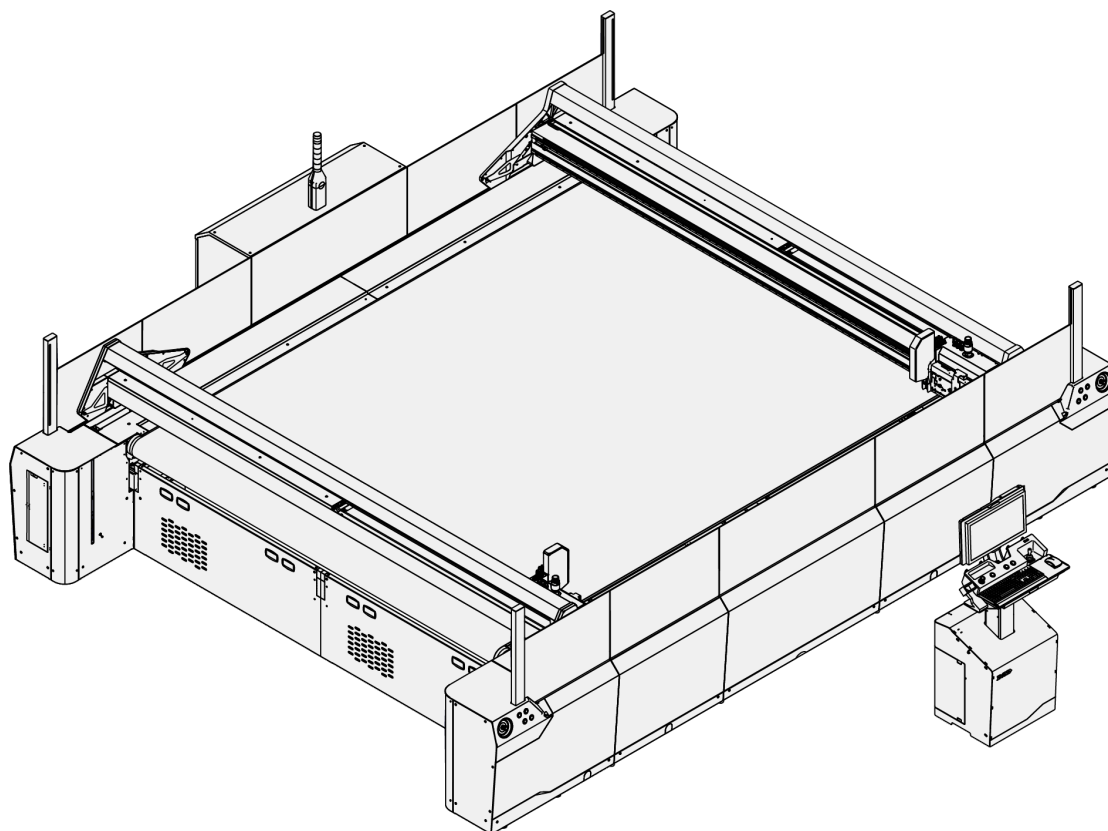


Operating manual

Cutter QD

Q 18-32 D
Q 22-32 D
Q 32-32 D



Translation of the original
Read this manual prior to performing any task!

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Zünd Systemtechnik AG
Industriestrasse 8
9450 Altstätten
Switzerland
Telephone: +41 71 554 81 00
E-mail: info@zund.com
Internet: <https://www.zund.com>

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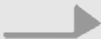


This manual uses the masculine grammatical form in a neutral sense to keep the text easier to read. It always addresses all genders in the same way.

Storage and use of the manual

This manual enables the safe and efficient use of the product. This manual is an integral part of the product and must be kept accessible to the personnel, in the respective national language, in the latest version and in the vicinity of the product. The personnel must read and understand this manual carefully before beginning any work. The basic requirement for safe work is compliance with all specified safety notes and warnings, as well as the action instructions in this manual. Furthermore, the local accident prevention regulations and general safety provisions for the area of use of the product apply.

The illustrations in this manual are intended to provide a basic understanding and may differ from the actual design.

General conventions

Marking	Explanation
DANGER	This signal word indicates an imminently hazardous situation which will result in death or serious injury.
WARNING	This signal word indicates an immediately hazardous situation which could result in serious injury.
CAUTION	This signal word indicates an imminently hazardous situation which may result in minor or slight injury.
NOTE	This signal word indicates damage to material or the environment.
<i>i</i>	Tip, advice or summary of a topic
	Individual action step of an action instruction
	Intermediate or end result of an action
	Reference to additional information
[Approval] button	Operating elements such as buttons, switches, etc.
“Start”	Screen elements such as buttons, menu entries, etc.
Code	Representation of programming code or file path

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Table of contents

1	About this manual.....	11
1.1	Purpose.....	11
1.2	Product identification.....	12
1.3	Product documentation.....	13
1.4	Contact data.....	15
2	Safety.....	17
2.1	Proper use.....	17
2.2	Misuse.....	18
2.3	Responsibility of the operating company.....	19
2.4	Personnel requirements.....	21
2.4.1	Personnel qualifications.....	21
2.4.2	Unauthorized persons.....	22
2.5	Personal protective equipment (PPE).....	23
2.6	Conformity.....	24
2.7	Residual hazards.....	25
2.8	Basic risks.....	26
2.8.1	Mechanical risks.....	26
2.8.2	Electrical hazards.....	27
2.8.3	Thermal hazards.....	28
2.8.4	Hazards from materials and substances.....	28
2.9	Risk of fire and explosion.....	30
2.10	Warnings on the product.....	31
2.11	Hazard area.....	34
2.12	Area of activity.....	36
2.13	Safety devices and monitoring equipment.....	37
2.14	Shutdown in an emergency.....	38
2.15	Securing against restart.....	39
3	Commissioning.....	41
3.1	Transport.....	41
3.2	Assembly and installation.....	42
3.3	Initial commissioning.....	43
3.4	Daily start-up.....	44
3.4.1	Powering up the cutter.....	44
3.4.2	Shutting down the cutter.....	45

4	Structure and function.	47
4.1	Functional description.	47
4.2	Safety devices and monitoring equipment.	49
4.2.1	Emergency stop command device.	49
4.2.2	Protection against unauthorized start-up.	49
4.2.3	Button Allow.	49
4.2.4	Safety control system.	49
4.2.5	Access protection.	50
4.2.6	Optional attachments.	51
4.3	Modules and tools.	53
4.4	Movement system.	55
4.5	Tool handling unit.	57
4.6	Material handling.	59
4.7	Material fixation.	60
4.8	Detection methods.	62
4.9	Extraction system.	63
4.10	Machine control system.	64
4.11	Software.	65
4.11.1	Before production.	65
4.11.2	For production.	65
4.11.3	After production.	65
4.12	Technical data.	66
4.12.1	Overview.	66
4.12.2	Dimensions.	66
4.12.3	Ambient conditions.	66
4.12.4	Requirements for the room.	66
4.12.5	Weights.	67
4.12.6	Performance features.	67
4.12.7	Media interfaces.	69
4.12.8	Emissions.	71
5	Operating and display elements.	73
5.1	Control panel.	73
5.2	Corner elements.	75
5.3	Signal light.	76

5.4	Operating states.....	77
5.4.1	Stop.....	77
5.4.2	Emergency stop.....	77
5.4.3	Error.....	78
5.4.4	Warning.....	78
5.4.5	Automatic.....	79
5.4.6	Interaction.....	79
5.4.7	Setting up.....	80
6	Setup and production.....	81
6.1	Training operating personnel.....	81
6.2	Basic tasks.....	82
6.2.1	Setting up the control panel.....	82
6.2.2	Changing the operating state.....	83
6.2.3	Moving the module carriage.....	83
6.3	Set up.....	85
6.3.1	Setting up modules and tools.....	85
6.3.2	Setting up the material handling unit.....	85
6.4	Producing.....	86
7	Troubleshooting.....	87
7.1	Modules and tools.....	87
7.2	Movement system.....	88
7.3	Material handling.....	89
7.4	Material fixation.....	90
7.5	Detection methods.....	91
7.6	Extraction system.....	92
7.7	Machine control system.....	93
7.8	Software.....	94
8	Inspection and maintenance.....	95
8.1	Introduction.....	95
8.1.1	Safety notes.....	95
8.1.2	Maintenance concept.....	95
8.2	Maintenance plan.....	97
8.3	Ensure safe work.....	99
8.3.1	Providing personal protective equipment.....	99
8.3.2	Updating product documentation.....	99

8.4	Safety devices and monitoring equipment.	101
8.4.1	Checking the finger guard.	101
8.4.2	Checking glass panes.	101
8.4.3	Checking the light curtain.	102
8.4.4	Checking the covers.	103
8.4.5	Checking EMERGENCY STOP command devices.	103
8.4.6	Cleaning the light curtain.	104
8.5	Operating and display elements.	105
8.5.1	Checking the signal light.	105
8.6	Modules and tools.	106
8.6.1	Inspecting and maintaining a module.	106
8.6.2	Inspecting and maintaining a tool.	106
8.7	Media interfaces.	107
8.7.1	Checking the pressure.	107
8.8	Machine control system.	108
8.8.1	Checking the condensate tank.	108
8.9	Detection methods.	110
8.9.1	Cleaning the INCAM.	110
8.10	Material fixation.	111
8.10.1	Inspecting and maintaining a vacuum generator.	111
8.11	Material handling.	112
8.11.1	Cleaning the conveyor belt.	112
8.12	Tool handling unit.	113
8.12.1	Cleaning the ITI.	113
8.12.2	Cleaning the tool magazine.	114
8.13	Movement system.	115
8.13.1	Cleaning the beam daily.	115
8.13.2	Cleaning the beam weekly.	116
9	Decommissioning.	119
9.1	Decommissioning for < 1 month.	119
9.2	Decommissioning for > 1 month.	120
9.3	Disassembly.	121
9.4	Disposal.	122
10	Appendix.	123
	Appendix - Table of contents.	125
A	Dimension drawings.	127

B	Drawings.....	129
C	Supplier documents.....	131

1 About this manual

1.1 Purpose

This manual is regarded as an operating manual as defined by the Machinery Directive 2006/42/EC and is a part of the product. It contains all information needed to use the product as intended and safely.

- The main structure of this manual is based on the product life phases.
- The cutter can be expanded modularly with optional attachments. This manual makes reference to the respective related manuals.
- If ownership of the product changes, the product documentation must be transferred to the new owner.
- Changes or corrections published by the manufacturer must be added. Ask your local service partner about the latest version of the product documentation.

Target group

This operating manual is addressed to the operating company and the machine operator.

Feedback



All conceivable measures have been taken to ensure the correctness and completeness of this manual. Despite the utmost care, errors can never be completely avoided; therefore, we appreciate notes and suggestions at any time.

Send an email if you have any feedback to share with us: techkom@zund.com

1.2 Product identification

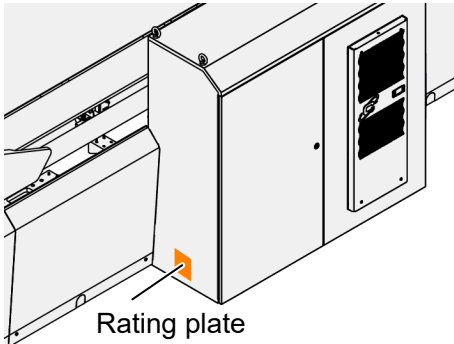


Fig. 1

A rating plate is attached to the cutter for product identification. → [Chapter 4.12.6.2 “Rating plate” on page 68](#)

This manual describes how to use the following machine types:

- Q 18-32 D
- Q 22-32 D
- Q 32-32 D

1.3 Product documentation

The cutter has a modular design. Examples of optional attachments include modules, tools, material handling units and software products. This operating manual describes the cutter. You can find important information on the optional attachments in the respective manuals:

Cutter

Manual	Target group
Cutter operating manual	Operator, Operating company
Cutter service manual	Service technician
Cutter installation instructions	Service technician

Modules

Manual	Target group
AUTOMO operating manual	Operator, Operating company

Tools

Manual	Target group
CRETO operating manual	Operator, Operating company
DRAWTO operating manual	
ELOSTO operating manual	
ROTATO operating manual	
UNITO operating manual	
PERTO operating manual	

Software

Manual	Target group
Cut Center software manual	Operator, Operating company
Cut Editor software manual	
Cut Manager software manual	
PreCut Center software manual	
PrimeCenter software manual	
ZCO software manual	
ZDC software manual	
ZPC software manual	

1.4 Contact data

Manufacturer

Zünd Systemtechnik AG
Industriestrasse 8
9450 Altstätten
Switzerland
Phone: +41 71 554 81 00
Email: info@zund.com
➔ <https://www.zund.com>

Customer service

Zünd Systemtechnik AG has a global service and sales network. Select your local partner.
➔ <https://www.zund.com/en/contact>

Webshop

Zünd Systemtechnik AG has a webshop for consumables, spare parts and software products. Visit the Webshop.
➔ <https://my.zund.com/shop>

2 Safety

2.1 Proper use

The cutter is designed and constructed exclusively for the intended use described here.

The cutter serves exclusively as a distributing station of CAD/CAM data for processing materials that have been held in place on a working area by means of a vacuum.

The available modules and tools define the possible processing methods:

- Cutting (Thru-cut)
- Marking (Draw)
- Creasing (Crease)
- Perforating (Perforate)
- Scoring (Score)

The cutter may be operated only with the Cut Center machining software and original Zünd modules, tools and tool inserts. Only process comparable materials, which are listed in the Cut Center material database.

The cutter is intended for materials up to a maximum thickness of 50 mm +10%.

When the required service intervals are adhered to, the proper service life is set at 10 years.

If you want to use machining software other than Cut Center, make sure you contact our service partner beforehand.

Proper use also includes compliance with the instructions in this manual.

2.2 Misuse

Any use of the cutter or optional attachments that goes beyond the proper use or is of another nature is considered misuse and can lead to hazardous situations and loss of warranty.

⚠ WARNING

Hazard from misuse:

Misuse can lead to serious hazardous situations.

- Only use tools, tool inserts, modules, tool handling units and material handling units that have been approved by Zünd.
- Only process comparable materials that are listed in the Zünd Cut Center material database.
- Only process materials that are correctly held on the working area.
- Do not operate the cutter unless it is in a properly maintained and functioning condition.
- Never set objects down on the cutter.
- Never lean yourself or objects against the cutter.
- Ensure that all emergency stop command devices are always freely accessible.
- Never bypass or deactivate safety devices and monitoring equipment.
- Never make structural modifications to the cutter or optional attachments without a subsequent risk assessment.
- Never carry out work that is not described in the product documentation.
- Do not use or work on the cutter or optional attachments unless you have read and understood the product documentation.
- Never operate the cutter in a potentially explosive environment.
- Never operate the cutter in an area with electrically conductive dust.
- Never operate the cutter in rooms or halls that are unprotected and exposed to weather.
- Observe the technical data.

2.3 Responsibility of the operating company

The cutter is used in the commercial area. The operating company of the cutter is subject to legal obligations for occupational safety. In addition to the safety notes in this manual, the valid regulations regarding general safety, occupational safety and environmental protection must be observed for the area in which the cutter is used.

In particular, the following applies to this:

- The operating company must look into the applicable occupational safety regulations and produce a hazard assessment that additionally communicates the hazards resulting from the specific working conditions at the site where the cutter is used. This must be implemented in the form of operating instructions for operation of the cutter.
- The operating company must ensure that the cutter is not operated without supervision or, if the cutter is operated without supervision, that hazardous situations cannot arise. The cutter must not be accessible to unauthorized persons.
- During the entire service life of the cutter, the operating company must check whether the operating instructions it has produced correspond to the current state of the rules and regulations and revise them, if necessary.
- The operating company must ensure that the cutter is never operated in a damaged or unmaintained condition. A cutter that is damaged or not maintained must be removed from operation immediately.
- The operating company must clearly regulate and define responsibilities for operation, troubleshooting, maintenance and cleaning.
- The operating company must ensure that all persons who use or work on the cutter have read and understood this manual. Furthermore, the operating company must train personnel and inform them about the hazards at regular intervals. → [Chapter 6.1 “Training operating personnel” on page 81](#)
- The operating company must provide the personnel with the required protective equipment and instruct them in how to properly wear the required protective equipment. → [Chapter 8.3.1 “Providing personal protective equipment” on page 99](#)
- The operating company must ensure that the production area has sufficient ventilation.
- People with medical implants (pacemakers, insulin pumps, etc.) must not get within 30 cm of the cutter.
- The operating company must provide for sufficient lighting in the working area and hazard area of the cutter.

- The operating company must have sufficient line protection installed for the electrical supply line.
- The operating company must have the equipotential bonding checked regularly.
- The operating company must ensure that the ground resistance is small enough to limit the contact voltage to 50 V AC/75 V DC in case of faults, or that a ground-fault circuit interrupter that switches off the voltage source within 400 ms is installed.

Furthermore, the operating company is responsible for making sure the cutter is always in perfect working order. Therefore, the following applies:

- The operating company must ensure that the maintenance intervals described in this manual are adhered to.
- The operating company must have all safety devices regularly inspected to make sure they are complete and functioning properly.
- The operating company must have all operating and display elements regularly checked to make sure they function properly.
- The operating company must document the established training measures.

2.4 Personnel requirements

2.4.1 Personnel qualifications

⚠ WARNING

Hazard due to insufficient qualification of personnel:

Insufficiently qualified personnel cannot properly assess hazardous situations.

- Only regularly trained personnel may use or work on the machine.
- Unqualified personnel must not use or work on the machine and its optional attachments.
- Training measures for the personnel must be documented.

Only people who can be expected to perform their work reliably are permitted as personnel. People with an impaired ability to react, e.g., due to drugs, alcohol or medications, are not permitted to perform the work.

In this manual, the personnel qualifications listed below are specified for the different areas of activity:

Operator

The operator is the staff person charged with operating the machine. The operator is capable of performing the tasks assigned to them and recognizing and preventing possible risks on their own based on their professional training, knowledge and experiences. The operator is personnel of the operating company. The minimum age for an operator is defined as 14 years old.

Service technician

The service technician is the personnel authorized by the manufacturer to carry out the assembly, installation, commissioning, maintenance, troubleshooting and disassembly. The service technician is capable of performing the tasks assigned to him and recognizing and preventing possible risks on his own based on his professional training, knowledge and experiences, as well as knowledge of the relevant regulations. The installation instructions and service manual document types offer detailed information which is specifically geared toward service technicians.

Support workers

The support worker is the personnel assigned to assist a service technician and/or operator. Due to a training carried out by the operator, as well as his or her professional training, knowledge and experience, the support worker is able to carry out the assigned work and to recognize and avoid possible dangers independently.



When selecting personnel, the applicable age and occupation-specific regulations at the location of use must be observed.

2.4.2 Unauthorized persons

⚠ WARNING

Hazard due to insufficient qualification of personnel:

Insufficiently qualified personnel cannot properly assess hazardous situations.

- Only regularly trained personnel may use or work on the machine.
- Unqualified personnel must not use or work on the machine and its optional attachments.
- Training measures for the personnel must be documented.

⚠ WARNING

Danger due to malfunction of medical products:

Strong magnetic fields at the cutter can interfere with the function of medical products (pacemakers, insulin pumps, etc.).

- People with medical implants (pacemakers, insulin pumps, etc.) must not get within 30 cm of the cutter.
- Provide warning of strong magnetic fields at the entrance to the production facility.

2.5 Personal protective equipment (PPE)

The personal protective equipment is used to protect the personnel from health-endangering effects and injuries during work on the cutter and the optional attachments. Mandatory signs on the cutter indicate the protective equipment to be used. In the respective job descriptions, reference is made to the personal protective equipment to be used.

Depending on the type of machining or material, the protective equipment to be used differs. If additional protective equipment is prescribed by the operator, it must be used.



Hearing protection

To protect against hazards posed by noise with an averaged sound pressure level of 80 dB(A) or more.



Protective gloves against chemical hazards

To avert the dangers emanating from chemicals (hazardous substances).



Protective gloves against mechanical hazards

To prevent hazards from sharp edges. E.g., for glass panes or burrs on materials.



Protective gloves against thermal hazards

To protect against hazards posed by hot surfaces at 60 °C or higher.



Protective goggles against mechanical hazards

To protect against hazards posed by chips or small material residue that are flung away, e. g. when metal is being routed.



Safety shoes against mechanical hazards with ESD protection

To prevent hazards from heavy components or when moving heavy stacks of materials. E.g., mounting of a cutter.

2.6 Conformity

EC declaration of conformity

The attached declaration of conformity confirms the guidelines and standards according to which the cutter has been built.

The relevant guidelines are:

- 2006/42/EC
- 2014/30/EU
- 2011/65/EU + (EU)2015/863

The relevant standards are:

- EN ISO 12100:2010
- EN 60204-1:2019
- EN IEC 61000-6-2:2019
- EN IEC 61000-6-4:2019
- EN 1010-1:2004+A1:2010
- EN 1010-3:2002+A1:2009

2.7 Residual hazards

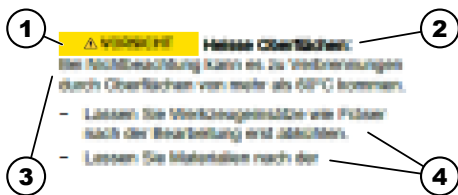
⚠ WARNING

Disregarding the manual:

Disregarding this manual can lead to potentially fatal injuries.

- Read the manual carefully and follow the instructions.
- Implement the information from this manual as concrete operating instructions.

The cutter and its optional attachments have been designed as safe-to-operate products in due consideration of applicable standards and guidelines, the state of technology and our many years of experience.



Despite all precautions, it is still possible for hazards to arise during use. This manual draws your attention to these residual hazards in the form of warnings. The warnings have the structure shown here.

Fig. 2

- 1 Symbol and signal word
- 2 Type and source of hazard
- 3 Consequences of non-compliance
- 4 Avoidance

2.8 Basic risks

2.8.1 Mechanical risks

⚠ WARNING Danger of being drawn in by moving parts: Failure to comply can result in severed limbs as well as crushing and cutting injuries.

- Only operate the cutter with safety devices and monitoring equipment that have been inspected and are functioning.
- Remove hands from the hazard area.
- Do not lean on the cutter.
- Do not reach into the area between the deflection rollers and conveyor belt.
- Protect long hair with a hairnet.
- Do not wear any loose items of clothing or jewelry.
- Never lean on the safety windows. Maintain a distance of 20 cm.
- Never reach into the hazard area over the safety windows.
- Always pay attention to moving parts when the cutter is in the Setup operating state.
- Make sure that no one is in the hazard area when you move the beam manually.

⚠ WARNING Mechanical risk:
Risk of injury to persons at the cutter

- Learn about your responsibilities before working at the cutter.
- Make sure that there is no one at the cutter before changing the operating mode.
- Make sure that there is no one at the cutter before raising the safety windows.
- Make sure that no one is at the cutter during setup mode.

⚠ WARNING Cutting and crushing hazard from sharp and heavy material:
Non-compliance can result in crushing and cutting injuries. The material may have sharp edges or burrs.

- Wear the protective equipment to be used for the type of processing/material.
- Choose a feed rate at which no material falls off the conveyor belt.
- Observe the material during material transport.

⚠ WARNING

Injuries due to flying material and parts of material:

Non-compliance can result in eye injuries, for example. In particular, parts can be ejected during routing.

- Wear protective goggles when processing materials.
- Strictly adhere to the maximum thickness of the material to be processed.

⚠ WARNING

Risk of injury due to flying objects:

Non-compliance can result in injuries. The movement system can catch objects lying on the cutter and hurl them away.

- Remove all foreign objects from the cutter and optional attachments before you activate the "Automatic" operating state.
- Make sure that nothing can fall onto the cutter from above. Acceleration forces can cause objects to be thrown from the cutter.

2.8.2 Electrical hazards

⚠ DANGER

Risk of death due to electrical current: Even minimal contact with parts under voltage can be deadly.

- The operating company may allow only qualified personnel to use or work on the electrical equipment.
- Do not under any circumstances open the control cabinet or covers. If live parts are touched and the electrical and mechanical structure is modified, there is a risk of electric shock. Furthermore, the cutter can malfunction.
- Do not operate the cutter if parts under voltage have been damaged or are faulty.
- Have the defects and damage to the electrical equipment repaired immediately by a specialist.

⚠ WARNING

Danger due to malfunction of medical products:

Strong magnetic fields at the cutter can interfere with the function of medical products (pacemakers, insulin pumps, etc.).

- People with medical implants (pacemakers, insulin pumps, etc.) must not get within 30 cm of the cutter.
- Provide warning of strong magnetic fields at the entrance to the production facility.

2.8.3 Thermal hazards

⚠ CAUTION Hot surfaces:

Non-compliance can result in skin being burned by surfaces hotter than 60 °C.

- First allow the tool inserts (e.g. router or knife) to cool down after machining.
- First allow the materials to cool down after machining.
- Wear protective gloves.

⚠ WARNING Ignition of combustible materials due to hot tool inserts:

Non-compliance can result in some materials being ignited by very hot tool inserts.

- Choose the processing parameters such that the tool inserts do not get too hot during machining.
- Stop machining and allow the tool to cool down if smoke forms or if the tool insert or material becomes discolored, indicating the increased development of heat.

⚠ DANGER Risk of deflagration and explosion due to dust:

Non-compliance can result in deflagration in case of thick dust deposits or hot parts of material can ignite dust in the extraction unit.

- Clean the cutter regularly to prevent a complete layer of dust from forming.
- Choose the processing parameters such that no smoldering or glowing chips are created.

2.8.4 Hazards from materials and substances

⚠ CAUTION Toxic vapors:

Non-compliance may result in irritation of or damage to the respiratory system.

- Before processing a material, check the safety data sheet for possible hazards.
- Read and observe the warnings and safety notes.

⚠ WARNING Health hazard due to adhesive:

Non-compliance may result in injury to eyes, respiratory system and skin.

- Observe the safety data sheet and the packaging information from the manufacturer.
- Wear the recommended protective equipment.
- Ventilate the workstation well.
- Do not inhale the vapors.
- Do not bring the adhesive into contact with the skin, eyes or mucous membranes.

⚠ WARNING Health hazard due to lubricants and cleaning agents:
Non-compliance may result in injury to eyes, respiratory system and skin.

- Observe the safety data sheet and the packaging information.
- Ventilate the workstation well.
- Do not inhale the vapors.
- Do not bring the agents into contact with the skin, eyes or mucous membranes.

2.9 Risk of fire and explosion

In the unlikely event of a fire, it is necessary to act quickly. Prepare in advance for a potential emergency by creating a customized fire protection concept. When doing this, take into account the material manufacturer's safety regulations for the materials to be processed.

Fire classes include a definition of the appropriate extinguishing agent for the different fuels:

Fire class A

Fuel: Solid, non-melting substances

Appearance: Embers and flames

Examples: Wood, paper, textiles, coal, non-melting plastics

Suitable, highly effective extinguishing agent:
Water, foam/CAFS/wetting agent, class F extinguishing agent

Fire class B

Fuel: Liquids, melting solid substances

Appearance: Flames

Examples: Solvents, oils, melting plastics

Suitable, highly effective extinguishing agent:
Foam/CAFS/wetting agent, BC powder, class F extinguishing agent

Burning electrical equipment



WARNING Electric shock from extinguishing agent:

Risk of electric shock due to extinguishing live parts.

- **De-energize the electrical equipment to be extinguished before using an extinguishing agent.**

Fuel: Printed circuit boards, insulation, electronic components

Appearance: Flames, sparks

Suitable, highly effective extinguishing agent:

- Solid jet of water from at least 5 meters away
- Spray jet of water from at least 1 meter away
- Foam/CAFS/wetting agent
- AB powder from at least 1 meter away
- BC powder from at least 1 meter away
- Carbon dioxide (CO₂) from at least 1 meter away

2.10 Warnings on the product

⚠ CAUTION

Missing, damaged or illegible signs:

Safe handling of the cutter is not guaranteed in case of non-compliance. In the event of damage, personal injury, limitation of liability or loss of warranty must be expected.

- Clean dirty signs regularly with a dry cloth.
- Order a new sign immediately if it is damaged or needs to be replaced.
- Inform staff of residual hazards until the new sign is in place.

An overview of the warning notices on the product can be found in the appendix of this manual.

Meaning of the pictograms



General mandatory sign

Indicates a general commandment.



Follow the instructions

Indicates compliance with the operating manual.



Use eye protection

Indicates the wearing of protective goggles to ward off hazards. E.g., chips or small material residues flung away.



Use hearing protection

Indicates the wearing of hearing protection to prevent hazards from sounds with an average sound pressure level of 80 dB(A) and above.



Use hand protection

Indicates the wearing of protective gloves to ward off hazards.

- Mechanical hazards, e.g., sharp edges, rough surfaces
- Thermal hazards, e.g., hot surfaces
- Chemical hazards, e.g., chemicals, cleaning agents
- Hazards due to contamination, e.g., carbon fiber / mineral oil mats



No access for persons with pacemakers or implanted defibrillators

Indicates prohibition of persons with pacemakers or defibrillator implants in an area.



Reaching in prohibited

Indicates the prohibition of reaching into an area.



Entry of area prohibited

Indicates the prohibition to enter an area.



Climbing prohibited

Indicates the prohibition to climb on an area.



Sitting forbidden

Indicates the prohibition to sit in an area.



General warning sign

Indicates general hazards.



Warning of electrical voltage

Indicates a risk of electric shock due to electrical voltages.



Warning against hand injuries

Indicates the risk of hand injuries due to clamping or crushing.



Warning against counter-rotating rollers
Indicates the risk of injury from being pulled in.



Suspended load warning
Indicates risk of serious injury or death from falling loads.



Warning against magnetic field
Indicates a risk of injury, interference or damage due to strong magnetic fields.



Warning against optical radiation
Indicates the risk of injury from optical radiation.



Warning against laser beams
Indicates the risk of injury from laser beams.



Hot surface warning
Indicates the risk of injury from hot surfaces.

2.11 Hazard area

Hazard area at the cutter

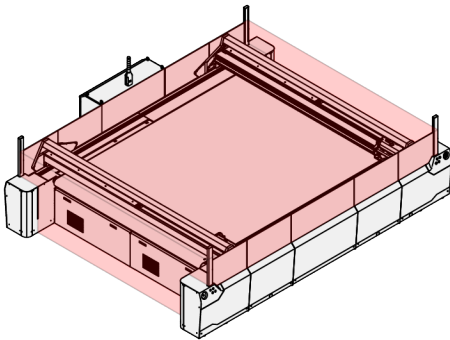


Fig. 3

The hazard area at the cutter is located within the lateral safety windows, the back of the main control cabinet and the light curtains in front and back.

➔ Chapter 2.8 “Basic risks” on page 26

Hazard area at the magazine

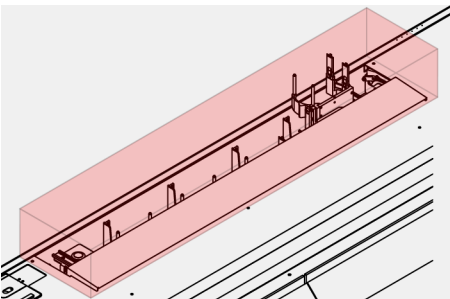


Fig. 4

The hazard area at the tool magazine is located in the visible area of the tool magazine.

➔ Chapter 2.8 “Basic risks” on page 26

Hazard area at the module carriage

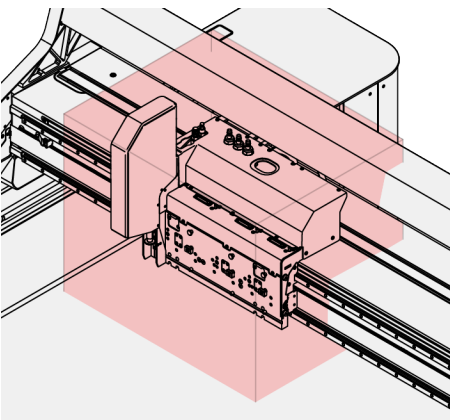


Fig. 5

The hazard area at the module carriage is located in the visible area of the module carriage.

➔ Chapter 2.8 “Basic risks” on page 26

Objects falling onto the cutter

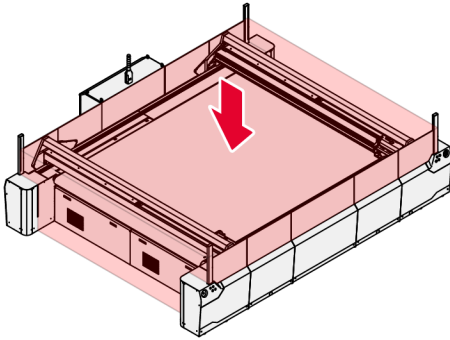


Fig. 6: eei1252a

The hazard area at the cutter is located above the working area of the cutter.

→ Chapter 2.8 “Basic risks” on page 26

Leaning or reaching into the hazard area

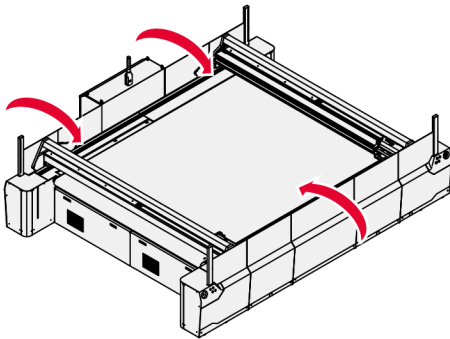


Fig. 7: eei1252b

The hazard area results from leaning on the cutter or reaching into the hazard area.

→ Chapter 2.8 “Basic risks” on page 26

2.12 Area of activity

The areas of activity are areas in which the operator can be active. These areas are always outside the hazard area. The areas must be freely accessible and must not be blocked by boxes or the like.

Control panel

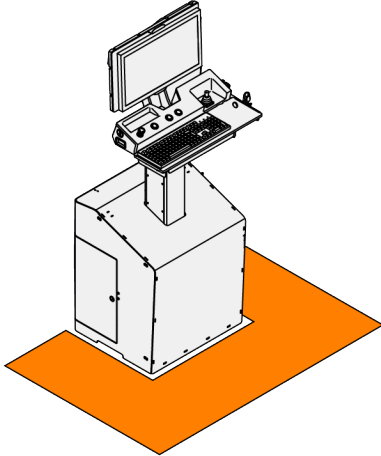
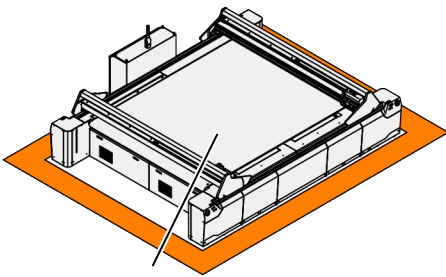


Fig. 8

The area of activity at the control panel is located in front of the screen.

- The upper part of the control panel can be swiveled to the right and left sides.
- The height of the upper part of the control panel can be adjusted.
- The control panel is freestanding. The exact position is determined during installation.

Cutter



Working area

Fig. 9

The area of activity at the cutter is located within a width of 2 m around the cutter.

- The cutter is operated from the outside and must not be entered.
- The side supports must not be entered or used for dismounting.
- Objects must not be set down on the working area, beam or side supports.
- The area of activity must always be freely accessible and must not be blocked by boxes or the like.

2.13 Safety devices and monitoring equipment

The safety devices and monitoring equipment are designed to protect the personnel and the cutter. For detailed information on the safety devices and monitoring equipment, refer to the "Structure and function" chapter.

➔ [Chapter 4 "Structure and function" on page 47](#)

2.14 Shutdown in an emergency

Target:

Here you will learn how to shut down the cutter in an emergency situation. In an emergency situation, the operator can actively put the cutter in the “Emergency stop” operating state. → [Chapter 5.4.2 “Emergency stop” on page 77](#)

Personnel:

- Operator



Fig. 10



Fig. 11

1. → Operate an [EMERGENCY STOP command device].
 - ➔ The cutter switches to the “Emergency stop” operating state.
2. → Remedy the cause of the emergency situation. If necessary, contact the service technician or operating company.
3. → Establish a safe state for the cutter and optional attachments.
4. → Turn the button of the triggered [EMERGENCY STOP command device] clockwise.
 - ➔ The [EMERGENCY STOP command device] has been reset.
5. → Exit the “Error / Stop” operating state. → [Chapter 6.2.2 “Changing the operating state” on page 83](#)
 - ➔ Normal operation has been restored.

2.15 Securing against restart

Target:

Here you will learn how to secure the cutter against being restarted. This may be necessary, for example, for service work on the cutter. In this case, it is ensured that the cutter or one of the optional attachments cannot be restarted by other people.

Personnel:

- Service technician

Material:

- Padlock

⚠ DANGER**Hazard due to unintended restart:**

An unintended restart can involve a high degree of danger.

- The operating company may only task qualified personnel with service work.
 - The operating company must inform its personnel about how to secure the cutter against being restarted.
 - It is mandatory to secure the cutter or optional attachments against being restarted when they are disconnected from the power for service work.
 - De-energize the cutter when you need to work on the electrical equipment.
1. Put the cutter in the "Stop" operating state.
 ➔ [Chapter 6.2.2 "Changing the operating state" on page 83](#)
 2. Also put the optional attachments in a safe operating state. ➔ [Chapter 1.3 "Product documentation" on page 13](#)
 3. Turn off the cutter. ➔ [Chapter 3.4.2 "Shutting down the cutter" on page 45](#)
 4. Secure the [main switch] with a padlock and remove the key.
 5. Hang a sign that says "Do not turn on" in the immediate vicinity of the [main switch].
 - ➔ The cutter is turned off and secured against being restarted.
 6. De-energize the cutter when you need to work on the electrical equipment.
 - ➔ The cutter is turned off, secured against being restarted and de-energized.

3 Commissioning

3.1 Transport

⚠ WARNING

Hazard due to insufficient qualification of personnel:

Insufficiently qualified personnel cannot properly assess hazardous situations.

- Only regularly trained personnel may use or work on the machine.
- Unqualified personnel must not use or work on the machine and its optional attachments.
- Training measures for the personnel must be documented.

NOTICE

Material damage due to improper transport:
The cutter is not designed and constructed to be transported when assembled.

- Contact your local service partner if you want to use the cutter at a different production facility.

For the cutter to be operated at a different production facility, it is required that the cutter be professionally disassembled.

After disassembly, the cutter must be professionally packaged and prepared for transport. At the new production facility, the cutter must be professionally unpacked, assembled, installed and recommissioned.

Contact your local service partner if you want to use the cutter at a different production facility. ➔ [Chapter 1.4](#) “Contact data” on page 15

3.2 Assembly and installation

⚠ WARNING

Hazard due to insufficient qualification of personnel:
Insufficiently qualified personnel cannot properly assess hazardous situations.

- Only regularly trained personnel may use or work on the machine.
- Unqualified personnel must not use or work on the machine and its optional attachments.
- Training measures for the personnel must be documented.

NOTICE

Material damage due to improper assembly, installation and commissioning:

The cutter is designed and constructed to be assembled, installed and commissioned by a service technician.

- The cutter is delivered disassembled in boxes. Do not open the boxes. If transport damage is visible from the outside, report it immediately.
- Installation of a cutter is performed by a qualified service technician trained by the manufacturer.
- Contact your local service partner if you want to use the cutter at a different production facility.

For the cutter to be operated at a different production facility, it is required that the cutter be professionally disassembled.

After disassembly, the cutter must be professionally packaged and prepared for transport. At the new production facility, the cutter must be professionally unpacked, assembled, installed and recommissioned.

Contact your local service partner if you want to use the cutter at a different production facility. → [Chapter 1.4 “Contact data” on page 15](#)

3.3 Initial commissioning

⚠ WARNING

Hazard due to insufficient qualification of personnel:
Insufficiently qualified personnel cannot properly assess hazardous situations.

- Only regularly trained personnel may use or work on the machine.
- Unqualified personnel must not use or work on the machine and its optional attachments.
- Training measures for the personnel must be documented.

NOTICE

Material damage due to improper assembly, installation and commissioning:

The cutter is designed and constructed to be assembled, installed and commissioned by a service technician.

- The cutter is delivered disassembled in boxes. Do not open the boxes. If transport damage is visible from the outside, report it immediately.
- Installation of a cutter is performed by a qualified service technician trained by the manufacturer.
- Contact your local service partner if you want to use the cutter at a different production facility.

For the cutter to be operated at a different production facility, it is required that the cutter be professionally disassembled.

After disassembly, the cutter must be professionally packaged and prepared for transport. At the new production facility, the cutter must be professionally unpacked, assembled, installed and recommissioned.

Contact your local service partner if you want to use the cutter at a different production facility. ➔ [Chapter 1.4](#) “Contact data” on page 15

3.4 Daily start-up

3.4.1 Powering up the cutter

Target:

Here you will learn how to power up the cutter.

Personnel:

- Operator

Requirement:

- No persons/objects in the hazard area
- All signs on the cutter are clean and undamaged.
 - ➔ [Chapter 2.10 “Warnings on the product” on page 31](#)

Power-up

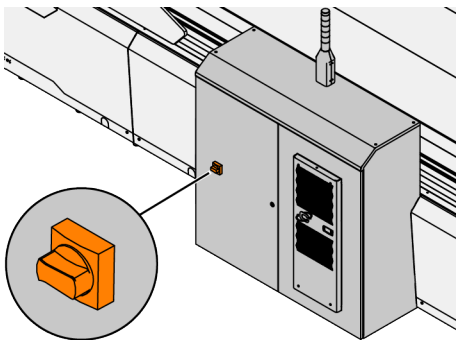


Fig. 12

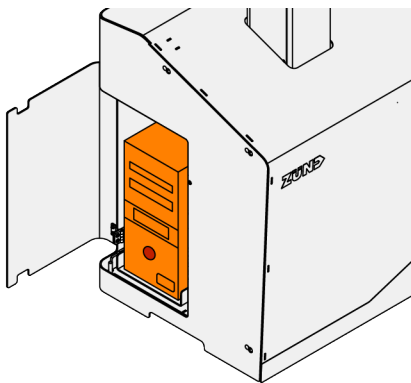


Fig. 13

1. ➔ Turn the main switch on the control cabinet to position “1”.
 - ➔ The cutter is supplied with electrical energy.
 - ➔ The optional attachments connected to the cutter are supplied with electrical energy.
 - ➔ The cutter is powered up and switches to the “Stop” operating state.
2. ➔ Turn on the compressed-air supply to the cutter.
3. ➔ Turn on the computer.
4. ➔ Log in on the computer.
5. ➔ Start Cut Center.

Checks after power-up

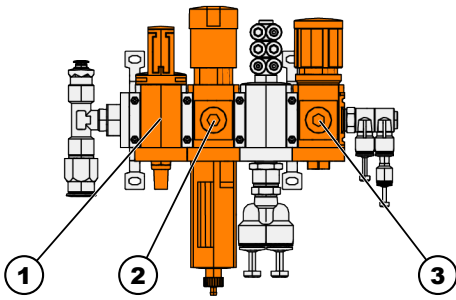


Fig. 14

- 1 Shutoff valve
- 2 Pressure gauge P2, 6 bar
- 3 Pressure gauge P3, 4.5 bar

6. Open the flap on the front left side support
 - ➔ Located behind the flap is the maintenance unit for the compressed-air supply.
7. Open the shutoff valve (1).
8. Check the pressure values on the pressure gauges P4, P2 and P3.
9. If necessary, set the pressure on the respective pressure gauge.
10. Verify that all safety devices and monitoring equipment are functioning properly. ➔ [Chapter 8.2 "Maintenance plan" on page 97](#)
 - ➔ The cutter is powered up and ready for operation.

3.4.2 Shutting down the cutter

Target:

Here you will learn how to shut down the cutter.

Personnel:

- Operator

1. Switch to the "Stop" operating state. ➔ [Chapter 6.2.2 "Changing the operating state" on page 83](#)
2. Turn the main switch on the control cabinet to position "0".

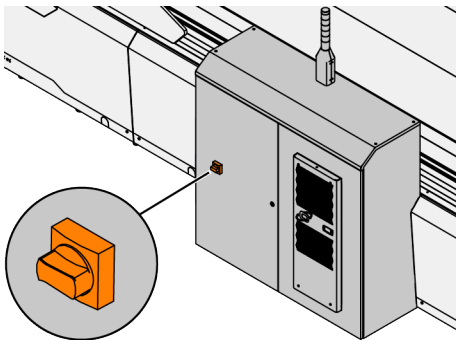


Fig. 15

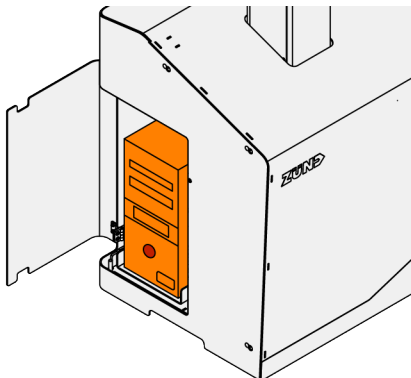


Fig. 16

3. Remove all materials from the working area.
4. Exit Cut Center.
5. Turn off the computer in a controlled manner. ("Windows → Start → On/Off")
 - ➔ Wait until the computer has shut down.

4 Structure and function

4.1 Functional description

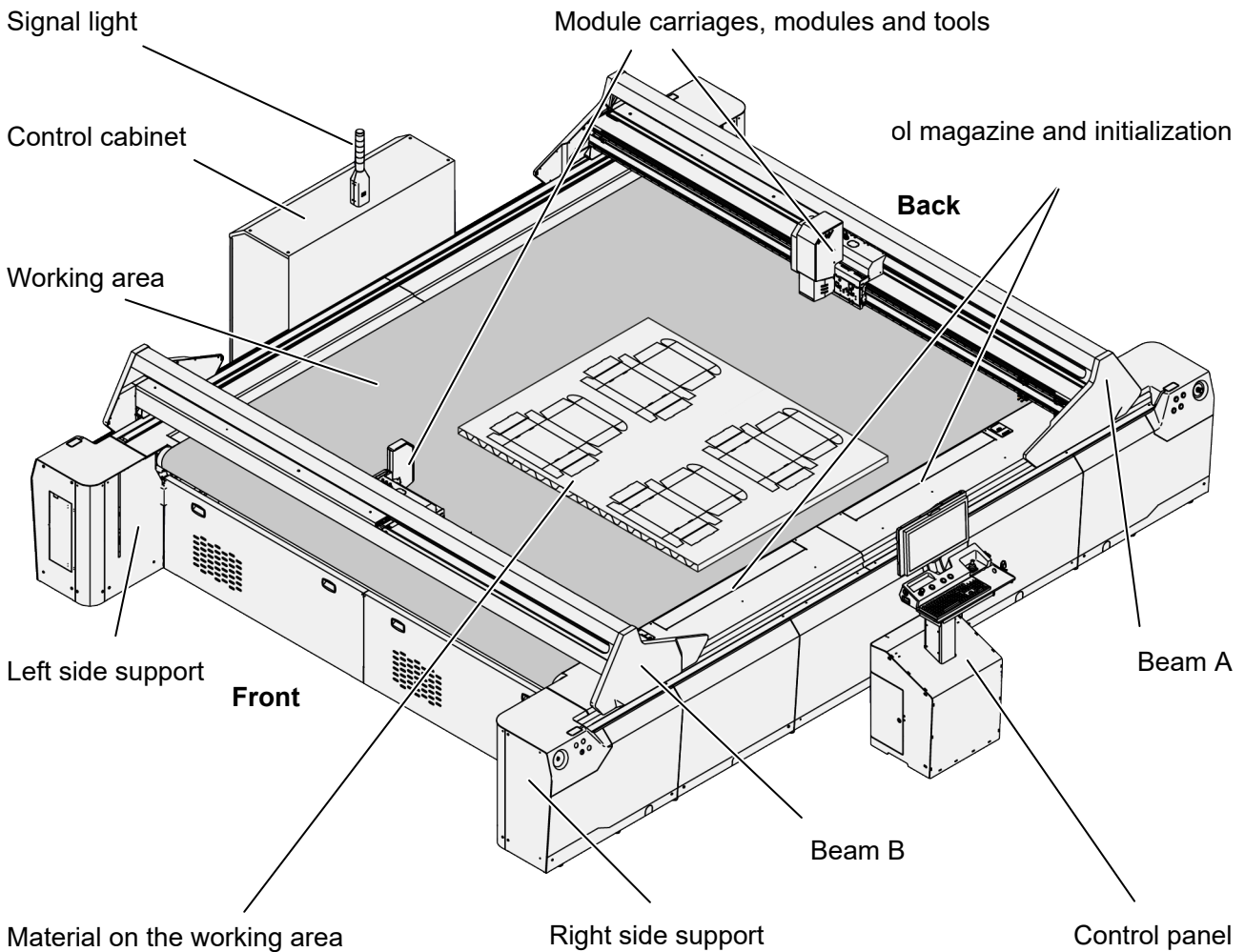


Fig. 17

Methods

The cutter can be used to process different materials with various methods. A method is a defined machining process. Depending on the configuration of the cutter, more or fewer methods are available.

Module carriages, modules and tools

The use of modules and tools allows for flexibly changing from one method to another. For example, for the production of a folding carton, first a folding crease is pressed into cardboard with rollers (Crease) and then contours are cut out with a knife (Thru-Cut). During production, the cutter independently makes use of the tools available in the tool magazine.

Tool magazine and initialization	The tool magazine contains all tools needed for production. Before production, the magazine is filled by the operator. At the start of production, the tools are automatically removed and initialized with the help of the tool initialization system (ITI).
Working area	The working area defines the surface on which the material can be machined. The working area consists of a rugged aluminum structure, which is designed with a hole pattern on top. The hole pattern allows a vacuum to hold the material in place. The aluminum structure is divided into vacuum zones. The intelligent cutter control system enables sequential activation and deactivation of the individual vacuum zones, thereby reducing the energy consumption. An endless conveyor belt is stretched over the hole pattern.
Conveyor belt	The conveyor belt is simultaneously a cutting underlay and a system used to transport objects. Cut parts are automatically conveyed away from the working area. The conveyor belt is moved by clamping elements as a result of the beam's kinetic energy. Material transport with the conveyor belt enables jobs that are longer than the working area to be produced. Transport elements hold the material in place during feeding.
Detection methods	The positioned material is detected by cameras. There are different cameras, which can be fastened above or on the cutter. In addition to the position of the material, product information can be read in by means of QR codes and barcodes.
Control panel	The cutter can be intuitively operated with a touchscreen as well as further operating and display elements. ↪ Chapter 5.1 "Control panel" on page 73
Optional attachments	A cutter's range of functions can be expanded by automation. For example, recurring activities can be automated. One example of automation is using the BHS150 for automatic positioning and removal of material.

4.2 Safety devices and monitoring equipment

4.2.1 Emergency stop command device

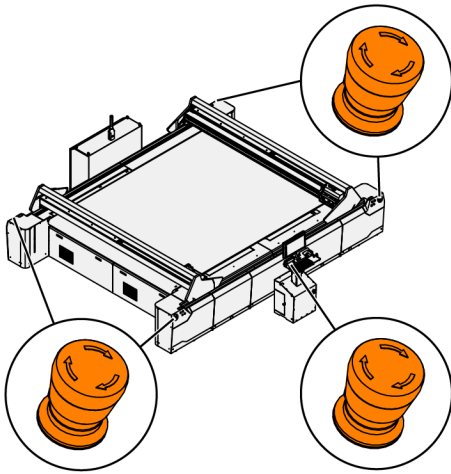


Fig. 18

The [emergency stop command device] is located on the corner elements and on the control panel of the cutter.

- The purpose of the [emergency stop command device] is to shut down the cutter quickly in an emergency. → [Chapter 2.14 “Shutdown in an emergency” on page 38](#)
- Each [emergency stop command device] must be freely accessible at all times.
- Activation of an [emergency stop command device] switches the cutter into the “Emergency stop” operating state.
- The [emergency stop command devices] must be checked regularly. → [Chapter 8.4.5 “Checking EMERGENCY STOP command devices” on page 103](#)

4.2.2 Protection against unauthorized start-up

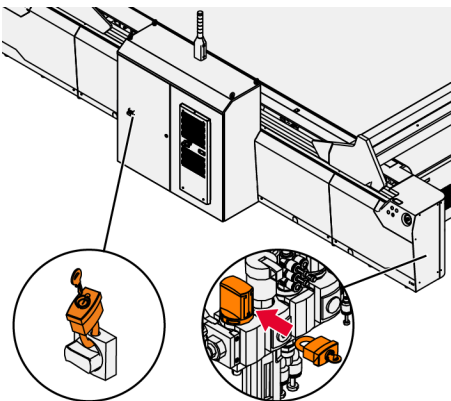


Fig. 19

For protection against unauthorized start-up, a padlock can be attached to the main switch and/or shutoff valve for the compressed air. → [Chapter 2.15 “Securing against restart” on page 39](#)

4.2.3 Button Allow

The button Allow appears in several places on the cutter. It can be found on the corner elements and on the control panel. The operator uses the button Allow to confirm their explicit permission for a function to be executed at the cutter. The function is not executed if the button is not pressed.

→ [Chapter 2.4.1 “Personnel qualifications” on page 21](#)

4.2.4 Safety control system

An autonomous safety control system ensures that the machine is safe in all its states. It monitors the sensors of the safety devices and coordinates the corresponding safety actions. As this is being done, the cutter control

system communicates with the safety control system to coordinate and synchronize the necessary tasks. The operating states are additionally indicated by signal lights.

➔ Chapter 5.4 “Operating states” on page 77

4.2.5 Access protection

Safety windows

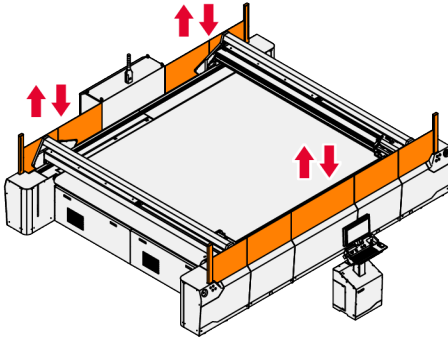


Fig. 20

The safety windows are located in the right and left side supports of the cutter.

- The safety windows are raised out of the side supports.
- The safety windows serve as protection against access to the hazard area from the side. ➔ Chapter 2.11 “Hazard area” on page 34
- The rear of the control cabinet replaces a section of the safety windows.
- When the safety windows are lowered, the movement system can be moved only at a reduced speed.
- The cutter must not be operated if safety windows are damaged or missing. ➔ Chapter 8.4.2 “Checking glass panes” on page 101
- The glass panes must be inspected regularly. ➔ Chapter 8.4.2 “Checking glass panes” on page 101
- Make sure that nothing can fall onto the cutter from above. Acceleration forces can cause objects to be thrown from the cutter.

Light curtain

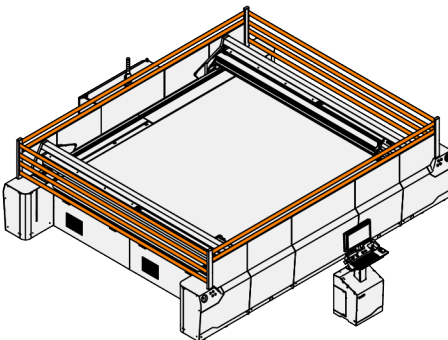


Fig. 21

The light curtain is located above the safety windows as well as in front of and behind the cutter.

- The curtain serves as protection against access to the hazard area. ➔ Chapter 2.11 “Hazard area” on page 34
- If an active light curtain is interrupted, the cutter switches to the “Emergency stop” operating state. ➔ Chapter 5.4.1 “Stop” on page 77
- The light barriers above the glass panes additionally monitor the clearance available for extending the safety windows.
- The light curtain must be inspected regularly. ➔ Chapter 8.4.3 “Checking the light curtain” on page 102

Finger guard

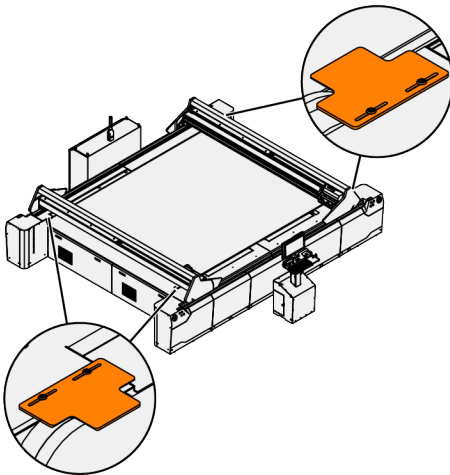


Fig. 22

A finger guard is provided in the form of a cover on the deflection rollers of the conveyor belt.

- The finger guards prevent fingers from getting pulled in between the conveyor and the deflection roller.
- If the cutter is equipped with cutter extensions, the finger guards are attached to the cutter extensions.
- The finger guards must be inspected regularly.
→ Chapter 8.4.4 “Checking the covers” on page 103

Sneak-by guard

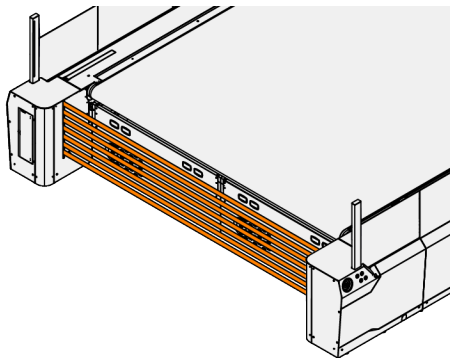


Fig. 23

The sneak-by guard is implemented using a light curtain. This light curtain is located in front of and behind the cutter. If the cutter has been expanded with a cutter extension, the sneak-by guard is not used.

- The sneak-by guard offers protection against access to the hazard area. → Chapter 2.11 “Hazard area” on page 34
- If an active light curtain is interrupted, the cutter switches to the “Emergency stop” operating state. → Chapter 5.4.1 “Stop” on page 77
- The light curtain must be inspected regularly. → Chapter 8.4.3 “Checking the light curtain” on page 102

Process light barrier

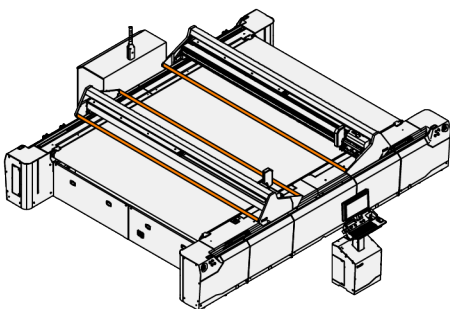


Fig. 24

The process light barriers are located on beam A and beam B in the front and rear.

- The process light barriers detect if the material protrudes above a permitted height.
- The process light barriers prevent the material from colliding with the beam.

4.2.6 Optional attachments

The modularly expandable cutter can be flexibly configured with optional attachments. Aside from the safety devices and monitoring equipment described in this manual, there are additional safety devices and monitoring equipment on the optional attachments.

These devices and equipment are described in the respective documentation for the optional attachments.
➔ [Chapter 1.3 “Product documentation” on page 13](#)

4.3 Modules and tools

A variety of modules and tools are available for the cutter. A module forms the interface between the module carriage on the beam and a tool. The modules and tools enable a variety of methods (machining processes).

You can find the tool inserts available for the respective tools in the Webshop. → [Chapter 1.4 “Contact data” on page 15](#)

Available modules



Name: AUTOMO E

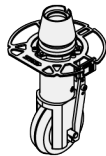
- CRETO 24, 61
- DRAWTO
- ELOSTO 5, 10, 25
- PERTO
- ROTATO
- UNITO C-15, C-6, E-15, E-6



Name: AUTOMO L

- CRETO 24, 61, 150
- DRAWTO
- ELOSTO 5, 10, 25
- PERTO
- ROTATO
- UNITO C-15, C-6, E-15, E-6

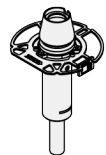
Available tools



Name: CRETO 24, 61, 150

Enables the following methods:

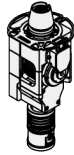
- Crease



Name: DRAWTO

Enables the following method:

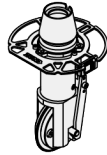
- Draw



Name: ELOSTO 5, 10, 25

Enables the following methods:

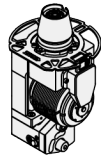
- Thru-cut
- Score



Name: PERTO

Enables the following method:

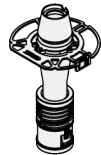
- Perforate



Name: ROTATO

Enables the following methods:

- Thru-cut
- Score



Name: UNITO C-15, C-6, E-15, E-6

Enables the following methods:

- Thru-cut
- Score

4.4 Movement system

X-axis

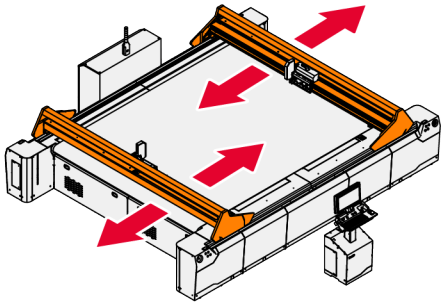


Fig. 25

The X-axis moves the beam forward and backward.

The conveyor belt can be fixed in place and moved with the beam by means of clamping systems on the beam.

→ Chapter 4.6 “Material handling” on page 59

Y-axis

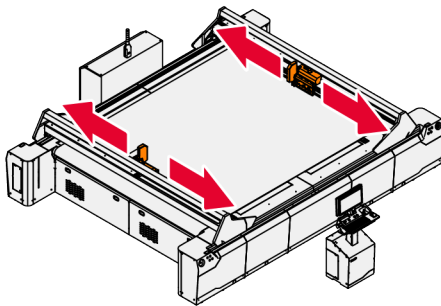


Fig. 26

The Y-axis moves the module carriage to the right and left on the beam.

Z-axis

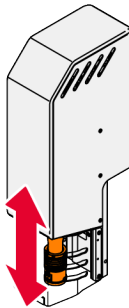
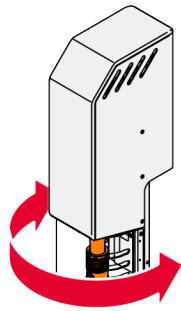


Fig. 27

The Z-axis is located in the module and raises and lowers the tool in the module.

C-axis



The C-axis is located in the module and rotates the tool clockwise and counterclockwise.

Fig. 28

4.5 Tool handling unit

The tool handling unit fulfills the task of preparing a tool for a module with the help of a tool magazine.

Module carriage

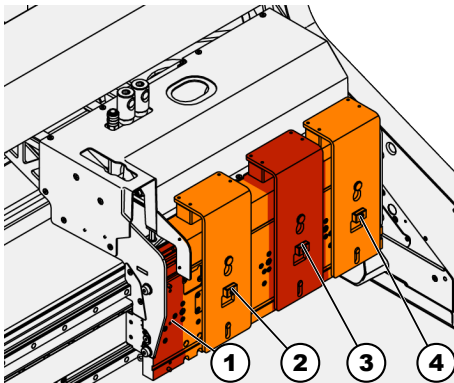


Fig. 29

- 1 Slot for sensor module
- 2 Slot 1 for AUTOMO E or AUTOMO L
- 3 Slot 2 for AUTOMO E
- 4 Slot 3 for AUTOMO E

The module carriage is located on the beam.

- A slot is the mechanical and control-related interface for a module.
- The module carriage is part of the movement system.
- The module carriage moves to the right and left on the Y-axis.
- The module carriage includes 4 slots.
- The definition of a narrow or wide module is determined. → [Chapter 4.3 “Modules and tools” on page 53](#)

Tool initialization system (ITI)

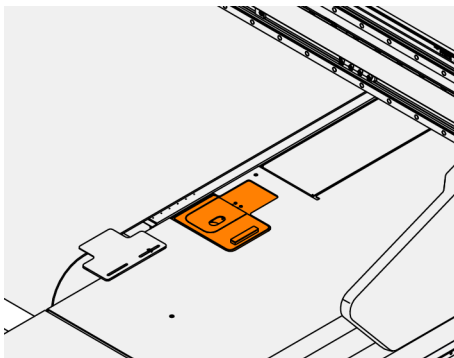


Fig. 30

The Integrated Tool Initialization, or ITI for short, is located in the right side support next to the tool magazine.

- A separate ITI exists for each beam.
- The ITI determines the tip of a tool insert with the help of a line camera.
- The initialization process for a tool insert can be carried out automatically or manually as desired by the operator.

Tool magazine

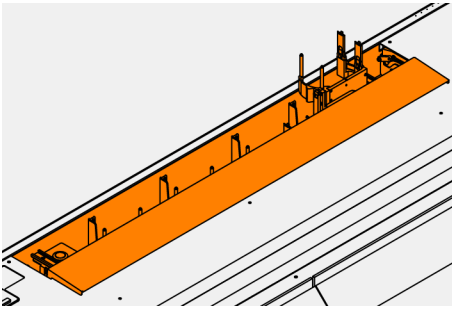


Fig. 31

The tool magazine is located in the right side support next to the ITI.

- A separate tool magazine exists for each beam.
- A tool magazine can contain seven or eight tool spaces, depending on the design.
 - The variant with seven tools includes space for five regular and two large tools.
 - The variant with eight tools includes space for eight regular tools.
- The tools are inserted into and removed from the tool magazine by the operator.
- During production, the cutter independently makes use of the tools in the tool magazine.

4.6 Material handling

Material handling fulfills the task of moving the material. Basic material handling is accomplished by the movement of the conveyor belt. In addition, there is an automation system for handling roll material and sheet material. The different automation systems can also be combined.

➔ Chapter 1.3 “Product documentation” on page 13

Conveyor belt

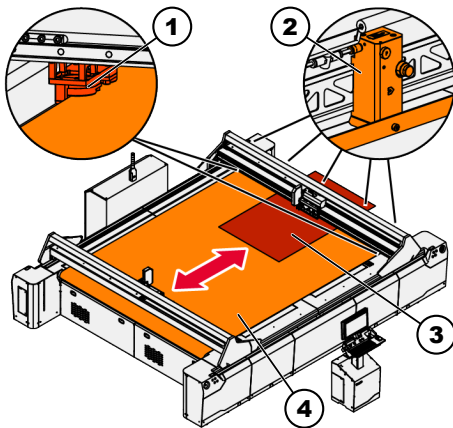


Fig. 32

- 1 Clamping element
- 2 Feed bar
- 3 Material
- 4 Conveyor belt

The conveyor belt is an endless loop that is guided over the vacuum plates.

- The conveyor belt serves as a belt for conveying material.
- The conveyor belt is permeable to air so that the material can be held in position by means of a vacuum during machining.
- Powered by means of beam movement:
 - The conveyor belt is secured in place on the beam by clamping elements (1).
 - The conveyor belt (4) is fed by the movement of the beam.
 - The feed bar (2) holds the material in position on the conveyor belt (4) during feeding.
- Powered by means of a drive motor:
 - Depending on the size of the conveyor belt, a drive motor is mounted.
 - The foremost deflection roller is rubberized.
 - A drive motor is connected to the foremost deflection roller.
 - Movement of the conveyor belt (4) is detected by a rotary encoder.

Cutter extension

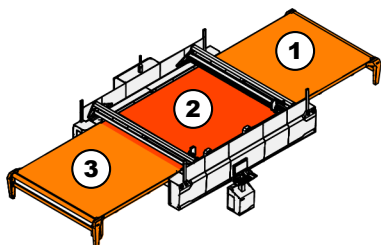


Fig. 33

- 1 Loading area
- 2 Working area
- 3 Removal area

The cutter extension is located in front of and/or behind the cutter.

- The rear cutter extension (1) serves as an extension of the cutter for positioning the new material.
- The size of the effective working area (2) in which production can be carried out with tools never changes.
- The front cutter extension (3) serves as an extension of the cutter for removing the material.
- The cutter extension enables parallel work steps such as loading, unloading and producing.
- There are cutter extension variants.

4.7 Material fixation

The purpose of material fixation is to hold the material in place during machining. Fixation of the material on the working area is accomplished by generating a vacuum between the material and cutting underlay.

Vacuum plates

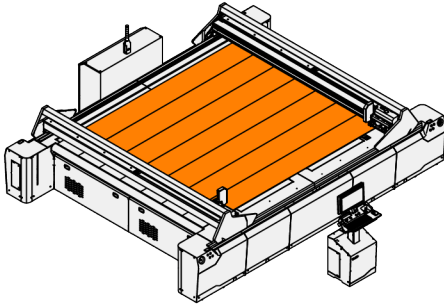


Fig. 34

The vacuum plates are mounted on the base of the cutter.

- The vacuum plates consist of a rugged aluminum structure, which is designed with a hole pattern on top.
- A vacuum plate consists of multiple vacuum zones, which can be controlled separately.
- Depending on the setting, the vacuum can be activated specifically in the area of the material to be machined.

Vacuum piping

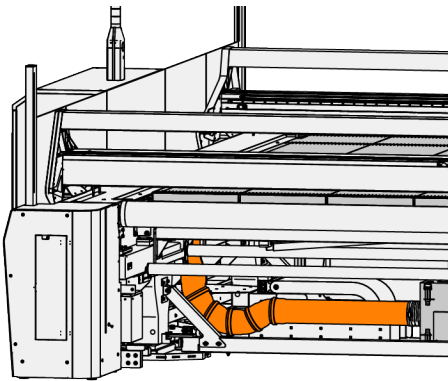


Fig. 35

The vacuum piping is located under the vacuum plates.

- The vacuum piping connects the vacuum plates to the vacuum generator.

Vacuum generator

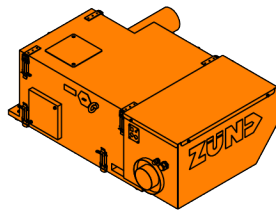


Fig. 36

The vacuum generator is located under the cutter, next to the cutter or in a separate space near the cutter.

- The vacuum generator generates a vacuum to hold the material in place on the working area.
- A vacuum generator is called a vacuum turbine if the output is infinitely variable.
- A vacuum generator is called a vacuum pump if the output is not infinitely variable.

Cooling air for the vacuum generator

The air intake for the cooling air of the vacuum generator is located on the front of the cutter.

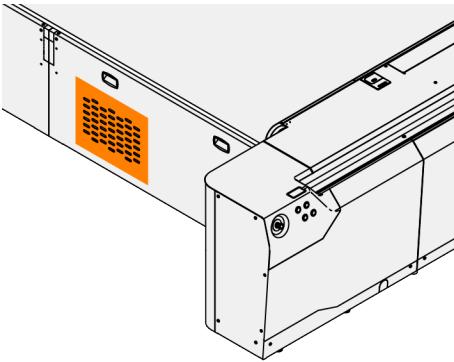


Fig. 37

4.8 Detection methods

The recording methods use optical sensors to clarify the position and orientation of the material on the working area. Aside from the material, printed codes can also be read in.

INCAM sensor module

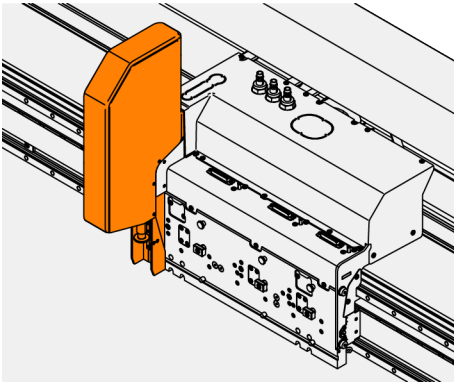


Fig. 38

The INCAM sensor module is located on the module carriage.

- The function of the sensor module can be variably expanded.
- The laser pointer is used to point to the working area.
- The sensor module can detect a register mark, code or sheet edge.

4.9 Extraction system

Vacuum extractor

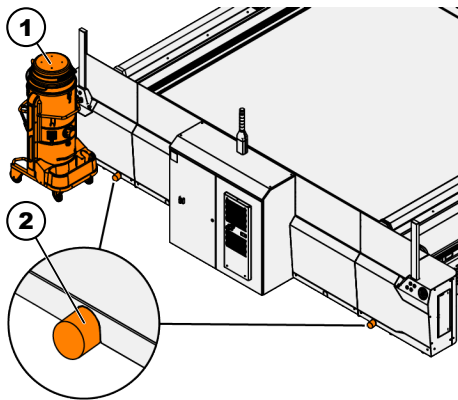


Fig. 39

- 1 Vacuum extractor
- 2 Interface

The vacuum extractor is located in the rear on the left next to the cutter or in a nearby space.

- The vacuum extractor will be available in late 2023.

Extraction piping

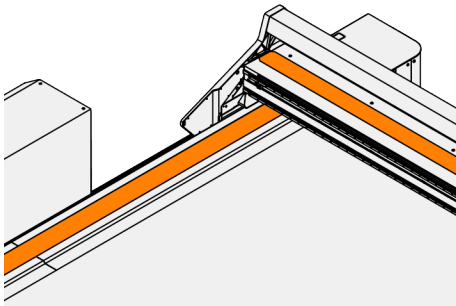


Fig. 40

The extraction piping runs to the left side support in the beam.

- The extraction piping is already integrated into the cutter and will be available in late 2023.

4.10 Machine control system

The machine control system handles a coordination task. The input from the operator and from sensors is processed or a process is carried out.

Control panel

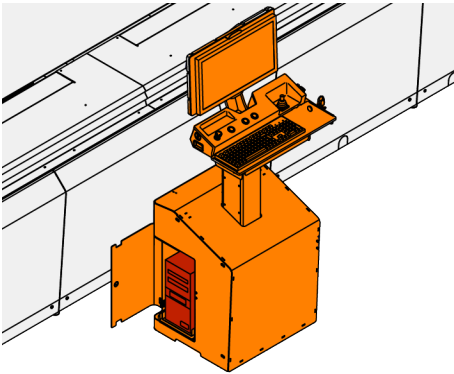


Fig. 41

The control panel is located next to the cutter. → [Chapter 5.1 “Control panel” on page 73](#)

- The control panel is the interface between human and machine.
- The control panel is where tasks for job preparation, job processing and control of the cutter are carried out.
- The control panel displays the states and faults of the cutter.
- The computer is located in the base of the control panel

Main switch

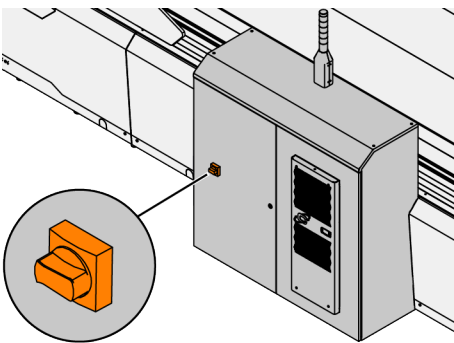


Fig. 42

The main switch is located on the control cabinet.

- The cutter is turned on at the main switch → [Chapter 3.4.1 “Powering up the cutter” on page 44](#)
- Parts of the machine can be live even if the main switch is turned off
- The control cabinet contains the cutter control system.

4.11 Software

4.11.1 Before production

Cut Editor

This software enables the cut data to be processed appropriately for the cutter. The processed cut data can be directly imported into Cut Center and immediately produced at the cutter.

PreCut Center

This software enables you to create fully nested job files easily and efficiently. Zünd PreCut Center simplifies data processing and output. In just a few steps, you create fully nested job files and can automate your data workflow according to your individual requirements. This software is for processing unprinted materials.

Design Center

This software is an Adobe Illustrator plug-in. The software is designed for creating single- and multi-piece packaging or three-dimensional POS displays.

PrimeCenter

This software serves as a control center for creating print data and cut data. PrimeCenter ensures a preliminary stage workflow that is productive and efficient. Create fully nested print-and-cut jobs in just a few clicks. This software is for processing printed materials.

4.11.2 For production

Cut Center

This software is required for operating the cutter. Cut Center exists in the “Basic” and “Advanced” variants. The main difference between the two variants is their job management. Additional information can be found in the software manual: [➔ Chapter 1.3 “Product documentation” on page 13](#)

4.11.3 After production

Zünd Connect

Zünd Connect is a SaaS product. The Zünd Connect monitoring tool helps the user recognize optimization potential in the digital cutting process. Zünd Connect collects the production data of the integrated cutters and prepares it in meaningful key performance indicators, such as capacity, availability and overall equipment effectiveness.

4.12 Technical data

4.12.1 Overview

For a detailed and current overview of additional technical data, visit our website. → <https://www.zund.com/de/cutting-systeme/digital-cutter>

4.12.2 Dimensions

For the dimensions of the cutter, please refer to the respective dimension drawing in the appendix.

4.12.3 Ambient conditions

Life phase	Specification	Value
Ambient conditions during operation	Operating temperature	+15 to +35 °C
	Relative humidity	10 to 80%, non-condensing
Ambient conditions during storage	Ambient temperature	-10 to +55 °C
	Max. duration of storage	4 weeks
	Relative humidity	10 to 80%, non-condensing

4.12.4 Requirements for the room

Room area and height

You can get the required room area and height from the dimension drawing in the appendix.

Floor characteristics

Specification	Value
Floor load capacity	500 kg/m ²
Point load of the machine feet	800 kg
Anchoring in the floor	Not required
Ground unevenness	max. 40 mm

Requirements for the building structure

Zünd recommends setting up the cutter on the ground floor. Due to the dynamics of the cutter, horizontal, pulsating forces of 3.6 kN can be transmitted to the building.

4.12.5 Weights

Cutter with control panel, control cabinet, conveyor belt

Cutter	Value
Q 18-32 D	XXX kg
Q 22-32 D	XXX kg
Q 32-32 D	4540 kg

4.12.6 Performance features

4.12.6.1 Working area

Width and length of the working area

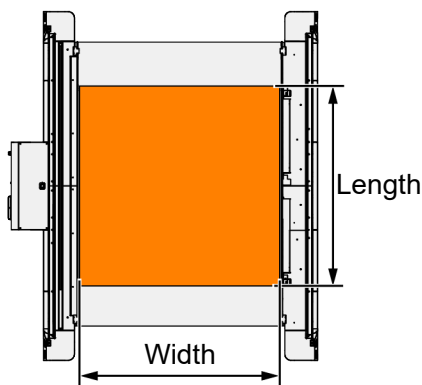


Fig. 43

Cutter	Width	Length
Q 18-32 D	1800 mm	3200 mm
Q 22-32 D	2270 mm	
Q 32-32 D	3210 mm	

Clearance for material

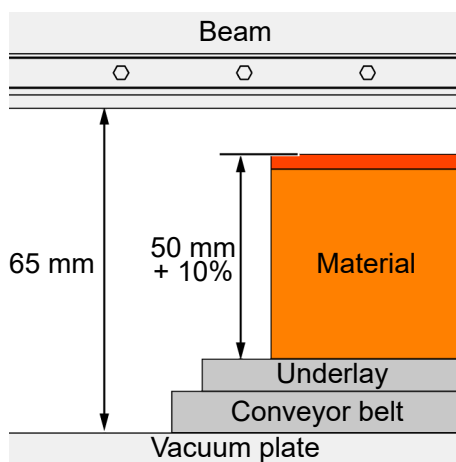


Fig. 44

Characteristic	Value
Beam clearance	65 mm
Max. material height	50 mm + 10% tolerance

4.12.6.2 Rating plate

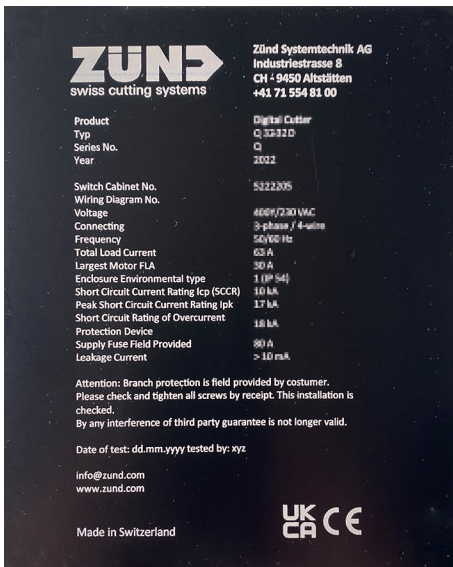


Fig. 45

The rating plate includes the following information:

Product	Type of product
Typ	Name of product
Series No.	Serial number of product
Year	Model year of product
Switch Cabinet No.	Serial number of control cabinet
Wiring Diagram No.	Identification number of wiring diagram
Voltage	Nominal Voltage
Connecting	Type of electrical connection
Frequency	Nominal Frequency
Total Load Current	Total load current
Largest Motor FLA	Largest motor FLA
Enclosure Environmental type	Enclosure environmental type
Short Circuit Current Rating Icp (SCCR)	Short-circuit current rating Icp (SCCR)
Peak Short Circuit Current Rating Ipk	Peak short-circuit current rating Ipk
Short Circuit Rating of Overcurrent Protection Device	Short-circuit rating of overcurrent protection device
Supply Fuse Field Provided	Supply fuse (field-provided)
Leakage Current	Leakage current
Attention notice	The supply line must be secured. All screws must be checked upon receipt and, if necessary, tightened. The system has been checked. The warranty shall be void in the event of modifications by a third party.
Date of test	Date of internal acceptance.
Conformity mark	The corresponding conformity mark is located at the bottom right of the rating plate.

4.12.7 Media interfaces

4.12.7.1 Locations of the media interfaces

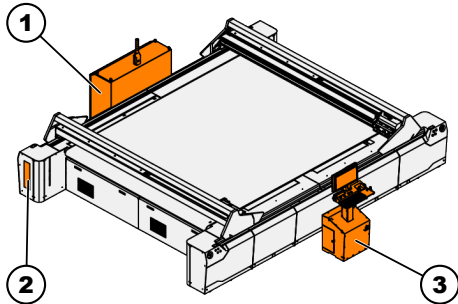


Fig. 46

The media interfaces are located at the following points:

- (1) → 4.12.7.2 “Electrical energy”
- (2) → 4.12.7.4 “Pneumatic energy”
- (3) → 4.12.7.3 “Network”

4.12.7.2 Electrical energy

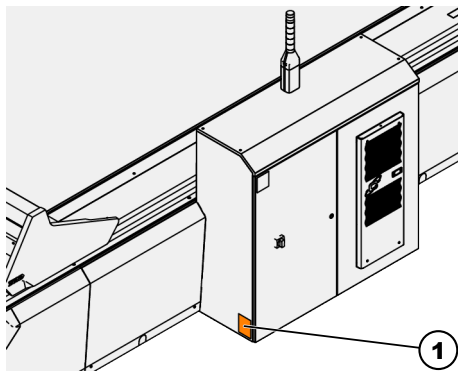


Fig. 47

1 Rating plate

Specification	Value
Nominal Voltage	400Y/230 ±10% VAC
Type of electrical connection	L1, L2, L3, N, PE (TN-C-S)
Cross section of supply line	5 x 25 mm ²
Nominal Frequency	50 / 60 Hz
Total load current	64 A
Largest motor FLA	30 A
Enclosure environmental type	1 (IP54)
Short-circuit current rating I _{cp} (SCCR)	10 kA
Peak short-circuit current rating I _{pk}	17 kA
Short-circuit rating of overcurrent protection device	18 kA
Supply fuse (field-provided)	80 A
Leakage current	> 15 mA

4.12.7.3 Network

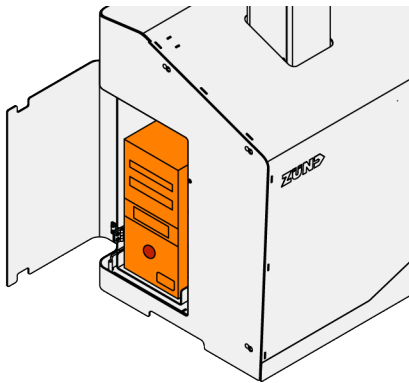


Fig. 48

The media interface for the network is located on the computer in the control panel. The RJ45 network cable can be connected to a network card.

4.12.7.4 Pneumatic energy

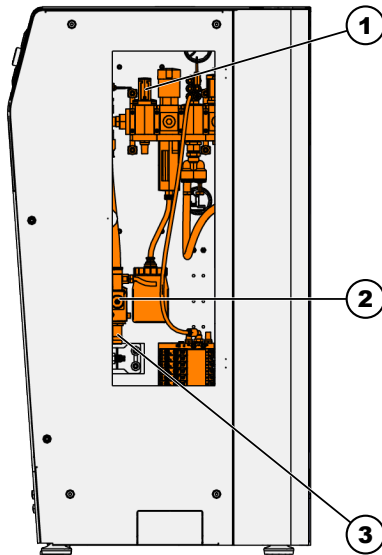


Fig. 49

- 1 Manual shutoff valve
- 2 Electrical on/off valve
- 3 Supply line

Specification	Value
Compressed air class according to ISO 8573-1:2010	2.4.2
Inner diameter of connecting hose	12 – 13 mm
Pressure in the supply line	0.6 – 1.0 MPa
Recommendation for the compressor	<ul style="list-style-type: none"> ■ Flow rate of at least 400 l/min ■ Pressure tank of at least 100 liters at 0.8 MPa

Depending on the configuration (modules, tools, etc.), higher consumption is to be expected.

4.12.8 Emissions

Airborne noise emissions

Specification	Value
A-weighted emission sound pressure level L_{PA} at the area of activity	< 75 dB(A) ¹
Measuring procedure	<ul style="list-style-type: none"> ■ Measured at a distance of 1 meter from the surface ■ At a height of 1.6 meters ■ In accordance with Machinery Directive 2006/42/EC, Section 1.7.4.2

¹ Depending on the cutting technology being used, the material being machined, the vacuum generator and the ambient conditions, the value can range from < 75 dB (A) to about 85 dB (A).

Electromagnetic compatibility

Specification	Value
Immunity standard for industrial environments (EMC)	EN 61000-6-2 EMC
Emission standard for industrial environments (EMC)	EN 61000-6-4 EMC

5 Operating and display elements

5.1 Control panel

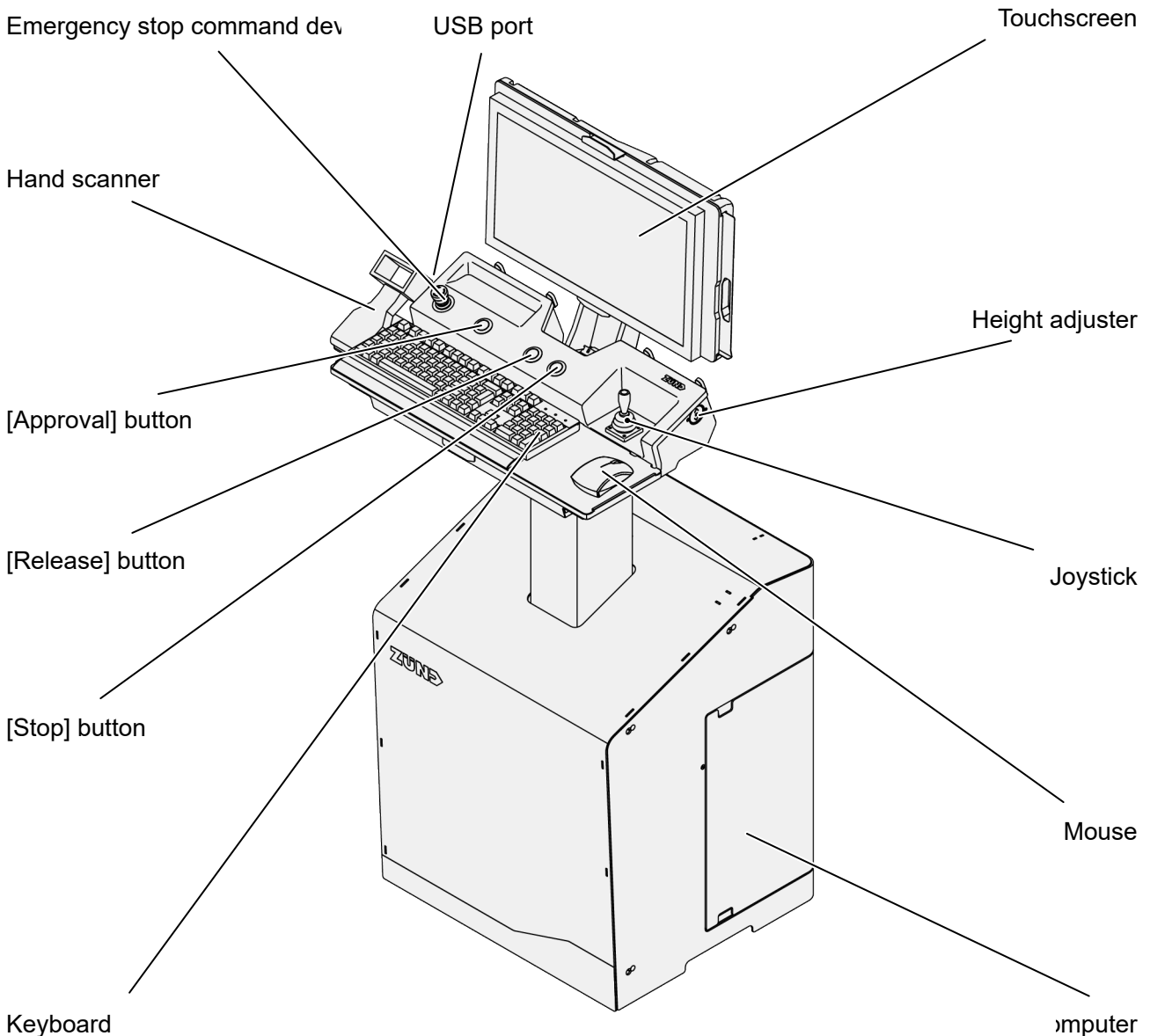


Fig. 50

Joystick

The joystick consists of a control lever that can be moved in four directions. It can be used, for example, to move the module carriage over the working area manually. The [Confirmation] button is on the joystick.

Hand scanner

The hand scanner can be used to scan a barcode or QR code.

Mouse

The mouse is an input device for operating software.

[Stop] button	This button lights up red when it can be selected. It can be used to switch the operating state.
[Release] button	This button lights up green when it can be selected. It can be used to switch the operating state.
[Approval] button	This button lights up white when it can be selected. The operator uses this button to consciously approve manual movement of the module carriage in the “Setup” operating state.
Keyboard	The keyboard is an input device for operating software.
Emergency stop command device	This button can be used to shut down the cutter in an emergency.
Height adjuster	The height adjuster consists of two vertically arranged buttons with which the height of the control panel can be adjusted.
USB port	The USB port is connected to the computer and is used for data exchange with a USB stick.
Touchscreen	The touchscreen is an input and output device in one. The software can also be operated by touching the screen with fingers.

5.2 Corner elements

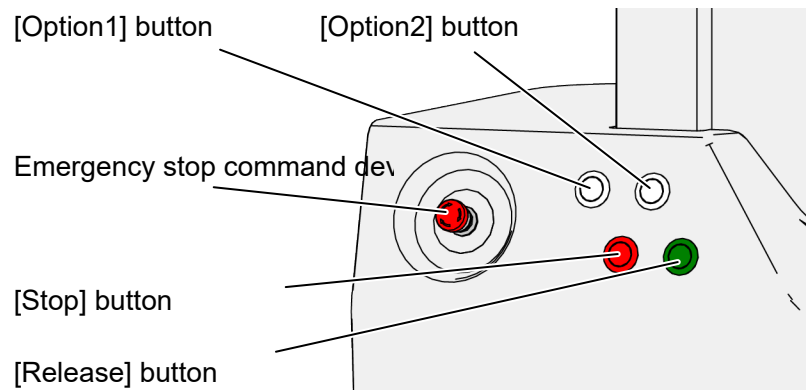


Fig. 51

The corner elements are located at the four corners of the cutter.

- Each corner element of the cutter contains the same operating elements as seen in the figure.
- The functions of the operating elements are the same as for the control panel. → [Chapter 5.1 “Control panel” on page 73](#)
- The [Option 1] and [Option 2] buttons can have functions assigned to them by the service technician. An example of a possible function is “Vacuum on” or “Vacuum off”.
- Each individual button lights up if the respective button can be selected.

5.3 Signal light

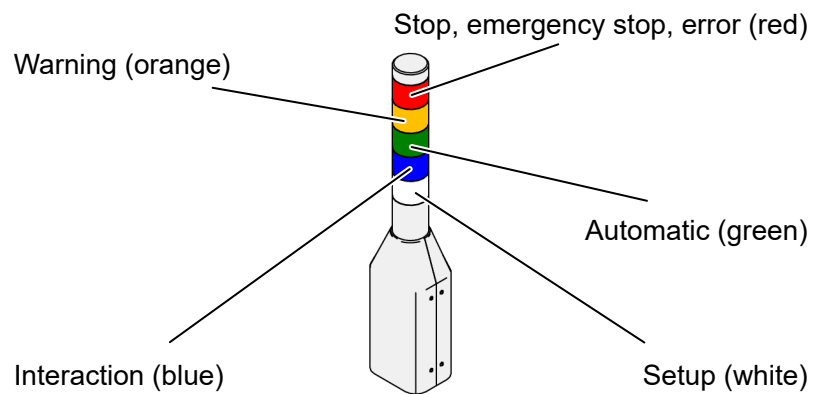


Fig. 52

The signal light is located on the control cabinet. The signal light, which is divided into sections of different colors, indicates operating states and faults of the cutter.

➔ [Chapter 5.4 "Operating states" on page 77](#)

5.4 Operating states

5.4.1 Stop

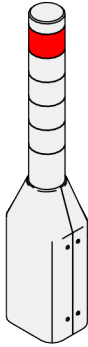


Fig. 53

Color of the signal light

- The red color ring is lit.

Status of the machine

- Information about the operating state is displayed on the screen.
- The safety windows are up or down.
- The light curtains are deactivated.
- The sneak-by guard is deactivated.

Benefits for the operator

- The module carriage can be moved at a reduced speed in two-hand mode. → [Chapter 6.2.3 “Moving the module carriage” on page 83](#)
- Pressing the [Release] button once makes it possible to switch to the “Automatic” operating state. → [Chapter 6.2.2 “Changing the operating state” on page 83](#)
- Pressing the [Stop] button once makes it possible to switch to the “Setup” operating state. → [Chapter 6.2.2 “Changing the operating state” on page 83](#)

5.4.2 Emergency stop

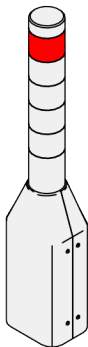


Fig. 54

Color of the signal light

- The red color ring is lit.

Status of the machine

- Information about the operating state is displayed on the screen.
- The safety windows are up or down.
- Production with the cutter is stopped.
- The light curtains are deactivated.
- The sneak-by guard is deactivated.

Benefits for the operator

- The cutter has been put into a safer operating state in an emergency situation. → [Chapter 2.14 “Shutdown in an emergency” on page 38](#)
- Pressing the [Stop] button once makes it possible to switch to the “Stop” operating state. → [Chapter 6.2.2 “Changing the operating state” on page 83](#)

5.4.3 Error

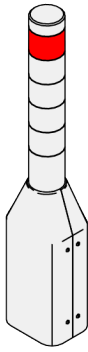


Fig. 55

Color of the signal light

- The red color ring is lit.

Status of the machine

- Information about the operating state is displayed on the screen.
- The machine's sensors have detected a deviation.
- An active production job is stopped.

Benefits for the operator

- Pressing the [Stop] button once makes it possible to switch to the "Stop" operating state. → [Chapter 6.2.2 "Changing the operating state" on page 83](#)

5.4.4 Warning

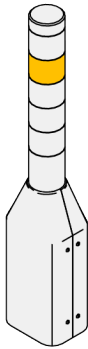


Fig. 56

Color of the signal light

- The orange color ring is lit.

Status of the machine

- Information about the operating state is displayed on the screen.
- The cutter has detected an irregularity.
- An active production job is not interrupted.

Benefits for the operator

- This operating state is informative for the operator and can be combined with other operating states.

5.4.5 Automatic

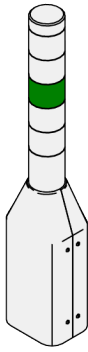


Fig. 57

Color of the signal light

- The green color ring is lit.

Status of the machine

- Information about the operating state is displayed on the screen.
- The safety windows are up.
- The light curtains are activated.
- The sneak-by guard is activated.

Benefits for the operator

- The module carriage can be moved at full speed. [↪ Chapter 6.2.3 “Moving the module carriage” on page 83](#)
- Pressing the [Stop] button once makes it possible to switch to the “Stop” operating state. [↪ Chapter 6.2.2 “Changing the operating state” on page 83](#)
- Pressing the [Stop] button twice makes it possible to switch to the “Setup” operating state. [↪ Chapter 6.2.2 “Changing the operating state” on page 83](#)

5.4.6 Interaction



Fig. 58

Color of the signal light

- The blue color ring is lit.

Status of the machine

- Information about the operating state is displayed on the screen.
- The cutter is prepared for interaction with the operator.

Benefits for the operator

- The operator can see that interaction with the cutter is required.

5.4.7 Setting up

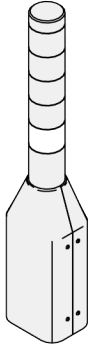


Fig. 59

Color of the signal light

- The white color ring is lit.

Status of the machine

- Information about the operating state is displayed on the screen.
- The safety windows are down.
- The light curtains are deactivated.
- The sneak-by guard is deactivated.

Benefits for the operator

- The module carriage can be moved at a reduced speed in two-hand mode. → [Chapter 6.2.3 “Moving the module carriage” on page 83](#)
- Pressing the [Release] button once makes it possible to switch to the “Automatic” operating state. → [Chapter 6.2.2 “Changing the operating state” on page 83](#)

6 Setup and production

6.1 Training operating personnel

Initial training occurs right after the cutter is installed. The service technician accompanies the operating personnel during the first hours of work. The content of this training is based on the “Basic Operation Training”. Initial training of the operating personnel is mandatory. In addition to the initial training, Zünd also offers customized training packages:

Basic Operation Training

This training is mandatory for operating personnel and a certificate is earned upon completion.

At a minimum, the following content is taught:

- Gaining an overview
- Working safely at the cutter
- Preparing and producing
- The digital cutting process
From customer request to finished product.
- Optimizing production
- Performing maintenance properly

Advanced Operation Training

This training is optional for trained operating personnel and a certificate is earned upon completion. Completion of “Basic Operation Training” is a prerequisite.

At a minimum, the following content is taught:

- Using registration methods
- Tips and tricks with Cut Editor
- Optimizing workflows (Workflow)
- Working with Hotfolders
- Creating your own materials
- Individual everyday questions



Contact Zünd for more information on the individual training packages. ➔ <https://www.zund.com/de/ueber-zuend/dienstleistungen>

6.2 Basic tasks

6.2.1 Setting up the control panel

Target:

Here you will learn how to set up the control panel to meet individual ergonomic needs.

Personnel:

- Operator

1. Press the [▲] or [▼] button.

➔ The height of the control panel is set.

Adjusting the height

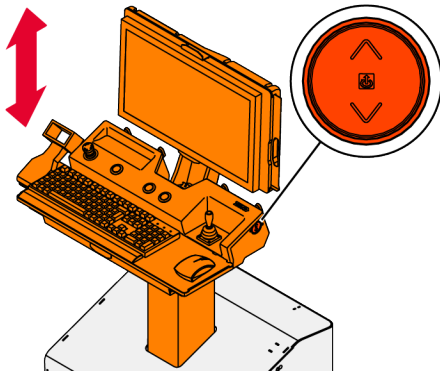


Fig. 60

Swiveling the control panel

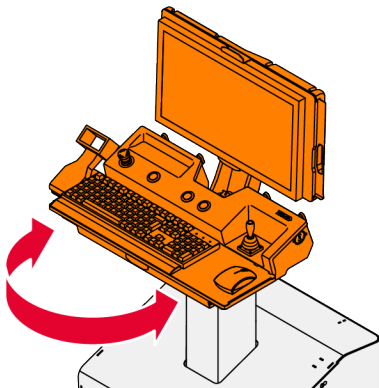


Fig. 61

Tilting the screen

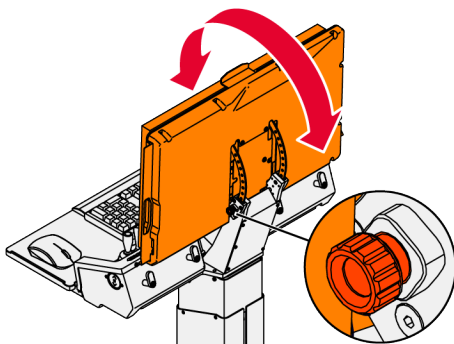


Fig. 62

2. Hold the top part of the control panel with both hands.

3. Swivel the top part of the control panel to the left or right.

➔ The control panel is set up.

4. Slightly loosen the knob by hand.

5. Hold the screen with both hands.

6. Swivel the screen forward or backward.

7. Tighten the knob by hand.

➔ The screen is secured in place.

6.2.2 Changing the operating state

Target:

Here you will learn how to change an operating state. An operating state is a defined status of the cutter. Each active operating state is represented on the signal light as a color ring.

Personnel:

- Operator

⚠ DANGER Serious physical injury or death due to acceleration forces:

Persons or objects that are within the hazard area of the cutter during and after the change of an operating state are exposed to the acceleration forces of the movement system. → [Chapter 2.11 “Hazard area” on page 34](#)

- Make sure that no persons or objects are within the hazard area of the cutter.
- Remove persons or objects from the hazard area.
- If people or any unwanted objects are in the hazard area, actuate the EMERGENCY STOP command device. → [Chapter 2.14 “Shutdown in an emergency” on page 38](#)

1. → Gain an overview of the individual operating states.
2. → To change the operating state, press the [Stop] or [Release] button.
 - ➔ The operating state is changed.

6.2.3 Moving the module carriage

Target:

Here you will learn how to move the module carriage in the “Automatic” and “Setup” operating states.

Personnel:

- Operator

Moving in the “Automatic” operating state

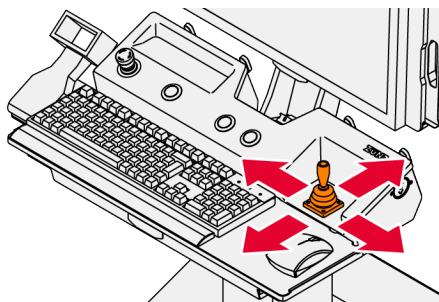



Fig. 63

1. → Set the cutter to the “Automatic” operating state. → [Chapter 6.2.2 “Changing the operating state” on page 83](#)
2. → In Cut Center, open the [Cutter Control Panel] .
3. → Select the beam of the module carriage that you want to move.
4. → Move the module carriage using the joystick.
 - ➔ The module carriage moves at full speed in the specified direction.

Moving in the “Setup” operating state

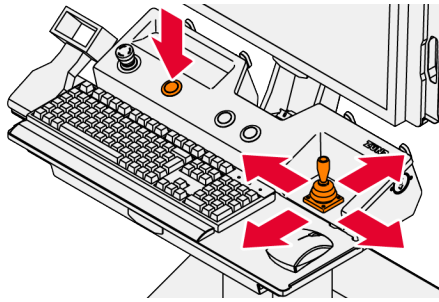



Fig. 64

5. → Set the cutter to the “Setup” operating state.
→ Chapter 6.2.2 “Changing the operating state” on page 83
6. → In Cut Center, open the [Cutter Control Panel] .
7. → Select the beam of the module carriage that you want to move.
8. → Move the module carriage by using the joystick and simultaneously pressing the [Approval] button.
➔ The module carriage moves at a reduced speed in the specified direction.

6.3 Set up

6.3.1 Setting up modules and tools

The operating manual for the modules and tools includes information on setup and operation. → [Chapter 1.3 “Product documentation” on page 13](#)

6.3.2 Setting up the material handling unit

The operating manual for the ZCC operating software or the corresponding material handling unit includes information on setup and operation. → [Chapter 1.3 “Product documentation” on page 13](#)

6.4 Producing

The cutter is operated by means of the Cut Center operating software.

The Cut Center software manual includes information on how to produce with the cutter. → [Chapter 1.3 “Product documentation”](#) on page 13

7 Troubleshooting

7.1 Modules and tools

For detailed information on troubleshooting, see the respective manual for the modules and tools. → [Chapter 1.3 “Product documentation” on page 13](#)

7.2 Movement system

Fault description	Cause	Remedy
Error description	Cause of error 1	Solution description 1
	Cause of error 2	Solution description 2

7.3 Material handling

Fault description	Cause	Remedy
Error description	Cause of error 1	Solution description 1
	Cause of error 2	Solution description 2

7.4 Material fixation

Fault description	Cause	Remedy
Error description	Cause of error 1	Solution description 1
	Cause of error 2	Solution description 2

7.5 Detection methods

Fault description	Cause	Remedy
Error description	Cause of error 1	Solution description 1
	Cause of error 2	Solution description 2

7.6 Extraction system

Fault description	Cause	Remedy
Error description	Cause of error 1	Solution description 1
	Cause of error 2	Solution description 2

7.7 Machine control system

Fault description	Cause	Remedy
Error description	Cause of error 1	Solution description 1
	Cause of error 2	Solution description 2

7.8 Software

You will find troubleshooting information in the software. Assistance for faults and error messages is displayed directly in the software.

8 Inspection and maintenance

8.1 Introduction

8.1.1 Safety notes

⚠ WARNING

Hazard due to insufficient qualification of personnel:
Insufficiently qualified personnel cannot properly assess hazardous situations.

- Only regularly trained personnel may use or work on the machine.
- Unqualified personnel must not use or work on the machine and its optional attachments.
- Training measures for the personnel must be documented.

NOTICE

Material damage due to lack of or inadequate maintenance and repair work:
A lack of or inadequate maintenance of the cutter results in premature wear or malfunctions.

- Adhere to the specified maintenance intervals.
- Contact your local service partner immediately if you observe the cutter malfunctioning.
- Never use a cutter that is defective or damaged for production.

8.1.2 Maintenance concept

Maintenance tasks

The operating manual includes descriptions of the maintenance tasks for operating personnel. Operating personnel may only carry out the tasks on the cutter described in the operating manual.

Other tasks, such as repairs, complex maintenance, replacement of defective components must be carried out by a trained service technician. Contact your local service partner if you need support. → [Chapter 1.4 “Contact data” on page 15](#)

Wear parts

The tool inserts are wear parts and must be replaced with new tool inserts from time to time. Wear parts such as tool inserts can be purchased in the → <https://my.zund.com> customer portal.

Spare parts

The cutter has a modular design. If a component is defective, it is usually replaced only by a new component. Proper replacement is performed by a service technician. Contact your local service partner if you need support. → [Chapter 1.4 “Contact data” on page 15](#)

8.2 Maintenance plan

Chap.	Task to perform	Daily	weekly	Monthly	Every 3 months	As needed	Page
8	Inspection and maintenance						95
8.3	Ensure safe work						99
8.3.1	Providing personal protective equipment			X			99
8.3.2	Updating product documentation				X		99
8.4	Safety devices and monitoring equipment						101
8.4.1	Checking the finger guard	X					101
8.4.2	Checking glass panes	X					101
8.4.3	Checking the light curtain	X					102
8.4.4	Checking the covers	X					103
8.4.5	Checking EMERGENCY STOP command devices	X					103
8.4.6	Cleaning the light curtain		X				104
8.5	Operating and display elements						105
8.5.1	Checking the signal light		X				105
8.6	Modules and tools						106
8.6.1	Inspecting and maintaining a module					X	106
8.6.2	Inspecting and maintaining a tool					X	106
8.7	Media interfaces						107
8.7.1	Checking the pressure					X	107
8.8	Machine control system						108
8.8.1	Checking the condensate tank		X				108
8.9	Detection methods						110
8.9.1	Cleaning the INCAM		X				110

Chap.	Task to perform	Daily	weekly	Monthly	Every 3 months	As needed	Page
8.10	Material fixation						111
8.10.1	Inspecting and maintaining a vacuum generator					X	111
8.11	Material handling						112
8.11.1	Cleaning the conveyor belt		X				112
8.12	Tool handling unit						113
8.12.1	Cleaning the ITI		X				113
8.12.2	Cleaning the tool magazine		X				114
8.13	Movement system						115
8.13.1	Cleaning the beam daily	X					115
8.13.2	Cleaning the beam weekly		X				116

8.3 Ensure safe work

8.3.1 Providing personal protective equipment

Target:

The following describes how the personal protective equipment is provided by the operating company and how personnel is trained in its protective effect. → [Chapter 2.5 “Personal protective equipment \(PPE\)” on page 23](#)

Personnel:

- Operator

Protective equipment:

- Protective goggles against mechanical hazards
- Hearing protection
- Protective gloves against chemical hazards
- Protective gloves against mechanical hazards
- Protective gloves against thermal hazards
- Safety shoes against mechanical hazards with ESD protection

1. → Make sure that the required protective equipment is provided.
2. → Make sure that the provided protective equipment is undamaged.
3. → Make sure that the personnel is trained in the protective effect of the protective equipment.

8.3.2 Updating product documentation

Target:

Here you will learn how to update product documentation. If the product documentation is saved locally, it must be regularly checked to verify that it is up-to-date. The responsible personnel must inform the remaining personnel about the updating.

Personnel:

- Operator
- Operator
- Support workers

Manuals for hardware products

1. → Find out from your local service partner whether the operating manual for the cutter is up to date.
2. → Check the versions of the supporting documents in the “Product documentation” chapter.
3. → Compare the versions of the supporting documents with the locally saved copies.
4. → Replace the outdated versions with the new versions.

5. Check the versions of the supplier documents in the appendix of the operating manual.

6. Compare the versions with the locally saved copies.

7. Use the QR code or web link to download the new versions.

8. If desired, print out the manuals at a local printer.

➔ The manuals for the hardware products are up to date.

Manuals for software products

9. Find out whether your software products are up to date at <https://my.zund.com>.

10. Update any outdated software products.

➔ When a software product is updated, the online help is updated automatically.

Informing personnel

11. Inform personnel that the update has taken place.

8.4 Safety devices and monitoring equipment

8.4.1 Checking the finger guard

Target:

Here you will learn how to check each finger guard on the cutter. A finger guard is located on the right and left ends of the conveyor belt of the cutter or cutter extension.

Personnel:

- Operator

1. → Check whether the finger guard is installed properly with the two screws.
2. → Tighten the screws if necessary.
3. → Check the remaining finger guards on each side.
4. → Immediately contact a service technician if a finger guard is missing or bent.

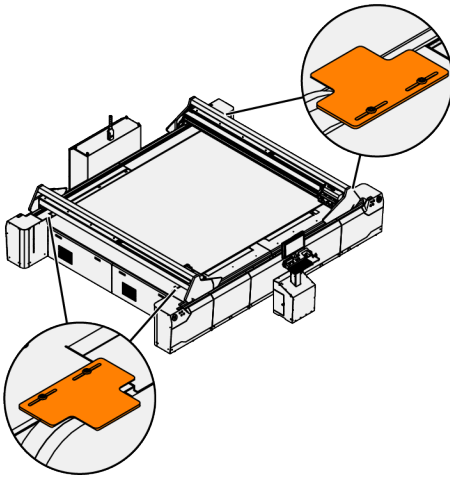


Fig. 65

8.4.2 Checking glass panes

Target:

Here you will learn how to check the glass panes for damage and completeness. If glass panes are missing or damaged, the cutter must not be put into operation since safe working on the cutter is not guaranteed.

Personnel:

- Operator

1. → Set the cutter to the “Automatic” operating state.
 - ➔ The glass panes are raised.
2. → Check all glass panes for completeness.
3. → Check all glass panes for visible damage such as cracks or chipping.
4. → Proceed as follows if the glass panes show visible damage such as cracks or chipping:
 - Decommission the cutter.
 - Immediately inform the responsible service technician and operator of the cutter.

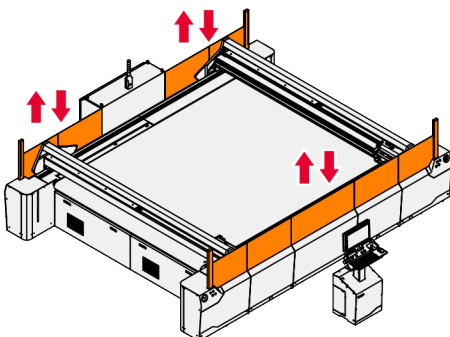


Fig. 66

8.4.3 Checking the light curtain

Target:

Here you will learn how to check the light curtains for damage and function. → “Light curtain” on page 50

Personnel:

- Operator
- Service technician

Tool:

- Test rod, Ø 14 mm

1. Check all transmitters and receivers for visible damage such as scratches or dirt.

- Light curtain
- Sneak-by guard

2. Set the cutter to the “Automatic” operating state. → Chapter 6.2.2 “Changing the operating state” on page 83

➔ The light curtains are active.

3. Check whether the “RES” indicator on the receiver is flashing.

4. Guide the test rod through the light barriers as shown.

5. Check the display on the light curtain during the procedure.

“OSSD” Must always be lit during the procedure.

“RES” Must not light up during the procedure.

6. Repeat the function test on all four light curtains.

7. Repeat the function test at the sneak-by guard in the front and rear.

➔ Contact a service technician if the light curtain or sneak-by guard does not work properly.

Checking for proper function

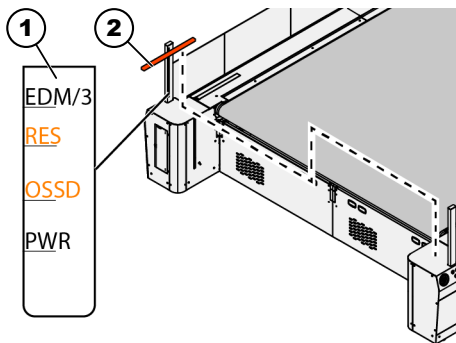


Fig. 67

- 1 Display on the light curtain
- 2 ø 14 mm test rod

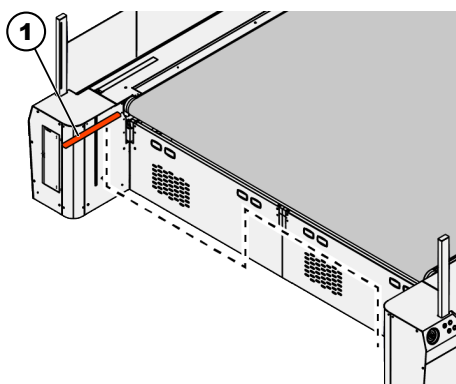


Fig. 68

- 1 ø 14 mm test rod

8.4.4 Checking the covers

Target:

Here you will learn how to check the covers for damage and completeness. If the covers are missing or damaged, the cutter must not be put into operation, as the safety of the cutter is not guaranteed.

Personnel:

- Operator

1. → Check all covers for completeness.
2. → Insert any missing covers.
3. → Check all covers for visible damage.

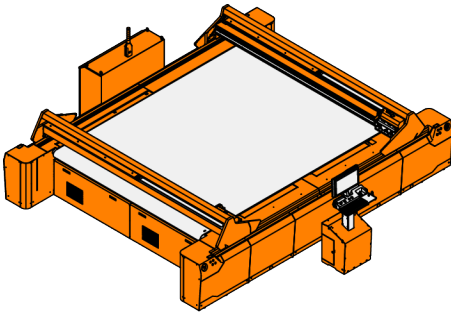


Fig. 69

8.4.5 Checking EMERGENCY STOP command devices

Target:

Here you will learn how to check the [EMERGENCY STOP command devices] .

Personnel:

- Operator

Requirement:

- Cutter is switched on

1. → Make sure that all [EMERGENCY STOP command devices] are easily accessible.

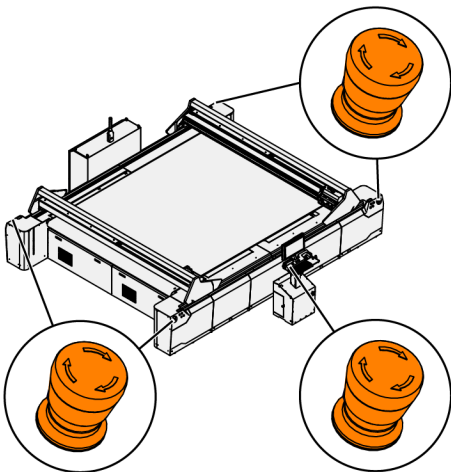


Fig. 70



Fig. 71



Fig. 72

2. Operate an [EMERGENCY STOP command device].
 - ➔ An error message appears on the control panel.
 - ➔ The cutter switches to the “Error / Stop” operating state.
3. Turn the button of the triggered [EMERGENCY STOP command device] clockwise.
 - ➔ The [EMERGENCY STOP command device] is reset.
4. Confirm the error message on the control panel.
5. Repeat the test on each [EMERGENCY STOP command device].

8.4.6 Cleaning the light curtain

Target:

Here you will learn how to clean the transmitters and receivers of the light curtain. The sneak-by guard is inactive if your cutter has a cutter extension.

Personnel:

- Operator

Material:

- Lint-free cleaning cloth

NOTICE Damage due to cleaning agents:

In case of non-compliance, you must expect damage to the component.

- Do not use any cleaning agents (spray cleaners, grease solvents, etc.).
1. Set the cutter to the “Automatic” operating state.
 - ➔ [Chapter 6.2.2 “Changing the operating state” on page 83](#)
 - ➔ The light curtains are active.
 - ➔ The light curtains are in a raised position.
 2. Set the cutter to the “Stop” operating state.
 - ➔ [Chapter 6.2.2 “Changing the operating state” on page 83](#)
 - ➔ The light curtains are inactive.
 3. Clean the transmitters and receivers of the light curtains at the corners of the cutter with a damp cloth.
 4. Clean the transmitters and receivers of the sneak-by guard at the front and back of the cutter with a damp cloth.

8.5 Operating and display elements

8.5.1 Checking the signal light

Target:

Here you will learn how to check the signal light. While the cutter is starting, all of the color rings light up together for a short time.

Personnel:



- Operator

Material:

- Lint-free cleaning cloth

Requirement:


- The cutter is shut down

1.  Power up the cutter. → [Chapter 3.4.1 “Powering up the cutter” on page 44](#)
2.  While the cutter is starting, check whether all of the color rings light up.
 - ➔ Contact a service technician if the signal light does not work properly.

NOTICE

Damage to the signal light due to strong pressure:

In case of non-compliance, you must expect damage to the sensors.

- **Do not exert any strong pressure on the sensor openings of the signal light.**
3.  If necessary, clean the signal light with a slightly damp, lint-free cleaning cloth.

8.6 Modules and tools

8.6.1 Inspecting and maintaining a module

Target:

Here you will learn how to inspect and maintain a module. Perform the required tasks in the operating manual of the respective module. → [Chapter 1.3 “Product documentation” on page 13](#)

Personnel:

- Operator

1. → Procure the operating manual of the respective product.

2. → Plan the required activities.

- ➔ The product is maintained according to the maintenance plan.

8.6.2 Inspecting and maintaining a tool

Target:

Here you will learn how to inspect and maintain a tool. Perform the required tasks in the operating manual of the respective tool. → [Chapter 1.3 “Product documentation” on page 13](#)

Personnel:

- Operator

1. → Procure the operating manual of the respective product.

2. → Plan the required activities.

- ➔ The product is maintained according to the maintenance plan.

8.7 Media interfaces

8.7.1 Checking the pressure

Target:

Here you will learn how to check and set the pressure gauge on the maintenance unit. If the pressure no longer corresponds to the target value, the pressure must be set.

Personnel:

- Operator

1. → Open the flap on the front left side support
2. → If necessary, set the pressure on the respective pressure gauge.

Pressure gauge P2 6 bar
(2)

Pressure gauge P3 4.5 bar
(1)

➔ The pressure has been set.

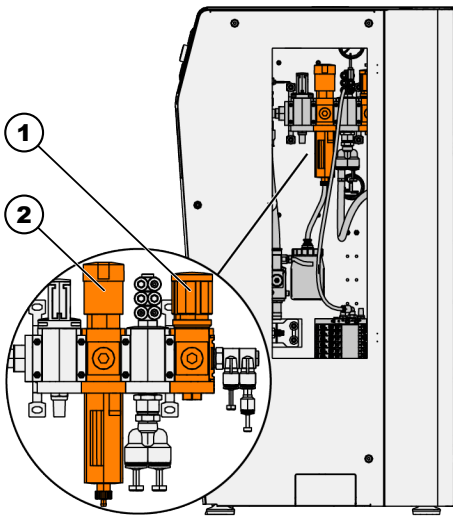


Fig. 73

8.8 Machine control system

8.8.1 Checking the condensate tank

Target:

Here you will learn how to check the condensate tank at the control cabinet and, if necessary, empty it. The condensate tank is attached to the inner wall of the cover by a Velcro fastener. How often the condensate tank has to be emptied depends on the ambient conditions.

Personnel:

- Operator

1. ➤ Lift the cover under the cooling unit.

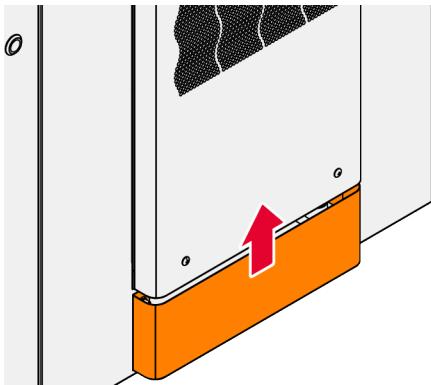


Fig. 74

2. ➤ Pull the cover with the condensate tank forward.

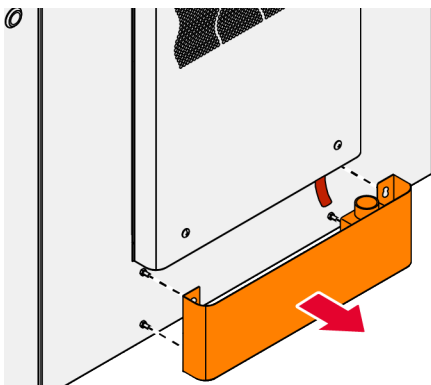


Fig. 75

3. ➤ Remove the condensate tank from the cover.

4. ➤ If necessary, empty the condensate tank.

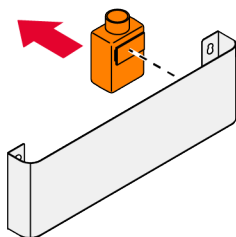


Fig. 76

Positioning the condensate tank

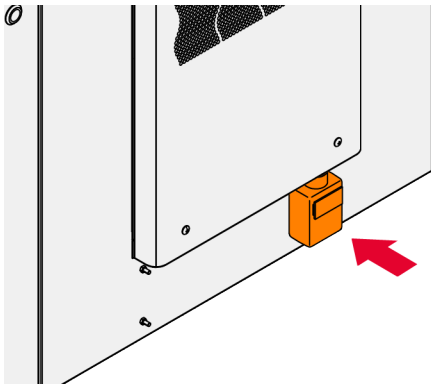


Fig. 77

5. → Position the condensate tank under the cooling unit as shown.
→ The hose leads into the condensate tank.

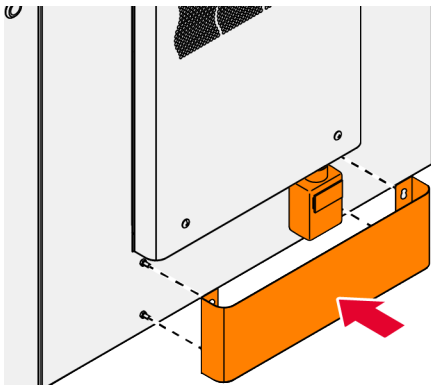


Fig. 78

6. → Hold the cover on the control cabinet and fasten the condensate tank to the inner wall of the cover.

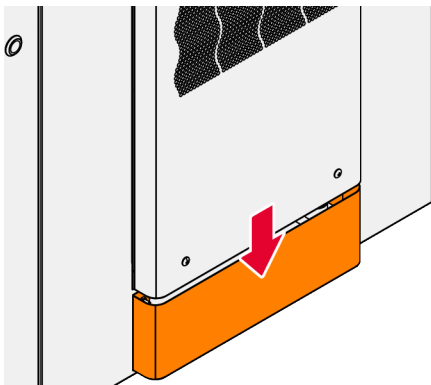


Fig. 79

7. → Lower the cover.
→ The cover is secured on the control cabinet.

8.9 Detection methods

8.9.1 Cleaning the INCAM

Target:

Here you will learn how to clean the INCAM.

Personnel:

- Operator

Material:

- Lint-free cleaning cloth

NOTICE Damage due to cleaning agents:

In case of non-compliance, you must expect damage to the component.

- Do not use any cleaning agents (spray cleaners, grease solvents, etc.).

1. → Set the cutter to the “Stop” operating state.
→ Chapter 6.2.2 “Changing the operating state” on page 83

→ The safety windows move down.

2. → Clean the viewing window on the INCAM with a lint-free cloth.

3. → Repeat the cleaning process on the other INCAM.

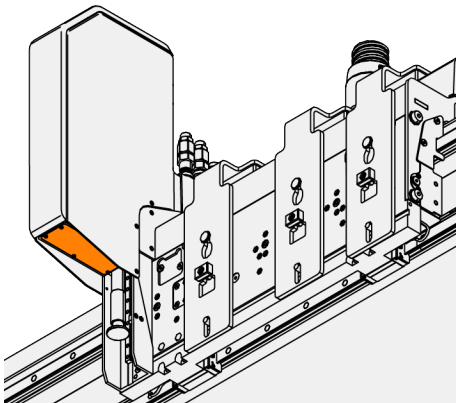


Fig. 80

8.10 Material fixation

8.10.1 Inspecting and maintaining a vacuum generator

Target:

Here you will learn how to inspect and maintain a vacuum generator. Perform the required maintenance tasks as described in the supplier documentation.

Personnel:

- Operator

1. Procure the operating manual of the respective product.

2. Plan the required activities.

- ➔ The product is maintained according to the maintenance plan.

8.11 Material handling

8.11.1 Cleaning the conveyor belt

Target:

Here you will learn how to clean the conveyor belt. The cleaning interval can be shortened, if necessary, depending on the material being processed and the method.

Personnel:

- Operator

Tool:

- Vacuum extractor

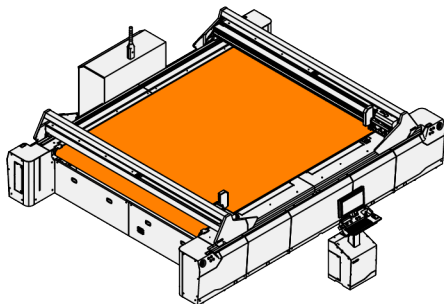



Fig. 81

1. **1.** Set the cutter to the “Stop” operating state.
 ➔ [Chapter 6.2.2 “Changing the operating state” on page 83](#)
 ➔ The safety windows move down.
2. **2.** Clean the surface of the conveyor belt with a vacuum extractor.
3. **3.** Switch to the “Automatic” operating state. ➔ [Chapter 6.2.2 “Changing the operating state” on page 83](#)
4. **4.** Perform a feed  using the Cut Center.
 ➔ The conveyor belt is moved ahead by the length of the working area.
5. **5.** Press the [Stop] button twice.
 ➔ The safety windows are in a lowered position.
6. **6.** Clean the surface of the conveyor belt with a vacuum extractor.
 ➔ The conveyor belt is now completely clean.

8.12 Tool handling unit

8.12.1 Cleaning the ITI

Target:



Here you will learn how to clean the ITI.

Personnel:

- Operator

Tool:




- Vacuum extractor

1.  Set the cutter to the “Stop” operating state.
 → Chapter 6.2.2 “Changing the operating state” on page 83
 - ➔ The safety windows move down.
2.  Manually push the cover on the ITI to the side.
 - ➔ The ITI is open.

NOTICE

Damage from reaching into the interior:
In case of non-compliance, you must expect damage to the light source.

- Clean the interior only from the outside.
- Do not reach into the interior with the vacuum extractor.
- Mount a vacuum brush on the vacuum extractor.

3.  Vacuum the dirt out of the interior from the outside with a vacuum extractor.
4.  Manually close the cover on the ITI.
5.  Repeat the cleaning process on the other ITI.

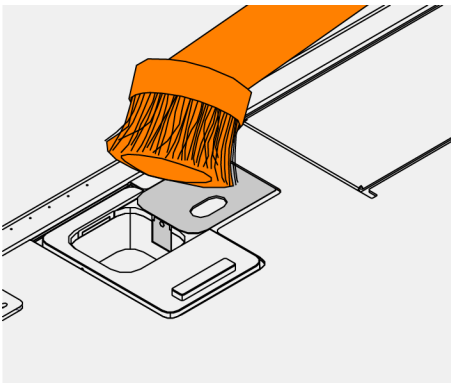


Fig. 82

8.12.2 Cleaning the tool magazine

Target:

Here you will learn how to clean the tool magazine.

Personnel:

- Operator

Tool:

- Vacuum extractor

Checking for proper function

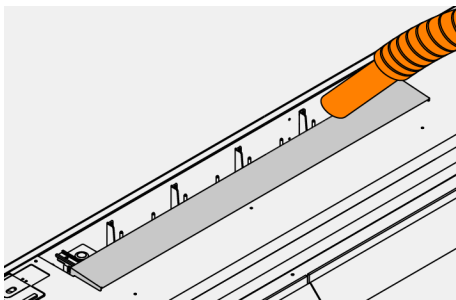


Fig. 83

1. **1.** Set the cutter to the “Stop” operating state.
 ➔ [Chapter 6.2.2 “Changing the operating state” on page 83](#)
 ➔ The safety windows move down.
2. **2.** Manually open the tool magazine cover.
3. **3.** Vacuum the interior with a vacuum extractor.
4. **4.** Manually close the tool magazine cover.
 ➔ The tool magazine is now clean.
5. **5.** Repeat the cleaning process on the other tool magazine.

8.13 Movement system

8.13.1 Cleaning the beam daily

Target:

Here you will learn how to clean the outside of the beam. Depending on the material being processed, it is necessary to clean with a vacuum extractor or cleaning cloth.

Personnel:

- Operator

Tool:

- Vacuum extractor

Material:

- Lint-free cleaning cloth

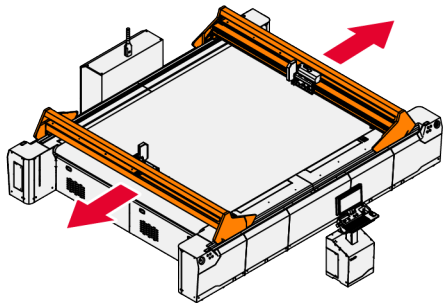


Fig. 84

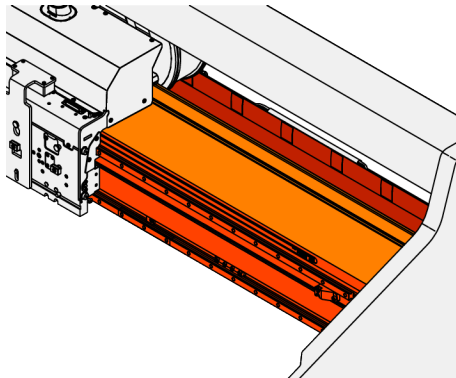


Fig. 85

1. → Move beam A backward and beam B forward.
→ Chapter 6.2.3 “Moving the module carriage” on page 83
2. → Set the cutter to the “Stop” operating state.
→ Chapter 6.2.2 “Changing the operating state” on page 83
→ The safety windows move down.

3. → Remove the dirt and machining debris from the areas indicated by color:
 - Front
 - Top
 - Duct for the energy chain

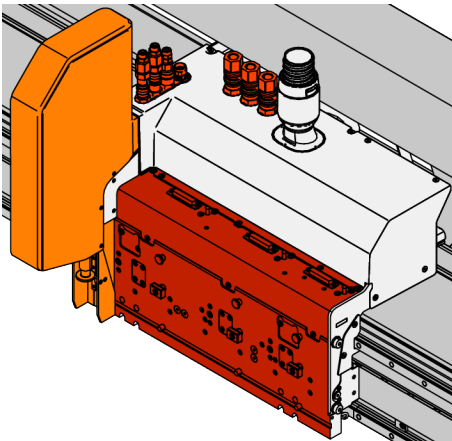


Fig. 86

4. → Remove the dirt and machining debris from the areas indicated by color:
 - Module slots
 - INCAM cover
 - Interfaces
5. → Repeat the cleaning process on the other module carriage.

8.13.2 Cleaning the beam weekly

Target:

Here you will learn how to clean the outside of the beam. Depending on the material being processed, it is necessary to clean with a vacuum extractor or cleaning cloth.

Personnel:

- Operator

Tool:

- Vacuum extractor

Material:

- Lint-free cleaning cloth

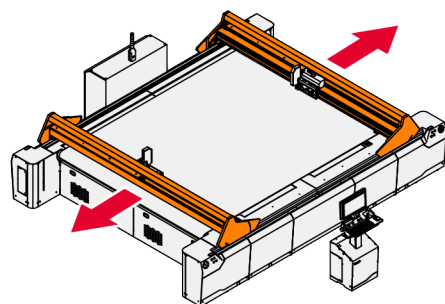


Fig. 87

1. → Move beam A backward and beam B forward.
→ [Chapter 6.2.3 “Moving the module carriage” on page 83](#)
2. → Set the cutter to the “Stop” operating state.
→ [Chapter 6.2.2 “Changing the operating state” on page 83](#)
➔ The safety windows move down.

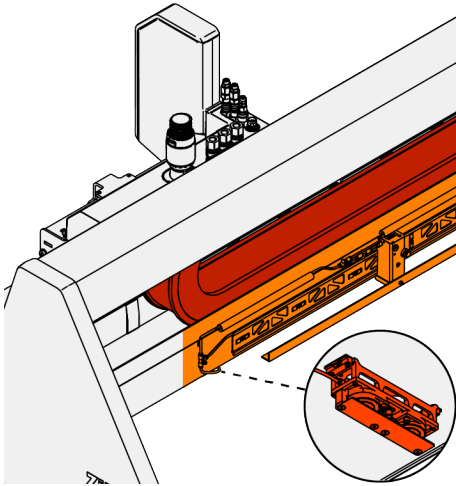


Fig. 88

3. → Remove dirt and machining debris from the following areas of the beam.
 - Feed
 - Conveyor clamping elements
 - Y-energy chain
4. → Repeat the cleaning process of the Y-energy chain on the other beam.

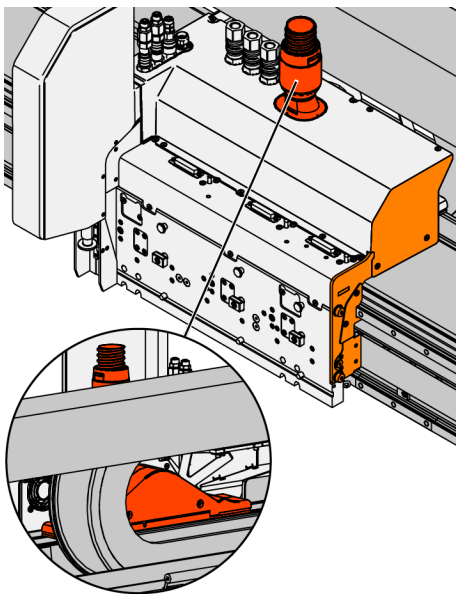


Fig. 89

5. → Remove dirt and machining debris from the following areas.
 - Carriage of the extraction unit
 - Side cover
6. → Repeat the cleaning process on the other module carriage.

9 Decommissioning

9.1 Decommissioning for < 1 month

Target:

Here you will learn how to store the cutter for less than one month.

Personnel:

- Operator

⚠ WARNING

Hazard due to insufficient qualification of personnel:

Insufficiently qualified personnel cannot properly assess hazardous situations.

- Only regularly trained personnel may use or work on the machine.
- Unqualified personnel must not use or work on the machine and its optional attachments.
- Training measures for the personnel must be documented.

NOTICE

Damage due to improper decommissioning:
In case of non-compliance, further assembly, installation and commissioning are impossible. The machine is not designed and constructed for decommissioning and reassembly, reinstallation and recommissioning by the operating company.

- Decommissioning of the machine is performed by a qualified service technician trained by the manufacturer.
 - Contact your local service partner if you want to use the machine at a different production facility.
1. **→** Ensure the ambient conditions are in place for the duration of storage.
 2. **→** Turn off the cutter. [↪ Chapter 3.4.2 “Shutting down the cutter” on page 45](#)
 - ➔ The cutter is ready for storage.

9.2 Decommissioning for > 1 month

Target:

Here you will learn how to store the cutter for a long period.

Personnel:

- Operator






⚠ WARNING

Hazard due to insufficient qualification of personnel:
Insufficiently qualified personnel cannot properly assess hazardous situations.

- Only regularly trained personnel may use or work on the machine.
- Unqualified personnel must not use or work on the machine and its optional attachments.
- Training measures for the personnel must be documented.

NOTICE

Damage due to improper decommissioning:
In case of non-compliance, further assembly, installation and commissioning are impossible. The machine is not designed and constructed for decommissioning and reassembly, reinstallation and recommissioning by the operating company.

- Decommissioning of the machine is performed by a qualified service technician trained by the manufacturer.
 - Contact your local service partner if you want to use the machine at a different production facility.
1.  Relieve tension from the energy chain of beam A by positioning the module carriage at the rear left.
 2.  Relieve tension from the energy chain of beam B by positioning the module carriage at the front right.
 - ➔ The load has been removed from the energy chain of beam A and B.
 3.  Protect the cutter from dust and dirt.
 4.  Make sure that the ambient conditions for storage are satisfied.
 5.  Secure the main switch against being switched on again. ➔ [Chapter 2.15 “Securing against restart” on page 39](#)
 - ➔ The cutter is ready for storage.

9.3 Disassembly

⚠ WARNING

Hazard due to insufficient qualification of personnel:
Insufficiently qualified personnel cannot properly assess hazardous situations.

- Only regularly trained personnel may use or work on the machine.
- Unqualified personnel must not use or work on the machine and its optional attachments.
- Training measures for the personnel must be documented.

NOTICE

Damage due to improper disassembly:
Material damage to the cutter due to improper disassembly makes further assembly, installation and commissioning impossible. The cutter is not designed and constructed to be assembled, installed and commissioned by the operating company.

- Disassembly of a cutter is performed by a qualified service technician trained by the manufacturer.
- Contact your local service partner if you want to use the cutter at a different production facility.

For the cutter to be operated at a different production facility, it is required that the cutter be professionally disassembled.

After disassembly, the cutter must be professionally packaged and prepared for transport. At the new production facility, the cutter must be professionally unpacked, assembled, installed and commissioned.

Contact your local service partner if you want to use the cutter at a different production facility. → [Chapter 1.4 “Contact data” on page 15](#)

9.4 Disposal

NOTICE

Damage to the environment:
Incorrect handling of environmentally hazardous substances, particularly incorrect disposal, can result in considerable damage to the environment.

- Read the safety data sheet from the manufacturer.
- Promptly inform the service technician or operating company if environmentally hazardous substances have gotten into the environment.
- In case of doubt, contact the responsible local authorities about the damage.

Cleaning agents

Solvent-based cleaning agents contain toxic substances. They must not get into the environment. Observe the safety data sheet from the manufacturer.

Lubricants, oils

Lubricants such as grease and oil contain toxic substances and must not get into the environment. They must be disposed of by a specialist waste management company. Observe the safety data sheet from the manufacturer.

Adhesive

Adhesives contain toxic substances and must not get into the environment. Observe the safety data sheet from the manufacturer.

Electrical and electronic components

Electrical and electronic components can contain toxic materials. These components must be collected separately and taken to local collection points or be disposed of by a specialist company.

Examples of these components include light bulbs, condensers containing PCBs, components containing mercury, printed circuit boards, liquid crystal displays, batteries, external electric lines and electrolytic capacitors.

10 Appendix

Appendix - Table of contents

A	Dimension drawings.....	127
B	Drawings.....	129
C	Supplier documents.....	131

A Dimension drawings

Q 18-32 D Cutter

Cutter	CE front	CE back	Special	Drawing	Document
Q 18-32 D	-	-	-	5230146_36	↪ https://bit.ly/3Bb0YBF

Q 22-32 D Cutter

Cutter	CE front	CE back	Special	Drawing	Document
Q 22-32 D	-	-	-	5230145_36	↪ https://bit.ly/3NV6CPI

Q 32-32 D Cutter

Cutter	CE front	CE back	Special	Drawing	Document
Q 32-32 D	-	-	-	5223302_36	↪ https://bit.ly/3VSowoh

B Drawings

Name	Drawing	Document
Warnhinweise am Produkt (ISO)	5230043	↗ https://bit.ly/3HZfoZr
Warnhinweise am Produkt (ANSI)	5230952	↗ https://bit.ly/42CBdWq

C Supplier documents

Product Designation	Manufacturer	Document
Klimagerät Schaltschrank	Cosmotec	https://bit.ly/3HXjBww