

TRANSLATION OF THE ORIGINAL VERSION



QUALITÄT SEIT 1918



Operating Manual

Slot Drilling and Mortising Machine

PANHANS 116|10



Machine Type: 116|10

HOKUBEMA Maschinenbau GmbH

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Space for notes:

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<h2>Handover Certificate</h2>		
Machine type:		
Machine no.:		
Construction year:		
Customer address (location of the machine):		
Name:		
Street:		
Postcode/City:		
Phone:	Fax:	
E-mail:		
Warranty: On the basis of our Terms and Conditions of Sale, Delivery and Payment of the respective current status, we assume a warranty of 12 months , calculated from the day of delivery, for material defects and defects of title in connection with the delivery for the above-mentioned machine.		
Warranty claims: Warranty claims on the part of HOKUBEMA Maschinenbau GmbH only exist if we have received the signed handover certificate and the machine has been properly commissioned. We therefore ask for immediate return. Important: Please read and follow the instructions in chapter ⇒ 1 " <u>Liability and Warranty</u> ".		
Confirmation of the buyer: ✓ The machine described above was purchased by me/us. ✓ Together with this handover certificate, I have received the operating manual valid for the machine (edition: _____). ✓ The operating instructions have been read and understood by me, as well as by all persons responsible for operating the specified machine. I will ensure that persons working on the machine at a later date are also instructed accordingly.		
_____ Name and position	_____ Date	_____ Signature of the customer
Address of the dealer (company stamp):		The machine, including the operating manual, was handed over to the buyer and installed according to the specifications in the operating manual. <div style="display: flex; justify-content: space-between; margin-top: 20px;"> <div style="text-align: center;">_____ Date</div> <div style="text-align: center;">_____ Signature - Customer Service</div> </div>

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Revisions:

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000	AG	Original manual translated	25.03.2022
001	AG	Section 13.6 added	09.01.2023
002	AG	Section 14.2.1 added	31.03.2023

1 Liability and Warranty

When purchasing a machine or additional component (hereinafter referred to as “machine”), the General Terms and Conditions of Sale and Delivery of HOKUBEMA Maschinenbau GmbH generally apply. These are provided to the purchaser or operator at the latest when the contract is concluded.



IMPORTANT NOTE: Liability and warranty claims shall only commence from the point in time at which the signed handover certificate (see ⇒ page 3 resp. 5) from the dealer and/or end customer for the delivered machine has been submitted to HOKUBEMA Maschinenbau GmbH in written form.

Liability and warranty claims for personal injury and property damage are generally excluded if they are due to one or more of the following causes:

- Commissioning of the machine without prior machine instruction by an authorised and adequately trained specialist who is familiar with the function and dangers of the machine.
- Electrical connection as well as repair and/or maintenance work on electrical components by personnel who do not have the appropriate qualifications.
- Connection and repair and/or maintenance work on hydraulic or pneumatic components by personnel who do not have the appropriate qualifications.
- Non-observance of the instructions in the operating manual, in particular the chapter “Safety”.
- Improper use or operation in an unauthorised area of application.
- Improper assembly, commissioning, operation and maintenance of the machine.
- Unauthorised conversions or modifications to the machine or additional components.
- Operating the machine without using all the protective equipment available for the operation.
- Inadequate monitoring and maintenance of the machine components and protective devices.
- Continuing to operate the machine when faults, damage or defects are present.
- Processing materials that do not correspond to the machine's area of application.
- Carrying out operations that are not permitted for the machine supplied.
- Use of tools that are not permitted for the machine supplied.
- Operating the machine outdoors or in damp, wet or potentially explosive environments.
- Operation of the machine outside permissible ambient temperatures or humidity.
- Grossly negligent behaviour when handling or operating the machine.
- Impact by foreign bodies, e.g. stones, metal parts, etc.
- Improperly carried out repairs.
- Catastrophic events due to force majeure.

2 Introduction

This operating manual applies to the slot drilling and mortising machine PANHANS 116|10. The purpose of this document is to acquaint the user with the machine and enable him to use it to the full extent of its intended capabilities. Additionally it contains important information to operate the machine safely, properly and economically.

Observance of the manual helps to avoid hazards, reduce repair costs and downtimes and increase the reliability and service life of the machine.

Observance of the manual helps to avoid hazards, reduce repair costs and downtimes and increase the reliability and service life of the machine. Furthermore, this operating manual serves to supplement instructions based on national regulations for accident prevention and environmental protection.



Figure 1: Typical application "mortising"



This operating manual must always be available at the place of use of the machine. It must be read and followed by every person who is assigned to work on the machine, e.g.

- *during operation, including set-up, troubleshooting in the work process, removal of production waste and maintenance,*
- *during maintenance (servicing, inspection, repair)*
- *and/or during transport.)*

Apart from the operating manual and the legally binding accident prevention provisions applicable in the country and place of use, the recognized technical regulations for safe and proper work must also be observed.

2.1 Legal Notice

All contents of these operating instructions are subject to the rights of use and copyright of Hokubema Maschinenbau GmbH. Any reproduction, modification, further use and publication in other electronic or printed media, as well as their online publication, requires the prior written consent of Hokubema Maschinenbau GmbH.

2.2 Illustrations






All photos, figures and graphics contained in this document are for illustration and better understanding only and may differ from the current state of the product. Figures may also include optional components and special accessories.

3 Symbols

3.1 General Symbols

Symbol	Meaning
	Indicates passages within this operating manual that must be particularly observed in order to prevent malfunctions or damage to the machine.
	Refers to chapters, sections, or figures within this document.
	Refers to an external document or a third-party source.

3.2 Symbols in Safety Instructions

Symbol	Safety Instruction
	General danger symbol, which requires the highest attention! <i>Failure to observe may result in damage to the equipment, serious injury or even death.</i>
	Warning of possible danger from forklift traffic! <i>Non-observance may result in life-threatening injuries.</i>
	Warning indicates a possible hazard under suspended loads! <i>Non-observance may result in life-threatening injuries.</i>
	Warning indicates a possible fall hazard! <i>Non-observance of these instructions may result in serious injuries.</i>
	Warning indicates a possible cutting hazard! <i>Risk of personal injury and possibly additional damage to equipment.</i>
	Reference to the obligation to wear protective gloves! <i>Non-observance of these instructions may result in personal injury.</i>
	Reference to the obligation to wear hearing protection! <i>Non-observance of these instructions may result in personal injury.</i>
	Reference to the obligation to wear protective goggles! <i>Non-observance of these instructions may result in personal injury.</i>
	Reference to the obligation to wear a respiratory protection mask! <i>Non-observance of these instructions may cause breathing difficulties and lung damage.</i>
	Reference to the obligation to wear safety shoes! <i>Non-observance of these instructions may result in personal injury.</i>
	Possible dangerous crushing hazard in the area of stationary objects! <i>Risk of personal injury and possibly additional equipment damage.</i>
	Reference to a possible crushing hazard! <i>Non-observance increases the risk of injury to hands and fingers!</i>
	This symbol warns of the dangers of electric voltage! <i>Failure to observe may result in damage to the equipment, serious injury or even death.</i>
	Fire hazard! Do not smoke and do not ignite open fire.
	Access for unauthorized persons prohibited! <i>Risk of personal injury and possibly additional equipment damage.</i>
	This safety notice indicates a possible dangerous pull-in hazard! Wearing loose clothing, jewellery as well as long untied hair is prohibited! <i>Risk of personal injury and possibly additional damage to property.</i>

4 General

The PANHANS slot drilling and mortising machine type 116|10 impresses with the highest precision and high-quality workmanship. It enables professional and precise drilling of mortises and dowel holes. It is equipped with a drill support that can be moved to two sides, allowing a maximum drilling depth of 145 mm and a maximum mortise length of 240 mm. The standard equipment already includes features such as mortise length limit stop, workpiece stop, frame stop and mitre fence, dowel indexing device, mobile base and two eccentric clamps. The longitudinal and transverse adjustment of the drilling unit is done via two-lever operation.

4.1 Construction

- The table top made of sturdy cast iron is screwed to the machine stand.
- The workpieces are securely clamped with the eccentric clamps mounted on the right and left of the clamping device.
- The workpiece stop facilitates the machining of series with large numbers of pieces.
- With the help of the removable mitre fence, you can drill mitre angles of 22.5°/45°.
- The cross support runs easily in adjustable ball guides. The transverse movement can be limited by lateral stops. The drilling depth is adjusted stop mechanism with scale.
- The height is adjusted according to the scale with a handwheel. The height support slides in an adjustable dovetail guide. It can be locked by means of a cross handle.
- The drilling speeds 1500/3000 rpm are reached by moving the selection lever to the right or left (an infinitely variable drilling speed via frequency converter is available as an option).
- CE-compliant and GS-tested.

4.2 Standard Equipment

- Smooth-running cross support with adjustable ball guides for lateral and depth adjustment
- Two stop rods for infinitely variable adjustment of the mortise length in the X-axis
- Dowel drilling device with pitches 16, 22, 25 and 32 mm via precision indexing barrel
- Frame stop pluggable with index bolts for the positions: Centre / Left / Right
- Drilling motor pole-changing between 1.3 kW / 1.8 HP and 1.7 kW / 2.3 HP
- Handwheel for height adjustment via laterally mounted millimetre scale
- Two robust hand lever eccentric clamps, infinitely height adjustable (optionally pneumatic safety clamping cylinder with manual slide valve)
- High-precision three-jaw drill chuck with spanner, 1 ... 20 mm capacity (collet chuck optionally available)
- Separate measuring scales for height and drilling depth adjustment
- Strong-walled and highly ribbed 700 x 380 mm cast iron table
- Laterally extendable workpiece fence up to 1500 mm
- Pluggable 90° table stop (can be used on both sides)
- Pluggable mitre fence for fixed degrees 22.5°/45
- Two-lever operation (optionally single-lever operation)
- Mobile base with push bar at the front side
- Tool tray above the drilling unit
- Emergency stop button on the operating side
- Suction nozzle with Ø 100 mm
- Mechanical motor brake

4.3 Optional Equipment

Optionally available components are described in detail in chapter ⇒ 14 "Optional Components".

The corresponding article numbers for ordering can be found in chapter ⇒ 17 "Options and Accessories".

4.4 Purpose of the Slot Drilling and Mortising Machine

The PANHANS 116|10 slot drilling and mortising machine is used exclusively for drilling holes and mortises up to Ø 20 mm in solid wood and wood-like board materials. Metallic materials as well as materials and woods containing metal parts must not be machined with the slot drilling machine.



Improper use can lead to danger to persons and to a defect or damage to the machine.

Please also read the section ⇒ 5.2 “Application Area and Intended Use”.

4.4.1 General Scope of Application

The general fields of application of the slot drilling and mortising machine are very versatile, for example:

- in joineries and carpentry workshops,
- in industrial and craft enterprises,
- in schools and training centres,
- in model construction
- and in the do-it-yourself sector.

4.5 Target Group and Previous Experience

This operating manual is intended for the operating and maintenance personnel of the machine. The operating personnel is to be determined by the operator and must further meet the following requirements:

- Basic technical knowledge (e.g. apprenticeship as carpenter, machine fitter, etc. and/or practice in operating tilting spindle moulders resp. woodworking machines)
- Reading and understanding these operating and maintenance instructions

In order to acquire the knowledge required to operate this machine, the operator must ensure the following measures:

- Product training for every operator (also possible external personnel)
- Regular safety instruction

4.6 Requirements for the Operators

- The machine may only be operated by trained personnel who have also read this manual.
- Inspection, maintenance, cleaning and repair may only be performed by technical specialists with product-specific training and mechanical and/or electrical training.
- Specialists with product-specific training are to be commissioned and held responsible for planning and checking the work.
- The national protective regulations for employees must be observed.
- The operator is responsible for the safe use of the machine.
- The legal minimum age must be observed.

4.7 Accident Prevention

To avoid accidents, the following rules must be observed for operation:

- Prevent unauthorized persons from gaining access to the machine.
- Keep unauthorized persons away from the danger areas.
- Repeatedly inform present other persons about existing residual risks (refer to section ⇒ 5.2.2 "Residual Risks").
- Conduct and record regular training & instruction for persons who must be in the area of the machine.
- New employees must be trained internally to work on a thickener and this training must be documented.

4.8 General Safety Regulations

In general, the following safety regulations and obligations apply when handling the machine:

- A tilting spindle moulder may only be operated in a technically perfect and clean condition.
- It is prohibited to remove, modify or bypass any protective, safety or monitoring equipment.
- It is forbidden to modify or alter the machine without the written approval of the manufacturer / supplier.
- Faults or damage must be reported to the operator immediately, eliminated without delay and repaired if necessary.
- For repairs, only original spare parts may be used.
- All protective, safety and monitoring devices must be regularly checked and maintained by the operator.
- Only instructed, trained or qualified persons may work on this machine.
- Maintenance work must be carried out and documented in accordance with the maintenance instructions.
- After maintenance or repair, the machine may only be started with all protective devices fitted. A responsible person must be defined for this purpose, who checks that the guards have been properly installed.
- For the operation of a tilting spindle moulder, the respective national safety regulations for employees as well as the national safety and accident prevention regulations apply.

5 Safety

5.1 Basic Safety Instructions

Woodworking machines can be dangerous if used improperly. Therefore, observe the safety instructions listed in this chapter and the accident prevention regulations of your employer's liability insurance association!



The manufacturer accepts no liability for damage and malfunctions resulting from failure to observe these operating instructions.

5.2 Application Area and Intended Use



- ***The slot drilling and mortising machine PANHANS 116/10 is used exclusively for drilling holes and mortises up to Ø 20 mm in solid wood and wood-like board materials.***
- ***Metallic materials or wood containing metal parts must not be machined with the slot drilling and mortising machine!***
- ***This machine may only be operated on a level, paved surface with a sufficient load capacity (net weight approx. 200 kg)!***

Any processing of other materials requires prior consultation with and approval of the manufacturer.



Improper use can lead to danger to persons and to a defect or damage to the machine.

Only workpieces that can be safely placed and guided may be machined.
Metallic materials must not be machined.

The machine is not suitable for operation outdoors or in potentially explosive areas.

- Permissible ambient temperature: +5 ... +40° C.
- Permissible humidity: 30 ... 90 %
- Number of workplaces: 1

Intended use also includes the connection of the machine to an adequately dimensioned extraction system and compliance with the operating, maintenance and servicing conditions specified in the operating manual.

Any other use is not in accordance with the intended use and is therefore prohibited.































5.2.1 Modifications and Conversions to the Machine



Unauthorised conversions and modifications to the machine are strictly prohibited for safety reasons. This will invalidate the CE declaration of conformity! The manufacturer is not liable for any resulting damage. The risk for this is borne exclusively by the operator/user.


5.2.2 Residual Risks

The machine is built according to the latest state of the art and the recognised safety rules. Nevertheless, the use of the machine may cause danger to life and limb of the user or third parties or damage to the machine and other equipment. Due to the construction of the machine, the following residual risks can occur even when used as intended and despite compliance with all relevant safety regulations:

	Reading and applying the operating manual is mandatory for the operating personnel.
 	Be alert to possible crushing hazards: a) when transporting the machine by forklift truck → between forks & pallet / machine b) when picking up the machine → between machine / pallet and floor c) when lowering the machine → between machine and fixed equipment
 	Be alert to possible crushing hazards when lowering the machine (from the cargo pallet to the floor) with a forklift truck or overhead crane.
	Make sure that no objects fall from the forklift truck / crane. Do not leave any objects / tools on the machine.
	It is strictly prohibited to ride on the machine during a lifting operation (with the indoor crane or forklift). There is a danger of falling!
	Unauthorised persons are not allowed to enter the installation area of the machine (responsibility of the operator).
 	Be aware of possible tripping and slipping hazards on the floor. Prevent possible hazards by keeping the floor dry and clean and by using anti-slip floor coverings around the machine.
 	Be aware of the danger from falling objects such as workpieces, tools or similar. Therefore, wear safety shoes, especially when transporting and setting down the machine.
 	Pay attention to the existing danger of cuts on the drilling bit. Never reach into the running drilling bit! Wear protective gloves when changing the tool.
	Be aware of the danger of cutting through chips and splinters and never remove them from the danger area by hand and/or while the machine is running. Use suitable aids, e.g. hand brushes.
	Danger of being drawn in and increased risk of injury when wearing watches and jewellery. Wearing watches and jewellery is prohibited on the slot drilling and mortising machine.
	Be aware of a possible danger of being drawn in by moving machine parts or tools. This can cause pieces of clothing or hair to be caught. Always wear tight-fitting clothing or avoid loose clothing and wear a hair net if necessary.
	Danger from electric shock! There are hazards when working on the electrical system. This work must only be carried out by qualified personnel!
	Danger from electric shock! It is strictly forbidden to bypass safety devices (e.g. safety switches).
	Electrical equipment must be maintained and cleaned regularly.
	Be aware of the risk of injury from flying tool parts in the event of tool breakage. Therefore wear protective goggles.
	Pay attention to the danger of crushing on workpiece guides and moving machine parts.
	Make sure that no unauthorised persons are in the area of the machine.
	Be aware of the risk of injury from flying workpiece parts and chips, splinters and dust coming out of the machine. Therefore wear protective goggles.
	Be aware of the increased noise emission and wear hearing protection.
	Be aware of the increased dust generation. Use the extraction device and wear a dust mask if necessary.
	The emergency stop buttons must always be freely accessible. They must not be moved, e.g. with hopper boxes. Check the function of the emergency stop buttons daily (before starting work).
	Fire hazard due to wood dust in connection with flying sparks and/or open fire!
 	Electrical equipment must be maintained and cleaned regularly.

5.2.3 Observe the Environmental Protection Regulations

During all work with the machine, the environmental protection regulations, obligations and laws for waste avoidance and proper recycling and/or disposal applicable at the place of use must be observed. This applies in particular to installation, repair and maintenance work involving substances that could pollute the groundwater (e.g. hydraulic oils and cleaning agents and liquids containing solvents). In any case, prevent them from seeping into the ground or entering the sewage system.

	<p><i>Store and transport the above-mentioned hazardous substances only in suitable containers. Avoid leakage of hazardous substances by using suitable collection containers. Ensure that the above-mentioned substances are disposed of by a qualified disposal company.</i></p>
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5.2.4 Organisational Measures

- ⚠ Always keep this operating manual within easy reach and at the place of use of the machine.
- ⚠ In addition to the operating manual, observe and instruct on generally applicable legal and other binding regulations for accident prevention and environmental protection.
- ⚠ Supplement the operating manual with further instructions, including supervisory and reporting duties, to take account of special operational features (e.g. with regard to work organisation, work processes, personnel employed).
- ⚠ Before starting work on the machine, the person responsible for its operation must have read the operating instructions, especially the chapter "Safety Instructions". This applies in particular to personnel who only occasionally work on the machine.
- ⚠ Check that work is carried out in a safety-conscious and hazard-conscious manner and in compliance with the operating manual.
- ⚠ Operators must not wear open long hair, loose clothing or jewellery (including rings). There is a risk of injury, e.g. by getting caught or drawn in.
- ⚠ Observe the safety instructions and danger warnings on the machine and keep them complete and in legible condition.
- ⚠ In case of safety-relevant changes to the machine or its operating behaviour, shut down the entire system immediately and report the fault to the responsible office/person.
- ⚠ Use personal protective equipment as necessary or required by regulations.
- ⚠ Do not make any modifications, additional attachments or conversions to the machine without the manufacturer's approval! This will compromise safety and invalidate the manufacturer's warranty and any liability claim.
- ⚠ Spare parts must meet the technical requirements specified by the manufacturer. The exclusive use of original spare parts ensures this. Therefore, only use original spare parts from the manufacturer.
- ⚠ Observe the fire alarm and firefighting possibilities. Make the location and operation of fire extinguishers (fire class ABC) known. Do not use water!

5.2.5 Personnel Selection and Qualification - Basic Duties

- ⚠ The machine design and operation is intended for right-handers.
- ⚠ Work on and with the machine may only be carried out by reliable personnel. Observe the legal minimum age!
- ⚠ Only use trained or instructed personnel. Clearly define the responsibilities of the personnel for operating, setting up, maintaining and repairing!
- ⚠ Ensure that only authorised personnel work on the machine!
- ⚠ If personnel to be trained or apprenticed have to work on the machine, this may only be done under the constant supervision of an experienced resp. qualified person.
- ⚠ Work on the electrical equipment of the machine may only be carried out by a qualified electrician or by untrained persons under the direction and supervision of a qualified electrician in accordance with the electrotechnical regulations.

5.3 Safety Instructions for Specific Phases of Operation

	<i>Defects and damage to the machine are to be reported immediately after detection.</i>
	<i>Any mode of operation that compromises safety is prohibited!</i>
	<i>Sufficient lighting around the machine must be ensured (at least 500 Lux)!</i>

5.3.1 Permitted Operations

Only the following operations are permitted with the slot drilling and mortising machine:

- ✓ Drilling through holes
- ✓ Drilling blind holes
- ✓ Drilling mortises, slots and oblong holes in solid woods
- ✓ Producing dowel holes
- ✓ Boring and tenoning of knotholes

5.3.2 Prohibited Operations

The following operations are prohibited with the slot drilling and mortising machine:

- ✗ Milling work of any kind with pure milling tools
- ✗ Grinding and sawing work of any kind

5.3.3 Before Working

- ⚠ Before starting work, check tools for operational safety (function and visual check). Protective devices must not be bypassed, removed or made inactive.
- ⚠ Clean the machine table from dirt and chips and provide containers for waste pieces.
- ⚠ Only use tools in perfect, sharpened condition and with clean clamping surfaces.
- ⚠ Only clamp permitted (approved) tools in the drill chuck.
- ⚠ Before starting the drill spindle, remove the drill chuck key.
- ⚠ Switch on and off only via the machine switch, not with the connector.
- ⚠ Always check workpieces to be machined for foreign objects, cracks and loose knots.
- ⚠ Only carry out adjustment work on the machine and the stop systems when the machine is at a standstill.
- ⚠ Use the necessary aids such as workpiece stops, frame stops or mitre fences.
- ⚠ Place workpieces securely on the machine table and on the stops and clamp them firmly.
- ⚠ Adjust the pressure devices and tool covers as best as possible.
- ⚠ Remove any objects lying on the table (tools, loose parts, etc.) before drilling.
- ⚠ Observe the correct direction of rotation of the drilling bit.
- ⚠ Keep the floor in the area of movement around the machine free of tripping hazards.
- ⚠ Ensure that the machine is connected to a functioning extraction system.
- ⚠ Wear tight-fitting clothing and safety shoes and use safety goggles and ear protection.
- ⚠ Take off scarves, watches, necklaces, hand and arm jewellery.
- ⚠ Secure longer hair with a hair tie, cap or hair net.
- ⚠ Do not wear gloves when working with a running slot drilling machine.

5.3.4 Normal Operation

- ⚠ **Guards:** Take measures to ensure that the machine can only be operated in a safe and functional condition. Only operate the machine when all guards and safety-related devices such as detachable guards, emergency stop system, sound insulation, suction device etc. are present and in working order. Always work with all available protection devices!
- ⚠ **Workpiece:** Before machining, inspect the workpiece for foreign inclusions, knots, twists, objects and other irregularities.
- ⚠ **Working area:** An obstacle-free work area around the machine is essential for safe operation. The floor should be level, well maintained and free from debris such as chips and cut-off workpieces.
- ⚠ **Rotation speed:** The speed must correspond to the drilling bit and the respective operation. Do not start drilling before the motor has reached full speed.
- ⚠ **Drilling range during operation:** Never attempt to remove splinters, chips or other parts from the cutting area while the machine is running! Never remove splinters and chips by hand! Clamp the drilling bit as deep as possible!
- ⚠ **Special tools:** For certain operating phases and operations it is necessary to use special tools, e.g. workpiece stop, frame stop, mitre fence and dowel indexing device.
- ⚠ **Single pieces / samples:** Always use all protective devices and appropriate tools!
- ⚠ **Workpiece machining:** Only process workpieces that can be safely placed and clamped on the table top.
- ⚠ **Workpiece clamping:** An eccentric clamp or optional pneumatic safety clamping cylinder must be used for all drilling work. The eccentric clamps or the optional pneumatic safety clamping cylinders must be clamped as close to the bore as possible.
- ⚠ **Clamping round workpieces:** Attach a template with guide trough to the machine table; clamp and machine the workpiece. When using pneumatic safety clamping cylinders, set the smallest possible stroke.
- ⚠ **Clamping long workpieces:** For the safe support of long workpieces, the appropriate equipment (e.g. support facilities such as roller blocks or table extensions) must be used for all drilling work.
- ⚠ **Drilling depth / mortise length:** Only set the drilling depth and mortise length when the tool is stationary and use suitable measuring equipment.
- ⚠ **Extraction:** The machine must be connected to an effective extraction system. This requires a flow velocity of at least 20 m/s for dry chips and 28 m/s for moist chips (moist 18 % or more).
- ⚠ **Machine condition:** Check the machine for externally visible damage and defects at least once per shift! Any changes that have occurred (including those in the operating behaviour) must be reported immediately to the responsible office or person! If necessary, stop and secure the machine immediately!
- ⚠ **Damage:** Damaged parts must be replaced immediately. Repair work may only be carried out by authorised specialists and with the main switch locked.
- ⚠ **Motor braking time:** The machine is equipped with a mechanical motor brake. If the drilling spindle does not come to a standstill within the prescribed braking time (10 sec.) despite the brake being adjusted (refer to section ⇒ 16.4) the customer service must be contacted.
- ⚠ **Work interruptions:** Switch off the machine even during short interruptions! Never leave the machine running unattended!

5.3.5 Special work within the Scope of Maintenance Work as well as Troubleshooting in the Workflow

- ⚠ Observe maintenance and inspection activities prescribed in the operating manual!
- ⚠ These activities, as well as all other repair work, may only be carried out by qualified personnel!
- ⚠ For all work concerning operation, production adjustment, conversion or setting of the machine and its safety-related equipment as well as maintenance and repair, observe switch-on and switch-off procedures according to the operating manual and instructions for maintenance work!
- ⚠ Secure the machine against unexpected restarting during maintenance and repair work.
 - ➔ **Lock the main switch with a padlock!**
- ⚠ Always tighten screw connections that have been loosened during maintenance and repair work!
- ⚠ If it is necessary to dismantle safety equipment during set-up, maintenance and repair, the safety equipment must be reassembled and checked immediately after completion of the maintenance and repair work!
- ⚠ Ensure safe and environmentally friendly disposal of operating and auxiliary materials (e.g. oils) and replacement parts (e.g. electronic components). See chapter ➔ 18 "Disassembly and Scraping".

5.3.6 After Work

- ⚠ Before leaving the machine, switch off the main switch and the extraction system.
- ⚠ Secure the machine against unauthorised use and never leave it unattended in an unsecured condition.
- ⚠ Clean the machine with an industrial Hoover (avoid compressed air!).

5.3.7 Operator Training

It is important that all users of table milling machines are adequately instructed in the use, setting and operation. This concerns in detail:

- ⚠ Possible hazards that may occur when working with the machine.
- ⚠ The basics of machine operation, correct setting and use of the fences, templates, aids and guards.
- ⚠ The correct selection of the tool for the respective processing.
- ⚠ The safe workpiece guidance and feeding.
- ⚠ The correct hand position and safe stacking and unstacking of the workpieces before and after machining.

5.3.8 Stability

- ⚠ For safe operation of the machine, it is necessary that it is placed in a stable position on a level, well-maintained and clean floor.

5.3.9 Setting up and Adjusting the Machine

- ⚠ Before starting the adjustment, the machine must be disconnected from the mains supply.
- ⚠ For tool clamping, refer to the recommendations of the tool manufacturer.
- ⚠ To ensure safe and effective machining, the tool must be suitable for the material to be machined.
- ⚠ Tools must be sharp and mounted on carefully balanced tool holders.

5.3.10 Standard Safety Equipment

- The main switch can be locked to protect the machine against unauthorised/unintentional switch-on during standstill as well as during repair and maintenance work.
- The machine is equipped with an easily accessible emergency stop button on the operating side.

5.3.11 Optional Safety Equipment

5.3.11.1 Lockable Emergency Stop Button

The lockable emergency stop button can be secured against unauthorised or unintentional unlocking with the supplied key. This provides even more safety.

- Art. No.: 4610

5.3.11.2 Safety Protection Cover

The protective device prevents the drill spindle from starting unintentionally. The motor only starts when the protective cover is folded down. Recommended in the training workshop for more safety. The safety protection cover over the drill chuck has an electrical interlocking device.

- Art. No.: 4611

5.3.11.3 Pneumatic Safety Clamping Cylinders (2 Pieces)

The workpieces are clamped safely and user-friendly by a pneumatic safety cylinder. The useful stroke of 100 mm allows a large adjustment range of different workpiece thicknesses, without separate adjustment.







The cylinder is a sophisticated clamping system which generates a high clamping force and prevents injuries to the hand. The safety mechanism triggers immediately as soon the clamping plate is tilted by more than 2°. Therefore, the clamping cylinder is only suitable for clamping flat workpieces.

- Art. No.: 4612

Further accessories can be found in chapter ⇨ 17.

5.4 Hazardous Areas

Due to their design, slot drilling and mortising machines can be used for a wide range of tasks. Exact right-angled holes or the precise slotting of grooves can be precisely realised. With regard to occupational safety, the main hazards are the mostly freely rotating drilling bit and inadequate clamping of the workpiece on the table top.

Hazard	Area/Action	Risk	Avoidance
Cutting and stabbing hazard 	On the tool <ul style="list-style-type: none"> During tool change On contact with the rotating tool Danger of stabbing due to protruding tool 	Mild to severe injuries to hands and fingers.	<ul style="list-style-type: none"> Wear gloves when changing tools. Keep hands out of the rotating danger zone. Use all available tool covers. Remove the tool from the chuck after use.
Danger of being drawn in 	On the tool, chuck and spindle <ul style="list-style-type: none"> Increased risk of drawing in due to rotation of the tool and drill chuck or spindle! 	Increased risk of injury from hands, fingers, clothing, watches, jewellery and long hair being drawn in.	<ul style="list-style-type: none"> Use all available tool covers. Keep hands out of the rotating danger zone. Never wear gloves when the drill spindle is running. Watches, jewellery and long hair are prohibited! Wear close-fitting clothing and hairnet if necessary.
Risk of crushing 	On all moving parts, guides, stops, fences and clamping devices <ul style="list-style-type: none"> Danger of crushing between moving parts and in the clamping area of clamping devices! 	Mild to severe injuries, contusions and/or fractures of hands and fingers	<ul style="list-style-type: none"> Keep hands out of the danger and clamping areas (e.g. between workpiece and clamping element).
Risk of ejection 	On the tool chuck <ul style="list-style-type: none"> Increased danger if the spanner or collet is not removed and due to ejecting parts, e.g. in case of tool breakage! 	Increased risk of injury or even death due to ejecting or flying off spanner resp. collet and/or tool parts in case of tool breakage.	<ul style="list-style-type: none"> Before switching on the drill spindle, always remove the spanner resp. collet or make sure that the spanner resp. collet is not on the chuck! Wear safety goggles. If required, retrofit the optional safety protection cover.
Electric shock hazard 	On the electrical system and all current-carrying components. On models with variable speed control on the frequency inverter (FI).	Electric shocks with an increased risk of injury up to death	<ul style="list-style-type: none"> Avoid wetness / moisture Have defective parts, cables and insulation repaired immediately (only by qualified personnel!) Do not touch energised components Switch off and lock the main switch or disconnect the machine from the mains during any maintenance or repair work. <p> Warning: After the main switch has been turned off, the FI is still energised for up to 15 minutes!</p>

6 Machine Data

6.1 Technical Specifications

Machine type	PANHANS 116 10
Drilling depth	max. 145 mm
Mortise length	max. 240 mm
Height adjustment	135 mm
Drill chuck ¹	3-jaw chuck, capacity 5 ... 20 mm
Table height	910 mm
Table top size	700 x 380 mm
Total height	approx. 1250 mm (standard version)
Workpiece stop	max. 150 mm
Mitre fence	45° / 22,5° (attachable)
Dowel indexing device	16, 22, 25 and 32 mm via indexing barrel
Motor type ²	in standard version pole-changing (2 speeds)
Speed	1500 / 3000 rpm (switchable) optionally continuously variable up to 2870 rpm
Motor voltage	400 V / 50 Hz
Motor power ²	1.3 kW / 1.8 HP (1500 rpm) or 1.7 kW / 2.3 HP (3000 rpm)
Motor protection class	IP54
Motor brake	mechanical electronic with option "variable speed control"
Suction nozzle	Ø 100 mm
Space requirement	approx. 1810 x 2080 mm
Weight	approx. 200 kg net (seaworthy packed approx. 320 kg)

Nameplate:

PANHANS
by
HOKUBEMA
HOKUBEMA GmbH • D-72488 Sigmaringen
Telefon/phone +49(0)7571 755-0

Langlochbohrmaschine

Baureihe line	<input type="text"/>
Typ type	116 10
Maschinen-Nr. machine no.	<input type="text"/>
Baujahr year of construction	202
Bemessungsspannung U = nominal voltage U =	<input type="text"/> V
Frequenz/Phasenzahl frequency/phases	Hz / 3
Stromart kind of current	AC
Volllaststrom I = operating current I =	<input type="text"/> A
Überstromschutz, intern excess current protection, internal	<input type="text"/> A
<input type="text"/>	
<input type="text"/>	

Figure 2: Name plate

Manufacturer:

HOKUBEMA Maschinenbau GmbH

Graf-Stauffenberg-Kaserne

Binger Str. 28 | Halle 120

DE-72488 Sigmaringen (Germany)

Tel.: +49 (0) 7571 / 755-0

Fax: +49 (0) 7571 / 755-2 22

Expandability:

The machine is prepared for the later addition of special accessories (see chapter ⇨ 17) from the extensive manufacturer portfolio.

If you would like to retrofit your machine, please request documentation from us about the accessories you require.

Please indicate the following data:

1. Type
2. Machine No.
3. Voltage (V)
4. Motor Power (kW)
5. Year of manufacture

¹ Collet chuck optionally available.

² With variable speed control (option): 1.7 kW / 2.3 HP motor (max. 2870 rpm) with frequency inverter.

6.2 Working Area

The working area designates the position from which the machine is operated during operation.

This position is on the rear of the machine, so that the two control levers for the longitudinal and transverse movement of the drill unit are easily accessible.

- The longitudinal movement \updownarrow when drilling into the workpiece is towards the table top.
- The transverse movement \rightleftarrows when drilling a mortise is towards both sides.

Note:

On machines with the "single-lever operation" option (see chapter \Rightarrow 17 "Options and Accessories"), narrow workpieces can also be machined from the table side.

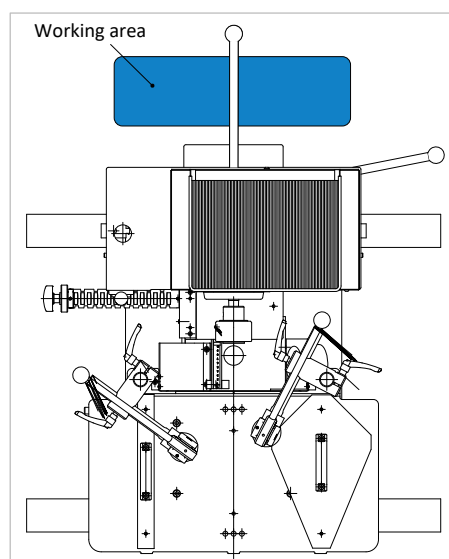


Figure 3: Working area

6.3 Emission Levels

6.3.1 Noise Information

The values given are emission levels and therefore do not necessarily represent safe workstation values at the same time. Although there is a correlation between emission and immission levels, it cannot be reliably deduced whether additional precautionary measures are necessary or not.

Factors that may affect the current immission level at the workstation include the duration of exposure, the nature of the workspace, other noise sources (e.g. the number of machines and other adjacent operations). The permissible workstation values can also vary from country to country.

However, this information should enable the user to make a better assessment of hazard and risk.

6.3.2 Noise Emission Values

- The measured values given are determined according to DIN 45635 part 1662.
- The noise values given are based on individual measurements.
- Series scattering of + 3 dB(A) can occur.

Workplace-related emission value	
Idle	68.3 dB(A)
Operation	74.3 dB(A)



As soon as the noise emission values of the machine exceed 85 dB(A), suitable hearing protection must be made available to the personnel!

Workplace-related dust emission value: 0.25 mg/m³ air.

7 Dimensions

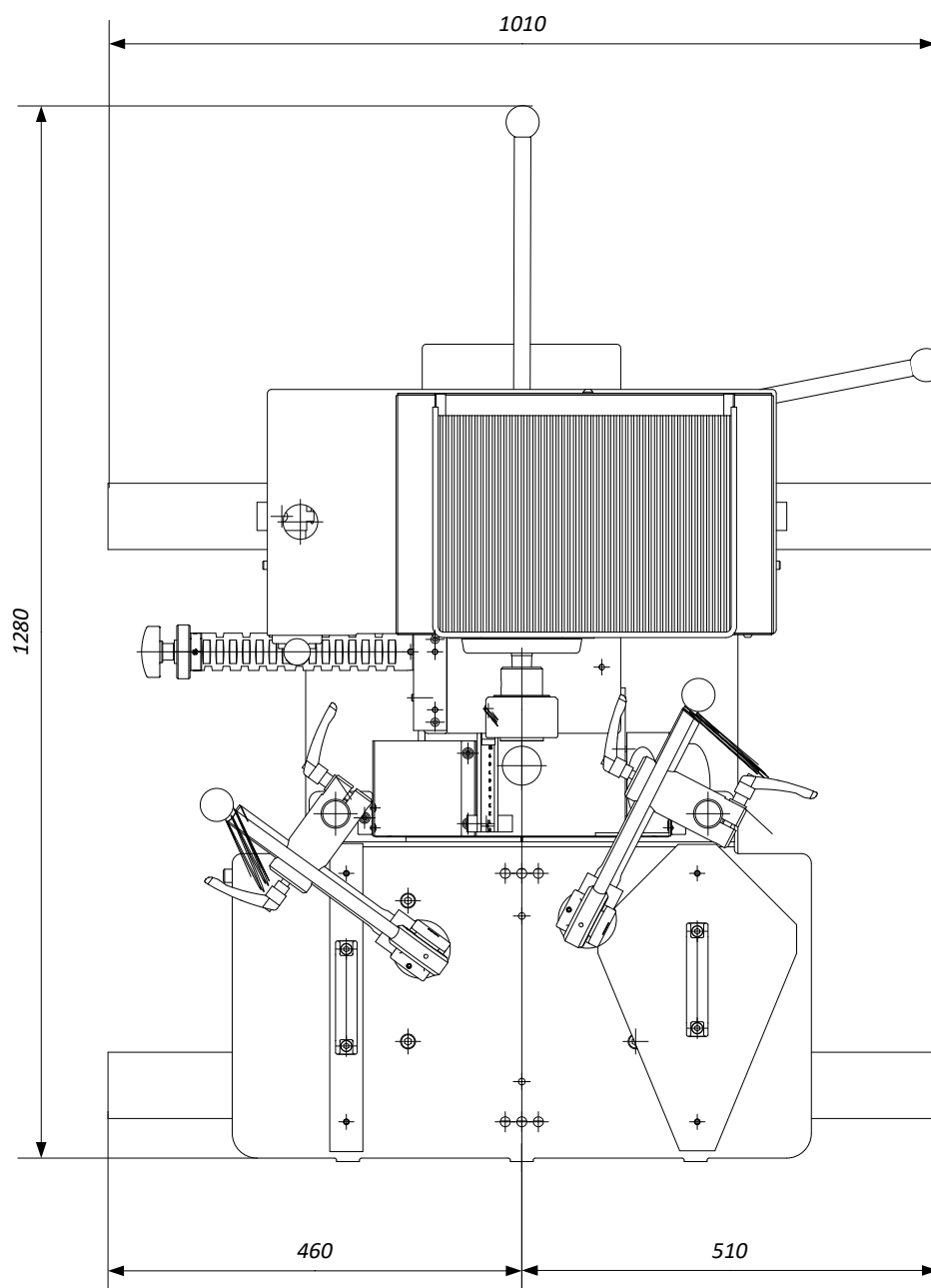


Figure 4: Dimensions (top view)

8 Installation and Connection

8.1 Check Delivery Conditions

Check the consignment for completeness and possible transport damage. In case of transport damage, please keep the packaging and inform the shipping company and the manufacturer immediately! Later complaints cannot be accepted.

8.2 Transport to the Installation Site

The machine is delivered on a transport pallet and is bolted to the bottom of the pallet.



Figure 5: Transport pallet

- Move a pallet truck between the pallet timbers (see ⇨ ⇨ Figure 5), lift the pallet only a few centimetres and move it to the immediate vicinity of the installation site.
- Remove transport locks and screw connections between machine and pallet and store them well.
- Then lift the machine off the pallet with a forklift truck or overhead crane and place it on the forks of a lift truck for further transport to the place of use.



Pay attention to the existing danger of tipping over during transport!



Be aware of possible crushing hazards when placing the machine (from the pallet to the floor) by means of a forklift truck or similar. Pay particular attention to your hands and feet and wear safety shoes and protective gloves as a precaution.



Danger to life when using a forklift truck! Keep a sufficient distance from the forklift truck and watch its speed. Vehicles with combustion engines also produce toxic exhaust gases. Wear a breathing mask if necessary.

8.3 Installing the Machine

- Move the machine with a lift truck or optional mobile base to the final place of use and set it down.
- The machine must be placed on a level, solid and vibration-free surface. The place of installation or operation must be dry and well ventilated.
- A foundation is not required. The floor must have a load-bearing capacity corresponding to the weight of the machine. The net weight of your machine can be found in section ⇨ 6.1 and may be more depending on the equipment.
- Level out any unevenness of the floor with underlays and with the aid of a machine spirit level.
- There are two mounting holes at the bottom of the front of the machine. If necessary, the machine can be bolted to the workshop floor via these holes when it is operated stationary.
- The bare parts of the machine are greased to protect them from corrosion.
- Carefully degrease these parts protected against rust with petroleum or benzene.



Fire hazard! Do not smoke and do not light an open fire.



Do not use nitro thinner for cleaning. Painted surfaces of the machine can be damaged.



Dispose of the packaging material in an environmentally friendly way!

8.4 Temporary Storage

If the machine is not put into operation immediately after delivery, it must be stored carefully in a protected place. Carefully cover the entire machine so that neither dust nor moisture can penetrate.

The bare, non-surface-treated parts (e.g. the cast iron tabletop) are provided with a preservative. This must be checked regularly for effectiveness and renewed if necessary.

8.5 Lashing on a Transport Vehicle

For transport with a truck, the machine must be lashed to the loading area of the truck (as for delivery) standing upright on a transport pallet.

The responsibility for safe loading is borne by the respective shipper!



At least two lashing straps must be used, each of which must be individually tensioned on the loading area of the truck! The palletised machine must be additionally secured against slipping and tipping over in the vehicle.

Please note the following when lashing in the transport vehicle:

- For transport, the movable drill support must be fixed to the table top using the transport lock (see ⇒ 11.1).
- The loading area of the transport vehicle must always be clean and dry.
- The lashing straps used must be suitable for the total weight of the machine (see section ⇒ 6.1).
- Fastening on the loading area is done by lashing down: This means that the transport pallet is secured by frictional locking. The load is pressed so firmly onto the loading surface that it can no longer slip. The clamping tool should have a high STF value at the frictional connection, e.g. long-lever ratchets.
- In addition, anti-slip mats should be used to provide even more safety.
- The ideal lashing angle (α) for tie-down lashing is 83° to and 90°. Therefore, the lashing straps should pull downwards approx. vertically. As the angle decreases, the pretensioning force of the lashing is reduced.
- When tensioning the lashing straps, make sure that no parts of the machine can be crushed or damaged.
- Accessories (e.g. stops systems) should not be on the machine table for transport. These can, for example, be packed individually in cardboard boxes and tensioned separately while lying on the floor or table top of the machine. Use a separate lashing strap for this purpose.
- Observe the permissible total weight of the transport vehicle.
- Ensure that the permissible axle loads of the transport vehicle are observed. The load must be distributed evenly on all axles of the vehicle.

8.6 Connecting the Extraction Unit

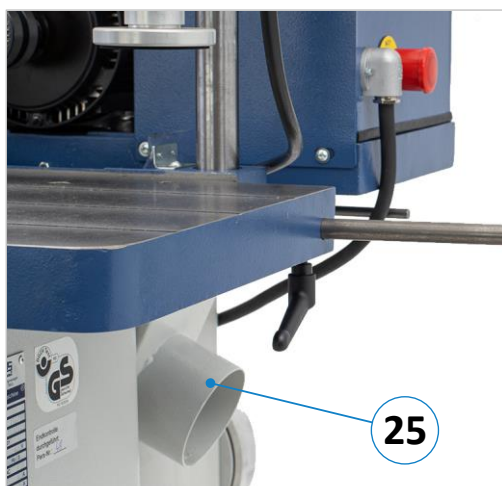


Figure 6: Suction nozzle

The machine must be connected to an effective extraction system on-site. The suction nozzle (25) has an outer diameter of 100 mm.

For automatic switching of the extraction system, two signal generator lines must be connected to terminals 1 and 2 of switch S1 (see circuit diagram).

Installation only by a qualified electrician!



When the machine is switched on, the extraction system must start automatically.



When flexible suction hoses are used, they must be flame-retardant.



All parts of the extraction system, including hoses, must be included in the earthing measure!

8.6.1 Air Speed

The air speed must be set in such a way that, with the extraction line connected and the tools stationary, an average air speed of

- 20 m/s (565 m³/h) with dry chips
- and a negative pressure of 600 Pa

is achieved at the extraction nozzle.



- ***The air velocity must be checked before initial commissioning and after significant changes.***
- ***The extraction system must be checked daily for obvious defects after initial commissioning and monthly for effectiveness.***

9 Electrical Connection



The electrical connection must be carried out by an authorised electrician!

The motor is only guaranteed if it is connected by an authorised electrician. In the event of a complaint, the electrician must confirm in writing that the machine has been connected in accordance with the regulations.

The electrical circuit diagrams are located in the motor cover behind the main switch (1).

Please observe the specified nominal voltage 400 VAC / 50 Hz (3 phases / N / PE)!

The machine is delivered ready for operation. Only the matching connector must still be fitted to the cable.

- The 3 phases are to be connected to the terminals “L1”, “L2”, and “L3”.
- The protective earth wire (yellow/green) must be connected to the terminal marked “PE”, the neutral wire to the terminal marked “N” (please note: “N” is loaded!).
- After connection, close the connector housing properly.



Observe the correct right hand direction of rotation of the drill spindle!



If the direction of rotation is wrong, the phases L1 and L2 must be interchanged.

9.1 Back-up Fuses (on-site)

The regulations of the local electric power company apply.

Motor	1.3 / 1.7 kW
400 V	16 A slow



The fault loop impedance and the suitability of the overcurrent protection device must be checked at the installation site of the machine.

Supply cable: Cu, 5-core. The cross-section must be determined on site by a qualified electrician!

9.2 Machines with Variable Speed Control

For machines with optional, variable speed control, it is essential to observe the following:



- ***Pulse current sensitive RCDs type A (according to DIN VDE 0664) are impaired in their tripping behaviour.***
- ***It is not permissible to operate the machine on a circuit that is protected by such RCDs.***
- ***The machine must therefore be operated on a circuit that is protected by an all-current sensitive RCD type B.***



Danger from electric shock at the frequency inverter! After switching off the main switch wait at least 15 minutes before working on the frequency inverter.

10 Components and Controls

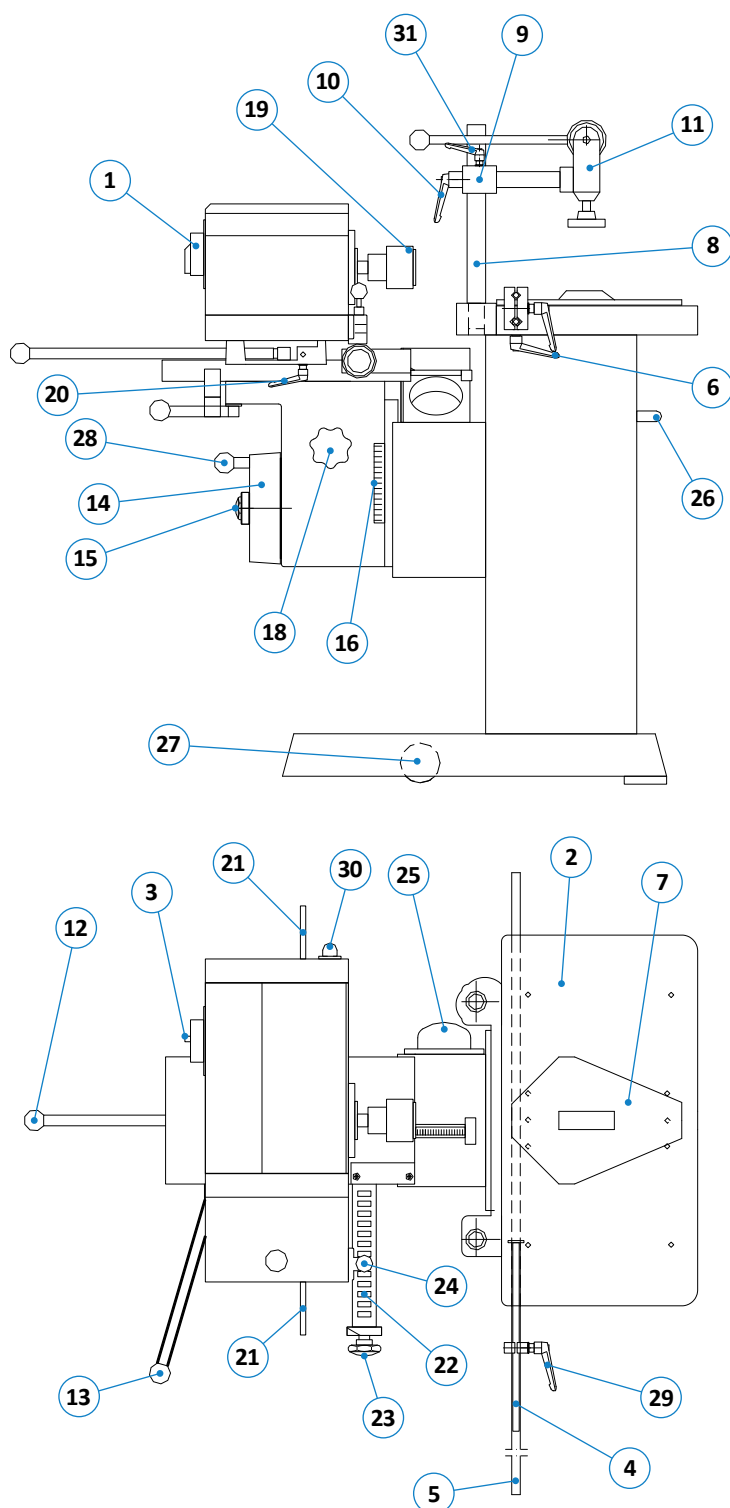


Figure 7: Components and controls

Pos.	Description
1	Main switch
2	Table top
3	Emergency stop button
4	Workpiece stop
5	Workpiece stop extension
6	Stop extension clamping lever
7	Mitre fence 45° / 22.5°
8	Column guide to eccentric clamp
9	Cross piece for clamping levers
10	Clamping lever "height"
11	Eccentric clamp
12	Lever for transverse movement
13	Operating lever for drilling depth
14	Hand wheel for height adjustment
15	Star grip for handwheel clamping
16	Height adjustment scale
17	Drill depth stop
18	Star grip for drill depth clamping
19	Three-jaw drill chuck
20	Clamping limit stops
21	Limit stops (for mortise length)
22	Dowel indexing device
23	Star grip for clamping index bolt (24)
24	Locking bolt (dowel indexing device)
25	Suction nozzle
26	Push handle
27	Mobile base
28	Ball crank on handwheel
29	Clamping for stop pull-out
30	Cable inlet
31	Clamping lever "length"

11 Mounting and Preparation



Mounting work may only be carried out by trained specialist personnel.

Before the machine can be put into operation, the components supplied must be assembled. The procedure is described in detail in the following sections.

11.1 Removing the Transport Lock

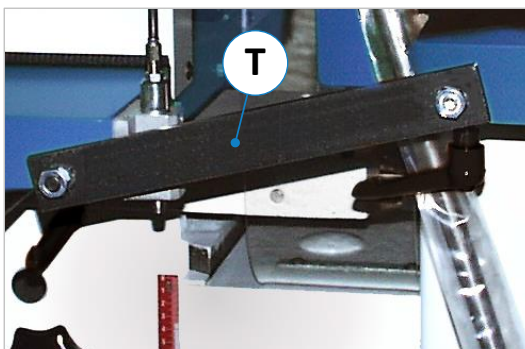


Figure 8: Remove transport lock

During transport, the movable drilling support is secured to the table top with a transport lock.

- If not already done during unpacking (see section ⇨ 8.2) the transport lock (T) must be removed with an open-end spanner before starting the mounting work described below.



Keep the transport lock and associated parts in a safe place in case the machine needs to be transported at a later date.

11.2 Mounting the Dowel Indexing Device

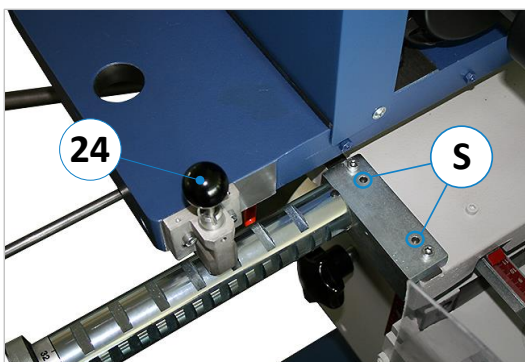


Figure 9: Mounting the dowel indexing device

The dowel indexing device is supplied completely pre-assembled. It only needs to be mounted on the drilling table with two screws.

- Pull the locking bolt (24) and turn it by 90°.
- Unscrew the two screws (S) mounted in the table.
- Place the dowel indexing device (22) on the holes and fasten it with the screws (S).

11.3 Mounting the Workpiece Stop

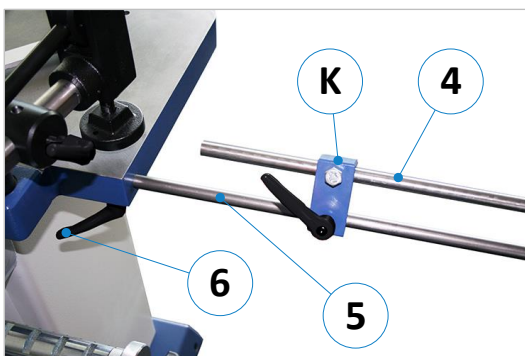


Figure 10: Mounting the workpiece stop

The workpiece stop (4) supplied is used for serial machining and is attachable to both sides of the drilling table (2).

- Open clamping lever (6).
- Insert the extension rod (5) into the hole on the side of the table top and tighten the clamping lever (6) well.
- Push the guide block (K) with the mounted stop rod (4) onto the guide rod (5) and clamp it in the desired position by means of the lever.

11.4 Mounting the Control Levers

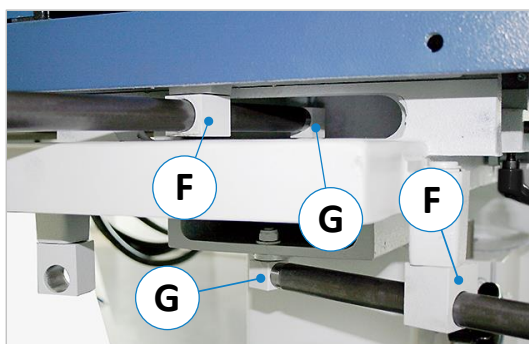


Figure 11: Mounting the control levers

The two control levers (12) and (13) for the longitudinal and transverse movement of the drilling unit are fitted as follows:

- Push the two control levers through the guide blocks (F) and screw them tightly to the hinge bolts (G).
- In case of misalignment, turn guide blocks (F) by 180°.

11.5 Mounting the Eccentric Clamps

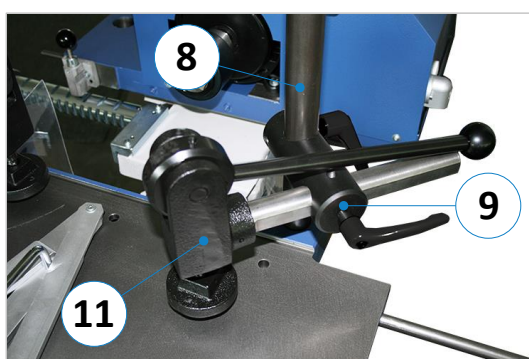


Figure 12: Mounting the eccentric clamps

The two eccentric clamps included in the scope of delivery are mounted on the right and left of the table top.

- Push the cross piece (9) onto the support bolt (8) and fix it with the corresponding clamping lever.
- Fasten the eccentric clamp (11) to the cross piece (9) with the corresponding clamping lever.

12 Commissioning

Before commissioning, carefully read and observe this manual and the safety instructions in chapter (⇒ 5).



Before switching on, make sure that

- the drilling bit is firmly and securely clamped,
- the machine table and stop surfaces are clean and free of objects,
- the guards are fitted in accordance with regulations,
- the extraction system is connected and in good working order
- and the direction of rotation is selected to suit the tool and work process.

12.1 Clamping and Replacing the Drilling Tool

With the standard three-jaw drill chuck, drilling bits with diameters from 5 mm to 20 mm can be clamped.



Figure 13: Three-jaw drill chuck

- To clamp the drilling tool, use the supplied drill chuck spanner.
- The tool must be clamped as deep as possible (over the entire length of the drill chuck).
- Before switching on the machine, make sure that the tool is clamped securely and tightly.



After the drilling work has been completed, the drilling bit must be removed, as there is an increased risk of injury due to the protruding tool.

12.2 Switching ON an OFF



Clamp the drilling bit centrally before switching on and remove the drill chuck spanner!

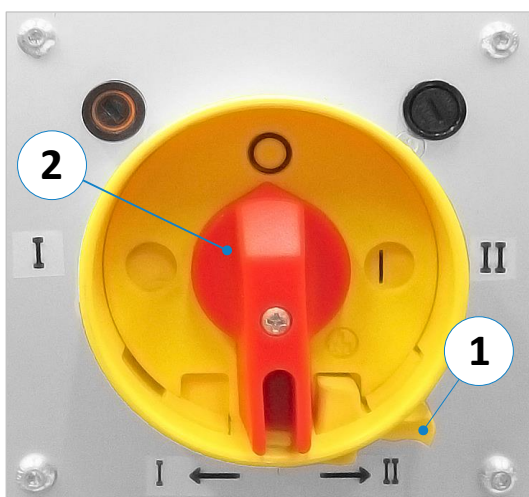


Figure 14: Switching ON and OFF

Switching ON

Drilling with 1500 rpm:

- Turn the selector lever (1) to the left
- Turn start switch (2) to the position "I"
- Carry out your drilling work

Drilling with 3000 rpm:

- Turn the selector lever (1) to the right
- Turn start switch (2) to the position "II"
- Carry out your drilling work

Switching OFF

- Turn start switch (2) to the position "O"

Remark: Machines equipped with the "Variable Speed Control" option do not have a two-stage but a standard single-stage main switch with the positions "O" und "I". The speed is then set via the corresponding setting wheel on the frequency inverter.

For more information on the option "Variable Speed Control", see section ⇒ 14.5.

13 Operation

13.1 General Working Methods

Note: Missing equivalents for the following numberings can be found in ⇒ Figure 7.

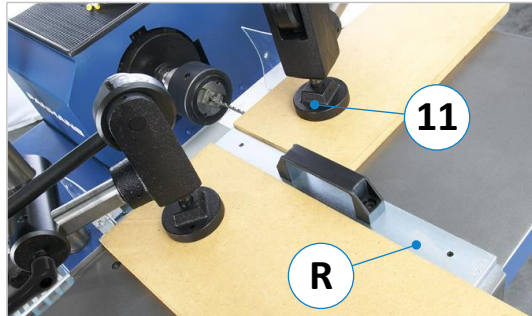


Figure 15: Clamping with frame stop

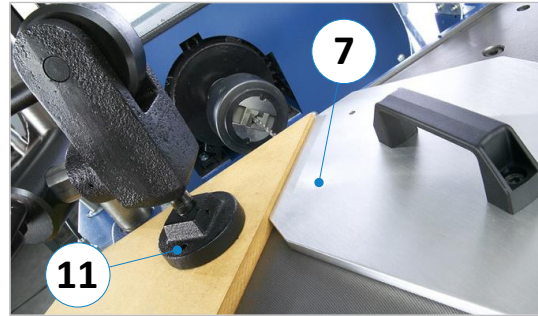


Figure 16: Clamping with mitre fence

- Place the workpiece on the table top (2). Simultaneously press the workpiece against the table edge stop and (depending on the type of machining) either the frame fence (R) or the mitre fence (7) and clamp it with the eccentric clamp (11).
- Insert the drill into the three-jaw drill chuck (19) or the optional collet chuck and clamp it with the spanner.
Note: If the opening for the drill chuck spanner is not accessible, the spindle can be turned manually.

13.1.1 Pre-Settings

- Set both limit stops (21) to the desired mortise length and clamp (see ⇒ 13.3).
- For blind holes, set the drilling depth stop (17) to the desired drilling depth (see ⇒ 13.4).
- Adjust the drill support to the appropriate height using the handwheel (14) (see ⇒ 13.5).
- Use the levers (12) or (13) to move the drill support in transverse or longitudinal direction.

13.2 Mortising

The drilling of a mortise is carried out according to the sequence shown in ⇒ Figure 17:

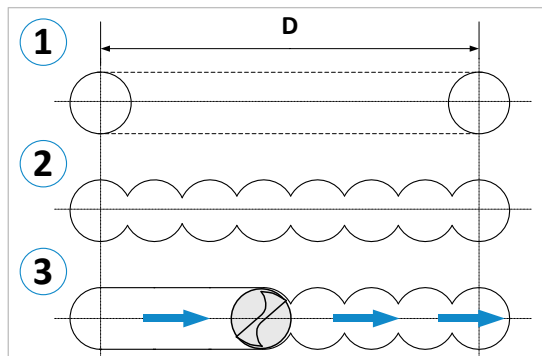


Figure 17: Mortising sequence



Figure 18: Drilling out a mortise

- After the pre-settings (⇒ 13.1.1) a hole is drilled as start and end point (see distance “D”) until the depth stop is reached. **Note:** The start and end point for the mortise length must be set beforehand at the limit stops.
- Then drill several intermediate holes manually or via the dowel indexing device (see ⇒ 13.6) over the entire mortise width to the depth set on the drill depth stop. Choose the hole spacing so that the holes do not run into each other, see ⇒ Figure 17 (2).
- Then drill out the mortise by moving back and forth several times against the two limit stops (21) in the transverse direction. Use the control lever for the transverse adjustment for this. Repeat the process until all intermediate holes form a clean and continuous mortise. **Remark:** For deep mortises, gradually increase the depth when connecting the intermediate holes together. This reduces the load on the tool and motor.

13.3 Setting the Limit Stops

The two limit stops are set by manually moving the fences to the desired length of the mortise.

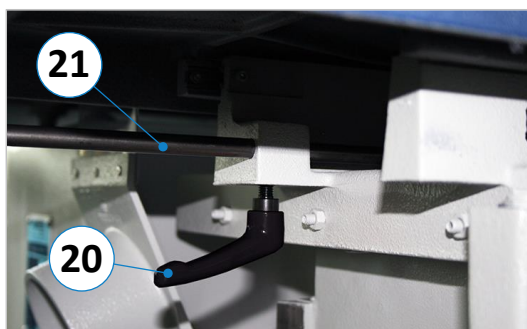


Figure 19: Limit Stop

- Open the two clamping levers (20). These are located on the right and left underneath the cross table.
- Move the two limit stops (21) to the desired start and end point of the desired mortise:
→ position the centre of the drill to a marking line
→ or use the optional laser (see ⇒ 14.8.1)
- Tighten the clamping lever (20) on both sides again.

13.4 Adjusting the Drilling Depth Stop

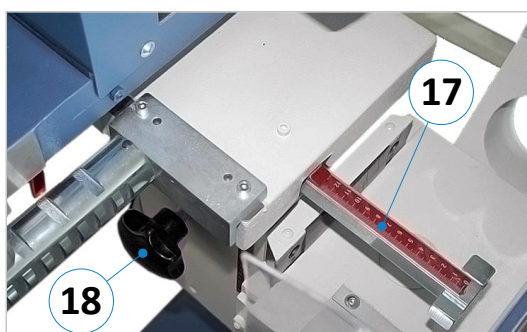


Figure 20: Drilling depth stop with scale

The drilling depth stop is used to precisely set the desired drilling depth.

- Open star grip (18) underneath the dowel indexing device.
- Move the stop down to the desired drilling depth (17) by hand and using the scale (17).
- Tighten the star grip (18) again.



In the case of deep mortises, always gradually increase the drilling depth to connect the intermediate holes together (according to Figure 17). Drilling too deep in one step can destroy the tool and/or overload the motor.

13.5 Height Adjustment via Handwheel

The height of the drill support is adjusted using the handwheel on the operating side. The setting 0 on the scale means that the tip of the drill is exactly at the level of the top edge of the table top.

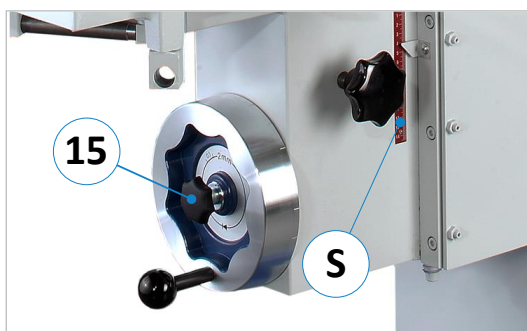


Figure 21: Handwheel with scale

- Loosen handwheel clamping with star grip (15).
- Adjusting the height via the scale (S):
Move upwards → Turn to the right ↻
When adjusting upwards, move beyond the position and then back (to compensate for spindle play).
Move downwards → Turn to the left ↻
- Tighten the star grip (15) again.



When adjusting the height, make sure that it is not set too low, otherwise there is a risk of collision between the table edge stop and the drilling tool.

13.6 Characteristic when drilling dowel holes at an angle to the wood fibre

When drilling dowel holes in mitred surfaces at 45° to the wood grain, the drill can be pushed away in height. This is caused by drilling at an angle to the wood grain. When the parts are joined together, there is then an offset in height. Drilling tests in the factory have shown that the best results are achieved with a conventional metal drill.

13.7 Using the Dowel Indexing Device

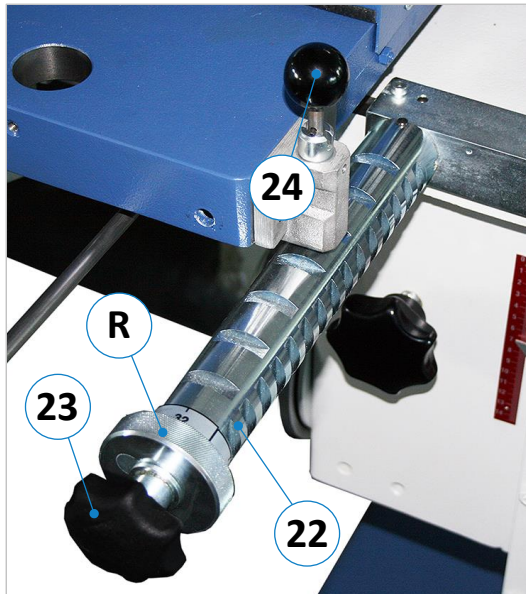


Figure 22: Using the dowel indexing device

With the dowel indexing device, precise hole line drillings can be made at pitches of 16 / 22 / 25 / 32 mm.

Change the grid to another dimension:

- Pull the locking bolt (24) upwards and turn it by 90°.
Note: With optional single-lever operation, lift the locking bolt off the dowel drilling device (22) using the single-lever (for procedure see section ⇒ 14.1).
- Loosen star grip (23).
- Pull out the dowel indexing device (22) a little via the knurled handle (R) and turn it to the desired pitch.
- Tighten the star grip (23) again and engage the locking bolt (24) in the indexing barrel. **Note:** With optional single-lever operation, proceed as described in section ⇒ 14.1.

14 Optional Components

The article numbers for the following options can be found in chapter ⇒ 17 "Options and Accessories".

14.1 Option - Single-Lever Operation

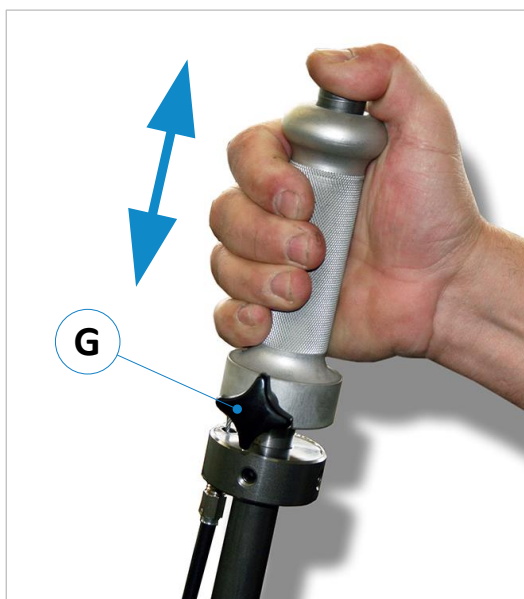


Figure 23: Option - Single lever operation

With the optional single-lever operation, the longitudinal and transverse movement of the drilling unit is carried out centrally via just one lever. In addition, the locking bolt of the dowel indexing device can be lifted off the raster rod and re-engaged with this lever via a Bowden cable system.

Move drilling unit:

- The drilling unit is moved by swivelling the lever in the desired transverse or longitudinal direction.

Operating the dowel indexing device:

- The locking bolt of the dowel indexing device is lifted off by pushing the lever upwards
→ Setting to the next drill hole is possible.
- To change the pitch (see section ⇒ 13.6) push the handle upwards and tighten the handle screw (G). Then loosen the handle screw (G) again.

Note: When equipped with this option, narrow work-pieces can also be machined easily from the table side.

14.2 Option - Variable Double Mitre Fence

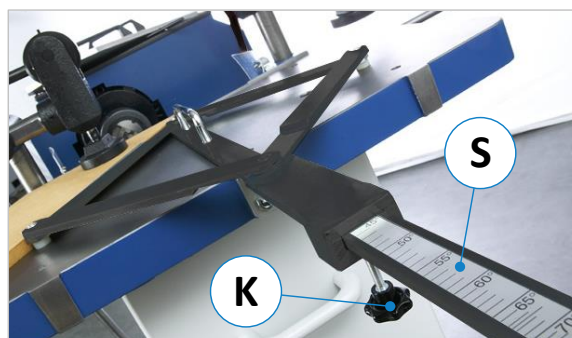


Figure 24: Option - Variable double mitre fence

In contrast to the standard mitre fence with two fixed degrees, the optional double mitre fence allows infinitely variable adjustment of angles in a range from 22.5° to 75°.

- For setting, open the star grip (K).
- Set the desired angle via the scale (S).
- Clamp adjusted angle measure with star grip (K).

14.2.1 Attaching the Variable Double Mitre Fence

To attach the double angle adjustment fence to the machine table top, proceed as follows:

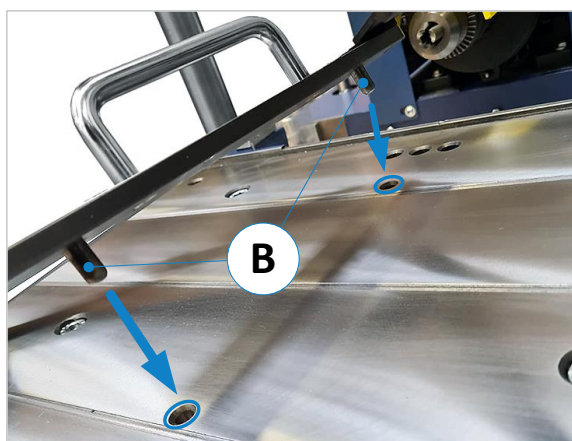


Figure 25: Locking bolts on the top side

- Place the variable double mitre fence on the machine table from the top so that the two locking bolts (B) engage in the holes provided in the table top.

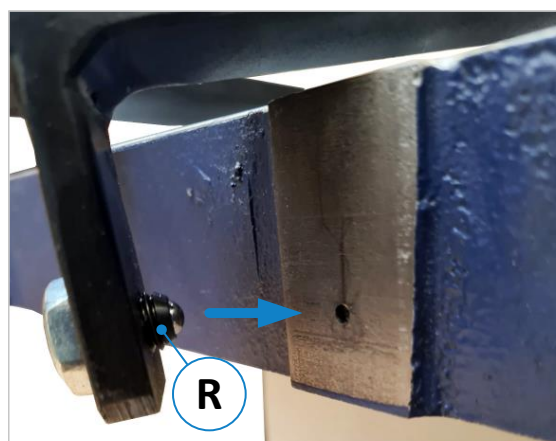


Figure 26: Locking pin on the front side

- At the same time, make sure that the locking pin (R) engages in the hole on the front of the machine table. The variable double mitre fence can then be used.

14.3 Option - Pneumatic Safety Clamping Cylinders

The two pneumatic safety clamping cylinders are used instead of the manual eccentric clamps. Workpieces can be clamped in an equally safe and user-friendly manner. The effective stroke of 100 mm allows a large setting range of different workpiece thicknesses without the need to make a separate adjustment. The cylinder is a sophisticated clamping system which generates a high clamping force and at the same time prevents injuries to the hands.

Installation:

- Open the clamping lever and insert the clamping cylinder into the horizontal hole in the crosspiece.
- Connect the air hose to the local compressed air network → **⚠ Operating pressure max. 6 bar!**

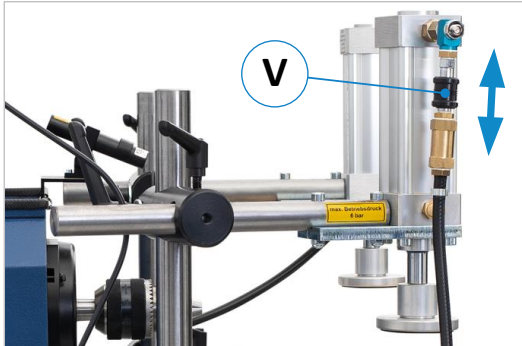


Figure 27: Option - Pneumatic safety clamping cylinders

Operation:

- The pneumatic clamping cylinder has a generous stroke of max. 100 mm.
- Adjust the height of the clamping cylinder to the workpiece so that the stroke is sufficient for clamping. Use the full stroke for different workpiece thicknesses.
- **Clamp workpiece** → Push the hand slide valve (V) forwards towards the clamping plate.
- **Release clamping** → Push the hand slide valve (V) back to the rear.



Please note: Only flat workpiece surfaces (parallel to the table top) can be clamped with the pneumatic clamping cylinder! At a tilt > 2° the safety mechanism triggers.

14.4 Option - Dial Gauge in the Handwheel

The analogue dial gauge is adjusted so that the tip of the drill is exactly level with the upper edge of the table top when the display shows 0. The dial gauge always shows the exact position (accuracy 0.1 mm).

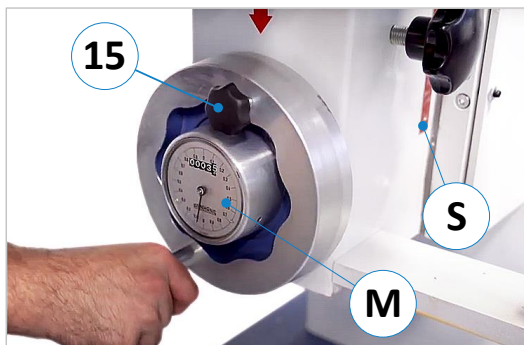


Figure 28: Option - Dial gauge in the handwheel

- Loosen handwheel clamp with star grip (15).
- Make rough adjustment via scale (S):
Move upwards → Turn to the right ↻
 When adjusting upwards, move beyond the position and then back (to compensate for spindle play).
Move downwards → Turn to the left ↻
- Then make fine adjustment via dial gauge (M).
- Tighten the star grip (15) again.

14.5 Option - Variable Speed Control

When equipped with this option, the drilling spindle speed can be regulated continuously from 100 to 2,870 rpm. Instead of the pole-changing 1.3 / 1.7 kW motor, a 1.7 kW motor with a permanently installed frequency inverter is used here. In addition, the mechanical motor brake is no longer required, as the braking process is controlled electronically via the FI.



Figure 29: Option - Variable speed control

- The main switch (1) of the machine is not two-stage but single-stage with this option:
→ Position “O” = OFF | Position “I” = ON
- The variable speed setting is made directly on the frequency inverter (F) using the setting wheel (R):
Increase speed → turn clockwise ↻
Reduce speed → turn anticlockwise ↻

	The separate operating instructions for the frequency inverter must be observed.
	Maintenance and repair work on the frequency inverter may only be carried out by an authorised electrician!
	Danger from electric shock at the frequency inverter! After switching off the main switch, wait at least 15 minutes before working on the frequency inverter.

14.6 Option - Safety Protection Cover



Figure 30: Option - Safety protection cover

This safety guard prevents the drilling spindle from starting unintentionally. The motor only starts when the protective cover is folded down.

- protective cover for with electrical lock
- for mounting above the drill chuck
- ensures more safety when drilling long holes

14.7 Option - Collet Chuck



Figure 31: Option - Collet chuck

The optionally available collet chuck with a Ø 10 mm collet ensures even higher precision in concentricity with clamped drilling tools. It replaces the three-jaw chuck fitted as standard.

The delivery also includes a matching collet spanner.

In addition, separate collets for collet chuck Ø from 2 to 20 mm (depending on customer requirements) are available. Please state the diameter when ordering.

14.8 Option - Positioning Lasers

As a workpiece positioning aid, the machine can be equipped with a positioning laser unit. The laser beam enables the exact positioning of the drill centre on the workpiece marking. Depending on customer requirements, a mains-powered or battery-operated model is available (see ⇒ 14.8.3 resp. ⇒ 14.8.4).

14.8.1 Making a Mortise with the Laser Beam:

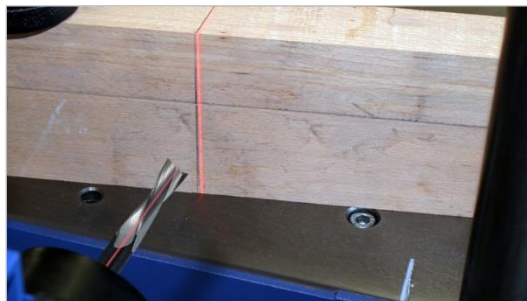


Figure 32: Align the laser with the workpiece marking

- Release the clamping levers of the two limit stops (21).
- Position the marking line of the clamped workpiece flush with the laser beam at the starting position of the mortise by means of cross adjustment.
- Move the corresponding limit stop to this dimension and clamp it with the clamping lever.
- Repeat the same procedure for the end position of the mortise with the second stop.

14.8.2 Particularities when using a Positioning Laser

The following instructions apply equally to the two laser models with battery operation and power connection.

- Do not look into the laser beam.
- The laser is correctly positioned at the factory and must not be adjusted under any circumstances.
- The installed laser must not be replaced by a laser of a different type.
- No additional optical devices or attachments may be used.
- Laser repairs may only be carried out by the laser manufacturer or by authorised persons.
- Note that the laser beam may be reflected by reflective surfaces (e.g. the table top or other bare machine parts and/or accessories).



Warning: Looking directly into the laser beam will cause serious eye injuries!



The operating instructions of the laser manufacturer must also be observed.

14.8.3 Mains-Powered Laser

The mains-powered laser (laser class 1 M) is already mounted at the factory when the machine is delivered and precisely aligned with the spindle resp. drill centre. Please do not change this setting under any circumstances!

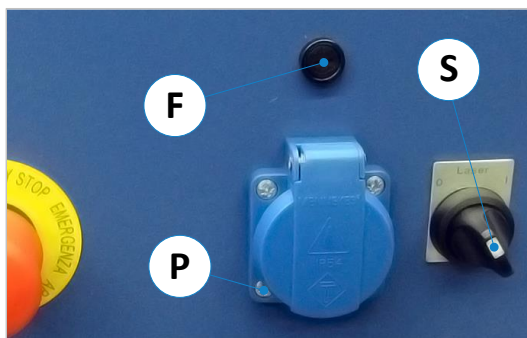


Figure 33: Laser ON/OFF switch & machine socket

If the machine is equipped with this laser type, there are three additional components on the machine (to the right of the emergency stop switch):

- The machine socket (P) for connecting the plug-in power supply unit of the laser.
- The switch (S) to switch the laser ON and OFF.
- The fuse (F) of type 1 A slow-blow for protection of the laser electronics .

Please also read the section ⇒ 14.8.1 "Making a Mortise with the Laser Beam".

14.8.4 Battery-Operated Laser

The battery-operated laser (laser class 1 M) is already mounted at the factory when the machine is delivered and precisely aligned with the spindle resp. drill centre. Please do not change this setting under any circumstances!

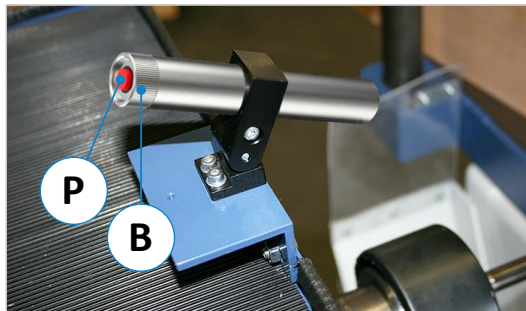


Figure 34: Laser ON/OFF switch & battery cover

- Switching ON and OFF is done via the switch (P) at the back of the laser housing.
- For power supply, either a
 - 1.5 VDC battery (type AA) or a
 - rechargeable 1.2 VDC battery
 is inserted into the battery compartment (B).
- The battery life for continuous operation is approx. 15 to 20 hours.

Please also read the section ⇒ 14.8.1 “Making a Mortise with the Laser Beam”.

14.8.4.1 Battery Change

- Before changing the battery, switch off the machine and secure or lock the main switch.
- Switch off the laser via the switch (P) on the laser housing.
- Unscrew ⤴ the battery cover (B) at the back and remove the old battery.
- Insert a new resp. charged battery into the battery compartment and observe the polarity.
- Screw ⤴ the battery cover (B) back in and switch on the laser as needed.



Fire, explosion and burn hazard!

Never recharge conventional type AA batteries or expose them to temperatures above 85° C.



Please dispose of the used batteries in a professional and environmentally friendly manner.

14.8.5 Realignment of the Laser

If the laser is misaligned or the centre of the drilled hole is no longer in exact alignment with the laser beam, the laser must be realigned. The lateral adjustment is made via the oblong hole on the mounting bracket for the laser device, in which the two fastening screws are located.

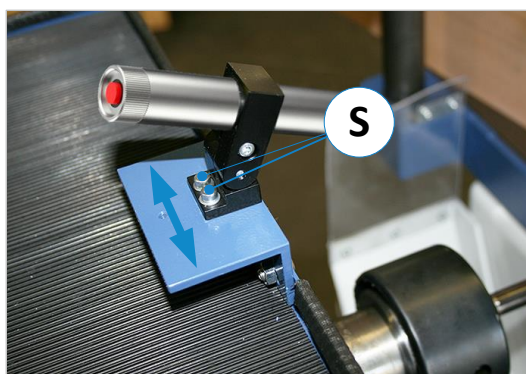


Figure 35: Realignment of the laser

- On the table top there is a notch as a reference point for alignment. This position corresponds exactly to the spindle or drill centre.
- Loosen the two screws (S) on the bracket.
- Switch on the laser device (⇒ Figure 33 or ⇒ Figure 34).
- Then align the laser beam exactly to the position of the notch by moving it sideways. At the same time make sure that the laser beam is parallel to the drill. This can be done with the help of a 90° stop angle by placing it horizontally against the table stop plate.

- When the position and parallelism are perfect, tighten the two screws (S) again.

Note: The tilt setting of the laser has no or little influence on the quality of the laser beam at this short distance. The tilt should be approx. as shown in the figure above and the laser beam should be sharp and clearly visible.

15 Troubleshooting

Proceed systematically when searching for the cause of a malfunction. If you are unable to find the fault or to remedy the malfunction, contact our customer service department (phone number: 0049 7571 / 755 – 0).

Before you call us, please follow these steps:

- Make a note of the type, machine number and year of production (see nameplate).
- Keep this operating manual (and any circuit diagrams) to hand.
- Describe the fault to us in detail so that a competent remedy can be found.

Fault	Possible Cause	Remedy
The machine does not start	No voltage Control fuse Main switch defective Main switch defective Drive motor defective Emergency stop button pressed	→ Check power supply (electrician!) → Replace fuse (electrician!) → Replace main switch (electrician!) → Contact customer service → Pull/unlock button
Motor power is not sufficient	Incorrect or defective drill bit Drilling depth too high for mortising Motor defective or wired incorrectly	→ Use a different/new drill → Increase the depth gradually → Contact customer service
Poor drilling result / ejection of wooden parts	Workpiece incorrectly clamped Defective drill Drill speed too high	→ Clamp workpiece correctly → Use new drill → Reduce speed
Handwheel for height adjustment is stiff	Handwheel clamp tightened Dovetail guide of the drill are support heavily soiled	→ Loosen clamping → Clean the guide
Support for the height adjustment has too much play	Dovetail guide must be readjusted	→ Adjust the guide evenly, see section ⇨ 16.2
The cross table has too much play	Cross table ball guides must be readjusted	→ Adjust the ball guides consistently, see section ⇨ 16.3
Machine vibrates	Machine stands unevenly	→ Level out unevenness → Bolt the machine if necessary

Optional Faults	Possible Cause	Remedy
Machine does not start	Electrical lock of the guard is active	→ Close protective cover
Pneumatic clamping cylinder does not clamp	Compressed air valves / connections are defective or leaking Safety mechanism triggered	→ Check the compressed air valve and connections → Only flat surfaces < 2° can be clamped
Laser beam does not coincide with the drill centre	Laser is mechanically misaligned	→ Realign the laser, see section ⇨ 14.8.5
The laser cannot be switched on or does not work	Switch or cable defective Fuse (1 A slow) defective Battery is empty Laser unit defective	→ Check switches & cables (electrician!) → Check / replace fuse → Replace / charge battery → Contact customer service

16 Maintenance and Inspection



Before any maintenance and inspection work is carried out, chapter ⇒ 5 "Safety" must be read carefully and observed!

Operational malfunctions caused by insufficient or improper maintenance can result in very high repair costs and long machine downtimes. Regular maintenance is therefore essential.

- Clean the machine daily and keep regular lubrication intervals (see section ⇒ 16.1)
- Inspect electrical equipment/components weekly for externally visible damage and have them repaired by a qualified electrician if necessary.
- Immediately remove and replace damaged guards. Never work with damaged equipment!
- Before starting work, check the extraction system for full function every day.
- The extraction system must be checked for obvious defects before initial commissioning, daily and monthly to ensure its effectiveness.
- The air velocity to the extraction system must be checked before the initial commissioning and after significant modification.
- If the motor does not stop within 10 seconds after switching off - despite readjustment of the motor brake (refer to section ⇒ 16.4) - it is essential to contact the customer service.
- Do not use the machine until these conditions are met.

Due to the different operating conditions, it is not possible to determine in advance how often a wear check, inspection or maintenance is required. Inspection intervals are to be determined appropriately according to the respective operating conditions.

16.1 Lubrication

- Every 3 months, the dovetail guides of the drilling support and the ball guides of the cross table must be lubricated with a thin-bodied oil.
- In order to maintain the smooth running of all moving parts such as eccentric clamps, workpiece stop, mitre fence, etc., these should be lubricated with a thin-bodied oil as required.

16.2 Readjusting the Dovetail Guide

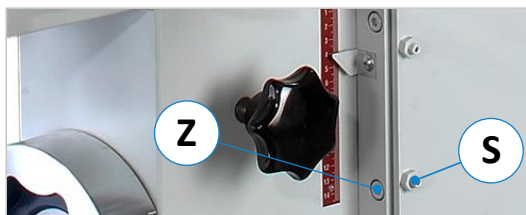


Figure 36: Readjusting the dovetail guide

- Loosen the 3 screws (Z).
- Loosen the 3 lock nuts of the adjusting screws (S) and adjust all three adjusting screws evenly so that the drilling support runs without play again.
- Tighten all counter nuts and cylinder screws (S) again.

16.3 Readjusting the Cross Table Ball Guides

The adjustment screws for the ball guides "transverse movement" are located at the front of the cross table below the motor. The ball guides for "drilling depth movement" are located on the left side of the cross table.

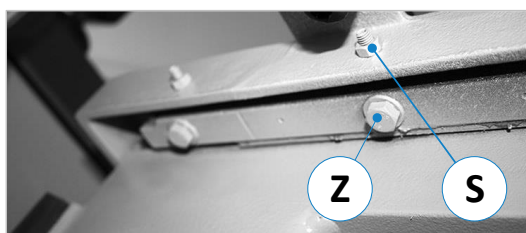


Figure 37: Readjusting the cross table ball guides

- Loosen the 3 screws (Z).
- Loosen the 3 lock nuts of the adjusting screws (S) and adjust all three adjusting screws evenly so that the cross table runs without play again.
- Tighten all counter nuts and cylinder screws (S) again.

16.4 Readjust Motor Brake

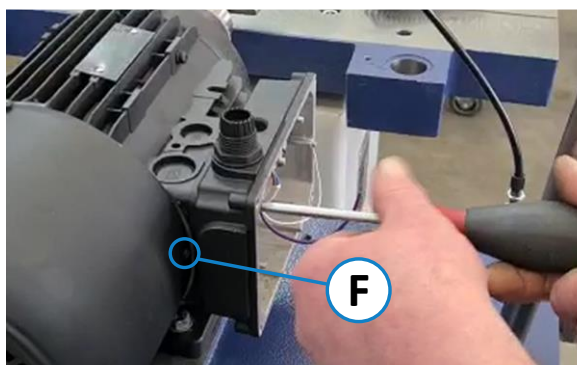


Figure 38: Remove the side cover

1. In order to access the screw (F) to open the fan cover and thus the motor brake, the side cover for the terminal box must first be dismantled and removed via the 4 fixing screws.

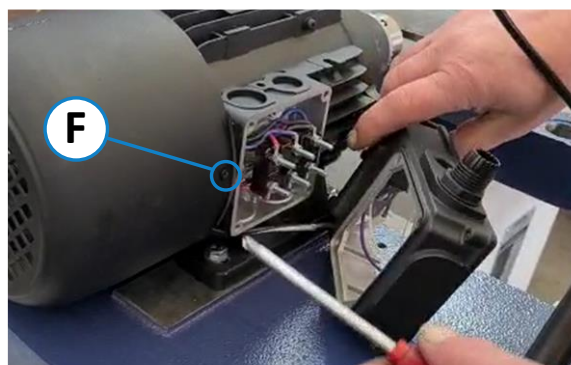


Figure 39: Loosen and remove the terminal box

2. Then also unscrew the inner 4 screws and remove the frame of the terminal box → The screw (F) is now accessible.
3. Loosen all 3 screws around the fan cover and remove the fan cover.



Figure 40: Loosen the securing screw

4. Now loosen the locking screw on the front side with a flat-blade screwdriver (↺ by approx. 1 turn).

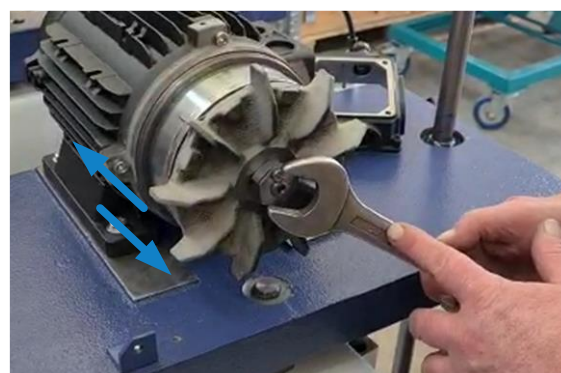


Figure 41: Adjusting nut for brake lining

5. With an SW27 open-end spanner, the brake can now be adjusted outwards ↺ or inwards ↻ via the centred adjusting nut.

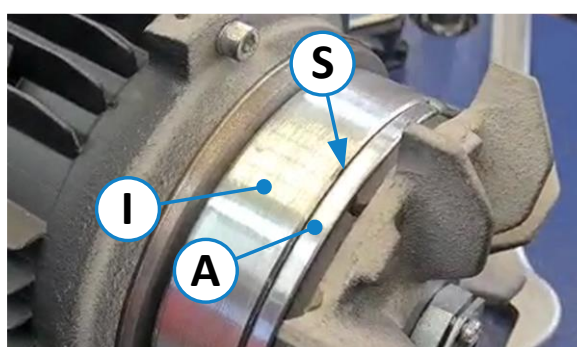


Figure 42: Gap to be adjusted

6. The gap dimension (S) between the inside (I) and the outside (A) must be 0.6 to 0.7 mm → Check gap dimension with feeler gauge



Figure 43: Readjust with feeler gauge

7. If the gap is too wide, readjust approx. 1/8 turn ↻ until 0.6 mm (max. 0.7 mm) is reached (check at several points!)
8. Then retighten the securing screw (see ⇨ Figure 40) reassemble all components → Start the motor and check the braking time (maximum 10 seconds).



If rattling noises occur in the area of the fan blade when turning the motor, please contact our customer service. Possibly the brake lining is worn out .

16.4.1 Replacing the Motor Brake

If the adjustment of the motor brake described previously is not successful, the motor brake must be replaced. First make a note of the type designation and other information on the name plate of your motor. Then contact our customer service (phone 0049 7571 / 755 - 0) to order a suitable new brake.

16.5 Motor Brake with optional Variable Speed Control

On machines with the option "Variable Speed Control", the motor brake cannot be readjusted because there is no longer a mechanical brake. The braking process is completely controlled by the frequency inverter. If you still have problems braking the machine, please contact our customer service (phone 0049 7571 / 755 - 0).

17 Options and Accessories

In the following tables you will find available options and accessories to upgrade your machine.




Use only the tools, accessories and spare parts specified by the manufacturer. The use of other tools, accessories or spare parts may cause injury to persons and damage to the machine. The manufacturer accepts no liability for any damage resulting from the use of tools, accessories or spare parts not specified by the manufacturer or from additional components supplied by third parties!


Article	Description	Art. No.
VARIABLE DOUBLE MITRE FENCE	Infinitely variable angular adjustment range from 22.5° to 75° instead of the pluggable mitre fence for fixed degrees of 45° and 22.5°.	4459
2 PIECES PNEUMATIC SAFETY CLAMPING CYLINDERS	100 mm stroke, with manual slide valve; for clamping the workpieces on the table top of the machine (instead of the manual eccentric clamps). Compressed air connection required from the customer!	4612
SINGLE-LEVER OPERATION	With remote locking for the longitudinal and transverse movement of the drill motor, including release and locking of the locking bolt on the dowel indexing device (instead of the 2-lever operation), narrow workpieces can thus also be machined from the table side.	4058
DIAL GAUGE IN HANDWHEEL	With 0.1 mm display of height adjustment instead of scale.	4306
LASER WITH POWER SUPPLY	For drill line visualisation, Laser beam with 300 mm line length.	4579
LASER WITH BATTERY POWER	For drill line visualisation, Laser beam with 300 mm line length.	4236
SPECIAL EMERGENCY STOP BUTTON	Lockable, key included.	4610
SAFETY PROTECTION COVER	Safety protection cover with electrical locking, for mounting above the drill chuck	4611
SONDERSPANNUNG	220 V / 50 HZ, maximum 4 kW.	4600
COLLET CHUCK WITH ONE COLLET	Instead of the three-jaw drill chuck (diameter = 10 mm); Other collets on request.	4928
EXTRA COLLET	Ø 2 - 20 mm, please specify diameter (price per piece).	4929
VARIABLE SPEED CONTROL VIA FREQUENCY INVERTER	Variable speed control of the drill spindle via frequency inverter (adjustable from approx. 100 to 2870 rpm).	4609

18 Disassembly and Scrapping


When dismantling and scrapping the machine, the current EU regulations or the respective regulations and laws of the country of operation, which are prescribed for proper dismantling and disposal, must be observed. The aim is to dismantle the machine and its various materials and components properly, to recycle all possible parts and to dispose of non-recyclable components in the most environmentally friendly way.

	<p>Please pay particular attention to</p> <ul style="list-style-type: none"> • <i>the dismantling of the machine in the working area</i> • <i>proper dismantling of the machine and accessories</i> • <i>a safe and proper removal of the machine</i> • <i>proper separation of all components and materials.</i>
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When dismantling and disposing the machine, the laws and regulations in force at the place of use concerning health and environmental protection must be observed.


	<p>Remove all residues of oil, grease and other lubricants and have them disposed of properly by a qualified disposal company.</p>
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When separating, disposing of or recycling the machine materials, comply with the environmental protection laws in force at the place of use regarding the disposal of industrial solid waste toxic and hazardous waste.

	<ul style="list-style-type: none"> • <i>Hoses and plastic parts as well as other components that are not made of metal must be dismantled and recycled or disposed of separately.</i> • <i>Electrical components such as cables, switches, connectors, transformers, etc. must be removed and (if possible) recycled or otherwise disposed of in a qualified manner.</i> • <i>Pneumatic and hydraulic parts such as valves, solenoid valves, pressure regulators, etc. must be removed and (if possible) recycled or otherwise disposed of in a qualified manner.</i> • <i>Dismantle the base frame and all metal parts of the machine and sort them according to material type. Metals can be melted down and recycled.</i>
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In the event of improper disposal of lubricants, the following residual risks to the environment and health exist:

	<p>Pollution of the environment by seepage into groundwater or sewage system.</p>
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	<p>Poisoning of the personnel contracted for the disposal.</p>
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Note: The disposal of lubricants considered toxic and hazardous must be carried out in accordance with the regulations and laws in force at the respective place of use. Only qualified disposal companies that have the appropriate permits for the disposal of used oil and lubricants are to be commissioned with the disposal.

EU - Declaration of Conformity

in accordance with the EU Machinery Directive 2006/42/EC Annex II A

The manufacturer,

HOKUBEMA Maschinenbau GmbH

Graf-Stauffenberg-Kaserne

Binger Str. 28 | Halle 120

DE 72488 Sigmaringen (Germany)

Phone: +49 (0) 7571 / 755 - 0

Fax: +49 (0) 7571 / 755 - 222

hereby declares that the manufactured machine

Slot Drilling and Mortising Machine Type 116/10

Machine-No.:

Year of manufacture:

in the version provided complies with the following directives:

- **Machinery Directive 2006/42/EC**
- **EMC Directive 2014/30/EU**

Applied guidelines in particular:

- **EN 60 204 T1 -1** (acc. to status 2019)

Applied national standards and technical specifications, in particular:

- **VBG 7j - Machines and plants for working and processing wood and similar materials**
(Accident prevention regulations of the German Timber Employers' Liability Insurance Association)
- **DIN 45 635 - Noise measurement test**
- **TRGS 553 - Dust emission test**
- **BGI739 - Wood dust - occupational safety and health protection during collection, extraction and storage**

The notified body (0392)

Fachausschuss HOLZ

- Prüf- und Zertifizierungsstelle im BG- PrüfZert -

Vollmoellerstraße 11

70563 Stuttgart

has carried out an EC type-examination for the above machine.

Mr. Andreas Ganter, Graf-Stauffenberg-Kaserne, Binger Str. 28 | Halle 120,
72488 Sigmaringen (Germany), is authorised to compile the technical documentation.

Type Examination Certificate No.: HO 101047 dated 27.01.2010

Sigmaringen, 25.03.2022

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R. Beck

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Reinhold Beck
Managing Director