



Operating manual  
**BlueMax Mini Type 3**

en

EC Declaration of Conformity is enclosed loose.

en



## **WARNING**

**Read these operating instructions carefully in order to obtain a thorough understanding of the machine and how to handle and maintain it. Operate the machine in the proper manner as described in these instructions so as to avoid injury and damage to the system. Do not operate the machine on the basis of suppositions. Keep these operating instructions to hand and consult them if you are in any doubt as to carrying out any particular procedure.**

If any questions remain unanswered after reading through the instructions, you must not put the machine into operation. Settle any unanswered questions first by consulting **Paul Hettich GmbH & Co. KG.**

## **Service**

### **Customer Service**

Paul Hettich GmbH & Co. KG,  
Anton-Hettich-Straße 12 - 16, D-32278 Kirchlengern

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## 1. Introduction

These operating instructions are intended to make it easier for you to become familiarised with the machine and use its capabilities in the proper manner. The operating instructions contain important information on operating the machine in a safe, proper and cost effective manner. Following them will help to avoid hazards, repair costs and down times, enhance reliability and prolong service life.

Existing national regulations on preventing accidents and on protecting the environment are also applicable.

**The machine must only be assembled and installed by persons instructed to do so by Paul Hettich GmbH & Co. KG. This also applies in particular to starting it up for the first time.**

The operating instructions must be available at the machine all the time. The operating instructions must be read and applied by any person entrusted with working with / on the machine, e.g.:

- Operation
- including setting up, troubleshooting while working, disposal of production waste, care, disposing of consumables and auxiliary substances,
- Maintenance
- Servicing, inspection, repair
- Handling

## 2. Rating plate



### NOTE

**The rating plate is located on the machine.**

The rating plate shows the following information:

|   |   |
|---|---|
|  | Manufacturer<br>Address<br>Type designation,<br>machine numbers<br>Year of manufacture<br>Technical specifications<br>(e.g. nominal pressure) |
|---|---|

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.

State all of the above details when requesting technical information and ordering replacement parts.

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## 3. Information for the owner

In addition to these operating instructions and the accident prevention regulations in force in the country of use or at the place of application, it is also necessary to follow the recognised code of safe and proper working practice.

Without the consent of Paul Hettich GmbH & Co. KG, the machine owner must not make any additions, alterations or modifications to the machine that may affect safety.

Replacement parts used must meet the technical requirements defined by Paul Hettich GmbH & Co. KG. This is always ensured when using genuine replacement parts from the applicable replacement parts list.

Only ever deploy trained or instructed personnel and clearly define personnel responsibilities with regard to operating, servicing and repair.





## 2. General

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## 1. Intended use



### WARNING

The machine must only be used in for its intended purpose and be in a perfectly safe condition!

Operating safety is only guaranteed if the machine is used for its intended purpose!

The BlueMax Mini Type 3 is a semi automatic drilling and insertion machine for panel type workpieces. 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.

Any other use beyond this is deemed to be improper and non intended use.

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

Unauthorised changes to the machine will result in the loss of product liability and liability on the part of the manufacturer for resultant damage.

**Any other use beyond this is deemed to be non intended use. The manufacturer shall not be liable for any damage this causes, with the risk involved being borne solely by the user.**

## 2. Foreseeable incorrect use



### WARNING

**Hazards may occur if the system is used incorrectly! The following situations in particular are deemed to be foreseeable hazardous situations:**

- 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 modifications,
- 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.

The situations above describe some of the residual hazards which, despite being impermissible, may occur and harm the health of staff.

The owner must observe the safety requirements defined in the German Ordinance on Industrial Safety and Health (Betriebssicherheitsverordnung).

### 3. Description of the machine

The BlueMax Mini Type 3 is a semi automatic drilling and insertion machine for panel type workpieces. 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.

All parts being worked on are fed into the machine by hand. Flat panels made of wood-based materials are laid on the work table and, by way of option, 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 (optional), the relevant fittings are pressed into place by means of a manually operated press in frame (optional). This concludes the machining process.



Fig. 1: BlueMax Mini Type 3



Fig. 2: BlueMax Mini Type 3 with accessories

### Space required by the machine

The space required by the BlueMax Mini Type 3 is largely determined by the dimensions of the machine base frame.

### Machine life

The machine's life will depend on whether or not it is used for its intended purpose, on adherence to regular servicing intervals and on the regular replacement of expendable parts.

### 4. Liability

Defects must only be rectified by competent personnel.

**Our liability is restricted to damage caused while using the system in the intended manner. We shall not be liable for safety defects not yet identifiable on the basis of the current state of the art.**

#### Failure to:

- observe safety advice for operating personnel
- observe advice on particular hazards
- observe the ban on unauthorised modifications and changes
- use replacement and expendable parts or auxiliary materials other than those approved by the manufacturer will rule out any liability on our part for the consequences.

### 3. Safety

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### 1. Information on signs, symbols and markings

The safety advice in the operating instructions is structured as follows:



#### DANGER

This danger advice draws attention to an **immediately** dangerous situation that **will** lead to **death** or **serious injuries** if the safety measures are not followed.



#### WARNING

This danger note draws attention to a **potentially** dangerous situation that **may** lead to **death** or **serious injuries** if the safety measures are not followed.



#### CAUTION

This danger note draws attention to a **potentially** dangerous situation that **may** lead to **minor** or **slight injuries** if the safety measures are not followed.



#### NOTE

This advice draws attention to **potential damage to property** or to a **process of particular interest / importance** that may occur if the safety measures are not followed.

In the operating instructions, hazard points are identified as follows:



#### DANGER

##### Danger from electric shock!

Working on live components in the improper manner presents a danger to life!

Work on electrical equipment must only be carried out by authorised electricians!



#### WARNING

##### Hearing damage warning!

Some areas of the facility can reach noise levels of over 80 dB (A).

Wear ear protectors when working in noisy areas!



#### WARNING

##### Danger from wood dust!

Wood dust can affect the respiratory tract. For this reason, wear a dust protection mask.



### WARNING

#### Fire risk!

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

Follow welding regulations and accident prevention regulations.



### WARNING

#### Explosion protection!

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



### WARNING

#### Warning – Hand injuries!



Hands could be crushed, drawn in or otherwise injured.

Never reach into the system's moving parts!

Wear hand protection!



### WARNING

#### Warning – Hot surfaces / objects!

There is a risk of injury from touching hot surfaces (e.g. electric motors).

Do not touch!

## 2. General

The machine described in the operating instructions is built to the state of the art and safe to operate. It complies with DIN EN 12100.

Hazard zones are made safe in compliance with the regulations. However, the machine may present hazards if it is used by untrained personnel improperly or not for the intended purpose.

This may then result in risks to life and limb, jeopardise the machine and prevent it from working efficiently.

Any person given the task of installing, starting, operating, servicing or repairing the machine at the user's premises must have read and understood these instructions, in particular the section on "Safety precautions".

In his or her own interest, the safety officer at the user company should obtain written confirmation from operating personnel that they have received instruction and training and are familiar with all safety precautions before they use the machine for the first time.

The safety guards must never be removed or taken out of operation.

If safety guards need removing for maintenance and repair work, they must be refitted as soon as such work has been completed.

The machine must only be used if it is in proper working order and operated by trained, authorised personnel.

Work requiring specialised knowledge (e.g. electrical, pneumatic system) must only be carried out by persons specifically trained and suitable to do so.

Before attempting any work on the machine, turn the main switch to the "0" position (OFF), make the machine safe and disconnect from the compressed air supply.

Switch off energy sources before carrying out repair, servicing, installation or cleaning work.

#### Energy sources:

- Electrical energy
- Pneumatic energy



### CAUTION

#### Danger from residual energy!

Stored energy will not be dissipated even after switching the system off at the main switch.

Dissipate residual or stored energy!

#### Switch off / dissipate energy sources:

For safety regulations applicable to third party devices, refer to the documentation from the third party manufacturers (operating instructions for bought in units).

**Electrical energy** via the motor switch / machine's main switch. Additionally attach a notice when servicing or other work is being carried out on the machine.



Fig. 3: Main switch



### WARNING

#### Warning – Hand injuries!

The main switch only shuts down the drive system, not the pneumatic system!

The machine has no emergency stop button or emergency stop facility. This means it is necessary to take particular care when handling and working on this machine.

**Pneumatic energy** through the supply connection on the machine frame. Make sure that all machine components are depressurised and any stored energy is dissipated. As part of the installation process, the owner will provide a mechanical main cock at which the machine can be disconnected from the compressed air supply.



Fig. 4: Pneumatics servicing unit

### 3. Safety advice for the user company

All persons entrusted with operating the machine (including line managers) must familiarise themselves with the section on "Safety". The safety advice must be followed.

The machine must only be used if it is in proper working order. The user company will issue clear responsibilities, e.g. for servicing, cleaning or repair, and ensure that the persons carrying out this type of work have received the training necessary for it.

The safety regulations applicable in the owner's country must also be observed. Refrain from any work that adversely affects operating safety.

The operating personnel will check the machine for changes or malfunctions, report such to the safety officer responsible and, if necessary, take the machine out of operation.

Only appropriate tools may be used for the work that needs to be done; remove tools after completing work. The place at which staff work must be selected in such a way as to ensure that work operations can be viewed at all times, the machine can always be stopped immediately and safety is never at risk.



#### WARNING

Never:

- reach into the machine when it is operating
- remove covers and take safety guards out of operation
- hinder unobstructed access to the controls
- continue operating the machine if changes occur that adversely affect safety
- manipulate or circumvent safety guards

### 4. Noise

The weighted equivalent continuous sound level is **> 89 dB (A)**.



#### WARNING



#### Hearing damage warning!

Local conditions may produce elevated sound pressure and cause noise induced hearing loss!

Operating personnel must be provided with appropriate protective equipment or be protected by other measures!

Wear ear protectors when working with the machine!

### 5. Oils, greases and other chemical substances

When handling oils, greases and other chemical substances, you must observe and follow the applicable regulations and safety data sheets of the manufacturers of these substances with regard to storing, handling, using and disposing of them.

When working with caustic substances, you must wear protective equipment of suitable material (safety goggles, rubber gloves, rubber boots, protective clothing).

In the event of contact with the eyes or skin, immediately rinse the area affected with copious quantities of water. Appropriate facilities (eye wash bottle, wash basin, shower) must be provided near the work area.

### 6. Residual risk



#### CAUTION

#### Residual hazards!

Handling the machine involves residual hazards that could not be eliminated by design measures.

Pay attention to the residual risks in the Technical Documentation!

The machine reflects the state of the art and is built in accordance with recognised safety regulations. All the same, the user or third parties may still be exposed to hazards.

The machine must be used

- for the intended purpose
- in an absolutely safe state



#### WARNING

#### Risk of injury!

Never remove safety devices or render them ineffective by making changes to the machine!

Malfunctions presenting a safety risk must be rectified without delay!

Before attempting servicing and cleaning work, switch off the entire machine and disconnect from the compressed air supply!

### 7. Safety advice for operating personnel

- Work on the machine must only be carried out by instructed, skilled personnel
- Only skilled personnel who have received training or instruction must be deployed

- The generally recognised code of occupational health and safety as well as accident prevention regulations must be observed
- Please keep first aid equipment (first aid kit etc.) in easy reach
- The owner must stipulate that operating personnel are to wear personal protective equipment (safety shoes and sturdy work clothing)

### Work which may be done by the operating personnel

Work which may be done by the operating personnel

- Activate, deactivate the machine
- Change drill bits
- Set the machine to component dimension
- Feed in individual parts (flat panels made of engineered wood, hinges and connecting fittings)
- Start the drilling and inserting process
- Remove finished components
- Clean the machine

### Requirements on operators

The operator must organise the work environment so as to permit optimum, continuous production.

The operator must be receive instruction before commencing work for the first time and every year thereafter.

Prior to commencing work, all persons working on or at the system shall undertake to

- follow the basic regulations on health and safety at work and on accident prevention
- wear personal / workplace related protective clothing and equipment for the purpose of ensuring work safety and use such while working if they are necessary for safety reasons

Work must only be performed for which authorisation has been given. For example

- work on pneumatic equipment must only be carried out by a specialist specifically trained to do so or by instructed persons under the direction and supervision of such a specialist in accordance with the applicable technical regulations

## 8. Safety advice for operating the machine

- The machine must only be put into operation in a fully installed and operational state
- The machine must only be operated if all protective guards and safety related equipment, e.g. protective claddings or enclosures, are in working order and undamaged
- On putting the system into operation, the operator must make sure that all safety equipment and protective guards as well as the controls are in correct working order and free of damage
- The workplace environment must be kept clean and tidy at all times. This must be ensured by internal checks
- Immediately report any irregularities or malfunctions to the department / person responsible. If necessary, the machine must be shut down immediately and made safe

## 9. Safety advice for carrying out maintenance work

- Maintenance work must only be performed by the manufacturer's skilled personnel or under the manufacturer's supervision
- If the machine is completely shut down for servicing and repair work, it must be prevented from switching back on unexpectedly
- If necessary, please cordon off the maintenance zone, providing a wide safety margin!
- Attach a warning sign
- For maintenance measures, use tools that are appropriate for the work involved
- Servicing and repair work must only be carried out by the owner's qualified personnel
- If safety devices need removing for servicing and repair work, they must be refitted and checked as soon as the work has been completed
- Always tighten screw connections that have been loosened during servicing and repair work
- At the start of work, connections and screw connectors must be cleaned of oil, operating consumables and dirt
- Make sure operating consumables and auxiliary substances as well as replaced parts are disposed of safely and in an environment friendly manner.

## 10. Training / instruction

- As owner, you are obliged to inform and instruct the operating personnel in respect of applicable legal and accident prevention regulations as well as the safety guards fitted. In this context, bear in mind the varying specialised qualifications of your staff
- The operating personnel must understand the instruction they are given, follow it as well as sign the documentation
- This is the only way you can be sure that operating personnel work in awareness of safety and of the hazards that are involved. As owner, you should therefore obtain written confirmation from all members of staff that they have received training/instruction
- Applying these safety measures will minimise potential hazards to such an extent that the machine can be operated safely



### NOTE

All of the **safety guards in place must be checked at least once before the start of each shift to make sure that they are in place and undamaged** (visual inspection).

## 11. Personal protective equipment

The owner must provide the following personal protective equipment:

- Safety shoes
- Ear protection
- Safety goggles
- Dust protection mask
- Safety gloves (as necessary)

## 4. Description of the machine

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## 1. Technical specifications

|                      |   |
|----------------------|---|
| Designation:         | Automatic drilling and insertion machines for panel type workpieces |
| Machine no.:         |   |
| Year of manufacture: |   |
| System dimensions:   |   |
| Height:              | 630 mm  |
| Width:               | 800 mm  |
| Depth:               | 620 mm (with suction extractor)                                     |
| Weight:              | 33.5 kg   |
| max. noise level:    | > 89 dB (A)   |

### Electrics

The unit is fitted with a connection cable of approx. 3 m in length and plug (refer to table for configuration). For your own safety, please instruct a qualified electrician to connect the machine. You will find the applicable connection specifications on the rating plate on the machine.

### Motor overview - BlueMax Mini Type 3:

| Volts (V)<br>Hertz (Hz)<br>Speed (rpm) | Phases (Ph)<br>Power (kW) | Connection data   | Version<br>Type 3 |
|--|---------------------------|---|-------------------|
| 400 V<br>50 Hz<br>2,800 rpm            | 3 ph.<br>1.1 kW           | CEE plug<br>ready to connect  | EPS               |
| 230 V<br>50 Hz<br>2,850 rpm            | 1 ph.<br>1.1 kW           | Shockproof<br>(Schuko) plug<br>ready to plug in   | EPS               |
| 230 V<br>60 Hz<br>3,400 rpm            | 3 ph.<br>1.3 kW           | Machine must<br>be connected to the local<br>mains power supply by a<br>qualified electrician | EPS               |
| 230 V<br>60 Hz<br>3,400 rpm            | 1 ph.<br>1.3 kW           | Machine must<br>be connected to the local<br>mains power supply by a<br>qualified electrician | EPS               |

### Requirements on the electrical power supply

Connection must only be made to an electrical system complying with VDE 0100. The electrical safety of this equipment is only guaranteed if it is connected to a protective earth conductor system that complies with regulations. It is very important to check that this basic safety requirement is met and that the machine is provided with adequate fuse protection. The manufacturer cannot be held responsible for damage caused by a lacking or interrupted protective earth conductor. The rating plate provides information on rated input and the appropriate fuse protection.

### Pneumatic connection

The automatic drilling machines have a fitted coupler plug, nominal width 7.2

- Max. input pressure 6-7 bar / 100 PSI
- Air consumption per stroke 1.2 l

### Suction extractor

It is compulsory to use a flexible, fire retardant hose for connection to an extractor system. A suction extraction line is not included.

- Outside diameter (suction connector) 50 mm
- Volumetric flow 141 m<sup>3</sup>/h
- Static negative pressure at 20 m/s 1,300 Pa



## NOTE

For further Technical Specifications, refer to the documentation provided by the manufacturers. Unauthorised changes and modifications to the system are not permitted for safety reasons and rule out any liability on the part of the manufacturer for any resultant damage.

## 2. Controls

Switches and other controls for operating and monitoring the machine are described below.

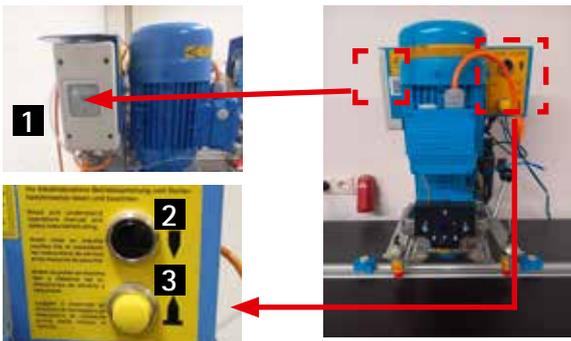


Fig. 5: Controls on the automatic drilling and insertion machine

| Item | Designation  | Explanation                                 |
|------|--------------|---|
| 1    | Motor switch | Power supply ON / OFF                       |
| 2    | Hand switch  | For activating work process                 |
| 3    | Pushbutton   | For manually releasing the hold-down clamps |



Fig. 6: Foot switch

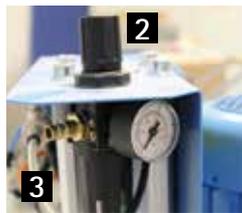


Fig. 7: Compressed air connection

| Item | Designation        | Explanation                              |
|------|--------------------|--|
| 1    | Foot switch        | For activating work process              |
| 2    | Pressure regulator | For setting operating pressure (6-7 bar) |
| 3    | Plug in coupler    | Compressed air connection                |



## NOTE

The hand switch is not operational when using the foot switch.

## 3. Setting up



## WARNING

Setup work may only be performed by qualified staff who, on the basis of their specialised training, experience and instruction, possess sufficient knowledge of

- safety rules,
- accident prevention regulations,
- guidelines and generally accepted codes of practice.

These qualified staff must be authorised to perform setting up work by the person responsible for the machine's safety.

## 4. Safety guards

Separating protective guards complying with EN 953 are installed on the machine to protect staff from mechanical hazards.

Warnings / pictograms are also provided on the machine.



Fig. 8: Protective enclosure

## 5. Labelling

### Area: entire machine

Warning of the risk of hands getting crushed

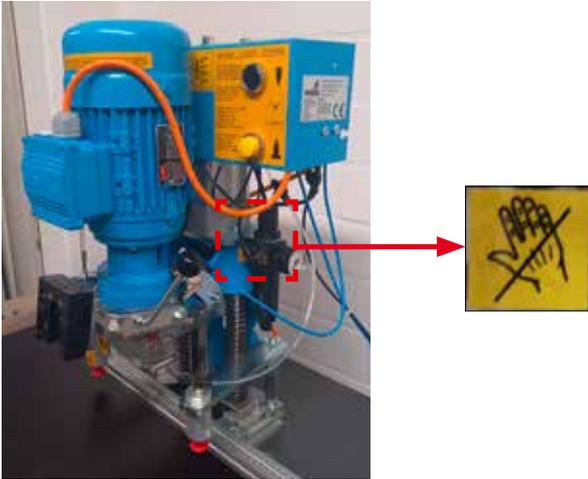


Fig. 9: Labelling – entire machine

### Area: hold-down clamps

Warning of the risk of hands getting crushed



Fig. 10: Labelling – hold-down clamps

### Area: protective cover on tools

Warning of the risk of hands getting crushed

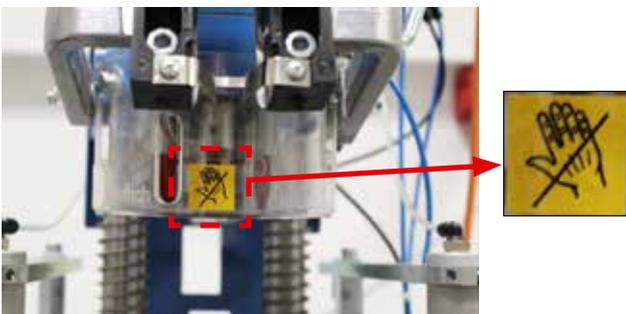


Fig. 11: Labelling – drilling and insertion unit

### Area: motor / drive

Reminder to unplug the mains power plug before changing tools



Fig. 12: Labelling – motor / drive

### Area: entire machine

Reminder to unplug the mains power plug and disconnect compressed air before changing tools. Main switch does not disconnect the machine from the compressed air system.

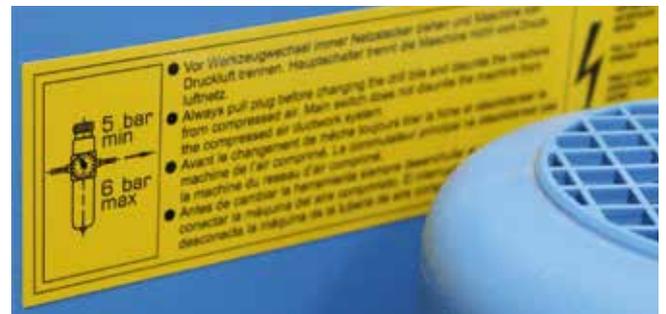


Fig. 13: Labelling – entire machine

### Area: controls

Reminder to read the operating instructions before starting up the machine



Fig. 14: Notice – Controls



## 5. Transportation and installation

|  |    |
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### 1. Transportation

The machine must only be transported and installed by companies / persons instructed / authorised to do so by the manufacturer or under the manufacturer's supervision.

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



#### NOTE

To prepare transportation, please bear in mind the weight of the machine!

**The machine weighs approx. 33.5 kg.**

#### Transportation on fork lift truck or pallet jack:

If fork lift trucks or hand pallet jacks are used for loading or unloading, they must be in proper working order and suitable for carrying the weights that are involved.

Attention must always be paid to the centre of gravity of the item being moved!

During transportation, the machines must be properly secured; the load must be evenly distributed. Avoid jerky movements.

Set the machine down without bumps or jolts as well as in an upright standing position. Take immediate action to prevent these from being 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.



#### WARNING



#### Warning of suspended loads!

To relocate the machine, it must be lifted and transported. The machine can topple over and fall as a result of improper lifting and transportation.

**Never stand under suspended loads!**



#### WARNING

#### Warning of suspended loads!

While transporting the machine, no persons must be present on the machine or hang from it.

### 2. Internal transportation

To move the machine internally, only use trolleys of sufficient stability and load capacity. When handling, always be sure to avoid knocks and vibration. Provide protruding objects (motors, drag chains, wiring harnesses, hoses, cylinders) with effective protection from damage.

### 3. 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. On receipt, immediately check to make sure a delivery is complete. Notify the shipping company making the delivery of any missing parts (notice of loss) and also immediately inform Paul Hettich GmbH & Co. KG.

### 4. 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

### 5. Site of installation

An even standing surface with a sufficient load capacity is essential for setting up the machine in a proper and safe manner. Any unevenness in the standing surface must be evened out by metal shims to ensure that the machine is not standing in a distorted manner.

The BlueMax Mini Type 3 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, it must be cleaned.

Secure the machine on a bench / base frame to be provided at the site of installation so as to prevent it from falling.



#### **CAUTION**

##### **Risk of crushing!**

Allow a space of at least 500 mm between moving machine parts and pillars, parts of the building, cabinets etc.!

Do not stand any laden pallets in this safety zone!

## 6. Start up

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## 1. General

The instructions described here are to be understood as minimum recommendations. Depending on operating conditions, they may need to be broadened in order to maintain the machine's working quality.

Servicing and maintenance work in specific disciplines (pneumatics etc.) must only be carried out by skilled persons trained in that particular discipline.

Observe the following safety advice!



### WARNING

You could get crushed by moving parts if the machine is not shut down.

**The machine must be depressurised and disconnected from the power supply before carrying out maintenance and cleaning work!**



### NOTE

Improper repair will result in damage to the machine!

Improper dismantling and assembly may result in property damage or consequential damage to the machine.

Therefore, when carrying out any removal or dismantling activity, always:

- mark parts that belong together
- mark or make a note of the position and point of installation
- remove and store assemblies separately

After carrying out maintenance work, always:

- check all screw connections to make sure they are tight. Close and screw down all covers

As with starting up, listen for unusual noises and check to see if there is any heat buildup!

## 2. Starting up for the first time

Before starting up the machine for the first time, observe the following:



### NOTE

The machine must only be put into operation for the first time by a person instructed / authorised to do so by the manufacturer / distributor or under the manufacturer's / distributor's supervision.

- Check to make sure the machine has been installed in accordance with the regulations specified!
- Make sure the machine stands firmly!
- Check to make sure that no foreign objects (tools, construction material etc.) have been left in the area of the machine from the assembly process!
- Check the hoses as well as the pneumatic system's hose connections!
- Check the safety guards for proper working order!
- Make sure that moving components can move without obstruction into the spaces they require and that the safety distances are observed!

## 3. Safety check

The machine must only be put into operation by trained and qualified personnel.

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
- the controls are readily accessible

## 4. 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
- auxiliary units malfunction
- the motors consume too much power
- there are electrical faults
- tools are overheating



**DANGER**

### Danger from electric shock!

Working on live components in the improper manner presents a danger to life!

Work on electrical equipment must only be carried out by authorised electricians!

Establish the cause of any malfunctions 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.

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

## 5. Carrying out trial run with / without material

It is recommended to first carry 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 hand or foot 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.

### 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

## 6. 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. Operation

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## 1. Preparing machine

The BlueMax Mini Type 3 is shipped in cardboard packaging. A number of parts and components must be installed to make the machine ready for operation. Once assembled, the machine must be thoroughly cleaned.

### Base frame for BlueMax Mini Type 3

Push work bench with sliding blocks onto the base profile and fasten the fence runner bracket in place on the base profile with clamping blocks and cheese head screws.

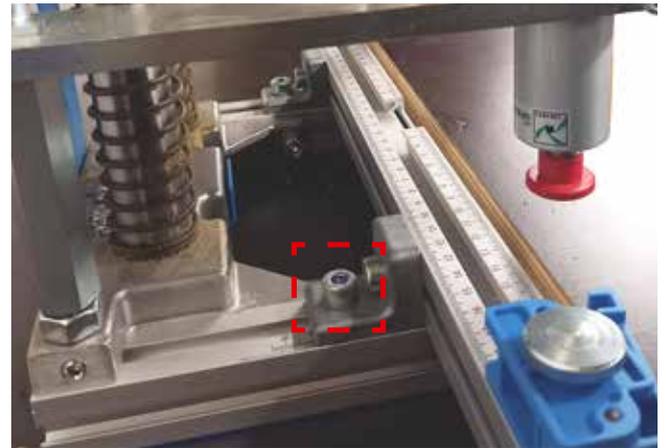


Fig. 15: Base frame with sliding blocks

### Drilling spindles

The machine is delivered with drilling spindles ready mounted. Drilling spindles not needed must be closed off with the six blanks provided for unused chucks so as to prevent the threaded pins from working themselves out and provide effective protection from soiling.



Fig. 16: Drilling spindles

### Drill bits

The machine is intended for use with solid carbide drill bits in a length of 57 mm and shaft diameter of 10 mm. Insert drill bits all the way, chucking faces turned towards the threaded studs, and tighten with the hexagon socket spanners. Pay attention to the spindle turning direction!

If necessary, adjust the length of the drill bits at the adjustment screws integrated in the drill-bit shaft.

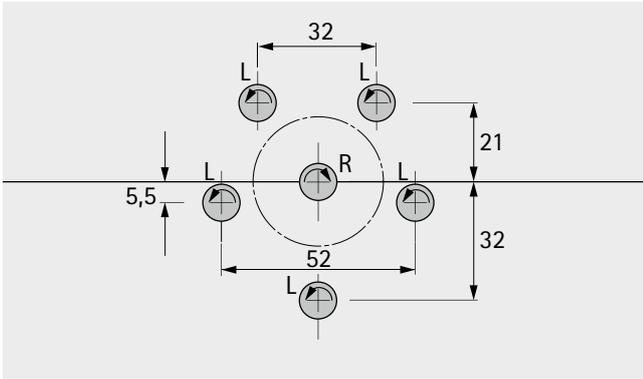


Fig. 17: Drilling pattern

### Connecting to extractor system

Connect the machine to an extractor system. It is compulsory to use 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: Ø 50 mm. Route extraction hose so as not to exert strain on the suction connector!

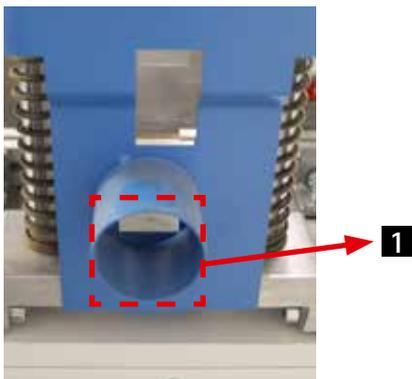


Fig. 18: Suction extraction connector

### 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.

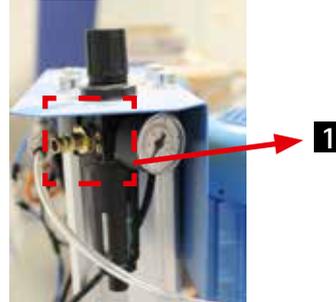


Fig. 19: Air filter unit with quick release connector

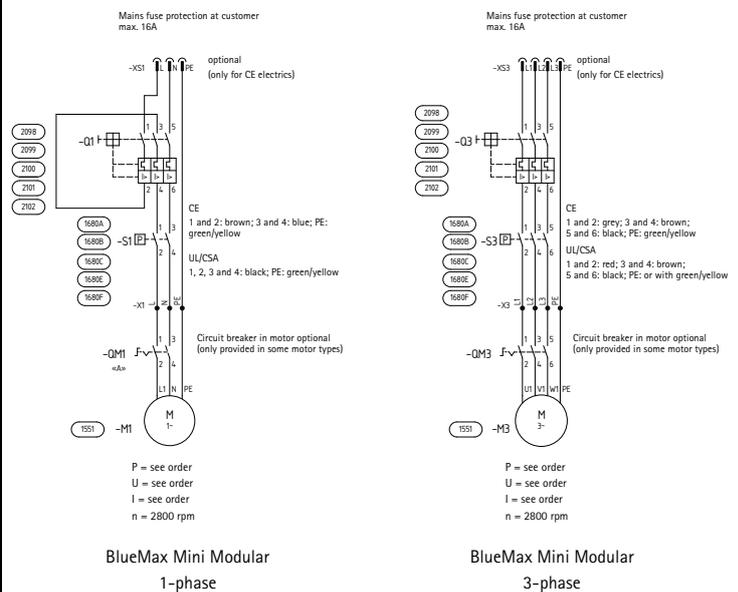
### Connecting to the power supply

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

Before you do, have a qualified electrician ensure that the socket is in proper working order.

Now connect the plug to the socket.

The machine is rated for a supply voltage of 400 volts. (Other options are possible)



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

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

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



**Danger from electric shock!**

Working on live components in the improper manner presents a danger to life!

Work on electrical equipment must only be carried out by authorised electricians!

### Add on "swivel unit with sensor roller"



#### NOTE

Before fitting accessories, disconnect machine from compressed-air supply and unplug from mains power!

Position swivel unit against drilling unit block and attach on both sides with threaded stud, spring washers and washers as shown in the exploded diagram in Section 12. Screw an M6 cheese head screw all the way on the right hand side of the drilling unit block. Vertical positioning of the swivel unit can be corrected at the threaded stud with locknut.

1. Turning the M8 x 10 allen screw provided, screw down the "sensor roller valve unit" on the right hand side of the drilling unit block so as to leave it angled away at the bottom and pointing to the left.



Fig. 20: Swivel unit with sensor roller

2. Check whether the sensor roller is pushed up when moving down the swivel unit. If it isn't, loosen the allen screw and adjust the sensor roller unit.

### Connecting BlueMax Mini hose "without foot pedal"

1. Disconnect the electropneumatic switch (EPS) - in the control console, black box in the power supply lead - from the control console.
2. From this, detach the only thin transparent hose, also from the Y-piece at the other end.
3. Now push the thin black hose (coming from the sensor roller valve) all the way into the blue EPS.
4. Screw the EPS back onto the control console.
5. Performance test! If compressed air is escaping anywhere else, recheck the hose connections to make sure they are pushed in all the way.

### Connecting BlueMax Mini hose "with foot pedal"

1. Detach the only thin transparent hose (in the control console) from the Y-piece and the single reducer.
2. Now push the thin blue hose (coming from the sensor roller valve) all the way into the open end of the T-piece.

3. **Performance test!** If compressed air is escaping anywhere else, recheck the hose connections to make sure they are pushed in all the way.

### Add on "hold-down clamp"



#### NOTE

Before fitting accessories, disconnect machine from compressed-air supply and unplug from mains power!

1. Undo bolts on the cylinder holders and attach to the left and right of the foot plate.
2. Screw cylinder holders back on again so that the cylinders are prevented from moving in under the drilling unit (with angled section of cylinder holder facing machine centre).
3. Cut out foil in the hole underneath the control console and insert manually operated valve with ring.
4. Connect the two unattached transparent hoses to the pneumatic cylinders.
5. Pull out the thin and thick red blanks. On pulling out the blanks, press down ring on coupler.
6. Now push the thin and the thick black hose (coming from the hold-down clamp unit) into the unattached couplers.
7. Screw the "OR" valve (the smaller valve with three connections) onto the inside of the control console (two holes positioned one above the other). The black connection must be at the top, with the valve's smooth surface facing the viewer.
8. Finally, screw the pneumatically operated 3/2 way valve (the larger valve with the four connections, including sound absorber) into the side of the control console (vacant hole). The black hose and the sound absorber must be at the top, with the valve's smooth surface resting against the control console.
9. **Performance test!** If compressed air is escaping anywhere else, please recheck the hose connections to make sure they are pushed in all the way. Also refer to exploded drawing in Section 12.

### Accessory fence extension

#### Scaled fence extension

Push half the bracket onto the fence extension and half of it onto the fence, then fasten in place with screws and clamping blocks.

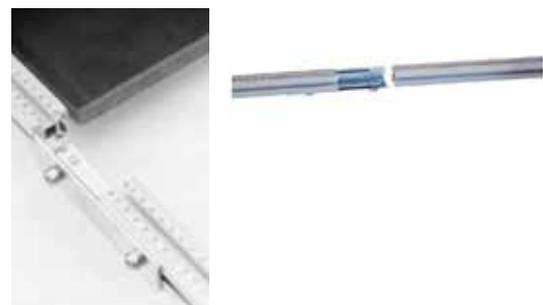


Fig. 21: Scaled fence extension

## 2. Preparing for work



### WARNING

#### Warning – Hand injuries!

Before resetting the machine, disconnect mains plug and detach compressed air supply!

### Setting drilling depth

Drilling depth can be changed by turning the threaded rod and locking it in place with the bottom Hexagon Nut. One full turn alters the depth by 1 mm.



Fig. 22: Setting drilling depth

### Edge distance

The distance from the edge is set by sliding the fence along the scale. The setting is read at the marker on the front edge of the fence. To make the setting, both screws must be undone on the runner bracket and then tightened again (on both sides) after the setting has been made. The scale shows the edge distance in relation to the main spindle (centre of hinge cup).

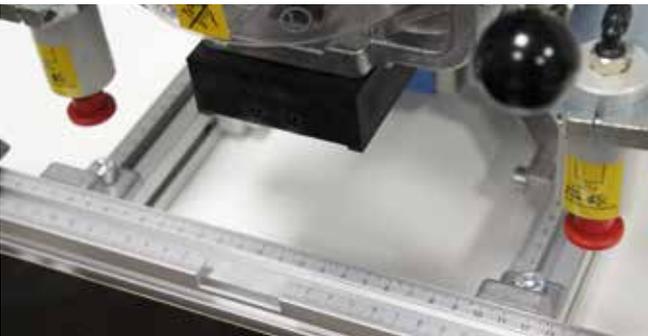


Fig. 23: Edge distance

### Pendulum stops

The stop profile is factory set to 0 at the centre of the main spindle, making it possible to precision adjust pendulum stops to the left and right on the basis of the millimetre scale.

Adjust pendulum stops to suit application. To make settings, release the clamping wheel **4** and move the pendulum stop **5** along the rail.

The value to be set is read on the scale at the rear edge (Fig. 24 : Setting according to the scale).

Retighten the clamping wheel. Now push the workpiece against the pendulum. When not in use, the pendulum can be pushed out of the way with the workpiece.

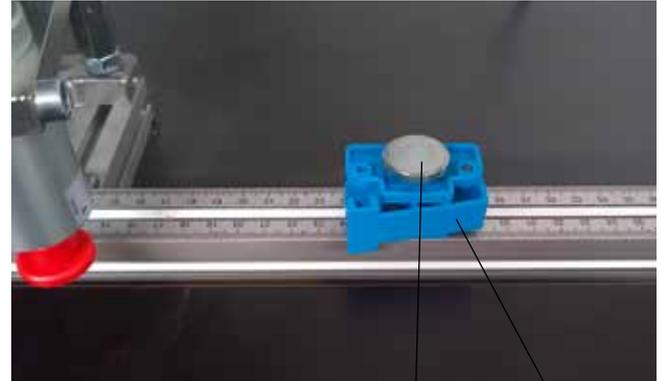


Fig. 24: Pendulum stop

4 5

### Hold-down clamp

Depending on panel thickness, hold-down clamps must be vertically adjusted. A space of approx. 3 mm must be allowed between workpiece and hold down foot (e.g. by inserting an A/F 3 mm Allen key).



Fig. 25: Hold-down clamp

## Die

Mount the insertion die onto the swivel unit with two hexagon socket screws. If you wish to use any other die, e.g. for connecting fittings or mounting plates, you must exchange the hinge insertion die, including the fixing screws. Depth can be adjusted at the threaded studs located on the front face of the insertion dies.



Fig. 26: Insertion die

## Hold-down clamp

The hold-down clamps are automatically tensioned on actuating the manual valve or foot pedal and can be released again by pressing the yellow button **1**.



Fig. 27: Yellow button: Releasing the hold-down clamps

## 3. Operating



### ! WARNING

#### Warning - Hand injuries!

While the machine is operating, always keep your hands away from the drill bits, hold-down clamps and insertion die to prevent injury.

They can be activated either by means of the manual switch valve or foot pedal. To do this, press the manual valve or foot switch until the drill bits have reached the end position (drilling depth stop). On letting the switch go, the drilling head returns to the home position.

#### 4. Setting up Hettich hinges

##### Setting up

1. A clockwise 35 mm diameter drill bit is chucked in the middle drill spindles, and two anticlockwise 10 mm diameter drill bits are chucked in the rear drilling spindles. The front drilling spindle must be closed off with a cap so as to prevent the threaded pin from working itself out and provide effective protection from soiling.

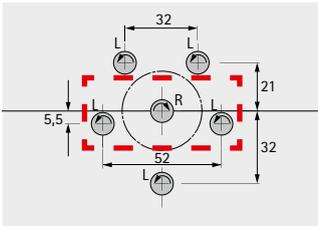


Fig. 28: Drilling pattern



Fig. 29: Drilling spindles with cap

2. Set drill depth stop and lock in place with a hexagon nut. Carry out trial drillings for each to establish the exact drilling depth.



Fig. 30: Drill depth stop with hexagon head screw

3. Using an Allen key, undo the fence screws and set the required distance from the edge (C dimension) on the scale.



Fig. 31: Fence with hexagon socket screw

4. Using the scale, set pendulum stops on left and right to the required dimensions.

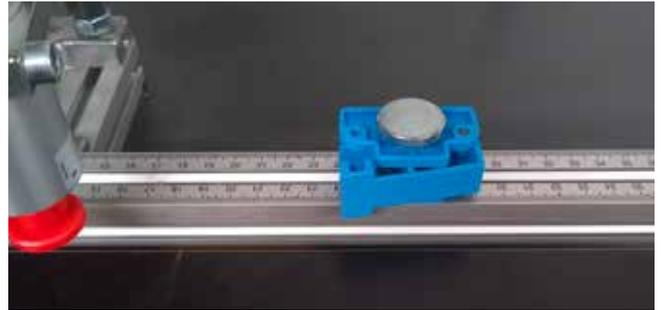


Fig. 32: Pendulum stop



##### WARNING

Do not set any stops near the drilling spindles as otherwise serious damage could be caused, for example, to the drilling spindles and drilling unit.



##### NOTE

Carry out trial drillings for each to establish the exact drilling depth.

##### Drilling

1. Insert workpiece in front of the fence and set the pendulum stops. Initiate the drilling process using the manually operated valve or foot switch and terminate it by releasing.



Fig. 33: Manually operated valve



Fig. 34: Foot switch

2. The Hettich hinge for fast installation on the cup side can now be fitted by hand.

## Pressing in

1. Clip hinge with premounted sockets into the insertion die for hinges and clip hinge arm in between the retaining springs.



Fig. 35: Insertion die

2. Move down catch with hinge insertion die as far as the stop over the drill hole.



Fig. 36: Insertion die for hinges

3. Initiate the insertion process by pressing manually operated valve **1** and terminate by letting it go again. Move up the hinge insertion die. Release hold-down clamp using lower momentary switch **2**. Remove workpiece.



Fig. 37: Manually operated valve and momentary switch



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## 8. Troubleshooting

Machine malfunctions must only be rectified by qualified staff instructed to do so by the person responsible. In identifying the source of malfunction attention must be paid to the entire area surrounding the machine. The manufacturer must be immediately notified of any damage occurring during the warranty period.

### General information



#### WARNING

##### **Safety regulations while identifying the source of malfunction and rectifying malfunction!**

Observe the accident prevention regulations!

- In the event of a mechanical malfunction, make sure that the assembly jig is depressurised!
- Prevent the machine from switching back on again and attach a warning sign!

## 9. Servicing and maintenance

- Check the safety guards every day for proper working order.
- Regular inspection of the electrical system in compliance with the VDE guidelines



#### WARNING

##### **Risk of injury!**

Servicing and maintenance work must only be carried out by instructed, qualified personnel.

### Drilling head

Dust must be cleaned off the guide columns at regular intervals. Do not grease as maintenance-free sockets are fitted.

### Pneumatic valves

By and large, the system can be operated without oil. A small amount of air may escape as a result of the greater clearance needed for the valves. To avoid workpiece soiling, do not connect any lubricator upstream.

To lubricate all pneumatic valves, including the main cylinder, you can also drip about 10 to 15 drops of commercial-grade hydraulic oil (HPL 46) into the discharge downstream of the servicing unit after every 40 to 50 hours of operation.

- The water separator must be drained at regular intervals by opening the discharging screw below the glass reservoir.
- A thin coat of lubricating grease must be applied to all drill-bit shafts before they are inserted into the chucks to facilitate insertion and removal.
- The machine itself must be properly cleaned at regular intervals.

### Labelling, information signs

Labelling/information signs must be

- cleaned with a cloth,
- checked for secure attachment and legibility,
- replaced if they are damaged.

### 10. Taking out of service

When taking the machine out of service, it must be disconnected from the compressed air supply to dissipate the residual or stored energy.



#### DANGER!

Even after the machine is switched off, cables in the control cabinets are still live

- Power supply cables
- Control cables to the power switch
- Undervoltage supply

Work on electrical equipment must only be carried out by authorised electricians!



#### WARNING

##### Risk of injury!

The compressed air supply must be disconnected by industrial mechanics or by persons of similar qualification.

### 11. Disposal

Dispose of the packaging in an environmentally friendly manner.



The BlueMaxMini type 3 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.

Sort machine parts before disposal and dispose of them in an environmentally friendly manner.

#### Protecting the environment



#### CAUTION

The obligations prescribed in law with regard to avoiding waste and proper recycling / disposal must be followed during all work on and with the machines!

Particularly when carrying out installation, repair and servicing work, substances hazardous to water, such as

- lubricating greases and oils
- solvent based cleaning fluids

must not be allowed to pollute the ground or enter the sewer system!

These substances must be kept, transported, recharged and disposed of in suitable containers.

### Scrapping

If the machine is ever taken out of service for good, the laws and regulations on disposal in force at that time must be observed and met.

At the time of final shutdown and disposal, it is necessary to dismantle and remove the entire energy supply system and dispose of the lubricating oils.

At the end of their useful life, machines must be disposed of by a specialist company qualified to do so.

It makes sense to check which materials can be recycled and then also do so.

### Oil and oily wastes



#### CAUTION

Oil and oily wastes are a huge potential threat to the environment. This is why they are disposed of by specialist companies.

Channel these wastes into the company's internal disposal department which will then pass them on to specialist companies.

## 12. Replacement and expendable parts

Please note that the manufacturer's declaration or declaration of conformity given by Paul Hettich GmbH & Co. KG as manufacturer will lose its validity if non approved replacement parts are installed.

|       |  |
|-------|--|
| 1101* | Boring block   |
| 1102* | Drilling unit cover                                  |
| 1103* | Auxiliary spindle with chuck                         |
| 1104* | Main spindle with chuck                              |
| 1105* | Pinion, teeth = 21                                   |
| 1106* | Pinion, teeth = 32                                   |
| 1107  | Guide column   |
| 1108  | Base plate   |
| 1109  | Connecting bracket                                   |
| 1110  | Hexagon nut DIN 936 M 12x1 galvanised                |
| 1111  | Drill depth stop M 12x1                              |
| 1112  | Guide plate  |
| 1113  | Work surface 400 mm x 800 mm                         |
| 1114  | Fence 800 mm   |
| 1115  | Base profile 465 mm                                  |
| 1116  | Guide screw M 6x12                                   |
| 1117  | Guard  |
| 1118  | Flat head screw with slot and dog point              |
| 1119  | Fence bracket assembly                               |
| 1120  | Cap for chuck  |
| 1121  | Cable grip HM (type 2)                               |
| 1122  | Suction extractor funnel assembly (without mounting) |
| 1124  | Extractor metal cover (without mount)                |
| 1125  | Straight cable grip PM (type 3)                      |
| 1127  | T-slot screw   |
| 1128  | Hexagon nut, DIN 934 M 8                             |
| 1130  | Self-tapping screw DIN 7500 - M 5x10 - C/ II         |
| 1131  | Spring washer, DIN 127 - A 5 each                    |
| 1151  | Deep groove ball bearing 6000 - 2RS                  |
| 1152  | Bushes MB 3030 DU                                    |
| 1154  | Compression spring HM (type 2)                       |
| 1155  | Compression spring PM (type 3)                       |
| 1156  | Pendulum stop assembly => article number             |
| 1161  | Knock in sleeve ø 10x12                              |
| 1162  | Cheese head screw DIN 912 - M 6x10                   |
| 1163  | Cheese head screw DIN 912 - M 8x10                   |
| 1164  | Square nut DIN 562 - M 8                             |
| 1165a | Threaded stud DIN 913 - M 6 x 5                      |
| 1167  | Cheese head screw DIN 912 - M 6x12                   |
| 1168  | Cheese head screw DIN 912 - M 8x20                   |
| 1169  | Cheese head screw DIN 912 - M 10x25                  |
| 1172* | Dust seal  |

\* These replacement part nos. only apply to the standard 4-spindle 52/5.5 mm drilling unit. A list of parts for configuring other drilling unit is provided at the end of this table.

|      |   |
|------|---|
| 1173 | Threaded stud DIN 914 - M 4x8                                       |
| 1174 | Cheese head screw DIN 912 - M 10x35                                 |
| 1175 | Spring washer DIN - A 10 each                                       |
| 1179 | Cylindrical pin DIN 7 - ø 4 M 6x20                                  |
| 1180 | Customised drilling unit block, 4-spindle, 45/9.5                   |
| 1181 | Customised drilling unit cover, 4-spindle, 45/9.5                   |
| 1182 | Customised auxiliary spindle with chuck                             |
| 1183 | Pinion, teeth = 17  |
| 1184 | Customised deep groove ball bearing 607 - 2RS                       |
| 1185 | Special seal  |
| 1186 | Customised drilling unit block, 6-spindle                           |
| 1187 | Customised drilling unit cover, 6-spindle                           |
| 1188 | Customised drilling unit block, 4-spindle, 38/8                     |
| 1189 | Customised drilling unit cover, 4-spindle, 38/8                     |
| 1190 | Customised auxiliary spindle with chuck                             |
| 1191 | Customised main spindle with chuck                                  |
| 1192 | Pinion, teeth = 16  |
| 1193 | Pinion, teeth = 25  |
| 1194 | Pinion, teeth = 39  |
| 1221 | Swivel unit   |
| 1223 | Handle rod for swivel unit  |
| 1225 | Fixing plate for sensor roller                                      |
| 1247 | Threaded stud DIN 553 - M 8x40                                      |
| 1248 | 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                                |
| 1253 | Standard insertion die => article number                            |
| 1256 | Threaded stud DIN 551 - M 5x16                                      |
| 1257 | Hexagon nut, DIN 934 - M 5  |
| 1258 | Hexagon nut, DIN 934 - M 8  |
| 1259 | Cheese head screw DIN 912 - M 8x25                                  |
| 1260 | 3/2 way valve with sensor roller                                    |
| 1262 | Serrated lock washer DIN 6791 A 5.3 - spring steel                  |
| 1263 | Self-tapping screw DIN 7500 - M 4x10 - C/ II                        |
| 1264 | Elbow union M 5, swivelling, ø 4                                    |
| 1265 | Oval cross-recessed head screw, DIN 7985 - M 3x14                   |
| 1319 | Strip for hand level linkage system                                 |
| 1320 | Linkage system for cranked hand lever (can be used in left / right) |

|        |   |
|--------|---|
| 1321   | Handle rod  |
| 1322   | Pan head screw DIN 923 M 8x6  |
| 1353   | Direkta II 38 mm  |
| 1428   | Clamping plate  |
| 1429   | Bolt for clamping plate   |
| 1451   | Cheese head screw DIN 912 - M 6x20  |
| 1452   | Cheese head screw DIN 912 - M 6x25  |
| 1453   | Cheese head screw DIN 912 - M 6x40  |
| 1454   | Disc DIN - A 6.4 - steel  |
| 1530   | Motor mount   |
| 1551   | Motor complete with switch => following details must be provided:<br>1.) Machine type HM (type 2), PM (type 3)<br>2.) Serial number<br>3.) Voltage, hertz, phases, power in kW, |
| 1552*  | BoWex coupler assy, drilling unit ø 10, motor ø 14 for 0.8 kW motor   |
| 1553   | Feather key for coupling DIN 6885 - A 3x3x16  |
| 1554   | Cheese head screw DIN 912 - M 6x16  |
| 1570   | BoWex coupler assy, drilling unit ø 10, motor ø 19 for 1.3 kW motor   |
| 1571   | BoWex coupler assy, drilling unit ø 7, motor ø 14 for 0.8 kW motor  |
| 1572   | BoWex coupler assy, drilling unit ø 7, motor ø 19 for 1.3 kW motor  |
| 1632   | Retaining spring for blow nozzle  |
| 1633   | Blow nozzle   |
| 1637   | Coupling for piston rod, including nut  |
| 1638   | Control console   |
| 1651   | Pneum. cylinder, double action, 80/125  |
| 1654   | Cheese head screw DIN 912 - M 10x20   |
| 1656   | 5/2 way pushbutton valve 1/8" black   |
| 1659   | Elbow union 1/4"  |
| 1660   | Elbow union 1/8"  |
| 1660 a | Elbow union 1/8" (longer legs)  |
| 1661   | Straight screw connector 1/8" ø 6   |
| 1662   | Sound absorber 1/8"   |
| 1663   | Discharge air, throttle type nonreturn valve  |
| 1664   | Reduction nipple 1/41 x 3/8A  |
| 1665   | Servicing unit 1/4", assy   |
| 1668   | Polyurethane hose, 6 mm, clear  |
| 1669   | Polyurethane hose, 6 mm, black  |
| 1670   | Polyurethane hose, 6 mm, blue   |

|      |   |
|------|---|
| 1671 | Plug connector NW 7.2   |
| 1672 | Switchover valve toggle switch 1/8"   |
| 1673 | AND valve 1/8"  |
| 1676 | Cable band T 40 R   |
| 1680 | Electropneumatic switch with cable => following details must be provided:<br>1.) Serial number<br>2.) Voltage, hertz, phases, power in kW |
| 1682 | Self-tapping screw DIN 7500 - M 6x16 - C/ II  |
| 1684 | Plug ø 6  |
| 1685 | Double plug in connector ø 4 (2 x ø 4, 1 x ø 6)   |
| 1686 | Plug ø 4  |
| 1687 | Elbow union R 1/8" internal thread G 1/8"   |
| 1688 | Rapid bleeder valve G 1/8"  |
| 1689 | Reduction nipple 1/8" I x 3/8" A  |
| 1690 | Elbow union, tapered, 2 x 1/8"  |
| 1691 | Polyurethane hose, 4 mm, clear  |
| 1692 | Polyurethane hose, 4 mm, black  |
| 1693 | Polyurethane hose, 4 mm, blue   |
| 1738 | Pressure plate for hold-down clamp  |
| 1739 | Stop bracket  |
| 1740 | Clamping plate for hold-down clamp  |
| 1741 | Bolt for hold-down clamp  |
| 1753 | Cheese head screw DIN 912 - M 6x35  |
| 1757 | Pneum. round cylinder, ø 33 mm  |
| 1760 | Double plug in connector ø 6  |
| 1761 | Elbow union M 5   |
| 1763 | Sound absorber M 5  |
| 1764 | Y hose connector  |
| 1765 | Double plug in connector ø 4 (3 x ø 4)  |
| 1766 | Plug in cross connector ø 4   |
| 1778 | 3/2 way pushbutton valve M 5, yellow, spring resetting  |
| 1779 | 3/2 way valve M 5, spring resetting   |
| 1782 | Plug in T connector   |
| 1783 | Plug in reducing connector  |
| 1785 | Oval cross-recessed head screw, DIN 7985 - M 3x18   |
| 1786 | Taper groove pin ø 6x30   |
| 1787 | Hexagon nut, DIN 934 M 12   |
| 1788 | Hexagon nut, DIN 934 M 3  |

|      |  |
|------|--|
| 1800 | Bench frame                                    |
| 1801 | Stop block                                     |
| 1802 | Shaft support with $\varnothing$ 20 shaft      |
| 1803 | Tape measure                                   |
| 1804 | Plate, rear                                    |
| 1805 | Plate, front                                   |
| 1806 | Vernier scale                                  |
| 1807 | Customised control console                     |
| 1808 | Supporting fork                                |
| 1809 | Clamping bracket, front                        |
| 1810 | Clamping bracket, rear                         |
| 1812 | Foot   |
| 1813 | Aluminium bearing unit                         |
| 1814 | Clamping lever DIN 78 M 8x63                   |
| 1816 | Cheese head screw DIN 912 - M 6x55             |
| 1817 | Cheese head screw DIN 912 - M 6x16             |
| 1818 | Spring washer DIN 7980 - 6 - spring steel      |
| 1819 | Cheese head screw DIN 912 - M 6x45             |
| 1820 | Spring washer DIN 7980 - 8 - spring steel      |
| 1821 | Grooved pin DIN 1473 - 8x50                    |
| 1952 | Plug, nickel plated brass, 1/8"                |
| 1953 | 5/2 way valve 1/8"                             |
| 1954 | OR valve M 5                                   |
| 1955 | 3/2 way foot valve 1/8"                        |
| 1956 | Double nipple M5 - M5                          |
| 1959 | Cheese head screw DIN 912 - M 4x25             |
| 1960 | Hexagon nut, DIN 934 M 4                       |
| 1961 | Disc DIN 125 - A 4                             |
| 1964 | Elbow union R 1/8" $\varnothing$ 4 MR 14.04.18 |
| 1966 | Straight screw connector 1/8" $\varnothing$ 4  |
| 2097 | Motor protection circuit breaker 1 - 1,6A      |
| 2098 | Motor protection circuit breaker 1,6 - 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                            |

### List of replacement parts by drilling unit type

(The numbers in brackets indicate the quantity contained in the drilling unit assembly)

#### Standard drilling pattern, 4-spindle, 52/5.5 mm

|      |   |
|------|---|
| 1101 | Boring block  |
| 1102 | Drilling unit cover   |
| 1103 | Auxiliary spindle with chuck (3 each)   |
| 1104 | Main spindle with chuck (1 each)  |
| 1105 | Pinion, teeth = 21 (2 each)   |
| 1106 | Pinion, teeth = 32 (2 each)   |
| 1151 | Deep groove ball bearing 6000 - 2RS (8 each)  |
| 1172 | Seal, 4-spindle, 52/5.5 mm  |
| 1552 | BoWex coupler assy, drilling unit $\varnothing$ 10, motor $\varnothing$ 14 for 0.8 kW motor |
| 1570 | BoWex coupler assy, drilling unit $\varnothing$ 10, motor $\varnothing$ 19 for 1.3 kW motor |

#### Drilling pattern, 4-spindle 38/8 mm

|      |  |
|------|--|
| 1188 | Special drilling unit block  |
| 1189 | Special drilling unit cover  |
| 1190 | Customised auxiliary spindle with chuck (3 each)   |
| 1191 | Customised main spindle with chuck (1 each)  |
| 1192 | Pinion, teeth = 16 (2 each)  |
| 1193 | Pinion, teeth = 25 (1 each)  |
| 1194 | Pinion, teeth = 39 (1 each)  |
| 1184 | Customised deep groove ball bearing 607 - 2RS (8 each)                                     |
| 1185 | Special seal   |
| 1571 | BoWex coupler assy, drilling unit $\varnothing$ 7, motor $\varnothing$ 14 for 0.8 kW motor |
| 1572 | BoWex coupler assy, drilling unit $\varnothing$ 7, motor $\varnothing$ 19 for 1.3 kW motor |

#### Drilling pattern, 4-spindle 45/9.5 mm

|      |  |
|------|--|
| 1180 | Special drilling unit block                            |
| 1181 | Special drilling unit cover                            |
| 1182 | Customised auxiliary spindle with chuck (2 each)       |
| 1103 | Auxiliary spindle with chuck (1 each)                  |
| 1104 | Main spindle with chuck (1 each)                       |
| 1183 | Pinion, teeth = 17 (2 each)                            |
| 1106 | Pinion, teeth = 32 (2 each)                            |
| 1151 | Deep groove ball bearing 6000 - 2RS (4 each)           |
| 1184 | Customised deep groove ball bearing 607 - 2RS (4 each) |

|      |   |
|------|---|
| 1185 | Special seal  |
| 1552 | BoWex coupler assy, drilling unit ø 10, motor ø 14 for 0.8 kW motor |
| 1570 | BoWex coupler assy, drilling unit ø 10, motor ø 19 for 1.3 kW motor |

#### Drilling pattern, 6-spindle 52/5.5 mm

|      |   |
|------|---|
| 1186 | Special drilling unit block   |
| 1187 | Special drilling unit cover   |
| 1103 | Auxiliary spindle with chuck (5 each)                               |
| 1104 | Main spindle with chuck (1 each)                                    |
| 1105 | Pinion, teeth = 21 (4 each)   |
| 1106 | Pinion, teeth = 32 (2 each)   |
| 1151 | Deep groove ball bearing 6000 - 2RS (12 each)                       |
| 1185 | Special seal  |
| 1552 | BoWex coupler assy, drilling unit ø 10, motor ø 14 for 0.8 kW motor |
| 1570 | BoWex coupler assy, drilling unit ø 10, motor ø 19 for 1.3 kW motor |

Fig 38: Exploded drawing 1

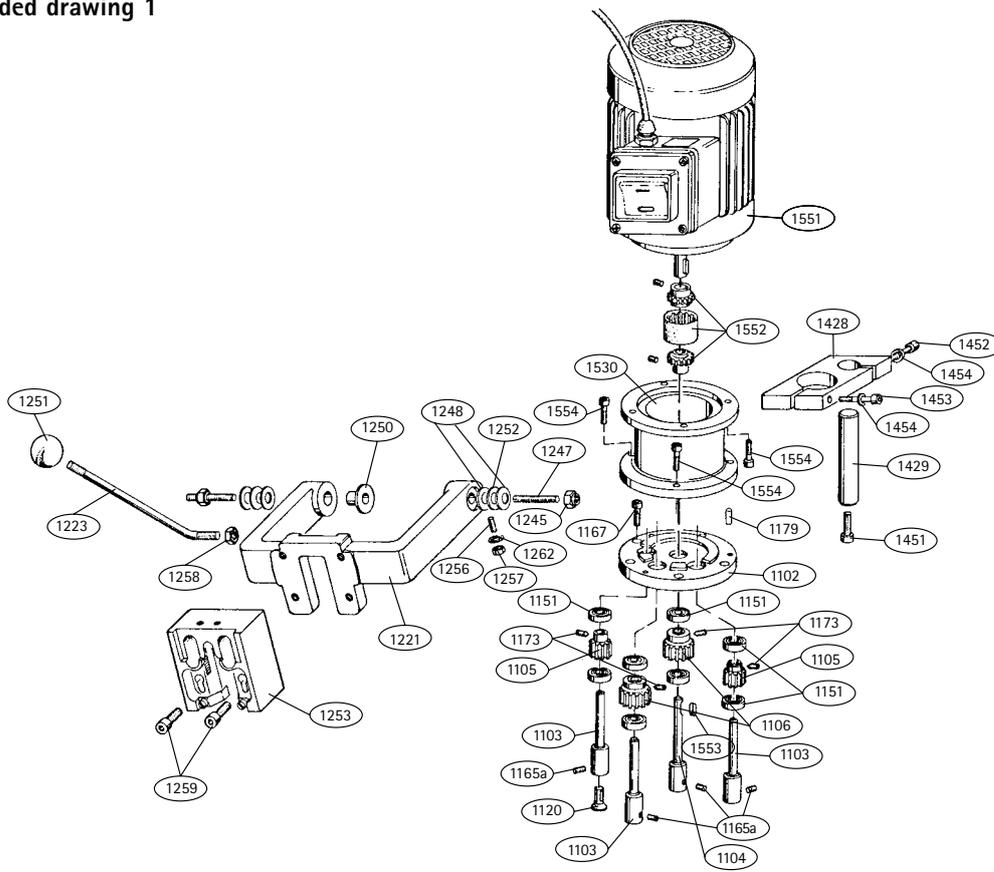


Fig 39: Exploded drawing 2

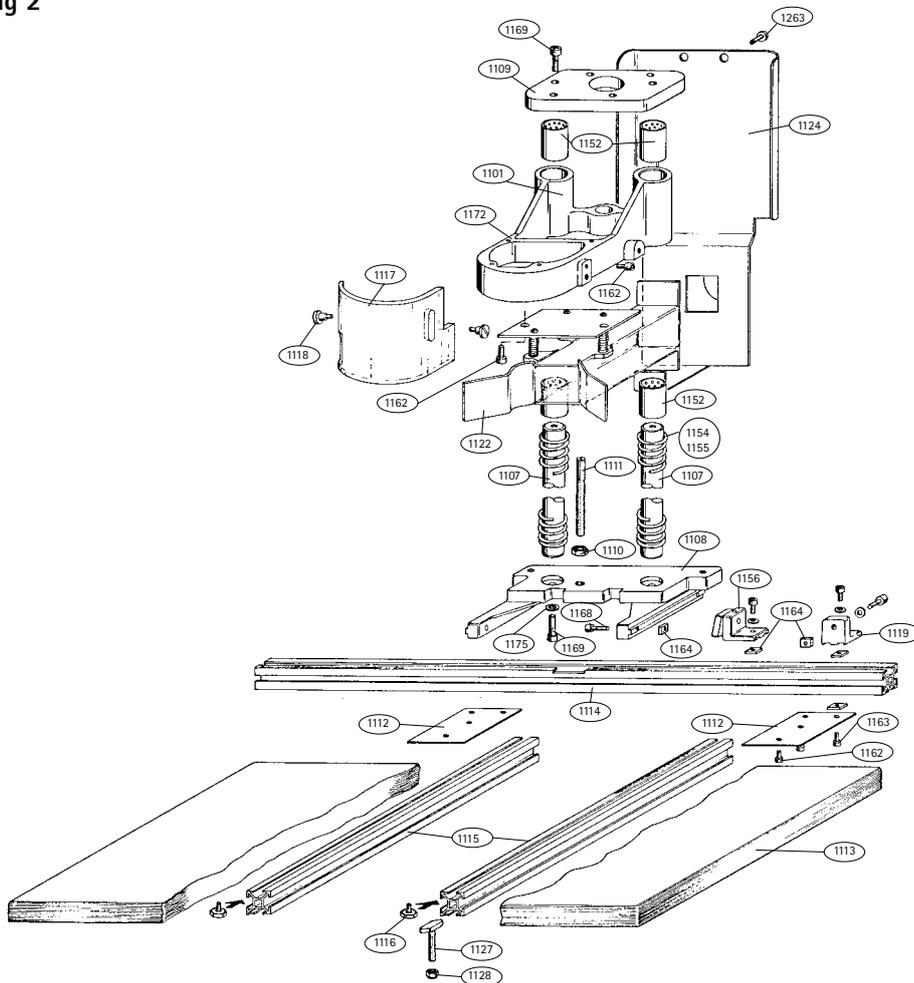


Fig 40: Exploded drawing 3

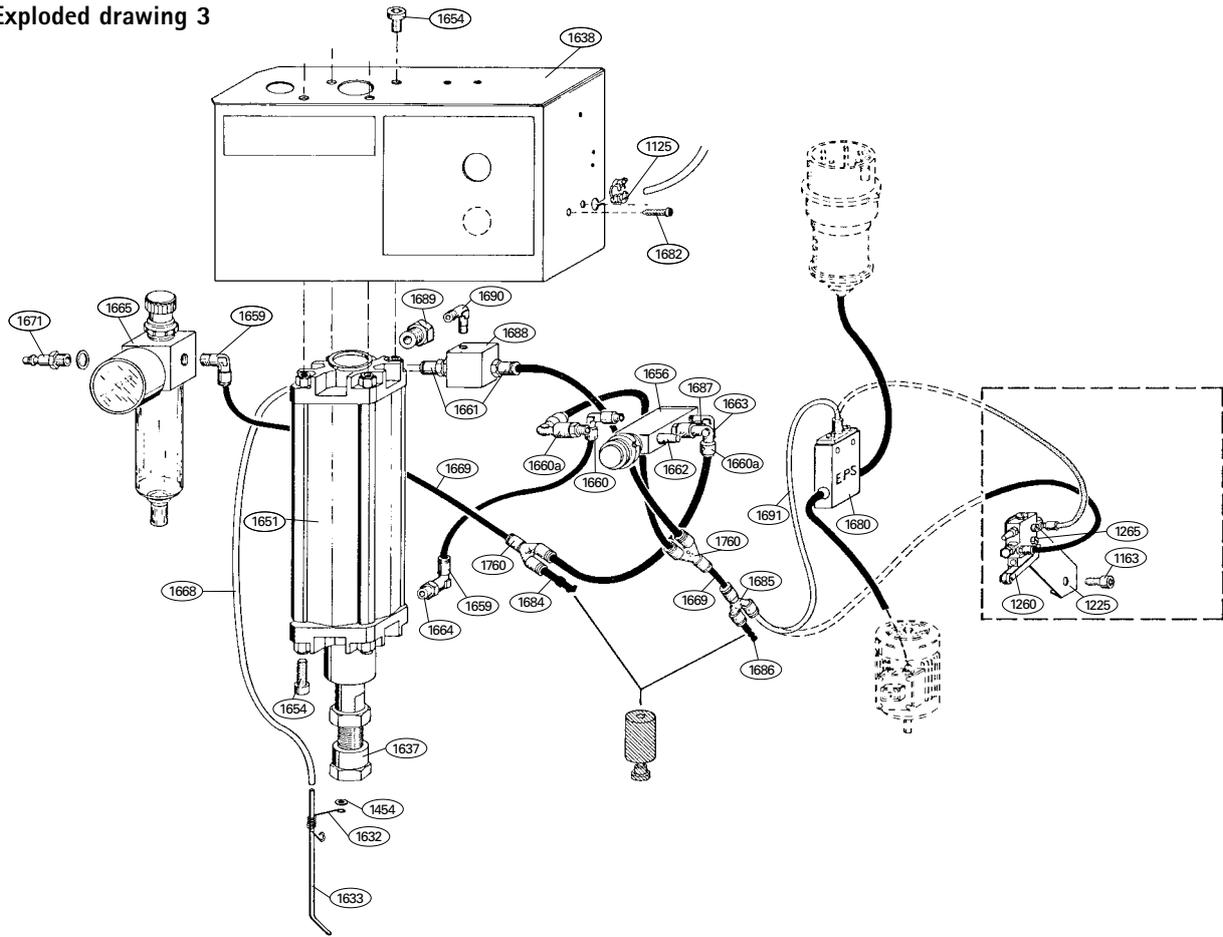
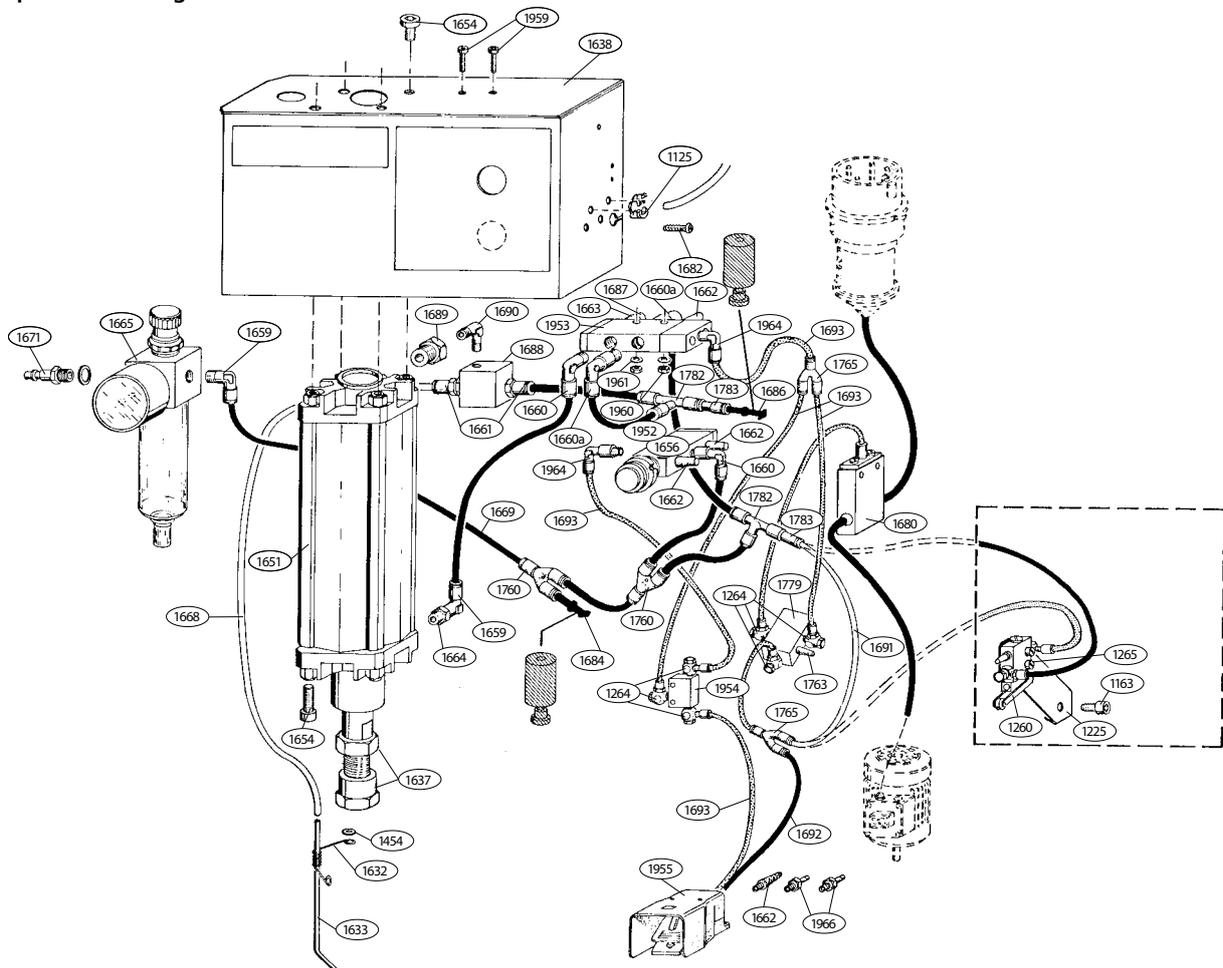
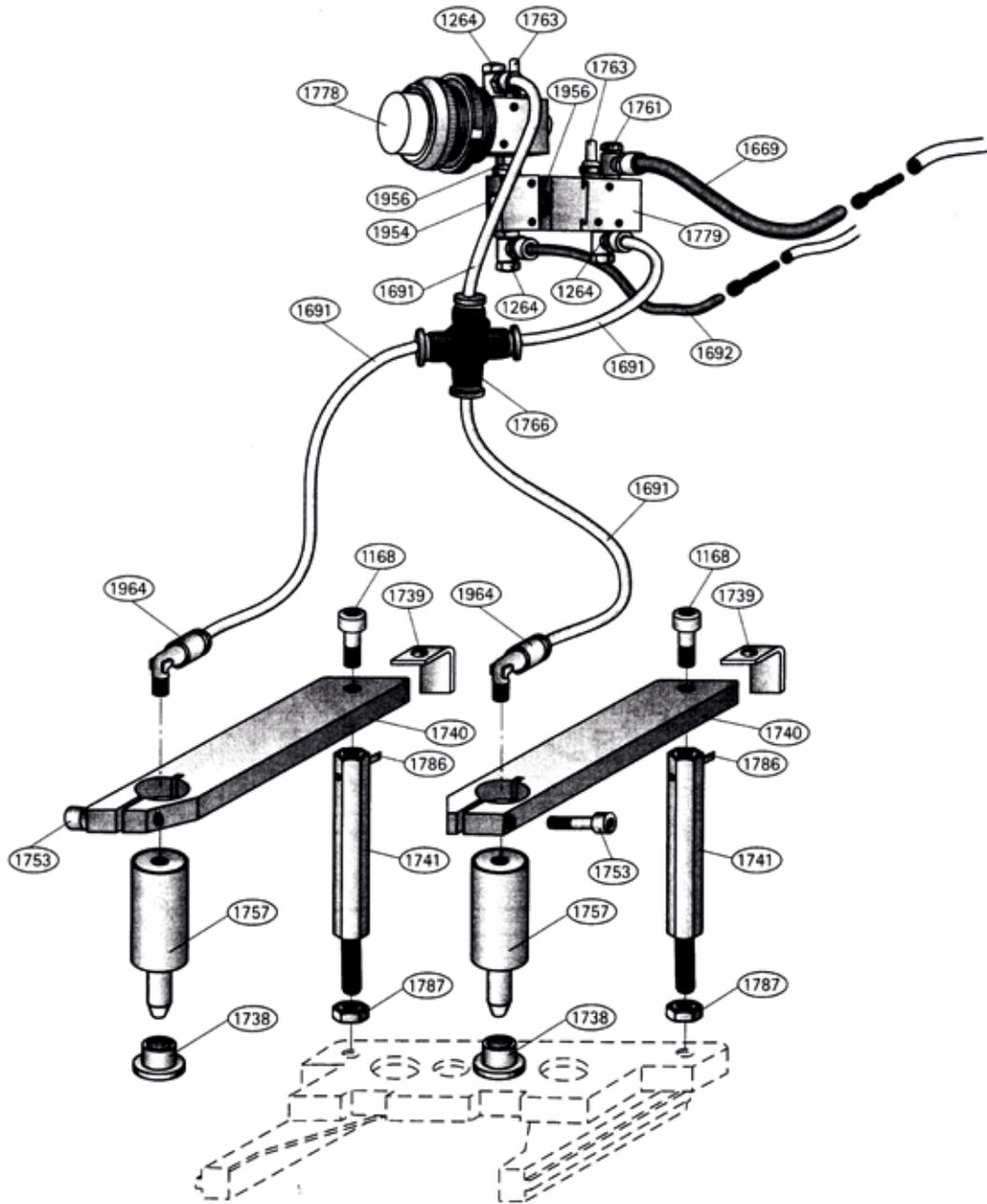


Fig 41: Exploded drawing 4



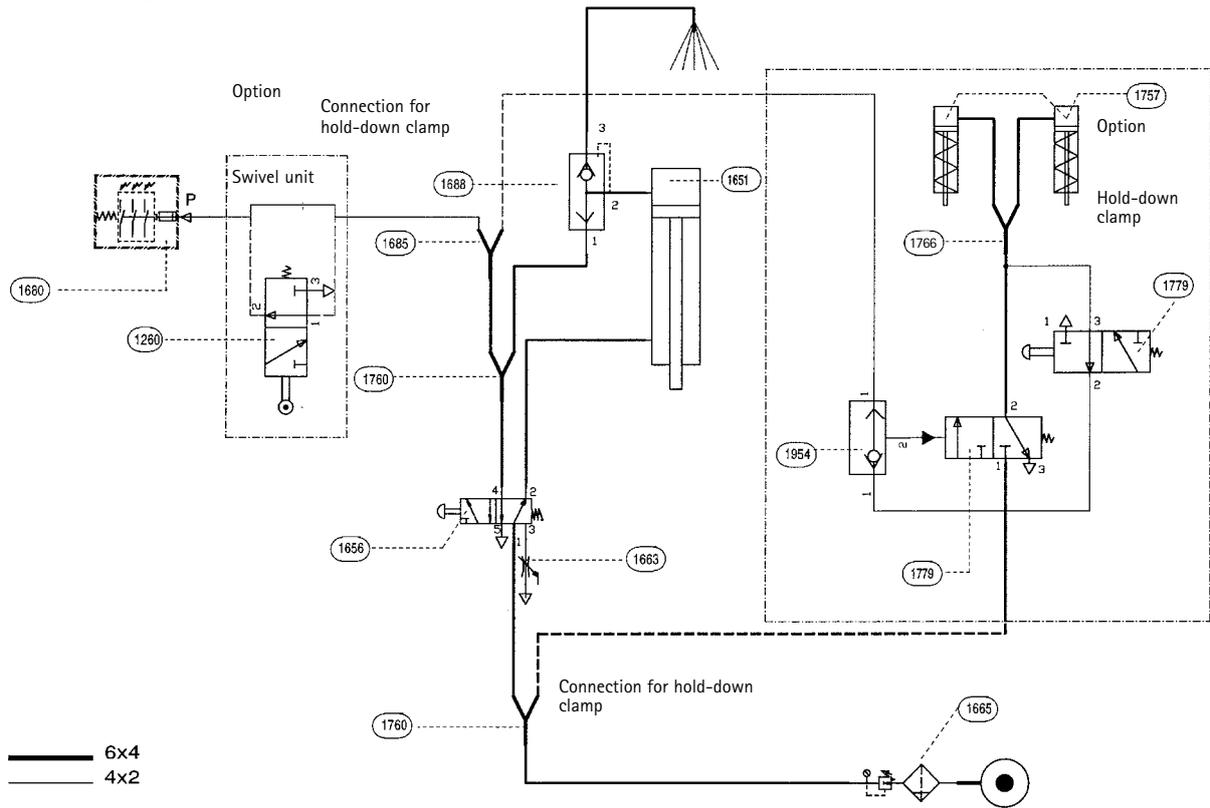
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Fig 42: Exploded drawing 5



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Pneumatic circuit diagrams



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Fig. 43: BlueMax Mini Type 3

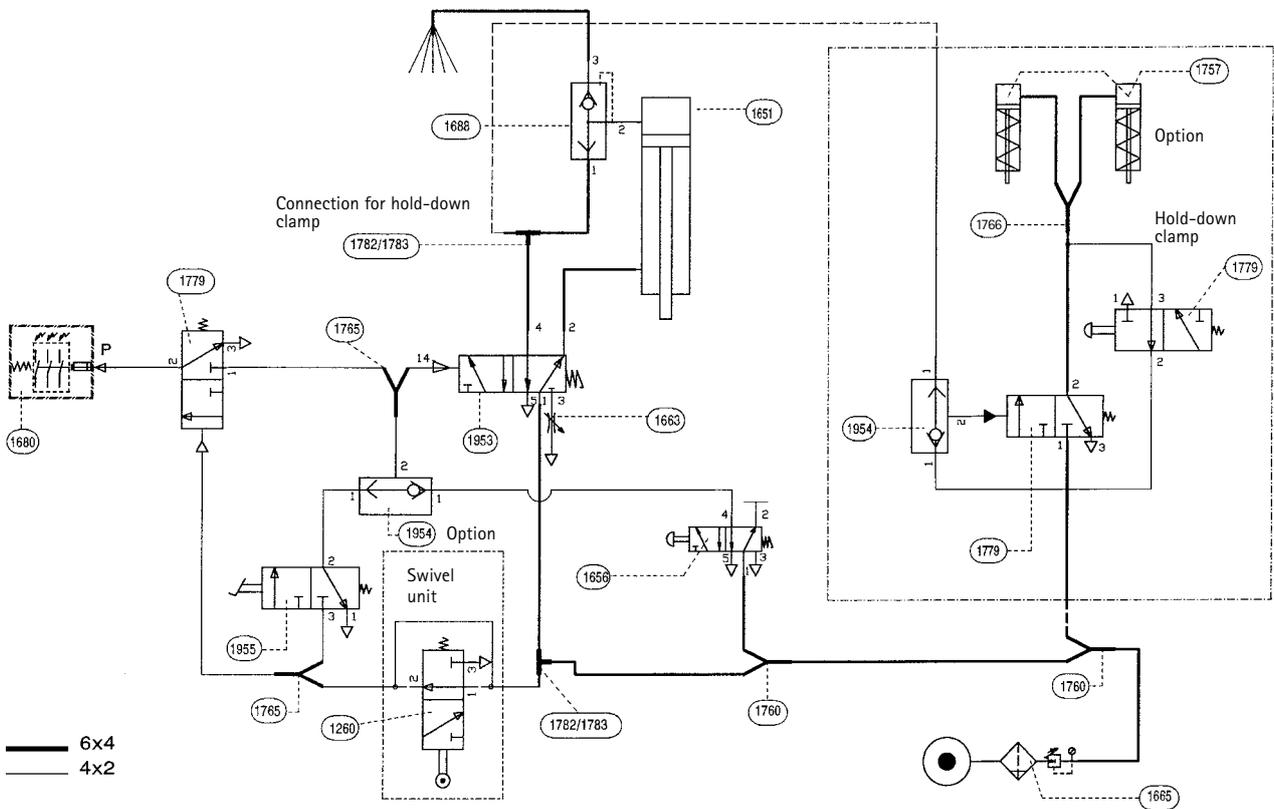
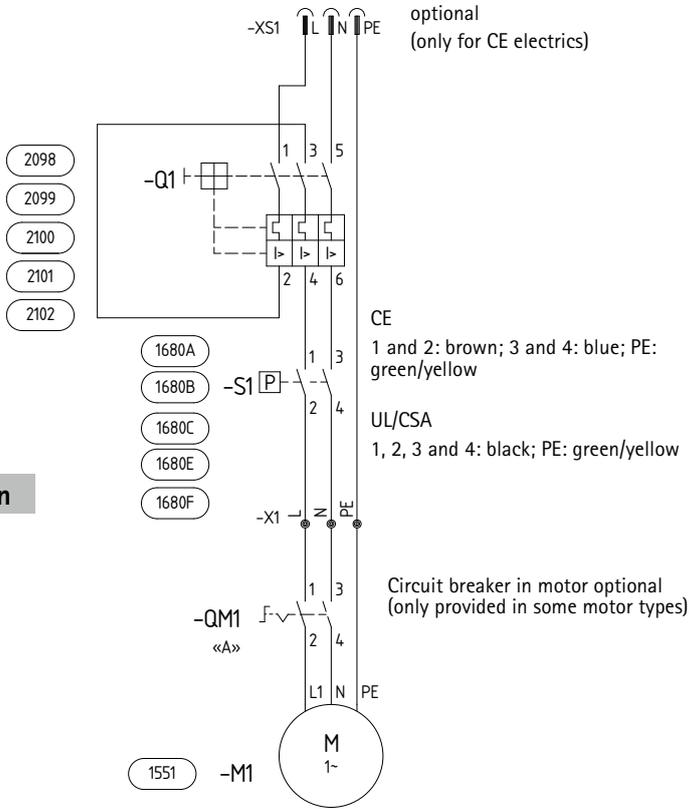


Fig. 44: BlueMax Mini Type 3 with accessories

## Wiring diagrams

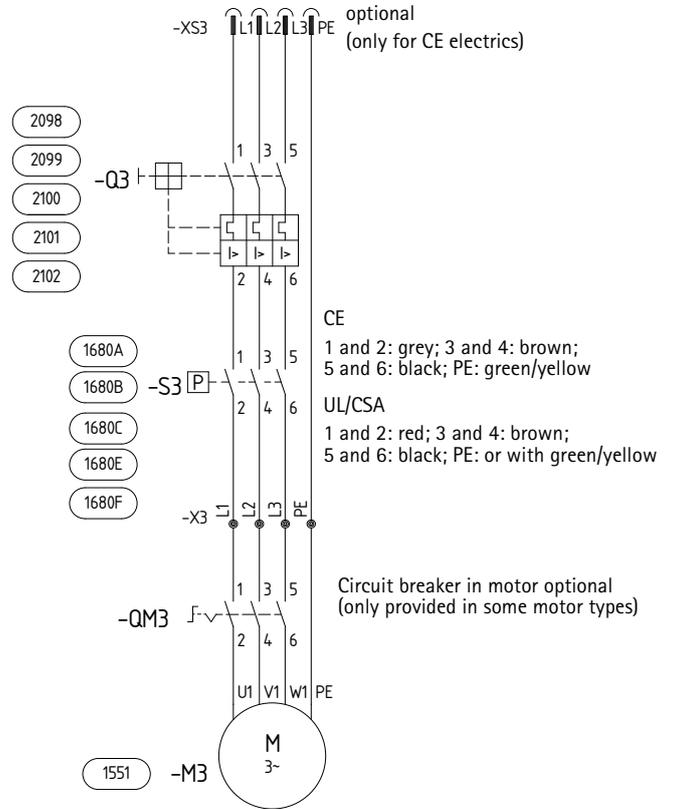
Mains fuse protection at customer  
max. 16A



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

Fig. 45: Circuit diagrams