



Operating manual **BlueMax Mini Modular**

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Foreword

1. Foreword

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1. Introduction

The main objective of this operating manual is to protect "man and machine" in accordance with the EC Machinery Directives. It is intended for all persons involved in working with and on this machine or system, in particular the operating personnel.

- As operating / servicing personnel, first read this operating manual and familiarise yourself with using the machine and operating it safely as well as with how to perform the necessary set-up, servicing and / or repair work in the proper way while meeting the safety requirements.
- Your personal safety and that of your surroundings as well as safe machine operation without risk to other property or the environment will only be ensured if you are familiar with and follow all of the information in this operating manual as well as in pertinent health and safety regulations.
- As customer and / or owner, make sure that this operating manual is given to your operating / servicing personnel before putting the machine / system into service for the first time, that it remains available directly at the machine at all times and that all persons concerned observe the information and warnings provided in this operating manual, the code of practice applicable to the site of installation as well as the regulations on occupational health and safety etc.

In other words, this operating manual does not release the owner from the duty to devise his or her own health and safety rules as well as safe work procedures tailored to his or her production requirements / needs, to any specific system / machine combination, to specific installation conditions, to specific modes of connection and/or tool and component properties etc., and to apply these, have them applied and monitor their observance.

2. Important notes

Revision service

This operating manual is not subject to any revision service. If changes / additions are made after the machine has been delivered, it is the responsibility of the owner to update this operating manual using his or her own addenda or any addenda provided by Paul Hettich GmbH & Co. KG.

The right is at all times reserved to amend and improve all technical specifications, details and illustrations in the interest of technical progress.

Updating

The laws, provisions, regulations, directives, codes of practice etc. specified in this operating manual as well as statements derived from them were up to date at the time this manual was compiled.

They must be heeded in their latest, applicable wording, updated at the responsibility of the owner and always applied in their more restrictive (stringent) wording.

We also point out that the content of this operating manual is not part of any earlier agreement, assurance or legal relationship or intended to amend such. All obligations on the part of Paul Hettich GmbH & Co. KG arise from the pertinent supply contract that also contains the complete and solely applicable warranty arrangements or draws attention to these. Statements made in this operating manual neither extend nor restrict these warranty provisions.

3. Validity of this operating manual

- This operating manual only applies to this machine.
- Please always quote the machine no. in all queries and orders for replacement parts.

Statements made in this operating manual in relation to items of equipment not included with the machine are for information only. They do not give rise to any legal claim to the machine being equipped with these items.

Application

This operating manual has been produced in compliance with EC directives, European (harmonised) standards etc. References to occupational health and safety, environmental protection and safety provisions may not yet conform to harmonised accident prevention regulations (UVV) / statutory accident insurance regulations (GUV) applicable in Germany or to the DIN standards or technical regulations stated in the appendix to the German Equipment Safety Act (Gerätesicherheitsgesetz (GSG)).

The customer / owner is personally responsible for:

- regarding specified laws, regulations, directives etc., as the basis for safe handling and maintenance practice,
- implementing and observing them in line with national / regional / company-internal regulations,
- providing supplementary safety or protective equipment prescribed by the responsible local, regional or national authorities and for fitting them before using the machine / system for the first time.

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Paul Hettich GmbH & Co. KG
D-32278 Kirchlintgen

This operating manual is protected by copyright under the German Copyright Act (UrhG) from 09.09.1965 for Paul Hettich GmbH & Co. KG. In particular, this applies to the right of duplication, dissemination and translation. Paul Hettich GmbH & Co. KG reserves all rights in the event patents being granted or utility models (designs) being registered.

4. Owner's personal responsibility

The customer or owner is personally responsible for ensuring that

- provisions on occupational health and safety, environmental protection and disposal are observed in relation to the machine, handling it as well as in the course of inspections, servicing and repair measures,
- no improper changes or modifications are made to the machine and safety guards,
- the machine is not used in any inappropriate, improper or non-intended manner.

5. Service

For all queries, technical problems, replacement parts etc., please contact Paul Hettich GmbH & Co. KG direct.

EC declaration and protocols

2. EC declaration and protocols

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EC Declaration of Conformity is enclosed loose.

2. Important note

Use for other purposes and modifications

We expressly point out that the EC declaration shall become null and void if modifications / changes etc. are made to the machines listed above.

The company making the modification must amend the EC declaration and extend or make out new documentation to reflect the latest modification.

(Art. 8 (6) of the EC Machinery Directive)

3. Verification of instruction

By signing this protocol the undersigned confirms that the following details and specifications are correct.

Confirmation

I hereby confirm that I have read and understood the operating manual for the machine:

Designation	BlueMax Mini Modular
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Type	Automatic drilling and insertion machine
------	--

Machine no.

I furthermore undertake to observe and follow the general safety precautions, the servicing and care instructions as well as power-up and operating instructions and the provisions relating to malfunctions. I am aware that any failure to observe these instructions and provisions may lead to accidents, put persons at risk and result in damage to property and the machine.

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[illegible]

General safety rules

3. General safety rules

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1. Basics

This operating manual has been produced in compliance with the applicable European EU standard and must always be available and in easy reach at the machine.

Information for operating personnel

Paul Hettich GmbH & Co. KG has manufactured this machine in accordance with the state of the art and applicable rules on safety. All the same, this machine may present a risk to persons and property if the machine is not used in the proper or intended manner or if the safety precautions are not observed.

Proper operation and careful servicing will ensure a high level of machine performance and availability. We therefore recommend paying particular attention to these sections of the manual.

Caution!



Any person involved in installing the machine, fitting material, operating or servicing the machine must have read and understood these instructions.

This includes:

- understanding the safety precautions provided on the machine and in the manual,
- familiarising yourself with the position and function of the various controls.

This machine must only be operated by persons who have been trained on how to use it and employed for this purpose. Any work on or with the machine must only be performed in the manner described in this manual. For this reason, it is imperative that this manual be kept in a safe place near the machine where it is in easy reach.

The general, national or company safety regulations must be observed (e.g. wearing of safety goggles, protective clothing, ear protection, safety shoes etc.).

Caution!



The responsibilities held in relation to operating the machine must be defined in no uncertain terms. They must be observed so as to prevent any uncertainty as to who is responsible for what under the aspect of safety.

2. Information on this manual

The descriptions provided in this manual apply to all versions of this machine. Although the images shown in the manual may differ from the actual version of the machine, this has no bearing on informative content.

The operating manual provides no instructions on repairing the machine.

The operating manual is broken down by activities on the machine and its assemblies, and provides information for the version supplied as well as any additional or alternative equipment. Any information required is quickly found by referring to the index.

This operating manual must not be duplicated or passed on to third parties either in whole or in part without our consent.

The machine has been designed and manufactured in accordance with the state of the art and is in a perfectly safe condition; it is safe to operate if used in the intended manner and in observance of agreed technical specifications, other operating conditions and component properties.



Danger!

The machine may present a hazard to operating personnel or third parties, to the machine or other property as well as to the environment if it is installed, set up, serviced or repaired in an improper or non-intended manner or operated in an unsafe state by inadequately qualified personnel.

The site of machine installation as well as the components worked on and the emissions (noise etc.) occurring during operation may present additional hazards to persons, property or the environment. The operator is responsible for implementing suitable measures to guard against such unavoidable hazards that do not fall within the machine manufacturer's responsibility.



Warning!

This version of the machine must not be installed or operated in potentially explosive atmospheres.

3. Informal safety measures

Keep this operating manual in direct machine proximity where it can be immediately consulted by operating and servicing personnel.

Always make sure the rating plate, safety and hazard statements and other written information on the machine are easy to read, immediately renewing labels / stickers if they become damaged.

4. Owner's duty

Please note that you bear sole responsibility for making sure that your staff as well as third parties employed by you are able to work in safety on / with the machine and for the risks they are exposed to.

- Make sure that all persons working on or with the machine agree to observe the provisions on occupational health and safety as well as the information provided in this operating manual.
- Take immediate action to avert hazards or meet the provisions on occupational health and safety directly after such hazards become known or a regulation has not been observed.
- Instruct a competent person to check the machine for absolute operating safety and proper working order before starting it for the first time, after it has been out of service for a prolonged period or after repair work.
- To satisfy safety requirements, take immediate action to eliminate defects / malfunctions and damage to the machine in the proper manner and in full.
- Inform operating personnel and any third parties working on your behalf about hazards from the machine, dangers at the point of installation or ambient conditions presenting a risk to health.
- Encourage all persons employed on your behalf to work in a perfectly safe and healthy manner.
- Keep a watch on the use of prescribed personal safety equipment.
- For all measures, only deploy qualified or adequately instructed persons.
- Define clear responsibilities for operating the machine and maintenance work and appoint a supervisor.
- Be sure to rule out hazards resulting from unclear responsibilities in operating and maintaining the machine.

5. Information for the user

Ensure the correct disposal of all waste and spent substances coming into existence while the machine is being installed, operated and serviced.

Before putting the machine into operation, the machine operator must check to make sure that no persons or objects are present in the machine's danger zone. The user must only operate the machine if it is in proper working order. Any change must be reported to the next line manager.

6. Skilled personnel and instructed, qualified persons

Only qualified, trained or instructed persons must be allowed to work on the machine:

- Visual checks, inspections,
- Operation (start-up, shut-down), visual check of running machine,
- Cleaning shut-down and isolated machine,
- Troubleshooting on running machine and rectifying mechanic / electrical faults after shut-down,
- Servicing and maintenance work,
- Taking out of operation,
- Switching on electrical devices, setting safety guards etc.,
- Replacing electrical devices and operating equipment.

General safety rules

7. Symbols used in the wording of this operating manual

The hazard statements and warnings do not claim to be a full list of all precautionary measures required for operating the machine safely or for carrying out maintenance work on it. A specific machine combination, particular installation requirements or local conditions, specific connecting modes, operating conditions, material or component properties etc. may call for additional safety measures.

In other words, this operating manual does not release the owner from the duty to devise his or her own health and safety rules as well as safe work procedures tailored to his or her production needs, and to apply these and monitor their observance.

This operating manual draws attention to and directly warns of hazards. Particular attention must be paid to these passages which are marked as follows:



Note!

This symbol draws your attention to a function or setting or need to exercise caution during work.



Warning!

This symbol provides you with important information on handling and setting the machine.



Danger!

This symbol draws your attention to specific hazards on the machine and how they affect your person as well as to ways of averting hazards and to rules of conduct for handling the machine in the proper manner.



Caution!

This symbol marks important information drawing your attention to potential risks of personal injury or damage to machine components as well as to rules of conduct in handling the machine.



Voltage!

This symbol marks important information drawing your attention to hazards involved in handling electrical energy (electric shock) and how this affects your person as well as to rules of conduct in handling the machine.

8. Hazard statements on the machine

On the machine you will find hazard statements, pictograms, warning labels and precautions in conformity with BGV A8 (A8 regulations of the German employers' liability insurance association). DIN 4844 (German statutory accident insurance regulation VBG 125) defining specific forms of conduct.

Warning of a danger point.

You will find this pictogram, for example, on guard covers that may only be opened or removed without risk after the machine has been shut down and made safe.



Danger from hazardous electric voltage.

You will find this pictogram, for example, on the switch cabinet, on electric drives / devices / operating equipment.



Warning of injury to hands

You will find this pictogram at danger points presenting a risk of injury to hands. Do not reach into this area.



Warning of injury to hands

You will find this pictogram at danger points presenting a risk of injury to hands as a result of incorrect settings (set-up). Do not reach into this area.



9. Tasks and duties of operating personnel

Observe the provisions on occupational health and safety. Adhere to proper and safe work practices for all measures.

Always use prescribed personal protective equipment (safety goggles, protective clothing, ear protection, safety shoes etc.).

Make sure your protective equipment is in proper order.



Warning!

Any person given the task of carrying out a measure described in this operating manual at the place of machine installation must have read and understood the operating manual, especially this section of safety, before commencing. It is too late for this once the machine is operating.

Before commencing work, familiarise yourself with:

- hazards or residual hazards, i.e. hazards that cannot be avoided without impeding proper working order, at the machine or site of installation.
- additional hazards that exist while the machine is operating, e.g. from noise emission,
- the cleaning agents to use, e.g. for cleaning and servicing work,
- protective equipment and safety guards on the machine,
- any hazards from machine equipment.



Note!

Keep escape routes clear.

- Familiarise yourself with the fire-fighting equipment and follow the instructions provided on fire extinguishers.
- Only allow authorised persons to work on the machine, start it up, put it into operation or shut it down.
- Before switching the machine on, make sure it is safe to use and ready for operation.
- Make sure no person is at risk from the starting machine, component conveyor, machine emissions etc.



Danger!

Never switch the machine on if any person is present in the machine's danger zone.

Only ever switch the machine on after making sure that:

- any malfunctions have been fully rectified,
- set-up and servicing work have been properly completed,
- worn and / or damaged components have been replaced,
- all protective equipment and safety guards are in proper working order.

Refrain from any switching operation and work practice that affects the safety of persons or machine safety in any way whatsoever.

When operating the machine, only wear suitable, closely fitting clothing and protect long hair. You could be pulled into the machine as a result of clothing getting caught or wound around moving or rotating machine parts.

Identifiable damage or defects.

Check the machine at least once a day for externally visible damage or defects.

Immediately inform the department to be appointed by the owner or supervisor of any changes to the machine, to the way it works, to operating conditions or component properties.



Danger!

Immediately shut the machine down if malfunctions occur, particularly if such affects your personal safety, the safety of your surroundings or the operating safety of the machine or overall system.

Only carry out cleaning and care work after shutting down the machine and making it safe.

Unplug the machine at the mains plug, lock the machine in its current state.

Before attempting any maintenance work, instruct a qualified electrician to isolate the machine from the power supply and earth it to reliably prevent the machine from being switched on unintentionally or by mistake.

Never make unauthorised modifications or alterations to the machine, especially not to protective equipment or safety guards.

Observe the requirements of environmental protection legislation to make sure waste of any type is disposed of in the proper manner.

Always make sure the site of machine installation is clean and tidy.

Avoid slippery floors and stumbling hazards.

10. Risks / residual hazards

The safety precautions provided below meet the requirements of the EC Machinery Directive, the German Equipment Safety Act (GSG), the German Act on Product Liability (ProdHaftG) etc. on warning the owner and operating personnel of danger points and sources of danger on the machine.

The hazard statements and warnings also draw attention to residual hazards that cannot be prevented by the machine manufacturer either at all or without impairing proper use.



Danger!

**Failure to observe the hazard statements, warnings and information provided below may result in severe damage to personal health or physical damage to the machine or other property.
The risk is borne solely by the owner.**

General safety rules

11. Danger points and danger zones

Danger points on the running machine must be made safe on site by means of appropriate safety guards.

Never reach into a danger zone while the machine is running.

Always unplug from the mains power supply before attempting any work on this machine.

Entering the danger zone in any impermissible way or when the machine is running, and reaching into it, e.g. for cleaning, setting or servicing work, may present the hazards described below:

Risk of trapping fingers	between moving and stationary machine parts, e.g. machine units and boundaries or safety guards
Risk of cutting yourself	on tools
Risk of getting pulled in	on rotating machine parts or machine units
Parts moving in an uncontrolled manner	Components falling, catapulted out, whiplashing, and pneumatic
Electrical hazards	Dangerous shock currents resulting from direct or indirect contact with electrical devices

12. Unloading and handling

Only use appropriate and approved lifting gear (crane) for unloading the machine, assemblies and components as well as for lifting heavy loads; to handle the machine internally, only use industrial trucks wherever possible.

- Any unloading or internal handling must not be done by hand if such involves weights in excess of 25 kg.



Danger!

Never stand or work under loads suspended on lifting gear. This presents the risk of fatal injury.

Observe the following when using lifting gear:

- Only attach lifting gear at the points marked (lifting eyebolts etc.) on the machine.
- Only use appropriate and tested load suspension devices (lifting belts, ropes, chains, shackles etc.) with a sufficient load carrying capacity.
- Only get experienced, skilled personnel to move the machine.
- Always ensure level standing for machine / assemblies, lift vertically, never drag at an angle.

Protect projecting machine parts and equipment from damage when using lifting gear and moving the machine internally.

Set down loads gently with the usual care and take immediate action to prevent them from falling over / tipping, rolling away, suffering damage from external force, e.g. colliding with industrial trucks and objects falling from above.

13. Installing and connecting the machine

- Get an expert to check the work benches for adequate load carrying capacity / stability before setting the machine down at the point of installation.
- Make sure that setting-up / connecting work is not affected by additional hazards at the site of installation.
- Do not install the machine near work areas where solvents are used (e.g. paint shops).



Warning!

The machine must not be installed with its electrical equipment in potentially explosive atmospheres.

- Thoroughly clean the standing surface. Remove (sweep up) dirt, debris left over from building or assembly work.
- Lay cables and compressed air lines so that no-one can trip over them in work and trafficked areas. Cables or hoses must not be kinked, nipped or worn through.
- Connecting pneumatic devices and equipment as well as setting and repair work demands specialised knowledge and must only be performed by appropriately trained and qualified personnel.

14. Getting ready

Operating preparations, function check, trial run and set-up work

Remember that it is not permitted to modify the machine and do not fit any attachments that have not been tested or approved by Paul Hettich GmbH & Co. KG. Any change, no matter how minor, will lead to uncontrollable malfunctions and result in considerable hazards and damage to property.

When setting the machine or changing a tool, take appropriate precautionary measures and work as instructed. Take appropriate measures to prevent machine elements from suddenly moving, e.g. through unauthorised or inadvertent changes to switch settings.

Before commencing any work, turn off the master or mains switch and prevent it moving from the OFF position.

When performing set-up work or making settings:

- do not touch any components that are still being moved, clamped or worked on by the machine and / or have not yet finally released by it,
- never touch tools before the machine has finally shut down and come to a complete standstill,
- do not touch any parts that are still hot from operation. The surfaces of drilling units can reach a temperature of approx. 80° C after the machine has been running for a while.



Warning!

Wherever possible, perform all set-up or setting work in the company of a supervising person who can switch the machine off in the event of any hazard situation suddenly occurring.

- When performing set-up work or changing a tool, thoroughly clean the immediate area of the machine you are working on. The proper way to do this is by suction, never by blowing it clean with compressed air. Dust deposits can cause malfunctions and / or damage to property during later operation.
- Always make sure tools are securely fastened.
- Completely remove any assembly or servicing aids, tools, cleaning cloths, assembly waste etc. from the machine.
- Make sure all components can move freely.
- After completing all connecting, set-up, servicing and / or repair work, check the machine to make sure it is safe and ready to operate.
- Check all guards for proper attachment.
- Moving / rotating machine elements that cannot be covered for operating reasons always present a source of danger with a major risk of injury from pinching, cutting, shearing, snatching, catching, winding or attack points.
- Carry out function checks and trial run as instructed and, in particular, make sure the safety guards are in proper working order.
- Familiarise yourself with possible switching errors and how to avoid them as well as with the measures necessary in the event of faulty operating results.
- After completing function checks / trial run, return the machine to a state of operational readiness for the operator and, if necessary, draw the operator's attention to any changes to machine handling.

15. Operating, inspecting and monitoring the machine



Danger!

Never leave the machine unattended while it is running. Avoid touching any moving / rotating components.

Only put the machine into operation once it has been installed and connected and all servicing measures have been completed.

When starting the machine and putting it into operation, make sure there are no persons working on the machine or at risk from the machine starting.

Only switch the machine on after making sure that

- any malfunctions have been fully rectified,
- set up and servicing work have been properly completed,
- worn and / or damaged components have been replaced,
- all protective equipment and safety guards are in proper working order.



Danger!

Never get a second person to switch the machine on if you need to perform set-up or servicing work in the danger zone.

When performing any action, always remember that you could get trapped between moving machine parts and stationary boundaries (building, guards etc.).

16. Working with the machine

Do not place any pallets or other objects in the safety zone of at least 1.0 metre between moving machine parts and stationary boundaries (walls, pillars, other machines or guards etc.).



Danger!

An activated machine (master switch or power supply ON) can start moving at any time.

Only operate the machine with the safety guards provided at the site of installation.



Danger!

Smoking or any other use of fire, naked flame or other ignition sources are prohibited at the place where the machine is installed.

During operation, remove dust deposits at regular intervals to be defined by the owner. Pay attention to fire and explosion protection.

Only check component quality once the machine is standing still and has been made safe or after the component has left the machine and has been safely set down.

Always use the recommended personal protective equipment, such as safety goggles, protective clothing, ear protection, safety shoes etc. while you are operating the machine.

Never reach into the running machine or behind claddings / covers and other places you are unable to see into.



Danger!

Risk of injury for crushing and cutting points

Never touch

- tools before the machine has reliably come to a complete standstill,
- components at operating temperature, such as drilling units.

Immediately shut the machine down, turn the master / mains switch off

- in the event of abnormal / unusual operating behaviour, noises or vibrations,
- if tools are damaged or improperly fastened,
- in the event of a faulty power / compressed air supply.

Establish the cause of the trouble and, to satisfy safety requirements, instruct qualified, skilled personnel to rectify such in the proper manner and in full or inform Paul Hettich GmbH & Co. KG.

The machine must only be restarted after fully eliminating defects or damage.

Before leaving the place of operation, switch the machine off and employ suitable measures to ensure that this state cannot be altered inadvertently or by unauthorised persons.

General safety rules

17. Servicing (maintenance)

Repairs to the machine demand a high level of specialised knowledge and experience.

Only perform servicing work after receiving thorough instruction or training and in accordance with this operating manual.

Wherever possible only have any necessary repair work carried out by Paul Hettich GmbH & Co. KG.

Only perform inspection / servicing work after shutting the machine down and making it safe.
Turn off the master or mains switch and make sure it cannot move from the OFF position.

Never perform any necessary setting, set-up or servicing work by yourself when the machine is running.



Note!

We expressly point out that it is not permitted to carry out any form of welding work on this machine.

Immediately refit any removed mechanical or electrical guards or safety components after completing servicing work.

Operation is not permissible with guards or safety components removed, deactivated or bypassed.



Danger!

This could result in damage to property.

Using normal tools and applying the prescribed levels of torque, immediately retighten any loose screw connections that are noticed during inspections / servicing work.

Ensure utmost cleanliness during all work. Dirt will result in malfunctions and damage to property.

18. Cleaning

- Only clean the machine by suction, never by blowing it clean with compressed air.
- Only wipe away lubricant residue with a dry cloth.
- Only use approved cleaning agents for washing out components that are oiled up or contain grease.
- While cleaning, check the components of the machine and electrical system for externally visible damage.
- Immediately take steps to rectify any defects / damage noticed while cleaning the machine.
- Follow the information on replacement parts, replacement substances etc.
- Pay attention to the package labelling and safety data sheet for all chemical substances (cleaning agents and similar products). Request this sheet from the substance manufacturer.
- Never coat rubber or plastic parts with oils, solvents, cleaning agents or any other chemical substances.
- Do not use any aggressive, highly flammable or health-threatening solvents, cleaning agents or any substances that contain dangerous solvents for cleaning the machine, components and items of equipment.

19. Compressed air



Note!

Switch off the power supply.



Caution!

The entire compressed air system must always be depressurised.

- Clean the machine, at least the work area, in the prescribed manner.
- Regularly check all compressed air lines, hoses and screw connections for leaks and externally visible damage.
- Carefully detach hoses. Escaping compressed air may swirl up dust.
- Protect air connections to prevent them from getting dirty.
- Never mix up connections, plugs or switches. This will inevitably result in malfunctions

20. Electrical work

Work on the electrical equipment must only ever be performed by a qualified electrician.

- Before attempting any work on the electrical equipment or in the immediate vicinity of live electrical operating equipment, instruct a qualified electrician to isolate and reliably disconnect the machine from the power supply and earth it.
- Before attempting any work on electric drives, devices and operating equipment always make sure they are dead.



Danger!

When operating electric devices or after connecting them to the power supply, specific parts of devices or operating equipment automatically carry a dangerously high level of voltage.

Always immediately instruct a qualified electrician to replace damaged and worn-through cables as well as loose or unsealed cable connections on the machine.

Only use genuine replacement fuses of the prescribed amperage. Instruct a qualified electrician to check the electrical equipment if fuses frequently blow.

- Unauthorised persons must be prevented from entering the work area while these measures are being carried out.
- Failure to observe the safety provisions or DIN, EN or VDE regulations and / or lacking specialised knowledge may result in serious damage and / or material damage when touching or working on electrical devices / operating equipment.

21. Repairs

Any repairs to the mechanical components demand a high level of specialised knowledge and experience.

Wherever possible only have any necessary repair work carried out by Paul Hettich GmbH & Co. KG.



Note!

It is not permissible to make alterations or attachments / modifications to the machine if they affect the way in which the machine works or its active / passive safety.

Only carry out repairs to the machine if you possess the relevant specialised knowledge and follow the instructions in this operating manual.

To satisfy safety requirements, always restore the original, safe state at the place of use.

When performing any work only use sound tools in a way that satisfies safety requirements and reflects the usual code of practice.

22. Replacement parts

Replacement parts, items of equipment or replacement substances not tested and approved by Paul Hettich GmbH & Co. KG may jeopardise the machine's active and passive safety. Replacement parts must only be fitted by qualified persons from Paul Hettich GmbH & Co. KG.



Danger!

Worn or damaged components affect safety and must be replaced immediately.

Only use genuine replacement parts. Non-genuine parts may not withstand the prevailing levels of stress and strain and may not provide the required level of safety. The risk of accidents may be increased as a result of inappropriate specifications, poor quality, incompatibility etc. Any risk from non-genuine parts or items of equipment shall be borne solely by the owner.

23. Guards / safety components

Only put the machine into operation with properly functioning guards and safety components.



Warning!

It is explicitly prohibited to remove, deactivate, bypass and alter safety guards. The owner is solely liable for the consequences.

Mechanical guards

- All guards must be protected from coming into contact with moving or rotating machine elements.
- While the machine is running, the machine and danger zone must be closed off by an isolating safety fence to guard against unauthorised access.

24. Main power supply

The plug for the main power supply has the purpose of disconnecting the machine from the electrical power supply.

Before disconnecting the machine from the power supply, e.g. to shut it down:

- clear (empty) the machine, i.e. all components must have left the machine,
- switch the machine off,
- wait for the machine to stop and switch off the master switch.

25. Pneumatic safety guards

The servicing unit has a coupling. Before carrying out any work on the machine, this must be detached from the machine to depressurise it.

26. Supplementary guards

The owner is responsible for installing any further safety guards necessary on the grounds of local circumstances, under internal regulations or under the requirements of local supervisory authorities.

Unless otherwise stated in the order confirmation and otherwise shown in the installation plan, the safety guards listed below are not provided by Paul Hettich GmbH & Co. KG.

- Guards to prevent any emissions escaping from the machine, for directly adjacent work place or traffic ways.
- Collision guard for the machine or operator position as protection against damage from industrial trucks.
- Colour markings required under accident prevention regulations (UVV), e.g. on the floor, as safety markings to indicate work areas, traffic ways etc.

27. Disposal and protecting the environment

Any disposal must be in accordance with regulations and in observance of the law!

Dispose of the packaging in an environmentally friendly manner.



The BlueMaxMini Modular contains components which must not be disposed of as household waste but as hazardous waste.

Under the European WEEE directive, electrical and electronic devices must not be disposed of with household waste. Their components must be recycled or disposed of separately because toxic and hazardous components can cause lasting damage to the environment if they are disposed of improperly.

On request, the manufacturer will provide details of the take back concept in effect.

Maintenance (servicing) and repair work may produce the following waste materials requiring disposal.

- lubricants, cleaning agents and expendables,
- waste of all types, including worn machine components and tools

Liquid wastes must be collected as groundwater-polluting substances in closed, approved containers and disposed of in the proper manner.

Immediately bind spilled liquids.

Never allow auxiliary substances (e.g. waste oils) to seep into the soil or sewer.

Observe internal, local or regional provisions when disposing of any item.

When disposing of the machine (dismantling or scrapping) all components must preferably be recycled by material group.

After completely emptying and cleaning lubricant systems (drilling units etc.), dismantling them may necessitate disposal of the following material groups:

metals: steel, aluminium (mechanical engineering materials),
plastics: PVC (hoses),

General safety rules

elastomers: cable coverings, seals, electrical devices / operating equipment.

Dismantled components must be collected separately by material group, non-recyclable residuals must be disposed of.

Observe the Regulation on Electronic Scrap when disposing of drives and items of equipment.

28. Emissions

Noise

Wear ear protection when performing very noisy work.

29. Safe machine operation

The machine is a semi-automatic machine for drilling panel-type workpieces and inserting the fittings they require. Any other use beyond this is deemed to be non-intended use. The manufacturer / supplier shall not be liable for any damage this causes. – The risk is borne solely by the user!

Only instructed persons must be allowed to work on the machine.

Responsibilities at the machine must be clearly defined. The machine operator must not allow persons to use the machine if they have not received proper instruction. Instructions detrimental to safety must be rejected!

The machine must be switched off before leaving it. Never let machines runs unattended! Unplug, disconnect the machine from the compressed air supply and remove the drill bits.

Application

This machine must only be used for working on flat panels made of wood-based materials, such as chipboard, blockboard panels, MDF, solid wood or similar materials! The manufacturer accepts no liability for any other uses.

Misuse of the assemblies set up on the machine, e.g. for machining workpieces merely held by hand or improperly clamped, may result in injury.

No unauthorised alterations must be made to the machine by fitting it with safety-related add-on devices or equipment not made by the manufacturer.

Wood must not have a moisture any higher than 8 to 12 %.

Work with particular care if workpieces project beyond the edge of the work bench. In such instances, install a larger support table or larger supports.

Secure the workpiece while you are working on it. Use the hold-down clamps.

Tools

Only use tested and appropriate tools for mechanical feed! Securely fasten tools!

Pay attention to the information provided by the manufacturer on tools with clamping systems (also refer to the section on changing drill bits in the operating manual).

Only use properly sharpened drilling tools.

Risk of crushing!

Always operate the machine and insert fittings from the front.

Dust

Health hazards from wood dust!

Used with the extraction system provided, the machine complies with dust protection regulations.

Some work processes and specific workpieces (e.g. framed doors) do not permit full encapsulation and extraction. In this case wear dust protection masks!

Odd pieces

Configure workpieces in a way that prevents odd pieces from being catapulted out of the machine.

Machining forces

Match feed force and machining volume to the holding force of the clamping equipment and to the workpiece material!

See Setting the drilling speed. If holding problems occur, use additional stops or power clamps.

Fire risk

Grinding and welding work must never be performed on this machine.

Fire risk!

Follow welding regulations and accident prevention regulations.

Explosion protection

Machine is not explosion-protected. Do not install near paint shops!

Purpose / operating principle

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1. General information

This operating manual must be kept at the machine all the time and be constantly available there. To ensure safe operation and proper machine handling, it is important for you to have read and understood the operating manual and, in particular, the safety rules. The safety provisions and operating instructions described in this operating manual must be followed exactly.

Regularly check this machine's safety guards and work sequences.



Danger!

Any person given the task of installing, servicing, starting, operating or repairing the machine must have read and, in particular, understood these instructions.

2. Intended use

This machine must only be used for working on flat panels made of wood-based materials, such as chipboard, blockboard panels, MDF, solid wood or similar materials!

Intended use also includes following the prescribed operating, servicing and maintenance conditions.

Misuse

No unauthorised alterations must be made to the machine by fitting it with safety-related add-on devices or equipment not made by the manufacturer.

Using this machine for any other or similar purpose or purpose beyond the one stated above is deemed to be non-intended use and not permitted.

Paul Hettich GmbH & Co. KG shall not be liable for any damage this causes.

3. Non-intended use

If the machine is used for any non-intended purpose, treated improperly or operated by untrained or unauthorised persons, it may present a risk of injury to personnel and a risk of damage to the machine itself. For this reason, only trained, instructed and authorised persons must be allowed to operate this machine.

Non-intended machine use means, for example:

- improperly assembling, starting, operating and servicing this machine,
- operating the machine with faulty safety guards,
- operating the machine with improperly fitted safety guards,
- operating the machine with non-functioning safety guards and protective equipment,
- failing to observe the information and instructions given in the operating manual in relation to handling, storing, assembling, starting, operating, servicing and setting up this machine,
- unauthorised structural changes,
- unauthorised changes to this machine's drive system (power output, speed),
- inadequate monitoring of machine parts subject to particular wear,
- improperly performed repairs and
- disasters caused by the impact of foreign objects and Acts of God.

4. Operating principle and description of the machine

Operating principle

This machine operates semi-automatically. All parts being worked on are fed into the machine by hand.

Flat panels made of wood-based materials, such as chipboard, blockboard panels, MDF and solid wood are laid on the work table fixed in place with the clamping equipment. The drilling process is initiated by pressing the start button. The start button must remain pressed until the drilling process has been completed. Using the integrated insertion facility, the fittings are pressed into place by means of a manually operated lever. This concludes the machining process.

5. Rating plate



Note!

The rating plate is located on the machine.

All country specific information, such as the depiction of the CE or UKCA mark, can be found on the type plate attached to the machine.

6. Limit values

The following limit values apply to items of equipment and accessories, such as drive motors, electric / electronic operating equipment etc.:

- ambient temperature: 35 °C max.
- rel. air humidity: approx. 65 %

5. Technical information

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1. Safety precautions

Observe the regulations, warnings and provisions on health, safety and environmental protection for all of the work described in this section.

2. Attachment points

Only use suitable and approved lifting gear (crane) for unloading the machine, assemblies and components as well as for lifting heavy loads; only use appropriate means of transport for handling the machine internally.

Any unloading or internal transportation must not be done by hand if such involves weights in excess of 25 kg.

When using industrial trucks to unload the machine and move it internally, always take into account the machine's total permissible weight (see Technical specifications).



Danger!

Never stand or work under loads suspended on lifting gear. This presents the risk of fatal injury!

Observe the following when using lifting gear:

- Only attach lifting gear at the points marked (lifting eyebolts etc.) on the machine / assemblies / components.
- Only use appropriate and tested load suspension devices (lifting belts, ropes, chains, shackles etc.) with a sufficient load carrying capacity.
- Only give experienced, skilled personnel the task of attaching the machine / assemblies / components.
- Always ensure level standing for machine / assemblies, lift vertically, never drag at an angle.

Protect projecting machine parts and equipment from damage when using lifting gear and moving the machine internally.

Set down loads gently with the usual care and take immediate action to prevent them from falling over / tipping, rolling away, suffering damage from external force, e.g. colliding with industrial trucks and objects falling from above.

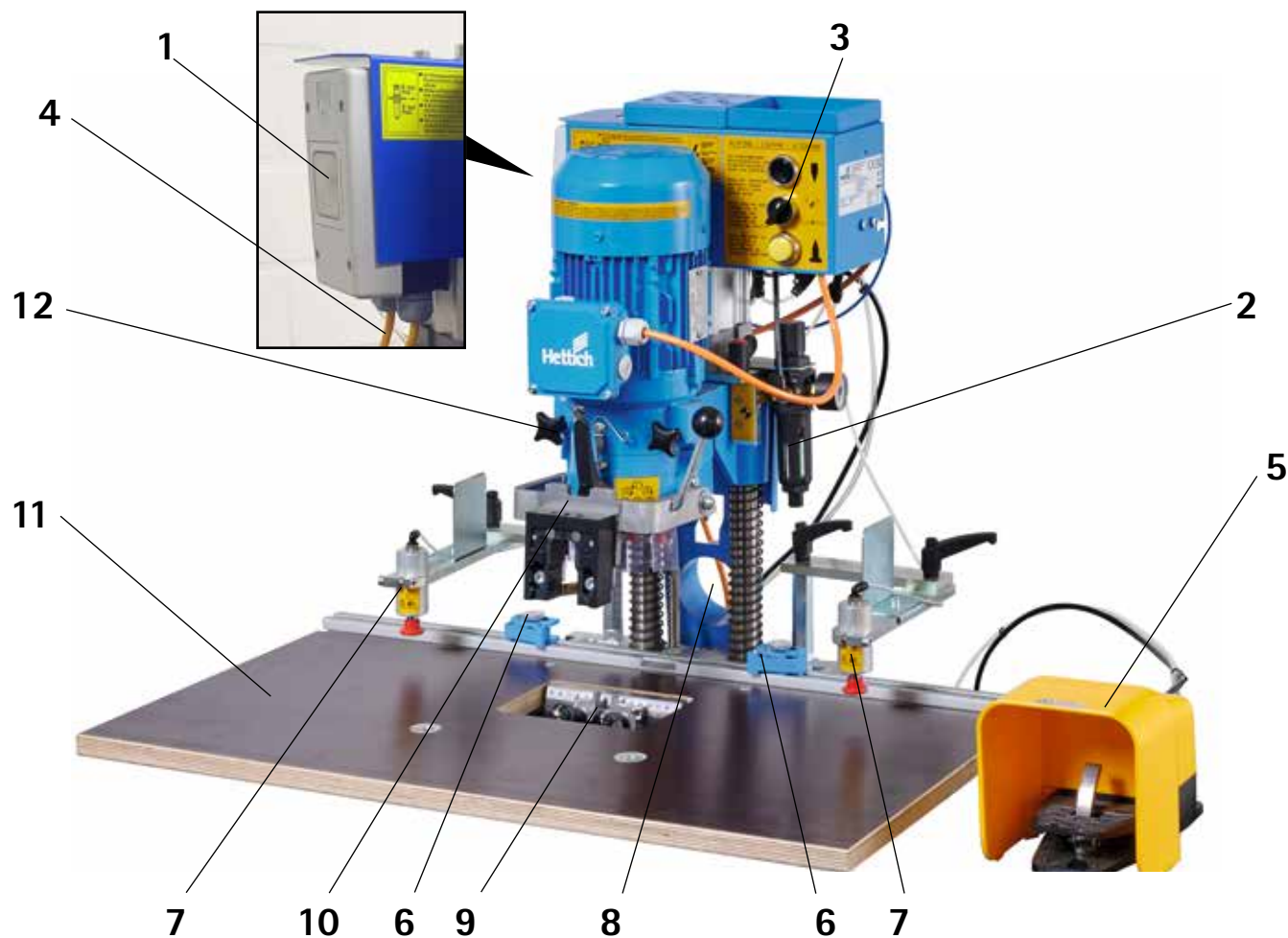
3. Technical specifications

Machine article number	No. 9132099	No. 9131498	No. 91314499
L x W x H (mm)	800 x 570 x 680		
Weight	approx. 40 kg		
Power output data			
Cycle time	manual		
Electrical data			
Power supply	400 V, 50 Hz, 3 ph	400 V, 50 Hz, 3 ph	230 V 60 Hz, 1 ph
Max. fuse protection	6 A	6 A	6 A
Connected load	1.1 kW	1.1 kW	1.6 kW
Rated current	2.64 A	2.64 A	2.64 A
Pneumatic data			
Nominal air pressure	min. 6 bar, max. 7 bar		
Connection	6 bar / 100 psi		
Ambient conditions			
Temperature	35 °C max.		
Rel. air humidity	approx. 65 %		
Max. noise level	> 80 dB		

en

Technical information

4. Equipment



Item	Designation	Explanations
1	Motor switch	Power supply ON / OFF
2	Servicing unit	Compressed air supply 6-7 bar
3	Controls, switches	Electrical controls, switches and buttons
4	Power supply	Connecting cable with 16 A plug
5	Foot switch	Actuator for drilling stroke
6	Pendulum stops	Adjustable stops for panels
7	Hold-down clamp	Pneumatically controlled clamping device
8	Dust extractor	Connection for dust extractor
9	Centre stops	Adjustable stops
10	For press-in frame	Manually operated
11	Work and support surface	Support and work bench
12	Interchangeable drilling unit	Receptacle for different interchangeable drilling units

5. Guards



Item	Designation	Explanations
1	Transparent deflector cover	Prevents direct reaching into the running tools. Important! Act with particular caution.
2	"Start" button	Pushbutton for initiating drilling stroke. Letting it go immediately stops drilling, and the drill returns to its starting position.

en



Warning!

The guards must not be modified, tampered with or taken out of operation.



Caution!

The machine has no EMERGENCY STOP button or EMERGENCY STOP equipment. This means it is necessary to take particular care when handling and working on this machine.



Danger!

The operator must always observe and follow the safety regulations for this machine.

Technical information

6. Noise emission

This machine operates at a noise level above 80 dB(a). We recommend wearing ear protectors at all times to prevent damage to hearing.



Warning!

Wear ear protection.

7. Aligning / fastening

General information

The machine should be installed on a level, load-bearing stand with firmly standing feet.

Any machine must be installed in a way that prevents it from moving about and tipping over.



Note!

Securely installed machines prevent accidents.

8. Connections required

Main power connection

Connection to the electrical power supply is made by connecting a 16 A plug **2** to a prepared socket **1** with appropriate fuse protection.

Care must be taken not to damage electrical supply leads.

These must be changed whenever necessary.



Note!

Before plugging in, instruct a qualified electrician to check the socket.

Compressed air connection

The entire machine is connected to a central in-house compressed air supply system.

The supply line is fitted with a plug-in coupler **2**.

The operating pressure must be set to 6 - 7 bar at the pressure regulator **1**.

This must be checked at the pressure gauge.



Note!

Only feed in dry compressed air as the pneumatic system is largely operated on unooled air.

9. Transporting the machine

Space around the machine

This machine must be installed in such a way that the machine is readily accessible and easy to walk around. Remove any objects lying about. For safety reasons, always allow a clearance of at least 1.0 metre around the machine.

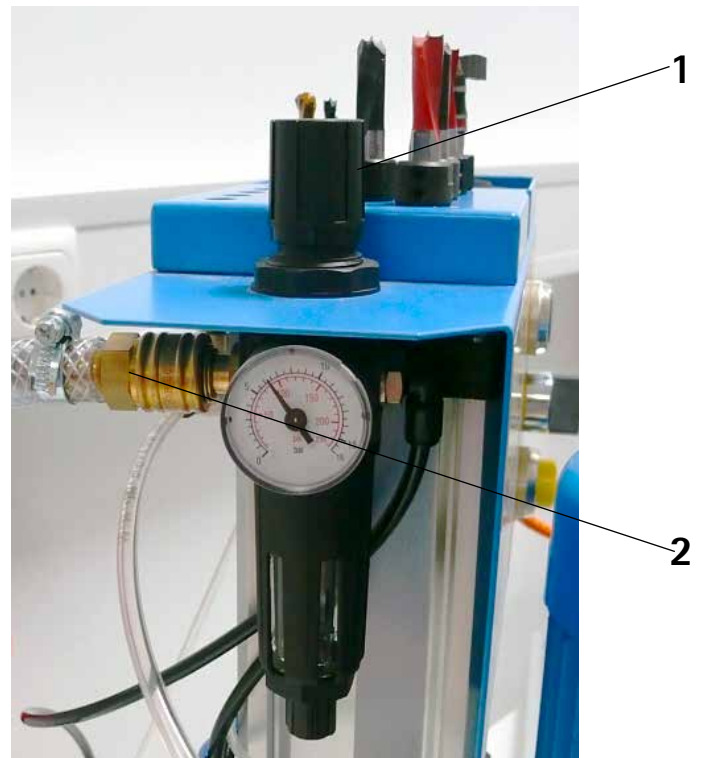
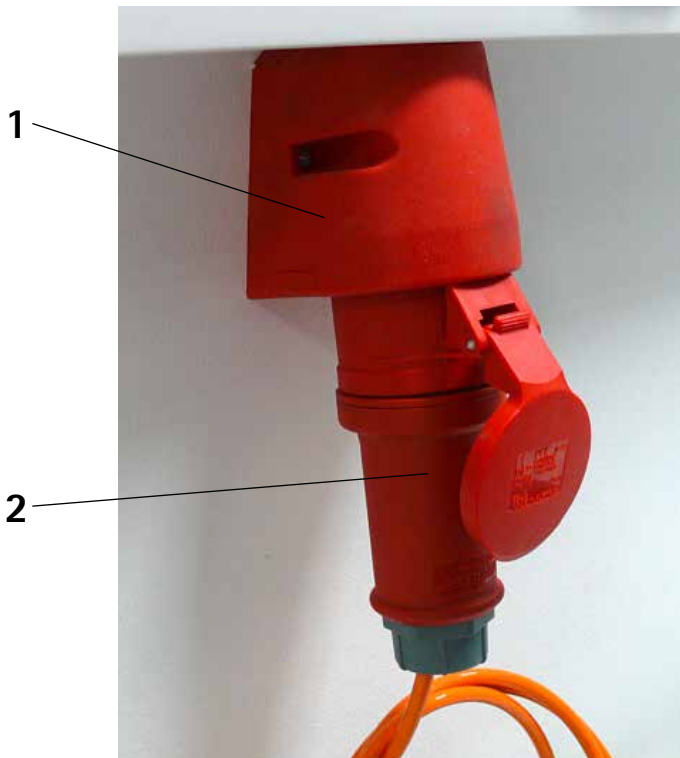


Note!

This machine must only be moved with approved and tested handling and lifting gear.

Make sure this machine stands firmly.

Always observe the accident prevention regulations applicable to your company.



Handling

Skilled personnel must be employed for handling the machine in the proper manner (low distortion, secure positioning, packaging etc.).

The machine is normally moved with lifting equipment (fork-lift truck etc.) or with approved handling equipment in compliance with regulations. Moving the machine on fork-lift trucks requires adequate lifting capacity.

After moving the machine, every part of it must be checked for transportation damage as possible harm may impair system operation and safety.

Unloading the machine

Always observe the safety rules. 25 kg may be lifted by one person. Pay attention to total weight.



Danger!

Warning! There is an elevated risk of injury and accidents!

Make sure that:

- only experienced, qualified persons are given the task of unloading,
- load suspension devices must be carefully attached and secured,
- the suspended load never presents a hazard on lifting it, and
- the machine is always lifted vertically and never dragged at an angle.



Danger!

Never stand or work under loads suspended on lifting gear.

- Set the machine down without bumps or jolts as well as in an upright-standing position. Immediately protect it from getting damaged by transportation vehicles and from tipping over.
- On unloading, handling and keeping the machine in temporary storage, treat it with the greatest possible care and protect it from the weather, impact of external force and from falling objects.
- Be sure to provide the safety clearance zone around the machine.

10. Internal handling

- To move the machine internally, only use trolleys of sufficient stability and load-bearing capacity.
- Always avoid bumps and shocks when moving the machine.
- Provide protruding objects (motors, mobile cable handlers, wiring harnesses, hoses, cylinders) with effective protection from damage.



Note!

When using fork-lift trucks to move the machine observe the regulations on industrial trucks.

11. Checking delivery for missing items

- Refer to the order confirmation or the list in this operating manual as well as the delivery note to ascertain what should be included.
- Check delivery immediately on arrival to make sure it is complete.
- Report missing parts straight away to the forwarder delivering the machine (notice of loss) and also immediately inform Paul Hettich GmbH & Co. KG.

12. Dealing with shipping damage

Immediately after arrival and unloading, thoroughly check the machine for any shipping damage, i.e. for externally visible damages (fractures, dents, kinks, cracks etc.).

Any suspected shipping damage must immediately be:

- reported in writing to the shipping company making the delivery (forwarder) and/or
- reported in writing to your own insurance company as well if the transportation risk was insured by the owner.



Note!

Delayed notification may lead to loss of insurance cover.

The usual period for reporting damage is only 24 h (delivery by mail) or 7 days after delivery.

Always document shipping damage by:

- taking photographs
- making a sketch with exact marking of the damage (do this using a copy of the machine overview) and
- providing a detailed description (report).

As a precautionary measure in your notification to the forwarder / insurer, also include so-called "hidden" shipping damage that can only be identified after dismantling the machine, i.e., make a written reservation in respect of the actual scope of damage that is initially only visible on the outside.

Always send a copy of damage notification to Paul Hettich GmbH & Co. KG.

If it is necessary to dismantle the machine or items of equipment, only have this done by skilled personnel from Paul Hettich GmbH & Co. KG.

13. Measures for temporary storage

The machine is designed for immediate installation and start-up. The following measures must be taken if this does not take place within a reasonable period of about 3 months after receiving the machine:

- Coat bare metal parts with corrosion-inhibiting oil.
- Cover the control system, electrical devices/operating equipment, drive motors to protect them from moisture and dust.
- Taking particular care, cover / use adhesive tape to seal off cable inlets into terminal boxes and plugs.
- Protect wiring harnesses from vermin. Mice and rats are particularly partial to highly flexible cables.
- Store the machine in a dry, frost-free room.
- Also observe the storage instructions.

Apply appropriate measures to protect the stored machine from tipping over, falling objects, impact from external force (e.g. industrial vehicles bumping into it), knocks and vibrations.

en 14. Protection measures at the site of installation

For all installation measures and connecting work, observe the regulations, warnings and information on "health, safety and environmental protection" in this operating manual.

For the machine to operate safely, it must be properly installed / assembled by qualified personnel in observance of the warnings and regulations provided in this operating manual.

In particular, observe the installation and safety regulations regarding work on high voltage systems and the regulations of the electric power provider. Also make sure staff are appropriately qualified.



Danger!

Failure to observe these requirements may result in serious damage to health and property.

- Before attempting any measure, familiarise yourself with the hazards prevailing at the site of installation and/or presented by the materials being machined or by the auxiliary materials (solvents / cleaning agents etc.) you will be handling.
- Close off the work area to prevent access by unauthorised persons.
- Observe the applicable national and international provisions on safety.



Warning!

Welding work must never be performed on the machine.

15. Safety guards to be provided by the owner

Safety guards provided by the owner must be easily accessible and in full working order after installing the machine. They must not interfere with the machine's own safety guards in operation on site.

The site of installation must be selected in such a way that will also allow repairs to be performed at a later date without physical obstruction.

16. Permissible ambient conditions

- The machine must only be installed and operated in dry rooms.
- The machine is not explosion-protected. The machine must not be installed near painting facilities.
- Provide a supply of fresh air to the fan cowls on electric motors.
- Avoid any external mechanical strain on the machine.

17. Removing preservatives

The machine is only coated with preservatives for transportation.

- Clean dust and shipping dirt from the machine with a dry cloth.
- Never use cold-cleaning products, nitrocellulose thinner or other aggressive chemicals!
- Remove all transport braces. These should be kept for later re-use.

6. Start up / trial run

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1. Before first-time use



Note!

The machine is started up for the first time and inspected for acceptance by skilled personnel from Paul Hettich GmbH & Co. KG.

Before the machine is started for the first time, make sure the described basic settings and trial runs have been made and the machine is ready for operation.

The following checks must be made before start-up:

- check the machine for correct installation and alignment,
- check all screw connections at the various stations for secure fit,
- check the safety guards for proper working order and
- check the power and compressed air connections for proper connection and secure fit.

2. Safety check

Satisfy yourself that:

- installation, set-up and servicing work have been completed in full and no persons are present in the danger zone, let alone working on it,
- all safety guards / covers are in place,
- the compressed air supply is ready for operation, and
- the controls are freely accessible.

3. Malfunctions on start-up

On start-up, immediately switch OFF the power supply to the machine if:

- unusual operating noises can be heard,
- the machine runs irregularly, oscillates or vibrates,
- tools malfunction,
- auxiliary units malfunction
- the motors consume too much power
- there are electrical faults, and
- tools overheat.



Danger!

Never put this machine into operation if work is still being performed on this machine or on the electrics.

Establish the cause of any malfunction with the machine shut down and made safe and have it rectified by a qualified and skilled person trained to do so or eliminate the malfunction yourself if you are in possession of the necessary qualification.



Caution!

Only switch the machine back on again once malfunctions / faults have been properly and completely rectified!

4. Machine versions supplied

The machine comes in various versions.

1. Machine with article numbers: 9 131 498 and 9 131 499

Compact automatic drilling and insertion machine with interchangeable drilling unit

- Pneumatic stroke movement, adjustable machine bench
- Mechanical drilling stroke limiter
- 2 drum stops for 22, 37, 57 mm depth adjustment of the fence
- 1 interchangeable drilling unit with 6 spindles and quick-change chuck
- 6 drill holders for quick-change chuck
- 1 tool shelf
- 2 pendulum stops

Electrical equipment:

- 1.1 kW / 400 V / 50 Hz / 3 phases 9 131 498
- 1.6 kW / 230 V / 60 Hz / 1 phase 9 131 499 1

2. Machine with article number: 9 132 099

Compact automatic drilling and insertion machine with interchangeable drilling unit

- Pneumatic stroke movement
- Adjustable machine bench
- Mechanical drilling stroke limiter
- 2 drum stops for 22, 37, 57 mm depth adjustment of the fence
- 1 interchangeable drilling unit, 6 spindles and quick-change chuck
- 6 drill holders for quick-change chuck
- 1 tool shelf
- 2 hold-down clamps (left / right)
- 1 centre stop with scale
- 2 pendulum stops

Electrical equipment:

- 1.1 kW / 400 V / 50 Hz / 3 phases

5. Optional accessories

Accessories for customising the BlueMax Mini Modular

- Hold-down clamp 9 131 508 1 set
- Centre stop with scale 9 132 098 1 each
- Press-in frame for drilling unit 9 132 100 1 each
- Foot switch 9 132 101 1 each
- Chuck plug for quick-change chuck 0 040 657 1 each
- Chuck plug 0 076 497 1 each

6. Interchangeable drilling units

Interchangeable drilling unit, 9 spindles / Interchangeable drilling unit, 3 spindles, Selekt / Interchangeable drilling unit, 6 spindles

Interchangeable drilling unit with three drilling spindles for drilling holes for Selekt hinges (23/9).

Interchangeable drilling unit with 6 drilling spindles for drilling holes for hinges and connecting fittings

- Interchangeable drilling unit, 3 spindles, Selekt drilling pattern 9 131 503 1 each
- Interchangeable drilling unit, 6 spindles 9 131 501 1 each
- Interchangeable drilling unit, 6 spindles, with quick-change chuck and drill holders 9 131 500 1 each

Interchangeable drilling unit, 9 spindles

Interchangeable drilling unit for System 32 hole line drillings

- Interchangeable drilling unit, 9 spindles 9 131 506 1 each
- Interchangeable drilling unit, 9 spindles, with quick-change chuck and drill holders 9 131 505 1 each

Interchangeable drilling unit, 90°, 9 spindles

Interchangeable drilling unit, offset 90° for drilling holes for runners in System 32

- Interchangeable drilling unit, 90°, 9 spindles, 9 132 097 1 each
- Interchangeable drilling unit, 90°, 9 spindles, with quick-change chuck and drill holders 9 131 507 1 each

7. Installing, assembling and connecting

The BlueMax Mini Modular comes in secure shipment packaging for safe transportation. A number of components must be installed to make the machine ready for operation. After installing the machine, clean off shipping dust and remove preservatives (oil).

The following pages explain how to put together and install individual assemblies.

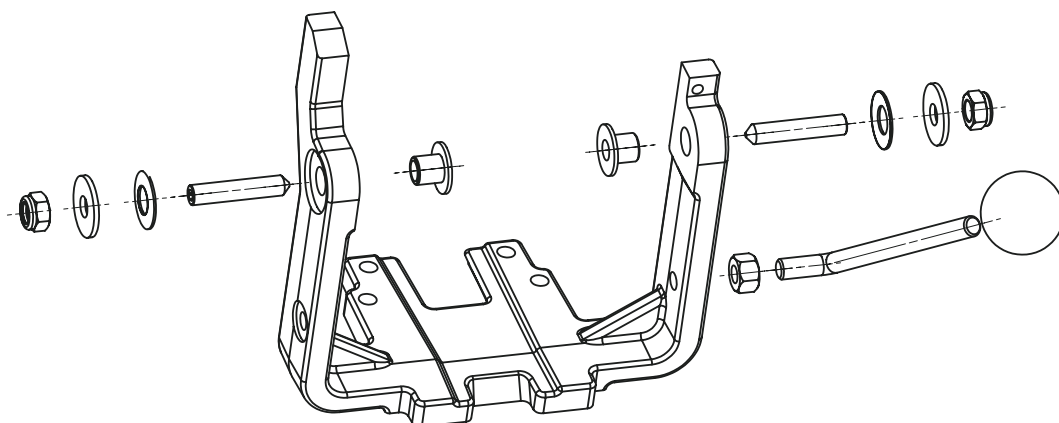
Depending on your machine's equipment, specific skills are required to carry out this work properly.

Start up / trial run

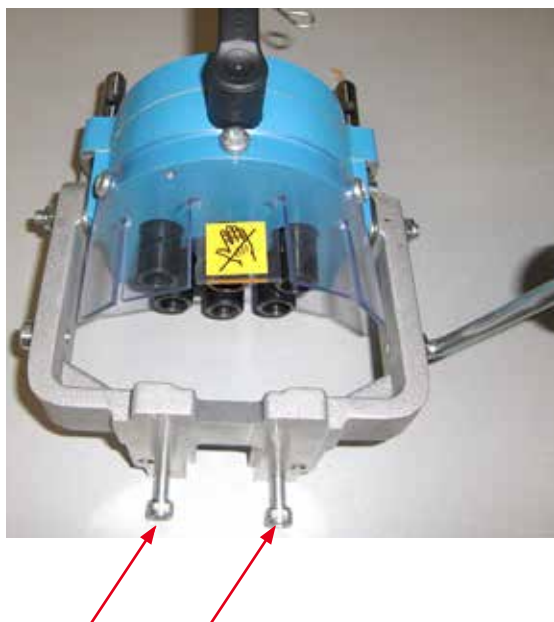
8. Assemblies

Press-in frame for the interchangeable drilling unit, 6 spindles

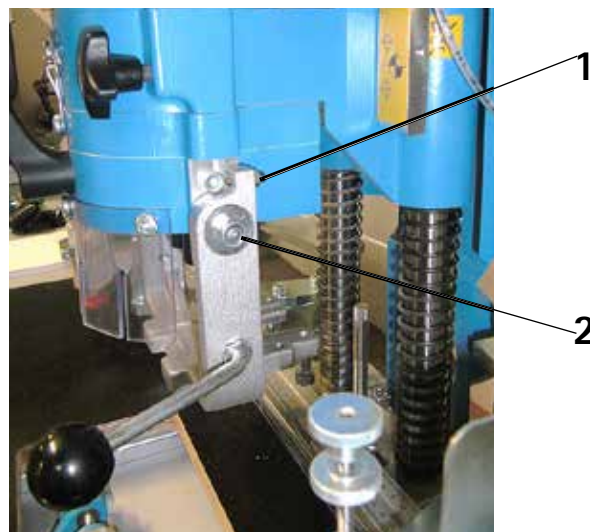
The press-in frame comes dismantled and must be assembled as illustrated. The press-in frame must only be used in conjunction with this 6 spindle interchangeable drilling unit.



Press-in frame assembled and installed.



Screws for fastening dies for inserting hinges and connecting fittings.



Attached at the side with stop screw **1** for exactly positioning the press-in frame with fixing screws **2** on the 6-spindle interchangeable drilling unit

Always follow the assembly instructions!

Centre stop

Center stop for drilling for connecting fittings or rows of holes.



Start up / trial run

Continuation stops

The continuation stops are premounted on the Interchangeable drilling unit, 9 spindles.

Setting the continuation stops

Setting height of the continuation stop

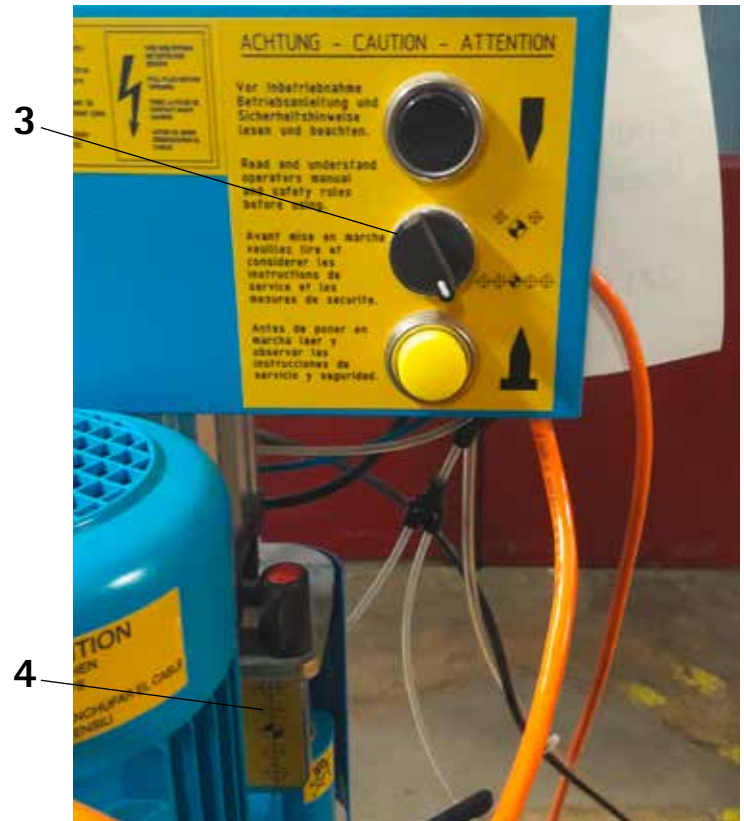
The height of the left and right continuation stop must be adjusted to suit the panel thickness by means of top setting ring **1**. The continuation stop's finger should engage as deeply as possible into the drill hole. A space of approx. 3 mm must also be allowed between workpiece and stop (insert a 3 mm hexagon socket spanner **2**)



en

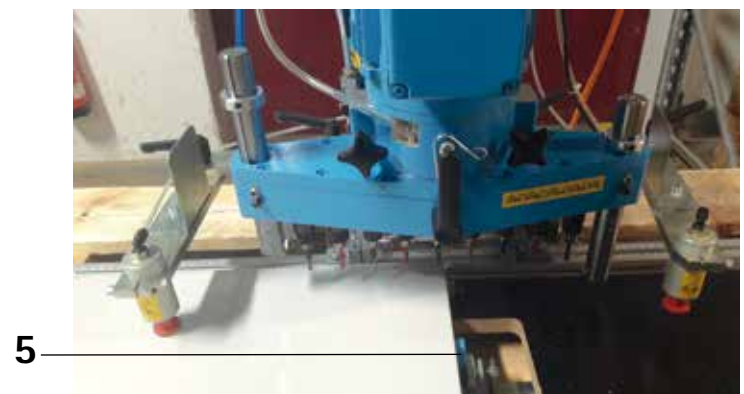
Switch for hold-down clamp / stroke reduction

Set switch for hold-down clamp to hole line **3**. This will automatically release the hold-down clamps after the drilling process which means there is no need to release them manually. Swivel in swivelling lever for stroke reduction. With the motor switched off, move the machine to the drilling position and move lever inwards (hole line pictogram can be seen) **4**.

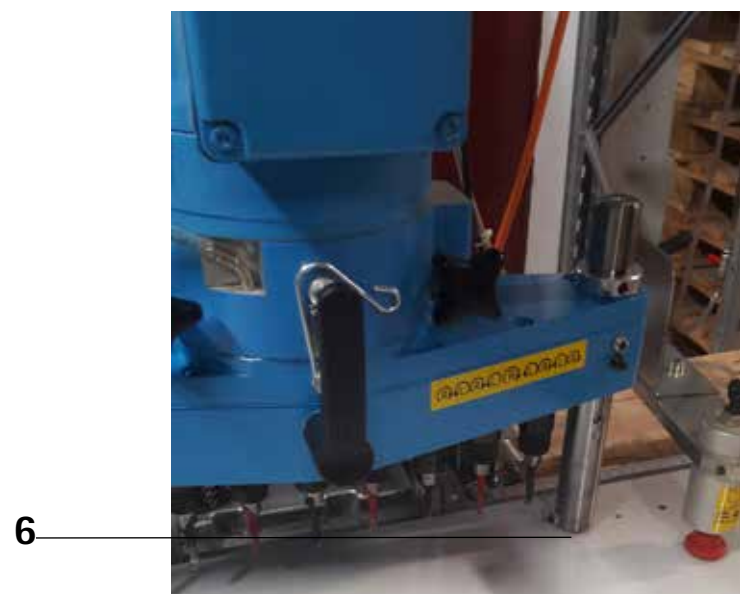


Drilling with the continuation stop (shown here with the right continuation stop)

Push workpiece up against centre stop **5** (start position of 1st hole in the hole line, for 19 mm panel material = 10 mm)

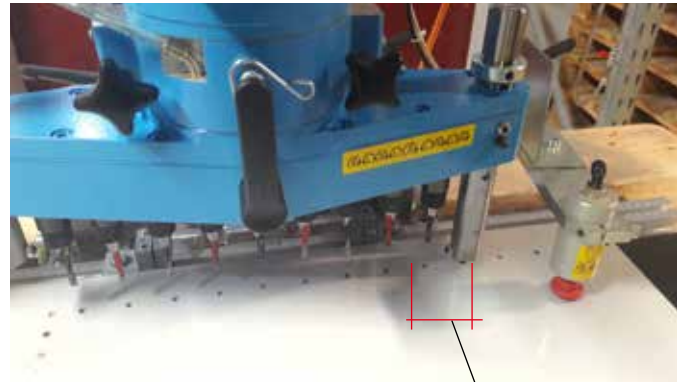


Activate drilling process and move panel material to the right until the pendulum of the continuation stops has slid over the last drill hole. Now pull the panel material back until the pendulum pin has engaged in the drill hole and is perfectly vertical. Pull workpiece as far as the pendulum stop **6**.



Start up / trial run

Restart drilling process and check distance between last drilling of 1st drilling process and 1st drilling of second drilling process **7**



7

The distance can be checked best by inserting two 5 mm pins into the drillings. For this, you must use a calliper and measure from the outer edge of the pins **8**. This must produce a dimension of 37 mm (32 mm distance between the drillings + 2 times 2.5 mm = 37 mm)



7



8

If the dimension differs, the continuation stop must be readjusted.

For this, undo the screw at the pendulum and tighten or slacken the grub screw using a hexagon socket spanner (1 turn = 0.8mm) **9**

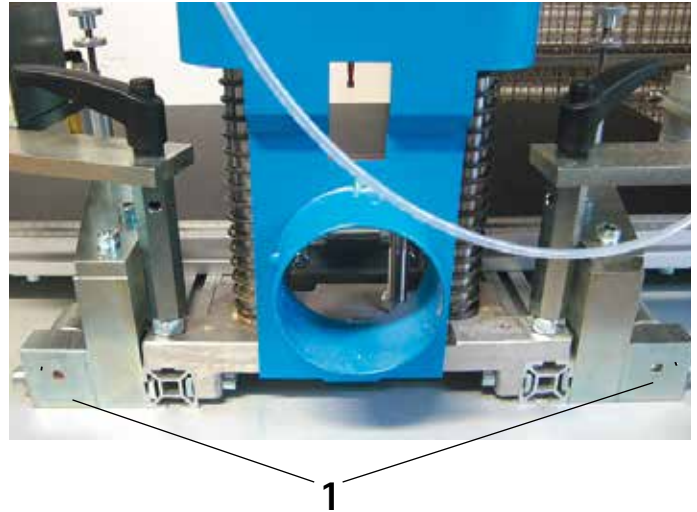
9



Drum stops

The drum stops are premounted and set.

Drum stops **1** must be installed on both sides of the machine.



Precision-adjust using stop pin **2**.

Three stops are already pre-set at the following spacings:

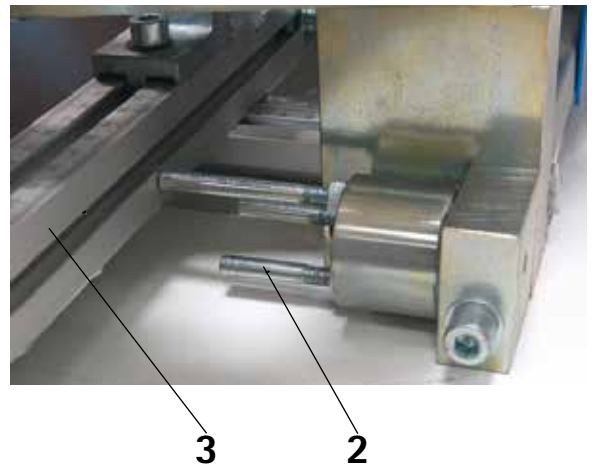
- a. 22 mm
- b. 37 mm
- c. 57 mm

The fourth stop can be set wherever chosen and must be installed. A stop screw is provided.

For 9-spindle 90° interchangeable drilling unit, for example, set the bench 69.5 mm on the scale and tighten the screw against the bench profile.

This produces a distance of 37 mm from the edge of the bench top in relation to the interchangeable drilling unit's 1st drilling spindle.

Loosen bench top **3** at fixing screw to make setting. Position both stop pins **2** at the required spacing (turned). Now push bench **3** against stop pins and re-fasten.



Photograph shows view of right-hand side.

Always follow the assembly instructions!

Start up / trial run

Hold-down clamp

The hold-down clamps (assembly) are pre-mounted.

This only needs installing on machine no. 9 131 498 and 9 131 499.

The photograph shows the right-hand side of the hold-down clamp, the hold-down clamp for the left-hand side is installed the other way round.

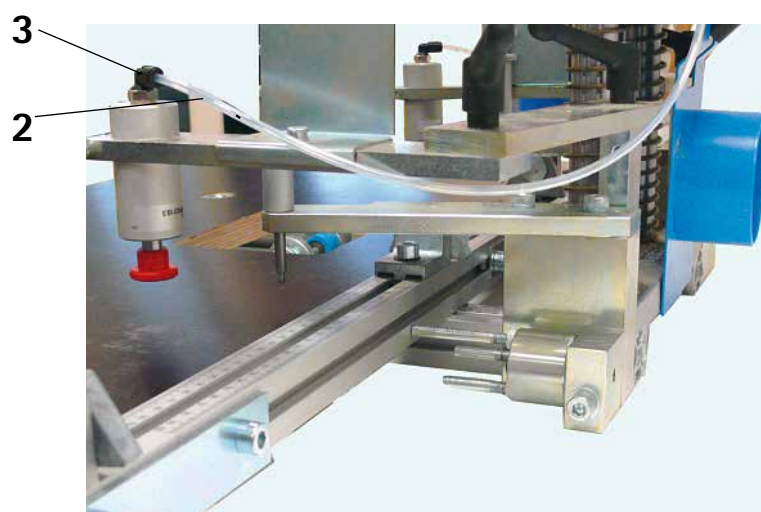
Attaching the hold-down clamp.

First tighten bolt **1**.

Now fix the pre-mounted hold-down clamp in place using tommy screw **2**.

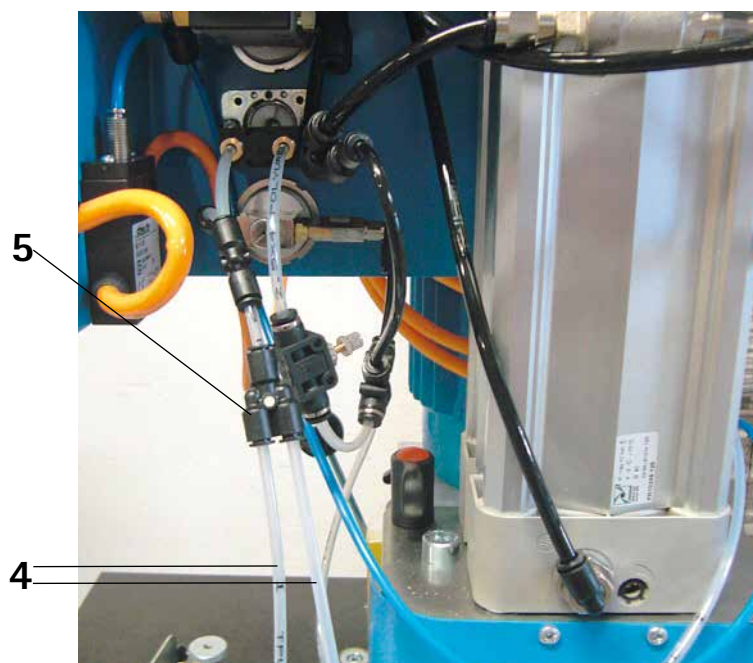


Fit hose **2** into clamp-type mount **3** on pressure cylinder.



Always follow the assembly instructions!

Connect compressed air hoses **4** using a Y-coupling **5**.
Make sure connections are tight.



en

Converting from manual operation to foot switch

The conversion kit contains all components required.

The foot switch must be placed on the floor where it must not be allowed to slip.

Fit valve into back of machine and connect with compressed air hoses.

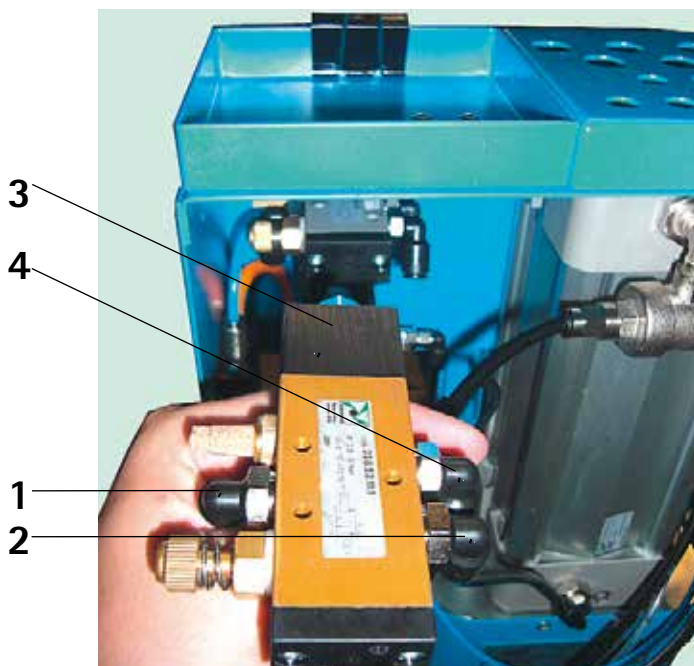
Always follow the assembly instructions!



Start up / trial run

Connection assignment

No.	Designation
1	Connection 1
2	Connection 2
3	Connection valve for foot switch
4	Connection 4



Remove dummy plug **5** from distributor and connect compressed air hose to connector on foot switch.



Note!

Always carry out a function test after completing this work.



Warning!

The compressed air hoses must not be damaged or kinked.



Be sure to follow the assembly instructions in the appendix to this operating manual.

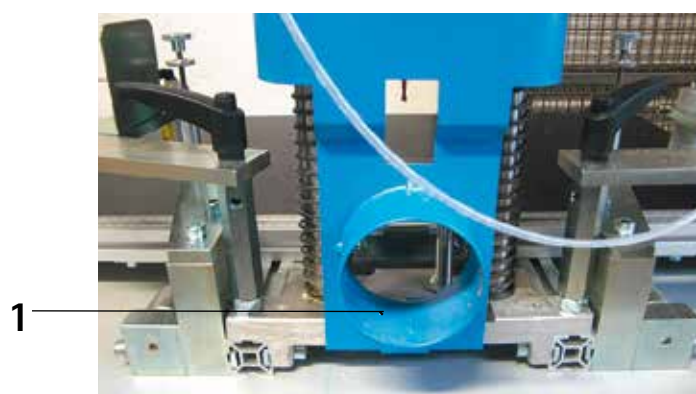
9. Connecting to extractor system

Connect the machine to an extractor system. It is compulsory to use a flexible, fire-retardant hose for connection to an extractor system.

Fit the extractor system's extraction hose to suction connector **1** and secure this in place with a hose clamp.

The extractor system must have an airflow rate of at least 20 m/s.

Extraction hose diameter: $\varnothing$ 80 mm. Route extraction hose so as not to exert strain on the suction connector!



Connecting to compressed air supply

To connect the machine to the compressed air supply system, push the air supply line onto the air filter using quick-release connector **1**.

Recommended air pressure 6 - 7 bar, 100 PSI.

1



en

Connection to power supply

Connect to the power supply using a 16-ampere plug.

Before you do, get a qualified electrician to make sure the socket is in proper working order.

Now connect plug **2** to socket **1**.

The machine is rated for a supply voltage of 400 volts.

Use an appropriate plug compliant with the DIN VDE or IEC standard. An upstream fuse must be provided in the mains power supply system.



Caution!

Check motor turning direction.
The drilling spindles must turn clockwise.



Note!

If the motor or spindle turns anticlockwise, you must reverse the phases in the plug.

1

2



Start up / trial run

10. Carrying out trial run

We recommend first carrying out a trial run without material and drill bits to test all functions for proper working order.
If all functions are working properly, fit the required tool.

Depending on connection, use the foot or manually operated switch for function testing.

Start a trial run without material. Afterwards, you should carry out a test with material.

Check work for correct results. You can start production if all settings are correct.

Pushbutton:

1 = pushbutton

Pressing pushbutton **1** manually initiates a work operation.

You must keep the pushbutton pressed until the work operation has been completed or the process will immediately stop.

2 = rotary switch

Setting for drilling with insertion, rotary switch points upwards.

Setting for drilling a hole line only, rotary switch points downwards (see photo).

3 = pushbutton

For manually releasing the hold-down clamp.

4 = foot switch

Foot switch **4** is used for initiating a work operation and must stay pressed down until the work operation had been completed or the process will immediately stop.

Pushbutton **1** is not operational when using the foot pedal.

Information on trial run

Once you have made and checked all settings, carry out a trial run.

Preliminary conditions

- All of the necessary activation processes must have been carried out.
- The compressed air must be turned on.
- The machine must be set up for the relevant product.
- Make sure the machine is running smoothly and not erratically.
- The operator must always be informed about current work procedure.



11. Concluding start up

- After completing all servicing and set-up work, make sure everything has been done properly.
- Check all screws and connections for secure fit.
- After completing the check, you should carry out a test using a component.
- Start-up may only be concluded once the machine is working properly.
- Now switch the machine off and hand over production to the operator.
- The operator must always be informed about the production settings currently in effect and given instruction on work procedure.
- Production can now commence.



Note!

Following servicing work, check all safety guards for proper working order.

7. Setting up

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1. General information

Safety precautions

Any person given the task of operating, servicing and repairing this machine or of altering its settings must have read, understood and adhere to the operating manual, in particular to the safety precautions.

The authorities and tasks of personnel operating this machine must be clearly defined.

The work described in this section must only be carried out by appropriately qualified personnel who are perfectly familiar with this machine / system.

Information for the machine setter

All work involved in repairing, setting, troubleshooting and servicing must only be carried out by duly instructed and authorised skilled personnel. In the interest of safety, a second person must be present during all work in case hazardous situations occur.

2. Getting ready



Note!

Before setting the machine, familiarise yourself with its controls.

Before you start setting:

- Look at the production job to find out which settings need making.
- Check the machine for any damage.
- Make sure the machine is safe and in proper working order before and after you switch it on.
- Make sure the described basic settings and trial runs have been made and the machine is ready for operation.
- When switching the machine on, make sure no unauthorised persons are present in the machine's work area.

3. Tools / aids

- All tools and aids must be in proper working order.

4. Safety check

Satisfy yourself that

- installation, set-up and servicing work have been completed in full and no persons are present in the danger zone, let alone working on it,
- all safety guards / covers are in place.



Danger!

Never put the system into operation if work is still being performed on this machine.

Establish the cause of any malfunction with the machine shut down and made safe and have it rectified by a qualified and skilled person trained to do so.

Or eliminate the malfunction yourself if you are in possession of the necessary qualification.



Caution!

Only switch the machine back on again once malfunctions / faults have been properly and completely rectified!

5. Setting up (preparing for work)

First select the appropriate interchangeable drilling unit.
The machine comes in 4 versions.

Tools used (drill bits).

First install the drill bits required. This setting applies to all interchangeable drilling units.

Insert required drill bit **1** into bayonet chuck **2** and tighten the two screws **7** using Allen key **3**.

When fitting, make sure drill bit chocking face **8** is correctly positioned. The screws must clamp the bit in position at this face.

Pre-mounted drill bits

Push pre-mounted tool **4** into tool holder of interchangeable drilling unit **5** and turn in opposite direction of drilling-unit rotation.

The bayonet chuck engages.

Repeat this process until all tools are securely engaged.

Always close off unneeded tool holders with a dummy plug **6**.

Always check your work before fitting the interchangeable drilling unit.
The drill bits must engage and all screws must be tight.

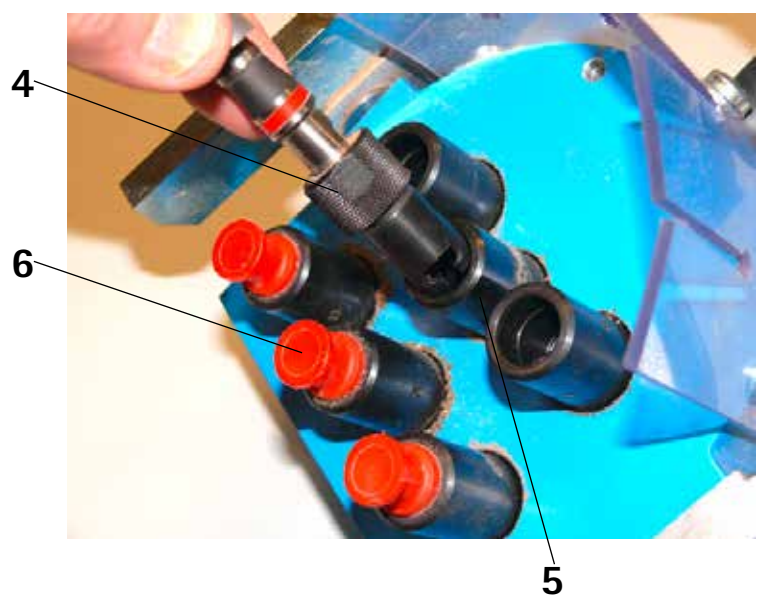
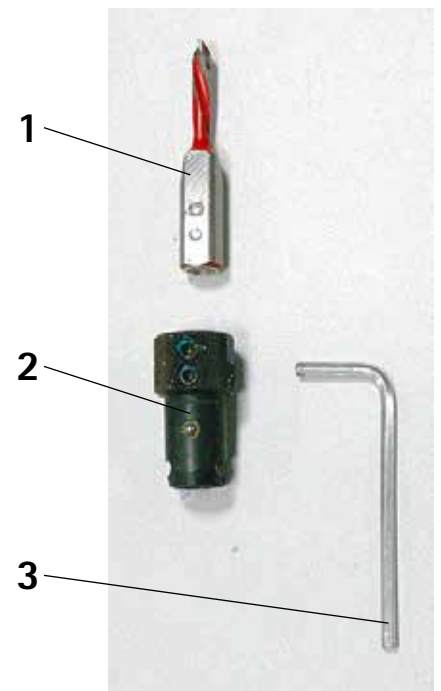
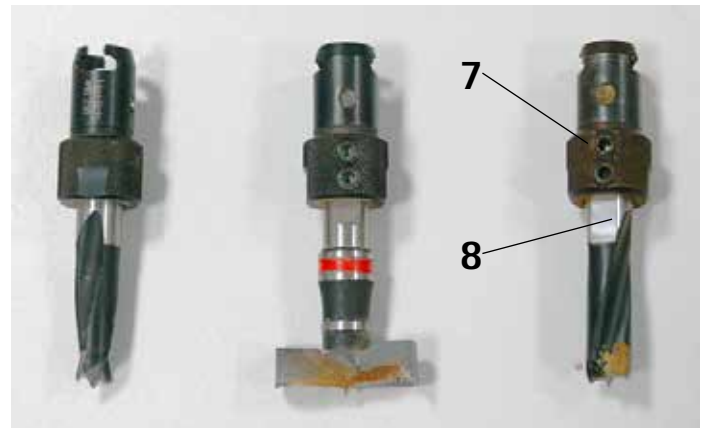


Note!

Pay attention to colour marking.

Drill bits marked red must be used for spindles turning anticlockwise.

Drill bits marked black must be used for spindles turning clockwise.



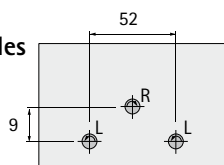
Setting up

Interchangeable drilling unit, 6 spindles, interchangeable drilling unit, 3 spindles (Selekta 22/9)

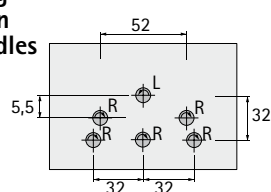
These interchangeable drilling units are used for drilling receiving holes and for inserting hinges and connecting fittings.

Fit tools (drill bits) on a work bench.

Drilling pattern 3 spindles



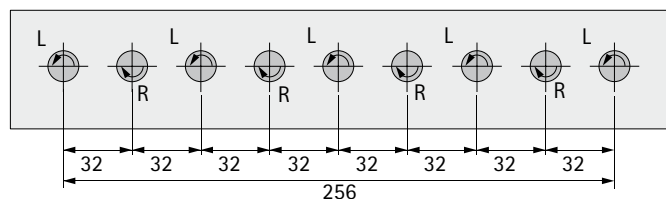
Drilling pattern 6 spindles



en Interchangeable drilling unit, 9 spindles

This interchangeable drilling unit is used for creating hole lines.

Drilling pattern

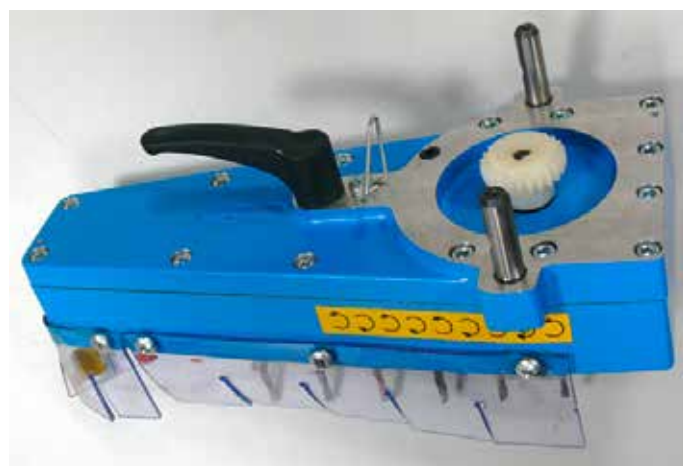
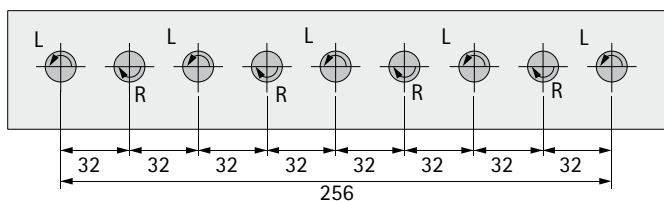


Interchangeable drilling unit, 90°, 9 spindles

This interchangeable drilling unit is used for creating holes at an angle of 90° (runners).

A maximum of 6 drill bits may be fitted with a maximum diameter of 5 mm.

Drilling pattern



6. Changing interchangeable drilling units

Depending on application, the appropriate interchangeable drilling unit must be fitted for drilling the required holes.

We will now show you how to change a drilling unit on the basis of this example. When changing drilling units, we recommend wearing safety gloves to prevent injuring yourself on the sharp tools.



Warning!

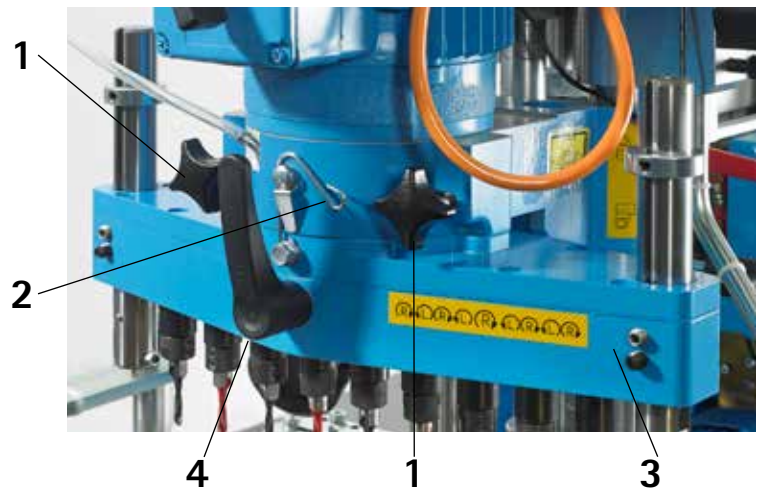
When changing tools, always detach the compressed-air hose and disconnect from the power supply (unplug mains plug).

First undo star shaped grips **1** until tool slips down.

U-shaped safety element **2** holds back interchangeable drilling unit **3** to prevent it from dropping down.

Lower interchangeable drilling unit out of guide using grip **4**. While doing so, give safety catch **2** a short downward turn.

Set the interchangeable drilling unit aside.



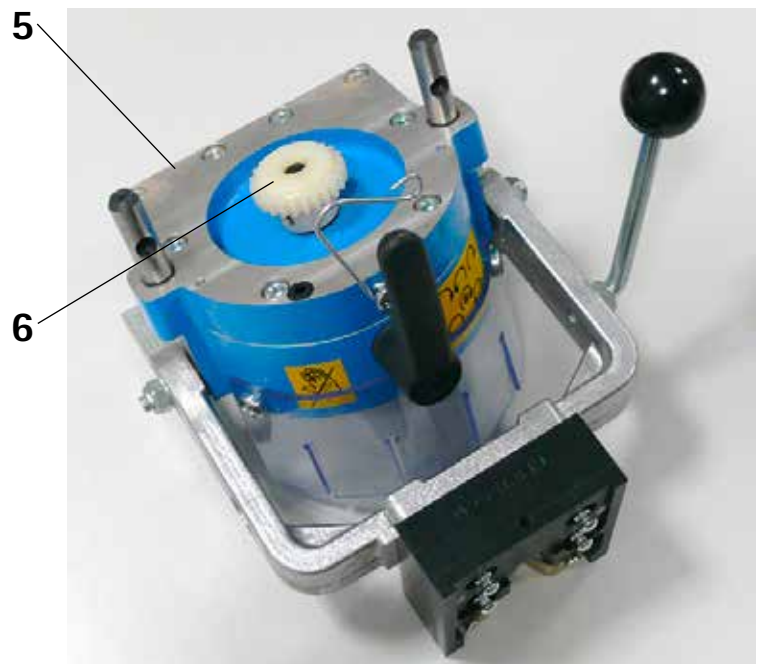
Cleaning

Before fitting the interchangeable drilling unit you require, clean mating faces **5** and drive sprocket **6** with a clean cloth.



Note!

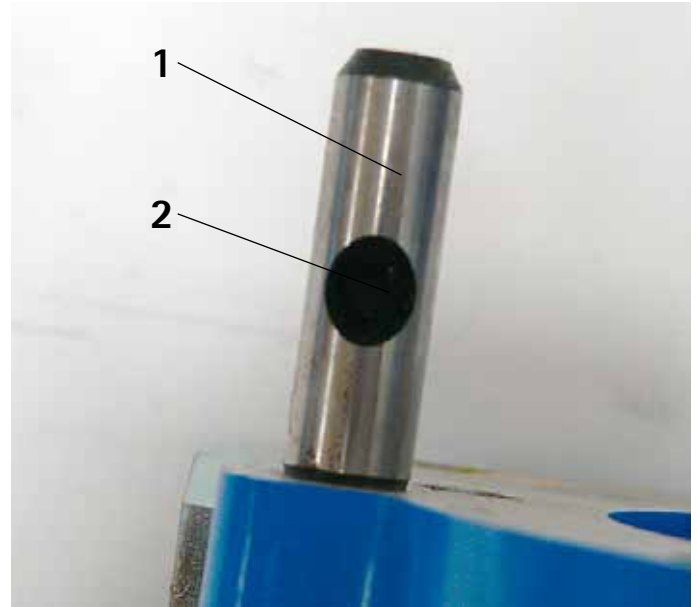
Soiling results in rapid drive-component wear and leads to malfunctions in the production process.



Setting up

Clean guide pins **1**.

Hole **2** in guide pin must be clean so clamping screw can hold interchangeable drilling unit securely in place.



en

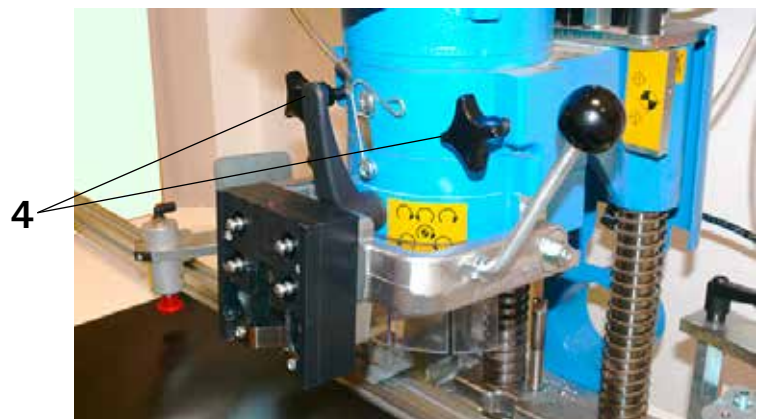
Fit the prepared interchangeable drilling unit by holding the grip or by placing your hand below yoke **2**.

Make sure guide pins **1** go in straight.

Move interchangeable drilling unit up and engage safety catch **3**.



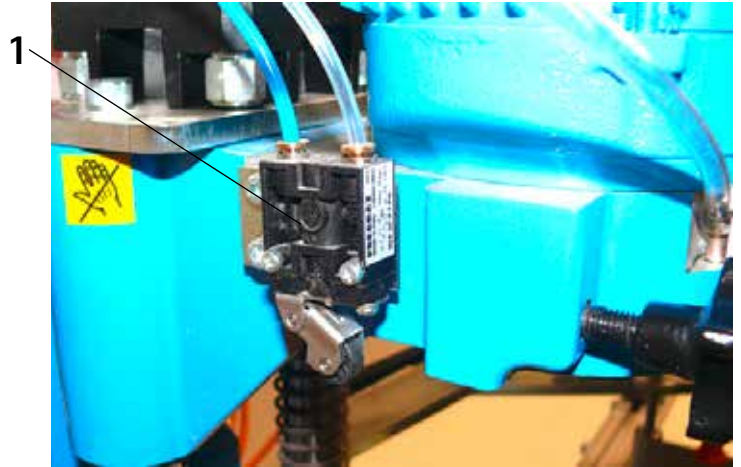
Tighten star shaped grips **4**.



Checking switch for proper working order

The 6 spindle interchangeable drilling unit is used for drilling holes and for inserting a hinge / connector.

The drilling unit's drive system must be switched off for inserting the hinge / connector.



Using the hand lever **2**, turn press-in frame **3** into the inserting position. Operate switch **1** with the lever and turn motor off using the switch. Check for proper working order. Adjust the switch if necessary.

Switch **1** must always be checked for proper working order after changing the drilling unit or after the machine has been out of service for a prolonged period.



Danger!

Malfunctioning can result in serious injuries and disrupt production!



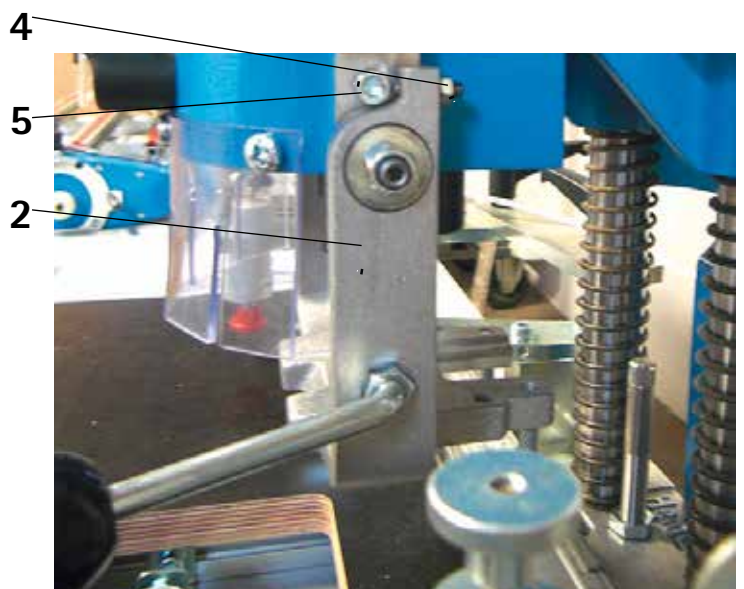
The press-in frame **2** can be repositioned if necessary.

Adjust press-in frame for exact positioning using setscrew **4**.

The setscrew presses against stop screw **5**.

Swing down press-in frame **2** and check position during pressing in.

If necessary, repeat the setting process until the correct position is attained.



Setting up

Setting drilling depth

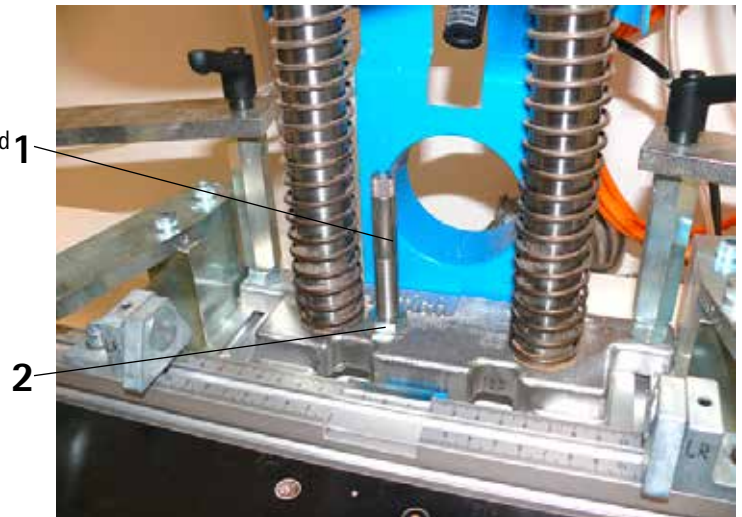
The stop limits downward drilling-stroke movement.

The drilling stroke can be selected to suit any panel thickness.

To do this, undo locknut **2** in stop **1** and turn this in the required **1** direction.

Always re-tighten the locknut to avoid differences in drilling depth.

Afterwards, carry out a trial drilling and check drilling depth using a calliper gauge.



en Drilling penetration rate (end-position damping)

The drill lowering rate can be limited so as to obtain good drilling results. The rate is reduced just before the drill bits reach the panel.

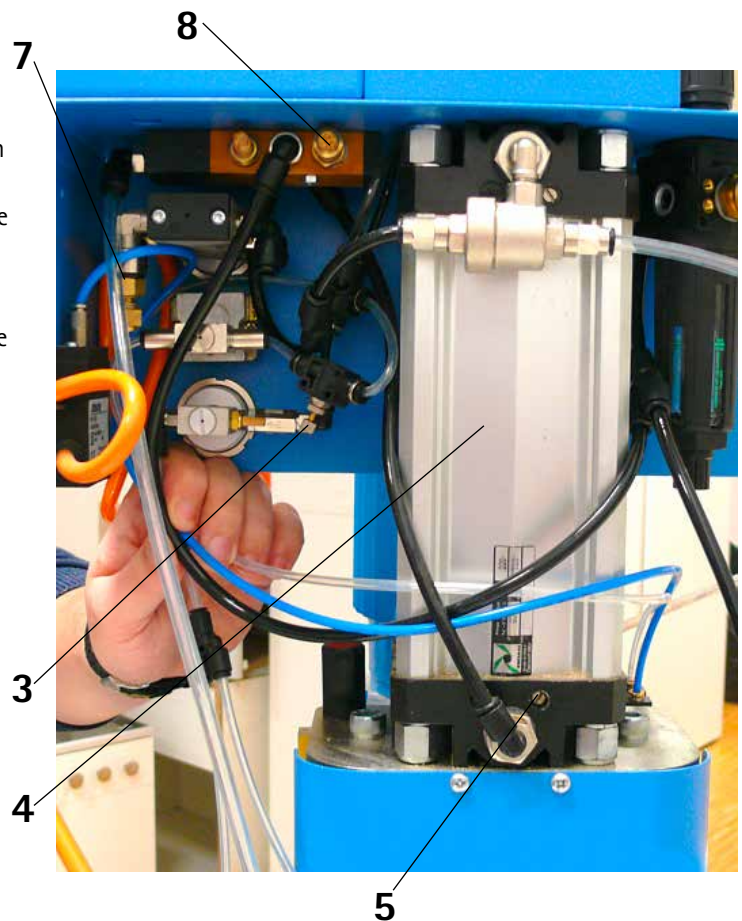
Lower end-position damping is adjusting using setscrew **5** in the stroke cylinder **4** at the rear of the machine. Drilling penetration rate can be reduced or increased by turning the adjustment screw.

Setscrew **3** in the valve is used for setting the length of time the hold-down clamps remain in position for after drilling (drilling hole lines only).

Setscrew **7** adjusts drilling penetration rate. This setting needs to be made when changing over from pushbutton to foot valve.

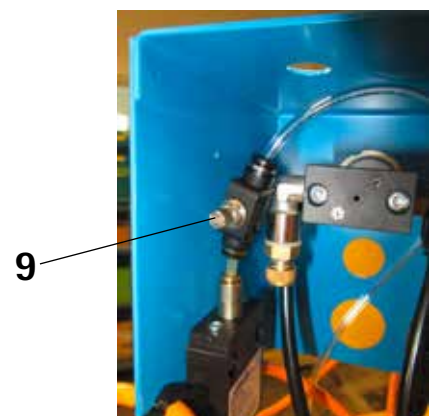
When operating the machine with the foot valve, drilling penetration rate is adjusted at setscrew **8**.

Check the setting by making a test drilling.



Drill overrun

The drill overrun can be adjusted. This is factory-set. To change the drill overrun, turn the screw on the throttle non-return valves **9**. Check the setting by making a test drilling.



Limiting drilling stroke for drilling hole lines

To work more effectively, the drilling stroke can be shortened for drilling hole lines.

For production, turn stop **1** using lever **2**.

Interchangeable drilling unit **3** must be in the lower position. Hold down switch for initiating drilling stroke.

A short stroke is carried out for the next work cycle.



Danger!

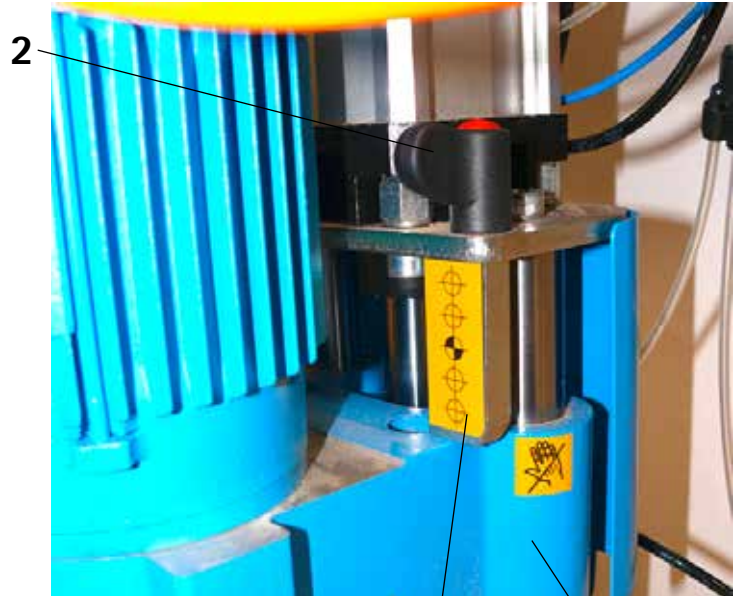
Exercise care when the drilling unit moves up and down, you could trap your fingers here.

Move stop **1** back after completing the work operation. The lever is next to the drilling unit.



Note!

Check all settings once you have finished making them.



1

3

en



1

Setting up

7. Hold-down clamp and centre stop

Hold-down clamp

Depending on panel thickness, hold-down clamps must be vertically adjusted.

Workpiece and hold-down clamp foot **3** must be spaced apart by no more than 6 mm (if necessary, place an A/F 5 mm hexagon socket spanner underneath).

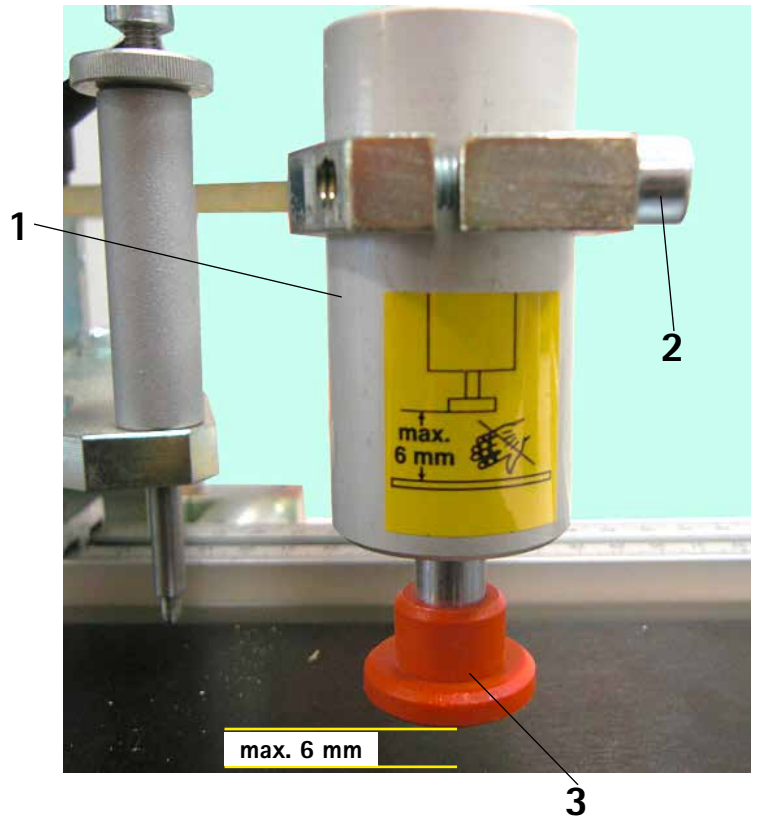
To set spacing, undo clamping screw **2** and re-position hold-down clamp **1** in its retainer.

Tighten clamping screw once correct height is achieved.



Note!

The compressed-air supply must be switched off when performing this setting work!



Hold-down clamp **1** must be moved into position to ensure workpiece is securely clamped in place for drilling.

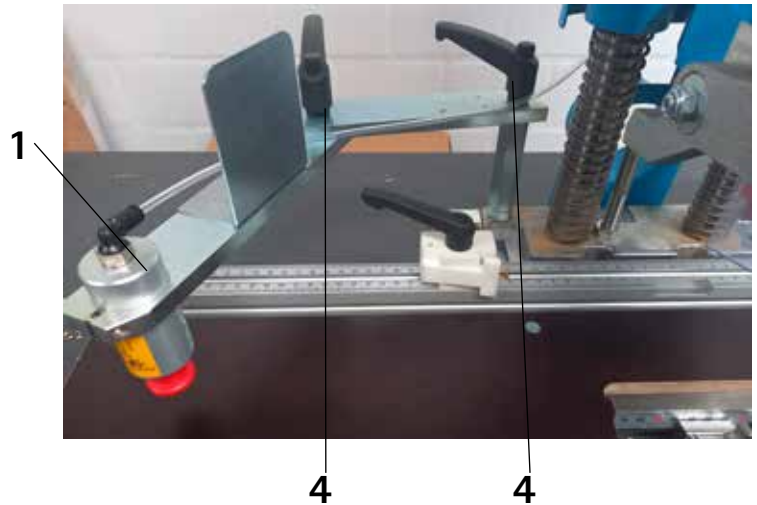
Undo clamping levers **4** to set the hold-down clamp.

Re-tighten clamping levers after positioning.



Caution!

Do not move the arm under the drilling head.

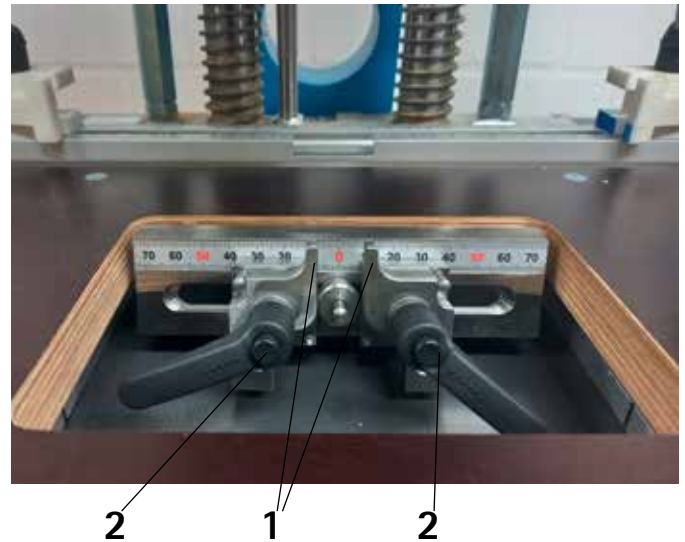


Centre stop

The center stop **1** is used for installing connecting fittings or as an initial stop for the row of holes. Depending on the direction of work, the right or left stop must be tilted upwards.

To adjust, the clamping levers **2** must be loosened and the center stop is adjusted manually according to the scale or with the spacers for the respective workpiece thickness.

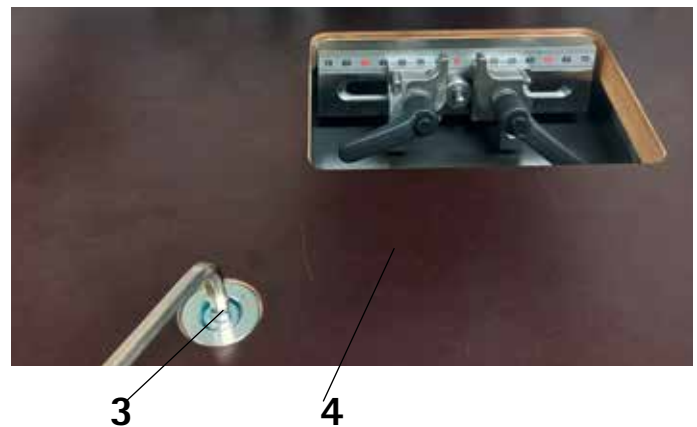
After adjustment, the clamping levers must be tightened firmly.



8. Bench top edge distance

To set the bench top in relation to the interchangeable drilling unit (spacing from edge), use the scale (manually) or drum stops.

Undo screws **3** with an Allen key and move bench **4** in the appropriate direction (forwards or backwards).

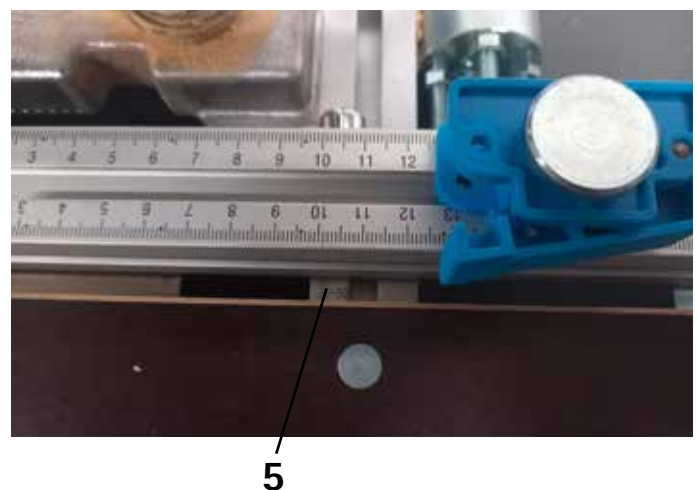


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Setting by scale

The bench can be positioned at the required setting using scale **5**.

Re-tighten screws after completing this work.

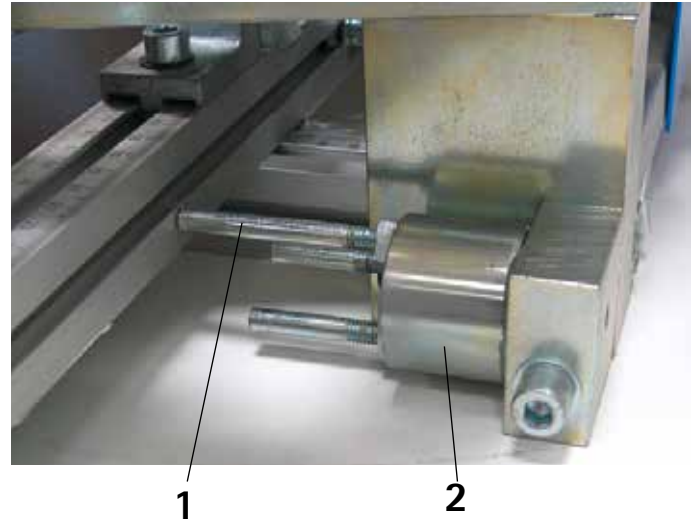


Setting up

Setting with the drum stops

The drum stops provide set spacings.
Preset: 22 mm, 37 mm and 57 mm.
Pull bench back a short distance.
For setting, turn the drum stop **2** to the required position and engage.

Space 22 mm	Interchangeable drilling unit, 6 spindles for drilling hinge hole
Space 37 mm	Interchangeable drilling unit, 9 spindles for drilling hole line
Space 57 mm	Interchangeable drilling unit, 9 spindles for drilling hole line



en



Note!

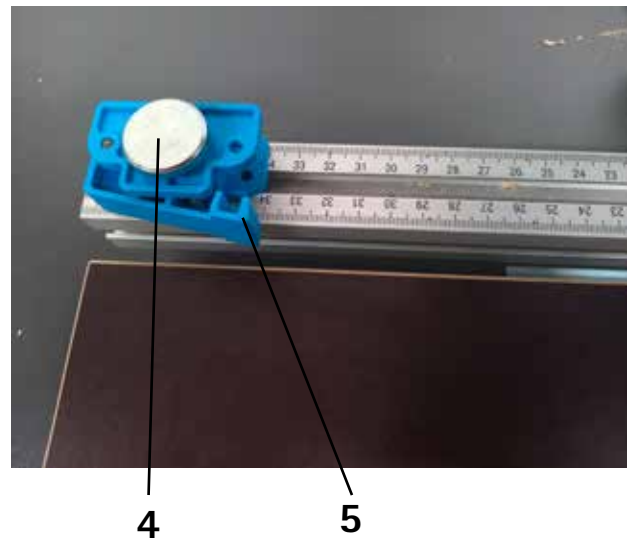
This setting must be made on both sides of the machine!

Move bench against stops **1** and re-tighten screws in bench.
Carry out trial drilling.

Pendulum stops

To adjust, the clamping lever **4** is released and the pendulum stop **5** is moved on the rail.

The value to be set is read on the scale at the rear edge (Photo: Setting according to scale) Pull the clamping wheel again firmly on. The workpiece is then held against the pendulum pushed. When not in use, the pendulum can be used with the Workpiece can be pushed away.



8. Operation

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1. Safety check



Caution!

This machine must only be operated and serviced by skilled personnel who have been authorised or trained to do so. Always observe the safety precautions and internal safety rules.

Before switching the machine on, satisfy yourself that

- any installation, set-up and servicing work have been completed in full,
- no persons are present in the danger zone, let alone working on it,
- all safety guards must be fitted in the prescribed way, and
- the compressed-air supply is ready for operation.

General information

Before commencing production:

- Make sure the machine is safe and in proper working order before and after you switch it on.
- Make sure the compressed air supply is ready for operation.
- Make sure the machine has been set up for the relevant product.



Note!

Immediately inform your line manager of machine malfunctions or faults.

Readiness for use

The machine is ready for operation if

- all of the above-stated activation processes have been carried out.
- a trial run has been carried out,
- the compressed-air supply is activated, and
- the machine is set up for the relevant product.

Production can now commence.

2. Switching on

Preparatory work

- Connect to the power supply by plugging in the mains plug,
- connect to compressed-air supply, switch this on and
- prepare material: panels, hinges / connectors etc.

Operation

You can operate the machine either by foot pedal or pushbutton on the control unit. The machine cannot be operated via foot switch and pushbutton at the same time.

Turn on the power supply for the drive motor at master switch **1**.

The same functions are given for foot pedal **2** and pushbutton **3** on the control unit.

Both controls must remain pressed until a complete work operation has been completed.

If you release the pushbutton or foot switch beforehand, the machine will abort the work operation and the drilling unit will return to the home position.

You must re-start the process.

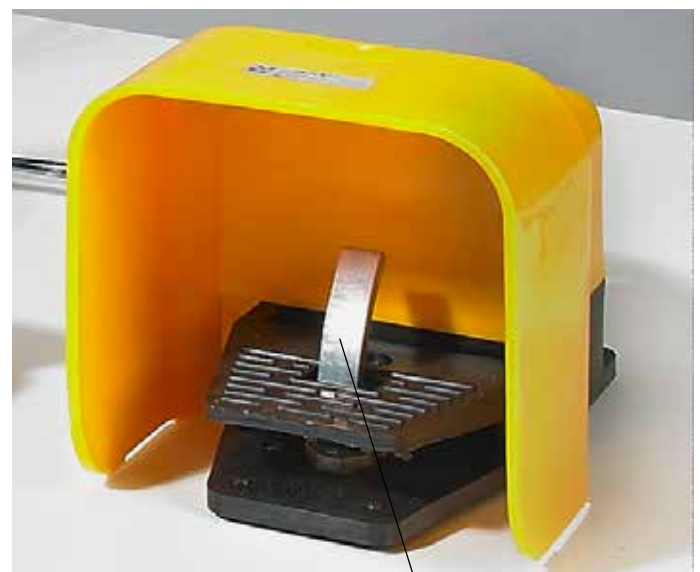
1



1



3



2

Operation

Controls

The control panel has two pushbuttons and a selector switch.



No.	Designation	Function
3	"Start" pushbutton	To start drilling, press and hold down until the drilling process has been completed.
4	Rotary switch	Choose between drilling and inserting or drilling only (4a = drilling and inserting) only with 6-spindle interchangeable drilling unit or 3-spindle interchangeable drilling unit (4b = drilling only) = only with 9-spindle interchangeable drilling unit and Interchangeable drilling unit, 90°, 9 spindles
5	Pushbutton "Release hold-down clamp"	Used in conjunction with selector switch (4a). Vents the hold-down clamps after inserting a hinge.



Caution!
In all work, remember:
Safety comes first!

Continuation stops

The continuation stops are premounted on the Interchangeable drilling unit, 9 spindles.

Setting the continuation stops

Setting height of the continuation stop

The height of the left and right continuation stop must be adjusted to suit the panel thickness by means of top setting ring **1**. The continuation stop's finger should engage as deeply as possible into the drill hole. A space of approx. 3 mm must also be allowed between workpiece and stop (insert a 3 mm hexagon socket spanner **2**)

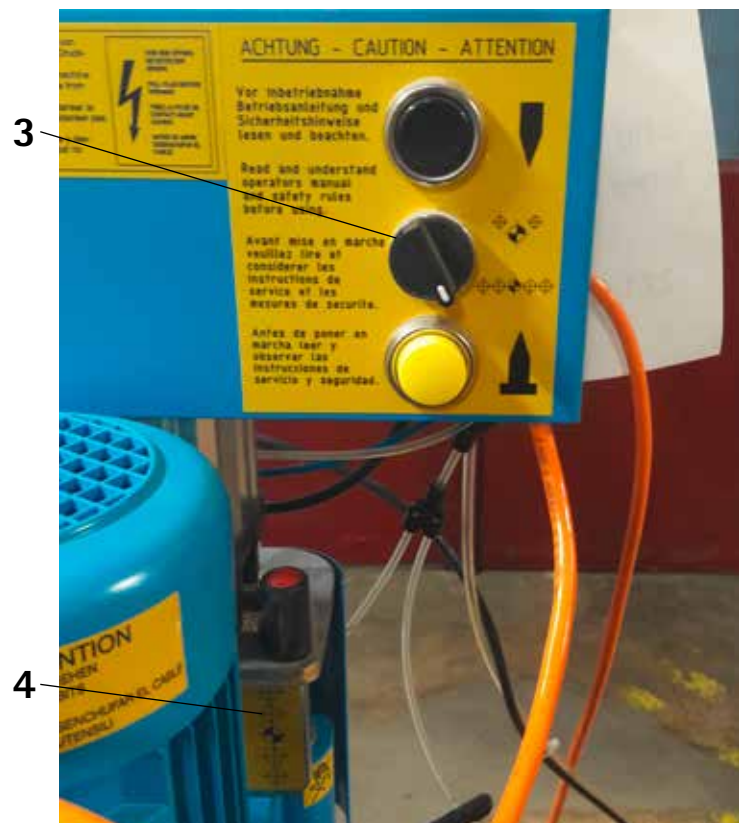


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Switch for hold-down clamp / stroke reduction

Set switch for hold-down clamp to hole line **3**.

This will automatically release the hold-down clamps after the drilling process which means there is no need to release them manually. Swivel in swivelling lever for stroke reduction. With the motor switched off, move the machine to the drilling position and move lever inwards (hole line pictogram can be seen) **4**.

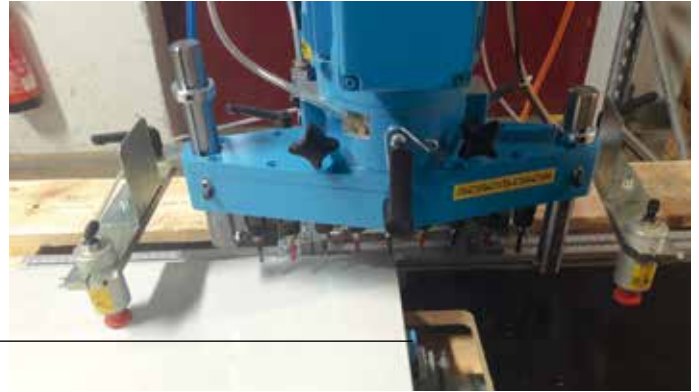


Operation

Drilling with the continuation stop (shown here with the right continuation stop)

Push workpiece up against centre stop **5** (start position of 1st hole in the hole line, for 19 mm panel material = 10 mm)

5



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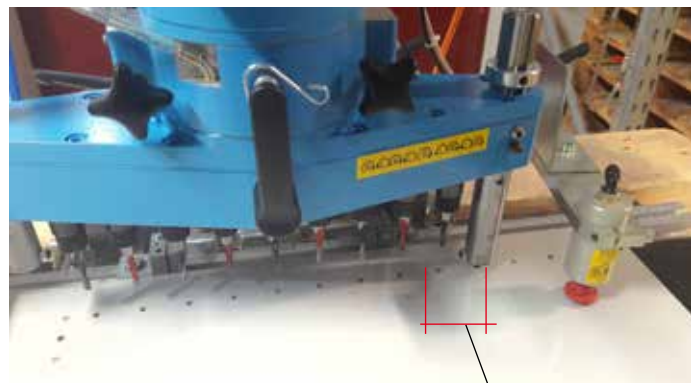
Activate drilling process and move panel material to the right until the pendulum of the continuation stops has slid over the last drill hole. Now pull the panel material back until the pendulum pin has engaged in the drill hole and is perfectly vertical. Pull workpiece as far as the pendulum stop **6**.

6



Restart drilling process and check distance between last drilling of 1st drilling process and 1st drilling of second drilling process **7**.

7



A digital depth gauge is shown measuring a spherical object. The gauge has a black frame with a digital display showing "1.23". The spherical object is metallic and has a yellow label with "50" on it. The gauge is placed on a white surface with several small holes.

7

For this, undo the screw at the pendulum and tighten or slacken the grub screw using a hexagon socket spanner (1 turn = 0.8mm) **9**.



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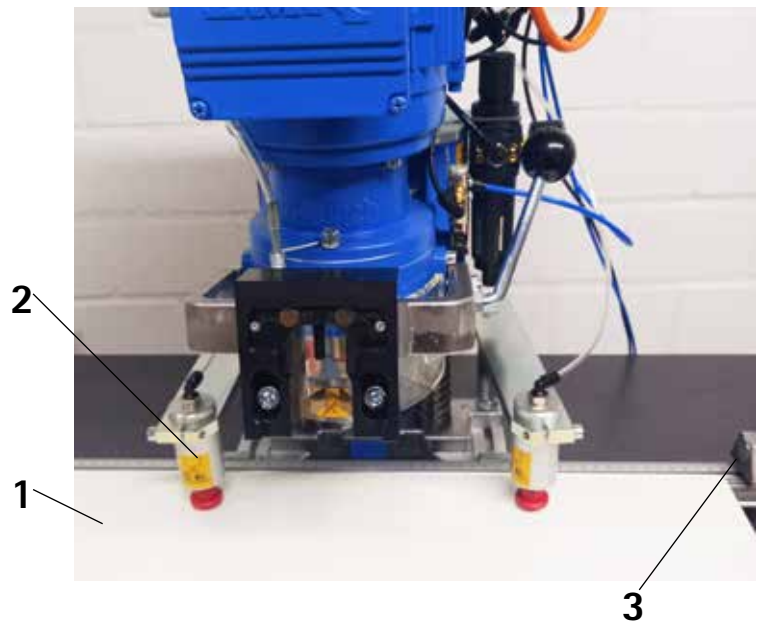
Operation

Inserting hinges

Hinges are inserted using the 6-spindle interchangeable drilling unit.

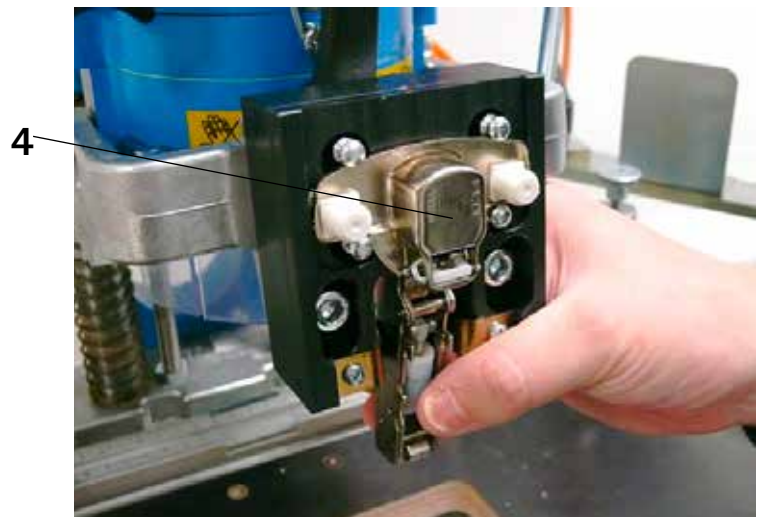
Carry out a function test before commencing production. With frame hinged down, actuate safety switch to deactivate motor while inserting hinge.

- Move panel **1** against stop **3**.
- Press foot switch or pushbutton.
- Hold-down clamps **2** lock panel in place, and drilling takes place.
- Hold-down clamps remain activated and continue to hold panel in place.



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- Fit a hinge into insertion die **4**.

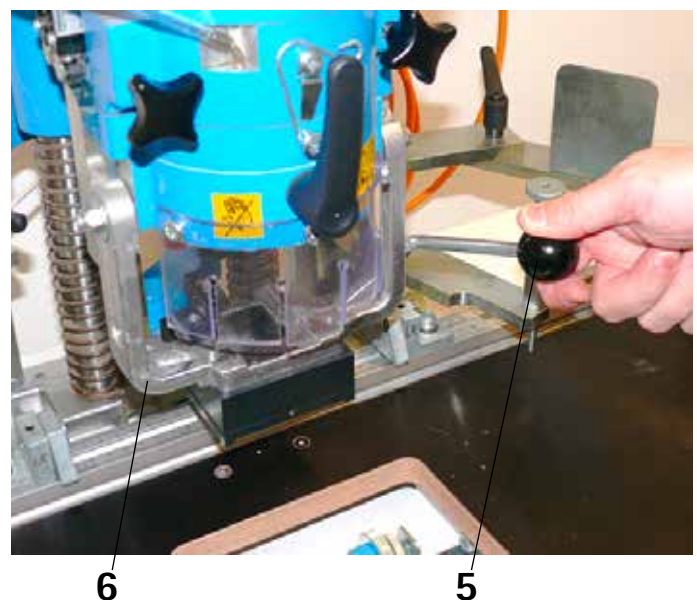


- Using grip **5**, move press-in frame **6** under drilling unit.
- Press foot switch (pushbutton) once again. (One hand on press-in frame, one hand on pushbutton.)
- The hinge is pressed into place.



Note!

Insert connecting fittings in the same way.



- Press pushbutton 5.
 - Hold-down clamps are raised and you can remove panel.
- This concludes the work operation.



3. Malfunctions during operation

All work involved in repairing, setting, troubleshooting and servicing must only be carried out by duly instructed, trained and authorised skilled personnel.

Malfunctions during operation

Immediately switch OFF the power supply to the machine if:

- unusual operating noises can be heard,
- the machine runs irregularly, oscillates or vibrates,
- faulty components get stuck,
- auxiliary units malfunction, and
- electrical faults occur



Note!

Always consult skilled personnel in the event of any malfunction.

Troubleshooting

- Inform line manager / machine setter.
- Remove components still in the machine.



Caution!

First rectify the malfunction and / or eliminate its cause before you switch the machine back ON again and resume operation.

4. Checks during operation

The operator must watch over machine operation.

- For your own personal safety and absolute machine operating safety, carry out the stated visual and safety checks once or twice per day / shift.

In extreme operating or ambient conditions, increase the number of checks per shift.

Checks for proper working order

- Is the machine running smoothly and with little vibration?
- Constantly watch out for any changes and operating noises.

9. Servicing / care

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1. General information

Inadequate, improper and / or unpunctual servicing will increase risk potential and may lead to operating malfunctions, high repair costs and long down times. The risk is borne solely by the owner.

Working on electrical components

Faulty electrical components must only be replaced with replacement parts of identical design.

Before attempting any work on electrical equipment, always disconnect it from the power supply and consult qualified personnel.



Danger!

Electrical operating equipment as well as specific parts of these devices may carry a dangerously high level of voltage even when they are switched off.

For this reason, handling electrical operating equipment improperly may result in serious damage and / or damage to property.



Warning!

Electrical equipment must only be repaired by qualified personnel.

Before attempting any work, reliably disconnect the relevant device from the mains power supply and earth it. Only use approved replacement parts (e.g. fuses) with specifications that match the data in the equipment parts list.

2. Instructing maintenance personnel

Before attempting any work, familiarise yourself with the machine as well as with this operating manual and always work in a way that meets the safety requirements.

Also follow any non Hettich operating instructions in the appendix to this operating manual.

Before attempting any maintenance measures, make sure that:

- the machine has been shut down and prevented from switching back on again and cannot be started up unintentionally or by mistake, and
- the compressed-air supply to the machine is shut off and the machine is depressurised.

all intended work is brought to the attention of a supervising person.



Warning!

Immediately renew worn and / or damaged components.

Otherwise, you will jeopardise your personal safety, the machine's operating safety and the safety of your surroundings.

Recommendation:

Only use genuine replacement parts. Replacement parts or items of equipment not tested and / or approved by Paul Hettich GmbH & Co. KG may impair the machine's active and passive safety.

In all work, refrain from applying any abnormal level of force above and beyond the extent necessary to undo / fasten connections and/or screwed joints. For maintenance work, only use suitable tools that are in proper technical working order, using them correctly and in a way that meets the safety requirements.

3. Making the machine safe on shutdown

- Switch OFF the power supply to the machine (unplug).
- Detach the compressed-air hose (compressed-air supply).
- Prevent the machine from being switched back on again without authorisation.
- Clean the machine as described in the relevant section.
- Affix a warning sign to the machine in compliance with accident prevention regulations.



Danger!

CAUTION! Servicing work in progress!
Do not switch machine on

Ensure good pollution-control practice

Contaminated dirt (washing water, oils, greases) must be collected and disposed of in accordance with regulations.

Observe the pertinent regulations (e.g. law on waste management). After cleaning, coat the machine's bare metal parts with preserving oil.

If necessary, coat rubber and plastic parts with talcum powder.

4. Cleaning the machine

The entire machine must always be cleaned after it has been used. This is best done by wiping it down with cloths and / or vacuuming it with an industrial vacuum cleaner.



Note!

Never use compressed air to blow the machine clean.

This would take dirt to the remotest corners of the machine, forcing it in particular under the sealing lips of ball bearings and similar components.



Danger!

On account of the risk of shorting, only clean electrical components (drives, switchgear etc.) in a dry state (cloth) or protect them with appropriate covers.

Clean at shorter intervals if operating conditions make this necessary.

Clean the machine

- only by suction, never by blowing it clean with compressed air, and
- only with a dry cloth to remove left-on lubricants etc.

Follow health and safety regulations and relevant provisions when handling hazardous and/or groundwater-polluting liquids (e.g. oil, cleaning agents or solvents as well as other chemical substances).

Never clean hands with aggressive, highly flammable and health-harming solvents or cleaning agents.

Electric motors

All electric motors must be cleaned at regular intervals because dirt and dust act as an insulating layer which may cause motors / coils to overheat.

5. Servicing work

Work on the pneumatic system

Before working on the pneumatic system, clean the machine, at least the work area, as described below.

- Depressurise compressed-air lines and hoses of the pneumatic system.
- Carefully detach hoses. Escaping compressed air may swirl up dust.
- Protect air connections to prevent them from getting dirty (if necessary, using adhesive tape).
- Never mix up connections, plugs or switches. This will inevitably result in malfunctions
- Always work with the greatest possible level of cleanliness. Dirt or dust in the pneumatic system may result in malfunctions and possibly also in significant damage to property.



Caution!

Any work on the pneumatic system must only be carried out by authorised skilled personnel.

Servicing unit

The servicing unit keeps dirt, dust, water and oil droplets out of the compressed-air line. Always make sure the reservoir is emptied in good time. The filter has no effect if the reservoir becomes too full. This will result in malfunctioning and faster wear to valves and cylinders. The necessary intervals must be defined internally as they will largely depend on the quality of compressed air provided.

Servicing units must be checked for water at the sight glass every day.



Note!

After completing all work, make sure all screws and lines are securely connected on the compressed-air systems.

6. Instructions on inspections

Inspections are measures for establishing and assessing the actual condition of a machine and its components.



Note!

Inspections are carried out as preventive maintenance and to ensure your personal safety.

Failure to carry out an inspection in good time is deemed non-intended machine use.

The machine operator must check the machine on a daily basis for externally visible faults and immediately rectify any faults identified or, if this is not possible, report them.

The machine must only be operated if it is in proper working order.

The machine's surroundings must be kept clean and clear of stumbling hazards. Compressed-air hoses and suction extraction hoses must be routed so as not to be in the way of the machine operator and restrict movement.

The prescribed servicing work must be carried out at the intervals shown. If necessary, the owner must define other appropriate intervals or specify additional work.

During weekly cleaning work, all of the machine's components should be checked for wear and damage wherever possible. The sooner damage is identified, the less it will cost to repair.

Once fitted, check all screw connections for secure fit! This applies in particular to all components exposed to dynamic strain.

During monthly servicing work, carry out random checks on screw connections exposed to dynamic strain!

Check safety guards at regular intervals (at least once a month) for proper working order.

Check all electric cables and compressed-air hoses for damage and secure fit.

Check cable glands at terminal boxes for proper sealing and secure fit.

General

Regularly clean drilling dust off the machine.

Regularly check electrical cables and compressed-air lines.

Immediately renew faulty or damaged components. Only use genuine replacement parts.

Malfunctions / troubleshooting

10. Malfunctions / troubleshooting

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1. General information



Note!

Always first identify the cause of any malfunction.

2. Malfunctions caused by the owner

Before leaving the factory, the machine/system was checked for proper working order by our skilled personnel.

Malfunctions attributable improper treatment, non-intended use or poor (unpunctual / improper) servicing are not covered by the warranty. The risk is borne solely by the owner.

3. Troubleshooting



Caution!

Observe the regulations, warnings and precautions when carrying out any troubleshooting activity

When locating any fault, proceed in stages and make a written note of observations, testing or measuring results.

Try and establish as accurately as possible which operating situation the malfunction occurred in, in other words try to answer the following questions:

Which work operation was the machine still performing properly?

After which work operation did the malfunction start to occur?

Does the malfunction occur regularly or only occasionally?

In the case of occasional malfunctions, try to find out whether the malfunction can be associated with

events or actions immediately before the malfunction occurs.

Does the malfunction only occur in conjunction with specific components (material, shape, particular profiles)?

Observe the operating manuals for all additional equipment / options.

General causes of malfunction

Before removing components in any troubleshooting activity, first make sure:

- the machine and / or its equipment is not showing any visible damage,
- the machine is clean and no dust deposits are obstructing or affecting the way components move,
- the compressed-air supply is working properly and operating pressure is within the permissible tolerance (6 - 7 bar),
- the mains power supply conditions match the specifications for the electric motors (rating plates) and / or electric equipment, and motor protection is correctly set, and
- servicing measures have been performed on time.

Malfunctions while machine is operating

All work involved in repairing, setting, troubleshooting and servicing must only be carried out by duly instructed, trained and authorised skilled personnel.

Always consult the machine setter in the event of any malfunction.

Try and locate the area of the machine the malfunction has occurred in.

Check whether:

- switches are incorrectly set or faulty,
- air hoses are leaking or kinked, and
- electric cables have been damaged by the switches or solenoid valves. It is not uncommon for electric cables to break.

4. Reporting malfunctions

If the information given above does not help you to remedy a problem, please contact Paul Hettich GmbH & Co. KG by telephone.

Please remember, though, that we too can only give swift assistance if we are provided with detailed information and fault descriptions.

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11. Dismantling / disposal

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1. General information

When dismantling the machine, always observe the national and international laws applicable in the country of use. We can only give basic information on dismantling and disposing.

Observe the regulations, warnings and provisions on health, safety and environmental protection for all work.

We recommend instructing an approved dismantling / disposal company to dismantle and dispose of the machine / system.

Before dismantling

For decommissioning / dismantling the machine / system, it is important to be familiar with the space that is needed. This includes aspects such as clearance heights, narrow transport routes and tight spots when the machine is taken away.

Space must be available for work equipment or sufficient space designated for this.

Before commencing work, always inspect the dismantling area and mark it off with barriers.

Before dismantling, you should familiarise yourself with the structural stability of the machine / system and with any weak points it may have, and draw up an appropriate dismantling plan.

Provide appropriate receptacles and transportation containers for the various materials.

A carefully devised work and safety plan provides a sound basis for a well-organised procedure.

2. Taking out of service

- Disconnect all plug connections.
- Shut off supply systems, such as compressed air, and then remove lines and hoses.

3. Dismantling

General information

Act with particular caution when dismantling the machine.



Danger!

Warning! There is an elevated risk of injury and accidents!

- Always wear ear protection when performing very noisy work.
- Only use tested and approved tools for dismantling the machine.
- Only use suitable and approved industrial trucks and lifting gear (crane) for transporting the machine, assemblies and components as well as for lifting heavy loads.
- Always use the prescribed personal protective equipment (safety goggles, protective clothing, ear protection, safety shoes etc.).

Dismantling the machine / system



Note!

On dismantling also follow the information under "Installing / fastening" in the section on "Technical information".

- Undo all screw connections and label the screws and screw positions in case the machine / system is ever re-installed.

4. Hazardous substances / disposal

Dispose of the packaging in an environmentally friendly manner.



The BlueMaxMini Modular contains components which must not be disposed of as household waste but as hazardous waste.

Under the European WEEE directive, electrical and electronic devices must not be disposed of with household waste. Their components must be recycled or disposed of separately because toxic and hazardous components can cause lasting damage to the environment if they are disposed of improperly.

On request, the manufacturer will provide details of the take back concept in effect.

Any disposal must be in accordance with regulations and in observance of the law.

Dismantled components must be collected separately by material group, non-recyclable residuals must be disposed of.

Observe the Regulation on Electronic Scrap when disposing of drives and items of equipment as well as electric / electronic components.

Maintenance (servicing) and repair work may produce the following waste materials requiring disposal – at the responsibility of the machine owner:

- lubricants, greases, oils and chemicals
- technical gases, e.g. nitrogen
- cleaning agents and expendables, as well as
- waste of all types, including worn machine components and tools.

Liquid wastes must be collected as groundwater-polluting substances in closed, approved containers and disposed of in the proper manner

Immediately bind and neutralise any spilled liquids.

Never allow auxiliary substances (e.g. waste oils) to seep into the soil or sewer.

Observe internal, local or regional provisions when disposing of any item.

When disposing of the machine (dismantling or scrapping) all components must preferably be recycled by material group.

After completely emptying and cleaning lubricant systems (drilling units etc.), dismantling them may necessitate disposal of the following material groups:

- metals: steel, grey cast iron, aluminium (mechanical engineering materials),
- plastics: PVC (hoses),
- elastomers: cable coverings, seals and
- electrical devices / operating equipment.

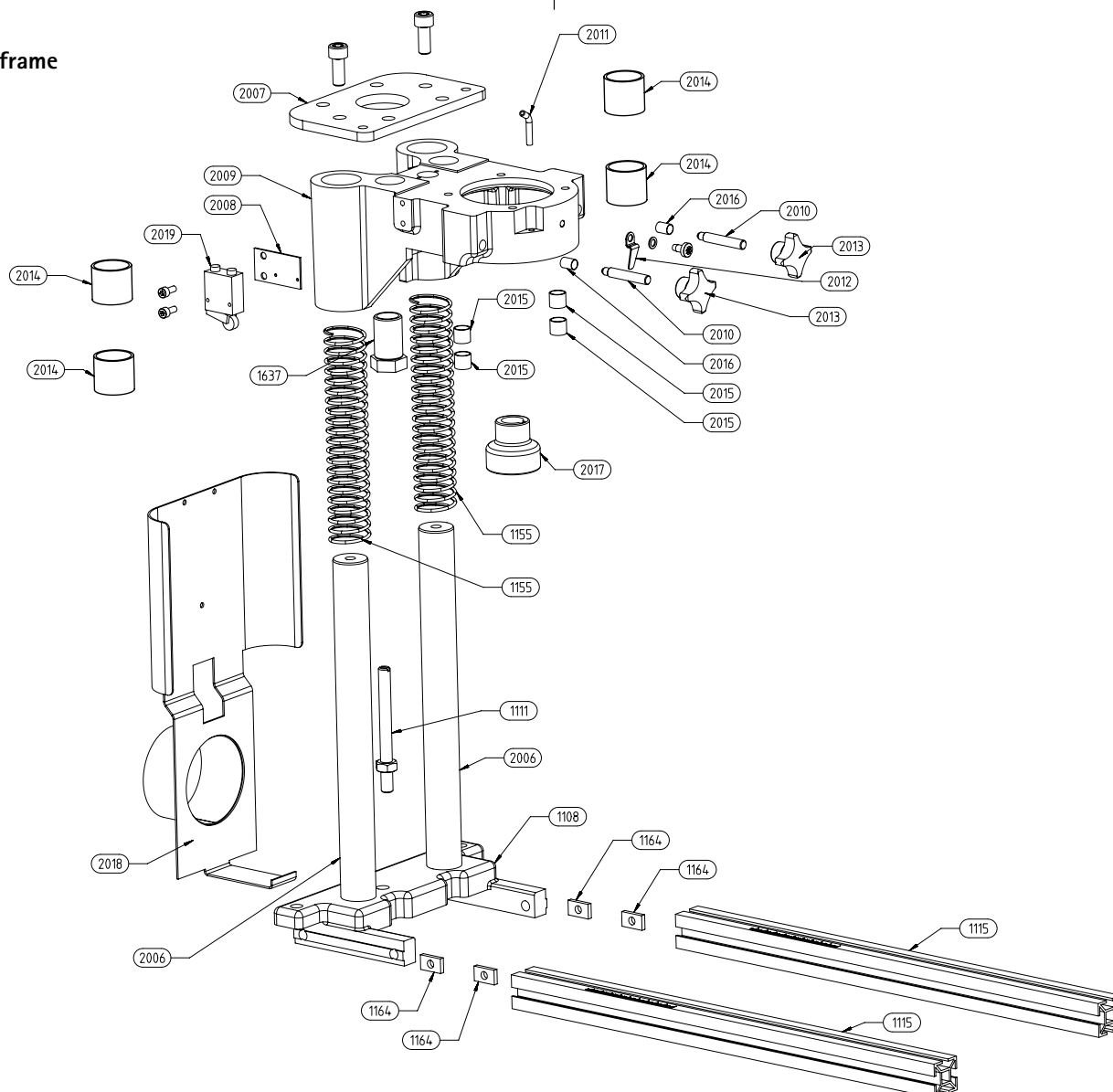
Replacement parts lists

12. Replacement parts lists

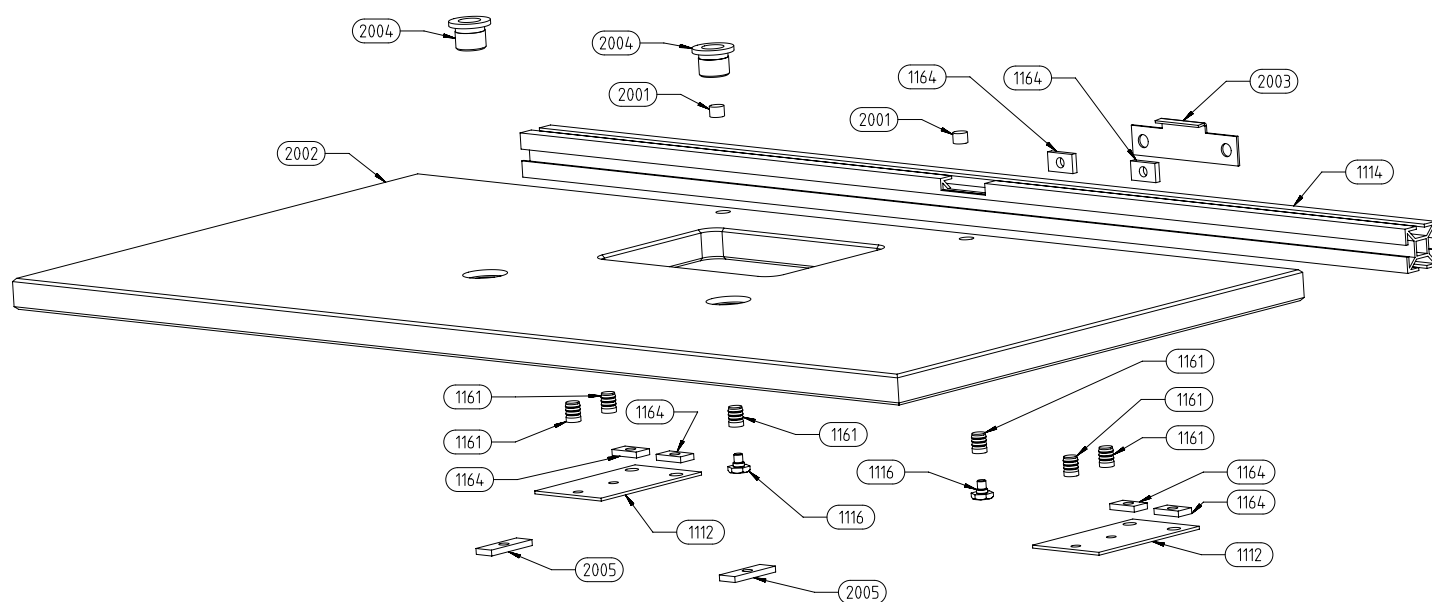
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1. Base frame

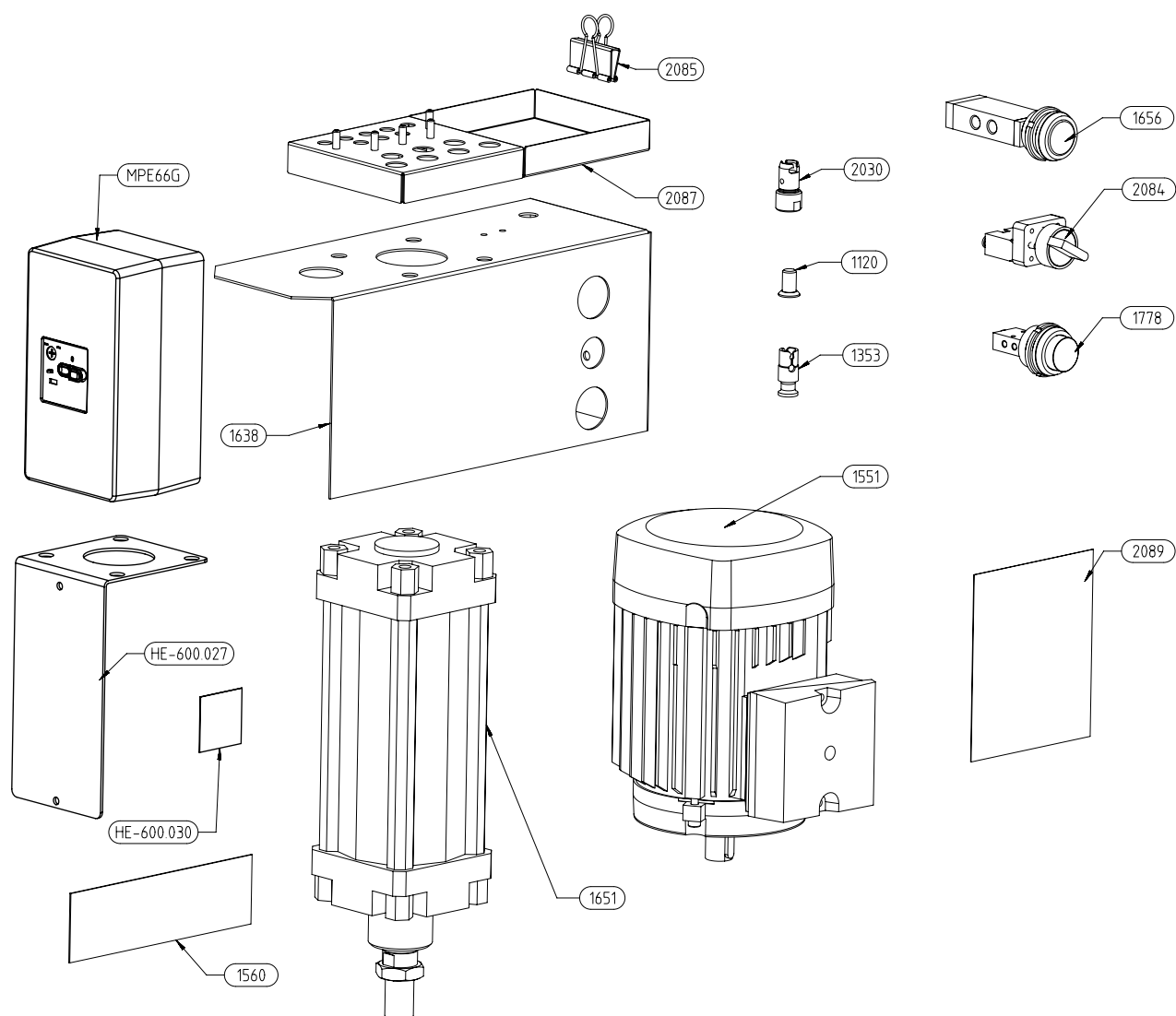


2. Work surface



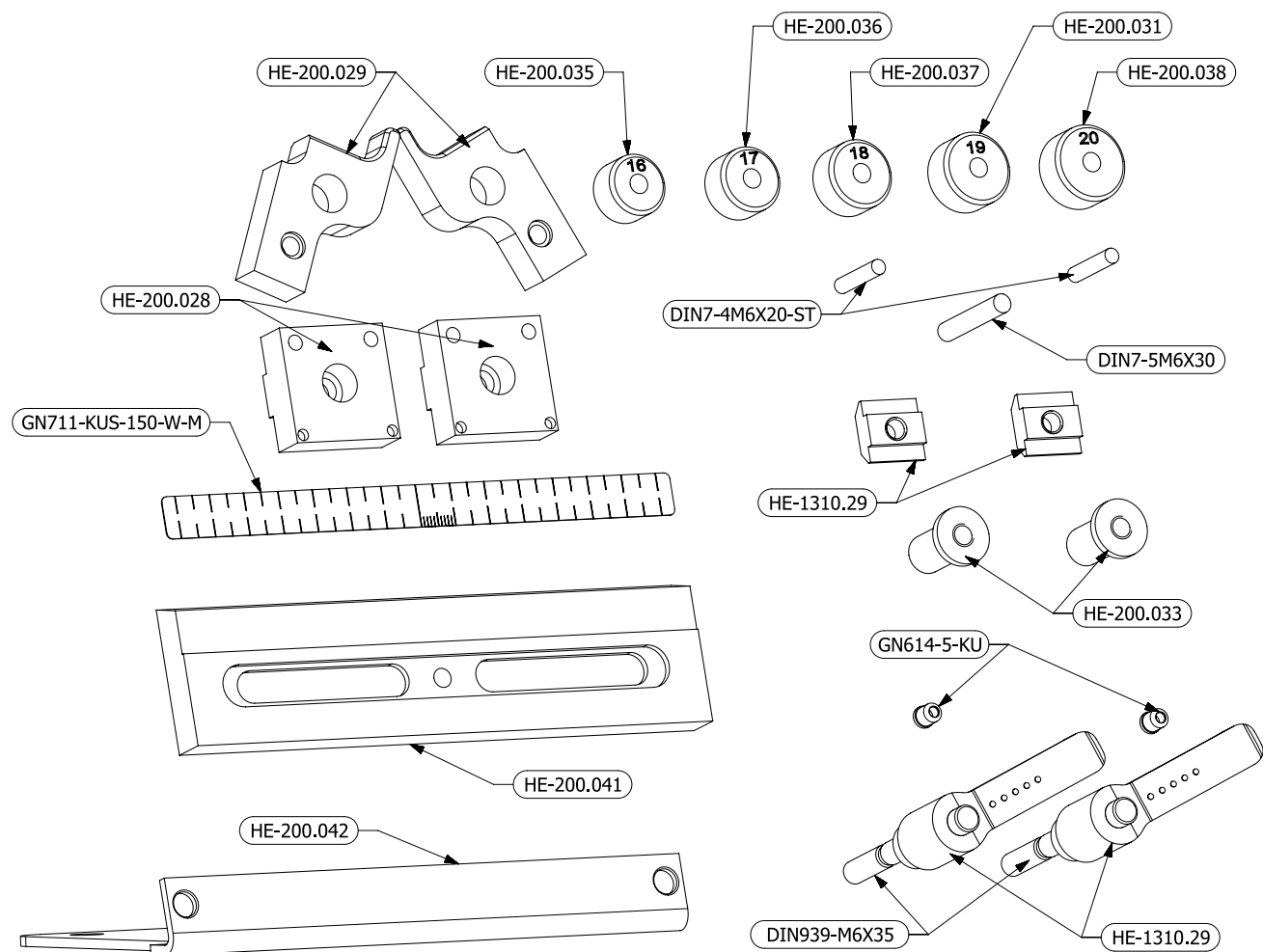
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3. Motor with lifting cylinder and tool shelf

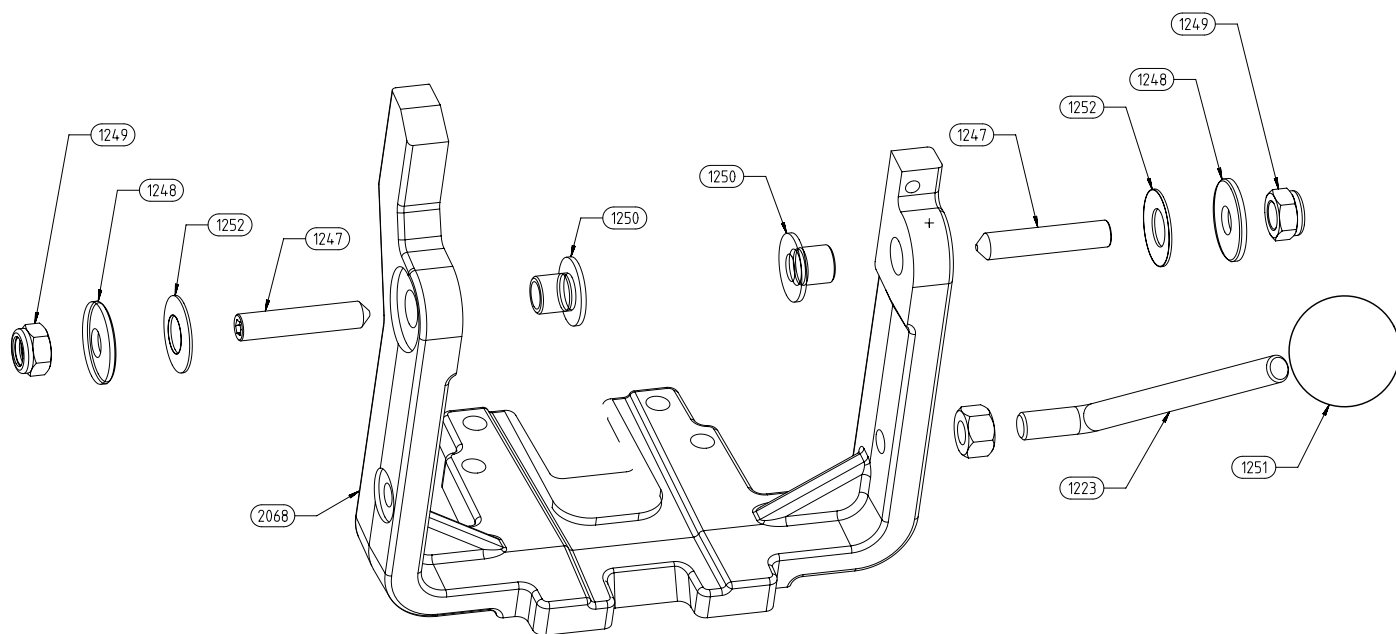


Replacement parts lists

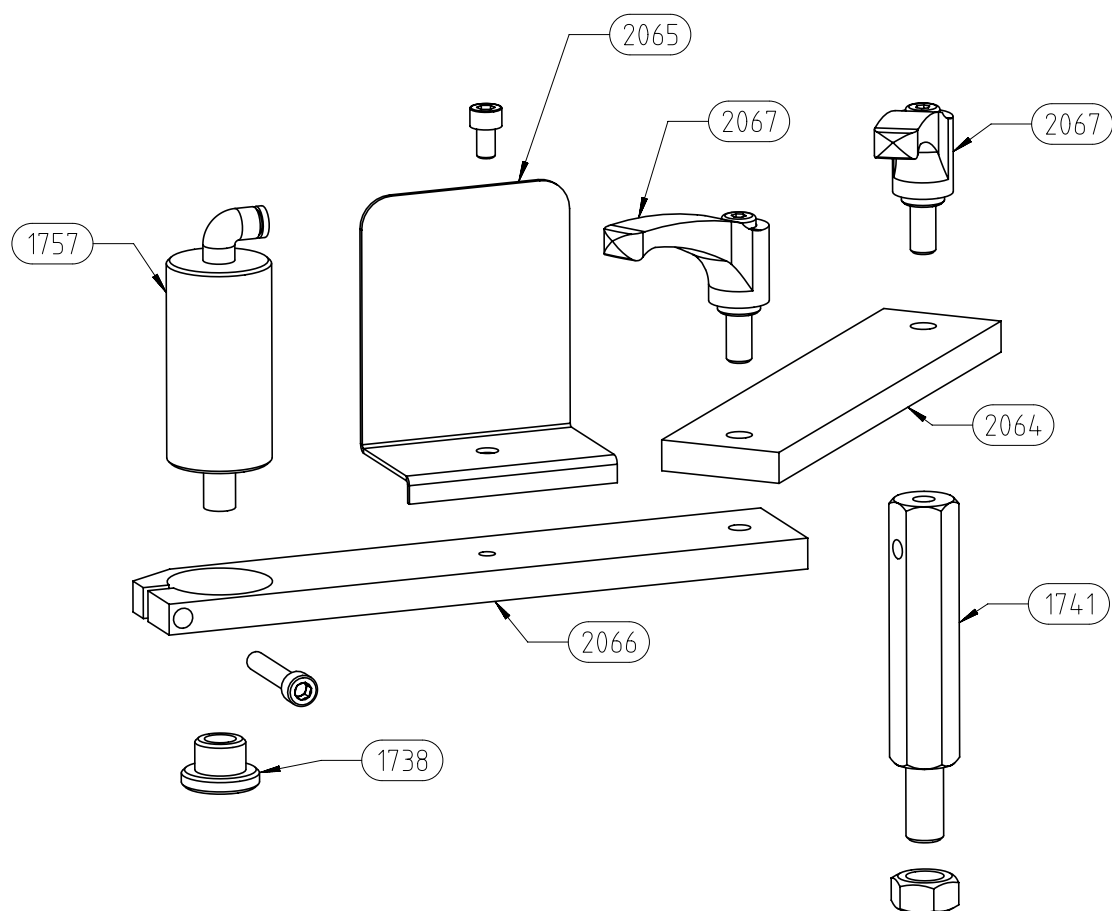
4. Centre stop



5. Press-in frame



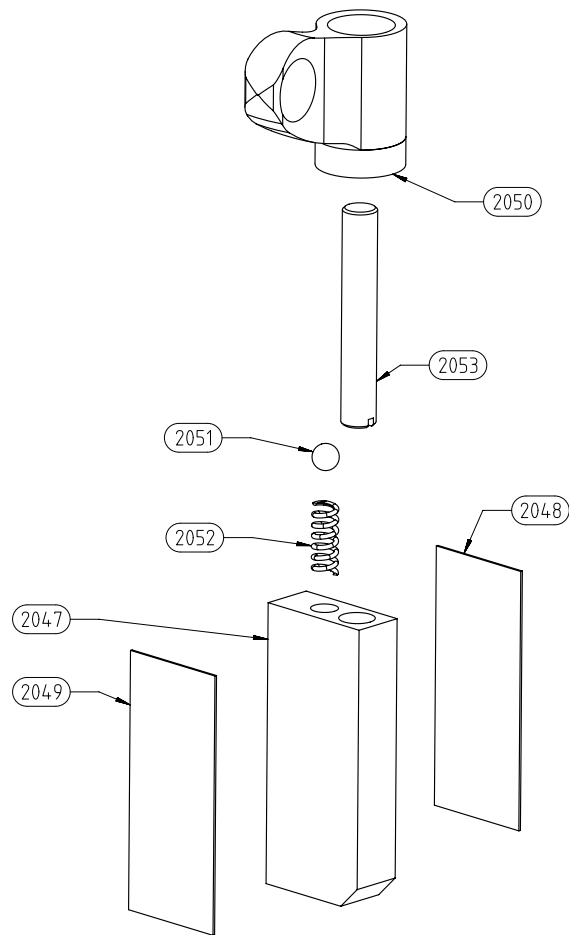
6. Hold-down clamp



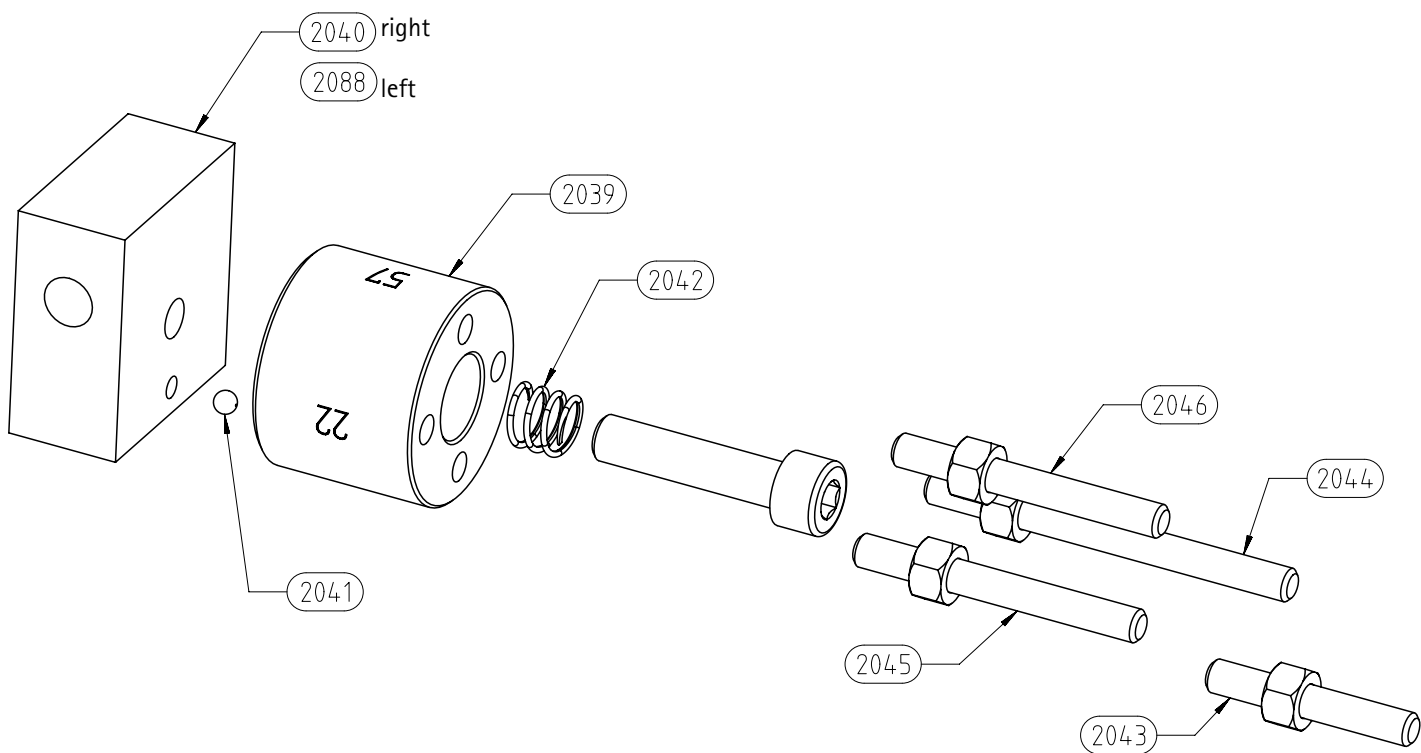
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Replacement parts lists

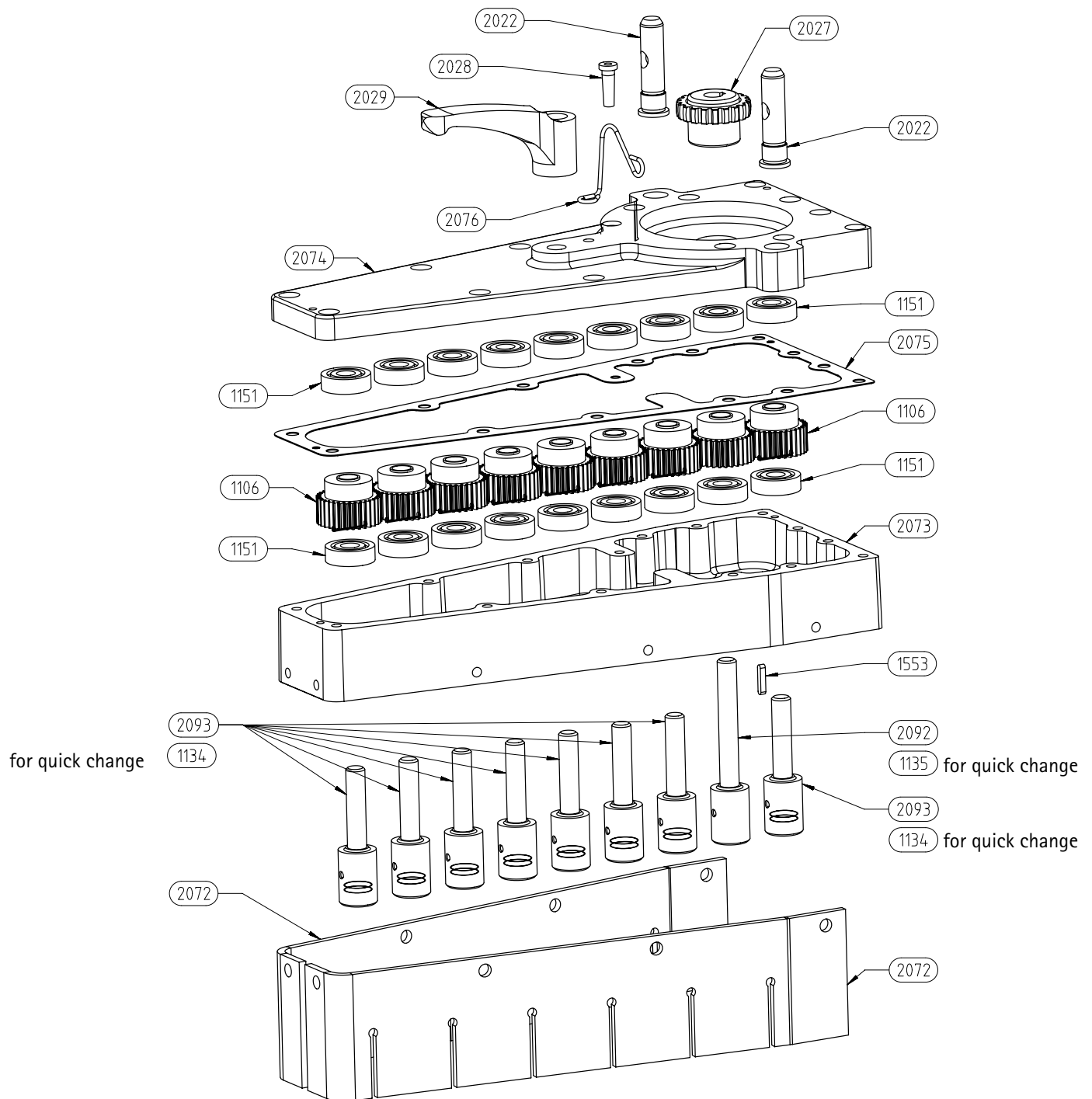
7. Stroke limiter



8. Drum stop

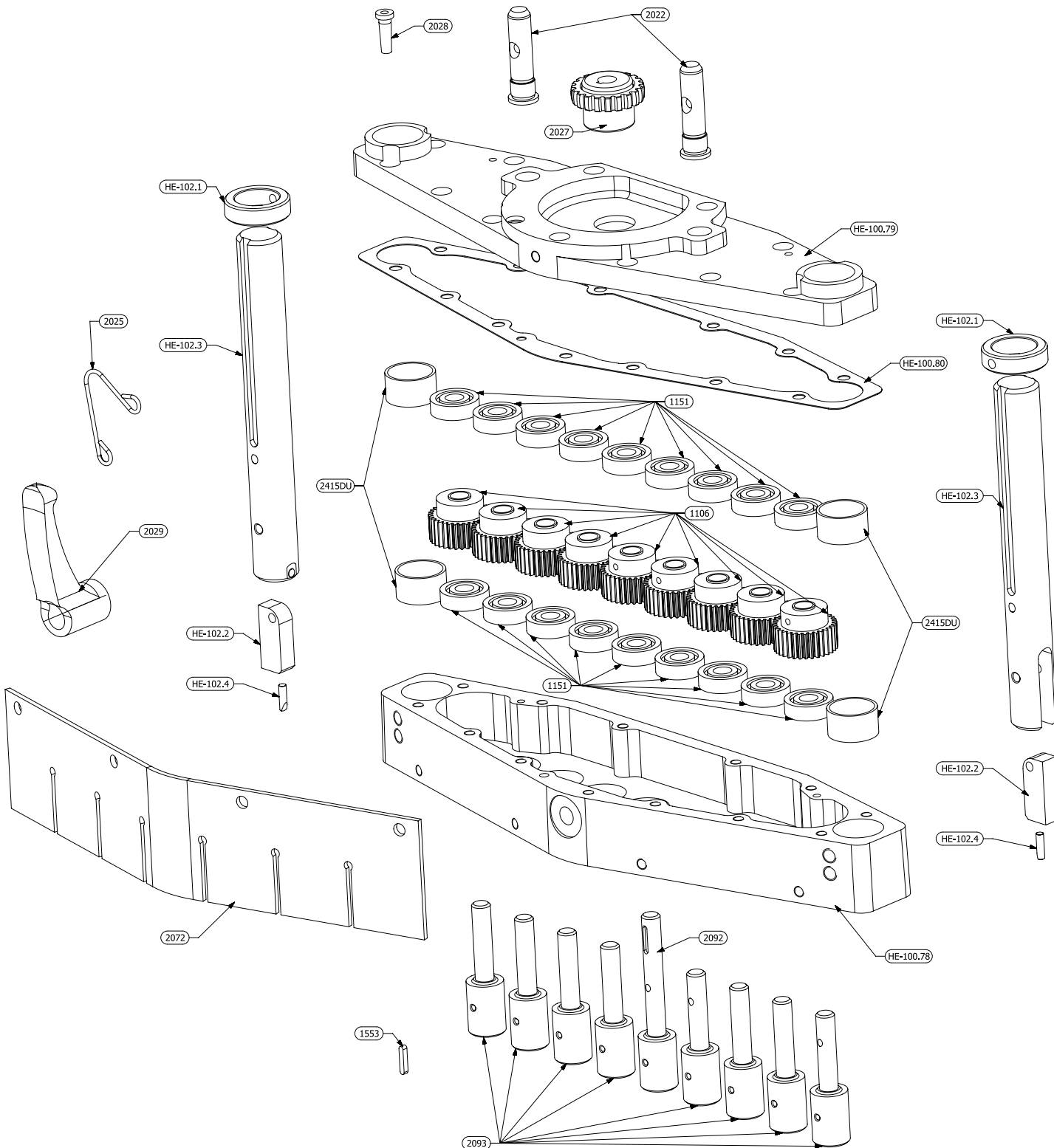


9. Interchangeable drilling unit, 90°, 9 spindles

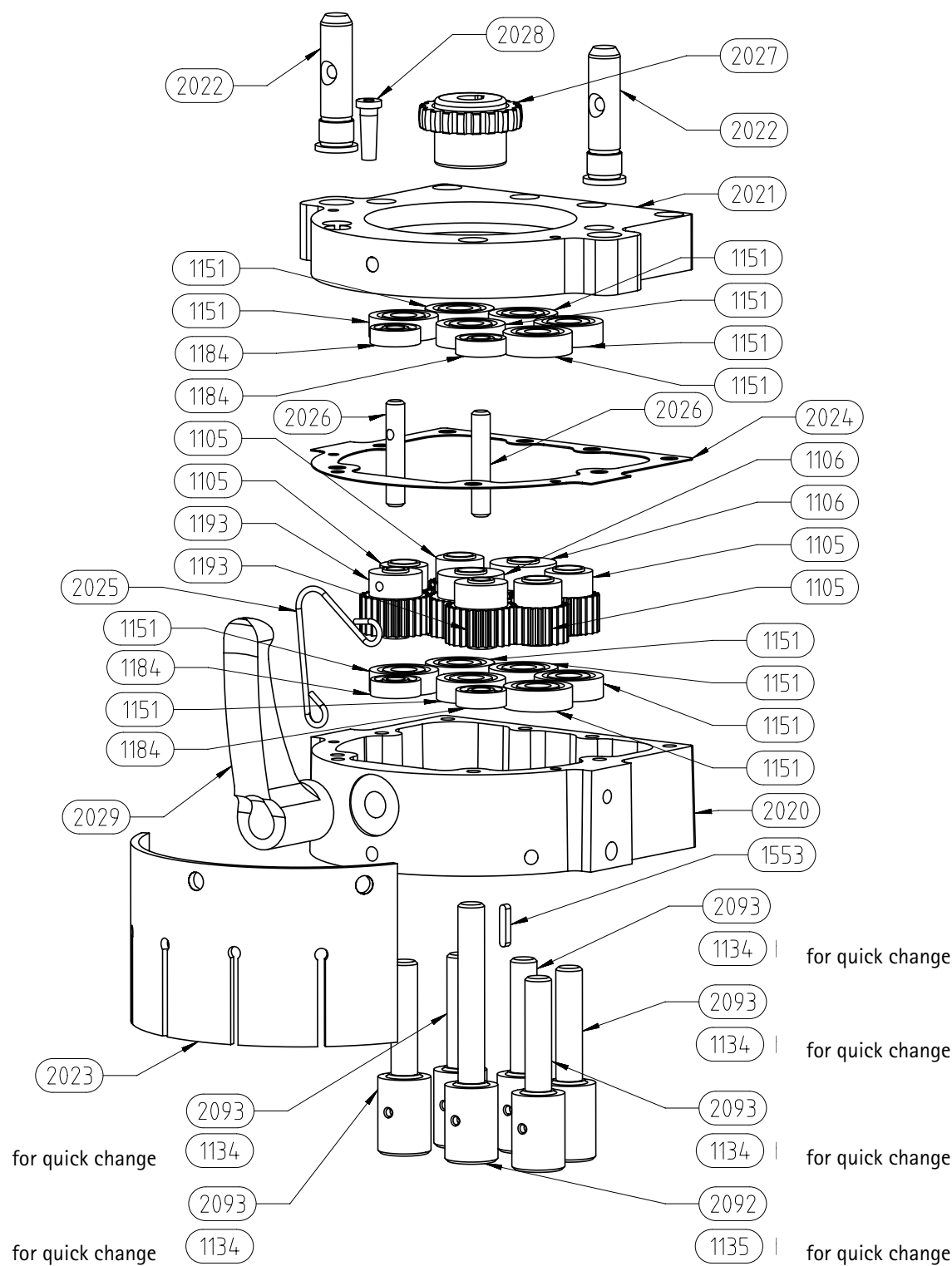


Replacement parts lists

10. Interchangeable drilling unit, 9 spindles

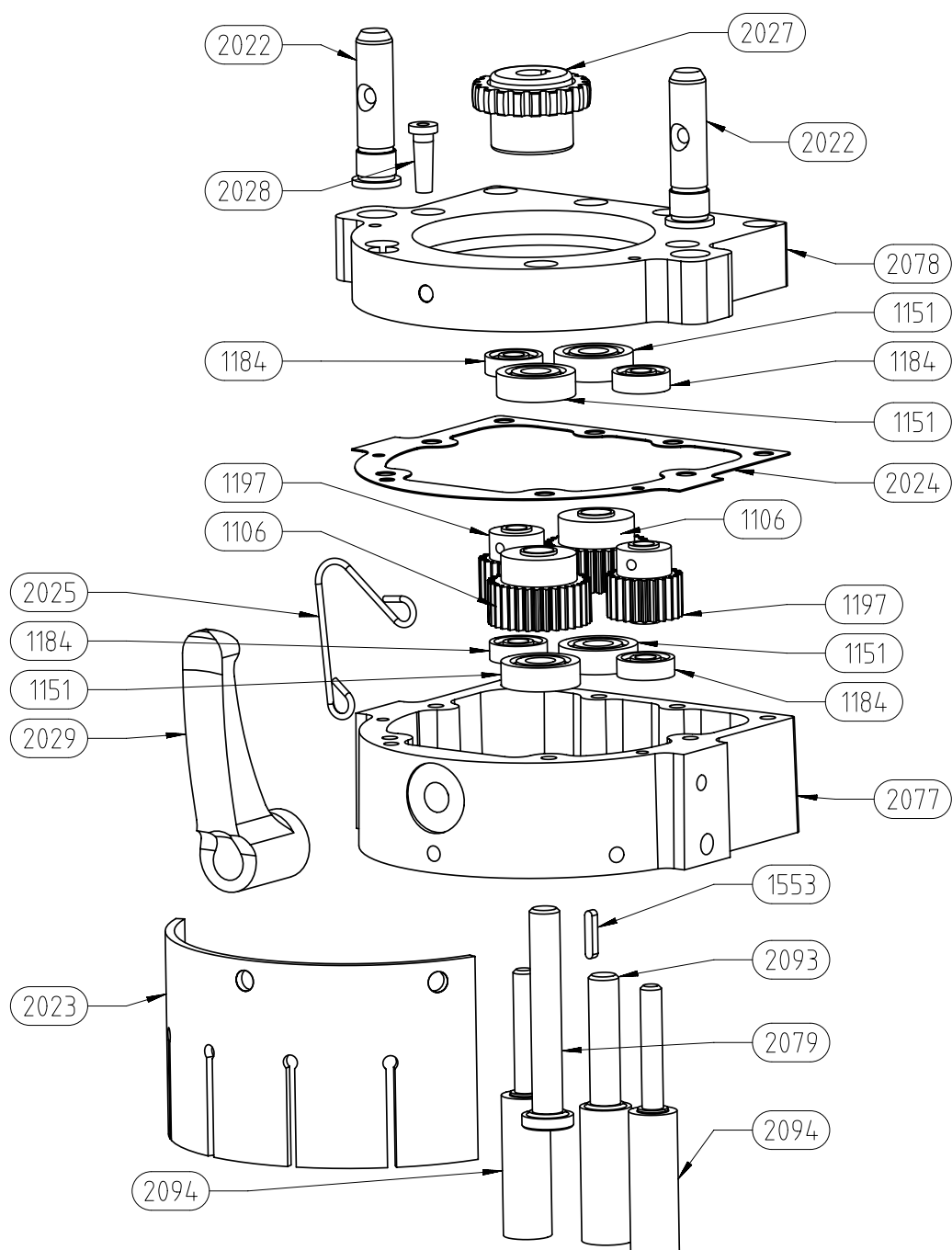


11. Interchangeable drilling unit, 6 spindles

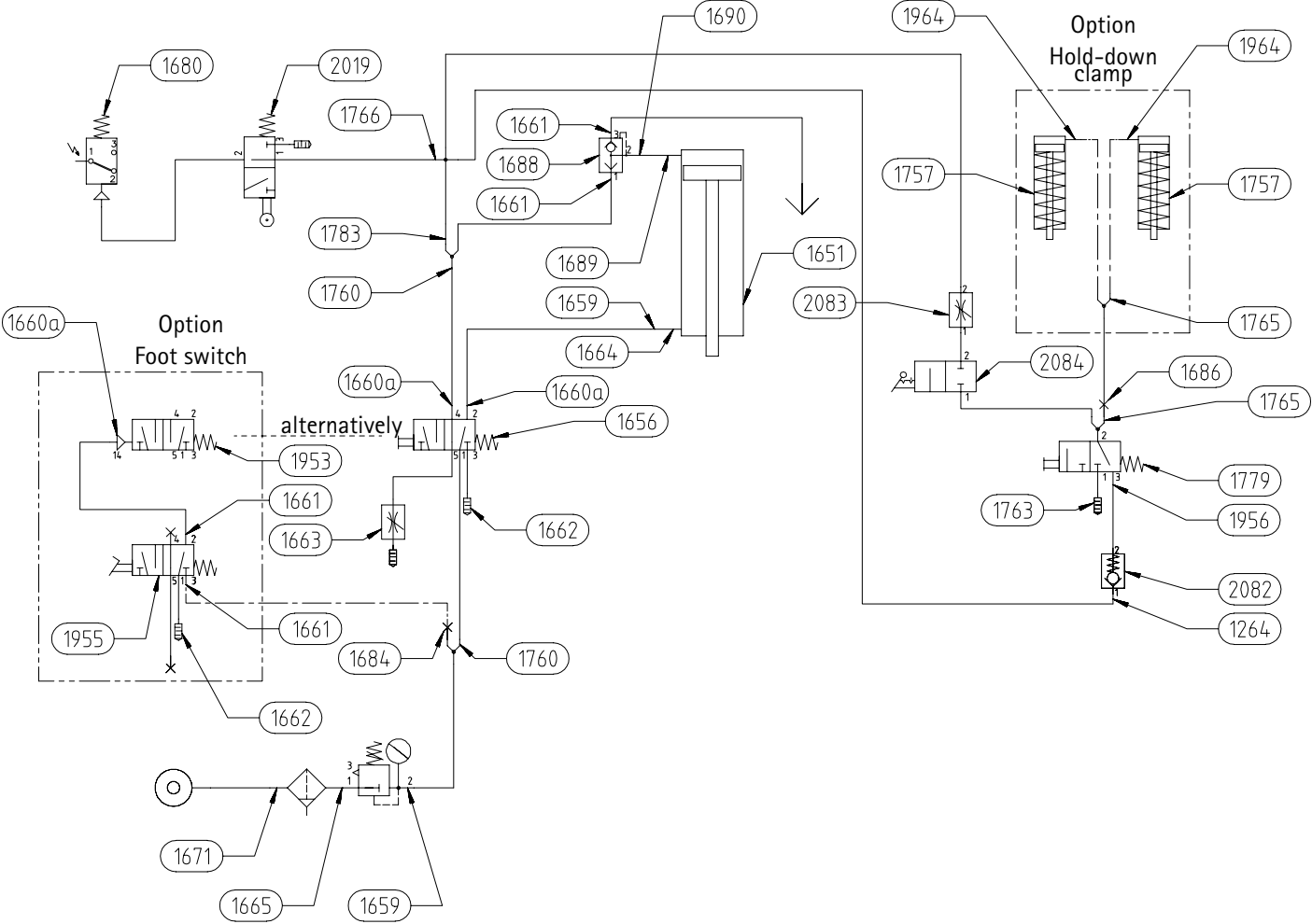


Replacement parts lists

12. Interchangeable drilling unit, 3 spindles, Selekt (22/9)



13. Pneumatics diagram

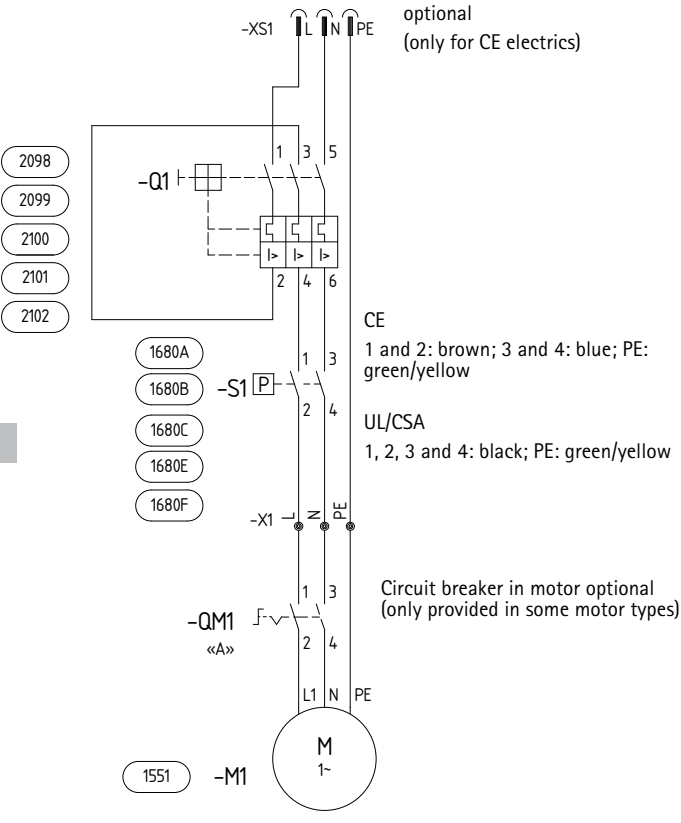


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Replacement parts lists

14. Circuit diagram

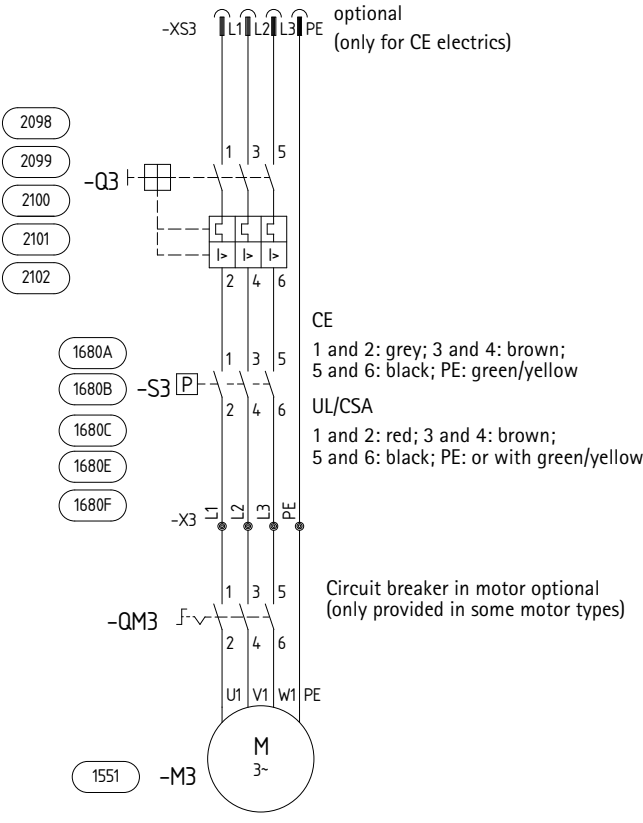
Mains fuse protection at customer
max. 16A



P = see order
U = see order
I = see order
n = 2800 rpm

BlueMax Mini Modular
1-phase

Mains fuse protection at customer
max. 16A



P = see order
U = see order
I = see order
n = 2800 rpm

BlueMax Mini Modular
3-phase

13. Replacement part numbers

Replacement part no.	Designation
1103	Auxiliary spindle with chuck
1104	Main spindle with chuck
1105	Pinion, teeth = 21
1106	Pinion, teeth = 32
1108	Base plate
1111	Drill depth stop M 12 x 1
1112	Guide plate
1114	Fence 800 mm
1115	Base profile 465 mm
1116	Guide screw M 6 x 12
1120	Cap for chuck
1134	Auxiliary spindle quick-release chuck
1135	Main spindle quick-release chuck
1151	Deep groove ball bearing 6000 - RS
1155	Compression spring PM
1160a	Angled screw connection 1/8" (longer shank)
1161	Knock-in socket ø 10 x 12
1164	Square nut DIN 562 - M 8
1183	Pinion, teeth = 17
1184	Customised deep groove ball bearing 607 - 2RS
1190	Customised auxiliary spindle with chuck
1193	Pinion, teeth = 25
1197	Pinion, teeth = 23
1223	Handle rod for swivel unit
1247	Threaded stud DIN 553 - M8 x 40
1248	Large-diameter washer DIN 9021- A 8.4
1249	Self-locking hexagon nut DIN 982 - M 8
1250	Bush
1251	Spherical knob
1252	Spring washer DIN 2093 B 22.5 size 1
1264	Angled screw connection M 5 swivelling ø 4 mm
1353	Cap for quick-release chuck
1551	Motor with switch = following information must be provided: 1. Machine type 2. Serial number 3. Voltage, hertz, phases, power output in kW
1553	Feather key for coupling DIN 6885 - A 3 x 3 x 16
1637	Coupling for piston rod, including nut
1638	Control console
1651	Pneumatic cylinder DW 80 / 125
1656	5/2-way pushbutton valve 1/8"

Replacement part no.	Designation
1659	Angled screw connection 1/4"
1661	Push-fit straight screwed connection 1/8" ø 6 mm
1662	Sound absorber 1/8"
1663	Discharge air, throttle type nonreturn valve
1664	Reduction nipple 1/41 x 3/8 A
1665	Servicing unit assy 1/4"
1671	Plug connector NW 7.2
1680	Electro-pneumatic switch with cable = following information must be provided: 1. Serial number 2. Voltage, hertz, phases, power output in kW
1684	Plug ø 6 mm
1686	Plug ø 4 mm
1688	Rapid bleeder valve G 1/8"
1689	Reduction nipple 1/8" I x 3/8" A
1690	Angled screw connection, tapered, 2 x 1/8"
1738	Pressure plate for hold-down clamp
1741	Bolt for hold-down clamp
1757	Pneumatic round cylinder, ø 33 mm
1760	Plug connector, twin connection ø 6 mm
1763	Sound absorber M 5
1765	Plug connector, twin connection ø 4 mm (3 x ø 4 mm)
1766	Push-fit cross connection ø 4 mm
1779	3/2-way valve M5, spring-returning
1783	Plug in reducing connector
1953	5/2-way valve 1/8"
1955	3/2-way foot valve 1/8"
1956	Double nipple M5-M5
1964	Push-fit angled screw connection R 1/8 ø 4 mm MR 14.04.18
2001	Skiffy machine foot, grey polyethylene
2002	Work surface, BlueMax Mini Modular
2003	Centre stop 39
2004	Insert for work surface
2005	Grooved nut M long
2006	Guide column, BlueMax Mini Modular
2007	Bridge, BlueMax Mini Modular
2008	Valve plate for PC104 valve series
2009	Motor mount, BlueMax Mini Modular
2010	Tensioning spindle, BlueMax Mini Modular
2011	Pipe for discharge air, BlueMax Mini Modular
2012	Sliding plate, BlueMax Mini Modular

Replacement part no.	Designation
2013	Star handle, grey cast iron, M 8 blind hole
2014	Plain bearing IGUS J 30 x 34 - 30
2015	DU bushing, cylindrical
2016	Wire thread insert M 8
2017	Bowex Junior size 19 d14 plug-in socket 2b
2018	Cover assy
2019	Pushbutton roller valve NO d4 linear
2020	Drilling-unit block, 6-sp., MT BlueMax Mini Modular
2021	Drilling-unit cover, 6-sp., MT BlueMax Mini Modular
2022	Clamp pin
2023	Drill-bit guard 6-sp
2024	Seal, 6-sp. BlueMax Mini Modular
2025	Wire spring, BlueMax Mini Modular
2026	Dummy spindle
2027	Bowex Junior size 19 d10 hub 1b
2028	Cable sleeve (for blow nozzle, BlueMax Mini Modular)
2029	Clamping lever, rigid, M10 grip length 78
2030	Drill holder with pressure plate and grub screw
2031	Scale sticker, BlueMax Mini Modular
2032	Threaded rod M 6 103 lg
2033	Lever, reworked
2034	Adjusting sleeve, BlueMax Mini Modular
2035	Double U-holder, BlueMax Mini Modular
2036	O-ring
2037	Knurled nut, shallow
2039	Drum, BlueMax Mini Modular
2040	Drum holder, right
2041	Ball, quality class 3
2042	Compression spring
2043	Stop L1 38 long, BlueMax Mini Modular
2044	Stop L2 68 long, BlueMax Mini Modular
2045	Stop L3 53 long, BlueMax Mini Modular
2046	Stop L4 50 long, BlueMax Mini Modular
2047	Stop pawl, BlueMax Mini Modular
2048	Sticker, hinge
2049	Sticker, hole line
2050	Wing nut, one-sided, M 8 cap red
2051	Ball, quality class 3
2052	Compression spring D1.0 x D6.0 x 16
2053	Shaft screw
2064	Extension plate for hold-down clamp, BlueMax Mini Modular

Replacement part no.	Designation
2065	Collision guard, BlueMax Mini Modular
2066	Clamping plate for pneum. hold-down clamp, BlueMax Mini Modular
2067	Clamping lever, adjustable
2068	Swivel unit
2069	Drilling unit block 9R
2070	Drilling unit cover 9
2071	Seal, 9-sp. BlueMax Mini Modular
2072	Drill-bit guard 9R/9W BlueMax Mini Modular
2073	Drilling unit block, 9-sp. 9W BlueMax Mini Modular
2074	Drilling unit cover, 9-sp. 9W BlueMax Mini Modular
2075	Seal, 9-sp. 9W, BlueMax Mini Modular
2076	Wire spring, 9W, BlueMax Mini Modular
2077	Drilling unit block, 3-sp. Selecta 52/9 BlueMax Mini Modular
2078	Drilling unit cover, 3-sp. Selecta 52/9 BlueMax Mini Modular
2079	Main spindle (special)
2080	Drilling unit block, 3-sp. 45/9.5 BlueMax Mini Modular
2081	Drilling unit cover, 3-sp. 45/9.5 BlueMax Mini Modular
2082	Non-return valve M 5
2083	Discharge air non-return valve, throttle-type, block form d4
2084	Rotary switch valve 22-way d4 N.C.
2085	Foldback clip 2154190 black 41 mm
2086	Set-up template, BlueMax Mini Modular
2087	Tool shelf, BlueMax Mini Modular, powder coated
2088	Drum holder, left
2089	"Caution" sticker, control panel
2090	Drilling unit block 38-9
2091	Drilling unit cover 38-9
2092	Special main spindle
2093	Special auxiliary spindle d10
2094	Special auxiliary spindle d7
2095	Continuation stop
2097	Motor protection circuit breaker 1 - 1,6A
2098	Motor protection circuit breaker 4,6 - 2,5A
2099	Motor protection circuit breaker 4 - 6,3A
2100	Motor protection circuit breaker 2,5 - 4A
2101	Motor protection circuit breaker 6,3 - 10A
2102	Motor protection circuit breaker 10 - 16A
2103	Insulated enclosure

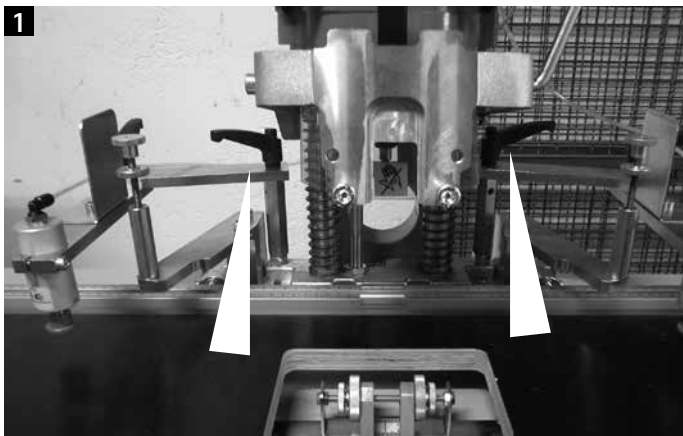
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14. Instructions for installing accessories	
Hold-down clamp	171
Press-in frame	172
Converting from pushbutton to foot switch	173 + 174

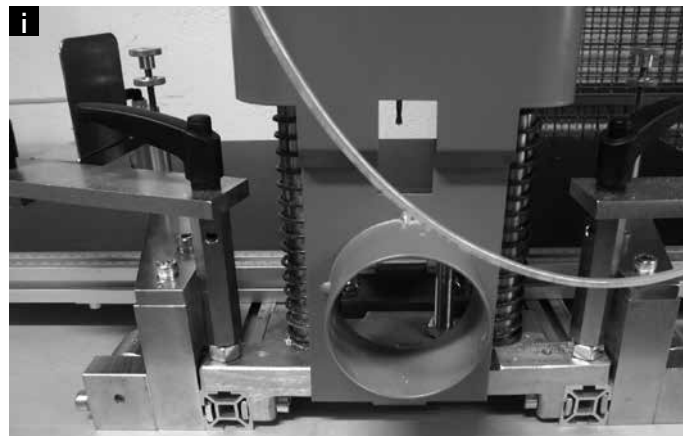
Hold-down clamp



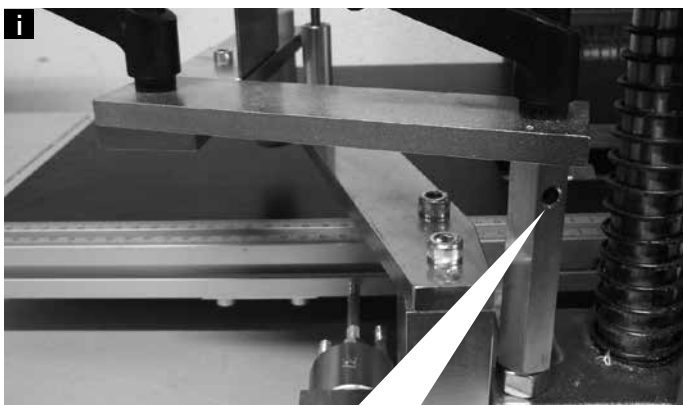
Before you start installing, make sure you disconnect the machine from the power supply and depressurise it!



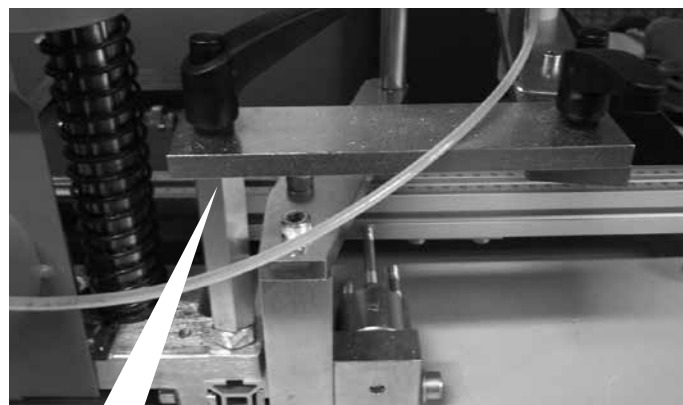
Mount hold-down clamps as illustrated.



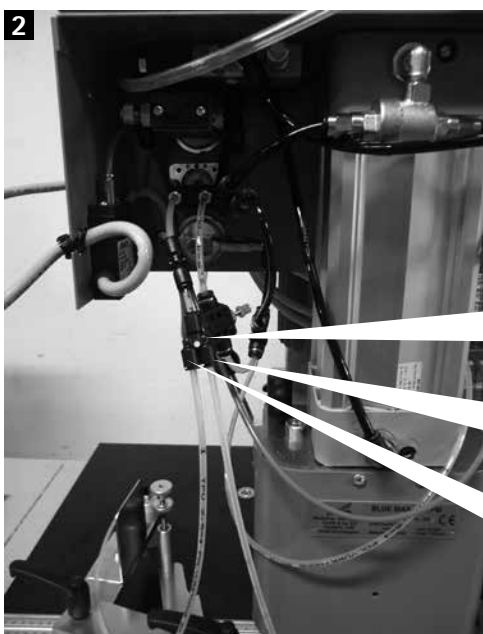
Hold-down clamps from the rear of the machine.



Left-hand hold-down clamp



Right-hand hold-down clamp



Remove dummy plug from two way branch and fit air hoses

Air hose
right-hand hold-down clamp

Air hose
left-hand hold-down clamp

Connect hold-down clamp air hoses
(fit air hoses into two-way branch).

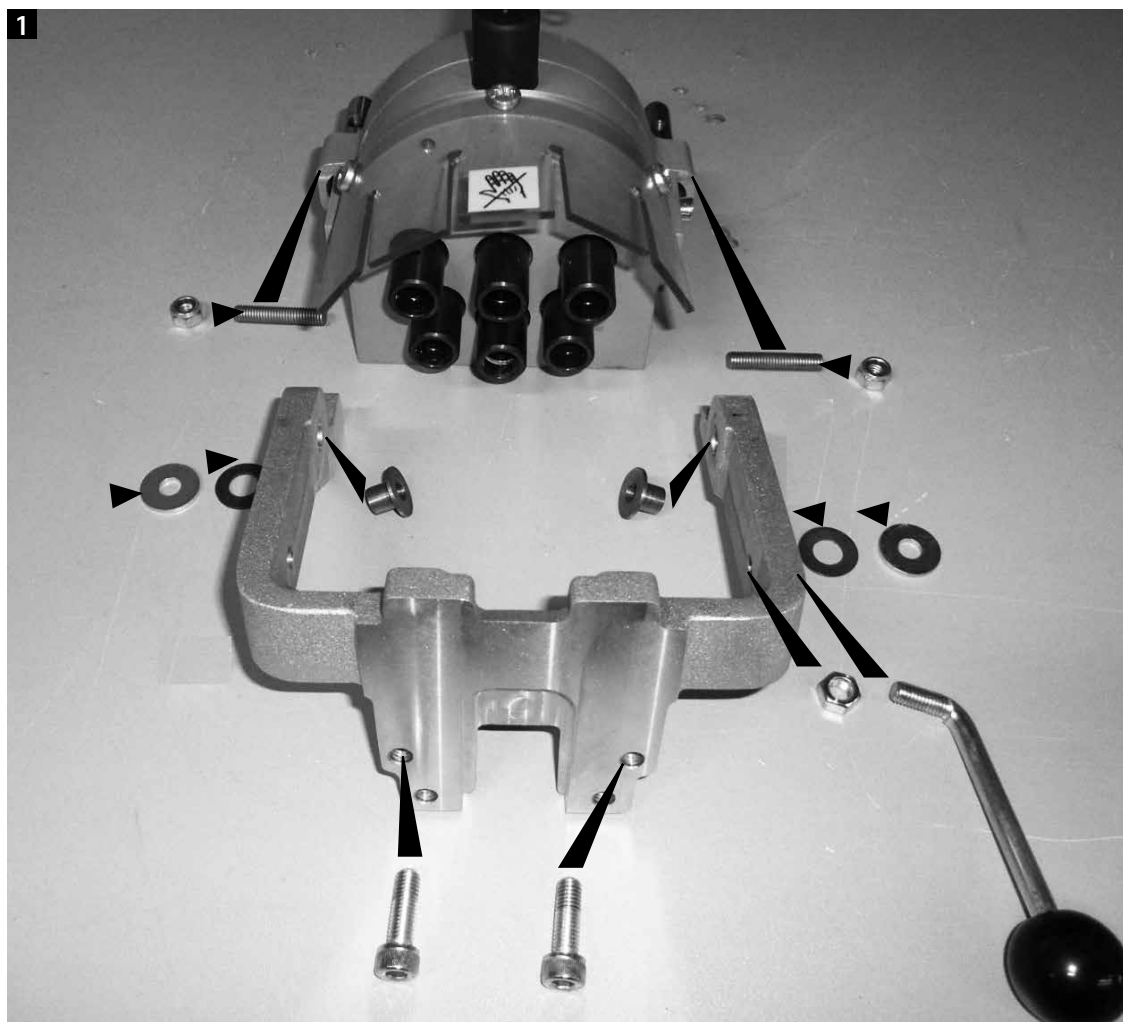
Assembly instructions

For press-in frame



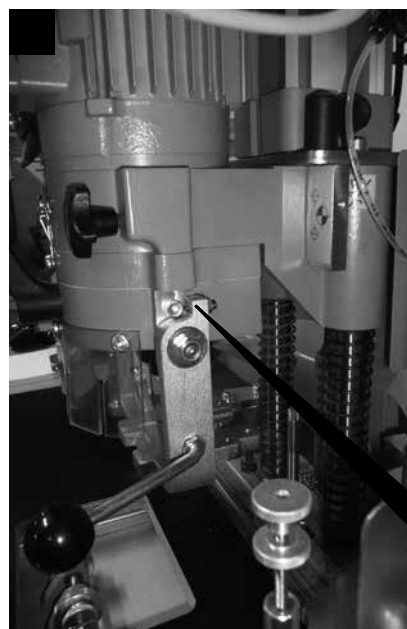
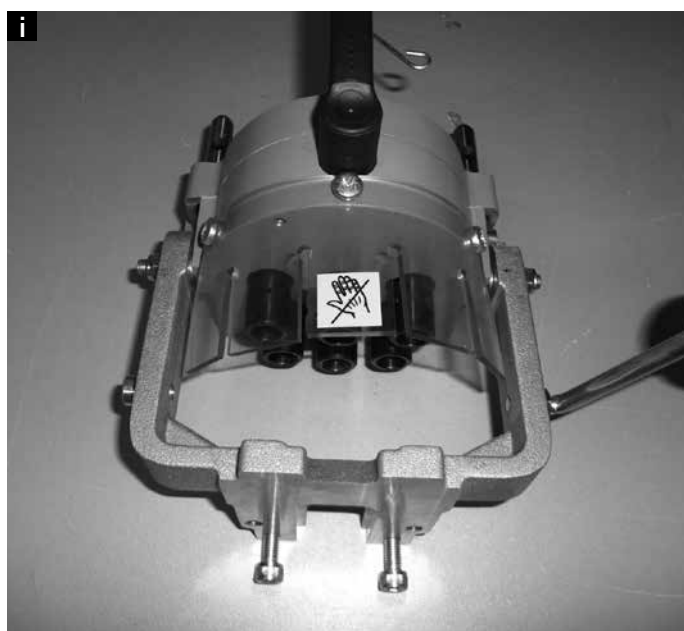
Before you start installing, make sure you disconnect the machine from the power supply and depressurise it!

1



Tightening the screw on the left / right regulates the frame swivelling ability.

i



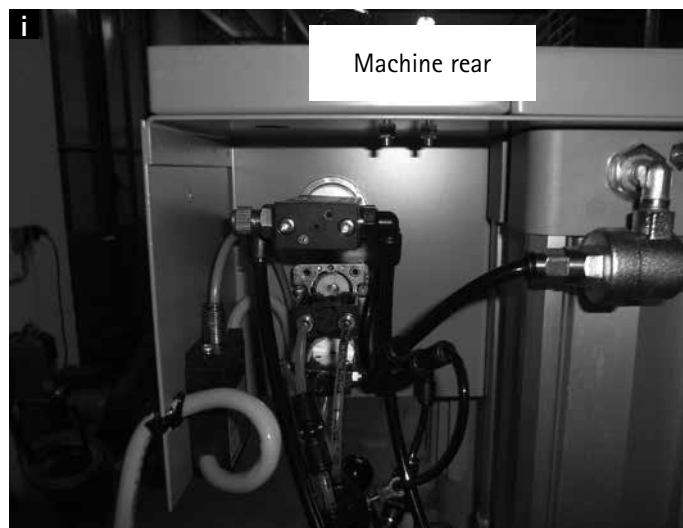
Screw for adjusting perpendicularity of the press-in frame.



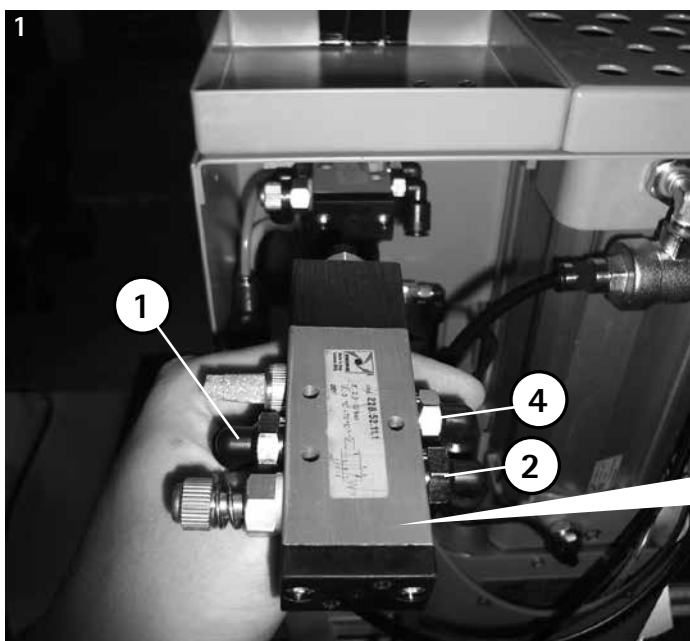
Converting from pushbutton to foot switch



Before you start installing, make sure you disconnect the machine from the power supply and depressurise it!



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See pneumatics plan in the machine's operating manual page 77.

Foot switch valve

Remove connection hoses from the pushbutton valve on the rear of the machine and connect them to the foot pedal valve provided. The three connection hoses must be fitted to the foot switch valve as indicated by the numbering.
Hose from connection no.1 to connection no. 1 on the foot switch valve.
The connections of no. 2 and no. 4 must be exchanged in the same way.

Assembly instructions

2

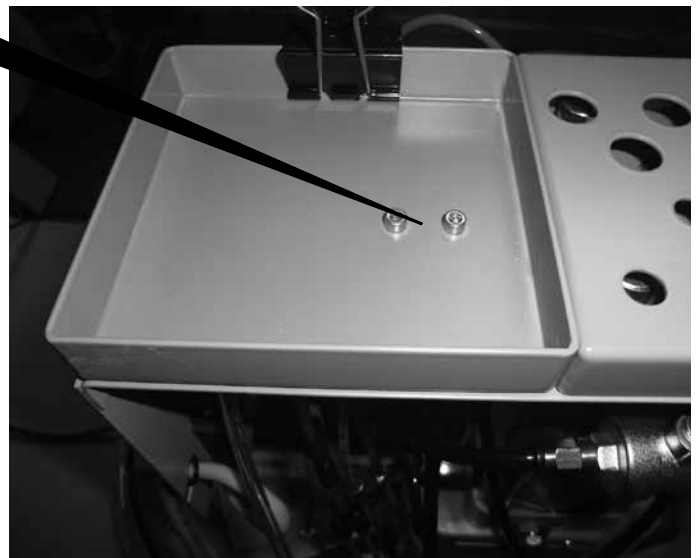


Remove dummy plug.

Fasten foot switch's black hose to the unused inlet at the hose branch.

3

Using the two screws provided, screw the foot switch valve from above to the tool shelf (**caution: hoses must not kink**).



Now re-set waste-air throttle (machine must take at least 6 seconds to cover 120 mm of working travel).

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