INSTRUCTION MANUAL

GHD-30V
Geared Head Drill (240V)
31.5mm Drilling Capacity with Automatic Feed & Tapping 3MT

D176

Table of contents

1 Safety

Glossary of symbols

☞	gives additional indications
➜	calls on you to act
•	enumerations

This section of the operating manual

- explains the meaning and use of the warning references contained in the operating manual,
- explains how to use the geared drill properly,
- highlights the dangers that might arise for you or others if these instructions are not obeyed,
- tells you how to avoid dangers.

In addition to this operating manual please observe

- applicable laws and regulations,
- legal regulations for accident prevention,
- the danger, warning and mandatory signs such as the warning reference on the geared drill.

During installation, operation, maintenance and repair of the geared drill the European standards are to be observed.

If European standards are not applied in the national legislation of the country of destination, the specific applicable regulations of each country need to be observed.

Where necessary, the required measures need to be taken to comply with the specific regulation of each country before the geared drill is used.

ALWAYS KEEP THIS DOCUMENT CLOSE TO THE GEARED DRILL FOR FUTURE REFERENCE.

INFORMATION

If you are unable to solve a problem using this manual, please contact us for advice:

Hare and Forbes Machineryhouse

Telepone: (02) 9890 9111

E-Mail: sales@machineryhouse.com.au

1.1 Safety warnings (warning notes)

1.1.1 Classification of hazards

We classify the safety warnings into various levels. The table below gives an overview of the classification of symbols (pictograms) and warning for the specific danger and its (possible) consequences.

Pictogram	Signal word	Definition/Consequences
	**DANGER!**	Imminent danger that will cause serious injury or death to personnel.
	WARNING!	Hazard: a danger that will cause serious injuries or death personnel.
	CAUTION!	Danger or unsafe procedure that might cause injury to personnel or damage to property.
	**ATTENTION!**	Situation that could cause damage to the machine and product and other types of damage. No risk of injury to personnel.
	**INFORMATION**	Application tips and other important or useful information and warnings. No dangerous or harmful consequences for personnel or objects.

In the case of specific dangers, we replace the pictogram

General danger

with a warning of

injuries to hands,

hazardous electrical voltage,

or

rotating parts.

1.1.2 Other pictograms

Activation forbidden!

Disconnect the plug from the mains!

Use protective goggles!

Use ear protection!

Use protective gloves!

Use protective boots!

Wear a safety suit!

Protect the environment!

Contact address

1.2 Proper use

WARNING!

Improper use of the machine

- **will endanger personnel,**
- **will endanger the machine and other items used by the operator,**

may affect proper operation of the machine.

The geared drill is designed and manufactured for boring cold metals or other non-flammable materials that do constitute a health hazard. It uses a rotary chip-stripping tool and has a number of grooves for collecting the chips.

The geared drill must only be used with a quick-locking chuck.
Chucks that require a key to secure the bit must not be used on this geared drill.

If the geared drill is used in any way other than as described above, if it is modified without the authorisation of Hafco Metalmaster or if the geared drill is operated with diffe-rent process data, then it is used improperly.

We do not take liability for damage caused by improper use.

We would like to stress that any modifications to the construction, or technical or technological modifications which have not been authorised by Hare and Forbes Machineryhouse will also render the guarantee null and void.

It is also part of proper use that

- the limits of the geared drill are complied with,
- the instruction manual is observed,
- review and maintenance instructions are observed.

☞ "Technical data" on page 15

WARNING!

Very serious injury.

It is forbidden to make any modifications or alterations to the operating values of the geared drill! These could endanger personnel and cause damage to the geared drill.

1.3 Possible dangers caused by the geared drill

The geared drill is carried out with the latest technological advances.

Nonetheless, there remains a residual risk, since the geared drill operates with

- high revolutions,
- rotating parts,
- electrical voltage and currents.

We have used construction resources and safety techniques to minimise the health risk to personnel resulting from these hazards.

If the geared drill is used by personnel who are not duly qualified, there may be a risk resulting from incorrect operation or unsuitable maintenance.

INFORMATION

All personnel involved in assembly, commissioning, operation and maintenance must

- be duly qualified,
- follow this instruction manual.

In the event of improper use

- there may be a risk to personnel,
- there may be a risk to machine and other items,
- correct functioning of the geared drill may be affected.

Disconnect the geared drill whenever cleaning or maintenance work is being carried out.

WARNING!

The geared drill may only be used with the safety devices activated.

Disconnect the geared drill whenever you detect a failure in the safety devices or when they are not fitted!

All additional installations carried out by the operator must incorporate the prescribed safety devices.

As the machine operator, this will be your responsibility! ☞ **"Safety devices" on page 9**

1.4 Qualification of personnel

1.4.1 Target group

This manual is addressed to

- operators,
- users,
- maintenance staff.

The warning notes therefore refer to both operation and maintenance of the geared drill.

Determine clearly and irrevocably who will be responsible for the different activities on the machine (use, maintenance and repair).

Vague or unclear assignment of responsibilities constitutes a safety hazard!

Always switch off the main switch of the geared drill. This will prevent it being used by unauthorised personnel. Always switch off the main switch of the geared drill.

1.4.2 Authorised personnel

WARNING!

Incorrect use and maintenance of the geared drill causes danger for personnel, objects and the environment.

Only authorised personnel may operate the geared drill!

Personnel authorised to use and perform maintenance are the trained and instructed technical staff working for the operator and manufacturer.

The operator must

Obligations of the operator

- train staff,
- instruct staff regularly (at least once a year) on
  - all safety standards that apply to the machine,
  - operation,
  - accredited technical guidelines,
- check staff's understanding,
- document training/instruction,
- require staff to confirm participation in training/instruction by a signature,
- check whether the staff are aware of safety and of dangers in the workplace and whether they observe the instruction manual.

The user must

Obligations of the user

- have received training in operation of the geared drill,
- know the function and principle of operation,
- before the machine is first used
  - have read and understood the instruction manual,
  - be familiar with all safety devices and regulations.

Additional qualification requirements

For work on the following machine components there are additional requirements:

- Electrical machine: Only an electrician or person working under the instructions and supervision of an electrician.

Before carrying out work on electric components or operating units, the following measures need to be performed in the order given.

➜ Disconnect all poles

➜ Ensure that the machine cannot be turned on again

➜ Check that there is no voltage

1.5 User positions

The user must stand in front of the geared drill.

INFORMATION

The main plug of the geared drill must be freely accessible.

1.6 Safety measures during operation

CAUTION!

Risk due to inhaling of health hazardous dusts and mist.

Dependent on the material which need to be processed and the used auxiliaries dusts and mist may be caused which might impair you health.

Make sure that the generated health hazardous dusts and mist are safely sucked off at the point of origin and is dissipated or filtered from the working area. Use an appropriate suction unit.

CAUTION!

Risk of fire and explosion by using flammable materials or cooling lubricants.

Take additional preventive measures in order to safely avoid health hazards before processing flammable materials (e.g. aluminum, magnesium) or before using flammable additives (e.g. spirit).

1.7 Safety devices

Use the geared drill only with properly functioning safety devices.

Stop the geared drill immediately if there is a failure in the safety device or if it is not functioning for any reason.

It is your responsibility!

If a safety device has been activated or has failed, the geared drill must only be used when

- the cause of the failure has been removed,
- it has been verified that there is no resulting danger for personnel or objects.

WARNING!

If you bypass, remove or override a safety device in any other way, you are endangering yourself and other personnel working with the geared drill. The possible consequences are

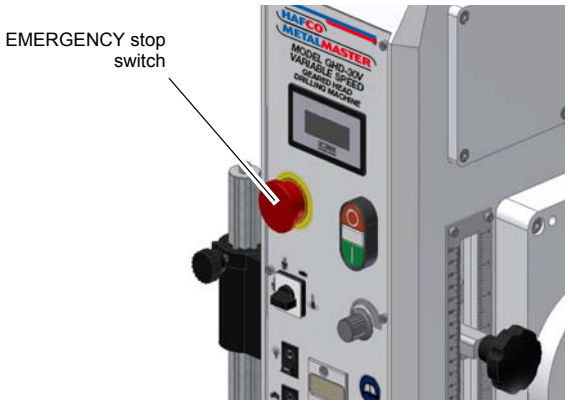
- **damage as a result of components or parts of components flying off at high speed,**
- **contact with rotating parts,**
- **fatal electrocution.**

The geared drill includes the following safety devices:

- EMERGENCY stop button.
- Main lockable switch.
- A drilling table with T-slots to hold the piece and a bench screw.
- Adjustable drill chuck protection with position switch.

1.7.1 EMERGENCY stop button

The geared drill is fitted with an EMERGENCY stop switch.



Illustr. 1-1: EMERGENCY stop switch

1.7.2 Main switch

In the "0" position, the lockable switch can be protected with a padlock against unauthorised or accidental activation.

When the main switch is off, the power supply to the motor is cut off.

Illustr. 1-2: Main switch

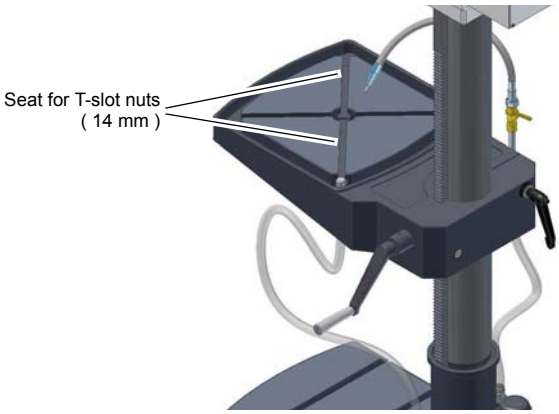
Points marked with the pictogram shown here are not included. These points may be live even when the main switch is off.

1.7.3 Drilling table

There are grooves in the drilling table for the T-slot nuts.

WARNING!

Danger of injury from centrifuged parts. Secure the piece firmly on the drilling table.



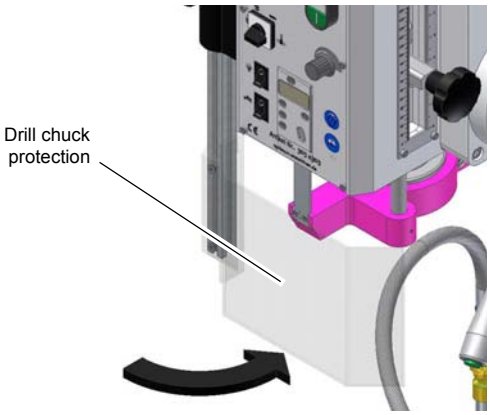
Illustr. 1-3: Drilling table

1.7.4 Drill chuck protection

➜ Adjust the drill chuck protection to the required height.

➜ Fold the drill chuck protection into place before you start drilling.

❍ The geared drill can only be activated as soon as the drill chuck protection has been closed.



Illustr. 1-4: Drill chuck protection

1.7.5 Prohibitive, warning and information labels

INFORMATION

All warning labels must be legible. Check them regularly.

1.8 Safety check

Check the geared drill at least once per shift. Inform the person responsible immediately of any damage, defect or change in operating function.

Check all safety devices

- at the beginning of each shift (with the machine stopped),
- once a week (with the machine in operation),
- after every maintenance and repair operation.

Check that prohibitive, warning and information labels and the markings on the geared drill

- can be identified (if not, clean them),
- are complete.

INFORMATION

Use the following table for checking.

General check		
Equipment	**Check**	**OK**
Protective covers	Fitted, firmly bolted and not damaged	
Drill chuck protection		
Labels, markings	Installed and legible	
Date:	**Checked by (signature):**	

Test run		
Equipment	**Check**	**OK**
EMERGENCY stop button	Once the emergency stop button is activated, the geared drill should be switched off.	
Drill chuck protection	The geared drill can only be switched on as soon as the drill chuck protection has been closed.	
Date:	**Checked by (signature):**	

1.9 Personnel protective equipment

For certain work personnel protective equipment is required. This includes:

- a safety helmet,
- protective goggles or face guard,
- safety gloves,
- safety shoes with steel toe cap,
- ear protection.

Before starting work check that the proper equipment is available in the workplace.

CAUTION!

Dirty or contaminated personnel protective equipment can cause disease.

Clean your personnel protective equipment

- **after every use,**
- **regularly, at least once a week.**

Personnel protective equipment for special work

Protect your face and eyes: During all work, and specifically work during which your face and eyes are exposed to hazard, a safety helmet with a face guard should be worn.

Use protective gloves when lifting or handling pieces with sharp edges.

Wear safety shoes when you position, dismantle or transport heave components.

1.10 Safety during operation

In the description of work with and on the geared drill we highlight the dangers specific to that work.

WARNING!

Before activating the geared drill, double check that this will not

- **endanger other people**
- **cause damage to equipment.**

Avoid unsafe working practises:

- Make sure your work does not endanger anyone.
- The instructions in this manual must be observed during assembly, handling, maintenance and repair.
- Do not work on the geared drill if your concentration is reduced, for example, because you are taking medication.
- Observe the rules for preventing accidents issued by your association for the prevention of occupational accidents and safety in the workplace or other inspection authorities.
- Inform the inspector of any danger or failure.
- Stay at the geared drill until all rotating parts have come to a halt.
- Use prescribed protective equipment. Make sure to wear a well-fitting work suit and, where necessary, a hairnet.
- Do not use protective gloves during drilling work.

1.11 Safety during maintenance

Inform operators in good time of any repair and maintenance work.

Report all safety relevant changes or performances details of the geared drill. Document all changes, have the operation manual changed accordingly and train the machine operators.

1.11.1 Disconnecting the geared drill and making it safe

Turn the machine off using the main switch before beginning any maintenance or repair work.

Use a padlock to prevent the switch being turned on without authorisation, and keep the key in a safe place.

All machine components and hazardous voltages disconnected. Only the points marked with the pictogram shown here are not included.

Place a warning sign on the machine.

1.11.2 Using lifting equipment

WARNING!

Use of unstable lifting and load suspension gear that breaks under load can cause very serious injuries or even death.

Check that the lifting and load suspension gear

- **is of sufficient load capacity,**
- **is in perfect condition.**

Observe the rules for preventing accidents issued by your association for the prevention of occupational accidents and safety in the workplace or other inspection authorities.

Fasten the loads properly. Never walk under suspended loads!

1.11.3 Mechanical maintenance work

Remove all protection and safety devices before starting any maintenance work and re-install them once the work has been completed. This includes:

- covers,
- safety indications and warning signs,
- earth (ground) connection.

If you remove protection or safety devices, refit them immediately after completing the work. Check if they are working properly!

1.12 Accident report

Inform your superiors and Hafco Metalmaster immediately in the event of accidents, possible sources of danger and any actions which almost led to an accident (near misses).

There are many possible causes.

The sooner they are notified, the faster the causes can be eliminated.

1.13 Electrical system

Have the machine and/or the electrical equipment checked regularly, and at least every six months.

Eliminate immediately all defects such as loose connections, defective wires, etc.

A second person must be present during work on live components, to disconnect the power in the event of an emergency.

Disconnect the geared drill immediately if there are any anomalies in the power supply!

☞ "Maintenance" on page 37

2 Technical data

The following information gives the dimensions and weight and is the manufacturer's authorised machine data.

2.1 Power connection			
Total connection rate	230V; 2,5 kW ~50Hz		
Cooling pump	230V; 40 W		
2.2 Drill capacity			
Drill capacity in steel [mm]	30		
Working radius [mm]	285		
Spindle sleeve travel [mm]	125		
2.3 Spindle seat			
Spindle seat	MK3		
Spindle sleeve feed [mm / rev]	Speed		
	1	2	3
	0,1	0,15	0,2
	☞ „Automatic spindle sleeve feed“ on page 30		
2.4 Drilling table			
Table measurements [mm] Length x width	400 x 500		
Size of T-slots [mm]	14		
Maximum distance [mm] Spindle - table	780		
Dimension base [mm] Length x width	420 x 643		
Maximum distance [mm] Spindle - base	1320		
2.5 Working area			
Height [mm]	2500		
Depth [mm	1700		
Width [mm	1500		
2.6 Revolutions			
Gear	L	M	H
Spindle rotating speeds [min^{-1}]	80 - 700	170 - 1500	400 - 3000
2.7 Floor load			
Ground resistance	14 kN/m^2		
2.8 Ambient conditions			
Temperature	5 - 35 °C		
Rel. humidity	25 - 80 %		

2.9 Operating material	
Gear oil for spindle sleeve gear 2.5 liters	Mobilgear 627 or equivalent oil ☞ "Recommended working materials" on page 42
Rack and upright of the drill	Commercial heavy grease
2.10 Coolant system	
Max. height of pressure [m]	3
Tank capacity [ccm]	4500
Max. rate of flow	2 l / min

2.11 Emissions

The level of the noise emitted by the geared drill is less than 76 dB(A).
If the geared drill is installed in an area where various machines are in operation, the acoustic influence (immission) on the operator of the geared drill may exceed 80 dB(A) at the workplace.

INFORMATION

This numerical value was measured on a new machine under proper operating conditions. Depending on the age respectively on the wear of the machine it is possible that the noise behavior of the machine changes.

Furthermore, the factor of the noise emission is also depending on manufacturing influencing factors, e.g. speed, material and clamping conditions.

INFORMATION

The mentioned numerical value is the emission level and not necessarily a safe working level.

Though there is a dependancy between the degree of the noise emission and the degree of the noise disturbance it is not possible to use it reliably to determine if further security measures are required or not.

The following factors influence the actual degree of the noise exposure on the operator:

- Characteristics of the workspace, e.g. size or damping behavior**,**
- Other noise sources, e.g. the number of machines,
- Other processes taking place in the proximity and the period of time during which the operator is exposed to the noise.

Furthermore, it is possible that the admissible exposure level might be different from country to country due to national regulations.
This information about the noise emission shall allow the operator of the machine to more easily evaluate the endangering and risks.

CAUTION

Depending on the overall noise pollution and the basic limit values the machine operators must wear an appropriate hearing protection.

We generally recommend to use noise protection and hearing protection.

Technical data

2.12 Dimensions

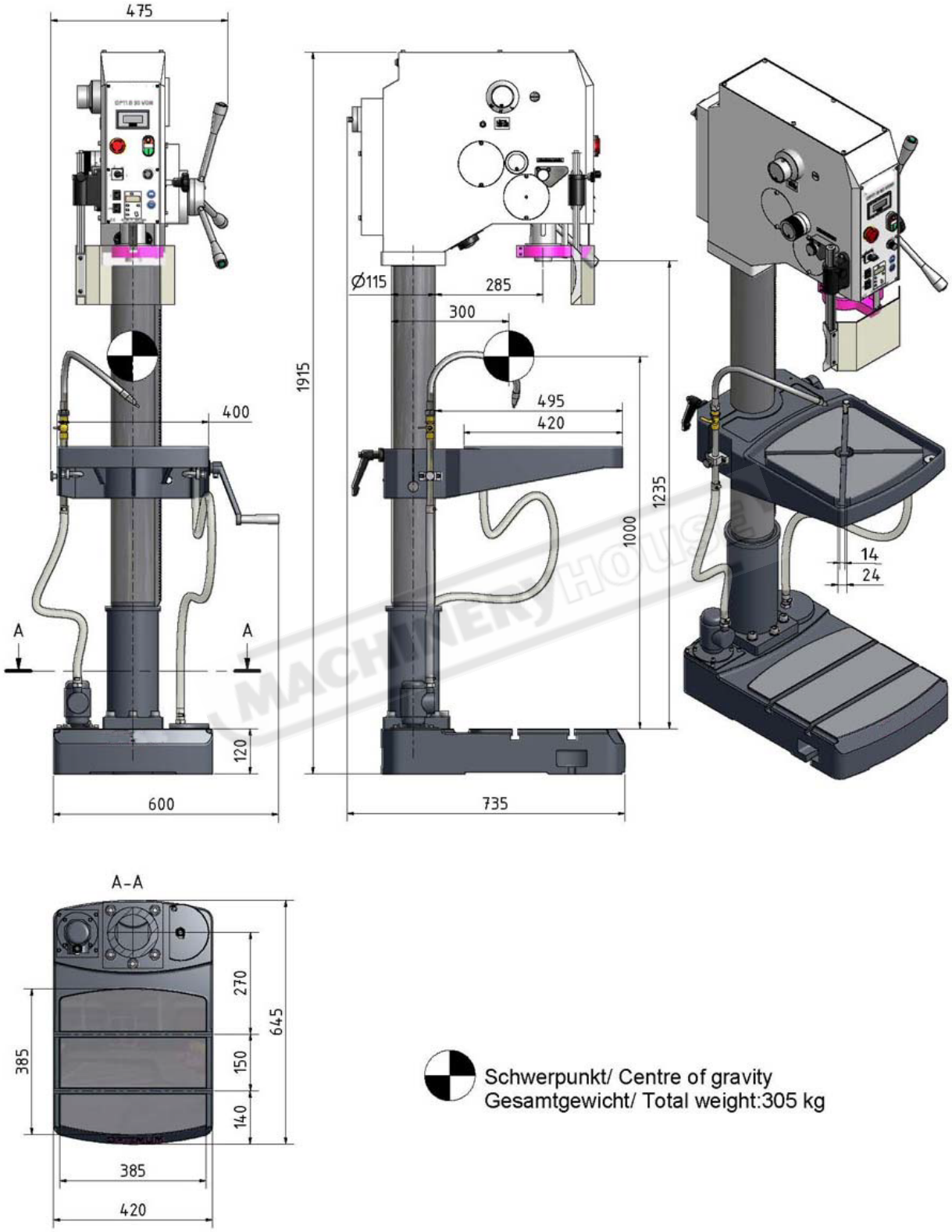


Fig. 2-1: Dimensions

3 Assembly

3.1 Scope of delivery

Check immediately upon delivery of the machine if there are any transport damages or shortages. Compare the scope of delivery with the included packing list.

3.1.1 Optionally available machine accessories

Designation	Item number
Machine vice MSO 100	3000100
Machine vice BMS 100	3000010
Machine vice BSI 100	3000210
Clamping tool assortment SPW 12	3352017
Twist drill HSS / MK3	3051003
Titanium twist drill kit 13 mm	3051010

3.2 Transportation

- Centers of gravity

- Load suspension point
  (Designation of the postions for load suspension gear)

- Prescribed transportation position
  (Marking of the top surface)

- Means of transport to be used
- Weights

WARNING!

Severe or lethal injuries due to machine parts tilting over or falling down from the forklift truck or transport vehicle. Observe the instructions and indications on the carrier box.

WARNING!

Severe or lethal injuries due to damaged hoisting gear and load suspension gear or hoisting gear and load suspension which is not sufficiently stable and breaks under load. Check if the hoisting gear and load suspension gears are of sufficient load bearing capacity and in proper condition.

Observe the rules for preventing accidents issued by your association for the prevention of occupational accidents and safety at the workplace or other inspection authorities.

Hold the loads properly.

Never walk under suspended loads!

3.3 Storage

ATTENTION!

In case of wrong or improper storage electrical and mechanical machine components might get damaged or destroyed.

Store the packaged or already unpacked parts only under the intended environmental conditions.

Observe the instructions and indications on the carrier box

- Fragile goods
  (Goods requiring careful handling)

- Protect against moisture and humid environment
  ☞ "Ambient conditions" on page 15.

- Prescribed position of the packing case
  (Marking of the top surface - arrows pointing to the top)

- Maximum stacking height

  Example: not stackable - do not stack a second packing case on top of the first one.

Hafco Metalmaster if the geared drill and accessories have to be stored for a period of more than three months or under different external conditions to those given here.

3.4 Installation and assembly

3.4.1 Requirements of installation site

Organize the workplace around the geared drill in accordance with local safety regulations.

INFORMATION

In order to achieve good operability and high processing accuracy as well as long durability of the machine the place of installation should fulfill certain criteria.

Observe the following points:

- The machine must only be installed and operated in dry, ventilated places.
- Avoid places nearby machine causing chips or dust.
- The installation place must be vibration-free and away from presses, planing machines, etc.
- The substructure must be appropriate for the operation of a geared drill. Also observe the bearing capacity and evenness of the ground.
- The substructure must be prepared in a way that eventually used cooling agent cannot penetrate into the ground.
- Protruding parts - such as stops, handles, etc. - need to be protected by the customer in a way that nobody is endangered.
- Make available sufficient space for the staff preparing the machine and the operators as well as material transportation.
- Also consider the accessibility for setting and maintenance works.
- Provide for sufficient illumination (minimum value: 500 luces, measured at the tool tip). In case of less illuminance provide for additional illumination for instance using a separate workplace lamp.

INFORMATION

The mains plug of the geared drill must be freely accessible.

3.4.2 Assembly

WARNING!

Danger of crushing and overturning.

The geared drill must be installed by at least 2 people.

INFORMATION

The geared drill is delivered pre-assembled.

3.4.3 Load suspension point

WARNING!

Severe or lethal injuries due to damaged hoisting gear and load suspension gear or hoisting gear and load suspension which is not sufficiently stable and breaks under load.

- ➜ Fix the load suspension gear around the drill head. To do so, use a lifting sling.
- ➜ Use an appropriate hoisting device, e.g. a crane.
- ➜ Make sure to have an equal load suspension so that the geared drill does not tilt when lifting.
- ➜ Make sure that the load suspension gear does not damage any add-on pieces or causes damages to the paintwork.

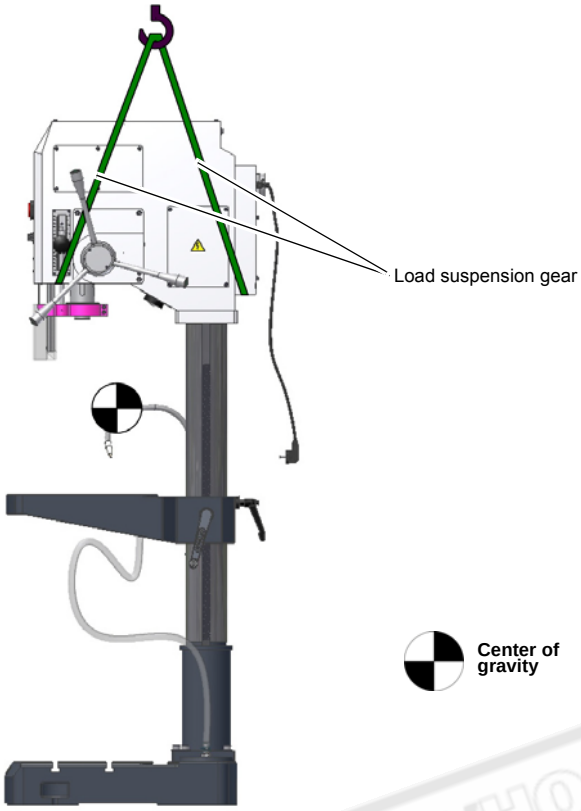


Fig. 3-1: Example of load suspension and lifting loads

3.5 Installation

➜ Check if the substructure of the geared drill is leveled using a spirit level.

➜ Check if the substructure is sufficiently stable and rigid. The total weight amounts to 305 kg.

➜ Position the geared drill on the provided substructure.

➜ Fix the geared drill on the provided through holes on the machine base.

WARNING!

The quality of the substructure and the type of fixture of the machine base with the substructure must be sufficiently stable to bear the load of the geared drill. The substructure must be even with the ground. Check if the substructure of the geared drill is leveled by means of a spirit level.

3.6 Fixing

In order to achieve the necessary stability of the geared drill, the base of the machine must be firmly bolted to the substructure. We recommend you to use anchor cartridges respectively heavy duty anchors.

➜ Fix the base of the geared drill to the substructure by screwing through the provided through holes.

The through holes are marked with arrows on the machine base.

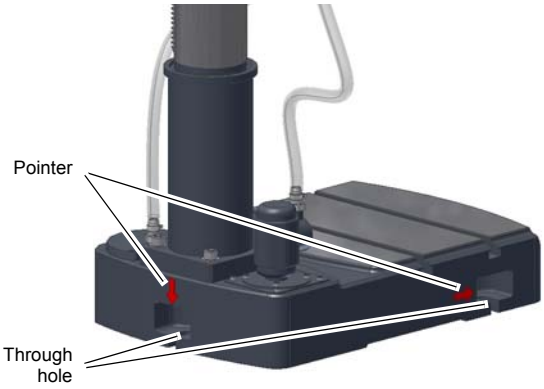


Fig. 3-2: Marking the fastening points

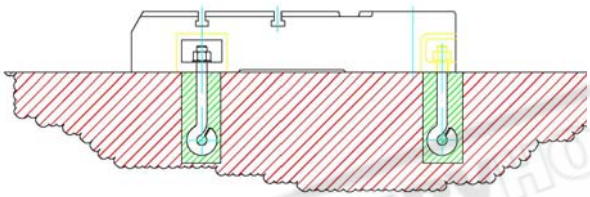


Fig. 3-3: Example floor anchoring

ATTENTION!

Only tighten the fastening screws on the geared drill in a way that it is safely fixed and cannot break away or tilt over during operation.

If the fastening screws are too tight or if the machine is fixed on an uneven substructure it may result in a fracture of the machine base.

3.6.1 Assembly guide

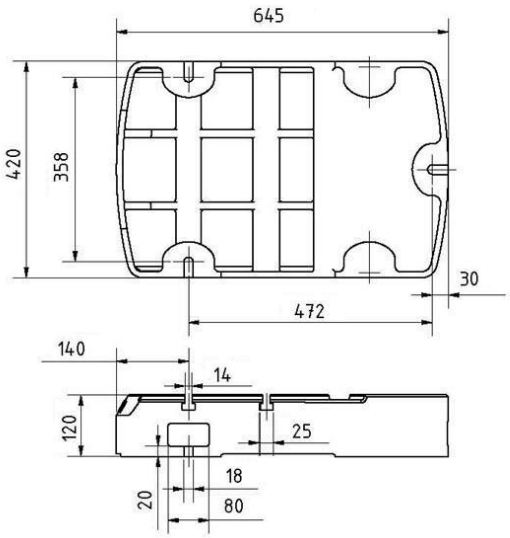


Fig. 3-4: Assembly guide

3.7 First use

WARNING!

Endangering due to the use of inappropriate tool holders or operation at inadmissible speeds.

Only use the tool holders (e.g. drill chucks) which were delivered together with the machine or are offered as optional equipment by HAFCO METALMASTER.

Use the tool holders at the intended admissible speed range.

Tool holders must only be modified in compliance with the recommendations of HAFCO METALMASTER or of the manufacturer of clamping tools.

WARNING!

Staff and equipment may be endangered if the geared drill is first used by unexpert staff.

We do not take responsibility for damage caused by incorrect commissioning.

3.7.1 Power supply

- ➜ Connect the electrical supply cable.
- ➜ Check the fusing (fuse) of your electrical supply according to the technical instructions regarding the total connected power of the geared drill.

ATTENTION!

The geared drill is delivered without operating material (oil, coolant). First fill in oil and coolant. ☞ **"Oil level of the gear of the drilling spindle sleeve" on page 40**

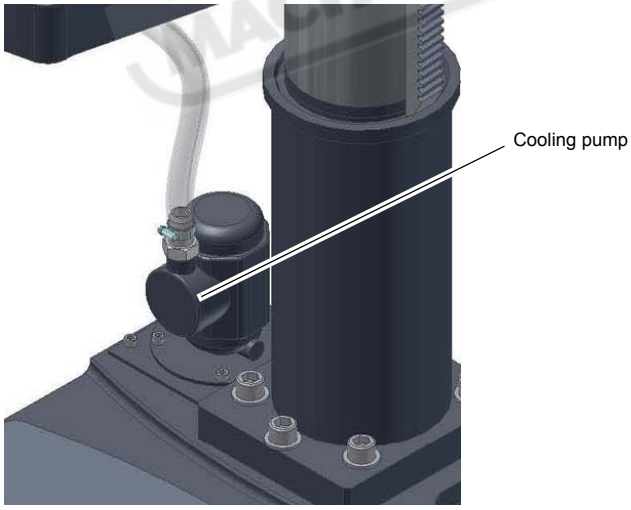


Fig. 3-5: Cooling pump B30 VGM

ATTENTION!

The coolant pump also delivers if it turns in the wrong direction. Due to the wrong turning direction the pump is destroyed within a short time.

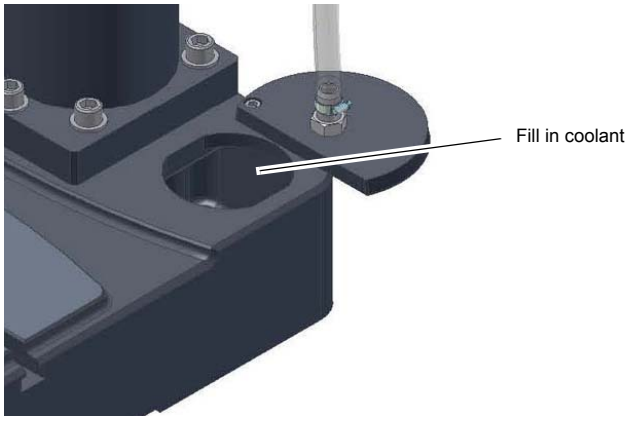


Fig. 3-6: Coolant filler hole

3.7.2 Checks

➜ Check the geared drill as indicated under ☞ "Safety check" on page 11.

➜ Check the geared drill as indicated under ☞ "Oil level of the gear of the drilling spindle sleeve" on page 40.

4 Handling

4.1 Safety

Use the geared drill only under the following conditions:

- The geared drill is in proper working order.
- The geared drill is used as prescribed.
- Follow the instruction manual.
- All safety devices are installed and activated.

All anomalies should be eliminated immediately. Stop the machine immediately in the event of any abnormality in operation and make sure it cannot be started up accidentally or without authorisation.

Notify the person responsible immediately of any modification.

☞ "Safety during operation“ on page 12

4.2 Control and indicating elements

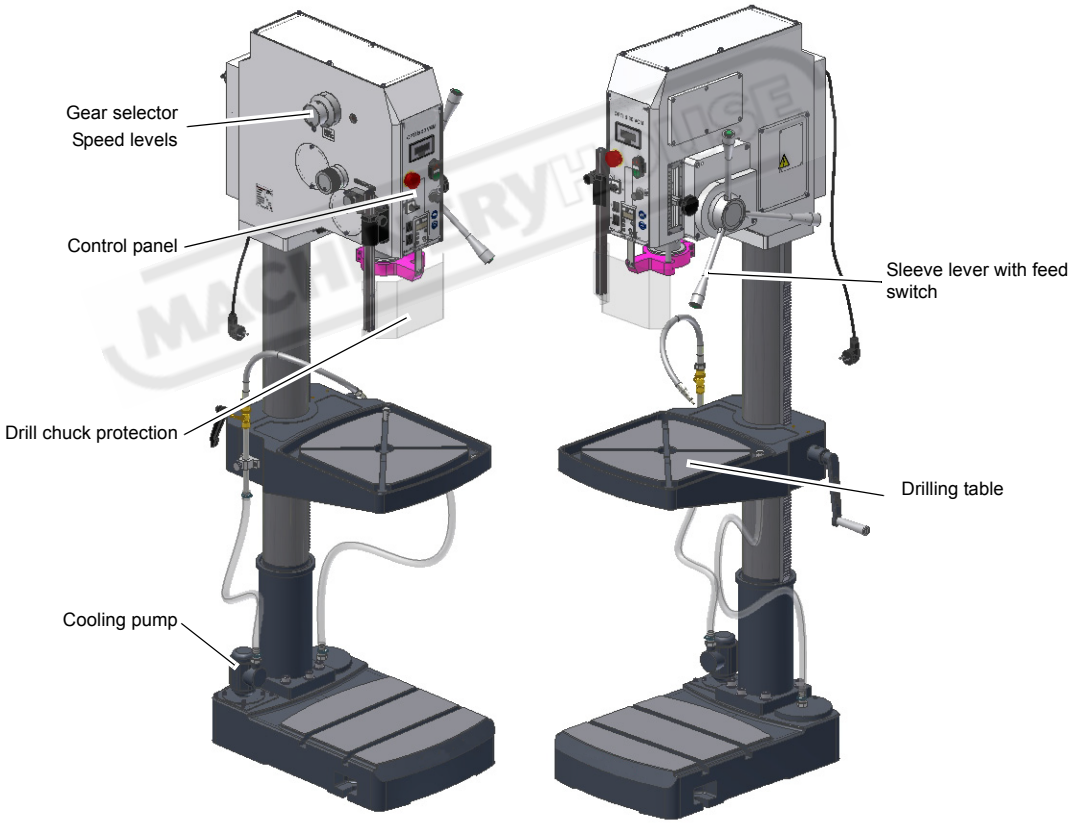


Fig. 4-1: Geared drill B30 VGM

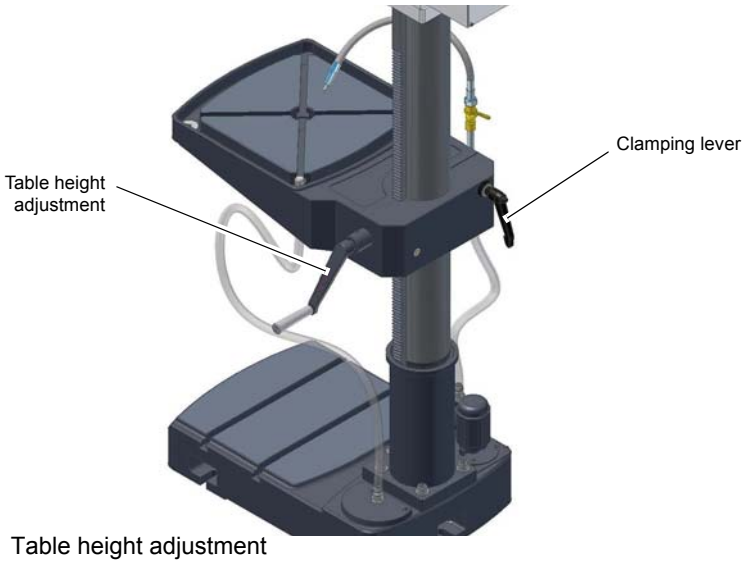


Fig.4-2: Table height adjustment

4.2.1 Control panel

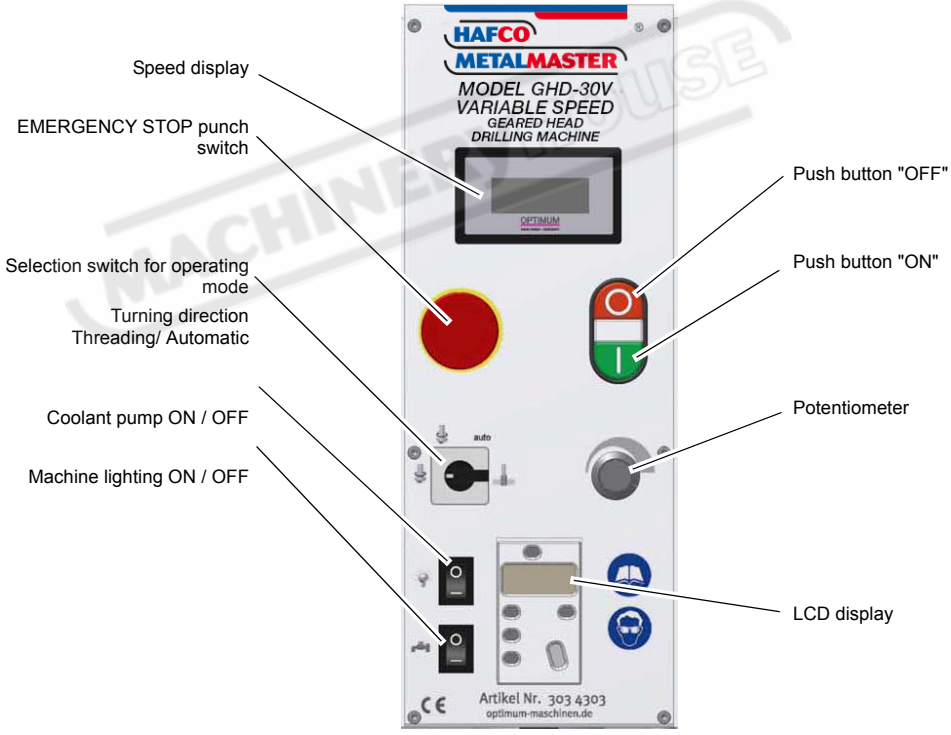
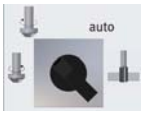
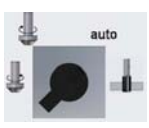


Fig.4-3: Control elements on the control panel



Selection switch for operating mode

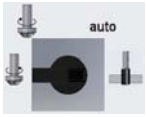
Select the operational mode "auto, threading or clockwise rotation respectively anti-clockwise rotation" by actuating the selection switch.



Operational mode "auto"

In the automatic mode the engine starts up according to a predefined path via the drilling depth limit of the sleeve and stop at the end position. This way it is not necessary to actuate the push button Start and Stop for repeated drilling tasks.

Handling



Operational mode "threading“

In the thread cutting mode the engine automatically starts up according to a predefined path via the drilling depth stop of the sleeve and automatically changes the sense of rotation as soon as the predefined depth had been achieved. The screw-tap is drawn out of the workpiece.

Rotation switch

Standard operation, selection clockwise or anti-clockwise rotation.

Potentiometer

Speed setting "VARIO"

Push button ON

The "push-button ON" switches the turn on of the drilling spindle.

Push button OFF

The "push-button OFF" switches the turn of the drilling spindle off.

Coolant pump ON / OFF

Switches the coolant pump.

Machine illumination ON / OFF

Switches the illumination on or off.

Indicator light

The indicator light on the operating panel must be illuminated.

Main switch

Interrupts or connects the power supply.

4.2.2 Gear selector switch

The speed of the drill spindle is set by actuating the gear selector switch and the potentiometer.

ATTENTION!

Changing the speed when the bit-holder spindle is turning may cause damage to the machine.

- **Disconnect the machine before changing the speed.**
- **Wait until the bit-holder spindle has come to a complete halt.**

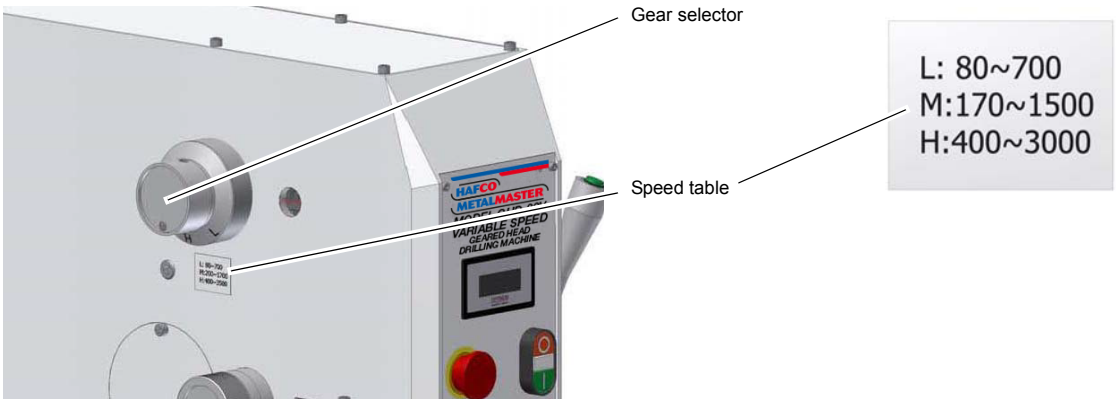


Fig.4-4: Gear selector

INFORMATION

When choosing the right rate, use the speed table on the bit-holder head.

4.3 Drill depth stop

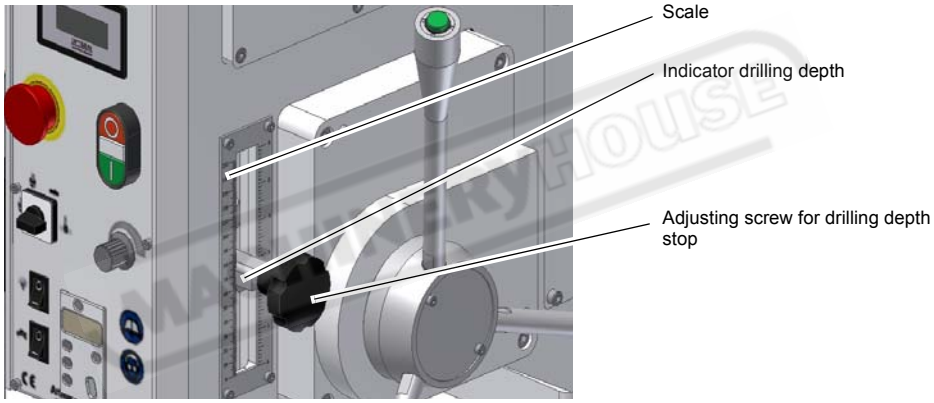


Fig.4-5: Drill depth stop

❍ When you are drilling several holes of the same depth you can use the drill depth stop.

➜ Unscrew the set screw of the drill depth stop and shift it until the required drill depth coincides with the indicator.

➜ Retighten the set screw drill depth stop.

❍ The spindle can now only be lowered to the set depth.

4.4 Digital drill depth display

Measuring range	mm	0 - 999,99
	inch	0 - 39,371"
Display accuracy	mm	0,01
	inch	0,0004"
Power supply		Button cell 1,55V 145mAh (SR44) 11,6 x 5,4mm

4.4.1 Assembly

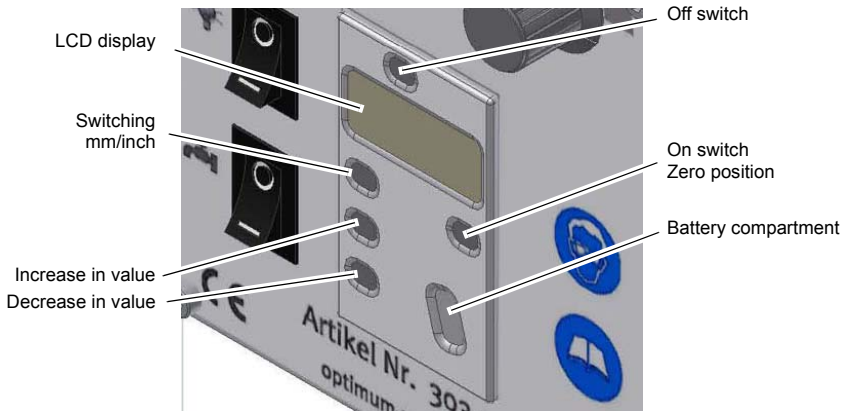


Fig. 4-6: Digital display

- ON / O,
  switches the display on and sets the display to "0".
- mm/in,
  switches the measuring unit from *millimeter* to *inch* and reverse.
- OFF,
  switches the display off.
- ▲,
  performs an increase in value.
- ▼,
  performs a reduction in value.

INFORMATION

Wait for about 30 seconds before inserting the new battery. Please make sure that the contacts are metallic bright and free from coatings originated by leaking or gassing batteries. Grip new batteries only using plastic tweezers: if possible, do not touch it with your hands in order to avoid formation of oxide and never grip it using metal tweezers in order to avoid a short circuit. Insert new button cells into the digital display in most cases with the labeling to the top. The battery compartment must be closed after inserting the button cell.

4.4.2 Malfunctions

Malfunction	Cause/ possible effect	Remedy
Display is blinking	• Tension too little	• Replace battery
Data display does not change	• Interferences in the switching circuit	• Remove battery and reinsert it after about 30 sec.
No display of data	• No power supply • Battery tension less than 1.55V	• Clean the contacts of the battery • Replace battery

4.5 Spindle sleeve feed

Spindle sleeve feed can be manual or automatic.

4.5.1 Manual spindle sleeve feed

Use the spindle sleeve lever to move the spindle sleeve downward. The spindle sleeve is pulled back to its original position by a spring.

4.5.2 Automatic spindle sleeve feed

The forward feed is activated by the push buttons in the spindle sleeve lever. The forward feed is performed electromagnetically. The switching-off of the forward feed occurs by the drill depth stop or by reactivating the push buttons at the spindle sleeve.

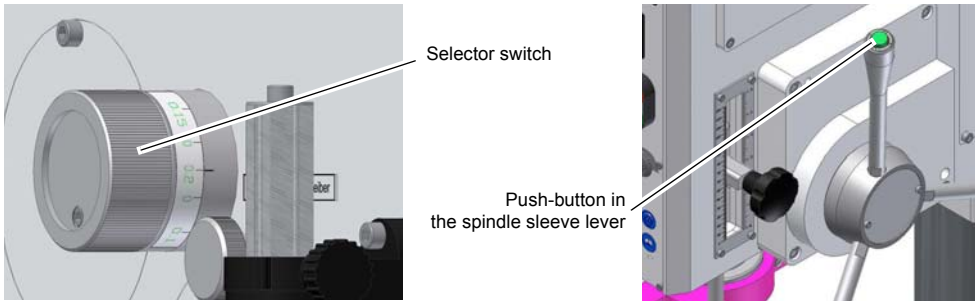


Fig.4-7: Automatic sleeve feed

➜ Choose the feed speed of the spindle sleeve by turning the selector switch:
- 0.10 mm / spindle turn (to Ø 30 mm)
- 0.15 mm / spindle turn (to Ø 24 mm)
- 0.20 mm / spindle turn (to Ø 20 mm)

INFORMATION

The higher the preset number of revolutions, the greater the feed speed in the spindle sleeve. Make sure you set the right speed for the material used and the diameter of the bit.

➜ Adjust the drill depth stop ☞ "Drill depth stop" on page 28.

➜ Pull the spindle sleeve lever upwards. This will activate the spindle sleeve feed.

❍ Once the preset drill depth is reached, the depth stop pushes the feed lever down mechanically, stopping the automatic advance of the bit. The drilling spindle sleeve is pulled back to the upper position by the spring.

4.6 Disassembly, assembly of drill chucks and drills

4.6.1 Drill chuck

Please proceed as follows in order to clamp a drill:

➜ Hold the top part of the drill chuck.

➜ Turn the bottom part.

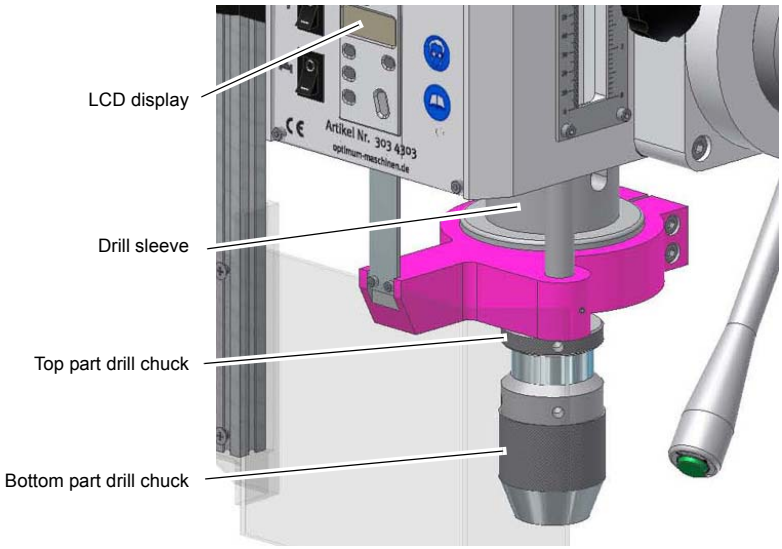


Fig.4-8: Drill chuck

ATTENTION!

Make sure that the clamped tool is firmly and correctly seated.

4.6.2 Completion with half-automatic integrated drill drift

ATTENTION!

The tool and or the drill chuck fall down. Firmly hold the tool ③ or the drill chuck when expelling it.

ATTENTION!

Do not try to expel the tool in the intermediate position. This might lead to damages of the integrated drill drift or of the feed handle.

The taper mandrel is released from the drill spindle as described below:

➜ Move the sleeve downward until it is possible to insert the locking pin ① (Fig. 4-10 (b) intermediate position).

➜ Move the locking pin ① until the locking pin completely cams in (Fig. 4-10 (c) ejection position).

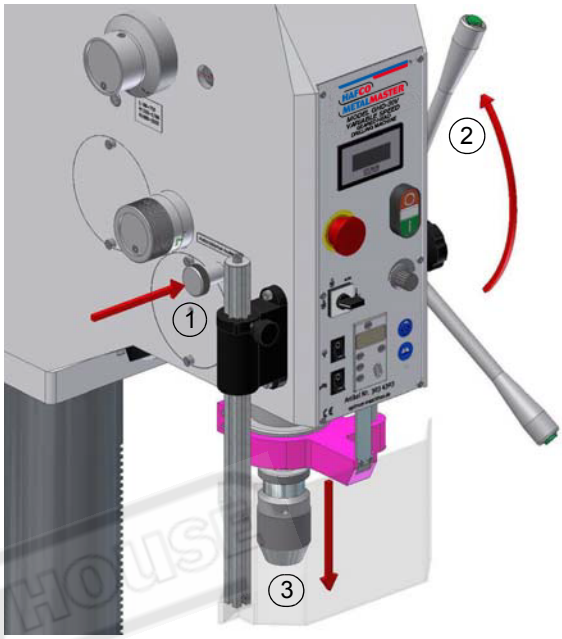


Fig. 4-9: Disassembly

➜ Push the sleeve lever ② upward by a rapid and powerful movement.

❍ The taper mandrel is pressed out of the drill sleeve.

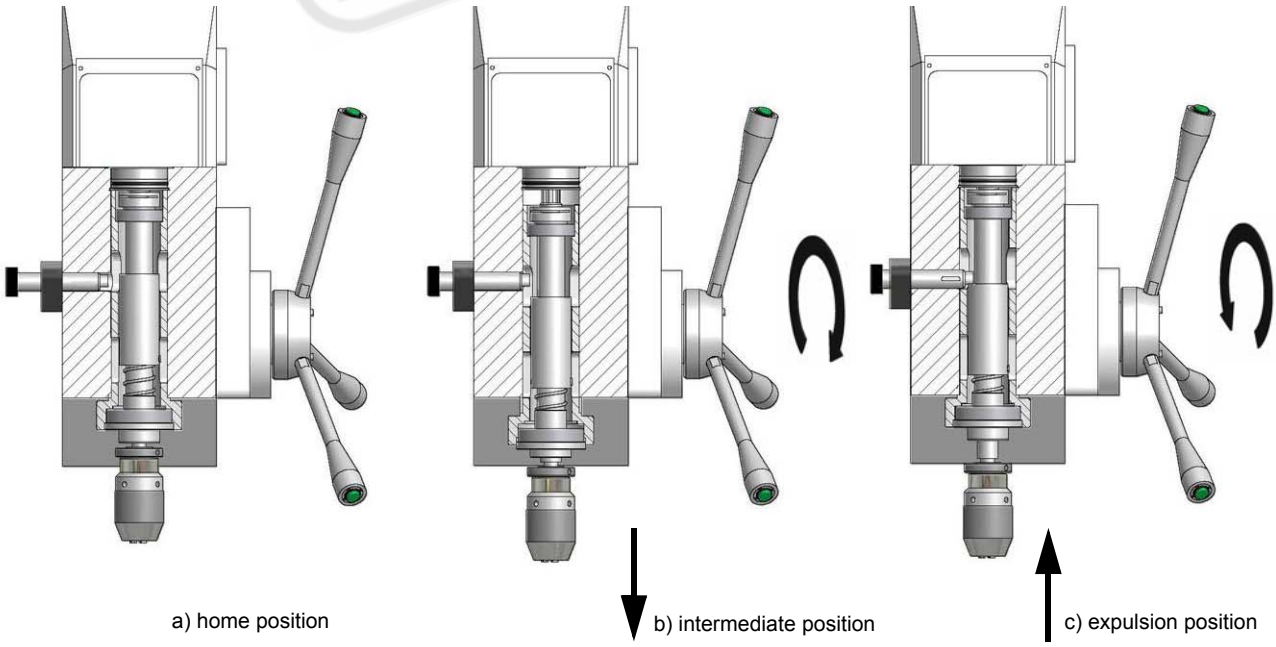


Fig. 4-10: Function representation of the drill drift (sectional drawing)

4.6.3 Fitting the bit-holder

The drill chuck is secured against torsion in the drill spindle by means of a form-fit connection (dog).

A frictionally engaged connection holds and centers the drill chuck with the taper mandrel in the drill spindle.

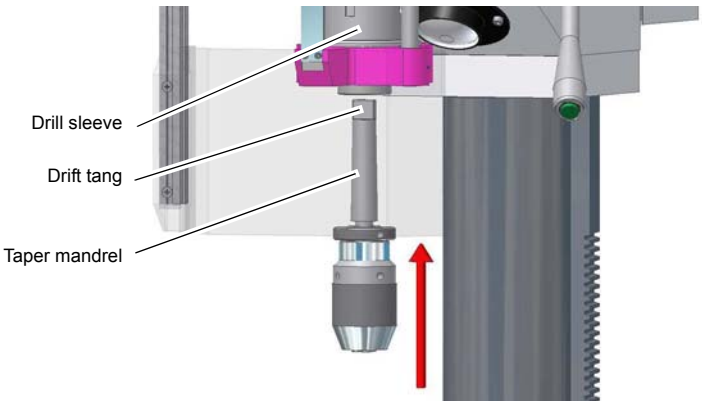


Fig.4-11: Taper mandrel

➜ Check or clean the conical seat in the bit-holder spindle and in the conical chuck of the tool or the bit-holder.

➜ Press the conical chuck into the bit-holder spindle.

4.7 Coolant unit

When performing rotational movements high temperatures are generated at the cutting edge due to the occurring friction.

Cool down the tool when drilling. This way you achieve better working result and a longer service life of the tool.

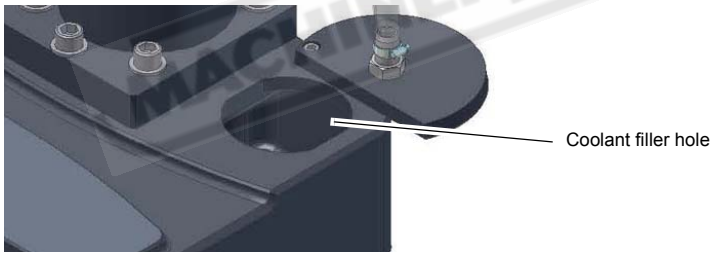


Fig.4-12: Filler hole

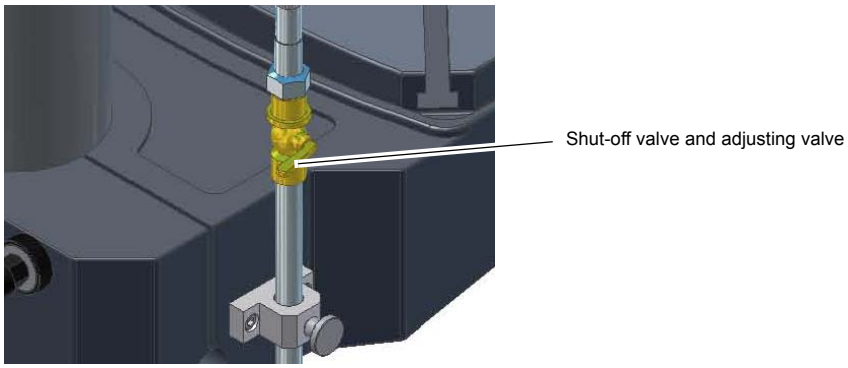


Fig.4-13: S-off valve and adjusting valve for collant

➜ Adjust the flow using the shut-off and dosing tap.

ATTENTION!

Failure of the pump in the event of dry running.

The pump is lubricated by the cooling agent. Do not start up the pump without cooling agent.

INFORMATION

Use a water soluble, environmentally compatible drilling emulsion procured from the specialized trade.

Re-use cooling agents and lubricants.

Dispose of the no longer used coolant and lubricating agents in an environmentally friendly way.

Follow the manufacturer's disposal instructions.

4.8 Working with the machine

4.8.1 Preparation

WARNING!

During drilling work it is necessary to firmly secure the piece to be drilled, in order to ensure that it is not moved by the bit. Examples of suitable securing of the tool includes a part-holder bolt or securing clamps.

Put a wooden or plastic board beneath the piece so that you do not drill through to the work table or the part-holder bolt.

If necessary, adjust the required drilling depth using the depth stop to obtain a constant result.

Make sure to use a dust remover unit when working with wood, as sawdust can be harmful to health.

Use a suitable protective mask for any work that generates dust.

➜ First, select the speed of the bit. This will depend on the diameter of the bit being used and on the material.

☞ "Speed table" on page 28

☞ "Determining the cutting speed and the speed" on page 34

4.8.2 Drilling

WARNING!

Danger of clothing and/or long hair getting caught.

- **Wear closely fitting clothes when drilling.**
- **Do not use gloves.**
- **If necessary wear a hairnet.**

CAUTION!

Danger of crushing!

Do not grap between the drill head and the sleeve. Risk of crushing due to the sleeve lever. The sleeve is reset by means of a recuperation spring. Do not release the spindle sleeve when resetting the spindle.

Spindle sleeve

➜ Evenly actuate the sleeve feed when feeding the sleeve manually but not too forcefully.

Drill

➜ Thin drill bits easily break. Retract the drill bit for deep holes more often in order to extract the drill chips from the hole.

❍ Cooling lubricants reduce the friction and increase the service life of the drill bit.

5 Determining the cutting speed and the speed

5.1 Table cutting speeds / infeed

Material table						
Material to be processed	Recommended cutting speed **Vc** in m/min	Recommended infeed **f** in mm/revolution				
		Drill bit diameter **d** in mm				
		2...3	>3...6	>6...12	>12...25	>25...50
Unalloyed construction steels < 700 N/mm²	30 - 35	0.05	0.10	0.15	0.25	0.35
Alloyed construction steels > 700 N/mm²	20 - 25	0.04	0.08	0.10	0.15	0.20
Alloyed steels < 1000 N/mm²	20 - 25	0.04	0.08	0.10	0.15	0.20
Steels, low stability < 800 N/mm²	40	0.05	0.10	0.15	0.25	0.35
Steel, high stability > 800 N/mm²	20	0.04	0.08	0.10	0.15	0.20
non-rust steels > 800 N/mm²	12	0.03	0.06	0.08	0.12	0.18
Cast iron < 250 N/mm²	15 - 25	0.10	0.20	0.30	0.40	0.60
Cast iron > 250 N/mm²	10 - 20	0.05	0.15	0.25	0.35	0.55
CuZn alloy brittle	60 - 100	0.10	0.15	0.30	0.40	0.60
CuZn alloy ductile	35 - 60	0.05	0.10	0.25	0.35	0.55
Aluminum alloy up to 11% Si	30 - 50	0.10	0.20	0.30	0.40	0.60
Thermoplastics	20 - 40	0.05	0.10	0.20	0.30	0.40
Thermosetting materials with organic filling	15 - 35	0.05	0.10	0.20	0.30	0.40
Thermosetting materials with anorganic filling	15 - 25	0.05	0.10	0.20	0.30	0.40

5.2 Speed table

Vc in m/min	4	6	8	10	12	15	18	20	25	30	35	40	50	60	80	100
Drill bit **Ø** in mm	Speed **n** in rpm															
1,0	1274	1911	2548	3185	3822	4777	5732	6369	7962	9554	11146	12739	15924	19108	25478	31847
1,5	849	1274	1699	2123	2548	3185	3822	4246	5308	6369	7431	8493	10616	12739	16985	21231
2,0	637	955	1274	1592	1911	2389	2866	3185	3981	4777	5573	6369	7962	9554	12739	15924
2,5	510	764	1019	1274	1529	1911	2293	2548	3185	3822	4459	5096	6369	7643	10191	12739
3,0	425	637	849	1062	1274	1592	1911	2123	2654	3185	3715	4246	5308	6369	8493	10616
3,5	364	546	728	910	1092	1365	1638	1820	2275	2730	3185	3640	4550	5460	7279	9099
4,0	318	478	637	796	955	1194	1433	1592	1990	2389	2787	3185	3981	4777	6369	7962

Determining the cutting speed and the speed

Vc in m/min	4	6	8	10	12	15	18	20	25	30	35	40	50	60	80	100
Drill bit **Ø** in mm	Speed **n** in rpm															
4,5	283	425	566	708	849	1062	1274	1415	1769	2123	2477	2831	3539	4246	5662	7077
5,0	255	382	510	637	764	955	1146	1274	1592	1911	2229	2548	3185	3822	5096	6369
5,5	232	347	463	579	695	869	1042	1158	1448	1737	2027	2316	2895	3474	4632	5790
6,0	212	318	425	531	637	796	955	1062	1327	1592	1858	2123	2654	3185	4246	5308
6,5	196	294	392	490	588	735	882	980	1225	1470	1715	1960	2450	2940	3920	4900
7,0	182	273	364	455	546	682	819	910	1137	1365	1592	1820	2275	2730	3640	4550
7,5	170	255	340	425	510	637	764	849	1062	1274	1486	1699	2123	2548	3397	4246
8,0	159	239	318	398	478	597	717	796	995	1194	1393	1592	1990	2389	3185	3981
8,5	150	225	300	375	450	562	674	749	937	1124	1311	1499	1873	2248	2997	3747
9,0	142	212	283	354	425	531	637	708	885	1062	1238	1415	1769	2123	2831	3539
9,5	134	201	268	335	402	503	603	670	838	1006	1173	1341	1676	2011	2682	3352
10,0	127	191	255	318	382	478	573	637	796	955	1115	1274	1592	1911	2548	3185
11,0	116	174	232	290	347	434	521	579	724	869	1013	1158	1448	1737	2316	2895
12,0	106	159	212	265	318	398	478	531	663	796	929	1062	1327	1592	2123	2654
13,0	98	147	196	245	294	367	441	490	612	735	857	980	1225	1470	1960	2450
14,0	91	136	182	227	273	341	409	455	569	682	796	910	1137	1365	1820	2275
15,0	85	127	170	212	255	318	382	425	531	637	743	849	1062	1274	1699	2123
16,0	80	119	159	199	239	299	358	398	498	597	697	796	995	1194	1592	1990
17,0	75	112	150	187	225	281	337	375	468	562	656	749	937	1124	1499	1873
18,0	71	106	142	177	212	265	318	354	442	531	619	708	885	1062	1415	1769
19,0	67	101	134	168	201	251	302	335	419	503	587	670	838	1006	1341	1676
20,0	64	96	127	159	191	239	287	318	398	478	557	637	796	955	1274	1592
21,0	61	91	121	152	182	227	273	303	379	455	531	607	758	910	1213	1517
22,0	58	87	116	145	174	217	261	290	362	434	507	579	724	869	1158	1448
23,0	55	83	111	138	166	208	249	277	346	415	485	554	692	831	1108	1385
24,0	53	80	106	133	159	199	239	265	332	398	464	531	663	796	1062	1327
25,0	51	76	102	127	153	191	229	255	318	382	446	510	637	764	1019	1274
26,0	49	73	98	122	147	184	220	245	306	367	429	490	612	735	980	1225
27,0	47	71	94	118	142	177	212	236	295	354	413	472	590	708	944	1180
28,0	45	68	91	114	136	171	205	227	284	341	398	455	569	682	910	1137
29,0	44	66	88	110	132	165	198	220	275	329	384	439	549	659	879	1098
30,0	42	64	85	106	127	159	191	212	265	318	372	425	531	637	849	1062
31,0	41	62	82	103	123	154	185	205	257	308	360	411	514	616	822	1027
32,0	40	60	80	100	119	149	179	199	249	299	348	398	498	597	796	995
33,0	39	58	77	97	116	145	174	193	241	290	338	386	483	579	772	965
34,0	37	56	75	94	112	141	169	187	234	281	328	375	468	562	749	937
35,0	36	55	73	91	109	136	164	182	227	273	318	364	455	546	728	910
36,0	35	53	71	88	106	133	159	177	221	265	310	354	442	531	708	885
37,0	34	52	69	86	103	129	155	172	215	258	301	344	430	516	689	861
38,0	34	50	67	84	101	126	151	168	210	251	293	335	419	503	670	838

Vc in m/min	4	6	8	10	12	15	18	20	25	30	35	40	50	60	80	100
Drill bit **Ø** in mm	Speed **n** in rpm															
39,0	33	49	65	82	98	122	147	163	204	245	286	327	408	490	653	817
40,0	32	48	64	80	96	119	143	159	199	239	279	318	398	478	637	796
41,0	31	47	62	78	93	117	140	155	194	233	272	311	388	466	621	777
42,0	30	45	61	76	91	114	136	152	190	227	265	303	379	455	607	758
43,0	30	44	59	74	89	111	133	148	185	222	259	296	370	444	593	741
44,0	29	43	58	72	87	109	130	145	181	217	253	290	362	434	579	724
45,0	28	42	57	71	85	106	127	142	177	212	248	283	354	425	566	708
46,0	28	42	55	69	83	104	125	138	173	208	242	277	346	415	554	692
47,0	27	41	54	68	81	102	122	136	169	203	237	271	339	407	542	678
48,0	27	40	53	66	80	100	119	133	166	199	232	265	332	398	531	663
49,0	26	39	52	65	78	97	117	130	162	195	227	260	325	390	520	650
50,0	25	38	51	64	76	96	115	127	159	191	223	255	318	382	510	637

5.3 Examples to calculatory determine the required speed for your drilling machine

The necessary speed is depending on the diameter of the drill bit, on the material which is being machined as well as on the cutting material of the drill bit.

Material which needs to be drilled: St37

Cutting material (drill bit): HSS spiral bit

Set point of the cutting speed [V_c] according to the table: 40 meters per minute

Diameter [d] of your drill bit: 30 mm = 0,03 m [meters]

Selected infeed [f] according to the table: about 0.35 mm/rev

Speed $n = \frac{\vartheta c}{\pi \times d} = \frac{40 m}{min \times 3,14 \times 0,03 m} = 425 (rpm)$

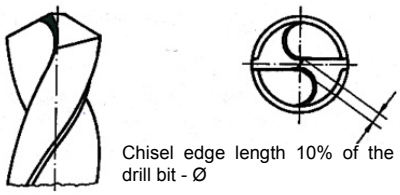
Set a speed on your drilling machine which is less than the determined speed.

INFORMATION

In order to facilitate the production of larger drill holes they need to be pre-drilled. This way, you reduce the cutting forces and improve the guiding of the drill bit.

The pre-drilling diameter is depending on the length of the chisel edge. The chisel edge does not cut, but it squeezes the material. The chisel edge is positioned at an angle of 55° to the major cutting edge.

As a general rule of thumb it applies: The pre-drilling diameter is depending on the length of the chisel edge.



Chisel edge length 10% of the drill bit - Ø

Recommended working steps for a drilling diameter of 30 mm

Example:

1st working step: Pre-drilling with Ø 5 mm.

2nd working step: Pre-drilling with Ø 15 mm.

3rd working step: Drilling with Ø 30 mm.

6 Maintenance

In this chapter you will find important information about

- Inspection,
- Maintenance,
- Repairs.

The diagram below shows which of these headings each task falls under.

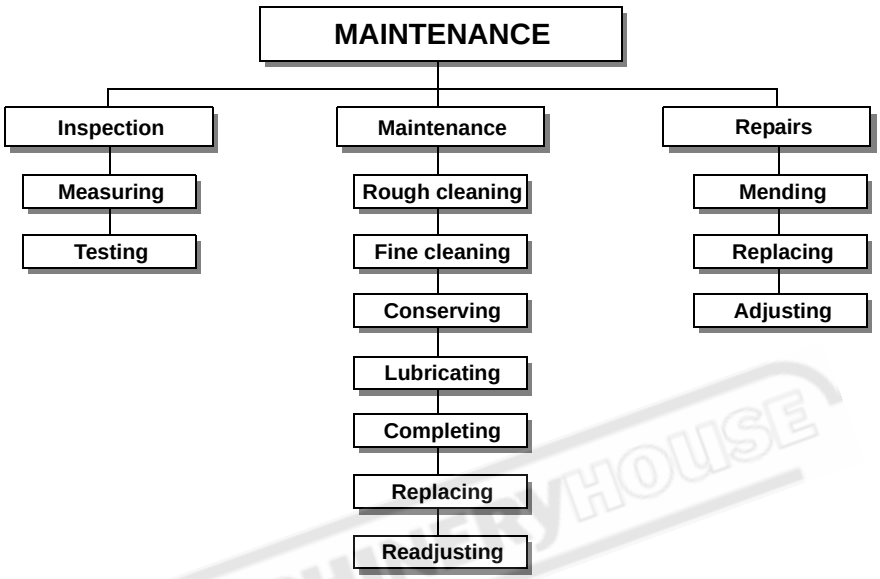


Fig.6-1: Maintenance – Definition according to DIN 31051

ATTENTION!

Properly performed regular maintenance is an essential prerequisite for

- **safe operation,**
- **fault-free operation,**
- **long service life of the geared drill and**
- **the quality of the products you manufacture.**

Installations and equipment from other manufacturers must also be in optimum condition.

ENVIRONMENTAL PROTECTION

During work on the bit-holder head, make sure that

- **collector vessels are used having sufficient capacity for the amount of liquid to be collected.**
- **liquids and oils are not spilt on the ground.**

Clean up any spilt liquids or oils immediately using proper oil-absorption methods and dispose of them in accordance with current legal requirements on the environment.

Cleaning up spillages

Do not re-introduce liquids spilt outside the system during repair or as a result of leakage from the reserve tank: collect them in a collecting vessel to be disposed of.

Disposal

Never dump oil or other pollutant substances in water inlets, rivers or channels.

Used oils must be delivered to a collection centre. Consult your superior if you do no know where the collection centre is.

6.1 Safety

WARNING!

The consequences of incorrect maintenance and repair work may include:

- **very seriuos injury to staff working on the machine,**
- **damage to the machine.**

Only qualified staff should carry out maintenance and repair work on the machine.

6.1.1 Preparation

WARNING!

Only carry out work on the machine if it has been disconnected from the mains. ☞ "Disconnecting the geared drill and making it safe" on page 13

Place a warning label.

6.1.2 Restarting

Run a safety check before restarting the machine.

☞ "Safety check" on page 11

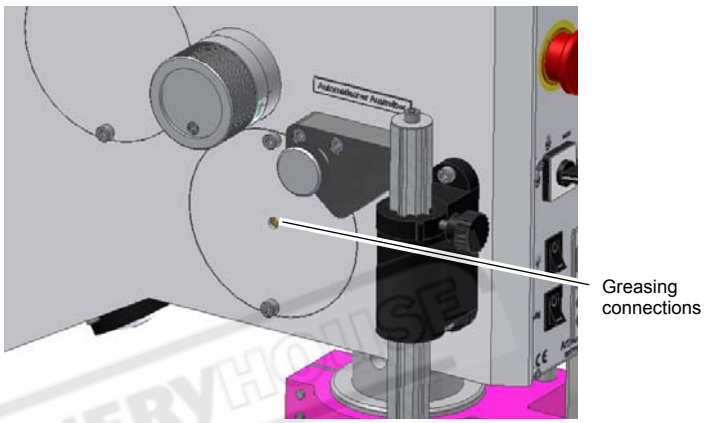
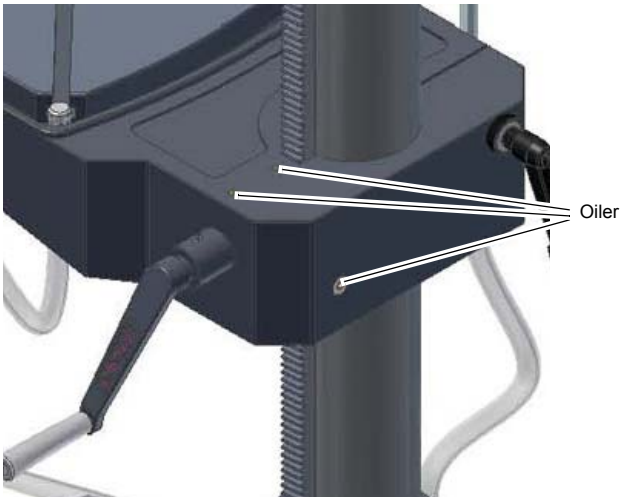
WARNING!

Before connecting the machine you must check that

- **there is no danger for staff,**
- **the machine is not damaged.**

6.2 Revision and maintenance

The type and extent of wear depends to a large extent on the individual usage and service conditions. For this reason, all the intervals are only valid for the authorised conditions.

Interval	Where?	What?	How?
Start of shift after each maintenance or repair operation	Machine	☞ "Safety check" on page 11	
Every day	Bit-holder head	Lubricate	➜ Oil the greasing connections.  Fig. 6-2: Greasing connections on bit-holder head
Every month	Oiler	Oil	➜ Grease all oilers using machine oil. Do not use a grease gun or similar tools.  Fig. 6-3: Oiler

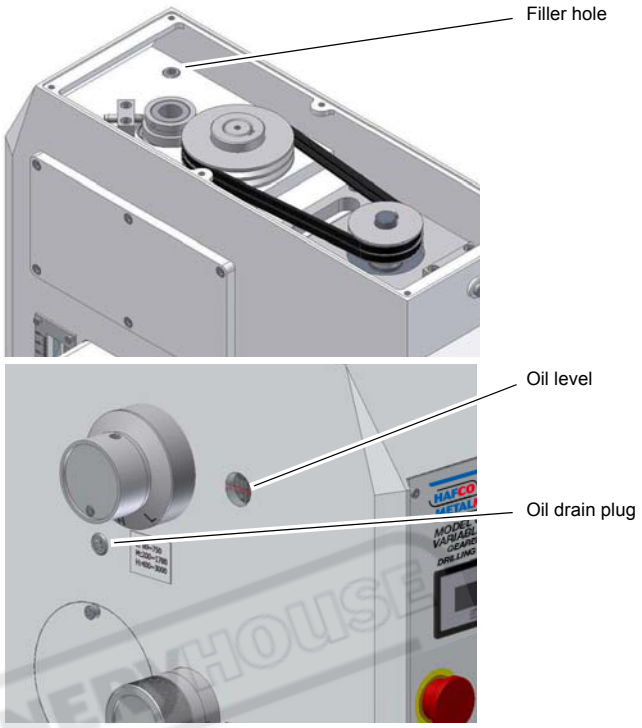
<table>
<tr><th>Interval</th><th>Where?</th><th>What?</th><th>How?</th></tr>
<tr><td>Start of shift
after each maintenance or repair operation</td><td>Bit-holder head</td><td>Oil level of the gear of the drilling spindle sleeve</td><td>➜ Check the oil level in the inspection window. The window should be half-covered.
 

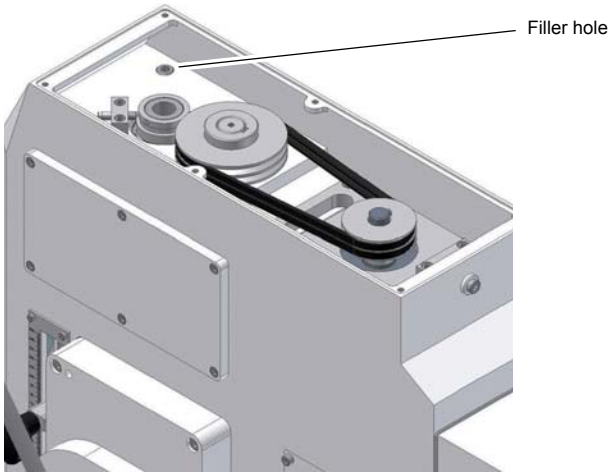
Fig.6-4: Oil level of the gear of the drilling spindle sleeve</td></tr>
<tr><td>First after 200 hours in service, then after every 2000 hours in service</td><td>Bit-holder head</td><td>Changing the oil in the gear of the drilling spindle sleeve</td><td>➜ Use collector vessels with sufficient capacity to change the oil.
➜ Unscrew the oil filling screw.
 

Fig.6-5: Changing the oil in the gear of the drilling spindle sleeve
➜ Re-fill the gear with gear oil. Approx. consumption 2.5 litres.
➜ Check if the oil level is correct.
☞ "Operating material" on page 16.</td></tr>
</table>

Maintenance

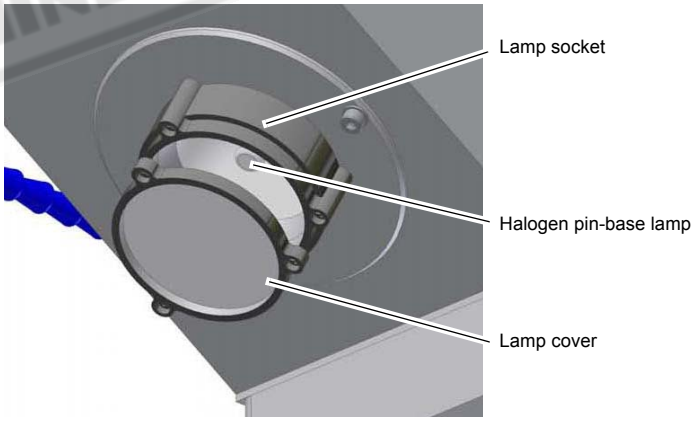
<table>
<tr><th>Interval</th><th>Where?</th><th>What?</th><th>How?</th></tr>
<tr><td rowspan="2">Every month</td><td>Drilling column and toothed rack</td><td rowspan="2">Lubricate</td><td>➜ Oil the drilling column in regular intervals using standard oil.
➜ Lubricate the toothed rack in regular intervals using standard grease.</td></tr>
<tr><td>Toothed rack Drilling sleeve</td><td>➜ Oil the toothed rack (toothing) and the drill sleeve in regular intervals using standard oil.</td></tr>
<tr><td>As required</td><td>Coolant system</td><td>Cooling pump</td><td>The cooling pump is maintenance-free.
➜ Replace the cooling agent whenever necessary.
➜ Because cooling agents are used that leave residues, the cooling pump must be washed.</td></tr>
<tr><td>As required</td><td>Lighting</td><td>Halogen pin-base lamp</td><td>If the halogen pin-base lamp is defective:
➜ Unscrew the lamp cover of the machine illumination.
➜ Pull out the halogen pin-base lamp using a cloth and replace the halogen lamp.
➜ Screw on the lamp cover of the machine illumination.
 

Fig. 6-6: Machine illumination</td></tr>
</table>

6.3 Recommended working materials

Working material	Specification	Manufacturer / Type (non binding recommendation)	Quantity
Gear oil	-	Mobilgear 627 Mobilgear 629 Mobilgear 636 BP F100 GP-XP Energol BP F150 GR-GP Energol Schell OMALA 100 Schell OMALA 150 OMV UNIGEAR 75 W-90	As required
Lubricant	ISO XM 2	OMV SIGNUM M 283	As required
Cooling lubricant	Mineral 1:10	UNIMET ASF 192	About 4.5 liters

6.4 Cleaning

- Blow out all ducts with dry compressed air in regular intervals. Wear safety goggles.
- Please use an absorbent lint-free cloth to take up lubricants.
- Clean all plastic parts using a soft moistened cloth.
- Never use solvents to clean plastic parts. The surface might etch and subsequent damages might result hereof.

It is recommended to have the machine thoroughly cleaned and checked by an approved service company.

6.5 Repair

For any repair work, get assistance from an employee of the company HAFCO Metalmaster technical service or send us the geared drill.

If the repairs are carried out by qualified technical staff, they must follow the indications given in this manual.

The company HAFCO Metalmaster does not take responsibility nor does it guarantee against damage and operating anomalies resulting from failure to observe this operating manual.

For repairs only use

- faultless and suitable tools,
- original spare parts or serial parts expressly authorised by the company HAFCO Metalmaster

7 Ersatzteile - Spare parts - GHD-30V

7.1 Ersatzteilzeichnung Bohrkopf - Spare parts drawing drilling

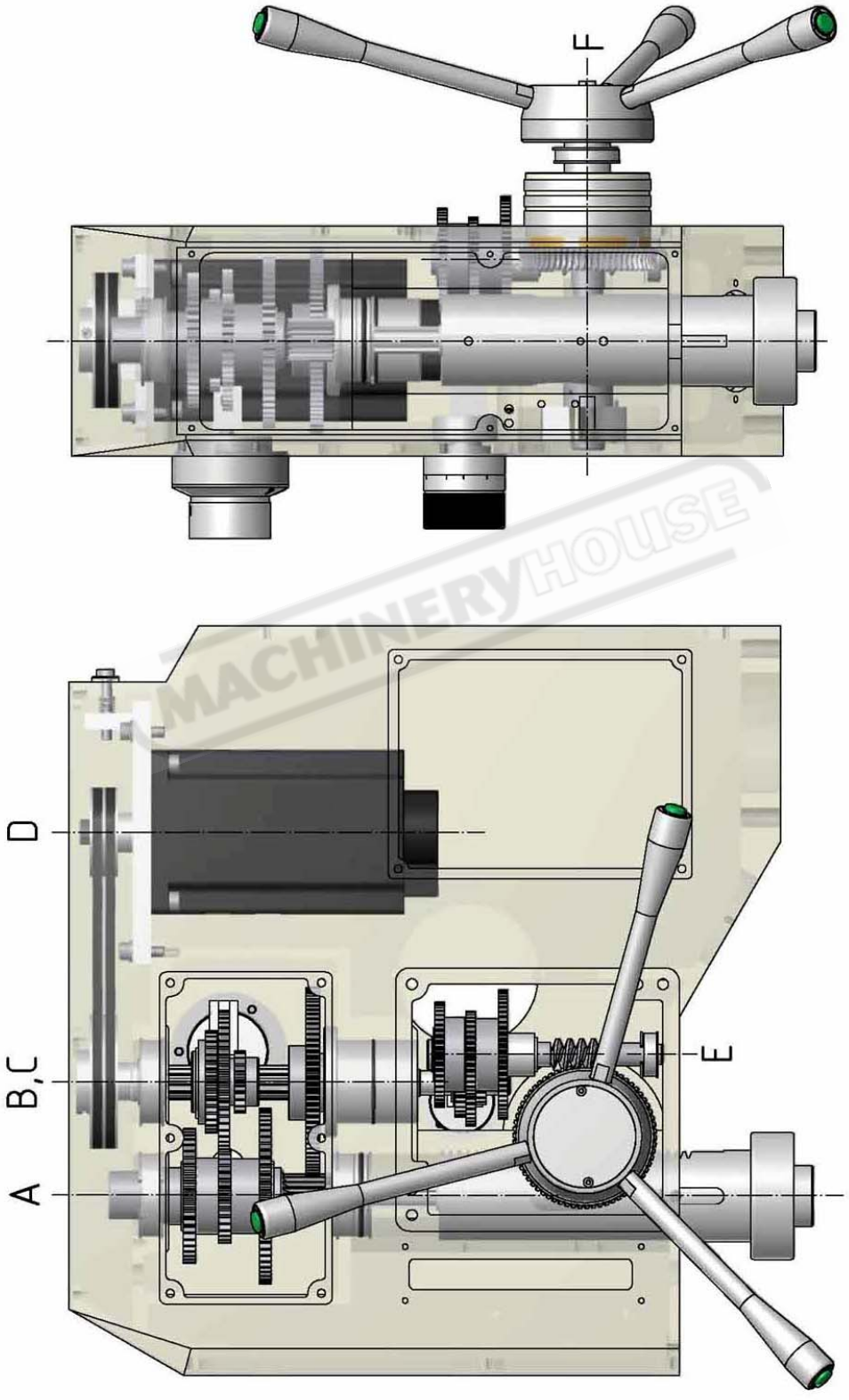


Abb.7-1: Bohrkopf - Drilling head

7.2 Ersatzteilzeichnung Bohrkopf 1 von 9 - Parts drawing drilling head 1 of 9

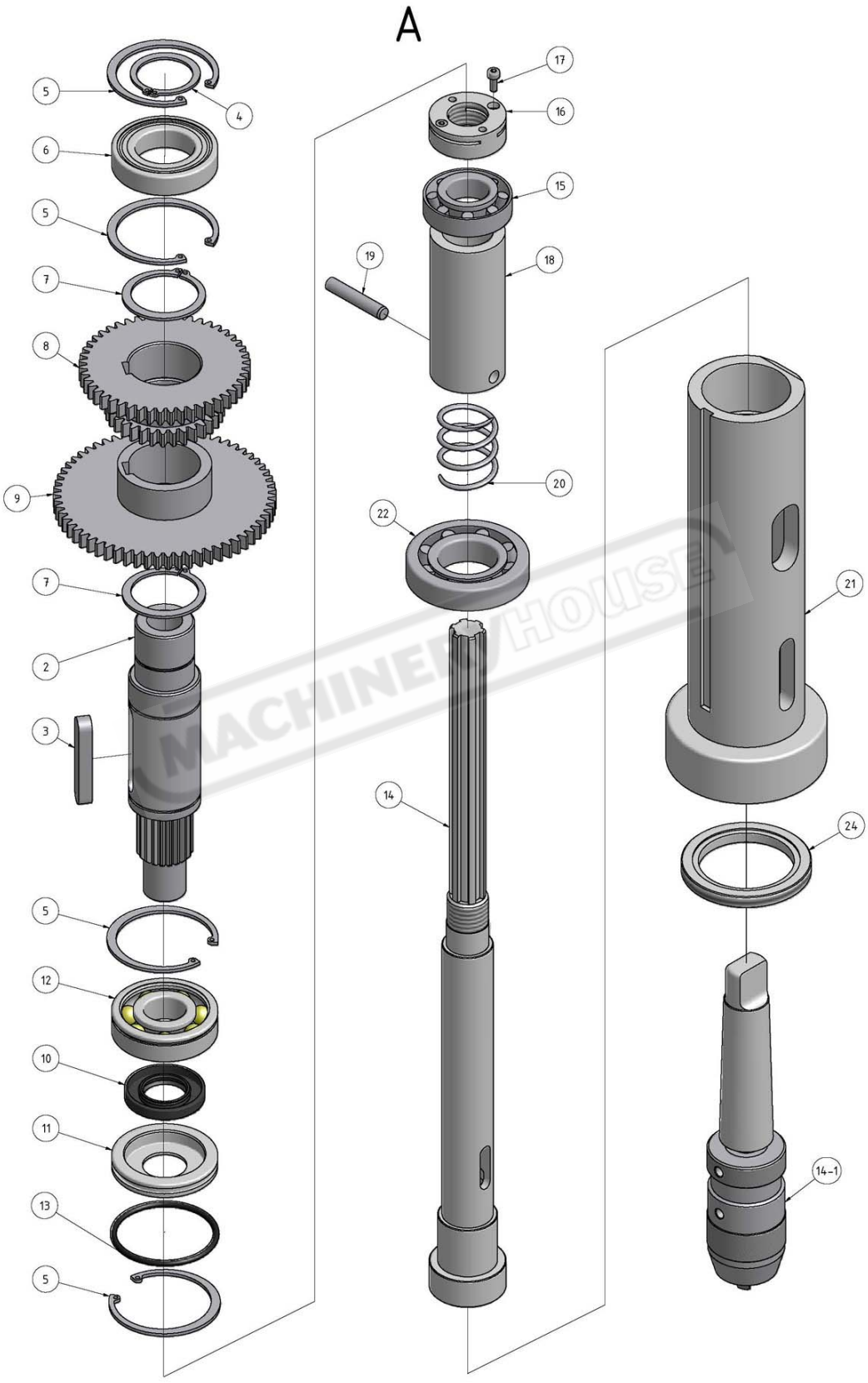


Abb.7-2: Bohrkopf 1 von 9 - Drilling head 1 of 9

Ersatzteile - Spare parts - GHD-30V

Ersatzteilzeichnung Bohrkopf 2 von 9 - Parts drawing drilling head 2 of 9

7.3

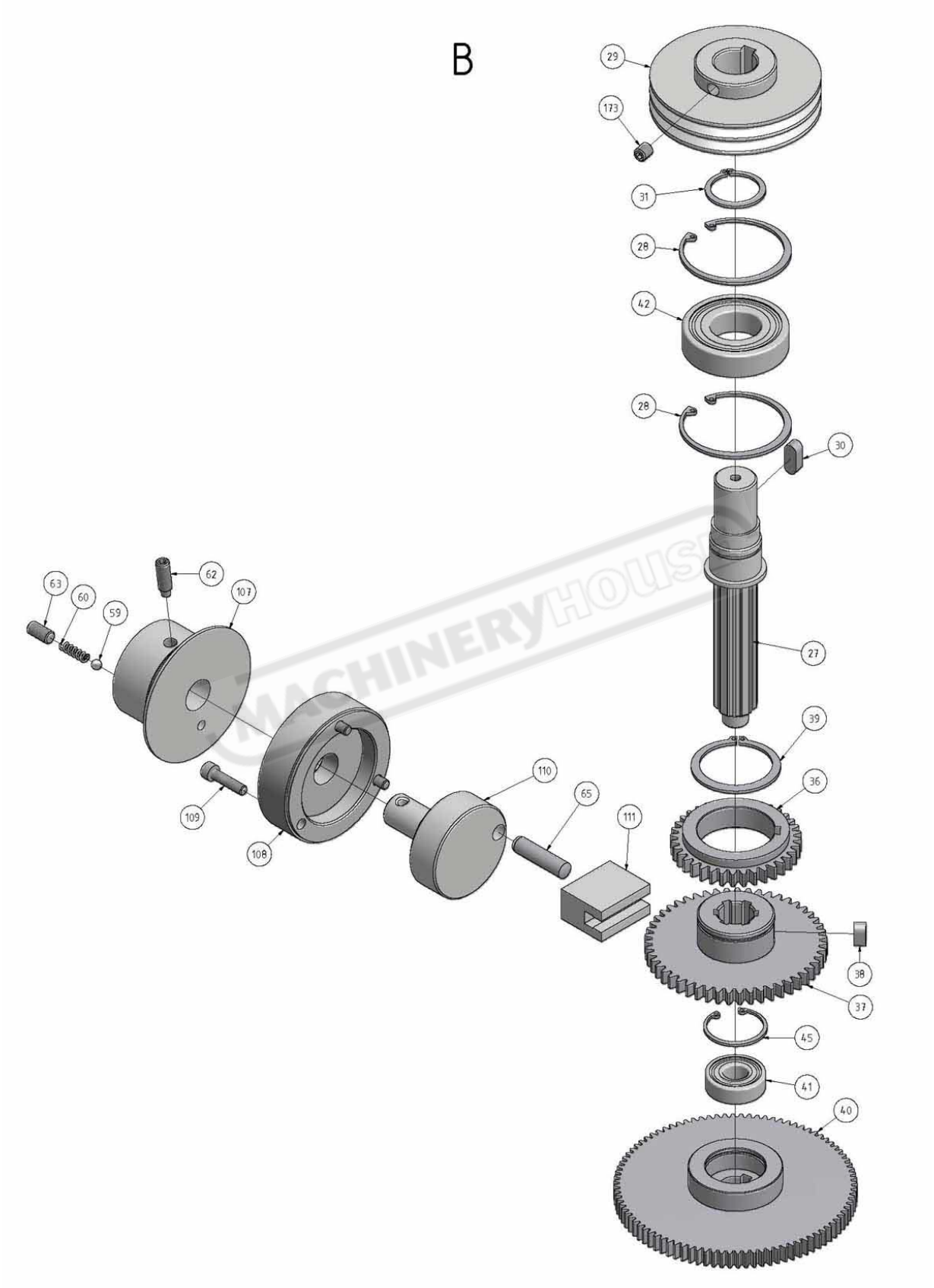


Abb.7-3: Bohrkopf 2 von 9 - Drilling head 2 of 9

7.4 Ersatzteilzeichnung Bohrkopf 3 von 9 - Parts drawing drilling head 3 of 9

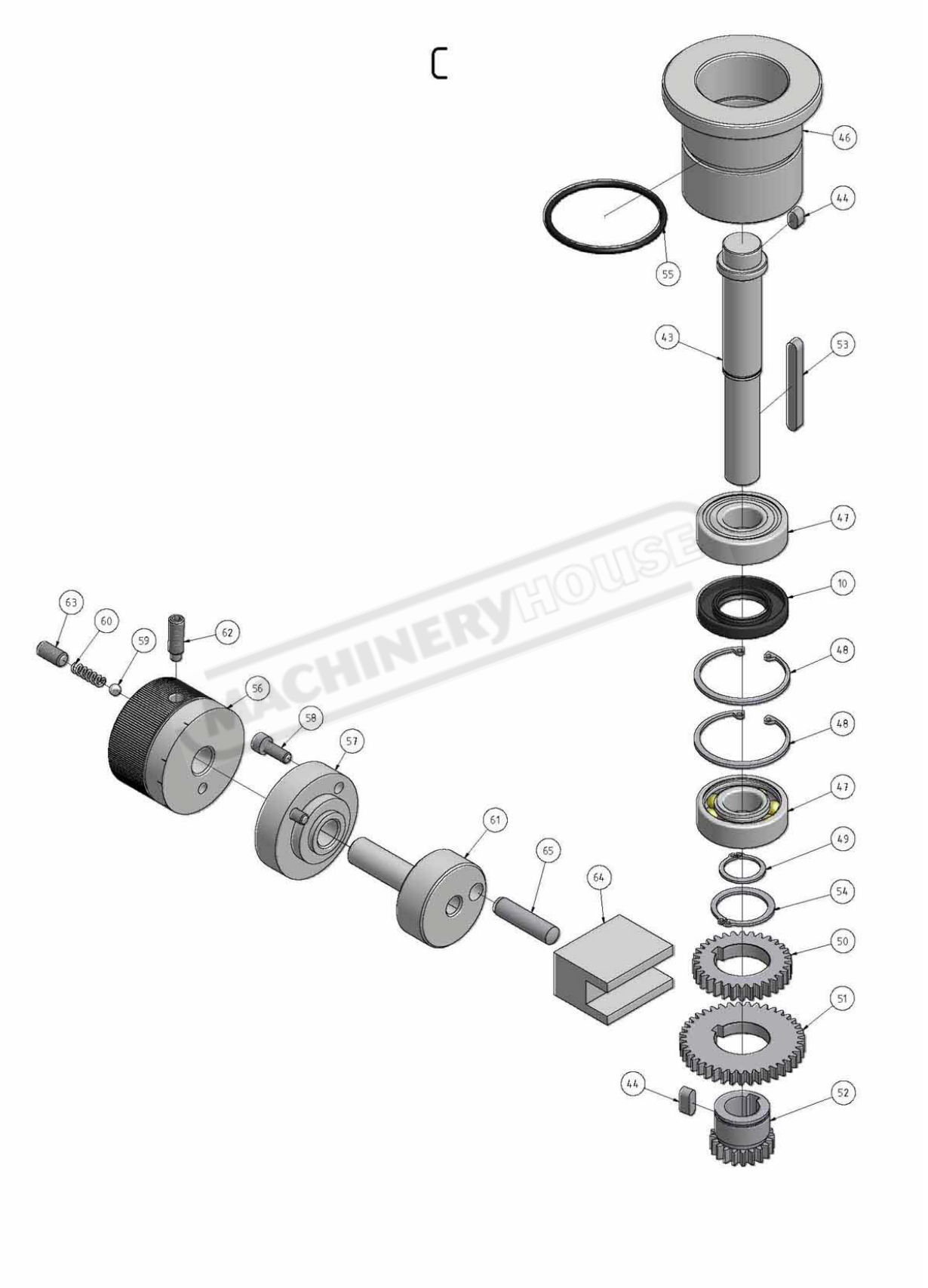


Abb.7-4: Bohrkopf 3 von 9 - Drilling head 3 of 9

Ersatzteile - Spare parts - GHD-30V

Ersatzteilzeichnung Bohrkopf 4 von 9 - Parts drawing drilling head 4 of 9

7.5

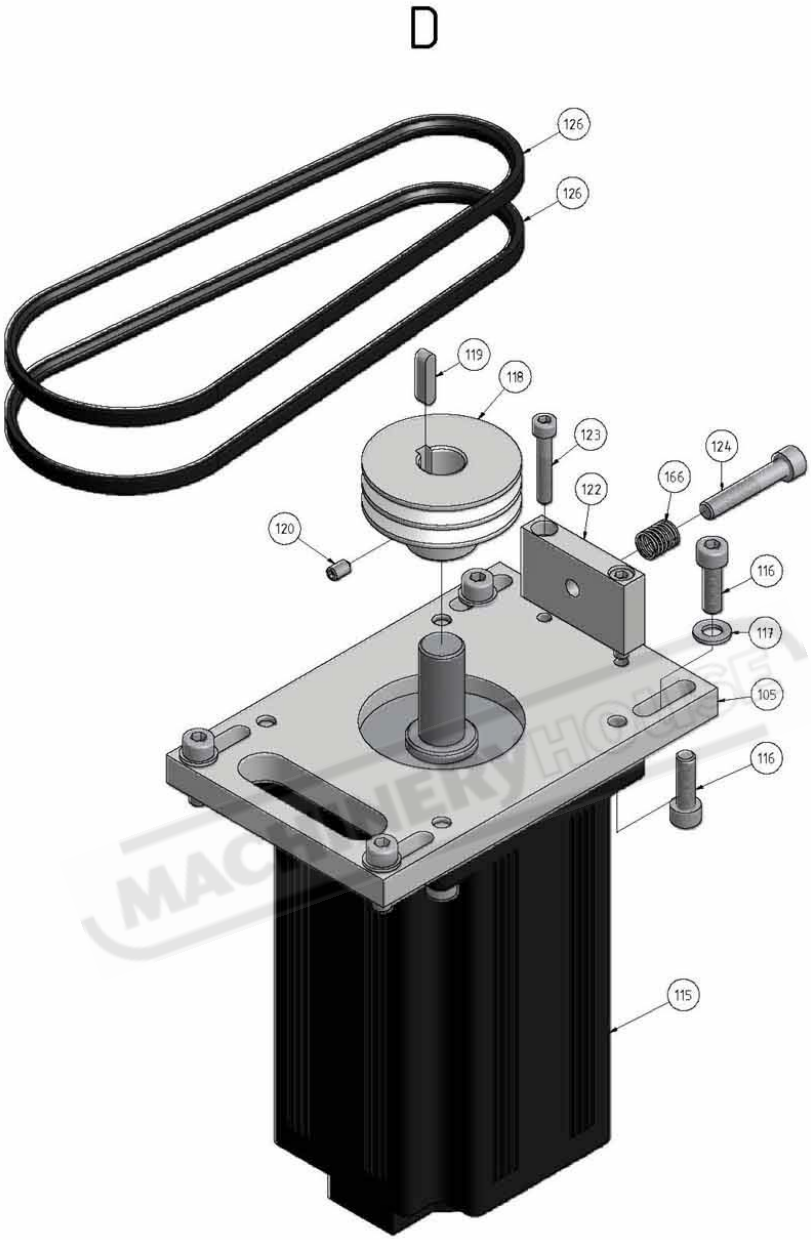


Abb.7-5: Bohrkopf 4 von 9 - Drilling head 4 of 9

7.6 Ersatzteilzeichnung Bohrkopf 5 von 9 - Parts drawing drilling head 5 of 9

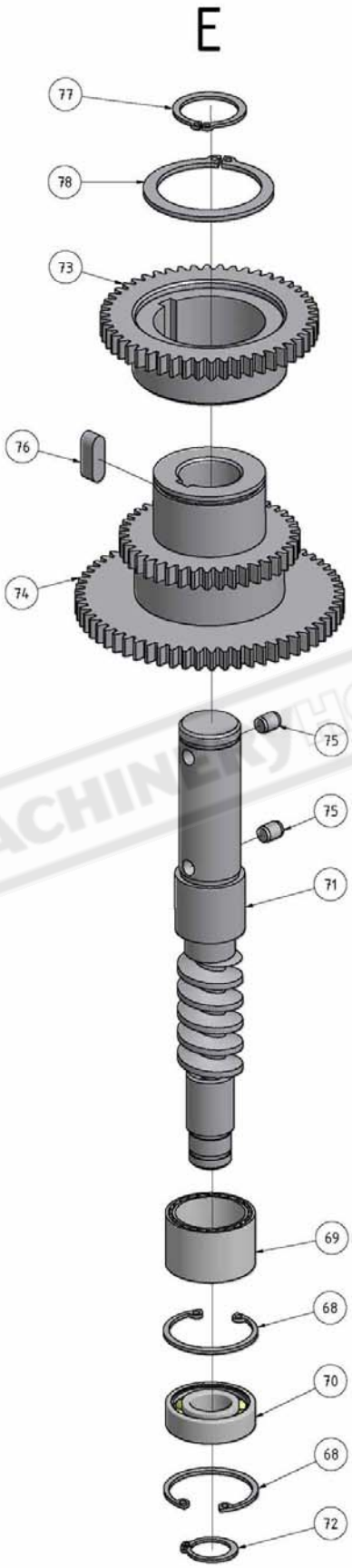


Abb.7-6: Bohrkopf 5 von 9 - Drilling head 5 of 9

Ersatzteile - Spare parts - GHD-30V

Ersatzteilzeichnung Bohrkopf 6 von 9 - Parts drawing drilling head 6 of 9

7.7

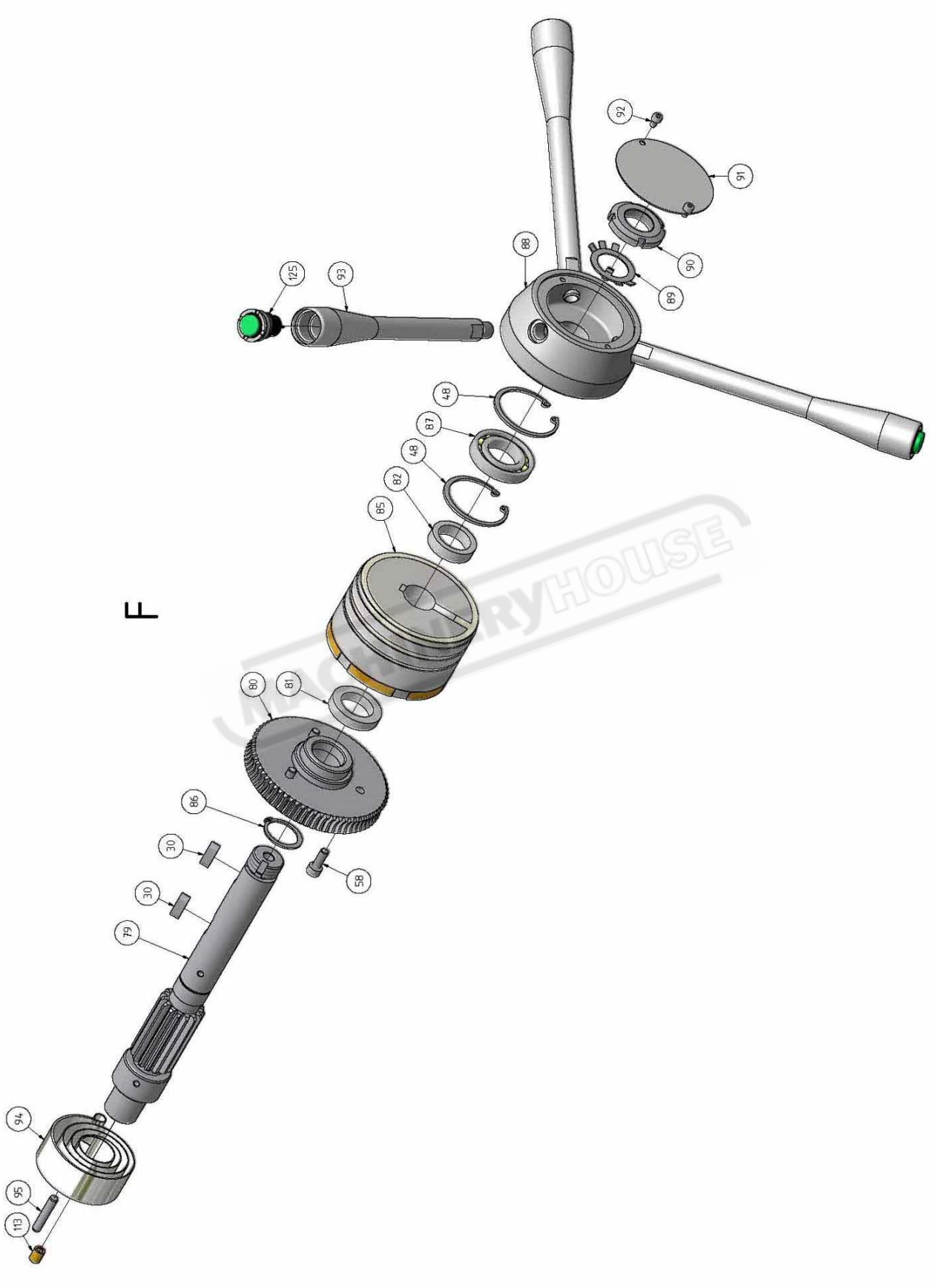


Abb.7-7: Bohrkopf 6 von 9 - Drilling head 6 of 9

7.8 Ersatzteilzeichnung Bohrkopf 7 von 9 - Parts drawing drilling head 7 of 9

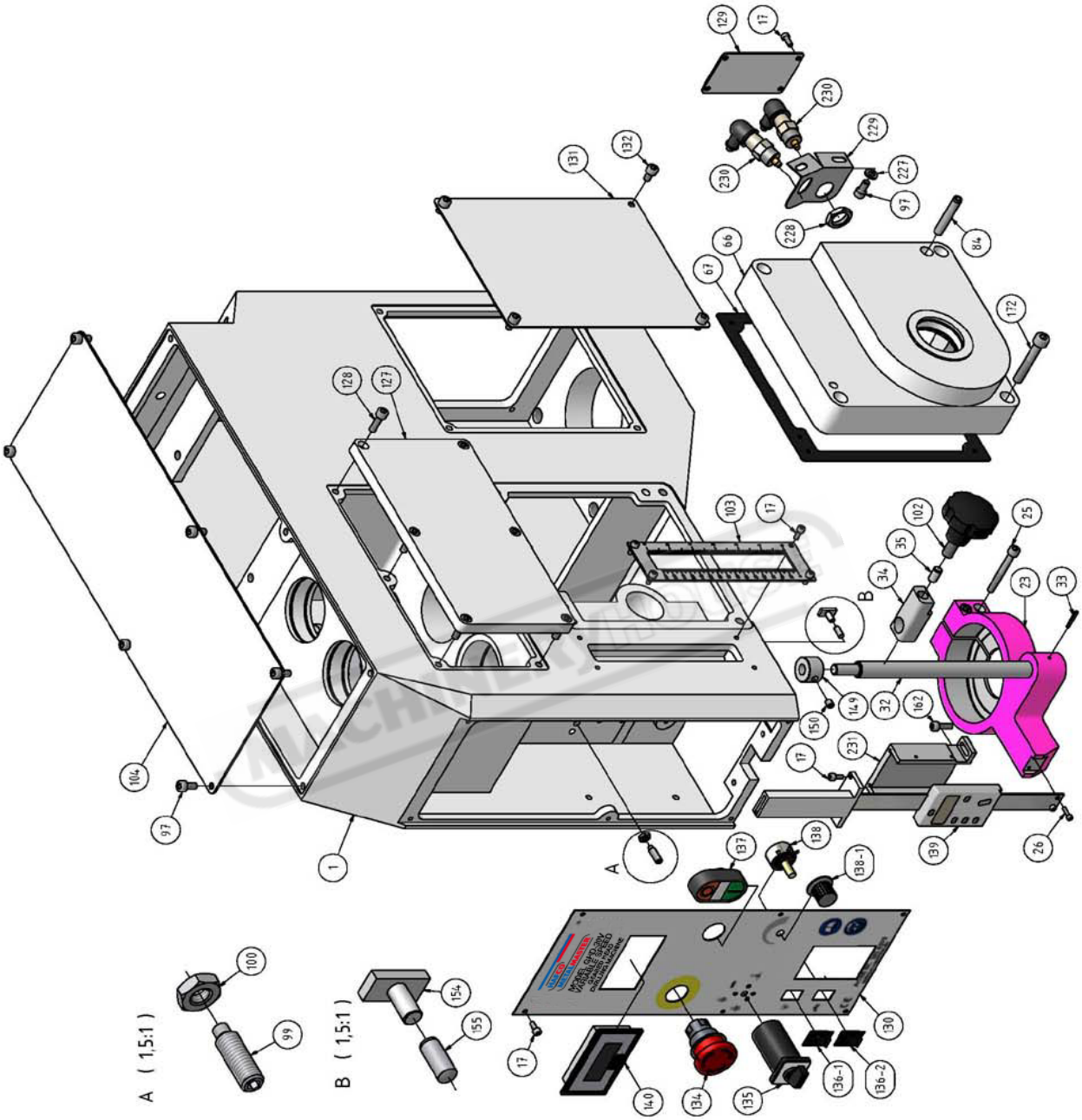


Abb.7-8: Bohrkopf 7 von 9 - Drilling head 7 of 9

Ersatzteile - Spare parts - GHD-30V

Ersatzteilzeichnung Bohrkopf 8 von 9 - Parts drawing drilling head 8 of 9

7.9

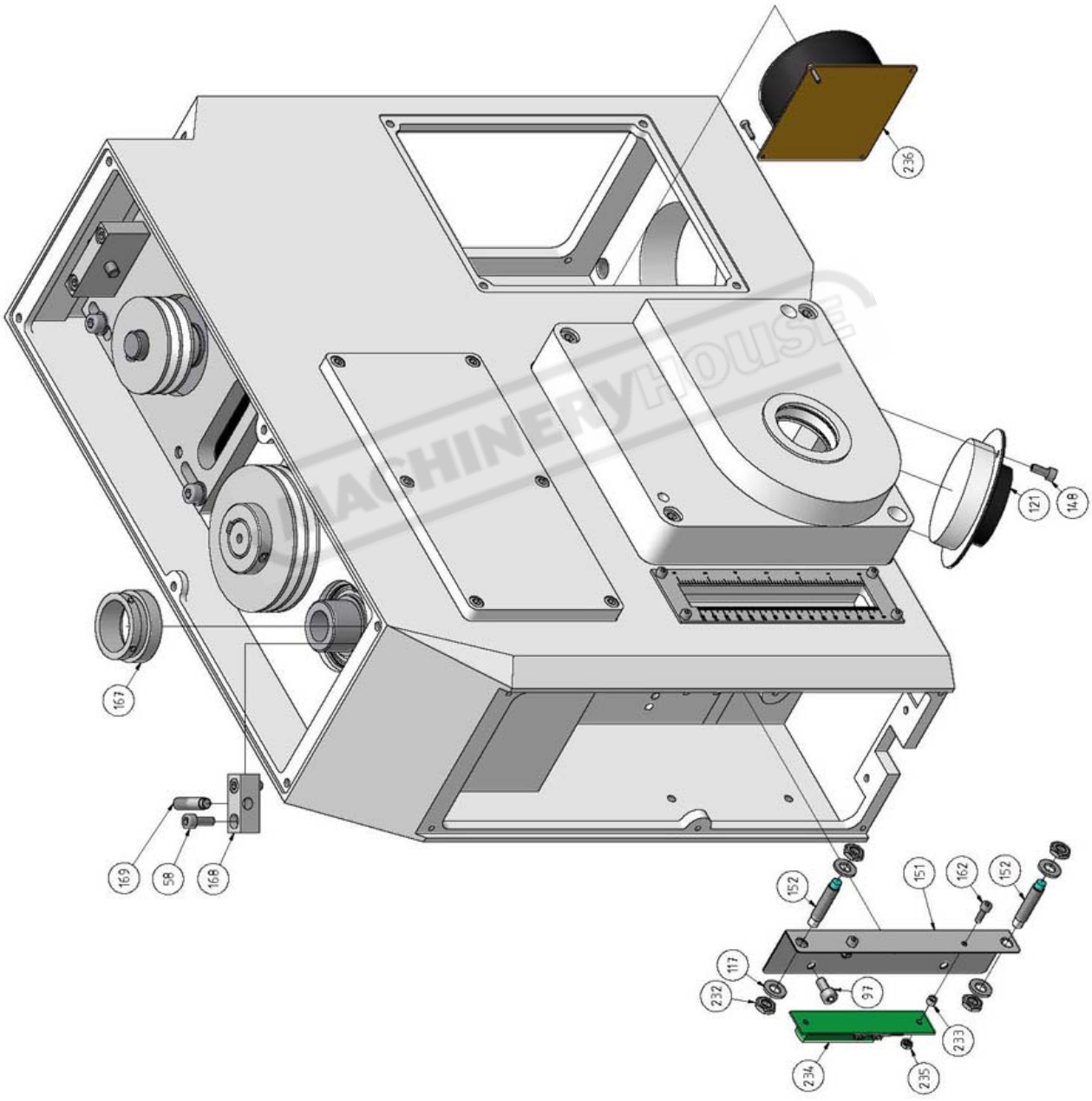


Abb. 7-9: Bohrkopf 8 von 9 - Drilling head 8 of 9

7.10 Ersatzteilzeichnung Bohrkopf 9 von 9 - Parts drawing drilling head 9 of 9

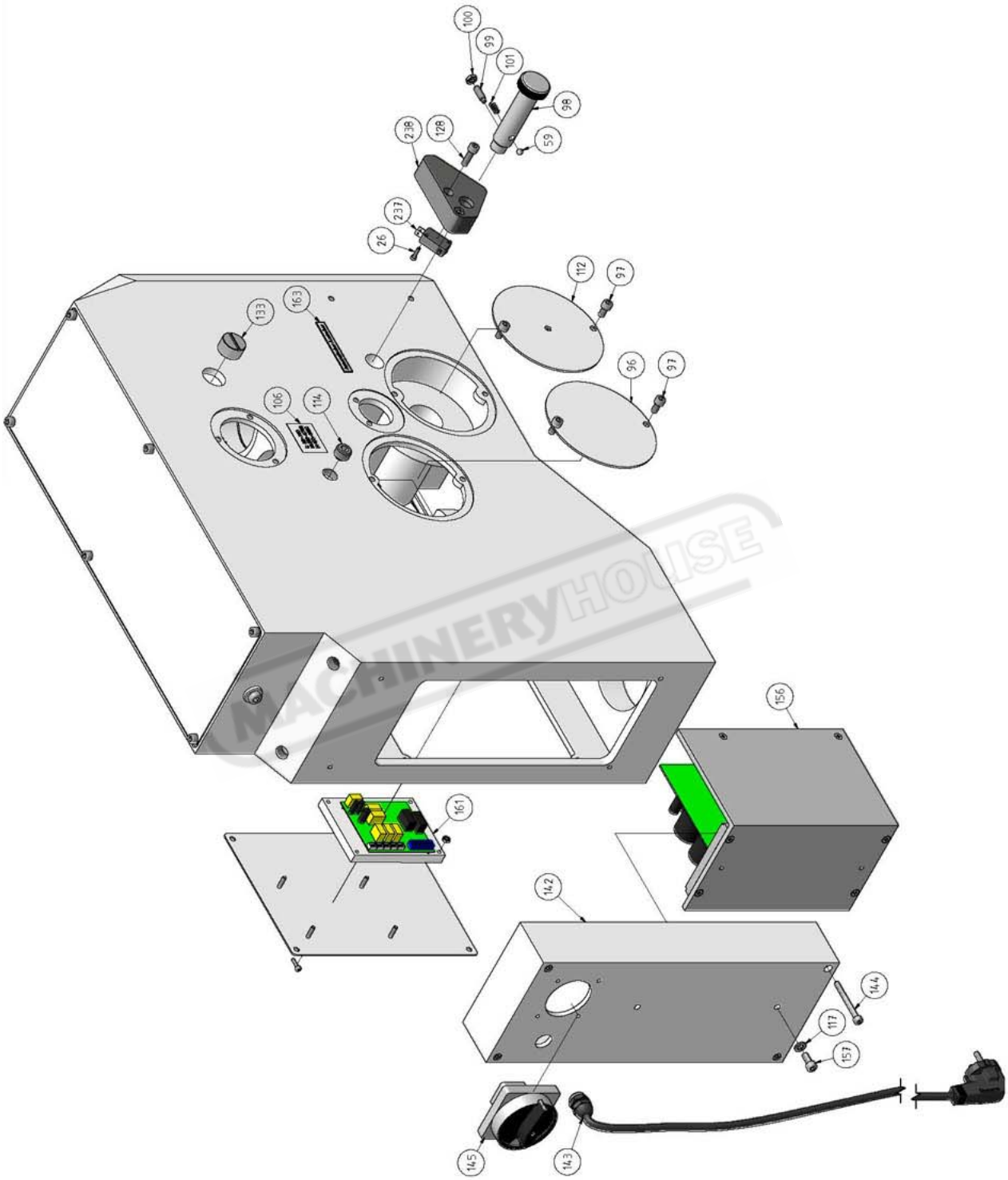


Abb.7-10: Bohrkopf 9 von 9 - Drilling head 9 of 9

Ersatzteile - Spare parts - GHD-30V

Ersatzteilzeichnung Bohrfutterschutz - Parts drawing drilling chuck protection

7.11

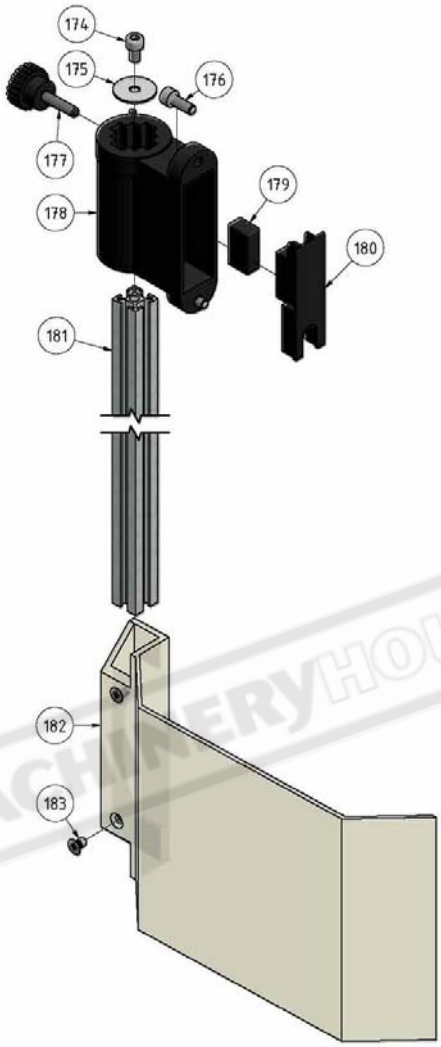


Abb. 7-11: Bohrfutterschutz - Drilling chuck protection

7.12 Ersatzteilzeichnung Säule und Bohrtisch - Parts drawing column and drilling table

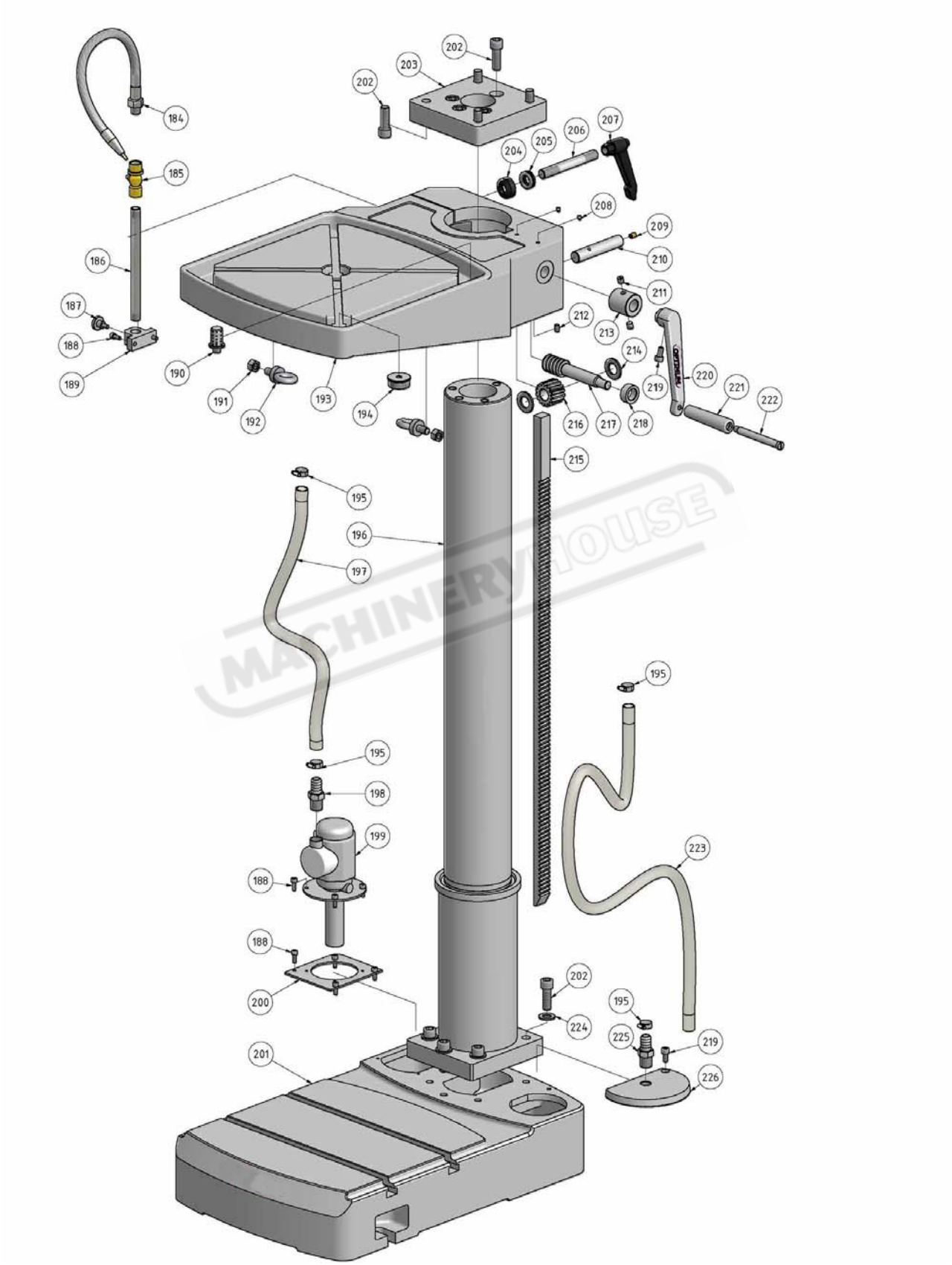


Abb. 7-12: Säule und Bohrtisch - Column and drilling table

Ersatzteile - Spare parts - GHD-30V

7.13 Ersatzteilliste - Spare part list

Pos.	Bezeichnung	Designation	Menge Qty.	Grösse Size	Artikelnummer Item no.
1	Gehäuse	Casing	1		0303430301
2	Welle	Shaft	1		0303430302
3	Passfeder	Fitting key	1	DIN 6885 - A 12 x 8 x 56	
4	Sicherungsring	Retaining ring	1	DIN 471 - 35 x 1,5	
5	Sicherungsring	Retaining ring	4	DIN 472 - 62 x 2	
6	Kugellager	Ball bearing	1	6007-2Z	0303430306
7	Sicherungsring	Retaining ring	2	DIN 471 - 42 x 1,75	
8	Zahnrad	Gear	1		0303430308
9	Zahnrad	Gear	1		0303430309
10	Wellendichtring	Gasket	2	GB 13871 - 25 x 47 x 7	0303430310
11	Ring	Ring	1		0303430311
12	Kugellager	Ball bearing	1	6305 N	0303430312
13	O-Ring	O-Ring	1	DIN 3771 - 58 x 3,55a	0303430313
14	Keilwelle	Spline shaft	1		0303430314
14-1	Bohrfutter	Drill chuck	1		3050626
15	Kegelrollenlager	Taper roller bearing	1	30205	0303430315
16	Klemmscheibe	Clamp washer	1		0303430316
17	Innensechskantschraube	Socket head screw	22	GB 70-85 - M4 x 10	
18	Hülse	Bushing	1		0303430318
19	Zylinderstift	Straight pin	1	GB 119-86 - A 8 x 45	
20	Druckfeder	Spring	1		0303430320
21	Pinole	Sleeve	1		0303430321
22	Kegelrollenlager	Taper roller bearing	1	30207	0303430322
23	Halter	Bracket	1		0303430323
24	Sicherungsmutter	Locknut	1		0303430324
25	Innensechskantschraube	Socket head screw	2	GB 70-85 - M6 x 50	
26	Innensechskantschraube	Socket head screw	2	GB 70-85 - M3 x 12	
27	Keilwelle	Spline shaft	1		0303430327
28	Sicherungsring	Retaining ring	2	DIN 472 - 62x2	
29	Keilriemenscheibe	V- belt pulley	1		0303430329
30	Passfeder	Fitting key	3	DIN 6885 - A 8 x 7 x 20	
31	Sicherungsring	Retaining ring	1	DIN 471 - 30 x 1,5	
32	Welle	Shaft	1		0303430332
33	Spanstift	Spring pin	1	GB 879-86 - 3 x 20	
34	Führung	Guide	1		0303430334
35	Stift	Pin	1		0303430335
36	Zahnrad	Gear	1		0303430336
37	Zahnrad	Gear	1	B30_03_21	0303430337
38	Passfeder	Fitting key	1	DIN 6885 - A 8 x 7 x 18	
39	Sicherungsring	Retaining ring	1	DIN 471 - 45 x 1,75	
40	Zahnrad	Gear	1		0303430340
41	Kugellager	Ball bearing	1	6202-2RSL	0303430341
42	Kugellager	Ball bearing	1	6206-Z	0303430342
43	Welle	Shaft	1		0303430343
44	Passfeder	Fitting key	2	DIN 6885 - A 6 x 6 x 14	
45	Sicherungsring	Retaining ring	1	DIN 472 - 35x1,5	
46	Aufnahme	Collet	1		0303430346
47	Kugellager	Ball bearing	2	6204-RSH	0303430347
48	Sicherungsring	Retaining ring	4	DIN 472 - 47x1,75	
49	Sicherungsring	Retaining ring	1	DIN 471 - 20 x 1,2	
50	Zahnrad	Gear	1		0303430350
51	Zahnrad	Gear	1		0303430351
52	Zahnrad	Gear	1		0303430352
53	Passfeder	Fitting key	1	DIN 6885 - A 6 x 6 x 56	
54	Sicherungsring	Retaining ring	1	DIN 471 - 28 x 1,5	
55	O-Ring	O-Ring	1	DIN 3771 - 63 x 3,55	0303430355
56	Drehknopf	Knob	1		0303430356
57	Aufnahme	Collet	1		0303430357
58	Innensechskantschraube	Socket head screw	7	GB 70-85 - M6 x 16	
59	Stahlkugel	Steel ball	3		0303430359
60	Feder	Spring	2		0303430360
61	Bolzen	Bolt	1		0303430361
62	Gewindestift	Grub screw	2	GB 79-85 - M8 x 25	
63	Gewindestift	Grub screw	2	GB 77-85 - M8 x 16	
64	Gabel	Fork	1		0303430364
65	Zylinderstift	Straight pin	2	GB 119-86 - A 10 x 40	
66	Abdeckung	Cover	1		0303430366
67	Dichtung	Gasket	1		0303430367

Ersatzteile - Spare parts - GHD-30V

Pos.	Bezeichnung	Designation	Menge Qty.	Grösse Size	Artikelnummer Item no.
68	Sicherungsring	Retaining ring	2	DIN 472 - 32x1,2	
69	Nadellager	Needle bearing	1	25x32x20	0303430369
70	Kugellager	Ball bearing	1	6002	0303430370
71	Schnecke	Worm	1		0303430371
72	Sicherungsring	Retaining ring	1	DIN 471 - 15 x 1	
73	Zahnrad	Gear	1		0303430373
74	Zahnrad	Ger	1		0303430374
75	Zylinderstift	Straight pin	2	GB 119-86 - B 6 x 12	
76	Passfeder	Fitting key	1	DIN 6885 - A 6 x 6 x 18	
77	Sicherungsring	Retaining ring	1	DIN 471 - 22 x 1,2	
78	Sicherungsring	Retaining ring	1	DIN 471 - 40 x 1,75	
79	Zahnwelle	Spline shaft	1		0303430379
80	Schneckenrad	Worm gear	1		0303430380
81	Abstandsring	Spacer	1		0303430381
82	Abstandsring	Spacer	1		0303430382
84	Spannstift	Spring pin	2	GB 879-86 - 8 x 45	
85	Elektrokupplung	Electrical clutch	1		0303430385
86	Sicherungsring	Retaining ring	1	DIN 471 - 25 x 1,2	
87	Kugellager	Ball bearing	1	16005	0303430387
88	Aufnahme	Collet	1		0303430388
89	Sicherungsblech	Locking plate	1	GB 858-88 - 24 x 34	0303430389
90	Nutmutter	Grooved nut	1	GB 812-88 - M24x1,5	0303430390
91	Abdeckung	Cover	1		0303430391
92	Innensechskantschraube	Socket head screw	2	GB 70-85 - M4 x 6	
93	Hebel	Lever	3		0303430393
94	Spiralfeder	Spiral spring	1		0303430394
95	Zylinderstift	Straight pin	1	ISO 2338 - 6 x 32	
96	Abdeckung	Cover	1		0303430396
97	Innensechskantschraube	Socket head screw	12	GB 70-85 - M6 x 12	
98	Bolzen	Bolt	1		0303430398
99	Gewindestift	Grub screw	1	GB 79-85 - M6 x 20	
100	Sechskantmutter	Hexagon nut	1	GB 6172-86 - M6	03034303100
101	Feder	Spring	1		03034303101
102	Griff	Lever	1		03034303102
103	Skala	Scale	1		03034303103
104	Abdeckung	Cover	1		03034303104
105	Motorplatte	Motor plate	1		03034303105
106	Schild	Label	1		03034303106
107	Aufnahme	Collet	1		03034303107
108	Scheibe	Washer	1		03034303108
109	Innensechskantschraube	Socket head screw	3	GB 70-85 - M6 x 25	
110	Drehbolzen	Fulcrum pin	1		03034303110
111	Gabel	Fork	1		03034303111
112	Abdeckung	Cover	1		03034303112
113	Schmiernippel	Lubrication cup	1	JB-T7940.4-1995-1/8mm	03034303113
114	Innensechskantschraube	Socket head screw	1	GB 80-85 - M16 x 12	
115	Motor	Motor	1		03034303115
116	Innensechskantschraube	Socket head screw	8	GB 70-85 - M8 x 25	
117	Scheibe	Washer	4	DIN 125 - A 8,4	
118	Keilriemenscheibe	V- belt pulley	1		03034303118
119	Passfeder	Fitting key	1	DIN 6885 - A 6 x 6 x 25	
120	Gewindestift	Grub screw	1	GB 80-85 - M6 x 10	
121	Arbeitsleuchte	Lamp	1		03034303121
122	Platte	Plate	1		03034303122
123	Innensechskantschraube	Socket head screw	2	GB 70-85 - M6 x 35	
124	Innensechskantschraube	Socket head screw	1	GB 70-85 - M8 x 45	
125	Druckschalter	Press switch	3		03034303125
126	Keilriemen	V- Belt	2		03034303126
127	Abdeckung	Cover	1		03034303127
128	Innensechskantschraube	Socket head screw	6	GB 70-85 - M6 x 20	
129	Platte	Plate	1		03034303129
130	Abdeckung	Cover	1		03034303130
131	Abdeckung	Cover	1		03034303131
132	Innensechskantschraube	Socket head screw	4	GB 70-85 - M6 x 10	
133	Ölschauglas	Oil sight glass	1		03034303133
134	Not-Aus Schalter	Emergency stop switch	1		0302130323
135	Schalter Drehrichtung- Gewindeschneiden-Automatik	Switch rotating direction - threading-automatic	1		03021303204
136-1	Schalter Betriebsleuchte	Light switch	1		03021303205
136-2	Schalter Kühlmittelpumpe	Cooling pump switch	1		03021303205
137	Schalter Ein/Aus	Switch ON/OFF	1		03021303203

Ersatzteile - Spare parts - GHD-30V

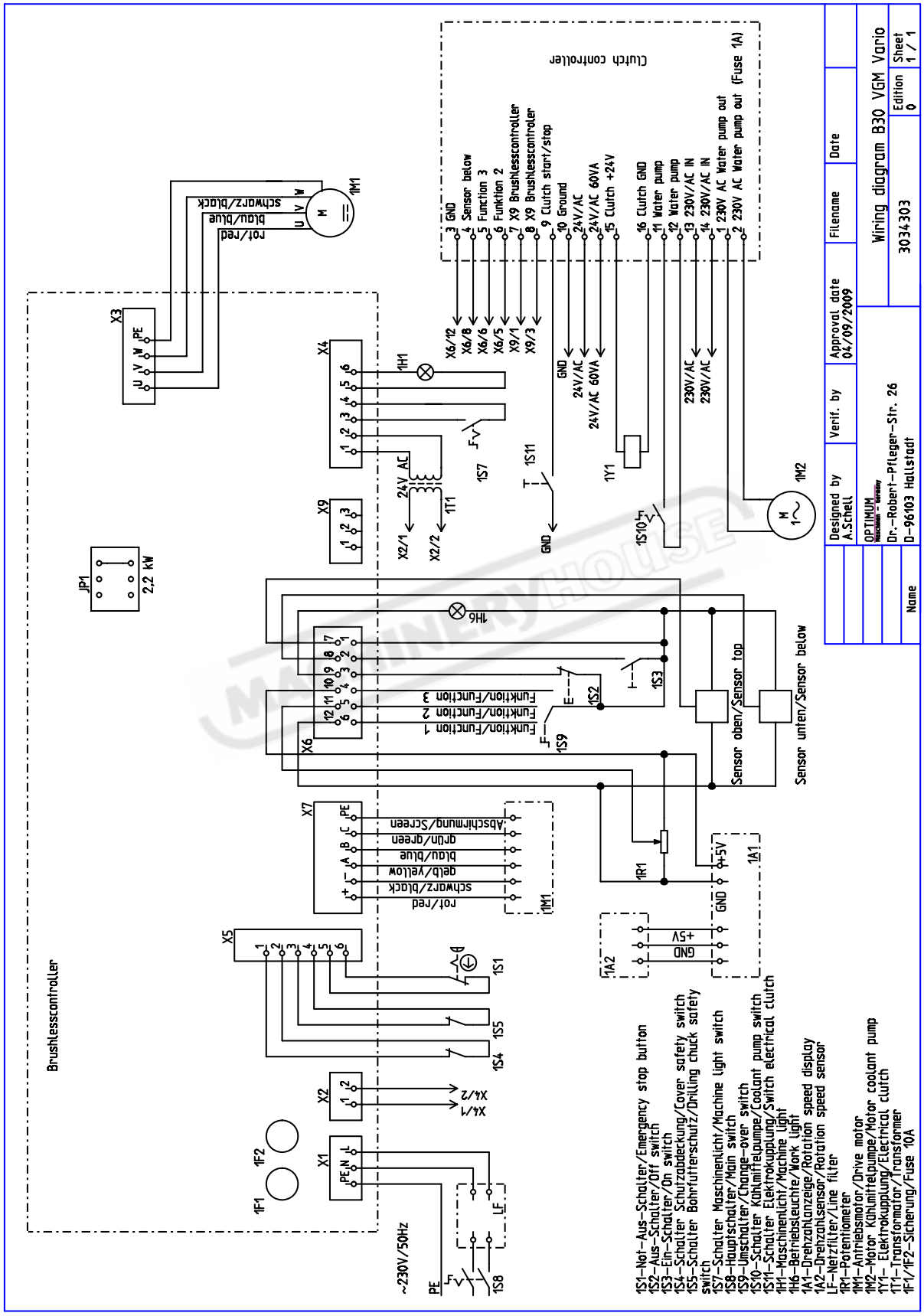
Pos.	Bezeichnung	Designation	Menge Qty.	Grösse Size	Artikelnummer Item no.
138	Potentiometer	Potentiometer	1		03338120R1.5
138-1	Drehknopf	Knob	1		030343031381
139	Digitalanzeige/ Messleiste	Digital display	1		03034303139
140	Drehzahlanzeige	Speed indicator	1		03021303202
141	Innensechskantschraube	Socket head screw	6	GB 70-85 - M5 x 16	
142	Abdeckung	Cover	1		03034303142
143	Anschlusskabel	Supply cable	1		03034303143
144	Innensechskantschraube	Socket head screw	4	GB 70-85 - M5 x 50	
145	Hauptschalter	Main switch	1		03034303145
146	Innensechskantschraube	Socket head screw	4	GB 70-85 - M5 x 10	
147	Buchse	Sleeve	1		03034303147
148	Innensechskantschraube	Socket head screw	2	GB 70-85 - M5 x 12	
149	Anschlagring	Stop ring	1		03034303149
150	Innensechskantschraube	Socket head screw	1	GB 80-85 - M6 x 8	03034303150
151	Platte	Plate	1		03034303151
152	Sensor	Sensor	2	LJ8A3-2-Z/BY	03021303230
153	Zylinderkopfschraube mit Schlitz	Raised head screw	6	ISO 1207 - M5 x 20	
154	Nutenstein	Slot nut	1		03034303154
155	Zylinderstift	Straight pin	1	GB 119-86 - A 5 x 12	
156	Steuerplatine	Control board	1		03021303201
157	Innensechskantschraube	Socket head screw	2	GB 70-85 - M6 x 14	
158	Schutzabdeckung	Cover	1		03034303158
161	Steuerplatine	Control board	1		03034303161
162	Innensechskantschraube	Socket head screw	4	GB 70-85 - M4 x 12	
163	Schild	Label	1		03034303163
166	Feder	Spring	1		03034303166
167	Scheibe Drehzahl	Rotation speed washer	1		03034303167
168	Halter	Bracket	1		03034303168
169	Drehzahlsensor	Rotation speed sensor	1		03034303169
171	Gewindestift	Grub screw	1	GB 80-85 - M16 x 16	
172	Innensechskantschraube	Socket head screw	4	GB 70-85 - M8 x 50	
173	Gewindestift	Grub screw	1	GB 80-85 - M8 x 10	
174	Innensechskantschraube	Socket head screw	1	GB 70-85 - M6 x 10	
175	Scheibe	Washer	1		03034303175
176	Innensechskantschraube	Socket head screw	2	GB 70-85 - M6 x 16	
177	Rändelschraube	Knurled screw	1		03034303177
178	Halterung	Fixture	1		03034303178
179	Mikroschalter	Microswitch	1		03034303179
180	Platte	Plate	1		03034303180
181	Alu- Profil	Aluminium profile	1		03034303181
182	Bohrfutterschutz	Drill chuck protection	1		03034303182
183	Schraube	Screw	2	GB819-85/M5x8	
184	Flexibler Kühlmittelschlauch	Flexible coolant hose	1		03034303184
185	Kugelhahn Kühlmittelschlauch	Ball valve	1		03034303185
186	Rohr Kühlmittelschlauch	Coolant hose	1		03034303186
187	Klemmschraube	Clamping screw	1		03034303187
188	Innensechskantschraube	Socket head screw	8	GB 70-85 - M6 x 16	
189	Halter	Holder	1		03034303189
190	Kühlmittelfilter	Coolant filter	3		03034303190
191	Sechskantmutter	Hexagon nut	2	GB 6170-86 - M12	
192	Ringschraube	Ring bolt	2	AS 2317 - M12	
193	Bohrtisch	Drilling table	1		03034303193
194	Stopfen	Plug	1		03034303194
195	Schlauchschelle	Hose clamp	4		03034303195
196	Bohrsäule	Column	1		03034303196
197	Kühlmittelschlauch	Coolant hose	1		03034303197
198	Schlauchtülle	Hose clip	1		03034303198
199	Kühlmittelpumpe	Coolant pump	1		0302130349
200	Platte Pumpe	Plate pump	1		03034303200
201	Standfuss	Base	1		03034303201
202	Innensechskantschraube	Socket head screw	13	GB 70-85 - M14x50	
203	Zwischenplatte	Distance plate	1		03034303203
204	Buchse	Protection bush	1		03034303204
205	Axiallager	Axial bearing	1	DIN711-51103/17x30x9	03034303205
206	Stiftschraube	Locking screw	1		03034303206
207	Klemmhebel	Clamping lever	1	HY8310.12-2	03034303207
208	Schmiernippel	Lubrication cup	2		03034303208
209	Schmiernippel	Lubrication cup	1		03034303209
210	Welle	Shaft	1		03034303210
211	Gewindestift	Grub screw	2	M10x10	
212	Gewindestift	Grub screw	1	GB 77-85 - M8 x 12	

Ersatzteile - Spare parts - GHD-30V

Pos.	Bezeichnung	Designation	Menge Qty.	Grösse Size	Artikelnummer Item no.
213	Distanzhülse	Spacer	1		03034303213
214	Scheibe	Washer	2	GB 97.1-85 - 20	
215	Zahnstange	Toothead rack	1		03034303215
216	Schneckenrad	Worm wheel	1		03034303216
217	Schnecke	Worm	1		03034303217
218	Distanzhülse	Spacer	1		03034303218
219	Innensechskantschraube	Socket head screw	2	GB 70-85 - M8 x 16	
220	Kurbel	Crank	1		03034303220
221	Griff	Handle	1		03034303221
222	Schraube	Screw	1		03034303222
223	Kühlmittelschlauch	Coolant hose	1		03034303223
224	Scheibe	Washer	5	DIN 125-A 14	
225	Schlauchtülle	Hose clip	1		03034303225
226	Platte Kühlmittelbehälter	Plate coolant reservoir	1		03034303226
227	Scheibe	Washer	2	DIN 125/6	
228	Sechskantmutter	Hexagon nut	4		03034303228
229	Haltewinkel	Fixing bracket	1		03034303229
230	Bürste	Brush	2		03034303230
231	Halter	Support	1		03034303231
232	Sechskantmutter	Hexagon nut	4		03034303232
233	Buchse	Bushing	2		03034303233
234	Klemmleiste	Terminal block	1		03021303201CB
235	Sechskantmutter	Hexagon nut	1	DIN 4032/M5	
236	Transformator	Transformer	1		03034303236
237	Mikroschalter	Micro switch	1		03034303237
238	Abdeckung	Cover	1		03034303238

Ersatzteile - Spare parts - GHD-30V

7.14 Schaltplan - Wiring diagram



8 Anomalies

Problem	Cause/possible effects	Solution
Noise during work	• Spindle turning dry • Tool blunt or incorrectly secured	• Grease spindle • Use new tool and check securing (fixed setting of the bit, bit holder and chuck).
Bit "burnt"	• Incorrect speed/feed too fast • The chips have not been removed from the bore hole • Bit blunt • Operating without or too little cooling agent	• Select another rate • Extract bit more often during work • Sharpen or replace bit • Use cooling agent
Bit tip moves, bore hole is not circular	• Hard fibre in the workpiece • Unequal length of the cutting spiral or angles in the bit • Bit deformed	• Replace bit
Defective bit	• Not support used	• Place a wooden board beneath the workpiece and secure them one another
Bit running off-centre or "hopping"	• Bit deformed • Bearings worn down in the spindle head • Bit badly secured • Drill chuck defective	• Replace bit • Have the bearings replaced • Secure the bit properly • Replace the drill chuck
Impossible to introduce drill chuck or morse taper	• There is dirt, grease or oil on the inner conical surface or the drill chuck or on the conical surface of the drilling spindle	• Clean surfaces well • Keep surfaces free of grease
Engine does not start	• Engine connected wrongly • Defective fuse	• Have it checked by authorised personnel
Overheating of engine and lack of power	• Engine overloaded • Insufficient mains voltage • Engine connected wrongly	• Disconnect immediately and have it checked by authorized personnel • Have it checked by authorised personnel
Precision of the work deficient	• Heavy and unbalanced or twisted workpiece. • Inexact horizontal position of the workpiece holder	• Balance the piece statically and secure without straining • Adjust workpiece holder
Drilling spindle sleeve does not return to its initial position	• Spindle restoring spring does not work properly • Locking pin is being introduced	• Check spindle restoring spring, replace it, if necessary • Pull out locking pin
The drilling sleeve may not be moved downwards.	• The locking pin is introduced • The drill depth setting is not released	• Pull out the locking pin • Release the drill depth setting

Anomalies

Problem	Cause/possible effects	Solution
Spindle bearing over-heating	• Bearing worn down • Excessive pre-tension of the bearing • Working at high speeds for a long time	• Replace • Reduce bearing clearance in the fixed bearing • Reduce feed rate
Working spindle rattling on rough piece surfaces	• Excessive slack in bearing • Working spindle goes up and down • Adjustment strip loose • Chuck loose • Tool blunt • Piece loose	• Readjust bearing slack or replace bearing • Readjust bearing slack (fixed bearing) • Adjust strip to the correct slack using the adjusting screw • Check, re-tighten • Sharpen or replace tool • Secure the piece properly

9 Appendix

9.1 Copyright

9.2 Terminology/Glossary

Term	Explanation
Drift	Tool removing the bit or the drill chuck from the drilling spindle
Drill chuck	Device for holding the bit
Drill head	Upper part of the geared drill
Drilling spindle sleeve	Fixed hollow shaft in which the drilling spindle turns
Drilling spindle	Shaft activated by the motor
Drilling table	Bearing surface, clamping surface
Taper mandrel	Cone of the bit or drill chuck
Spindle sleeve lever	Manual control for advancing the bit
Quick-action drill chuck	Manually tightenable bit holding fixture
Workpiece	Piece to be turned or machined
Tool	Milling cutter, drill bit, countersink, etc.

Appendix

9.3 Liability claims for defects / warranty

Beside the legal liability claims for defects of the customer towards the seller the manufacturer of the product, OPTIMUM GmbH, Robert-Pfleger-Straße 26, D-96103 Hallstadt, does not grant any further warranties unless they are listed below or had been promised in the frame of a single contractual agreement.

- The processing of the liability claims or of the warranty is performed as chosen by HAFCO Metalmaster either directly or through one of its dealers. Any defective products or components of such products will either be repaired or replaced by components which are free from defects. The property of replaced products or components passes on to HAFCO Metalmaster.
- The automatically generated original proof of purchase which shows the date of purchase, the type of machine and the serial number, if applicable, is the precondition in order to assert liability or warranty claims. If the original proof of purchase is not presented, we are not able to perform any services.
- Defects resulting of the following circumstances are excluded from liability and warranty claims:
  - Using the product beyond the technical options and proper use, in particular due to over-straining of the machine
  - Any defects arising by one's own fault due to faulty operations or if the operating manual is disregarded
  - Inattentive or incorrect handling and use of improper equipment
  - Non-authorized modifications and repairs
  - Insufficient installation and safeguarding of the machine
  - Disregarding the installation requirements and conditions of use
  - Atmospheric discharges, overvoltage and lightning strokes as well as chemical influences
- The following items are as well not subject to the liability or warranty claims:
  - Wearing parts and components which are subject to a standard wear as intended such as e.g. V-belts, ball bearings, illuminants, filters, sealings, etc.
  - Non reproducible software errors
- Any services which HAFCO Metalmaster or one of its agents performs in order to fulfill in the frame of an additional guarantee are neither an acceptance of the defects nor an acceptance of its obligation to compensate. Such services do neither delay nor interrupt the warranty period.
- Place of jurisdiction among traders is Bamberg.
- If one of the above mentioned agreements is totally or partially inefficient and/or null, it is considered as agreed what is closest to the will of the warrantor and which remains in the framework of the limits of liability and warranty which are predefined by this contract.

9.4 Note regarding disposal / options to reuse:

Please dispose of your device environmentally friendly by disposing of scrap in a professional way.

Please neither throw away the packaging nor the used machine later on, but dispose of them according to the guidelines established by your city council/municipality or by the corresponding waste management enterprise.

9.4.1 Decommissioning

CAUTION

Used devices need to be decommissioned in a professional way in order to avoid later misuses and endangerment of the environment or persons

- Pull off the mains plug.
- Disconnect the connection cable.
- Remove all environmentally hazardous operating fluids from the used device.
- If applicable remove batteries and accumulators.
- Disassemble the machine if required into easy-to-handle and reusable assemblies and component parts.
- Supply the machine components and operating fluids to the provided disposal routes.

9.4.2 Disposal of the packaging of new devices

All used packaging materials and packaging aids of the machine are recyclable and generally need to be supplied to the material reuse.

The packaging wood can be supplied to the disposal or the reuse.

Any packaging components made of cardboard box can be chopped up and supplied to the waste paper collection.

The films are made of polyethylene (PE) and the cushion parts are made of polystyrene (PS). These materials can be reused after reconditioning if they are forwarded to a collection station or to the appropriate waste management enterprise.

Only forward the packaging materials correctly sorted to allow a direct reuse.

9.4.3 Disposing of the old device

INFORMATION

Please make sure in your own interest and in the interest of the environment that all component parts of the machine will be disposed of in the provided and admitted ways.

Please note that the electrical devices include lots of reusable materials as well as environmentally hazardous components. Account for separate and professional disposal of the component parts. In case of doubt, please contact your municipal waste management. If appropriate, call on the help of a specialist waste disposal company for the treatment of the material.

9.4.4 Disposal of electrical and electronic components

Please make sure that electrical components are disposed of in a professional way according to the legal requirements.

The device includes electric and electronic components and must not be disposed of with the rubbish. According to the European directive 2002/96/EG regarding electrical and electronic used devices and the execution of national rights used electrical tools and electrical machines need to be collected separately and be supplied to an environmentally compatible reuse.

Being the machine operator you should obtain information regarding the authorized collection or disposal system which applies for your company.

Please make sure that the batteries and/or accumulators are disposed of in a professional way according to the legal regulations. Please only throw discharged batteries in the collection boxes in shops or at municipal waste management companies.

Appendix

9.4.5 Disposal of lubricants and coolants

ATTENTION

Please imperatively make sure to dispose of the used coolant and lubricants in an environmentally compatible way. Observe the disposal notes of your municipal waste management companies.

INFORMATION

Used coolant emulsions and oils should not be mixed up since it is only possible to reuse used oils which had not been mixed up without pre-treatment.

The disposal notes for the used lubricants are made available by the manufacturer of the lubricants. If necessary, request the product-specific data sheets.

9.5 Disposal

Disposal of used electric and electronic machines
(Applicable in the countries of the European Union and other European countries with a separate collecting system for those devices).

The sign on the product or on its packing indicates that the product must not be handles as common household waist, but that is needs to be delivered to a central collection point for recycling. Your contribution to the correct disposal of this product will protect the environment and the health of your fellow men. The environment and the health are endangered by incorrect disposal. Recycling of material will help to reduce the consumption of raw materials. Your District Office, the municipal waste collection station or the shop where you have bought the product will inform you about the recycling of this product.

9.6 RoHS , 2002/95/CE

The sign on the product or on its packing indicates that this product complies with the European guideline 2002/95/EC .

Index

⚠WARNING

General Machinery Safety Instructions

Machinery House
requires you to read this entire Manual before using this machine.

1. **Read the entire Manual before starting machinery.** Machinery may cause serious injury if not correctly used.
2. **Always use correct hearing protection when operating machinery.** Machinery noise may cause permanent hearing damage.
3. **Machinery must never be used when tired, or under the influence of drugs or alcohol.** When running machinery you must be alert at all times.
4. **Wear correct Clothing.** At all times remove all loose clothing, necklaces, rings, jewelry, etc. Long hair must be contained in a hair net. Non-slip protective footwear must be worn.
5. **Always wear correct respirators around fumes or dust when operating machinery.** Machinery fumes & dust can cause serious respiratory illness. Dust extractors must be used where applicable.
6. **Always wear correct safety glasses.** When machining you must use the correct eye protection to prevent injuring your eyes.
7. **Keep work clean and make sure you have good lighting.** Cluttered and dark shadows may cause accidents.
8. **Personnel must be properly trained or well supervised when operating machinery.** Make sure you have clear and safe understanding of the machine you are operating.
9. **Keep children and visitors away.** Make sure children and visitors are at a safe distance for you work area.
10. **Keep your workshop childproof.** Use padlocks, Turn off master power switches and remove start switch keys.
11. **Never leave machine unattended.** Turn power off and wait till machine has come to a complete stop before leaving the machine unattended.
12. **Make a safe working environment.** Do not use machine in a damp, wet area, or where flammable or noxious fumes may exist.
13. **Disconnect main power before service machine.** Make sure power switch is in the off position before re-connecting.
14. **Use correct amperage extension cords.** Undersized extension cords overheat and lose power. Replace extension cords if they become damaged.
15. **Keep machine well maintained.** Keep blades sharp and clean for best and safest performance. Follow instructions when lubricating and changing accessories.
16. **Keep machine well guarded.** Make sure guards on machine are in place and are all working correctly.
17. **Do not overreach.** Keep proper footing and balance at all times.
18. **Secure workpiece.** Use clamps or a vice to hold the workpiece where practical. Keeping the workpiece secure will free up your hand to operate the machine and will protect hand from injury.
19. **Check machine over before operating.** Check machine for damaged parts, loose bolts, Keys and wrenches left on machine and any other conditions that may effect the machines operation. Repair and replace damaged parts.
20. **Use recommended accessories.** Refer to instruction manual or ask correct service officer when using accessories. The use of improper accessories may cause the risk of injury.
21. **Do not force machinery.** Work at the speed and capacity at which the machine or accessory was designed.
22. **Use correct lifting practice.** Always use the correct lifting methods when using machinery. Incorrect lifting methods can cause serious injury.
23. **Lock mobile bases.** Make sure any mobile bases are locked before using machine.
24. **Allergic reactions.** Certain metal shavings and cutting fluids may cause an ellergic reaction in people and animals, especially when cutting as the fumes can be inhaled. Make sure you know what type of metal and cutting fluid you will be exposed to and how to avoid contamination.
25. **Call for help.** If at any time you experience difficulties, stop the machine and call you nearest branch service department for help.

⚠WARNING

Drilling Machine Safety Instructions

Machinery House
requires you to read this entire Manual before using this machine.

1. **Maintenance.** Make sure the Drill is turned off and disconnect from the main power supply and make sure all moving parts have come to a complete stop before any inspection, adjustment or maintenance is carried out.
2. **Drill Condition.** Drill must be maintained for a proper working condition. Never operate a Drill that has damaged or worn parts. Scheduled routine maintenance should performed on a scheduled basis.
3. **Leaving a Drill Unattended.** Always turn the Drill off and make sure all moving parts have come to a complete stop before leaving the Drill. Do not leave Drill running unattended for any reason.
4. **Avoiding Entanglement.** Remove loose clothing, belts, or jewelry items. Never wear gloves while machine is in operation. Tie up long hair and use the correct hair nets to avoid any entanglement with the Drill spindle or moving parts.
5. **Chuck key & wrench safety.** Always remove chuck keys, wrenches and any service tools immediately after use. Chuck keys left in the chuck can cause serious injury.
6. **Understand the machines controls.** Make sure you understand the use and operation of all controls.
7. **Drill bit selection.** Always use the correct Drill bit for the job you are Drilling. Make sure you use the correct shank drill bit for you drilling machine.
8. **Secure the Drill Bit.** Properly tighten and securely lock the drill bit in the chuck.
9. **Cutting Tool inspection.** Inspect Drill for sharpness, chips, or cracks before use. Replace any cutting tools immediately if dull, chipped or cracked. Handle new cutting tools with care. Cutting edges are very sharp and can cause lacerations.
10. **Reversing the spindle.** Make sure the spindle has come to a complete stop before changing the direction of the spindle.
11. **Stopping the spindle.** Do not slow or stop the spindle by using you hand.
12. **Speed selection.** Select the appropriate speed for the type of work, material, and tool bit. Allow the Drill to reach full speed before beginning a cut.
13. **Changing Belts for speed selection.** Always allow the machine to come to a complete stop and turn power off before changing belts. Not turning power off when changing belts can cause serious injury.
14. **Clearing chips.** Always use a brush to clear chips. Never clear chips when the drill is running.
15. **Power outage.** In the event of a power failure during use of the drill, turn off all switches to avoid possible sudden start up once power is restored.
16. **Clean work area.** Keep the area around the drill clean from oil, tools, chips.
17. **Surface/workpiece area.** Before turning the drill on, make sure the table is clear of any objects (tools, scraps, off-cuts etc.) Do not drill material that does not have a flat surface. unless a suitable support is used.
18. **Table Lock.** Make sure the table is tightened before starting the drill.
19. **For - Radial Drill Arm Lock.** Make sure the arm is locked before leaving or starting a radial arm drill. An unlocked radial drill arm can swing and cause serious injury.
20. **Drilling Sheet metal.** All sheet metal should be clamped to the table before drilling.
21. **Mounting workpieces.** Use clamps or vices to secure workpiece before drilling. Position work so you avoid drilling into table.
22. **Guarding.** Do not operate the drill when chuck guard is removed.
23. **Eye and hand protection.** A face shield with safety glasses is recommended. Always keep hands and fingers away from the drill bit. Never hold a work[piece in your hand while drilling. Do not wear gloves while operating the drill.
24. **Drill operation.** Never start the drill with the drill bit pressed against the workpiece. Feed the drill evenly into the workpiece. Back the drill out of deep holes. Turn the machine off and clear chips and scrap pieces with a brush. Turn power off, remove drill bit, and clean the table before leaving the machine.
25. **Call for help.** If at any time you experience difficulties, stop the machine and call you nearest branch service department for help.

PLANT SAFETY PROGRAM

NEW MACHINERY HAZARD IDENTIFICATION, ASSESSMENT & CONTROL

Drilling Machine

Developed in Co-operation Between A.W.I.S.A and Australia Chamber of Manufactures
This program is based upon the Australian Worksafe Standard for Plant(NOHSC:1010-1994)

Item No.	Hazard Identification	Hazard Assessment	Risk Control Strategies (Recommended for Purchase / Buyer / User)
A	ENTANGLEMENT	HIGH	Eliminate, avoid loose clothing / Long hair etc.
B	CRUSHING	LOW	Secure & support work material on drill table.
C	CUTTING, STABBING, PUNCTURING.	MEDIUM	Isolate power to machine prior to any checks or maintenance being carried out. Do not adjust or clean until the machine has fully stopped.
D	SHEARING	MEDIUM	Isolate power to machine when changing speeds or maintenance is being carried out. Make sure all guards are secured shut when machine is on.
F	STRIKING	MEDIUM	Ensure workpieces are tightly secured on machine. Wear safety glasses. For Radial Arm Drills ensure that arm is locked before drilling. Ensure correct spindle direction when drilling..
H	ELECTRICAL	MEDIUM	All electrical enclosures should only be opened with a tool that is not to be kept with the machine. Never clean or dust machine when power is on. Machine should be installed & checked by a Licensed Electrician.
M	HIGH TEMPERATURE	LOW	Wear appropriate protective clothing to prevent hot swarf.
O	OTHER HAZARDS, NOISE.	LOW	Wear hearing protection as required.
Plant Safety Program to be read in conjunction with manufactures instructions			

HARE&FORBES MACHINERYHOUSE

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Authorised and signed by:
Safety officer: .....
Manager: .....

Revised Date: Aug-08