



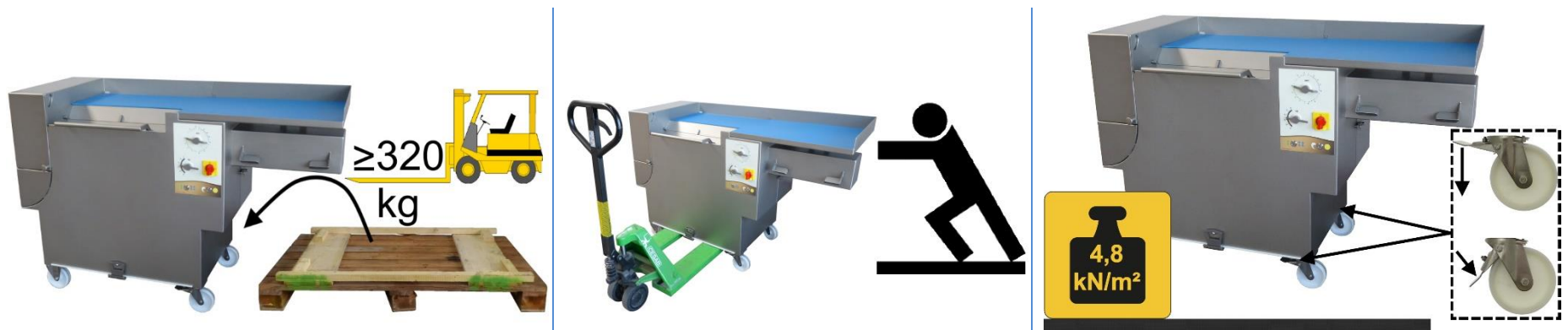
Quick installation guide

AR 20

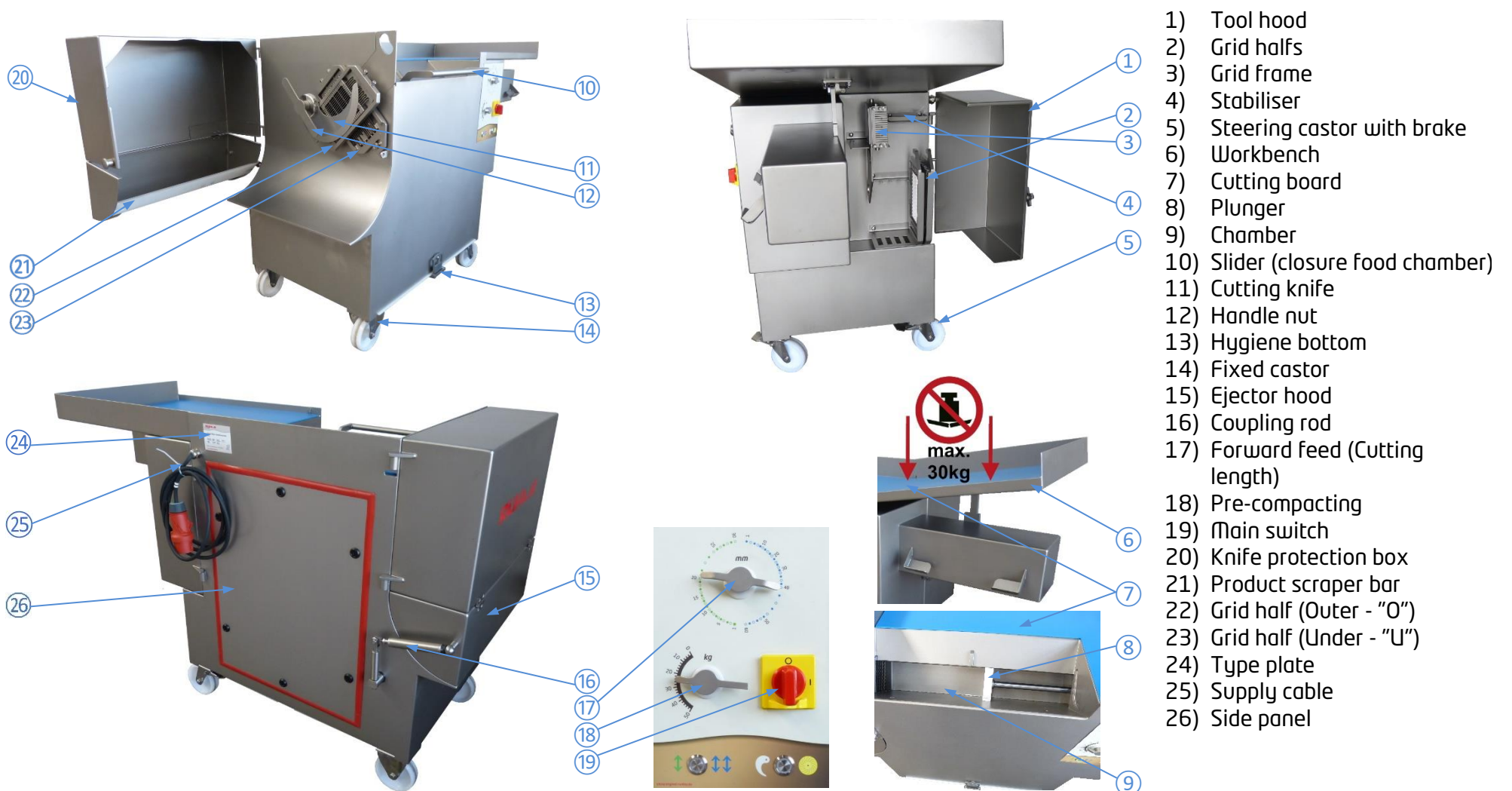
RÜHLE

Echte Originale.

I • Installing the machine



II • Operation

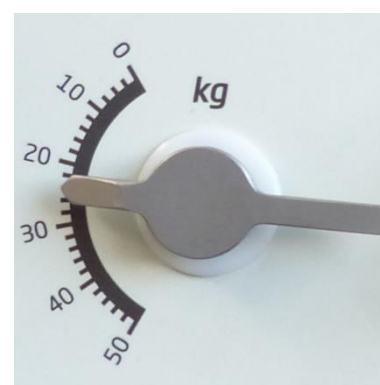
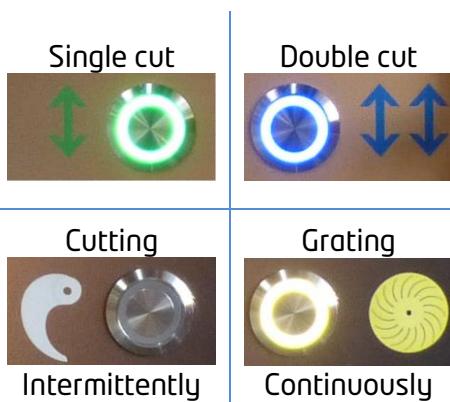


III • Control system

17 • Forward feed

18 • Pre-compacting

19 • Main switch

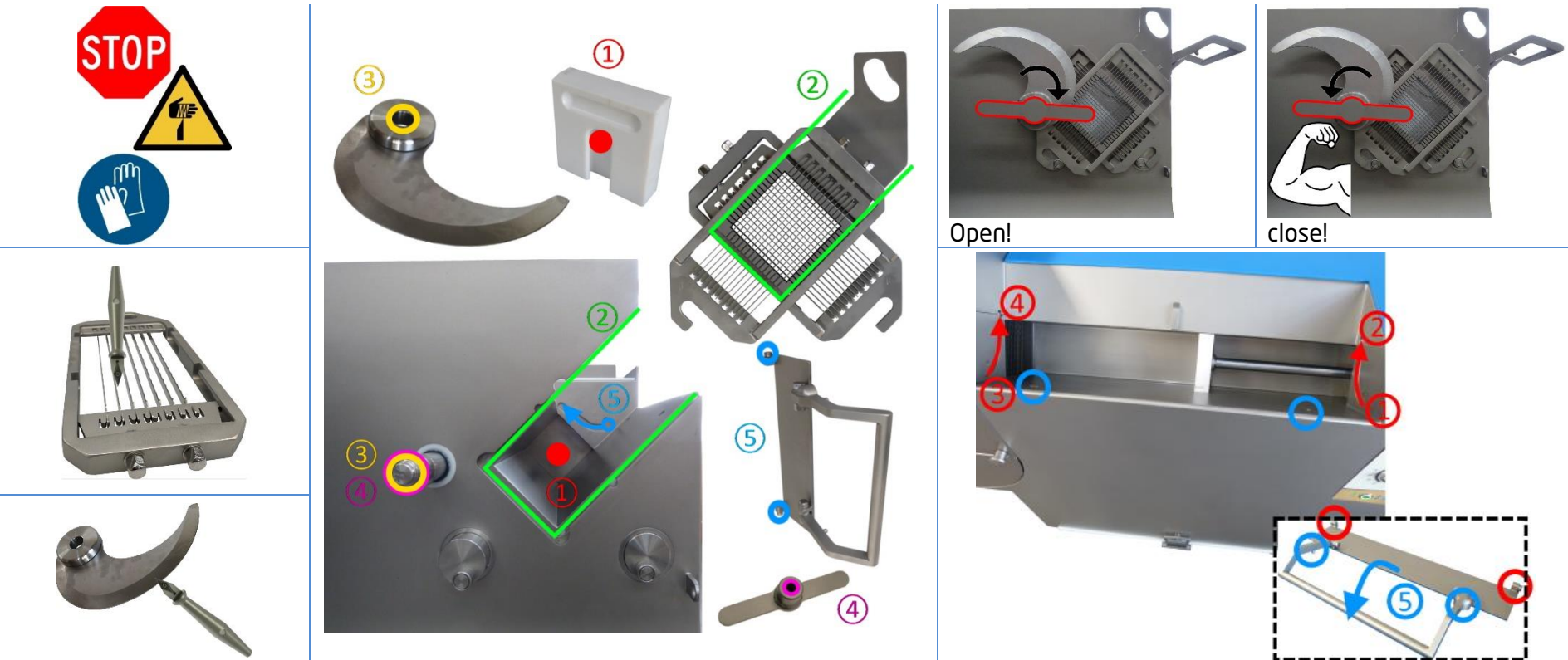


IV • Safety functions / Emergency stop

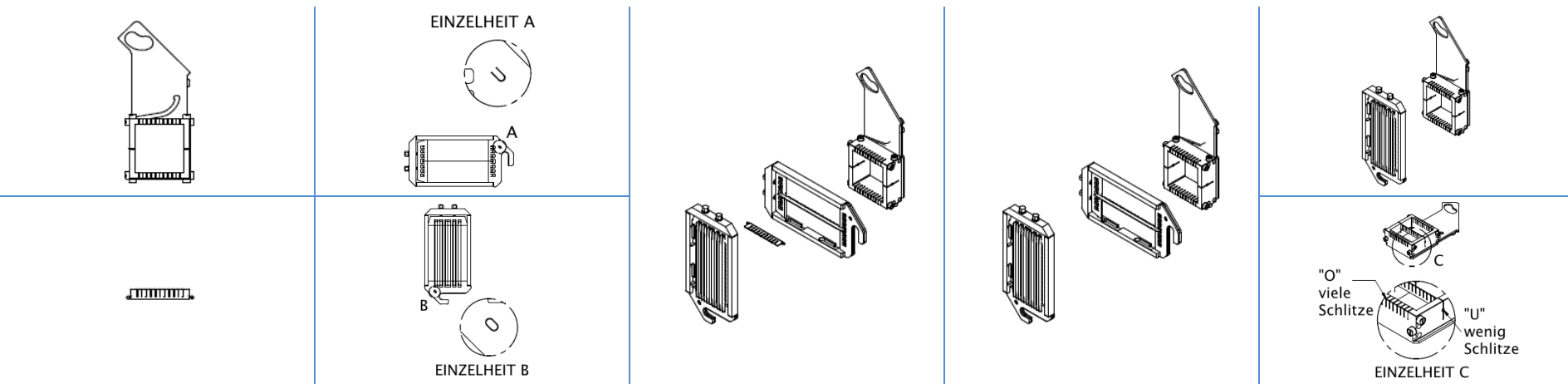
V • Box reception E1 / E2 / E3



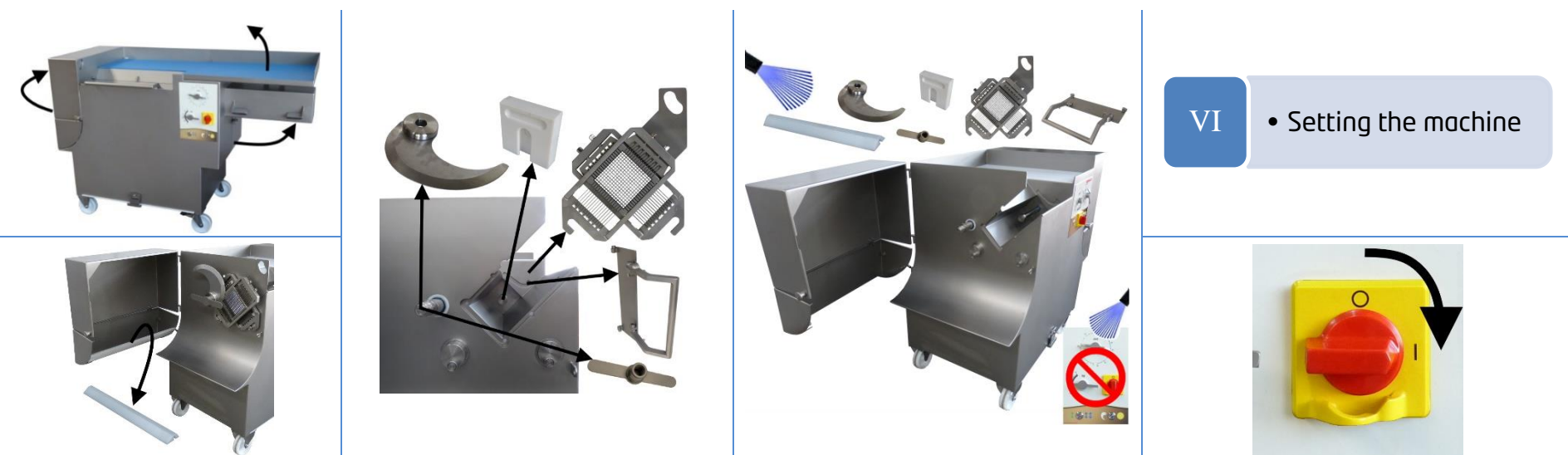
VI • Setting the machine



VII • Grid / Grid set-up



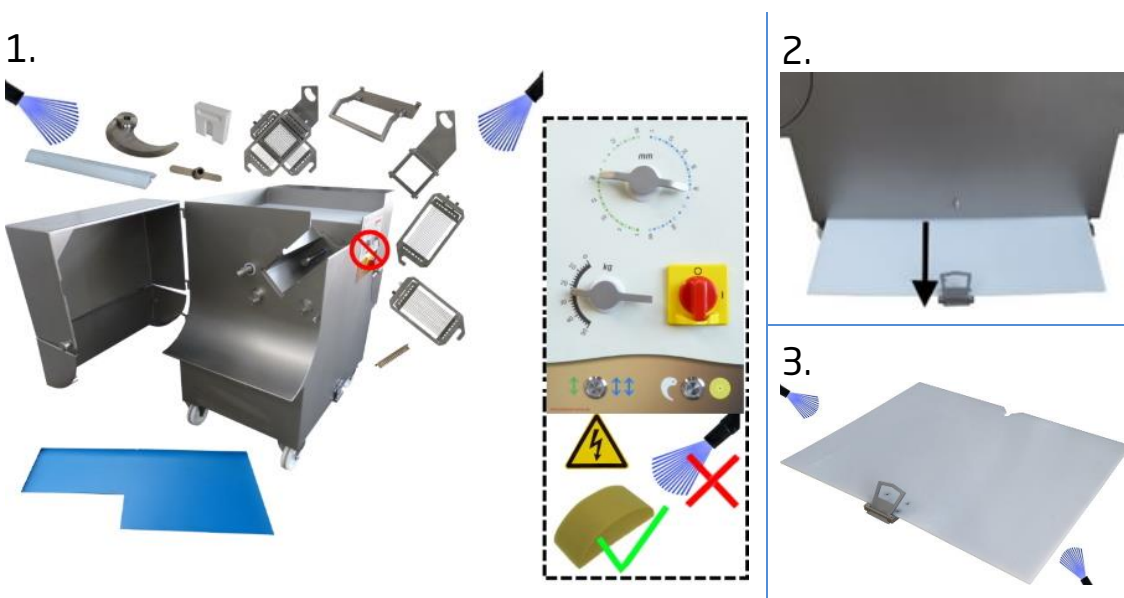
VIII • Initial operation



IX • Cleaning (preparation)



X • Cleaning





Translation of the original instructions

RÜHLE - Cutting machine

Type: AR 20

Rühle GmbH, Beim Signauer Schachen 10, 79865 Grafenhausen
Germany

Phone: +49 (0)7748 523 11; fax: +49 (0)7748 523 8511

www.original-ruehle.de



Table of contents

1	Safety instructions	3
1.1	Safety instructions	3
1.2	Remaining risk of accidents	6
1.3	Intended use	7
2	Installation instructions.....	8
2.1	Machine transport and setup	8
2.2	Workplace description	9
2.3	Connecting the machine	10
3	Operating instructions	11
4	Cleaning instructions	12
4.1	Safety instructions	12
4.2	Cleaning agents and disinfectants.....	13
4.3	Cleaning procedure	14
5	Service: care, maintenance, repair	14
5.1	Regular care	16
5.2	Regular maintenance.....	17
5.3	Repairs and spare parts	18
6	Disposal	18
7	Technical documentation	18
7.1	Technical data	18
7.2	Electrical circuit diagram	20
8	EC Declaration of Conformity according to Directive 2006/42/EC	21

Version: 05 December 2022 (Version 1.2)

Subject to change

1 Safety instructions

!!! Observe the safety instructions during the installation, operation, cleaning and maintenance of the Rühle cutting machine!



Hazard potentially causing irreversible injuries if disregarded.



Warning potentially causing serious injuries if disregarded.



Note



Warning of electrical power.



Pull the mains plug!



Warning of sharp object. (Risk of cutting)



Hazard from bursting hoses.



Warning of slipping hazard.



Warning of hot surface.



Warning of non-ionising radiation.

Non-ionising radiation is not specifically generated, but is only emitted by the electrical equipment (e.g. electric motors, power lines or solenoid coils) for technical reasons. In addition, the machine has no strong permanent magnets. If a safety distance (distance field source to implant) of 30 cm is maintained, the influence on active implants (e.g. cardiac pacemakers, defibrillators) can be excluded with a high degree of probability.

1.1 Safety instructions

!!! A **supervisor** (responsible person) must be assigned to the machine!
This person must:

- a) Completely read and understand these operating instructions before transport, commissioning, setup, operation, cleaning, decommissioning, care/maintenance as well as dismantling/disposal!
- b) Prepare work instructions for intended and safe transport, commissioning, setup, operation, cleaning, decommissioning, care/maintenance as well as dismantling/disposal!
- c) Ensure that the qualified workers have completely read and understood the respective work instructions according to section 1.1b!
- d) Proper functioning of the protective devices must be checked at least once a year by a Rühle service engineer!
- e) Provide personal protective equipment!

All life cycle phases:



Use foot protection according to EN ISO 20345!
(e.g. recommended for butcher stores, dairies, meat and fish processing: safety boots S4 with steel cap)



Use hand protection according to EN ISO 388!
(e.g. gloves with high cutting/puncture resistance)



Wear protective clothing according to EN ISO 13688! (E.g. appropriate aprons/coats/overalls)

Cleaning; care/maintenance; dismantling:



Use eye protection according to EN ISO 166!
(e.g. tightly closing safety goggles)



Use light breathing masks according to EN ISO 149!
(e.g. simple breathing mask protection class FFP1)



Use hand protection according to EN ISO 374!
(Acid-resistant, butyl rubber, Viton)



Wear protective clothing according to EN ISO 13688, EN ISO 17491!
(E.g. appropriate coats/overalls)



[The information on the proposed personal protective equipment has only an advisory function. A full risk assessment should be carried out before using the product to assess whether the indicated personal protective equipment is suitable for local conditions. Personal protective equipment should conform to the relevant EU standards.]

!!! The **operator** must operate the machine according to the intended use and strictly observe all points listed in the "Operation" work instructions prepared by the supervisor.

!!! Before putting the machine into operation for the first time and on each working day, the **operator** must check the functionality of the following safety devices:

- a) Visual check for changes or damages on all machine sides and accessible machine parts, e.g. the cut-off knife, locking mechanism of knife protection box. The machine must be shut down in the event of any damage or changes!
- b) Check the safety switches as follows:
Install the grid frame and product stripper bar (ejection hood), close the knife protection box, insert the slider and close the chamber with it.
 - Start the machine. - Open knife protection box 20 mm wide. - If the machine does not switched off, it must be shut down immediately!
 - Start the machine. - Open the slider of the chamber 20 mm wide. - If the machine does not switched off, it must be shut down immediately!
 - Remove the grid frame. - Insert the slider. - Start the machine. - If it should start, it must be shut down immediately!

!!! To **shut down** the machine the main switch must be turned to "0 - OFF" and the power plug pulled out of the socket! Secure the machine against further use!

!!! The **supervisor** must arrange for the repair of the non-functional safety device by a Rühle service technician. Until the corresponding parts have been repaired, the supervisor must ensure that the machine or parts of the machine are not put into operation under any circumstances!

This applies also to leaking hydraulic systems!

!!! The **cleaning personnel** must observe the work procedures from the “Cleaning” work instructions prepared by the supervisor.

!!! The **maintenance personnel** may only carry out work specified as “Regular maintenance” unless any other authorisation has been issued in writing by the manufacturer of the machine. The maintenance personnel must observe the work procedures from the “Maintenance” work instructions prepared by the supervisor.

Disconnect the power plug for maintenance work!

!!! Do not modify the machine.

!!! Only Rühle spare parts and accessories may be used.

!!! The operating instructions as well as all other technical documents included must be supplied completely when reselling the machine.

1.2 Remaining risk of accidents

!!! All life cycles phases



Damaged knife elements must be replaced!

Cut protection gloves must be worn when working:

- on the open knife protection box,
- on the cut-off knife,
- on the grid knives of the knife levels,
- in the chamber , e.g. to remove product.



Reaching into the machine or the chamber during operation is strictly prohibited!

Any manipulation and bypassing of the safety devices is strictly prohibited!



Risk of slipping and falling due to spilled hydraulic oil!

Make sure the floor under and around the machine is free from oil!



When a machine is unattended, the knife protection box must be closed before leaving the workplace!



When processing very watery products, spraying from the chamber may occur in spite of installed slider! With such product it is recommended to stand to the side of the chamber when the machine starts.

!!! Maintenance



Touching electrical components may cause serious injuries or death.



Work on electrical equipment of the machine may only be carried out by qualified technicians! Always disconnect machine from the mains during this process!



The protective covers (lids on rear, etc.) may be removed only while performing maintenance!



Beware of hot surfaces, e.g. drives, hydraulic unit, etc. during maintenance work!



Danger from pressurised and/or escaping hydraulic oil!



Work on the hydraulic system of the machine may only be carried out by qualified technicians!



Always disconnect machine from the mains during this process!



Depressurise the complete hydraulic system! !

Excessive contact with the hydraulic oil may cause skin irritation and eye injuries!

1.3 Intended use

The cutting machine may only be used to cut foodstuff that is not frozen (-5 °C to +80 °C) into cubes, strips and slices or grated in different sizes. The room temperature must not exceed 12 °C for reasons of food hygiene!



This machine is intended:

- For use during work
- For use by persons over 18
- For use by instructed persons



Claims of any type for damage caused by use other than the intended use are excluded!

Misuse:

- Any use other than the use listed above is strictly prohibited and is considered misuse!
- Operating the machine in explosive atmospheres is prohibited!
- Handling/processing products and materials which are not foodstuffs is prohibited!
- Handling / processing of products containing bones is prohibited!
- The worktable may only be loaded with max. 30 kg!

2 Installation instructions

Installation and commissioning of the machine may only be carried out in the presence of a Rühle service technician or by persons authorised by Rühle.

Rühle GmbH Lebensmitteltechnik accepts no liability for any damage resulting from failure to comply with these operating instructions.

2.1 Machine transport and setup

Please refer to the short instructions supplied with the machine regarding transport and setup of the cutting machine.



The machine and machine parts must be transported by 2 persons (1 person to operate the floor truck/1 person to supervise transport).



The power supply line must not be damaged by driving over or crushing it!

The machine must be shut down until a damaged power supply line has been repaired!



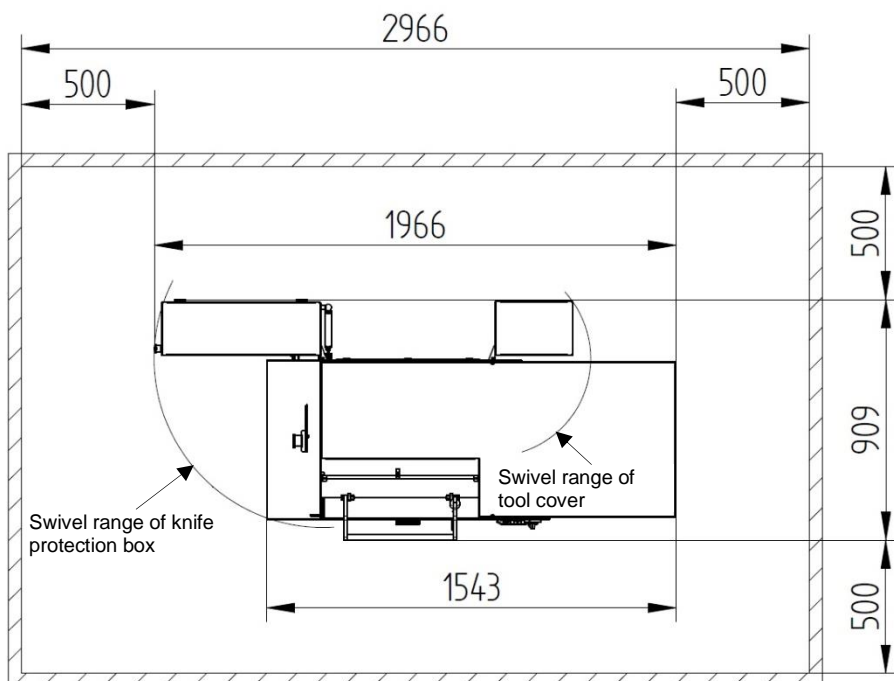
Ensure that the machine is stable!

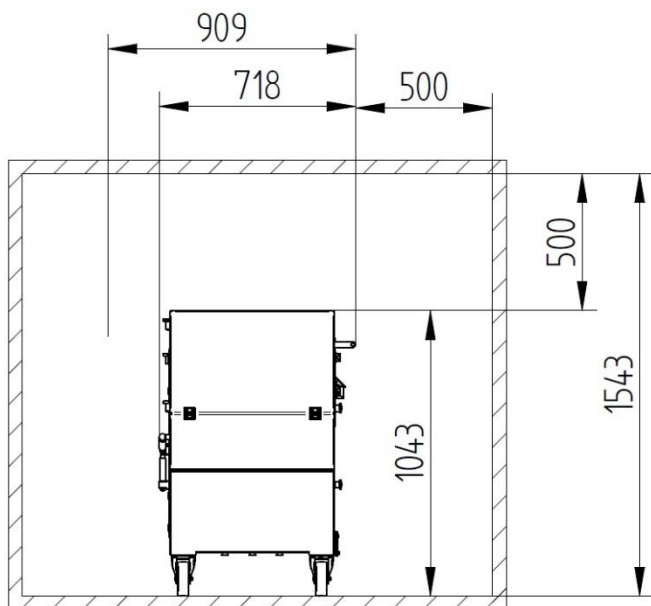
Foundation load: 4.8 kN/m²!

Set up the machine on a solid level floor with sufficient load bearing capacity!

2.2 Workplace description

The work area around the machine is at least 0.5 m on all sides; for maintenance work it is at least 1 m; if used as passageway, it is at least 1.2 m.





2.3 Connecting the machine

The machine is connected to a three-phase outlet (clockwise rotating field); the specifications (voltage, amperage) must correspond to the specifications on the type plate of the machine.



The machine must be shut down until a damaged power supply line has been repaired!

Check the power supply line regularly!

Check the correct direction of the rotary field by starting the machine. The machine does not start with a wrong rotating field!



- In this case, an electrician has to change the rotating field inside the mains plug.
- The power supply to the machine must be fuse-protected with 16 A and protected with an AC/DC sensitive RCD (type B).

3 Operating instructions

Please refer to the short instructions supplied with your machine for the operation of your cutting machine.



Also follow the safety instructions in chapter 1.1!

In its respective life cycle phases (transport, commissioning, setup, operation, cleaning, decommissioning, care/maintenance, dismantling/disposal), this machine is designed for single person operation!

When using this machine, no other person may be present near the machine. The exception (2-man operation):

- Transport of machine and machine parts
- Commissioning
- Maintenance activities



The following is strictly prohibited and failure to comply represents gross negligence:

- Operating the machine without lids on the rear!
- Manipulating or deactivating the safety devices on the machine!

Working on the machine without lids installed on the rear is permitted only for a Rühle service technician during the maintenance phase!

The supervisor must be notified if hydraulic oil escaped from the hydraulic cylinder is noticed in the chamber!



The operator must make sure that no persons, who do not know the hazards of the machine or cannot anticipate them, are about in the area of the machine!

4 Cleaning instructions

The cutting machine has been designed to allow for complete cleaning of all parts that come into contact with the food product.

4.1 Safety instructions

- Also follow the safety instructions in chapter 1.1!
- The cleaning staff must notify the supervisor immediately of any defects on the machine!
- The cleaning staff must notify the supervisor immediately of any hydraulic oil leaks!
- The cleaning staff must use the specified cleaning agents and disinfectants!
- Germ reduction is achieved only by correct cleaning and subsequent disinfection!
- Appropriate material (e.g. brushes, rags) is required and must be provided for the proper procedures of the above!
- Cleaning products and disinfectants approved for the food product area and suitable to remove contamination (e.g. protein, lime-scale) must be used!
- The cleaning agents and disinfectants must be prepared to a solution as described in the product data sheet of the manufacturer!



Personal protective equipment must be worn as described in Chapter 1.1!



Cleaning with high-pressure cleaners
is permitted only for:

- all outside surfaces,
- inside of the knife protection box,
- Ejector hood,
- (working) funnel.

The operator controls must be cleaned manually and must not be exposed to a water jet!



All other parts and surfaces may be cleaned only with normal water pressure!

4.2 Cleaning agents and disinfectants

Recommended cleaning agents and disinfectants:

Art. No.	Product name	Description	pH value	Concentration for application [%]	Exposure times [min]	Temperatures [°C]	
15207	FINK - Spül ASS	Alkaline foam cleaner, mild	alkaline	1.0 - 5.0	5 - 15	20 - 50	daily
19402	FINK - Superfettlöser	Alkaline foam cleaner		0.5 - 5.0	5 - 20	20 - 50	
10030	FINK - FC 30	Cleaning and disinfection, combined		1.0 - 3.0	5 - 15	20 - 50	
18556	FINK - FC Power-foam A2	Alkaline foam cleaner		1.5 - 3.0	5 - 20	20 - 50	
13308 *)	FINK - Antisept G	Disinfectant for spray application, QAC		0.5 - 3.0	5 - 15	20 - 40	
17107	FT 107 DES	Disinfection	neutral	2.0 - 5.0	15 - 30	20 - 40	daily
13302	FINK - Antisept A	Alcohol-based disinfectant		100	5	RT	
13304	FINK - Antisept E	Alcohol-based disinfectant		100	5	RT	
18803	FINK - Alu-Reiniger	Acid foam cleaner	acid	2.0 - 5.0	5 - 15	20 - 50	Once in 2 weeks
17043	FT 43 SR	Acid foam cleaner		1.0 - 5.0	5 - 15	20 - 50	
18550	FINK - FC Power-foam S1	Acid foam cleaner		1.0 - 2.0	5 - 20	20 - 50	
17310	Ökoron® 10	Disinfectant, acid		0.3 - 1.0	20 - 30	5 - 70	
17307	Ökoron® 7S	Disinfectant, acid		0.5 - 2.0	1 - 20	5 - 60	
17312	Ökoron® 12	Acid disinfection		0.5 - 3.0	5	Cold	
17313	Ökoron® 13	Acid disinfection, foamable	acid	0.1 - 1.0	5	45	daily
17900	Ökoron® SR	Ecological cleaner		1.0 - 5.0	15 - 20	20 - 55	

- *) **13308, FINK – Antisept G** Because of customer-specific application prohibitions, QAC-containing products are sometimes not used since the IFS standard must be met. Possible alternative products would be, for example, FT 107 DES.

Supplier: **FINK TEC GmbH**, Oberster Kamp 23, 59069 Hamm, Germany
Tel. +49 2385-730 / info@finktec.com / www.finktec.com

4.3 Cleaning procedure

Please refer to the short instructions supplied with your machine for carrying out the cleaning procedure.

Cleaning preparations:

- To ensure optimum cleaning, some components of the machine must be removed.
- Remove any objects lying on the machine.
- Remove the slider (chamber closure).
- Remove the plunger.
- Open the knife protection box.
- Unscrew the handle nut.
- Remove the cut-off knife and the grid frame with the knife levels.
- Remove the product stripper bar from the ejection hood.



Remove and clean the hygiene bottom only after cleaning of the machine with a high-pressure cleaner has been completed!

5 Service: care, maintenance, repair

Any work related to any kind of service may be carried out only by Rühle service technicians and by persons authorised by Rühle in writing. In this regard, a distinction is made between regular care and maintenance and repair. The respective qualification certificate must be issued explicitly for the corresponding task.



Also follow the safety instructions in chapter 1.1!



Notify and obtain permission from Rühle customer service if welding or cutting work is required on the machine!



Wear cut protection gloves when working on the blades!



Reaching into the inside of the machine by opening the side cover is strictly prohibited when performing "Regular care" activities!



When working on the electrical equipment of the machine, ensure that



- this is only done by qualified personnel!
- the machine is always disconnected from the power supply!



When working on the hydraulic system of the machine, ensure that



- this is only done by qualified personnel!
- it is always disconnected from the mains!
- it is depressurised!
- the system must be vented after changing the oil or individual components!



Use of lubricants - hygiene area

- None



Use of lubricants - others

- Synthetic high-performance lubricant TEROSON VR 500 / PLASTI-LUBE, based on super-refined mineral oils, free from metallic soaps or fatty acids
 - Chains, sprockets of cutting drive (inside)
 - Shafts, gear wheels of control unit (inside)
- Multi-purpose grease OKS 476 white, for food technology NSF H1 Reg. No. 137619
 - Coupling rod bearing (inside)





[The information on the proposed personal protective equipment has only an advisory function. A full risk assessment should be carried out before using the product to assess whether the indicated personal protective equipment is suitable for local conditions. Personal protective equipment should conform to the relevant EU standards.]

5.1 Regular care

Regular care of the machine must be carried out at least once per week. This prevents malfunctions and signs of wear.

Any abnormalities detected during regular care must be reported to the supervisor! The supervisor must immediately initiate rectification or maintenance, or notify Rühle Service!

Care schedule:

- a) Disassemble the machine according to the cleaning instructions. Check for any parts moving with difficulty, material abrasion or other signs of wear and tear.
- b) Sharpen the cut-off knives with the knife sharpener and check for any chipped blades and other damage.
- c) Sharpen the grid knives in the knife levels with the knife sharpener on both sides and check them for any chipped blades and other damage.



Grid knives must be resharpened at least every 50 working hours on a slip-resistant underlay using only little pressure and a Rühle knife sharpener!

- d) Check the slider (chamber closure) and its guide rollers for damages and abrasion; remove sharp edges!
- e) Check the guide rails of the slider (chamber closure) in the machine and the grid frame; remove sharp edges!
- f) Check the rollers of the eccentric shafts (drive shaft for the knife level) and of all grid frames:
 - a. For easy running and axial play!
 - b. For abrasion (plane surfaces)!⇒ Replace defective rollers!

- ⇒ In case of abrasion, check the corresponding sliding surface on all knife levels for damages!
- ⇒ Replace defective knife levels!
- g) Visually check for changes or damages on all machine sides and accessible machine parts, e.g. the knife levels. The machine must be shut down in the event of any damage or changes!
- h) Visual inspection for loss of hydraulic oil under the machine and in the chamber.

5.2 Regular maintenance

Regular maintenance of the machine must be carried out every 2000 hours of operation but at least once per year.

Maintenance schedule:

- a) Inspect the safety devices as described in Chapter 1.1 Safety instructions!
- b) Carry out a test run with open machine (caution: moving parts)!
- c) All inspection activities and sharpening tasks specified under "Regular Care"!
- d) Change the oil of the hydraulic system! For filling, see 7.1 Technical data.
- e) Leak test of the hydraulic system!
- f) Check hydraulic hoses for damages or cracks! Defective hydraulic hoses must be replaced!



Hydraulic hoses must always be replaced at an interval of 2 years (for increased loads and usage*) or 6 years (for normal loads and usage)! See embossed date.

This represents a measure for the *Preservation of safe condition* according to para. 10 (1) Operational Safety Regulation (German BetrSichV)**.

No hazardous situation may arise from extending the changing intervals which may cause injuries to employees or other persons!

*Increased load and usage, e.g. through multiple shift operation or short cycle times of the machine or pressure pulses.
 **Operational Safety Ordinance (Germany).
 The national applicable regulations must be observed!

- g) Check the distance between cut-off knife and grid frame; adjust if necessary!
- h) Grease all moving parts in the machine compartment!

5.3 Repairs and spare parts

As a damaged part on a machine is usually damaged due to causes unrelated to the part, always carry out a fault diagnosis.

Contact our Service Hotline at +49 (0)7748 523 11 for spare parts or malfunctions. Please keep the machine type and number to hand.

6 Disposal



All materials and operating fuels must be separated and disposed of in accordance with nationally applicable regulations!

1. The following components contain oil:
 - Hydraulic system (unit, cylinder, hoses)
 - Cutter drive

The hydraulic unit is equipped with an oil drain plug.
 The gearbox must be opened at the cutter drive!
2. The following components have lubricating grease:
 - All chains, sprockets, bearings

7 Technical documentation

7.1 Technical data

Supply voltage:	400 V 50/60 Hz 3-phase AC / N / PE
Power consumption:	3.8 kW

Full-load current:	7.2 A
Back-up fuse max.:	16 A
Protection class:	IP54
Protection class:	1
Ambient temperature:	+2 °C to + 40 °C
Cut product temperature:	-5 °C to + 80 °C
Dimensions, W x H x D:	1543 x 1043 x 718 mm
Work space, W x H x D:	1966 x 1043 x 909 mm
Funnel size:	100 x 100 x 350 mm
Cut-off length:	0.5 – 60 mm
Cutting speed:	200 sections/min. (pulsating) 200 sections/min. (continuous)
Cutting output max.:	1700 kg/h
Size of knife level to grid frame 5x:	5, 10, 20 mm
grid frame 6x:	6, 12, 24 mm
grid frame 8x:	8, 24, mm
Approved Euro boxes:	E1, E2, E3
Machine weight:	320 kg
Transport weight (pallet):	345 kg
Transport weight (wooden crate):	395 kg
Worktable, load capacity:	30 kg
Foundation load:	4.8 kN/m ²
Emission sound pressure level:	<70 dB(A) averaged, when idling accuracy class 2, as per DIN EN ISO 3744: 2010
Measuring instrument:	Brüel & Kjær Type 2240
Hydraulic oil tank:	7 litres (filling 6 litres)
Hydraulics oil:	Mobil SHC Cibus 32, NSF H1 registered

The data on the type plate principally applies; it is located on the back of the machine. In case of deviations, please contact the manufacturer for a written confirmation of the data!

If your country requires an RCD as protective measure, an RCD (type B), AC/DC sensitive, must be used.

7.2 *Electrical circuit diagram*

The electrical circuit diagram of your machine is located in the electrical control cabinet and must be supplied when reselling the machine!

8 EC Declaration of Conformity according to Directive 2006/42/EC

The manufacturer hereby declares

Name: Rühle GmbH
Legal form: Lebensmitteltechnik
Address: Beim Signauer Schachen 10
79865 Grafenhausen
Germany

that the following product

Type: AR 20
Designation: Cutting machine
from serial no.: 0001

complies with all relevant provisions of the Directive indicated above, including any changes that are valid at the time of this declaration.

The product complies with all relevant provisions of the following additional EU Directives and standards, including any changes to these that are valid at the time of the declaration:

- DIN EN 1672-2: 2021-05 Food processing machinery - Basic concepts - Part 2: Hygiene requirements
- DIN EN 60204-1: 2019-06 Safety of machinery - Electrical equipment of machines - Part 1: General requirements
- DIN EN 13871: 2015-01 Food processing machinery - Cubes cutting machinery - Safety and hygiene requirements
- EC 1935/2004 Regulation on materials and articles intended to come into contact with food.
- EU 10/2011
- EC 2023/2006 Regulation on good manufacturing practice for materials and articles intended to come into contact with food.

Signed by:

Place of issue: 79865 Grafenhausen (Germany)
Date of issue: 26 January 2022
Position of the signing person in the company: Management
Name of the signing person: Mr. Claus Rühle

Person authorised for the documentation:

Name: Jürgen Stegerer
Address: Rühle GmbH
Beim Signauer Schachen 10
79865 Grafenhausen (Germany)

Signature:



A declaration of conformity for your machine (serial number), with updated content, if necessary, can be requested from RÜHLE GmbH.