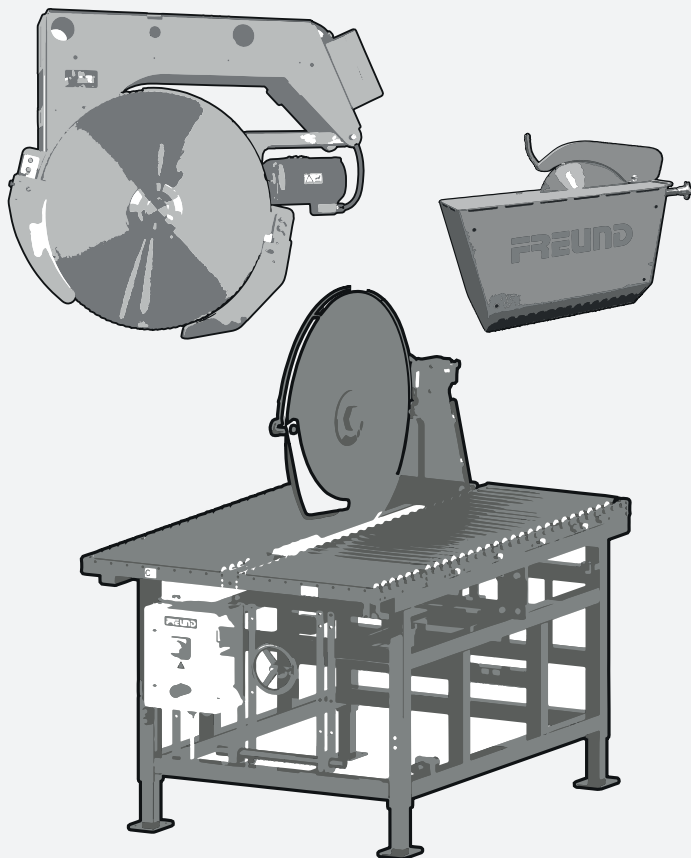
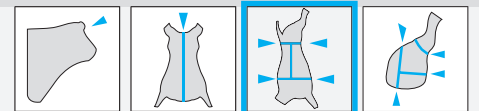


OPERATING MANUAL CIRCULAR CUTTING KNIFE

Translation of original manual



CIRCULAR CUTTING KNIFE MODELS

- ZKM95-DA
- ZKM75-DA
- ZKM75-T
- ZKM60-DA-MS
- ZKM25-13
- FK40-08-FT



Imprint

Home address FREUND Maschinenfabrik GmbH & Co. KG
 Schulze-Delitzsch-Str. 38
 33100 Paderborn, GERMANY

Fon +49 5251 1659-0

Fax +49 5251 1659-75

E-Mail mail@freund.eu

Internet www.freund-germany.com

Sales +49 5251 1659-0
 sales@freund.eu

© FREUND Maschinenfabrik GmbH & Co. KG, 11.2024

The reproduction, distribution and utilization of this document as well as the communication of its contents to others without express authorization is prohibited. Offenders will be held liable for the payment of damage. All rights reserved in the event of the grant of a patent, utility model or design.

Technical changes reserved

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

Contents

1	About this Manual	7
1.1	Target group	7
1.2	Liability and warranty	7
1.3	Storing the operating manual	8
1.4	Warnings	8
1.5	Symbols and layout elements	9
1.5.1	Layout elements	9
1.5.2	Safety signs	9
1.5.3	Symbols	10
2	For your safety	12
2.1	Obligations of the operator	12
2.2	Employee responsibilities	13
2.3	Personal protective equipment	14
2.4	Residual risks	14
2.5	Intended use	15
2.6	Safety-related components	16
2.6.1	Swivel guard	17
2.6.2	Splitting wedge	17
2.6.3	Blade guard	17
2.6.4	Emergency stop switch	17
2.6.5	ZKM60, ZKM75 and ZKM95	18
2.6.6	ZKM (table version)	19
2.6.7	ZKM25	20
2.6.8	FK40-08-FT	21
3	Technical Description	22
3.1	Dimensions	22
3.1.1	ZKM75-08-DA-JVE	22
3.1.2	ZKM75-08-DA-JVM	23
3.1.3	ZKM75-08-DA-JVE-JHS	24
3.1.4	ZKM75-46(B)-DA-JVE	25
3.1.5	ZKM75-46(B)-DA-JVM	26
3.1.6	ZKM60-08-DA-MS	27
3.1.7	ZKM60-46-DA-MS	28
3.1.8	ZKM95-46B-DA-JVE	29
3.1.9	ZKM95-46B-DA-JVM	30
3.1.10	ZKM75-08-T	31
3.1.11	ZKM25	32

3.1.12 FK40-08-FT	33
3.2 Technical Data.....	33
3.3 Rating plate.....	34
3.4 Serial Number.....	34
3.5 Lubricants	34
4 Transport and storage	36
4.1 Safety information	36
4.2 Personal protective equipment.....	36
4.3 Unpacking the machine	36
4.4 Storing the machine	36
4.5 Transporting the machine	37
5 Installation and Commissioning.....	38
5.1 Safety information	38
5.2 Personal protective equipment.....	39
5.3 Personal protective equipment.....	39
5.4 Setting up the machine	40
5.5 Adjusting the splitting wedge.....	40
5.6 Adjusting the blade guard	40
5.7 Setting the cutting height.....	40
5.8 Adjusting the cutting position	40
5.9 Adjusting the cutting angle	40
5.10 Installing the blades and saw blade	40
5.11 Connecting the machine	41
5.12 Carrying out a test run	41
6 Operating	42
6.1 Safety information	42
6.2 Personal protective equipment.....	42
6.3 Personal protective equipment.....	42
6.4 Daily safety check.....	43
7 Operating	44
7.1 Operating the machine.....	44
8 Cleaning and Disinfection.....	45
8.1 Safety information	45
8.2 Personal protective equipment.....	46
8.3 Carrying out cleaning and disinfection.....	46

9	Maintenance and Repair Work	49
9.1	Safety information.....	49
9.2	Personal protective equipment	50
9.3	Maintenance schedule.....	50
9.4	Recommended lubricants	51
9.5	Replacing the blades and saw blade	51
9.6	Sharpening the blades and saw blade	52
9.7	Filling with gear oil	52
9.8	Lubricating the gear unit	52
9.9	Replacing the conveyor belt	52
9.9.1	Periodic inspection of electrical equipment	52
10	Troubleshooting.....	53
10.1	Safety information.....	53
10.2	Personal protective equipment	54
10.3	Overview of possible faults ZKM.....	54
11	Disposal and Recycling	59
11.1	Disassembling and disposing of the machine	59
11.2	Disposing packaging material	59

1 About this Manual

The circular breaking knives and circular feet cutting saws are also referred to as machines in this operating manual.

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

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

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

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

1.1 Target group

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

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

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

1.2 Liability and warranty

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

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

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

Exclusion of
liability

We assume no liability and warranty:

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

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

- not observing the information provided in this operating manual at all or to the necessary extent

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

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

1.3 Storing the operating manual

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

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

1.4 Warnings

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

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

The precautions described must be observed to avoid the danger.

Structure of a
warning



Signal word!

Type and source of the imminent danger.



Possible consequences of the danger if the warning is disregarded.

➤ Instructions for averting the danger.

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

1.5 Symbols and layout elements

1.5.1 Layout elements

- Enumerations
 - Individual, independent instruction step
Result arising from the instruction step
 - 1. Step-by-step sequences in a specific order
 - 2. The numbers indicate that the instruction steps follow each other
 - 3. *Result arising from the instruction steps*
- References to another chapter
-  Important additional information or special details regarding the use of the machine
-  Embedded warning note - shows type and source of the danger and the measure to avoid the danger

1.5.2 Safety signs

Warning signs



Warning of a danger point

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



Warning of dangerous electrical voltage

Danger to life from electric shocks to the body.



Warning of sharp-edged machine parts

Danger to the fingers and hands from cutting and striking.

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



Warning of 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 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.

Mandatory signs



Wear protective gloves

protect the hands against friction, abrasions, and cuts.



Wear safety spectacles

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



Wear hearing protection

protect hearing during operation of the machine.



Wear safety shoes or rubber boots

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



Wear a hair net or use a blade guard

protect long hair against entanglement in the machine.



Wear a protective apron

protects the body against humidity, blood and other fluids.



Wear head protection

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



Pull out the power plug

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

1.5.3 Symbols



Comply with the operating manual

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



Separate spare parts list available

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



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



Available as a set

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



Tool set available

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

2

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



Lubrication

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



No lubrication



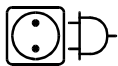
Glue

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



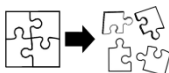
Cleaning

Instruction for an additional cleaning step.

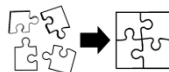


Power plug

symbolises the connection of the machine to the power network.



Disassembly of the machine or component



Assembly of the machine or component

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

2 For your safety

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

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

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

2.1 Obligations of the operator

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

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

Risk assessment
and protective
measures

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

Operating
instructions

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

Operating staff

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

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

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

Instruction of staff

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

- | | |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Risk assessment | The site operator must inform operators of possible dangers, symptoms and preventative measures. Relevant occupational safety conditions have to be complied with. |
| Workplace | The workplace must comply with the national and regional hygiene and workplace regulations. |
| Escape routes | The operator must ensure that sufficient escape routes are available for the staff and that these are clearly marked. The operator must ensure that escape routes are not obstructed and that their function is not impaired (e.g. that doors open towards the escape route). |
| Cleaning | The operator must ensure that machine and working equipment can be cleaned easily and without any risk. The operator must provide suitable detergents and define suitable cleaning procedures. |
| Safety of the machine | <p>The site operator must ensure that the machine is only operated and used in perfect and functional condition.</p> <p>The site operator must ensure that safety devices are regularly serviced and checked for proper function.</p> |

2.2 Employee responsibilities

- | | |
|-------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating staff | <p>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.</p> <p>Operating staff must be familiar with the operating manual and the applicable OHS and accident prevention regulations.</p> |
| Qualified personnel | <p>A technical expert is a person who, due to technical training and experience, possesses sufficient skills and knowledge.</p> <p>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.</p> |
| Competent personnel | <p>Competent personnel are such persons who, due to technical training and experience, possess sufficient skills and knowledge.</p> <p>The technical expert must be familiar with the operating manual and the applicable OHS and accident prevention regulations as well as with the latest regulations of the protection of animals.</p> |
| Safety at the workplace | <p>Maintain a stable upright position and keep your balance. Avoid awkward postures.</p> <p>Keep your workplace clean and tidy. Untidy workplaces can cause accidents.</p> <p>Always wear the personal protective equipment provided.</p> <p>Keep children, young persons and untrained staff away from the machine.</p> |
| Emergency procedures | <p>In the case of an accident, administer first aid and call a doctor and emergency medical services.</p> <p>Notify the operator or his authorised representative of every accident.</p> |

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

2.3 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.

2.4 Residual risks

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

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

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

- danger to life from live machine parts
- danger of injury from compressed air/overpressure
- Cutting injuries from cutting tools
- risk of cuts from running open saw blade and when touching the saw blade from the side.
- danger of injury from flying pieces of meat and bone fragments
- Danger of injury from breakage or ejection of fragments of the cutting tool.
- danger of injury to fingers and hands.
- hearing damage from noise if noise emissions exceed 75 dB(A)
- hearing damage from noise if noise emissions exceed 75 dB(A)
- danger of burning on hot surfaces

- risk of injury from negligent handling of personal safety equipment while operating the device, during maintenance and repair work and during cleaning and disinfection

2.5 Intended use

The circular breaking knife ZKM75 and ZKM95

- is intended for low-loss coarse cutting of horizontal carcasses, e.g. on a cutting belt conveyor.
- is intended for cutting soft and splittable non-frozen pieces of meat.
- is intended for suspended installation in cutting equipment.
- is intended for continuous operation.
- may be switched on no more than twice an hour. Switching it on more than this will subject motor and gear unit components to a significant additional load.

The circular breaking knife ZKM60

- is intended for separation of pig mid-sections in belly & cutlet series.
- is intended for cutting soft and splittable non-frozen pieces of meat.
- is intended for suspended installation in cutting equipment.
- is intended for continuous operation.
- may be switched on no more than four times an hour. Switching it on more than this will subject motor and gear unit components to a significant additional load.

The circular cutting knife (tabletop version) ZKM75-08

- is intended for low-loss coarse cutting of horizontal carcasses, e.g. on a cutting belt conveyor.
- is intended for separation of ham, shoulder and mid-sections of pigs and for halving sheep, lambs, calves and goats.
- is intended for cutting soft and splittable non-frozen pieces of meat.
- is intended for continuous operation.
- may be switched on no more than twice an hour. Switching it on more than this will subject motor and gear unit components to a significant additional load.

The ZKM25-13

- is intended solely for cutting poultry, small game and small pieces of pig, sheep and calf.
- must not be operated as a stand-alone machine.
- is intended for cutting soft and splittable non-frozen pieces of meat.
- ZKM25-13 installation variant is intended for installation in cutting equipment.

The circular foot saw FK40-08

- is intended for lateral installation in cutting equipment.
- must not be operated as a stand-alone machine.
- may only be used for sawing off the front legs and hind legs of pigs when cutting horizontally

The laser

- is intended for projecting a laser line as a tool for aligning and positioning workpieces.
- is securely installed on the FREUND circular cutting knife (ZKM).
- is suitable for brief, intermittent operation as well as 24-hour continuous operation.

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.

2.6 Safety-related components

The safety-related machine components described in this chapter must be installed and must not be modified.

Replace defective safety-related components immediately.

2.6.1 Swivel guard

The swivel guard

- swivels in harmony with the cutting direction,
- prevents interference with the circular knife blade from the side
- returns to the starting position automatically after passing through the cutting material

2.6.2 Splitting wedge

The splitting wedge

- prevents the cutting material getting jammed,
- prevents the cutting material getting pulled back in,
- covers the rear part of the circular knife blade
- prevents interference from the back of the circular knife blade

The gap between the circular knife blade and splitting wedge must be 2 – 6 mm.

2.6.3 Blade guard

The upper blade guard

- covers the top part of the circular knife blade,
- prevents accidental interference with the circular knife blade.

The lower blade guard

- covers the bottom part of the circular knife blade,
- prevents accidental interference with the circular knife blade.

The gap between the circular knife blade and blade guard must be 2 – 6 mm.

2.6.4 Emergency stop switch

The emergency stop switch is located on the control box.

The emergency stop switch stops the machine immediately. After the emergency stop switch has been pressed, it is only possible to restart the machine by switching the main switch off and on again.

2.6.5 ZKM60, ZKM75 and ZKM95

The diagram below illustrates the positions of the safety devices on the machine.

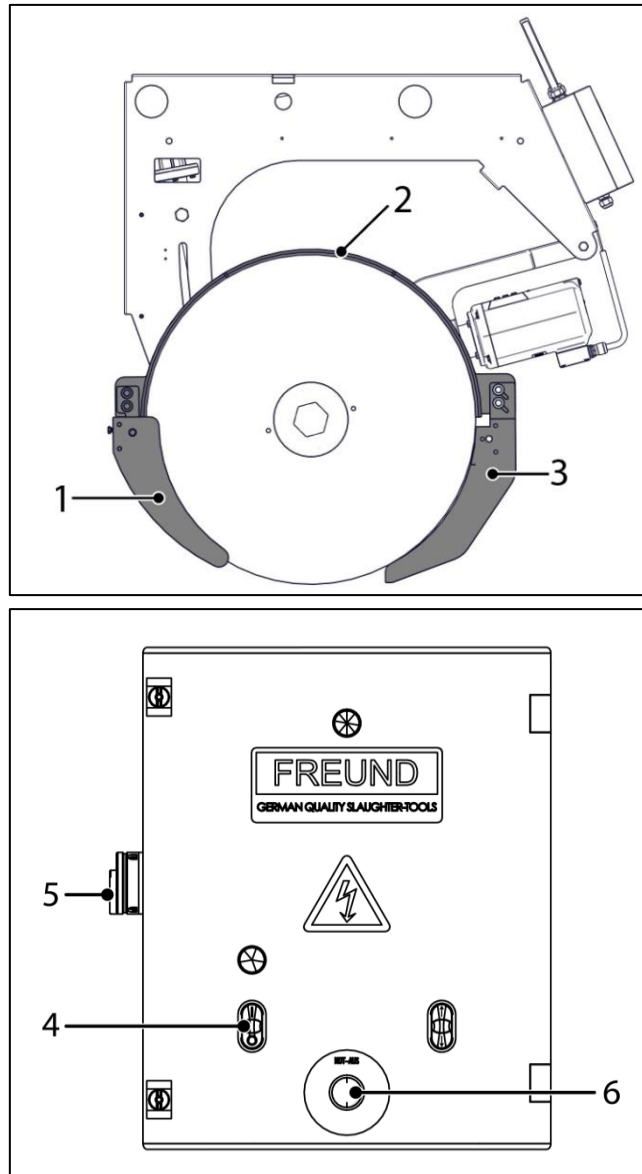


Fig. 2-1 Safety elements ZKM

Pos.	Description
1	Swivel guard
2	Blade guard, 3 elements (ZKM95: 4 elements)
3	Splitting wedge
4	ON/OFF switch
5	Main switch
6	Emergency stop switch

2.6.6 ZKM (table version)

The diagram below illustrates the positions of the safety devices on the machine.

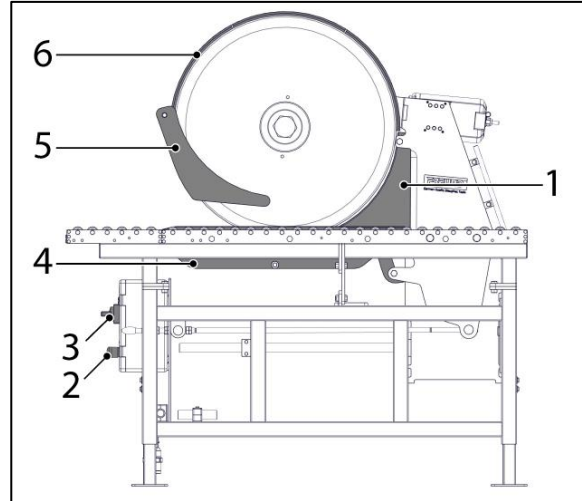


Fig. 2-2 Safety elements ZKM (table version)

Pos.	Description
1	Splitting wedge
2	Emergency stop switch
3	Main switch
4	Lower blade guard
5	Swivel guard
6	Upper blade guard

2.6.7 ZKM25

The diagram below illustrates the positions of the safety devices on the machine.

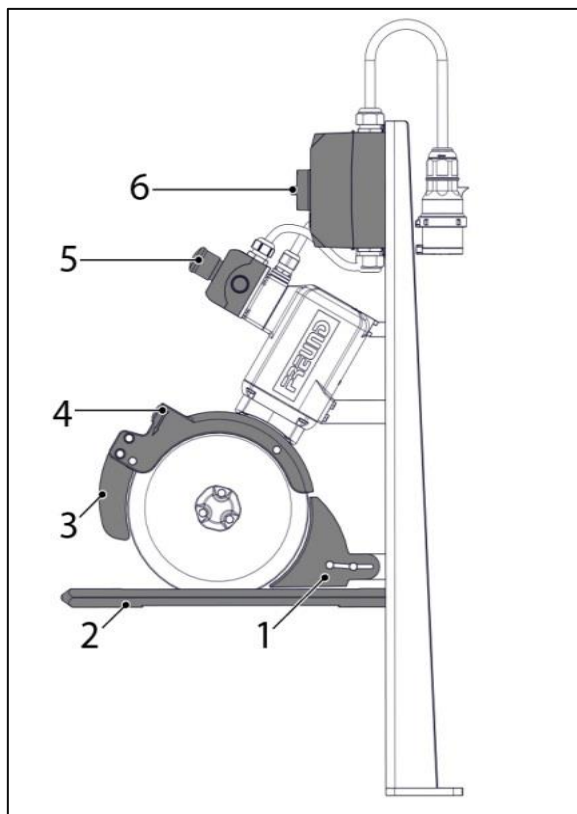


Fig. 2-3 Safety elements ZKM25

Pos.	Description
1	Splitting wedge
2	Lower blade guard
3	Protection blade
4	Blade guard
5	Emergency stop switch
6	Main switch

2.6.8 FK40-08-FT

The diagram below illustrates the positions of the safety devices on the machine.

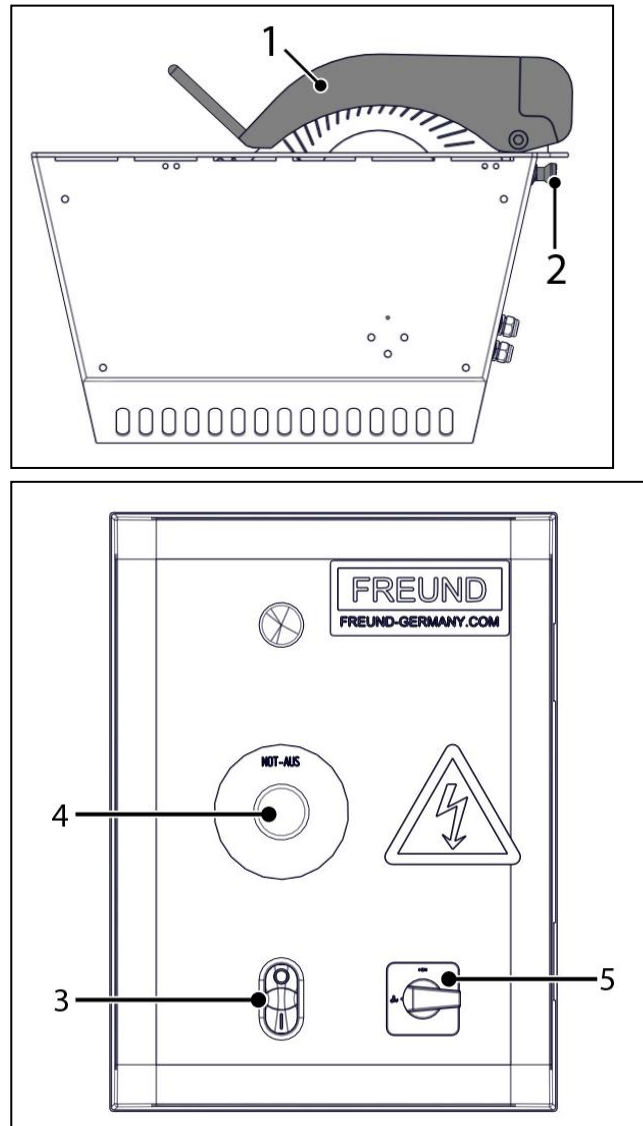


Fig. 2-4 Safety elements FK40

Pos.	Description
1	Blade guard
2	Locking mechanism
3	ON/OFF switch
4	Emergency stop switch
5	Main switch

3 Technical Description

3.1 Dimensions

3.1.1 ZKM75-08-DA-JVE

The following diagram provides an overview of the dimensions. All dimensions are in mm.

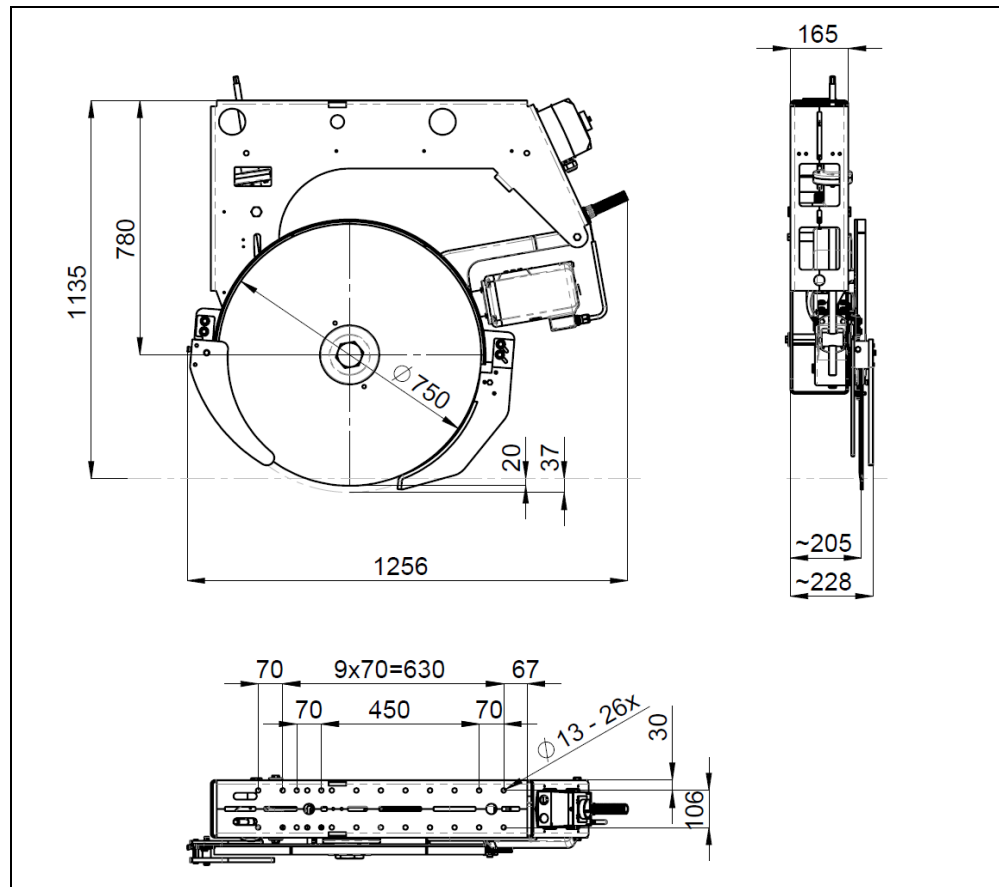


Fig. 3-1

Optional accessories		Part No.
	Control unit SG-ZKM-08-DA-01	904-800-001
	Line laser with holder	904-900-004

3.1.2 ZKM75-08-DA-JVM

The following diagram provides an overview of the dimensions. All dimensions are in mm.

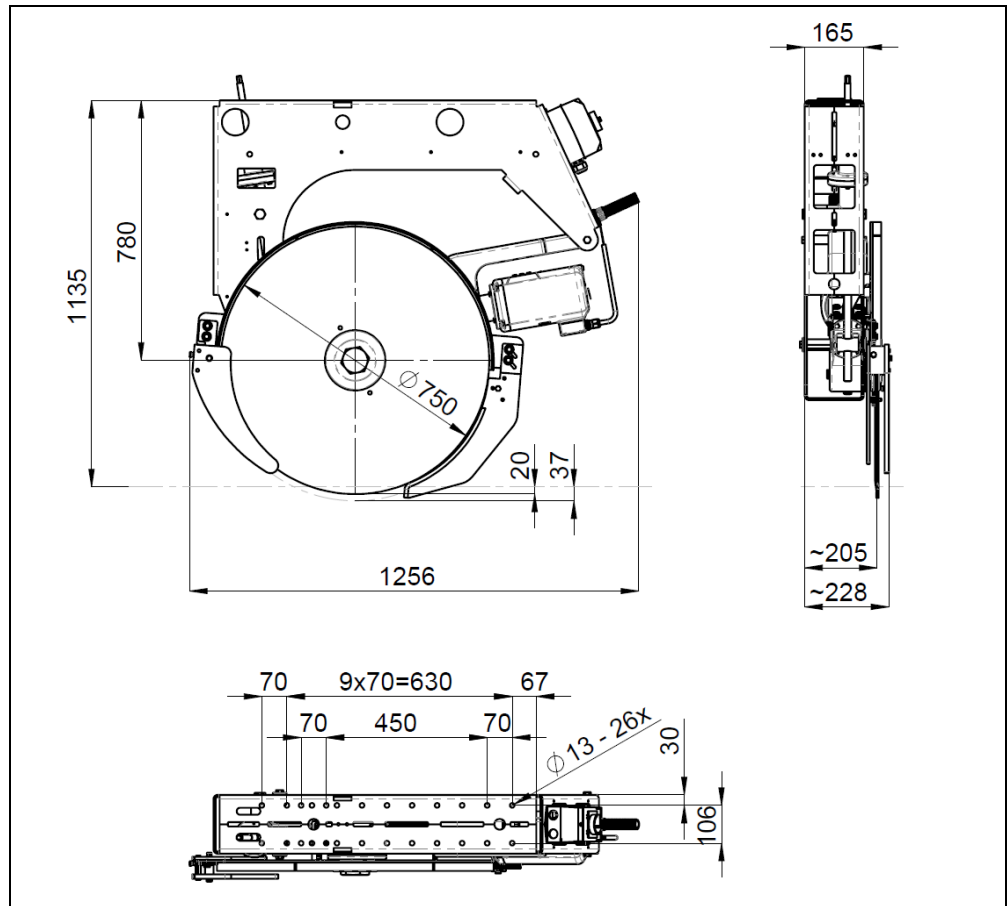


Fig. 3-2

Optional
accessories

	Part No.
Line laser with holder	904-900-002

3.1.3 ZKM75-08-DA-JVE-JHS

The following diagram provides an overview of the dimensions. All dimensions are in mm.

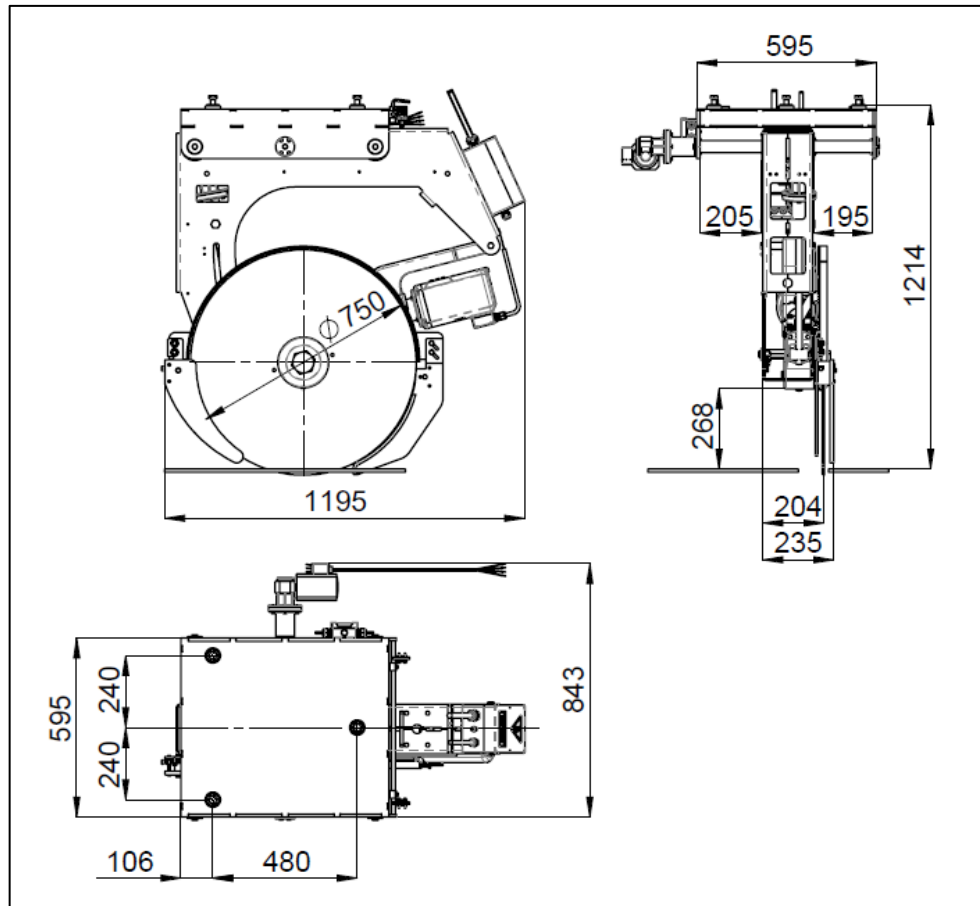


Fig. 3-3

Optional accessories		Part No.
	Control unit SG-ZKM-08-DA-01	Included
	Line laser with holder	904-900-004

3.1.4 ZKM75-46(B)-DA-JVE

The following diagram provides an overview of the dimensions. All dimensions are in mm.

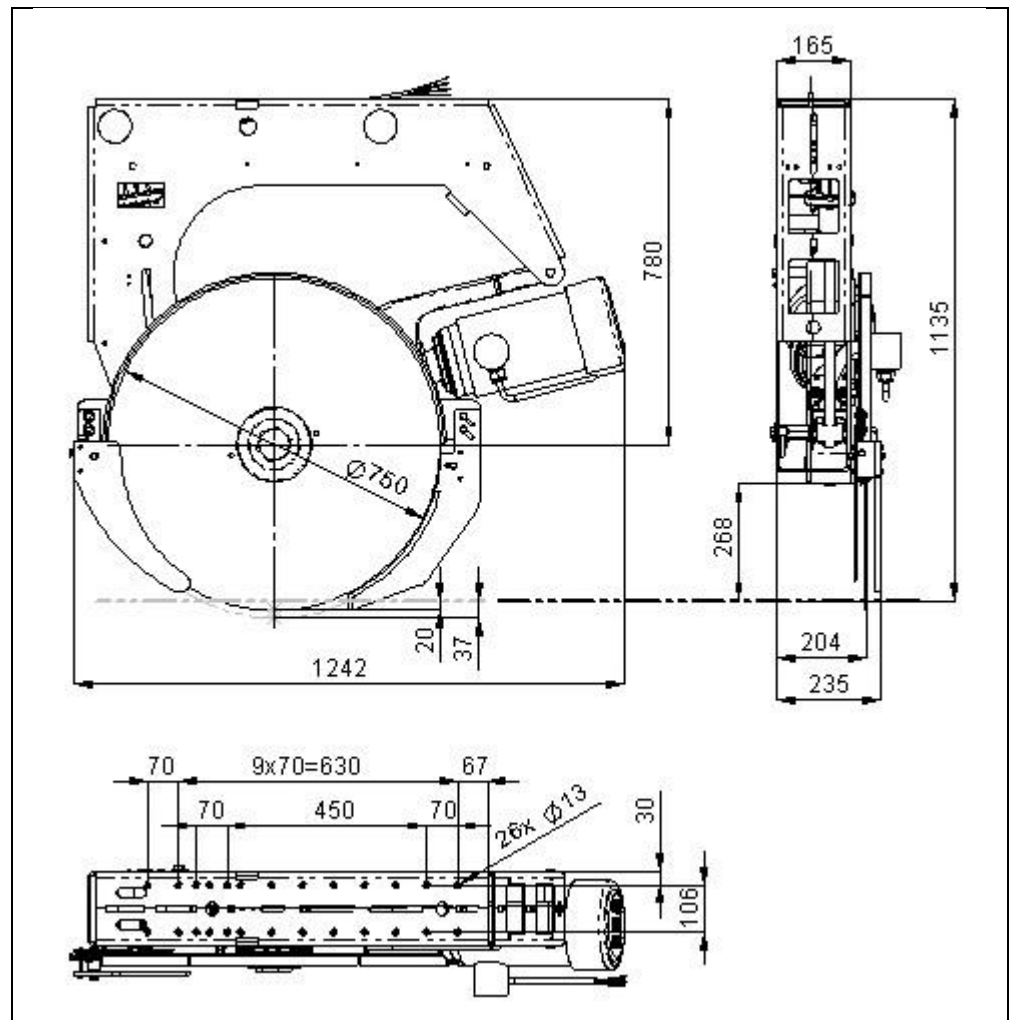


Fig. 3-4

Optional
accessories

	Part No.
Control unit SG-ZKM-46(B)-DA-01	904-800-004
Line laser with holder	904-900-004

3.1.5 ZKM75-46(B)-DA-JVM

The following diagram provides an overview of the dimensions. All dimensions are in mm.

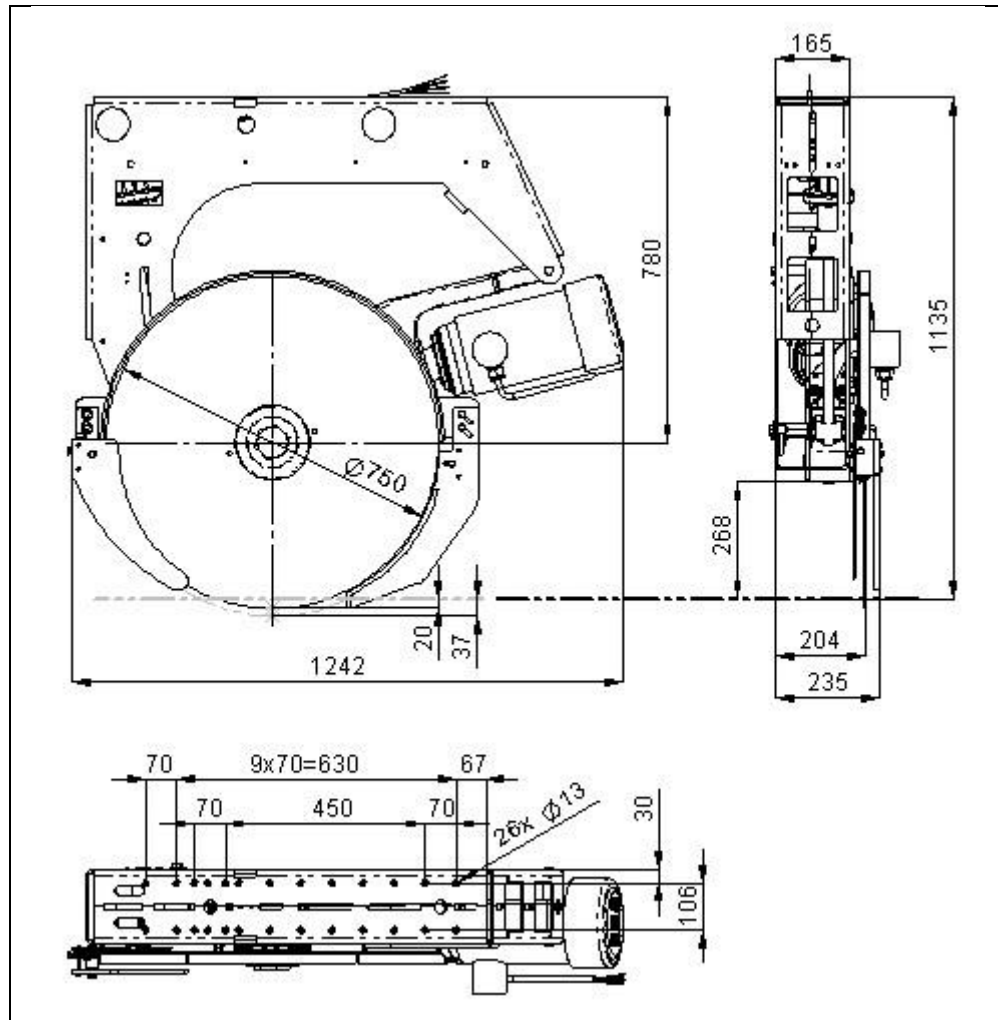


Fig. 3-5

Optional
accessories

		Part No.
Line laser with holder		904-900-002

3.1.6 ZKM60-08-DA-MS

The following diagram provides an overview of the dimensions. All dimensions are in mm.

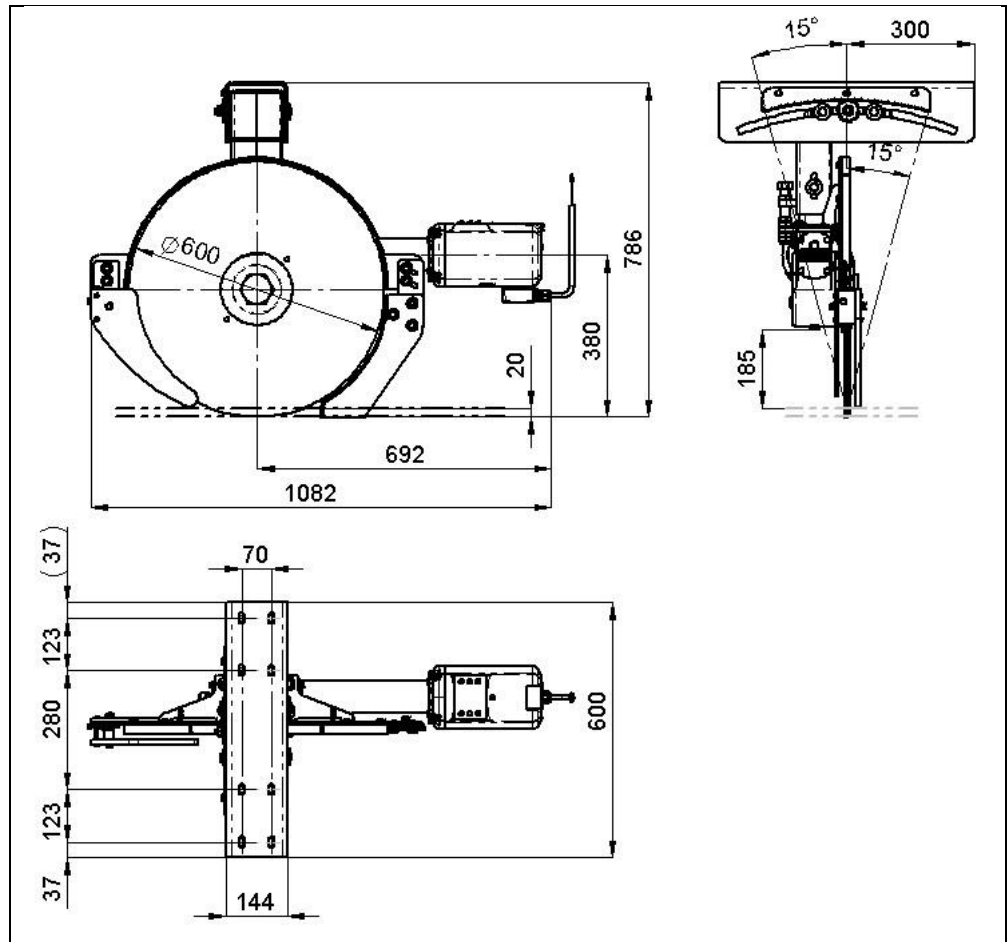


Fig. 3-6

3.1.7 ZKM60-46-DA-MS

The following diagram provides an overview of the dimensions. All dimensions are in mm.

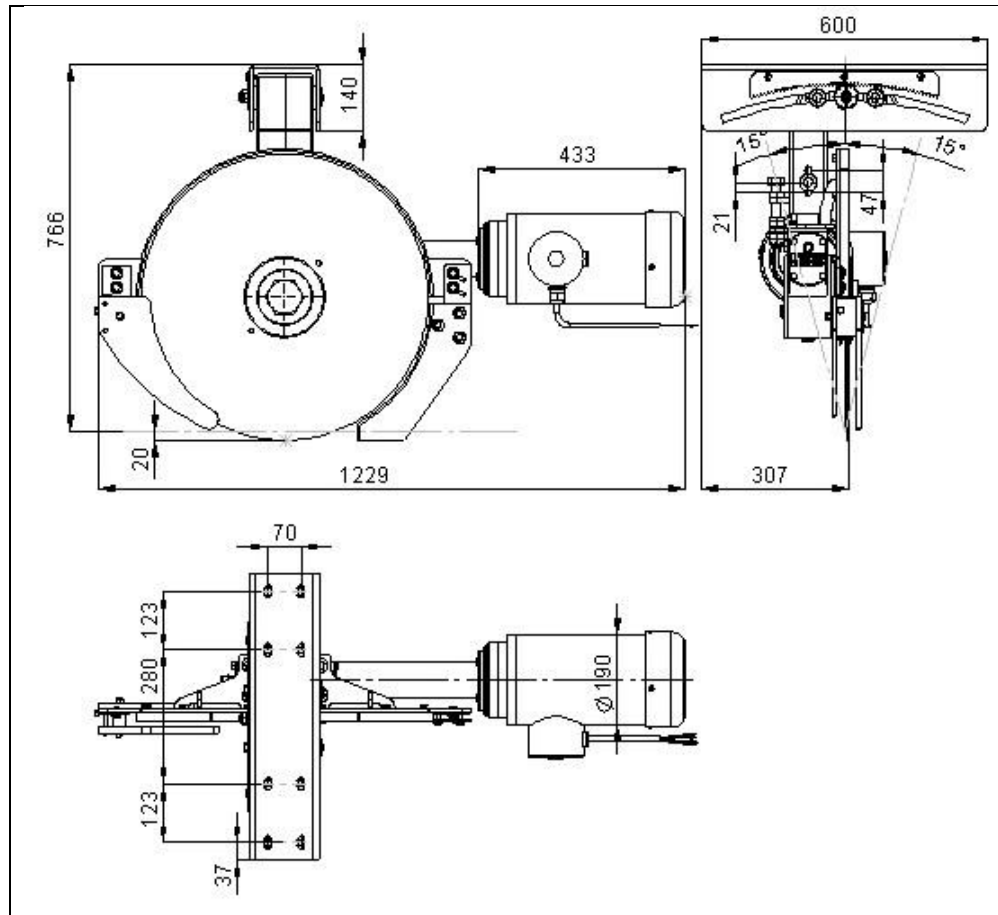


Fig. 3-7

3.1.8 ZKM95-46B-DA-JVE

The following diagram provides an overview of the dimensions. All dimensions are in mm.

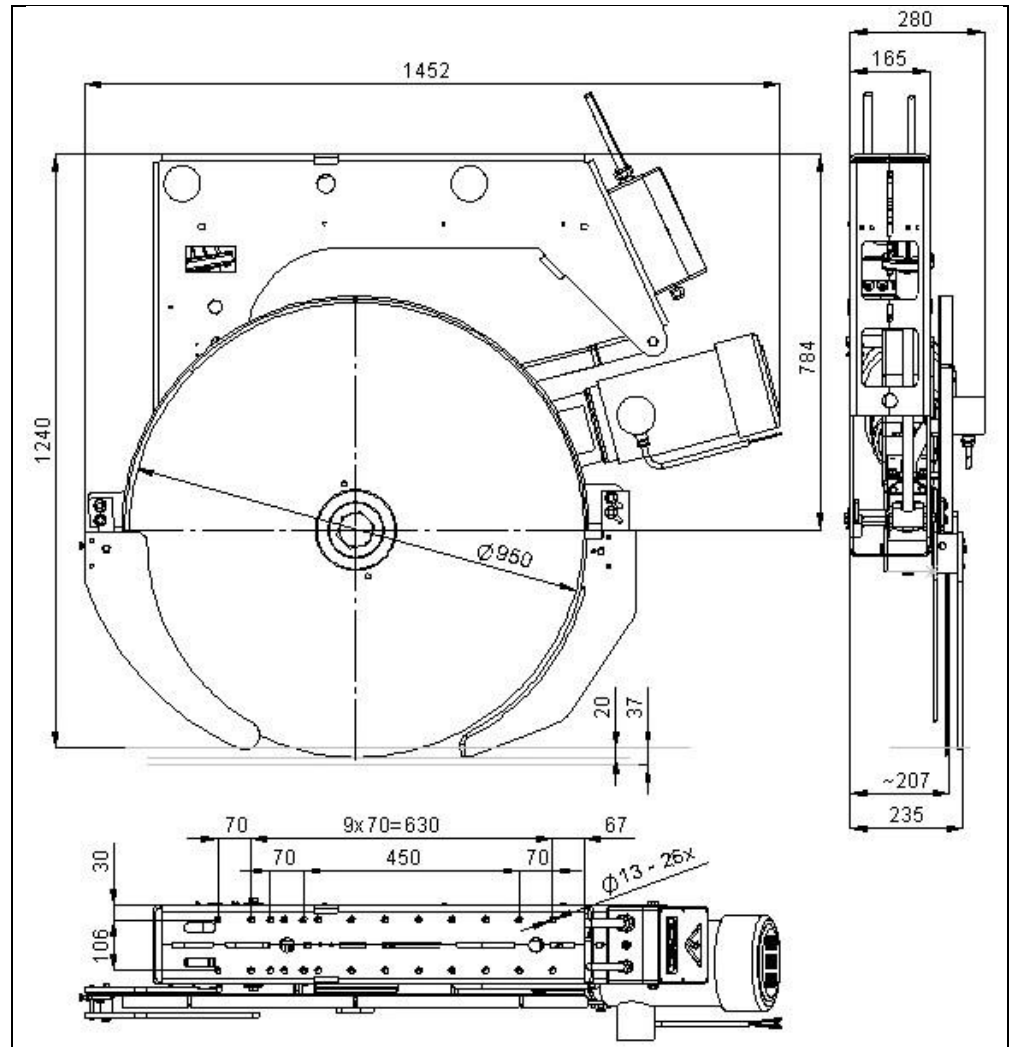


Fig. 3-8

Optional accessories		Part No.
	Control unit SG-ZKM95-46B-DA-JVE-FC	904-800-007
	Line laser with holder	904-900-004

3.1.9 ZKM95-46B-DA-JVM

The following diagram provides an overview of the dimensions. All dimensions are in mm.

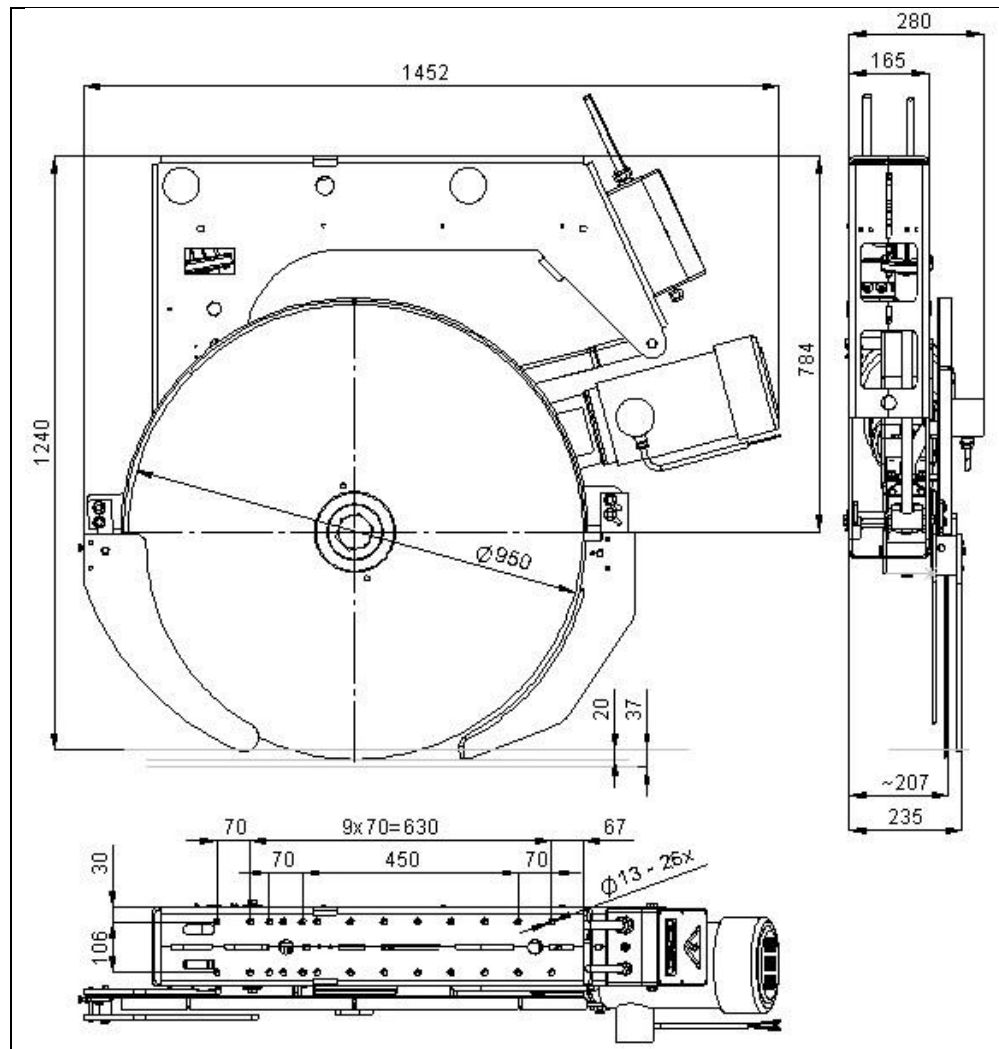


Fig. 3-9

Optional accessories		Part No.
	Control unit SG-ZKM95-46B-DA-JVM-FC	904-800-008
	Line laser with holder	904-900-002

3.1.10 ZKM75-08-T

The following diagram provides an overview of the dimensions of the standard version. All dimensions are in mm.

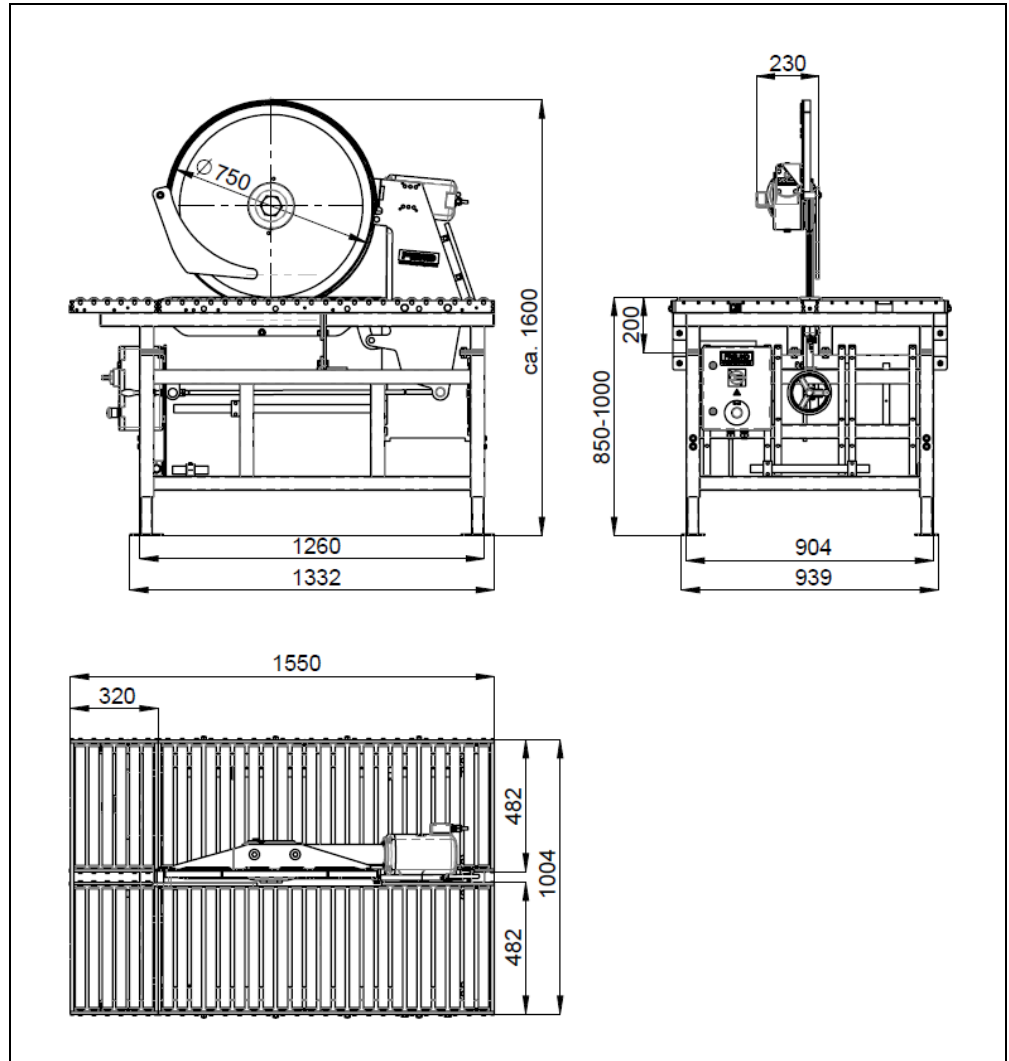


Fig. 3-10

Optional
accessories

	Part No.
Line laser with holder	904-900-003

3.1.11 ZKM25

The following diagram provides an overview of the dimensions of the standard version. All dimensions are in mm.

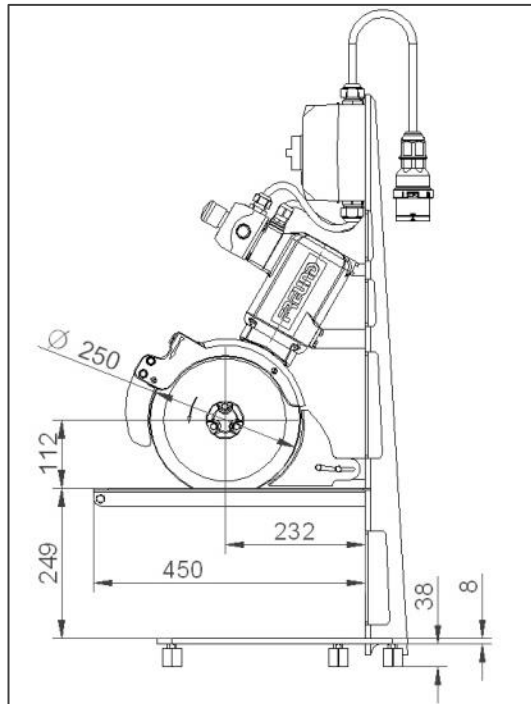


Fig. 3-11

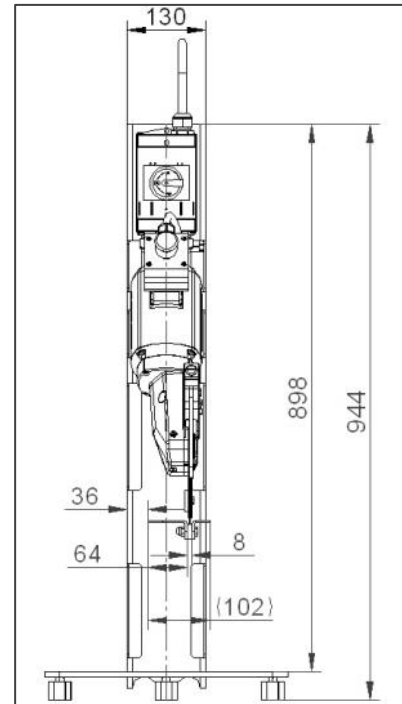


Fig. 3-12

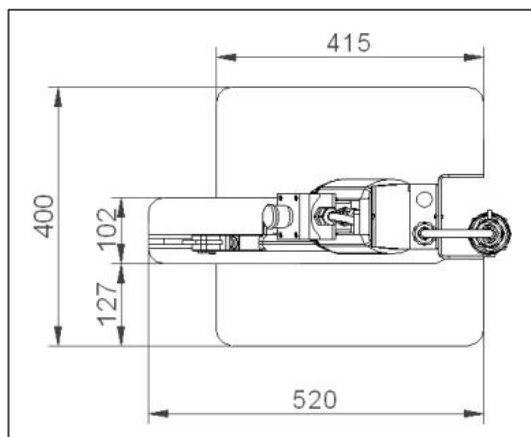


Fig. 3-13

3.1.12 FK40-08-FT

The following diagram provides an overview of the dimensions. All dimensions are in mm.

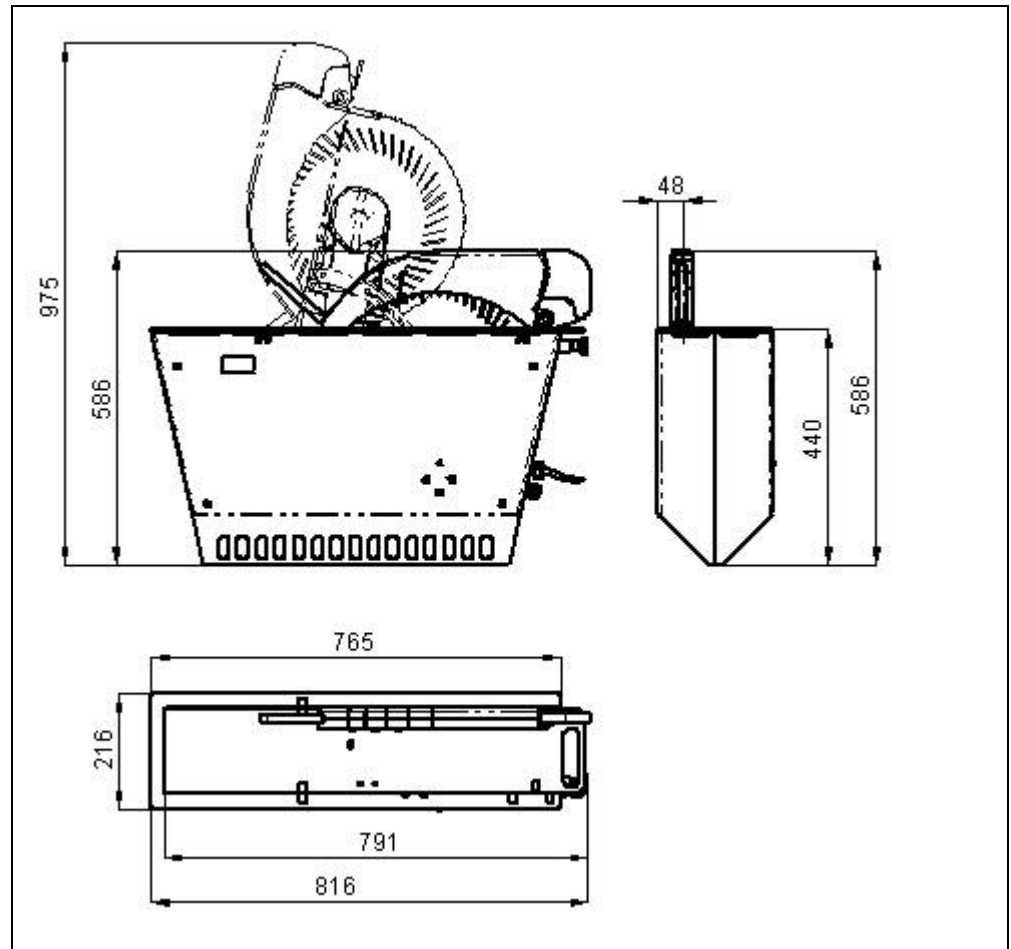


Fig. 3-14

3.2 Technical Data



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

3.3 Rating plate

The rating plate is attached to the front of the motor and provides information on the machine performance.

The illustration below is an example of the rating plate:



Fig. 3-15 Example of rating plate

Element	Explanation
1	Company address
2	Machine type and designation
3	Performance data: Rated voltage/phases [V] Rated output [W] Frequency [Hz] Rated current [A] Duty type Speed [rpm] Protection class Displacement power factor [cos φ]
4	Year of manufacture of the machine and production order no.

3.4 Serial Number

ZKM95 ZKM75, The serial number is located on the worm gear housing
ZKM60

ZKM25-13 The serial number is located on the motor housing
FK40-08

3.5 Lubricants



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

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

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

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

Safety data sheet Please refer to the safety data sheets for further information. You can find the safety data sheets in the [FA](#).

Getriebeöl FREUND-Getriebeöle halten einer hohen Druckbelastung stand und bieten exzellenten Schutz vor Verschleiß und Korrosion. Sie schützen die Bauteile bei höheren Betriebstemperaturen besser als die meisten Schmierstoffe auf Mineralöl- oder Synthetikölbasis.

FREUND-gear oils are high performance lubricants that provide outstanding lubrication in extreme-temperature gear. It is designed to enhance EP/ anti-wear protection, corrosion resistance.

Grease The grease supplied by FREUND is a high-performance transmission grease that is extremely resistant to high pressure loads and high temperatures. It is hygienically harmless and is characterised by good oxidation and ageing resistance.

It is physiologically harmless and is certified as per NSF-H1.

4 Transport and storage

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

Test run ex works The machine was tested prior to shipment. Such testing ensures that the machine corresponds to the specified data and is working properly. Despite all due care, it is possible that the machine could be damaged during transport. When unpacking the machine, please therefore check it for possible transport damage and document any such damage. Inform the transport company and Freund customer service immediately.

4.1 Safety information



WARNING!

Danger due to falling or toppling load.

Death or very serious injuries are possible.

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

4.2 Personal protective equipment



4.3 Unpacking the machine

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

For details about recycling and disposal of the package refer to the → chapter *Disposal and Recycling* on page 59.

- 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.

4.4 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.

4.5 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 **Fehler! Verweisquelle konnte nicht gefunden werden.** on page **Fehler! Textmarke nicht definiert..**
- 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 from electric current.

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



WARNING!

Risk of accident caused by insufficiently qualified personnel

Danger to Life and most severe injuries are possible.

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



WARNING!

Direct current can be fed into the protective earth conductor.

There is a possible danger to life and risk of very serious injuries.

- For single-phase inverters connected to a phase and to neutral, use a type A residual current device (RCD/GFCI) or a residual current monitoring (RCM) device for additional protection against direct or indirect contact
- For three-phase devices, as well as single-phase devices that are not connected to a phase and to neutral, use a type B residual current device (RCD/GFCI) or a differential current monitoring device (RCM) that is approved for use with inverters and is responsive to all current types.

Further conditions for the use of a residual current device:

- The inverter has an increased leakage current at the time of switching on. Use a residual current device (RCD/GFCI) or a residual current monitoring (RCM) device with response delay.
- High-frequency currents must be filtered.

Select a device with the following functions:

- Filtering of high-frequency currents
- A time delay that prevents the upstream device tripping due to the load of interference capacitances when switched on. This delay is not available on 30 mA devices. In such cases, select devices that are insensitive to unintentional activation.

Due to the high leakage current in standard operation, we recommend choosing at least one 300 mA device.



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!

Danger of eye damage.

Laser beams could damage your eyes.

- Never look directly into the laser beam.
- Immediately close and avert your eyes if the laser beam strikes them.
- Do not direct the laser beam at other persons.

5.2 Personal protective equipment



5.3 Personal protective equipment

To prevent injury, always wear the following personal protective equipment:



Laser protective goggles

5.4 Setting up the machine

- Only set up the machine in enclosed and frost-free spaces.
- Set up the machine in such a way that all controls and screw connections are freely accessible at all times.
It must be possible to perform all maintenance and repair tasks without risks and obstructions.
- ZKM75-08-T ➤ Screw the machine onto the base surface. The flooring must be level, firm, and have an adequate load capacity.
Refer to the dimension sheet for the dimensions of the hole pattern.
- Models
suspended from
the ceiling ➤ Mount the machine on a sufficiently stable and load-bearing structure.
Refer to the dimension sheet for the dimensions of the hole pattern.
- ZKM60, 75, 95 ➤ The saw blade continues to rotate for up to 6 seconds after switch-off.
Install suitable safety devices.

5.5 Adjusting the splitting wedge

The relevant manual can be found in the appendix under the heading **TIN-012722**.

5.6 Adjusting the blade guard

The relevant manual can be found in the appendix under the heading **TIN-012707**.

5.7 Setting the cutting height

The relevant manual can be found in the appendix under the heading **TIN-012683**.

5.8 Adjusting the cutting position

ZKM75-...JHS The relevant manual can be found in the appendix under the heading **TIN-012728**.

5.9 Adjusting the cutting angle

ZKM60 The relevant manual can be found in the appendix under the heading **TIN-012733**.

5.10 Installing the blades and saw blade

You can find the corresponding installation manual in the spare parts list under the heading **MTA-012734-C**.

5.11 Connecting the machine



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.

The machine may only be connected by a trained electrician.

Observe the wiring diagrams in the spare parts list when you connect the machine.

5.12 Carrying out a test run

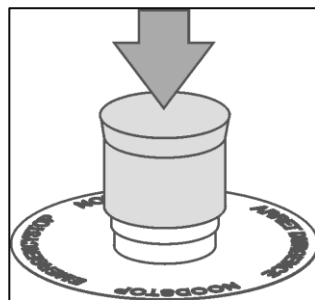


Fig. 5-1

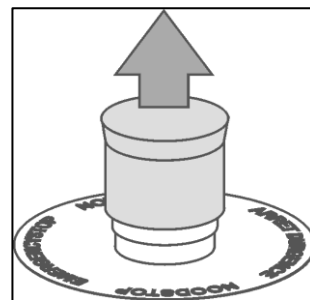


Fig. 5-2

- Check all important areas of the machine before the test run.
- Emergency stop ➤ Check the emergency stop switch when the machine is running.
 1. Press on the red cap of the emergency stop switch (Fig. 5-1).
The red cap engages in the pressed position. The machine stops immediately.
 2. Pull the red cap of the emergency stop switch up (Fig. 5-2).
The emergency stop switch is unlocked.
The machine remains off and can only be restarted using the main switch.
- Direction of rotation ➤ Check the direction of rotation of the circular knife blade is correct.
- Check the direction of rotation of the motor.



If the direction of the motor is incorrect, turn the machine off immediately. Have the machine checked by an electrician (→ Wiring diagrams).

- Noises ➤ Pay attention to noticeable and unusual noises during operation of the machine.
The motors must not have any speed fluctuations and no noticeable noises.

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!****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!****Danger of eye damage.**

Laser beams could damage your eyes.

- Never look directly into the laser beam.
- Immediately close and avert your eyes if the laser beam strikes them.
- Do not direct the laser beam at other persons.

6.2 Personal protective equipment



6.3 Personal protective equipment

To prevent injury, always wear the following personal protective equipment:



Laser protective goggles

6.4 Daily safety check

Before starting work, check the machine diligently for flawless and intended functioning.

Only use technically sound and functioning machines.

Check

- the machine for signs of visible damage and loose machine parts.
 - the screw connections for tightness.
 - all electrical connections and connection lines for external damage.
 - the function of the safety devices.
 - whether the circular knife blade is correctly installed, firmly secured and can be turned freely.
- Emergency-stop switch
- the function of the emergency stop switch.
It must be unlocked.

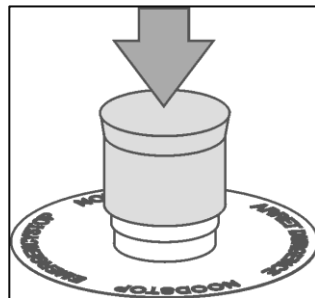


Fig. 6-1

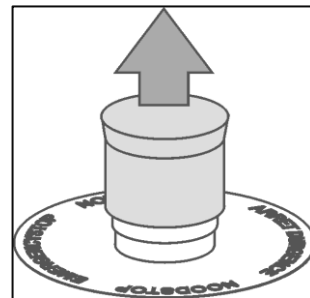


Fig. 6-2

1. Press on the red cap of the emergency-stop switch (Fig. 5-1).
The red cap engages in the pressed position. The machine stops immediately in running operation.
 2. Pull the red cap of the emergency-stop switch upwards (Fig. 5-2).
The emergency-stop switch is unlocked.
The machine remains switched off and can only be switched on again using the main switch.
- Ensure that no persons are working or are present in the danger zone of the machine.
 - 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.

7 Operating

The Laser does not have its own power switch and no control elements. It is connected via the FREUND Circular-Cutting-Knife ZKM, to which it is connected.

The Laser is suitable for intermittent duty as well as for 24-hour continuous duty.

7.1 Operating the machine

1. Pull out the emergency stop switch completely.
2. Turn the main switch to the ON position.
3. Feed the cutting material to the circular knife blade evenly. Do not jam the material during cutting.

A different amount of pressure is required depending on the blade position and thickness of the cutting material.

The machine pulls in the cutting material in the running direction.

The cutting material is cut and output on both sides of the circular knife blade.

4. Turn the main switch to the OFF position.



Circular knife blade continues to run! Cutting hazard! Never reach into the circular knife blade!

5. Secure the circular knife blade using the blade guard.

8 Cleaning and Disinfection

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

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

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.

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.



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.

8.2 Personal protective equipment



8.3 Carrying out cleaning and disinfection

- Only use detergents and disinfectants approved for the food industry.
- Always take note of the safety symbols and the safety and product data sheets issued for the relevant detergents or disinfectants.
- Store detergents and disinfectants separately or in a special room.
Make absolute sure those detergents and disinfectants do not come in contact with food.

Notice!**Damage due to high water pressure.**

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


- Do not use high-pressure cleaners.
 - Only work at water pressures of less ≤ 6 bar.
- Wear the personal protective equipment specified by the manufacturer of the detergent.
 - Only use cloths, brushes or other devices which are only used for cleaning.

Caution!

Corrosion on the saw blade/circular knife blade.

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

- Only clean the saw blade/circular knife 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/circular knife 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		

Work steps	Detergents and disinfectants	Auxiliary materials
Intermediate rinsing		
	Drinking water, max. 60°C Low-pressure device, spray bottle	
Disinfection* ²		
Spray, apply foam Allow to act as per product data sheet Solution temperature approx. 15°C	1 – 2% Ecolab P3-topax 99 0.5 – 2% Ecolab P3-topax 91 1% TEGOL 2000 1% TEGOL IMC 1% Somplex	Spray bottle, spray gun, clean damp cloth
Final rinsing		
	Drinking water, max. 60°C depending on fat melting temperature Low-pressure device, spray bottle	
Check		
that machine is visibly clean; repeat cleaning and/or disinfection if necessary		
Drying		
Rub dry or allow to dry in ambient air; allow disassembled parts to dry individually if possible		
Care		
Apply	Preservative oil, food grade oil	Spray bottle, clean cleaning cloth
Assembly		
Personnel must wash and disinfect hands		

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

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

9 Maintenance and Repair Work

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

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

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

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

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

9.1 Safety information



WARNING!

Risk of accident caused by insufficiently qualified personnel.

Danger to life and risk of very serious injuries.

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



WARNING!

Live machine parts.

Danger to life and most severe injuries are possible.

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



WARNING!

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 Maintenance schedule

Some maintenance tasks must be performed at regular intervals.

The table below provides an overview of the maintenance tasks to be performed, together with the maintenance interval. If necessary, adapt the maintenance intervals to your operating conditions.



Further manuals for repair and assembly tasks are available from [FREUND Assistance](#).

Interval	Maintenance job	→ Chapter
4 hours after commissioning	Check the housing temperature	
	Check the fastening bolts for tight fit	
1 day after commissioning	Check the housing temperature	
	Check the fastening bolts for tight fit	
	Check the oil level	
	Check the gear unit for leaks	
Daily	Visual inspection before starting work	→ Chapter Daily safety check on page 43.
	Check the safety devices	→ Chapter Daily safety check on page 43.
	Check bolts on saw blade flange	
Monthly	Check the oil level	
	Check the gear unit for leaks	
	Check the fastening bolts for tight fit	
	Lubricate the gear unit (ZKM25, FK40)	→ Chapter Lubricating the gear unit on page 52
Every 6 months	Check the oil consistency	

Interval	Maintenance job	→ Chapter
	Electric in-service inspection as per VDE 0701/0702/EN60204-1	→ Chapter Periodic inspection of electrical equipment on page 52
After 5,000 operating hours, after 2 years at the latest	Change the gear oil (ZKM60, 75, 95)	→ Chapter Filling with gear oil on page 52
Every 2 years	Replace grease	→ Chapter Lubricating the gear unit on page 52
If required	Sharpen the saw blade	→ Chapter Sharpening the blades and saw blade on page 52
	Sharpen the circular knife blade	→ Chapter Sharpening the blades and saw blade on page 52
	Replace the saw blade/circular knife blade	→ Chapter Replacing the blades and saw blade on page 51
	Replace the conveyor belt	→ Chapter Replacing the conveyor belt on page 52

9.4 Recommended lubricants



Ensure compliance with the general occupational safety rules when handling lubricants.

We offer you the following lubricant containers for refilling and lubricating the machine:

	Retail container	Part No.
ZKM25, FK40	1-kg can	100-013-039
ZKM60, 75, 95	1L bottle	159-016-035

9.5 Replacing the blades and saw blade

You can find the corresponding installation manual in the spare parts list under the heading **MTA-012735-C**.

9.6 Sharpening the blades and saw blade

The relevant manual can be found in the appendix under the heading **TIN-003653** and **TIN-006658**.

9.7 Filling with gear oil

ZKM60, ZKM75, ZKM95 The relevant manual can be found in the appendix under the heading **TIN-012736**.

9.8 Lubricating the gear unit

ZKM25, FK40 The relevant manual can be found in the appendix under the heading **TIN-012753**.

9.9 Replacing the conveyor belt

You can find the corresponding installation manual in the spare parts list under the heading **MTA-012737-C**.

9.9.1 Periodic inspection of electrical equipment

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

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

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

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

10 Troubleshooting

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

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

10.1 Safety information



WARNING!

Live machine parts.

Danger to life and most severe injuries are possible.

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



WARNING!

Risk of accident caused by insufficiently qualified personnel.

Danger to life and risk of very serious injuries.

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



WARNING!

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.

10.2 Personal protective equipment



10.3 Overview of possible faults ZKM

Fault	Possible cause	Remedy
Motor does not start or stops during operation.	Power supply is interrupted or defective.	Check all electrical connections.
		Check whether the connection cables are defective.
		Check whether all electrical connections are tight.
	Electrical connection is not correct.	Check the electrical connection according to the wiring diagram.
	Motor circuit breaker has tripped.	Check the motor circuit breaker for correct setting. Observe the power specification on the rating plate.
	Contactor does not switch.	Check the actuation of the contactor.
	Motor is overheated.	Also see fault → "Motor heats up too much".
	Internal thermal switch has tripped / failed.	Check whether there is any overload or overheating.
		After the motor has cooled down, check the continuity of the internal thermal protection.
		Also see fault → "Motor heats up too much".
	External overload protection has tripped / failed.	Check whether there is any overload or overheating.
		After the motor has cooled down, check the continuity of the external overload protection.
	Motor is overloaded.	Rectify the cause of the overload.

Fault	Possible cause	Remedy
Direction of rotation of motor is incorrect	Machine is connected incorrectly.	Change the phases of the supply line to the machine.
Motor hums and has high current consumption.	Rotor is scraping	Arrange for the motor to be repaired by a specialist workshop or contact FREUND Maschinenfabrik.
Fuses trip or contactor trips immediately.	Short circuit in the supply line to the motor.	Rectify the short circuit.
	Supply line is connected incorrectly.	Check the wiring according to the wiring diagram.
	Motor has a short circuit.	Arrange for the fault to be rectified in a specialist workshop or contact FREUND Maschinenfabrik.
	Motor has an earth fault.	
Motor heats up too much.	Supply line has a loose contact (a phase is missing).	Rectify the loose contact.
		Check all electrical connections according to the wiring diagram.
	Fuse has blown.	Replace the fuse.
	Difference of the mains voltage by more than 5% (area A) /10% (area B) from the motor rated voltage.	Adjust the motor to the power supply. Contact FREUND Maschinenfabrik.
	Blunt saw blade/blades	→ See chapter Replacing the blades and saw blade on page 51.
	Ball bearings have insufficient clearance	Correct the bearing clearance.
	There has been a phase failure	Check the electrical connections.

Fault	Possible cause	Remedy
	Connection cable cross-section is too small or too long	Only use original cable.
Overload relay has switched off.	Overload of the motor	Rectify the cause of the overload.
		Switch the overload relay back on.
		Check the current specification on the overload relay and increase this if necessary.
Machine gives poor cutting results or does not cut at all.	Against the direction of the installed circular knife blade.	Install the circular knife blade correctly.
	Incorrect circular knife blade.	Switch off the machine. Replace the circular knife blade.
	Blunt circular knife blade.	Sharpen the circular knife blade as per sharpening instructions or have it sharpened / microerrated
	Immersion depth in table not appropriate for cutting depth	If bone fractures occur, immerse the blade deeper; if it is necessary to apply considerable pressure to the material, do not immerse the blade as deeply → Chapter Setting the cutting height on page 40.
Circular knife blade jams.	Dirty circular knife blade.	Clean the machine.
Circular knife blade slips under load.	Driver pins in the flange are missing or are damaged or the circular knife blade is not installed correctly	Replace the driver pins or insert the blade correctly
	Circular knife blade screwed on too loosely.	Tighten the flange nut using the supplied spanner
	Dirty circular knife blade.	Clean the machine.
	Worn flange.	Replace the flange.
Circular knife blade rotates in the wrong direction	Poles reversed	Have an electrician reverse the polarity.

Fault	Possible cause	Remedy
Gear unit makes noises	Poor oil consistency	Perform an oil change → Chapter Filling with gear oil on page 52.
	Blade guard scrapes against blade	Check the distance between the blade and blade guard ≤ 6 mm.
	Bearings and seals worn	Replace the bearings and seals.
	Worm gear damaged	Replace the worm gear.
	Fastening bolts loose	Tighten the bolts/nuts.
	Overload due to circular knife blade contact with the table	Adjust the position of the circular knife blade. Circular knife blade must turn freely. → Chapter Setting the cutting height on page 40. → Chapter Adjusting the cutting position on page 40. Adjust the thickness of the meat.
Motor makes unusual noises	Bearing clearance too big and/or bearing defective	Check the bearing. Replace the bearing if necessary.
	Fastening bolts loose	Tighten the bolts/nuts.
	Failure of a phase	Check the connections and, if necessary, the resistance of the coil.
Oil discharges	Oil level NOK	Correct the oil level. → Chapter Filling with gear oil on page 52.
	Shaft rings defective	Replace the shaft rings.
	Oil discharges from the vent.	Close off the vent.
	Flange bolts are loose	Tighten the bolts.
	Flange seal is defective	Replace the flange seal.
	Transport damage (e.g. hairline cracks)	Get in touch with FREUND.
Gear unit is becoming too hot	Oil level NOK	Check the oil level and correct it if necessary. → Chapter Filling with gear oil on page 52.

Fault	Possible cause	Remedy
	Synthetic oil and mineral oil have been mixed up	Check the oil and perform a full oil change if necessary. → Chapter Filling with gear oil on page 52.
	Oil is too old	Change the oil. → Chapter Filling with gear oil on page 52.
	Bearing clearance too big and/or bearing defective	Check the bearings and replace them if necessary.
	Gear unit clearance too narrow	Check the gear unit clearance and set it correctly if necessary.
Output shaft not turning when motor is running	Connecting shaft between the motor and gear unit is broken	Replace defective parts.
	Keys sheared	
	Coupler bushing is defective	
Motor does not start or is sluggish	Oil level NOK	Check the oil level and correct it if necessary
	Synthetic oil and mineral oil have been mixed up	Check the oil and perform a full oil change if necessary. → Chapter Filling with gear oil on page 52.
	Labyrinth seal rubs against the driving flange of the gear unit	Get in touch with FREUND
	Motor is not supplied with electricity	Check the connections.
Increased clearance at drive and output	Positive connection between drive motor and gear unit worn out due to overload	Replace defective parts.
Height/lateral adjustment unit is stuck	Insufficient lubrication	Grease the spindle mechanical system
	Actuator defective	Check the actuator and the control

11 Disposal and Recycling

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

11.1 Disassembling and disposing of the machine



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

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

1. Disconnect the machine from the power supply and/or the compressed air supply.
2. Disconnect all electrical connections and supply lines from the machine.
3. Completely disassemble the machine.
4. On oil-lubricated machines, drain all the oil from the machine and remove filter elements, if fitted.
5. Completely degrease the machine.
6. Dispose of waste oil and components and materials soiled with oil in accordance with the applicable environmental regulations.
7. Segregate all materials.
8. Send the individual materials to the appropriate recycling or disposal facilities.
9. Send hazardous waste to a local hazardous waste site.

11.2 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.

More Information

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

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

Technical Data

Machine	Key data								Main drive					
	Weight [kg]	Length mm	Height [mm]	Width [mm]	Circular knife Ø [mm]	Cutting depth [mm]	Speed of rotation knife [U/min] 50/60HZ	Cutting height [mm]	Type of motor	Motor power [W]	Frequency [HZ]	Speed of rotation [U/min] 50 / 60HZ	Voltage [V] / Rated current [A]	Gear ratio [i]
ZKM25-13	33	520	944	400	250	75	600 / 720	/	M13	950	50/60	1320 / 1584	400 / 1,8 230 / 3,14	2,2 : 1
ZKM75-08DA JVE/JVM	150	1256	1135	228	750	265	94 / 112 195 / 234	290	M08	2300	50/60	2900 / 3480	400 / 4,3 230 / 7,4	30 : 1 15 : 1
ZKM75-08DA JVE JHS	200	1115	1214	843	750	265	94 / 112 195 / 234	290 400*	M08	2300	50/60	2900 / 3480	400 / 4,3	30 : 1 15 : 1
ZKM75-46-DA JVE/JVM	150	1242	942	226	750	265	195 / 234	200	M46	3000	50/60	2900 / 3480	400 / 5,5	15 : 1
ZKM75-46B-DA JVE/JVM	150	1242	942	226	750	265	94 / 112	200	M46B	3000	50/60	1450 / 1740	400 / 6,1	15 : 1
ZKM75-46-DA JVE JHS	200	1242	942	843	750	265	195 / 234	200	M46	3000	50/60	2900 / 3480	400 / 5,5	15 : 1
ZKM95-46B-DA JVE/JVM	180	1452	1240	280	950	365	94 / 112	200	M46B	3000	50/60	1450 / 1740	400 / 6,1	15 : 1
ZKM60-08-DA-MS-JA	120	1082	765	600	600	150	195 / 234	30°**	M08	2300	50/60	2900 / 3480	400 / 4,3	15 : 1
ZKM75-08-T	300	1565	1840	1012	750	265	94 / 112 195 / 234	136	M08	2300	50/60	2900 / 3480	400 / 4,3	30 : 1 15 : 1

Technical Data

Machine	Key data								Main drive					
	Weight [kg]	Length mm	Height [mm]	Width [mm]	Circular knife Ø [mm]	Cutting depth [mm]	Speed of rotation knife [U/min] 50/60HZ	Cutting height [mm]	Type of motor	Motor power [W]	Frequency [HZ]	Speed of rotation [U/min] 50 / 60HZ	Voltage [V] / Rated current [A]	Gear ratio [i]
FK40-08-FT	58	844	940	223	400	144	900 / 1080	/	M08	2300	50/60	2900 / 3480	400 / 4,3 230 / 7,4	3,22 : 1

Protection class

IP65

* additional lateral travel ZKM75-08DA JVE JHS

elektr. Connection

3ph~

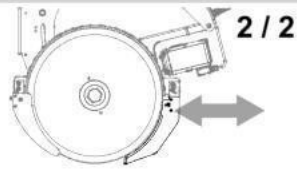
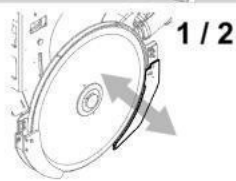
** Angle adjustment ZKM60-08-DA-MS-JA

Noise emission
[dB(A)]

≤ 70, can increase up to 95 dB(A) during operation

Vibration [m/s²]

< 2,5



SW13

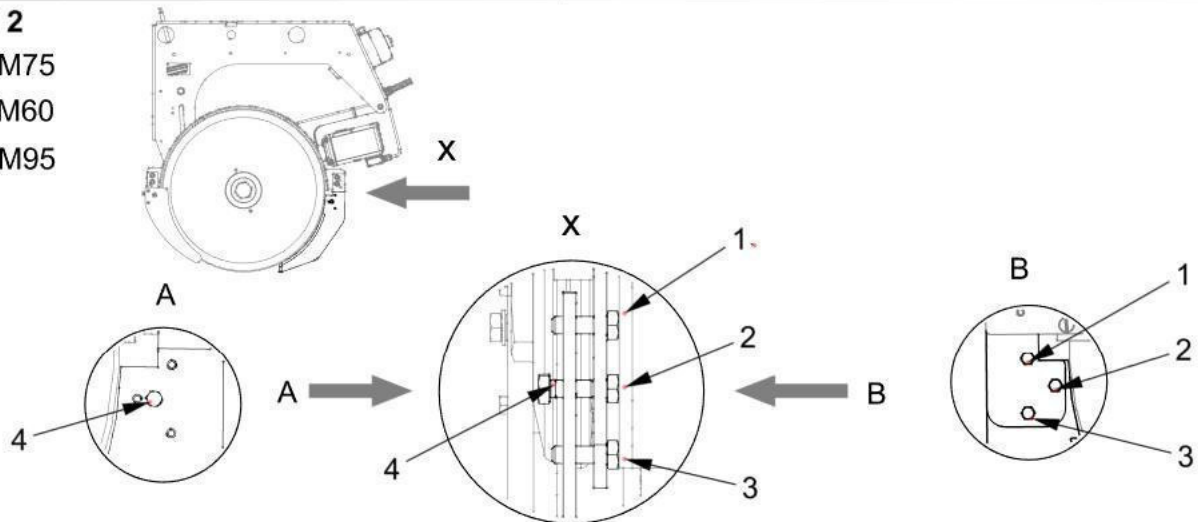
1 / 3

1 / 2

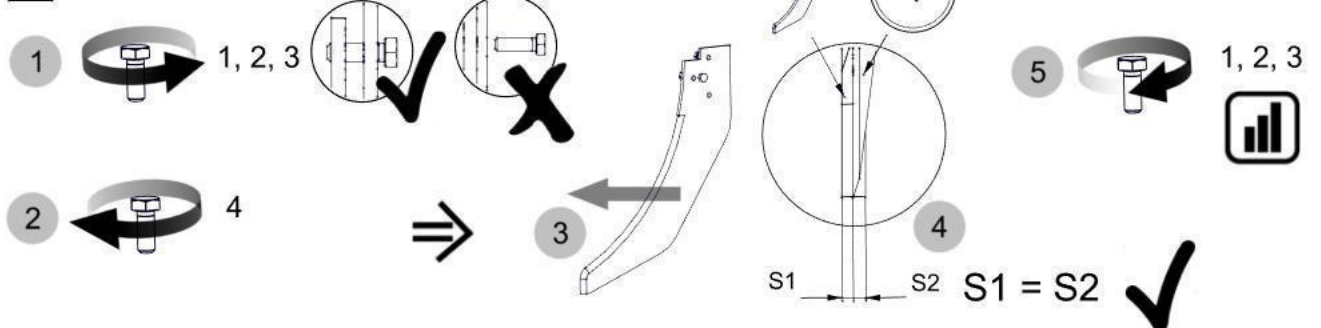
ZKM75

ZKM60

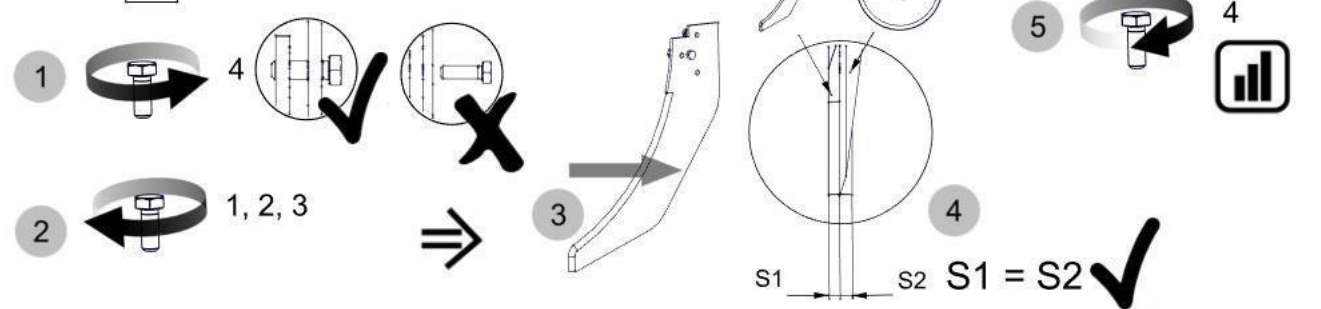
ZKM95



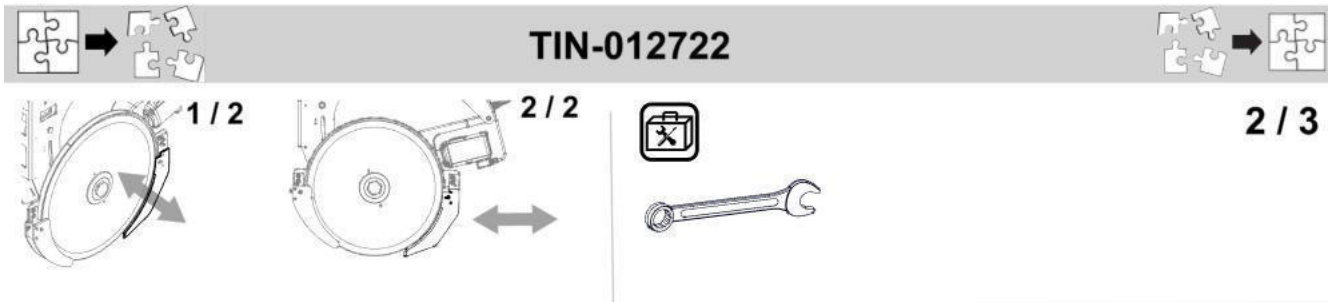
L



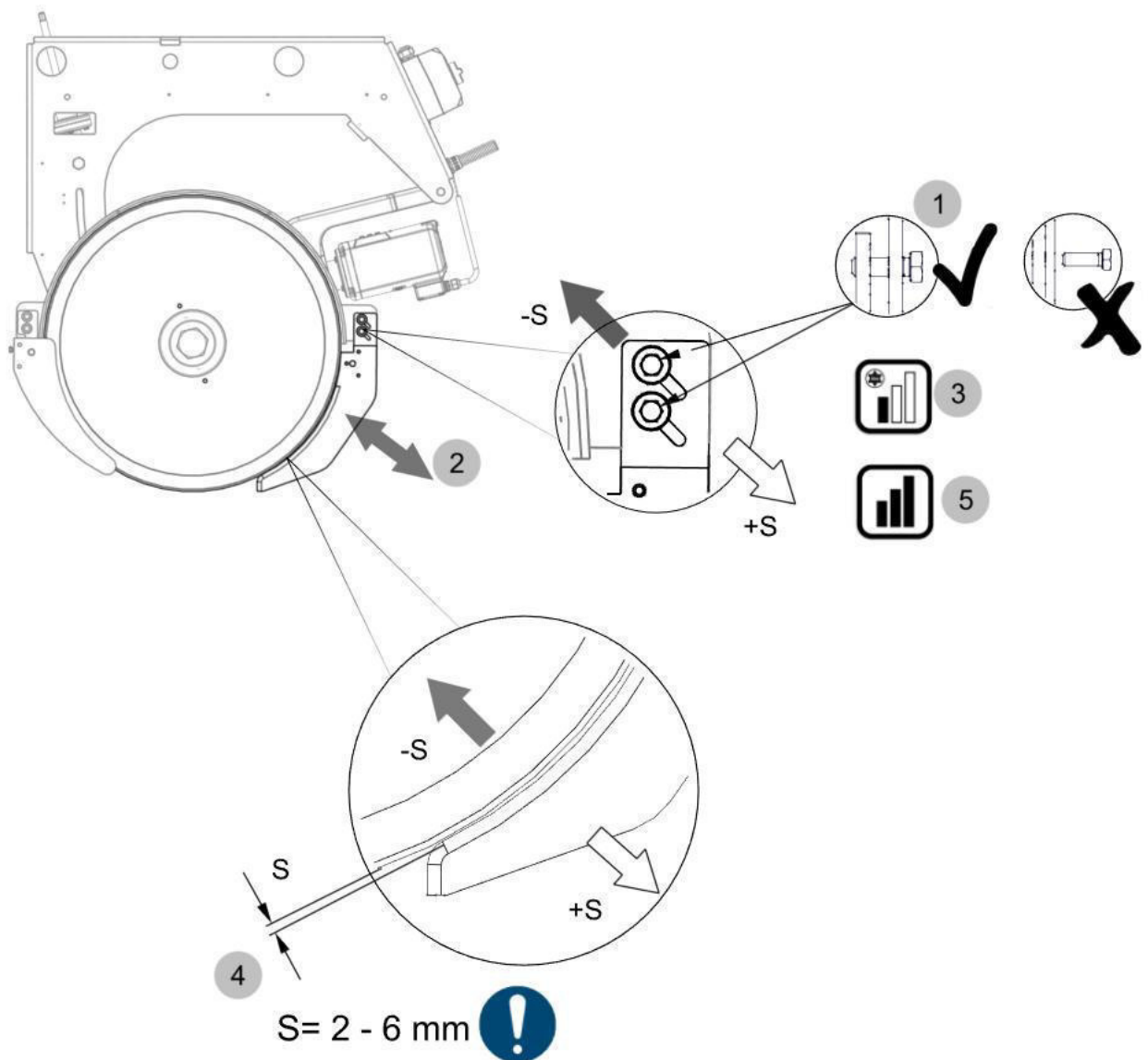
R



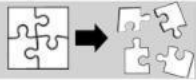
TIN-012722 -000



2 / 2 ZKM75 ZKM60 ZKM95



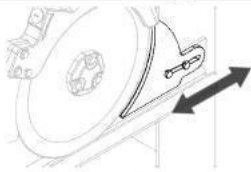
TIN-012722 -000



TIN-012722

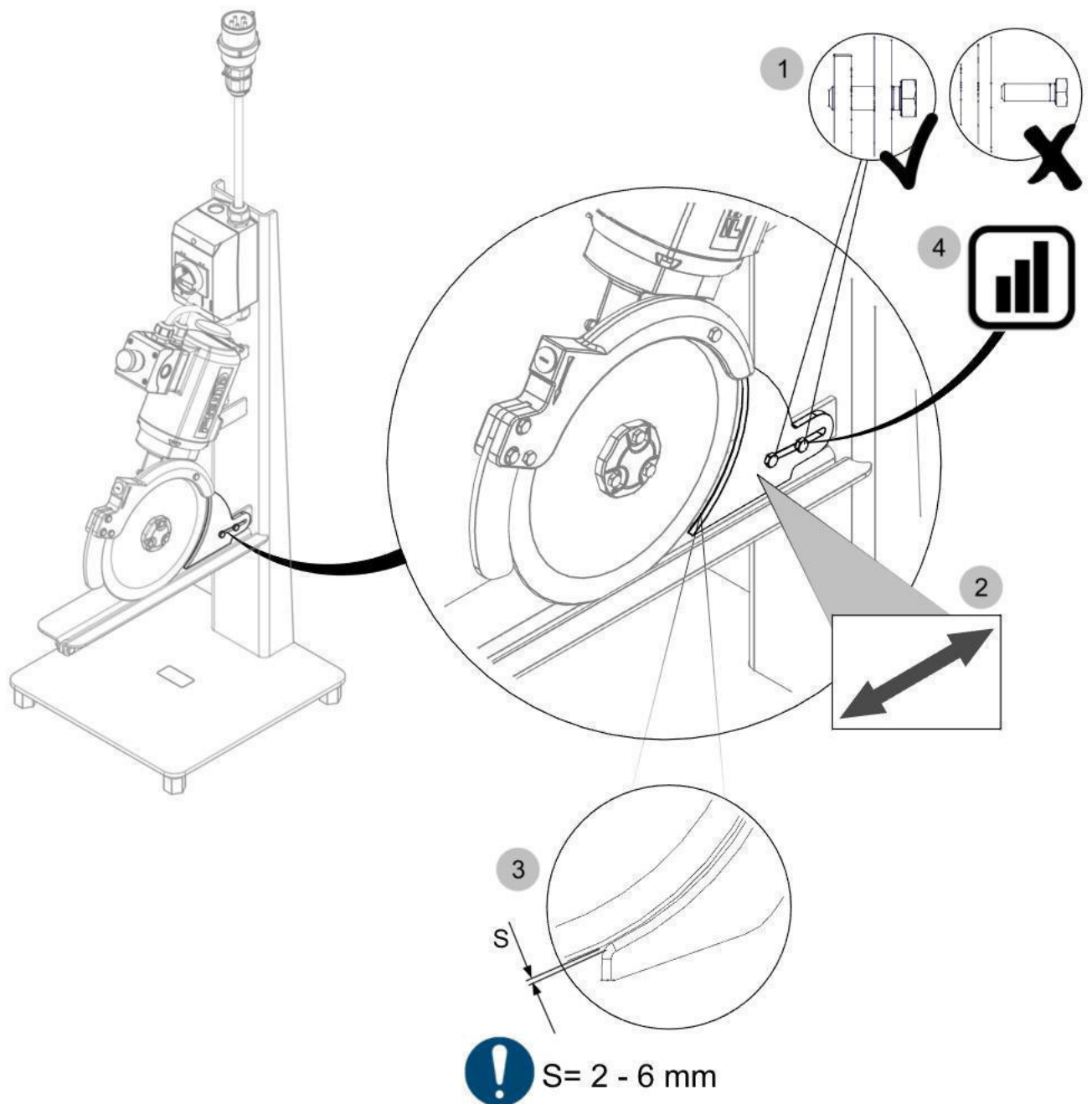


3 / 3

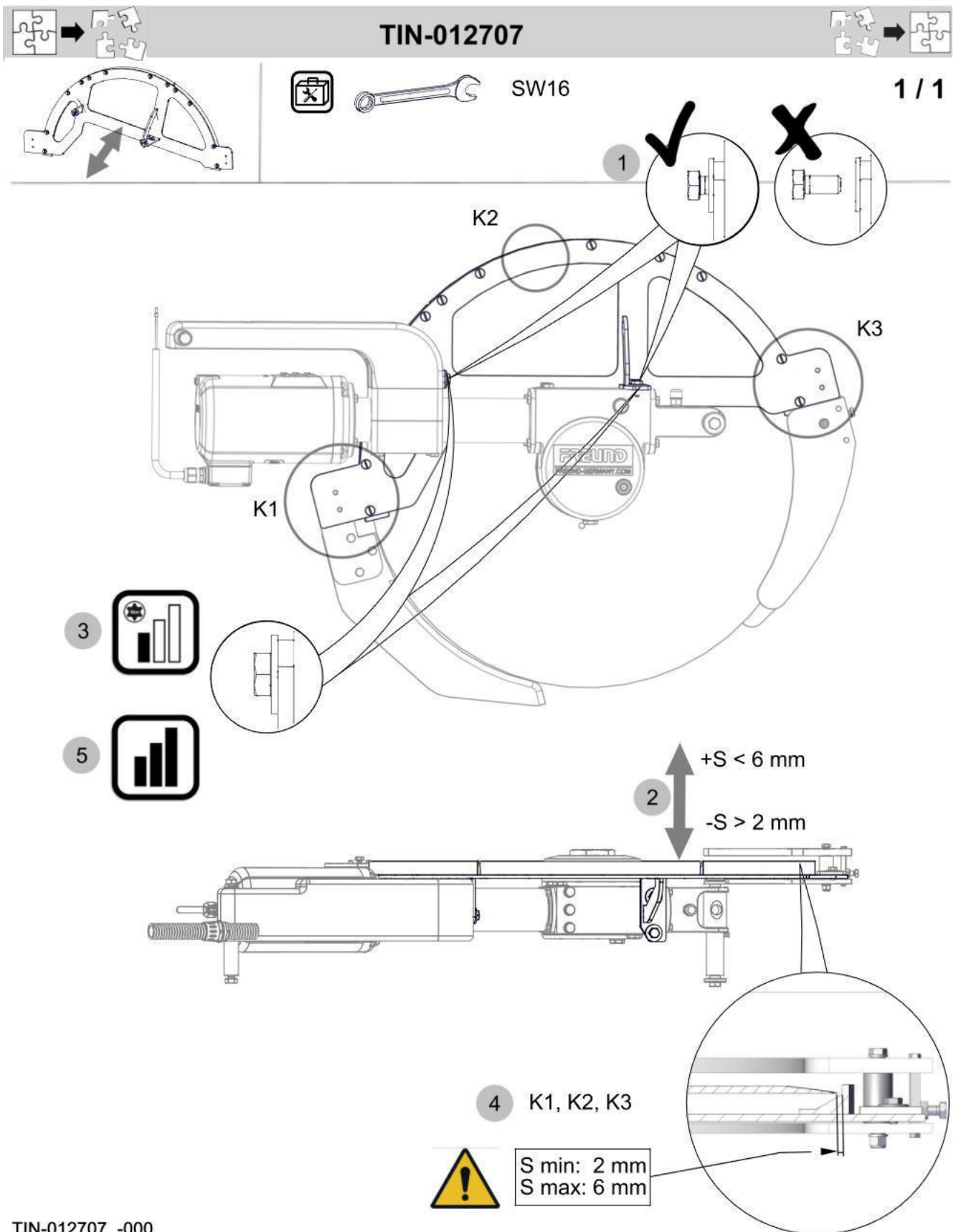


SW10

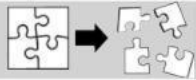
ZKM25-13



TIN-012722 -000



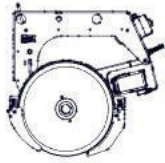
TIN-012707 -000



TIN-012683



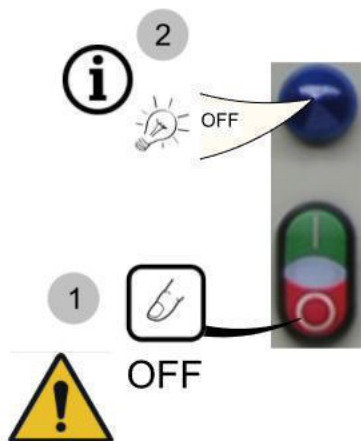
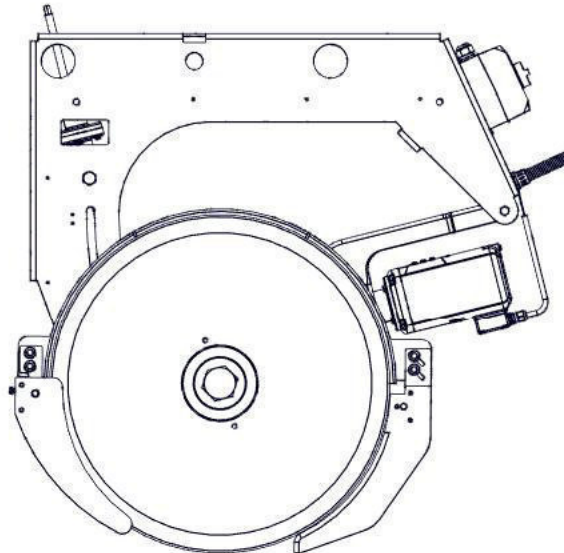
1 / 2



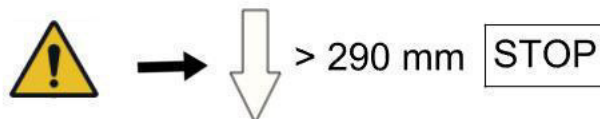
ZKM - JVE



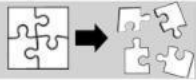
max. 290 mm



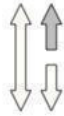
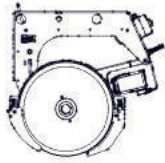
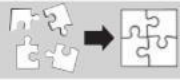
3



TIN-012683 -000



TIN-012683



SW13

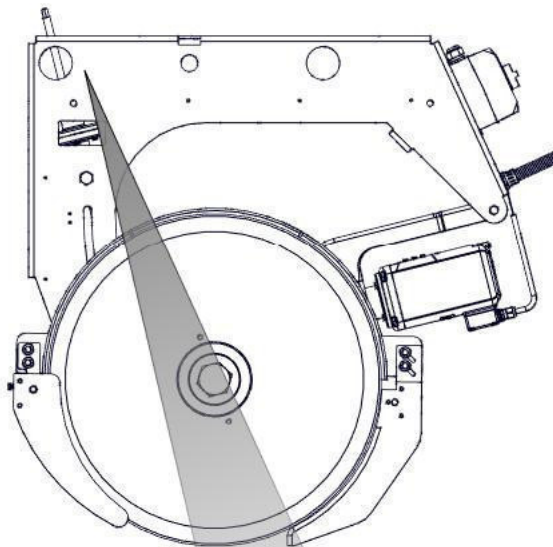
2 / 2

ZKM - JVM

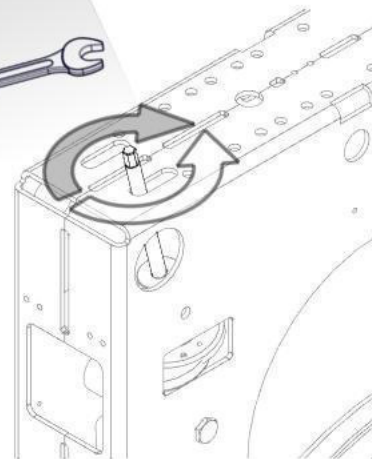
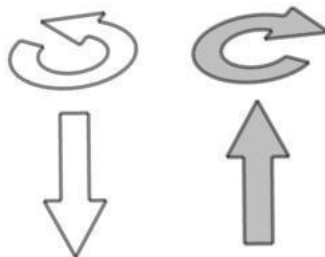


1
OFF

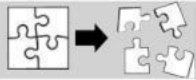
max. 290 mm



2



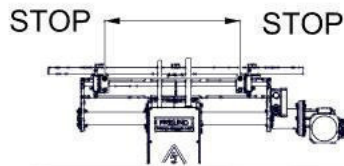
TIN-012683 -000



TIN-012728



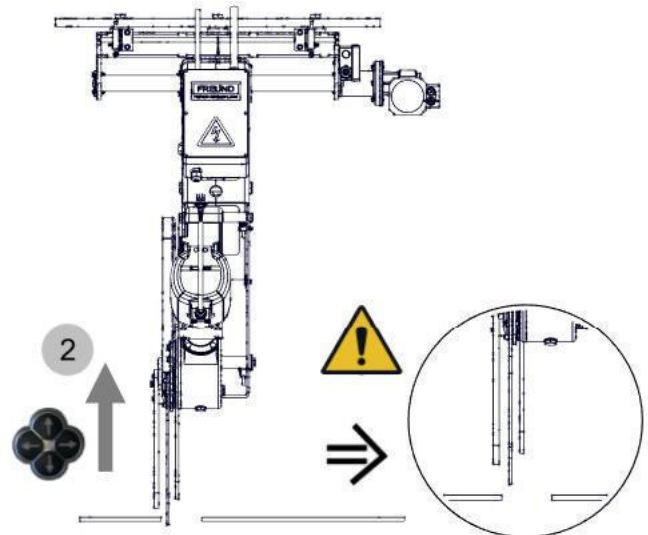
1 / 3



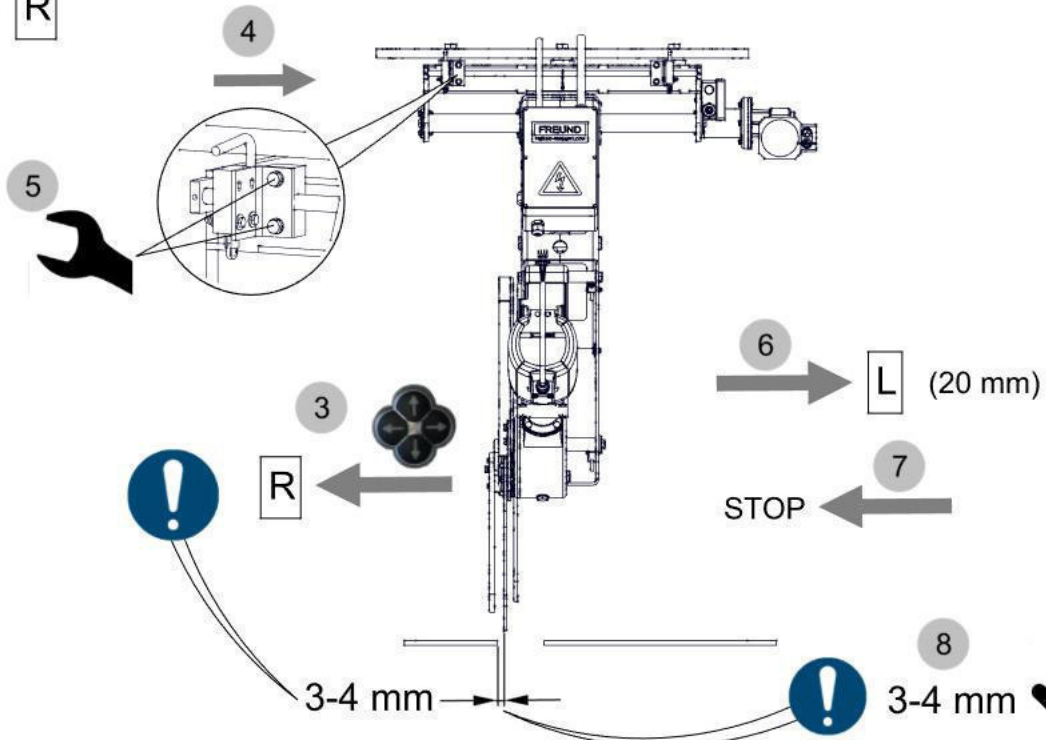
SW10



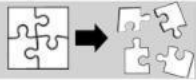
1
OFF



R



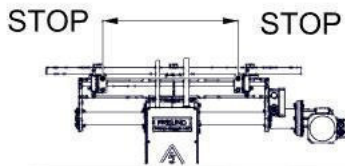
TIN-012728 -000



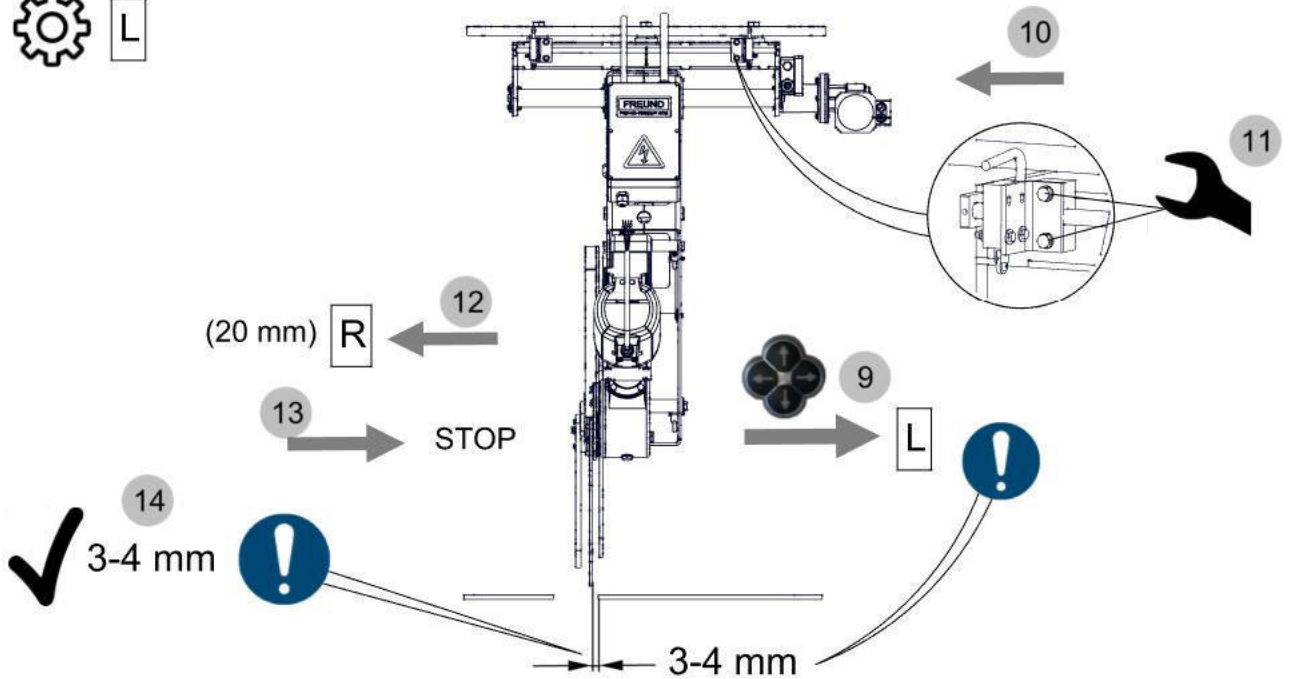
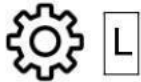
TIN-012728



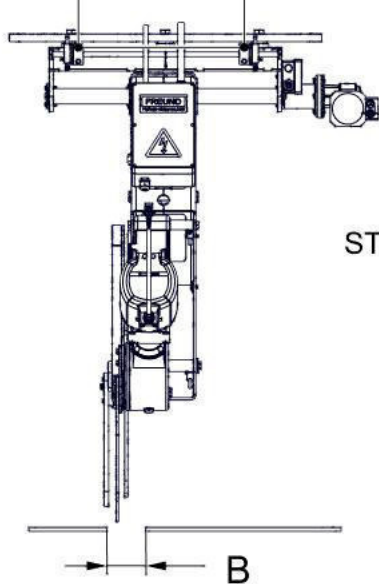
2 / 3



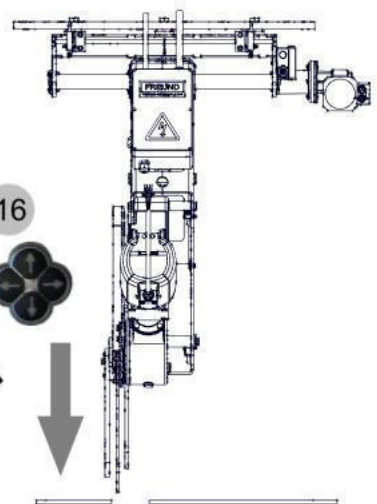
SW10



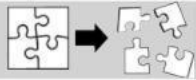
STOP STOP



STOP STOP
B



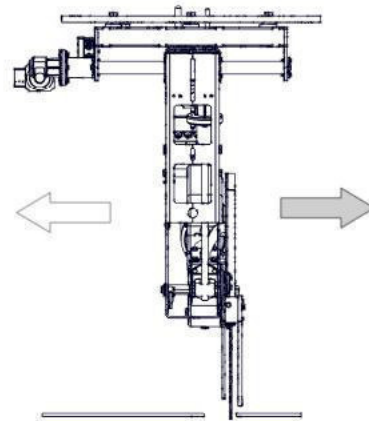
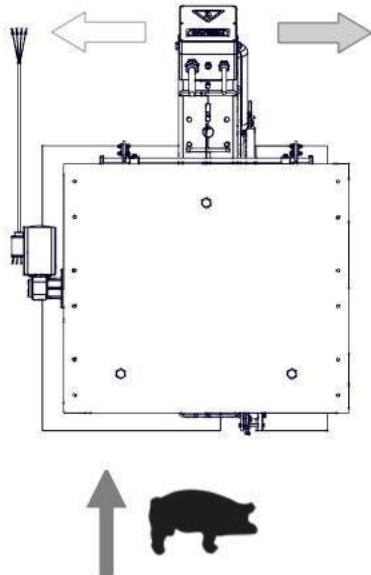
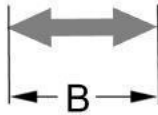
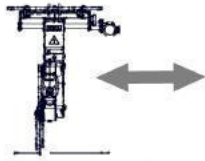
TIN-012728 -000



TIN-012728



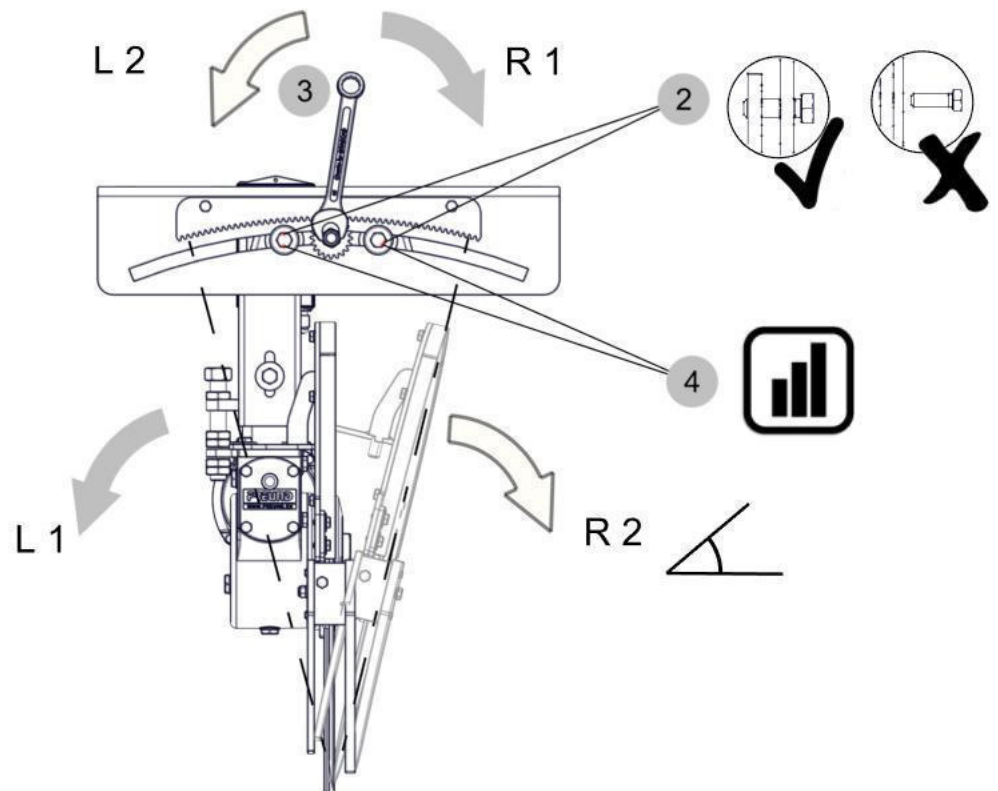
3 / 3



TIN-012728 -000



1
OFF



3



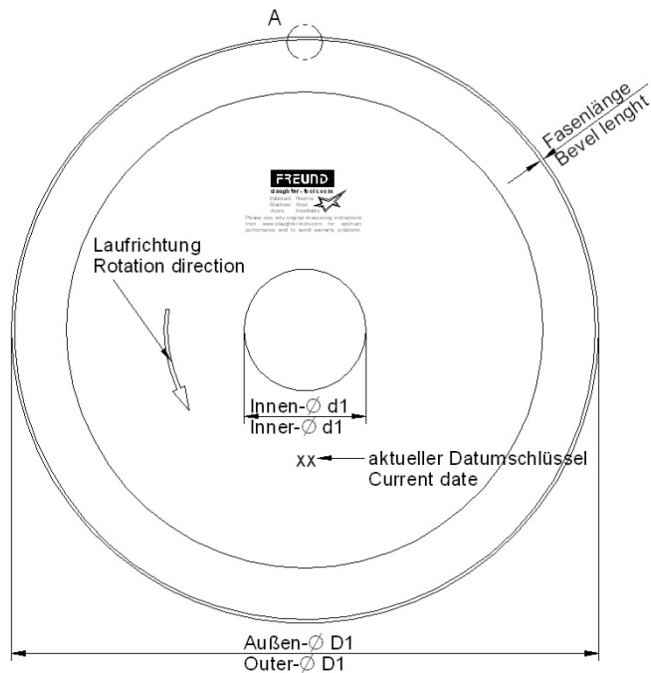
 R 1	 L 1
 L 2	 R 2

TIN-012733 -000

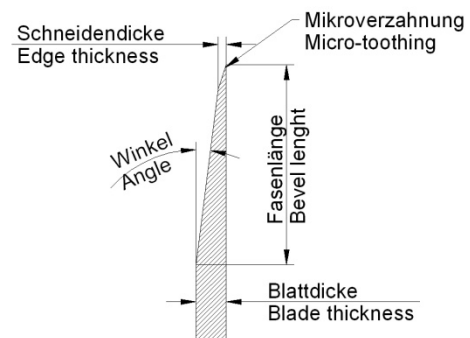
Bezeichnung **Schärfanleitung Kreismesser**
Description **Sharpening instructions circular blade knife**

Jan-13

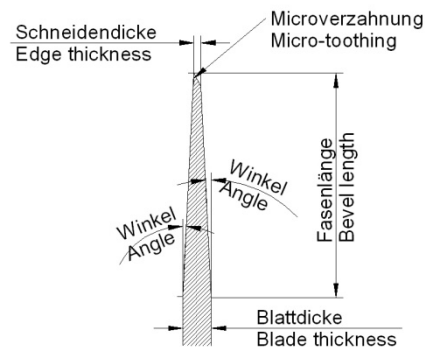
Freigabe Öffentlich ☒ nur Testkunden ☐ RAX ☐
Sofort ☒ Newsletter ☐



1F- einseitig / single bevelled:



2F – beidseitig / double bevelled:



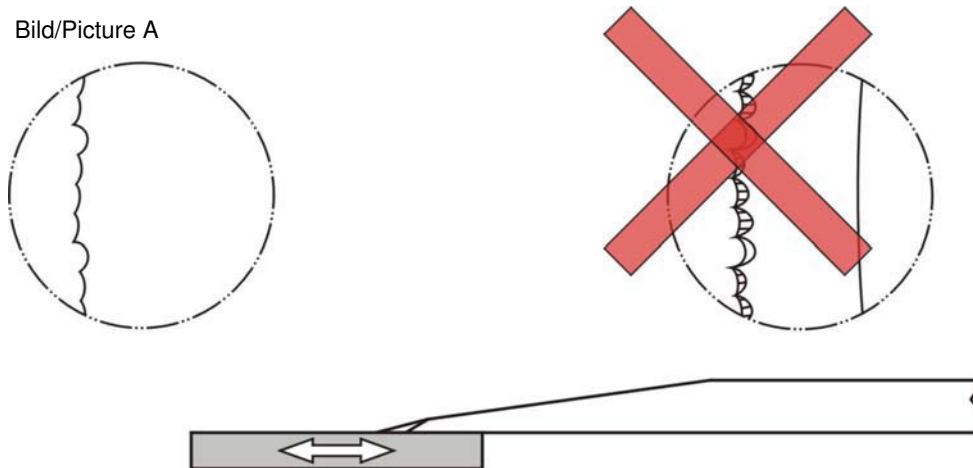
		Maße					
Typ / Type	Art-Nr. / Part-No.	Ø D1 [mm]	Ø d1 [mm]	Schneiden- dicke/Edge thickn. [mm]	Blattdicke/ Blade thickn. [mm]	Winkel/ Angle [°]	Fasenlänge/ Bevel length [mm]
KM 250W-2F	230-250-002	250	52 H7	0,8	3	2,8	24
KM 250N-2F	230-250-001	250	52 H7	0,8	3	2,8	24
KM 340W-1F	230-340-003	340	52 H7	1,2	3	5	23
KM 340WD-1F	230-340-006	340	52 H7	1,3	3	8	15
KM 600Z-1F	230-600-007	600	80 H8	1,4	6	7,46	40
KM 750-1F	230-750-002	750	80 H8	1,6	6	7,15	40
KM 750Z-1F	230-750-013	750	80 H8	1,6	6	7,15	40
KM 750Z-2F	230-750-011	750	80 H8	1,3	6	3,6	40
KM950S-1F	230-950-001	950	80 H8	1,6	6	3,6	40

Bezeichnung **Schärfanleitung Kreismesser**
Description **Sharpening instructions circular blade knife**

Jan-13

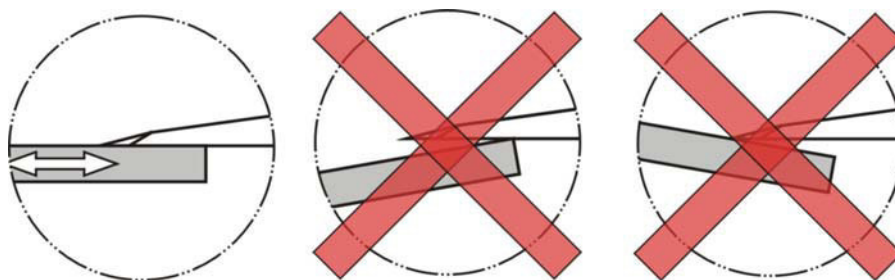
Freigabe Öffentlich ☒ nur Testkunden ☐ RAX ☐
Sofort ☒ Newsletter ☐

Bild/Picture A



Nicht die Microverzahnung schärfen! *Do not sharpen the micro- tooting!*

Bild/Picture B



Schleifstein plan führen! *Hold the grinding stone flat and plane!*

Bezeichnung **Schärfanleitung Kreismesser**
Description **Sharpening instructions circular blade knife**

Jan-13

Freigabe Öffentlich ☒ nur Testkunden ☐ RAX ☐
Sofort ☒ Newsletter ☐



Schnittgefahr! Nur mit Schutzhandschuhen arbeiten.
Cutting hazard! Only work with protective gloves.

- Kreismesser bei Bedarf schärfen und Gratbildung an den Schneiden vermeiden.
Sharpen the circular knife blade if required and avoid burrs.
- Nur mit einer geeigneten Schleifmaschine (z.B. Rund- oder Kreismesserschleifmaschine) schärfen.
Only sharpen the circular knife blade with a suitable grinding machine (e.g. cylindrical or circular knife grinding machine).
- Nur die glatte Seite des Kreismessers ohne Mikroverzahnung schärfen (siehe Bild A).
Only sharpen the smooth side of the circular knife blade without micro-toothing (see picture A).
- Schleifstein für 2-3 Umdrehungen plan an die flache Seite des Kreismessers (siehe Bild B) halten und nur mit leichtem Druck über die Fläche des Kreismessers fahren.
Hold the grinding stone onto the flat side of the circular blade knife in a plane way for 2-3 rotations (see picture B). Only move the grinding stone with light pressure on the surface of the circular knife blade.
- Schärfungsvorgang wiederholen, wenn der Grat nicht vollständig beseitigt ist.
Repeat the sharpening procedure if the burr is not completely eliminated.

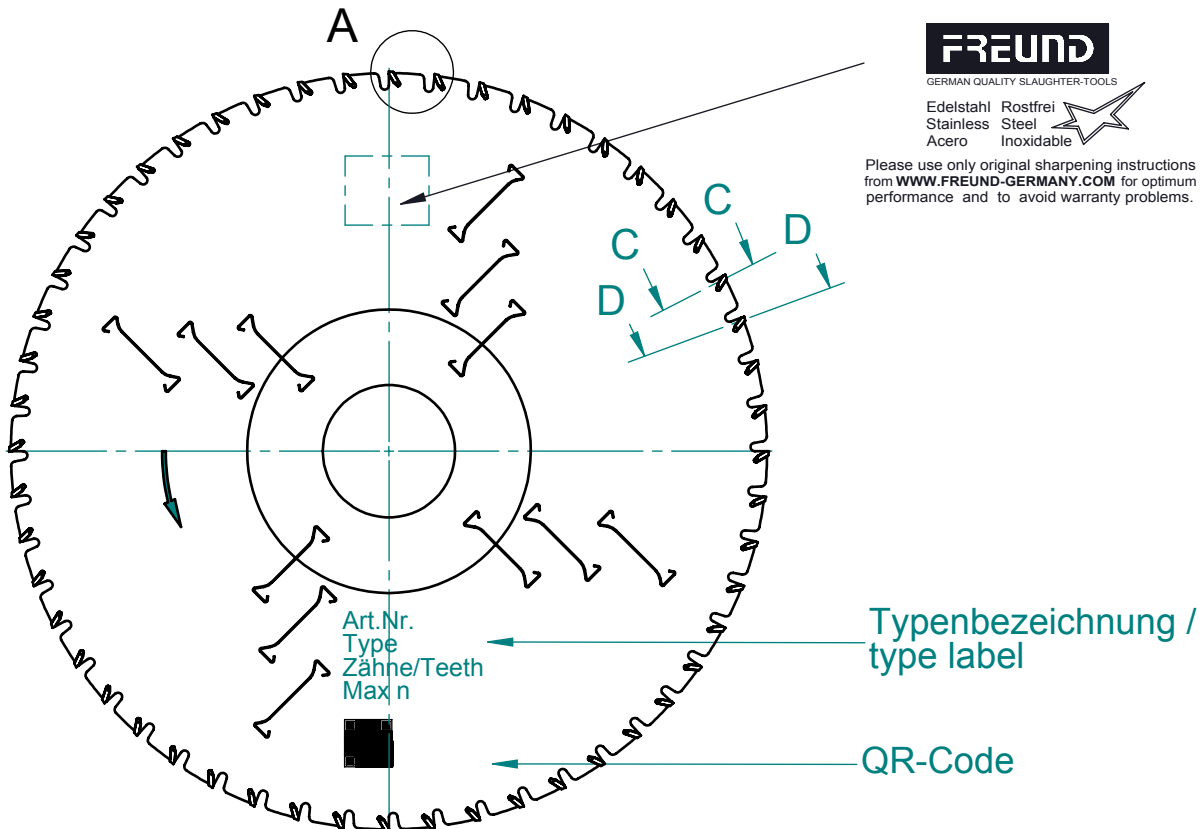


Die Mikroverzahnung darf nur durch die FREUND Maschinenfabrik oder durch einen Fachbetrieb geschärft werden.
The micro-toothing is only permitted to be sharpened by FREUND Maschinenfabrik or by a specialist company.

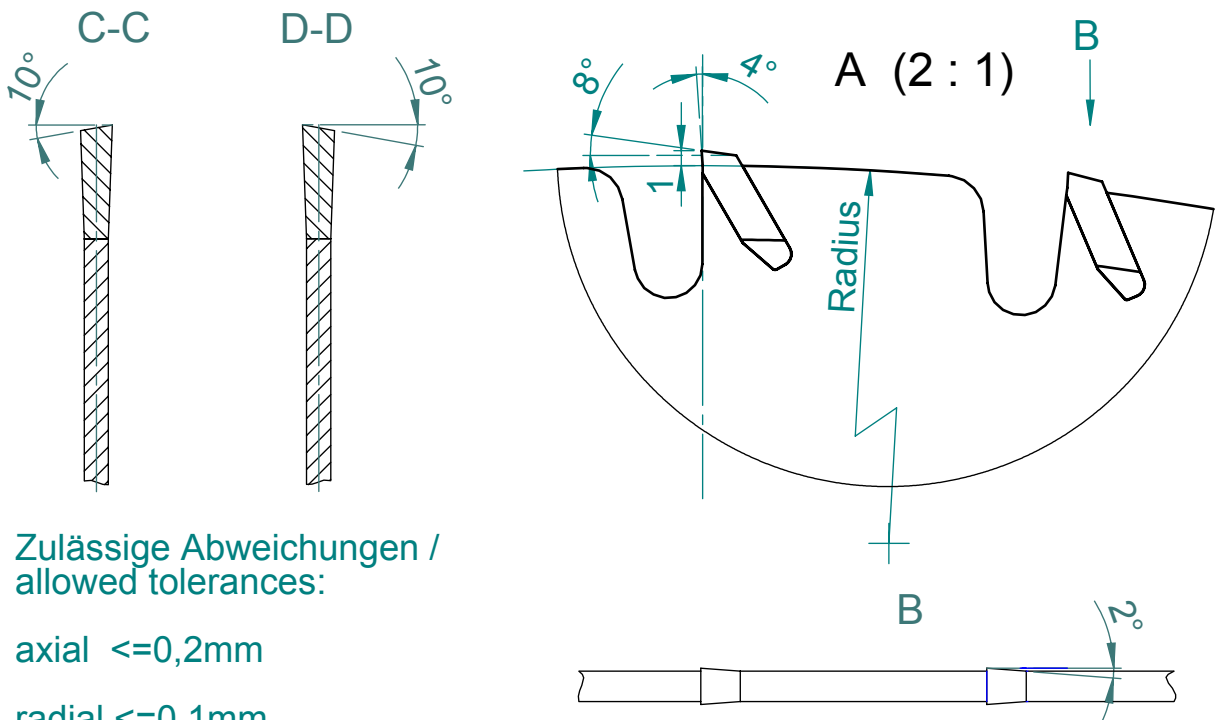
Artikel-Nr. TIN-220-101
Part-No.

Bezeichnung
Description

Schärfanleitung / Sharpening Instruction
KHZ Sägeblatt / Sawblade Ø > 320mm



Please use only original sharpening instructions from WWW.FREUND-GERMANY.COM for optimum performance and to avoid warranty problems.



Zulässige Abweichungen /
allowed tolerances:

axial $\leq 0,2\text{mm}$

radial $\leq 0,1\text{mm}$

Zähnezahl siehe Typenbezeichnung / number of teeth, see type label

TIN-006658 / 000 /

Der Schneiderfolg der Kreissäge hängt in erster Linie von der Schärfe des Sägeblattes ab. Stumpfe Sägeblätter verursachen Produktionseinbußen und gefährden den Benutzer.

Halten Sie das Sägeblatt immer scharf!

Achten Sie auf richtig nachgeschärfte Sägeblätter!

Ein unsachgemäßes Nachschärfen des Sägeblattes kann zum Ausbruch von Schnittkanten oder gar zum Bruch des Sägeblattes führen.

Wir empfehlen deshalb grundsätzlich, sämtliche Nachschärfarbeiten durch die Fa. **FREUND** oder durch einen Fachbetrieb durchführen zu lassen. Hartmetall-Sägeblätter dürfen nur von Sachkundigen nachgeschärft werden und mit Originalteilen instand gesetzt werden. Sachkundige sind Personen mit entsprechender Fachausbildung und Erfahrung, die die Anforderungen an die Konstruktion und Gestaltung der Kreissägeblätter kennen und sich auf die Sicherheitsbestimmungen verstehen.

Das Schärfen der Hartmetall-Sägeblätter ist nur entsprechend der **FREUND**-Schärfanleitung erlaubt. Die Schärfanleitung kann im Bedarfsfall bei der Fa. **FREUND** angefordert werden. Beim Nachschärfen müssen alle angegebenen Maße und Winkel unbedingt eingehalten werden. Das Sägeblatt muss nach dem Schärfen sämtlichen Angaben der **FREUND**-Schärfanleitung entsprechen!

Bei Nichtbeachten der Schärfanleitung erlischt jeglicher Garantieanspruch!

Schäden, die durch unsachgemäßes Nachschärfen oder unsachgemäßer Behandlung entstanden sind, bleiben von der Garantie ausgeschlossen!

TIN-006658 / 000 /

The cutting performance of the circular breaking saw primaly depends on the sharpness of the saw blade. Blunt saw blades cause production losses and endanger the users.

Always keep the saw blades sharp!

Pay attention on correctly resharpened saw blades!

Incorrect resharpening of the saw blade can cause a crack of the cutting edge or the saw blade.

Because of that we recommend to perform always all resharpening operation by company **FREUND** or other specialised company.

Hardmetal saw blades are only allowed to be sharpened by experts using genuine parts. Experts need the corresponding technical education and experience and they have to know the requirements and safety regulations related to saw blades.

The sharpening of hardmetal saw blades is only allowed according to the **FREUND** sharpening instruction. The instruction can be ordered at company **FREUND** when necessary. Warranty claims will not be granted in case the sharpening instructions have not been followed carefully.

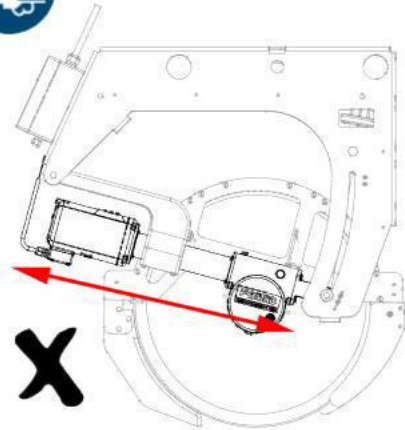
During sharpening operation have to be fulfilled.

Damages, caused by inappropriate resharpening or incorrect handling are excluded of all warranties!

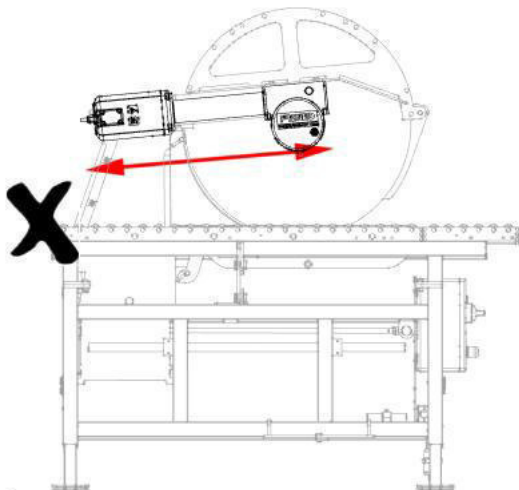
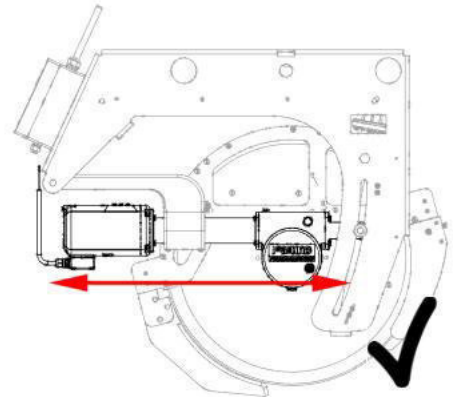


TIN-012736

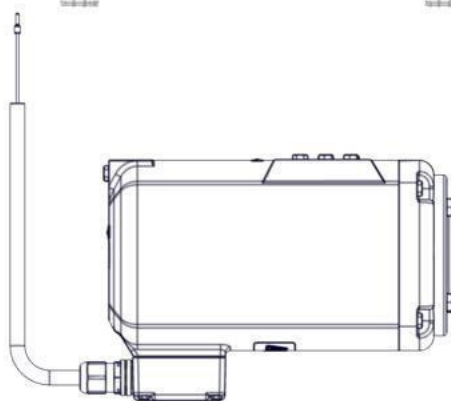
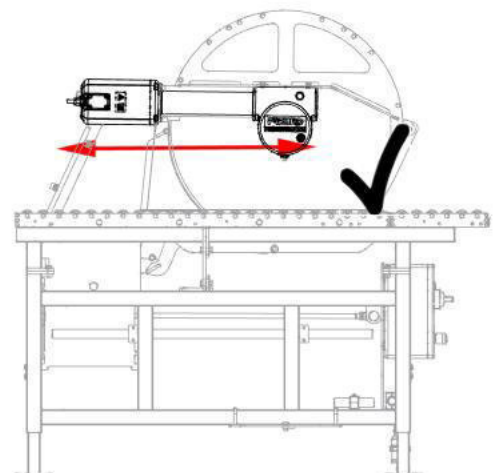
1 / 1



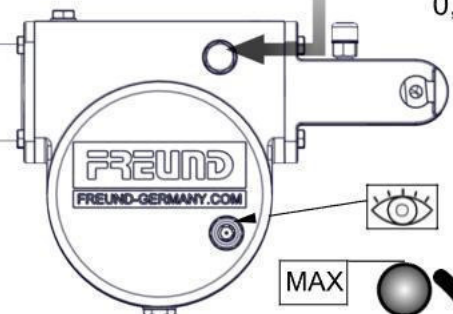
ZKM75-DA
ZKM60-DA-MS
ZKM95-DA



ZKM75-08-T



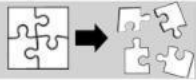
159-016-035
0,5 l



MAX



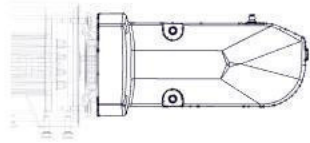
TIN-012736 -001



TIN-012753



1 / 1



ZKM25-13

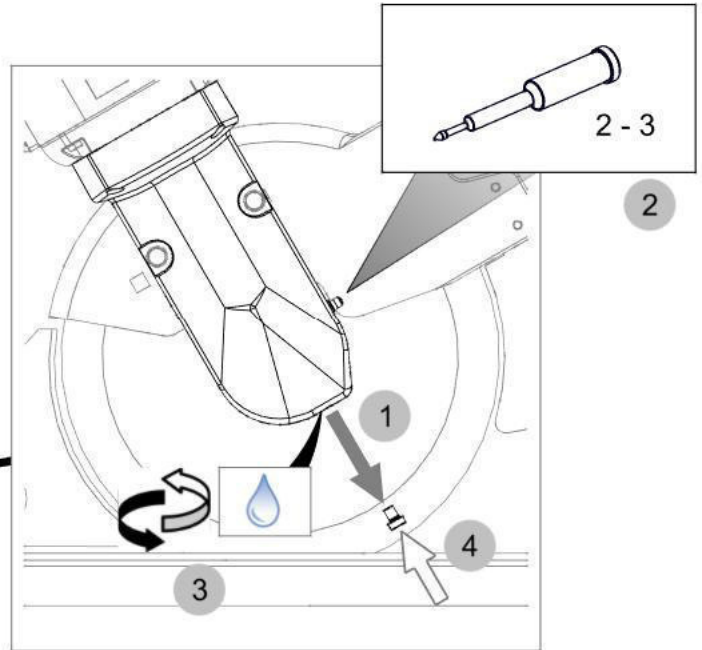
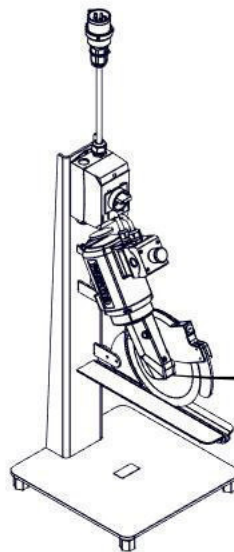


> 200 h



< 2 a

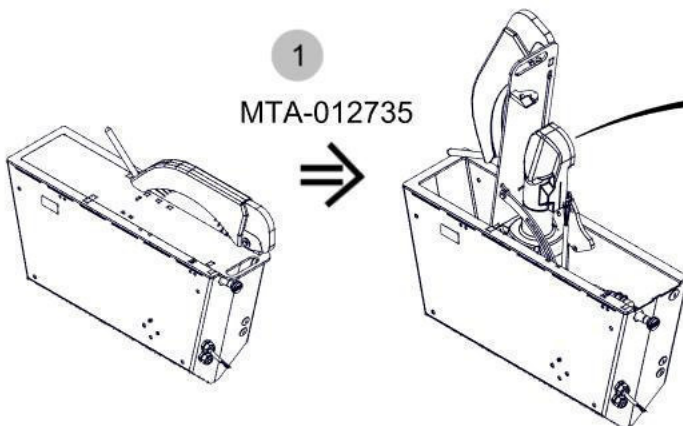
100-013-039
100 g



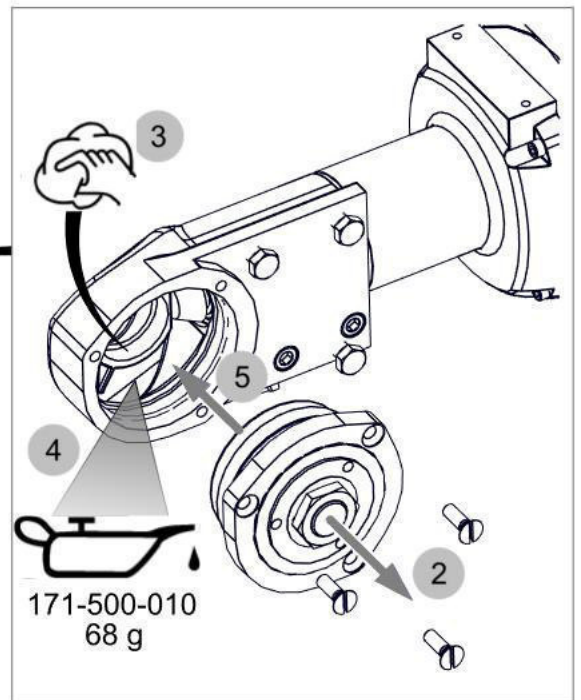
FK40-08



6 Monate



MTA-012735



TIN-012753 -000

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.
- LFGB - 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:

ZKM, FK40

Machine parts that come into contact with food	Material designation	Groups of materials and articles	Notes
Circular knife	1.4034	Stainless steel	
Splitting wedge	1.4301	Stainless steel	
Swivel protection	Polyoxymethylen	Plastic	
Knife protection (ZKM)	Polyoxymethylen	Plastic	
Knife protection (FK40)	X5CrNi18-10 (1.4301)	Stainless steel	
Saw blade (FK40)	X46Cr13 (1.4034)	Stainless steel	
Flange nut	X5CrNi18-10 (1.4301)	Stainless steel	
Protective cover (FK40)	X5CrNi18-10 (1.4301)	Stainless steel	

Paderborn, 08.03.2021


Head of Development

EU-Declaration of Conformity



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

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

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

Hereby we declare that the machine,

Type **ZKM60- , ZKM75- , ZKM95-**

Serial number

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

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

(EC)1935/2004	Food safety
(EC)2020/1245	Food safety

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

DIN EN 1672-2:2020	DIN EN ISO 12100:2011-03
DIN EN 1672-1:2014	DIN EN 12267:2011-02
DIN EN 13861:2012-01	DIN EN 12268:2014
DIN EN 60204-1:2018	DIN EN ISO 13850:2016

EU-Declaration of Conformity

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

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

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

Hereby we declare that the machine,

Type **ZKM25-13**

Serial number

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

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

(EC) 2020/1245	Food safety
(EC) 1935/2004	Food safety

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

DIN EN ISO 12100:2011-03	DIN EN 12267:2011-02
DIN EN IEC 60204-1:2019-06	DIN EN 1672-1:2014-12
DIN EN 13861:2012-01	DIN EN 1672-2:2021-05
DIN EN 13850:2016-05	DIN EN 13732-1:2008-12

EU-Declaration of Conformity

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

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

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

Hereby we declare that the machine

Type **FK40-08**

Serial number

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

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

(EU) 2020/1245	Food safety
(EU) 1935/2004	Food safety

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

DIN EN 60204-1:2008	DIN EN 12267:2011-02
DIN EN 1672-1:2014	DIN EN 1672-2:2020
DIN EN ISO 12100:2011-03	