

Operating manual

Version 1.0.5

Geared drill



- B40E Item No. 3034344
- B40PTE Item No. 9680212

Keep for future reference!

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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.

Consult OSHA, state and local regulations in order to determine compliance, danger and risks to the operator.

Always keep this document close to the geared drill for future reference.

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:

C.H.HANSON

2000 North Aurora Rd.

Naperville, IL 60563

Call 800-827-3398

Safety

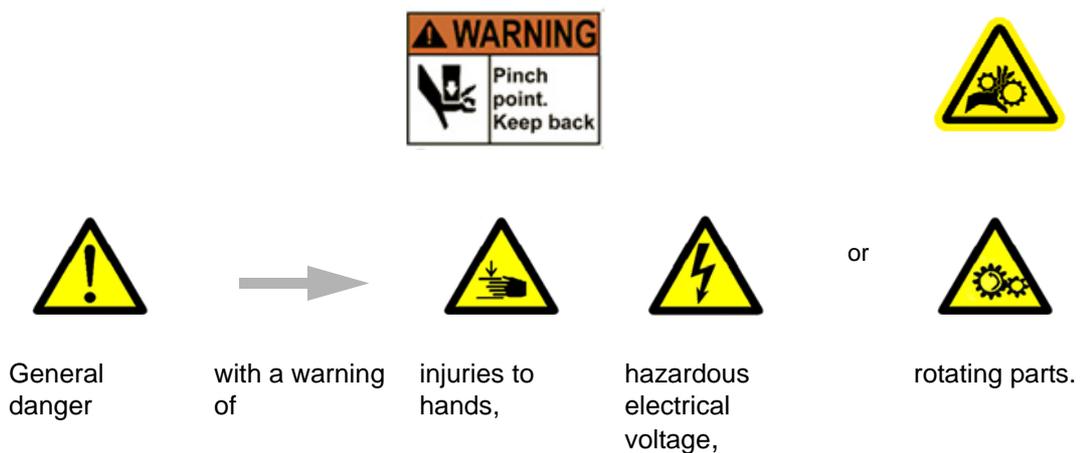
1.1 Safety warnings (warning notes)

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



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!



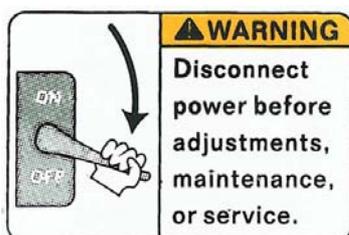
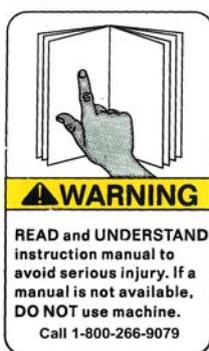
Wear a safety suit!



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 not 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 company or if the geared drill is operated with different 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 company 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 16



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

Reasonably foreseeable misuse

Any other use or any use beyond the use described under "Proper use" is regarded as improper use and is forbidden.

If it is intended to use the device in any other way as described above, it is necessary to consult the manufacturer.

It is only allowed to work metallic, cold and non-flammable material using the geared drill.

In order to avoid misuse, it is necessary to read and understand the operating instructions before the first commissioning.

The operators must be qualified.

1.3.1

Avoiding misuse

- Using suitable cutting tools.
- Adapting speed settings and feed on the material and on the workpiece.
- Clamp the workpiece firmly and vibration-free.

ATTENTION!

The workpiece must always be fixed in a machine vice, jaw chucks or any other suitable clamping tool such as e.g. clamping claws.

WARNING!

Injuries due to workpieces flying off at high speed.

→ Clamp the workpiece in the machine vice. Make sure that the workpiece is firmly clamped in the machine vice resp. the machine vice is firmly fixed on the machine table.

- Use of cooling and lubricating agents in order to increase the durability of the tool and to improve the surface quality.
- Clamp the cutting tools and the workpieces on clean clamping surfaces.



- Sufficiently lubricate the machine.
- Correctly set the bearing clearance and guidance.

It is recommended to:

- Use the drill in a way that it is exactly located between the three clamping jaws of the quick action chuck.

When drilling, please observe that

- It is necessary to set the suitable speed depending on the diameter of the drill,
 - The press-on must only be as intense that the drill can cut on no-load,
 - If the press-on is too intense, it might result in early tool wear perhaps even tool fracture resp. jamming in the drill hole. If the tool gets jammed, immediately stop the main drive motor by actuating the emergency-stop button,
 - For hard materials, e.g. steel, it is necessary to use commercial cooling/lubricating agents,
- Generally always back out the tool from the workpiece while the shaft is turning.

1.4 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 10

Safety

1.5 Qualification of personnel

1.5.1 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.



1.5.2 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 opera-
tor

- 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
requi-
rements

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

1.6 User positions

The user must stand in front of the geared drill.



INFORMATION

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



Fig.1-1: User positions

1.7 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).

1.8 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,**

Safety

- **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.

1.8.1 Protective cover

The drilling milling head is provided with a protective cover.



WARNING!

Only remove the protective cover if the power plug of the drilling milling machine is disconnected.

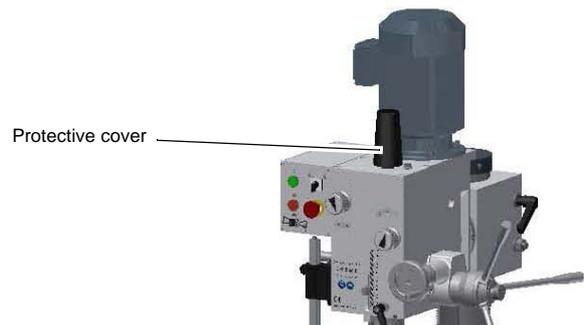


Fig.1-2: Protective cover

1.8.2 Main switch

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

If the main switch is switched off the power supply to the motors is interrupted.

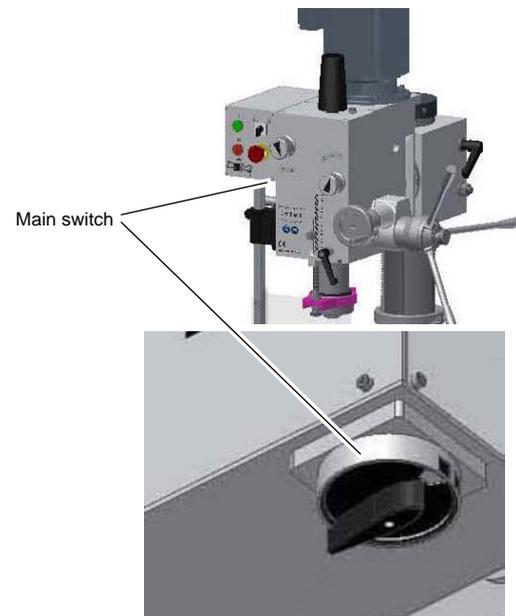


Fig.1-3: Main switch



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

1.8.3 Drilling table

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



WARNING!

Risks of injury due to parts flying off at high speed. Secure the piece firmly on the drilling table.

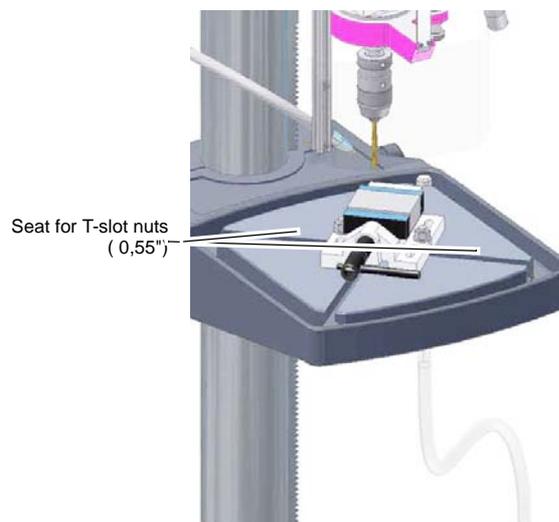


Fig.1-4: Drilling table

1.8.4 Drill chuck protection

- Adjust the drill chuck protection to the required height.
- Flap the drilling chuck protection in before you start drilling.
- It is only possible to switch on the geared drill if the drill chuck protection is closed.



Fig.1-5: Drill chuck protection

1.8.5 Prohibitive, warning and information labels



INFORMATION

All warning labels must be legible. Check them in regular intervals.

1.9 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 (at continuous operation),
- 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

- are legible (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):	

Functional test		
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 should only be switched on if the drill chuck protection is closed.	
Date:	Checked by (signature):	

1.10 Personal protective equipment

For certain work individual protection gear is required. This includes:

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

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



CAUTION!

Dirty or contaminated body protection gear can cause disease.

Clean your individual protection gear

- after every use,
- regularly, at least once per week.

Individual protection gear 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.



During operation of the drilling machine it is forbidden to wear gloves due to the risk of winding up.



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

1.11 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 the staff,**
- **cause damage to equipment.**

Avoid unsafe working practices:

- 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 protection gear. Make sure to wear a well-fitting work suit and, where necessary, a hairnet.
- Do not use protective gloves during drilling work.

1.12 Safety during maintenance

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

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

1.12.1 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 authorization, and keep the key at a safe place.

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



Place a warning sign on the machine.

1.12.2 Using lifting equipment



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 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 at the workplace or other inspection authorities.

Hold the loads properly. Never walk under suspended loads!

1.12.3 Mechanical maintenance work

Remove all protection and safety devices before beginning maintenance work and re-install them once the work has been completed. These include:

- Covers,
- Safety indications and warning signs,
- Earth (ground) connection.

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

1.13 Accident report

Inform your superiors and company 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.

1.14 Electrical system

Have the machine and/or the electric equipment checked regularly, 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 59

2 Technical data

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

2.1 Power connection	B 40 E	B 40 PTE
Motor	3 x 230V; 60 Hz; 1.1/ 1.5 kW	
Coolant unit	~60 Hz; 40 W	

2.2 Drill capacity	B 40 E	B 40 PTE
Drill capacity in steel [inch]	1 1/4"	
Continuous drilling performance in steel [inch]	1"	
Drill capacity in cast iron [inch]	1 9/16"	

2.3 Spindle seat	B 40 E	B 40 PTE
Stroke of sleeve [inch]	4 3/4"	
Spindle seat	MT4	
Spindle sleeve feed [inch / rev]	0.004" 0.007" 0.010"	
Drilling head	360° turnable +/- 60° tilting	

2.4 Drilling table	B 40 E	B 40 PTE
Table measurements [inch] Length x Width	15 3/4" x 16 3/4"	16 3/4" x 17 1/2"
Size of T-slots [inch]	0.55"	
Maximum distance [inch] Spindle - Table	29 3/4"	
Maximum distance [inch] Spindle - Base	46 1/4"	

2.5 Dimensions	B 40 E	B 40 PTE
Height [inch]	80"	
Depth [inch]	28"	
Width [inch]	23 1/2"	
Total weight [lb]	710	
Column diameter [inch]	115mm [4 1/2"]	

Technical data

2.6	Working area	B 40 E	B 40 PTE
	Height [inch]	90 1/2"	
	Depth [inch]	71"	
	Width [inch]	55"	

2.7	Revolutions	B 40 E	B 40 PTE
	Spindle rotating speeds [rpm]	115 - 3150	
	No. of speeds	12	

2.8	Floor load	B 40 E	B 40 PTE
	Ground resistance	10 KN / m ²	

2.9	Ambient conditions	B 40 E	B 40 PTE
	Temperature	41-95 °F	
	Humidity	25 - 80 %	

2.10	Operating material	B 40 E	B 40 PTE
	Gear oil	Mobilgear 627 or equivalent oil	
	Rack and upright of the drill	Commercial heavy grease	

2.11	Coolant pump	B 40 E	B 40 PTE
	Height max. [ft]	9	
	Tank capacity [US gal]	1.2	
	Conveying quantity max. [US gal/min.]	0.5	

2.12 Emissions

The noise emission of the geared drill amounts to less than 78 dB (A).

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 the noise behavior of the machine might change.

Furthermore, the factor of the noise emission also depends 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 dependency 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 precaution measures are required or not.



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

- Characteristics of the work space, 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 a noise protection and a hearing protection.



Technical data

2.13 Dimensions B40E

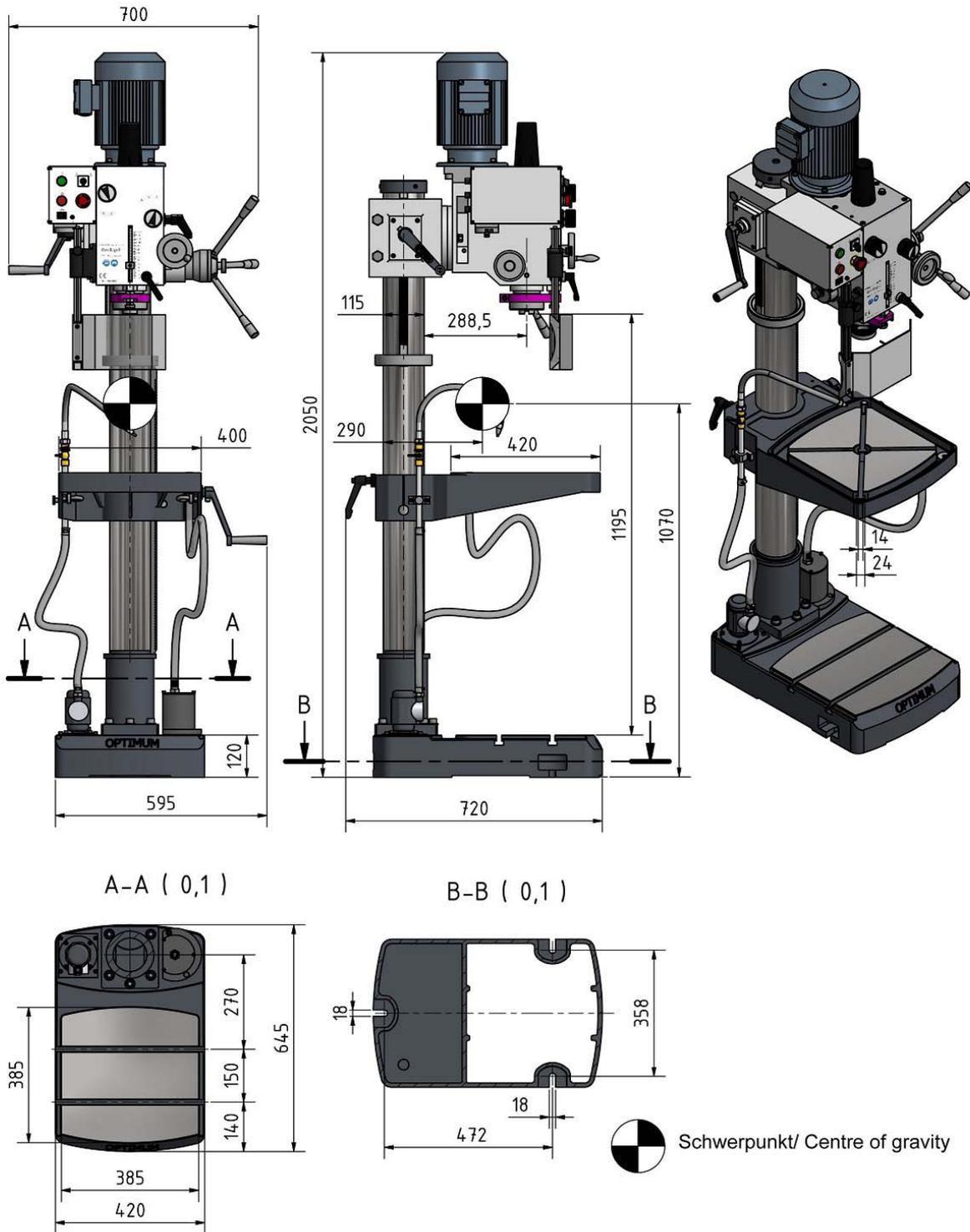


Abb.2-1: Dimensions B40E

2.14 Dimensions B40PTE

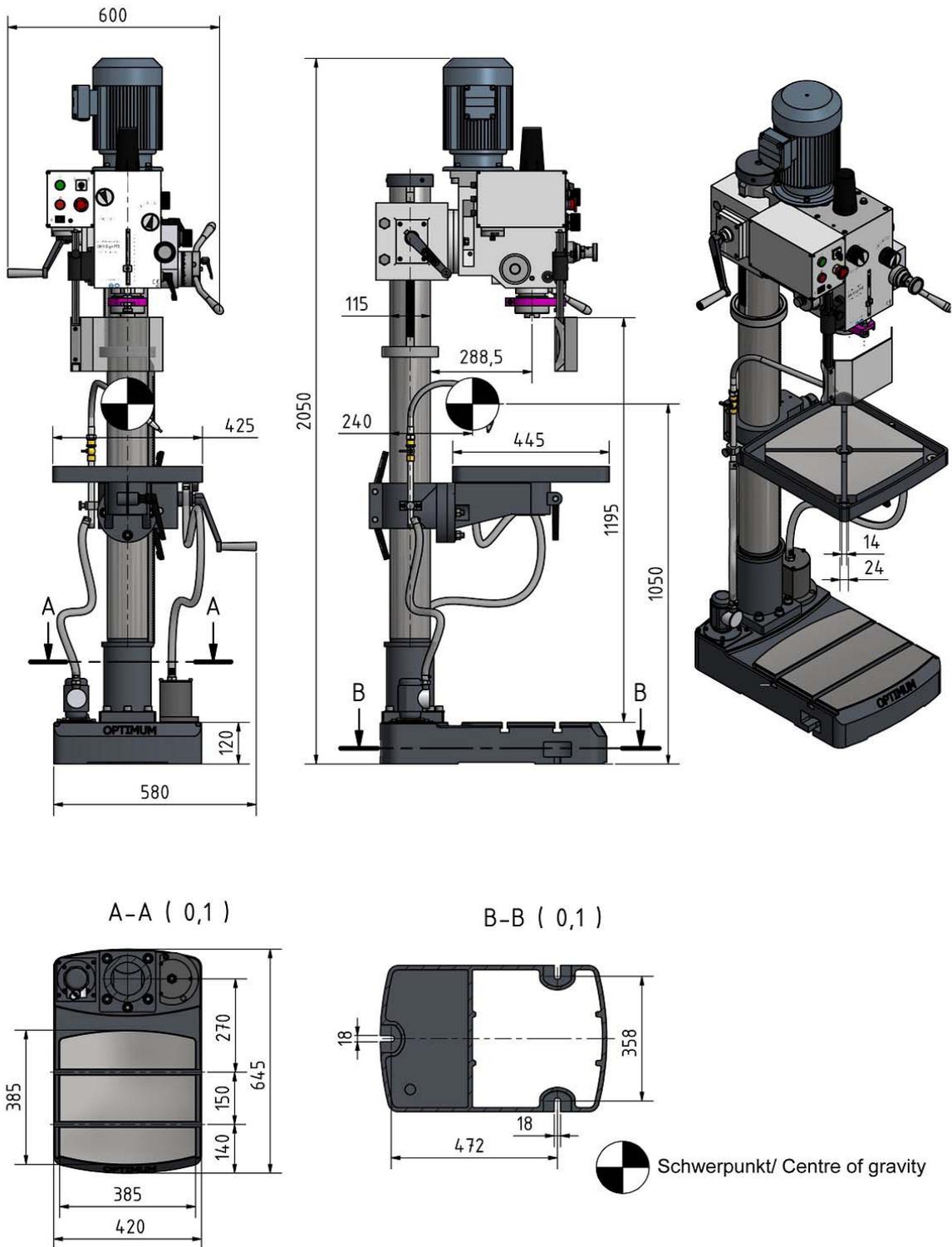


Abb.2-2: Dimensions B40PTE

3 Assembly



INFORMATION

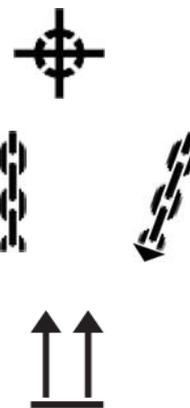
The geared drill is delivered pre-assembled.

3.1 Scope of delivery

Check immediately upon delivery of the geared drill if there are any transport damages or loosened fastening screws. Compare the scope of delivery with the packing list.

3.2 Transportation

- Centers of gravity
- Load suspension point
(Designation of the positions for the 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 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!



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.

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 require careful handling)



- Protect against moisture and humid environment



- 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.



Assembly

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.
☞ „Dimensions“ on page 16

Operation, maintenance and repair in the work area must not be hindered.
☞ „Working area“ on page 17



INFORMATION

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

3.4.2 Load suspension point

- Fix the load suspension gear to the ring screw and beneath the drilling head.
- Fix the load suspension gear to an appropriate hoisting device, e.g. crane. Fix the load suspension gear around the drilling head.
- Make sure that no add-on parts are damaged due to the load suspension gear around the drilling head nor defects in paintwork are caused. ☞ „Total weight [lb]“ on page 16

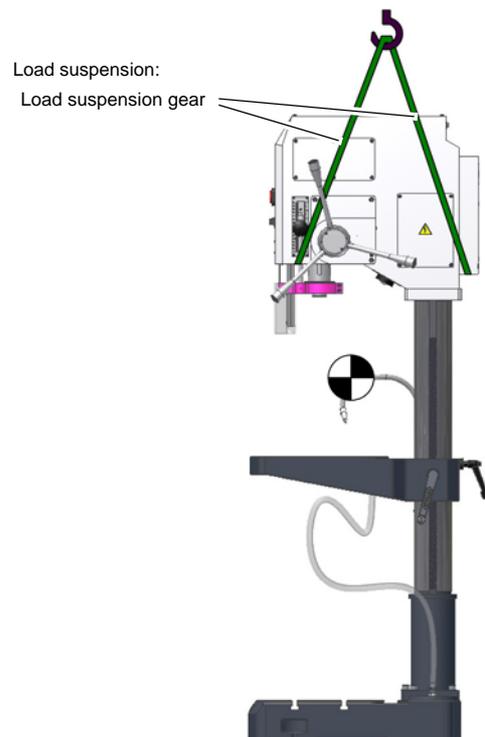


Fig.3-1: Example of load suspension and of lifting loads

3.4.3 Assembly



WARNING!

Danger of crushing and overturning. The Geared drill must be installed by at least 2 persons.

3.4.4 Installation

Check if the substructure of the Geared drill is leveled using a spirit-level.

Fix the Geared drill to the substructure by fixing the provided through-holes on the stand.
☞ „Floor load“ on page 17

The type of the installation place must be sufficient for the ergonomic requirements of the working place.

3.4.5 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.

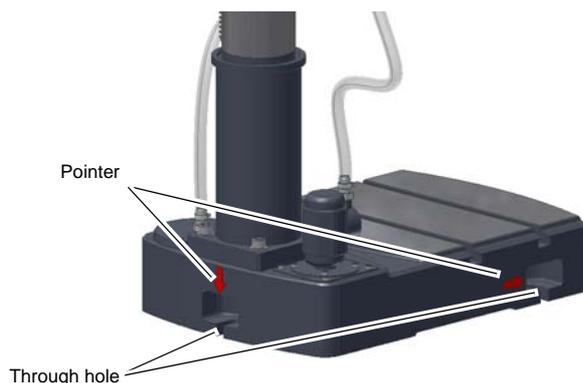


Fig.3-2: Marking of the fixing points

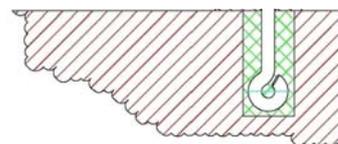


Fig.3-3: Example floor anchoring



ATTENTION!

Only fasten 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 fixing screws are too tight in particular in connection with an uneven substructure it may result in breaking the stand of the machine.

3.5 First use



WARNING!

Staff and equipment may be endangered if the Geared drill is first used by inexperienced staff. We do not take responsibility for damage caused by incorrect commissioning.

Power supply

Connect the supply cable:

Check the fusing (fuse) of your electrical supply according to the technical instructions regarding the total connected value of the Geared drill. ➔ „Power connection“ on page 16



ATTENTION!

Imperatively make sure that all 3 phases (L1, L2, L3) are correctly connected. Most of the defects on motors are caused by wrong connection, e.g. if the neutral conductor (N) is connected to a phase.

This might have the following results:

- The engine does get quickly very hot.
- The engine noise increases, i.e. becomes louder.
- The engine has no power.

When the phases are connected wrongly, the guarantee is being null and void.



ATTENTION!

Check the rotary field respectively the turning direction of the motor.

In the indexing position of the turning direction switch right-handed rotation (R) the drilling spindle must turn clockwise. If the motor turns in the wrong direction it may destroy the Geared drill.



ATTENTION!

Due to the wrong turning direction the pump is destroyed within a short time.

- Check the rotary field respectively the turning direction of the coolant pump.
- The pump must turn clockwise.



INFORMATION

The coolant pump also conveys if it turns the wrong way.

3.5.1

Checks

- Check the geared drill as indicated under  „Safety check“ on page 12.
- Check the geared drill as indicated under  „Oil level“ on page 61.

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 authorization.

Notify the person responsible immediately of any modification.

☞ „Safety during operation“ on page 14

4.2 Control and indicating elements

4.2.1 B40 E

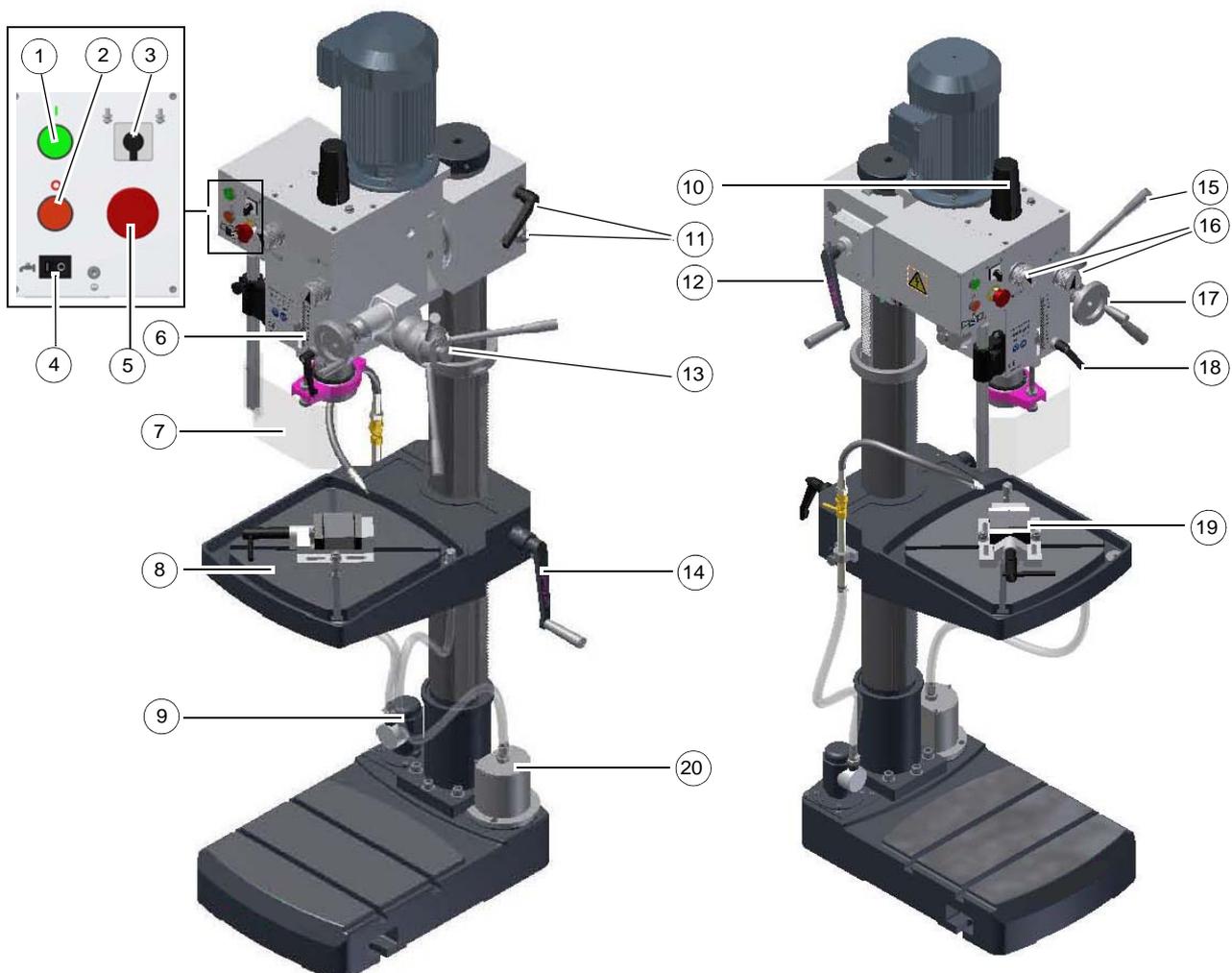


Abb.4-1: Geared drill B40 E

Handling

No	Designation	No	Designation
1.	Push button start	11.	Clamping lever/Locknut
2.	Push button stop	12.	Crank handle drilling head height adjustment
3.	Turning direction switch	13.	Activation of the fine adjustment
4.	Coolant pump ON / OFF	14.	Table height adjustment
5.	EMERGENCY STOP	15.	Star grip for spindle sleeve feed
6.	Meter rule with scale	16.	Gear selector switch speed levels
7.	Drill chuck protection	17.	Fine adjustment of spindle sleeve
8.	Drilling table	18.	Clamping lever Sleeve
9.	Cooling pump	19.	Machine vice BMS150 (optional)
10.	Cap draw-in rod	20.	Chip filter

4.2.2 B40 PTE

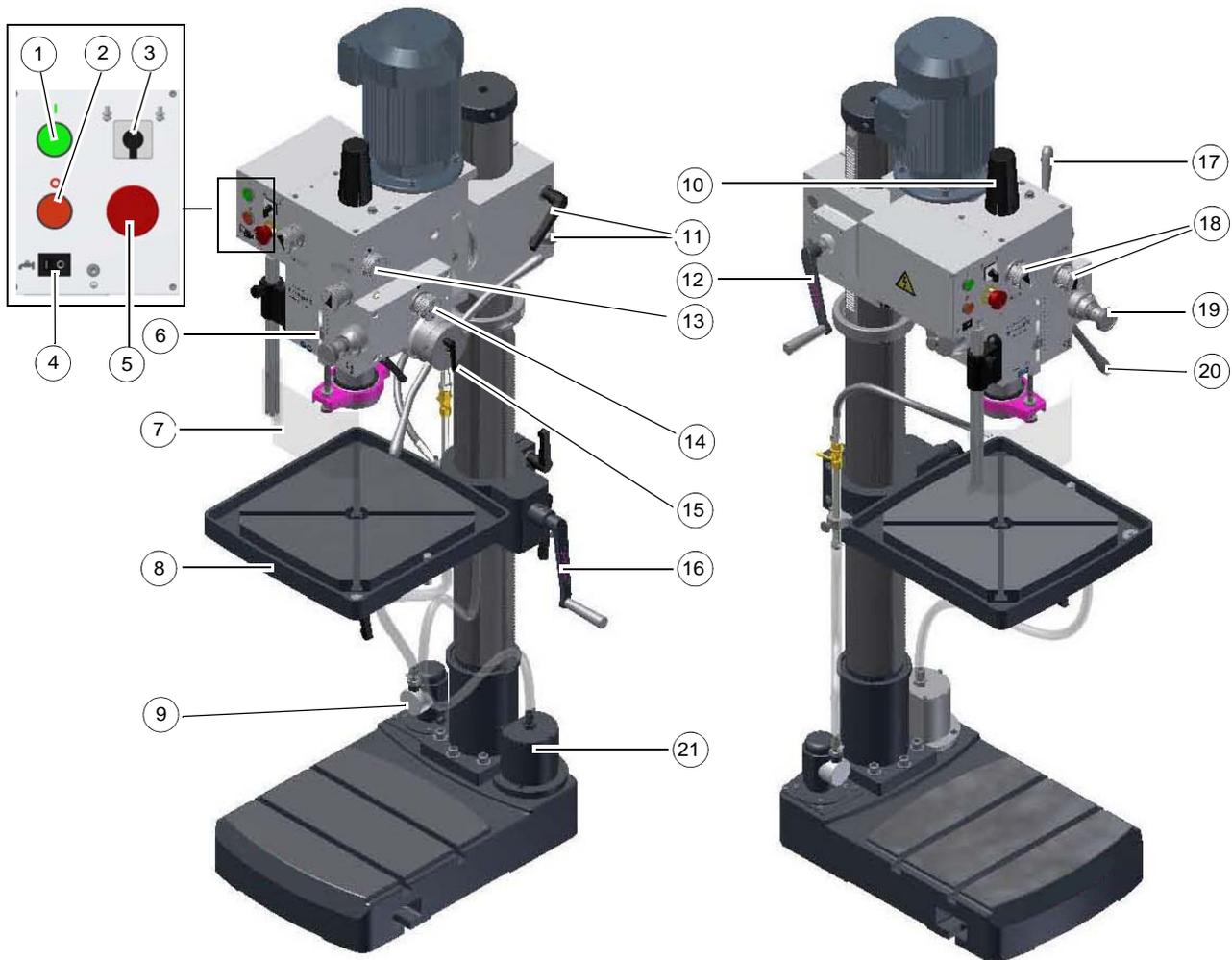


Abb.4-2: Geared drill B40 PTE

No	Designation	No	Designation
1.	Push button start	12.	Crank handle drilling head height adjustment
2.	Push button stop	13.	Selector rotary switch feed ON/OFF
3.	Turning direction switch	14.	Selector rotary switch sleeve feed (3 steps)
4.	Coolant pump ON / OFF	15.	Activation of the fine adjustment
5.	EMERGENCY STOP	16.	Table height adjustment

6.	Meter rule with scale	17.	Sleeve lever with feed activation
7.	Drill chuck protection	18.	Gear selector switch speed levels
8.	Drilling table	19.	Fine adjustment of spindle sleeve
9.	Cooling pump	20.	Clamping lever Sleeve
10.	Cap draw-in rod	21.	Chip filter
11.	Clamping lever/ Locknut		

4.3 Geared drill switch on



ATTENTION!

Wait until the geared drill has come to a complete halt before inverting the turning direction using the change-over switch.

- Switch on the main switch.
- Close the protective equipment.



Fig.4-3: Control panel

- Select the turning direction of the geared drill by pressing the turning direction switch.

There are two speed levels available for each turning direction.

- The marking "R" means right-handed rotation (clockwise).
- The marking "L" means left-handed rotation.

- Press the button "ON"
The geared drill switches on and turns into the pre-selected turning direction.

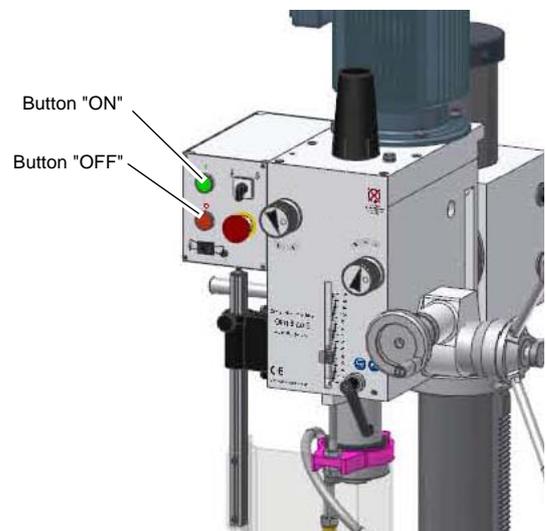


Fig.4-4: ON / OFF button

Handling

4.3.1 Gear selector switch

A speed selection is performed by pressing the gear selector switches. In connection with the speed levels on the turning direction switch you obtain a total of 12 speed levels ranging from 95 to 3.200 rpm

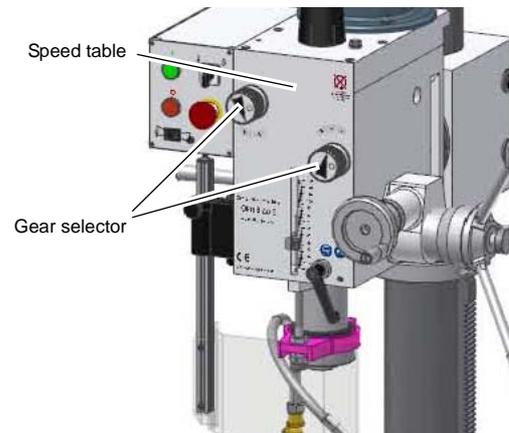


Fig.4-5: Gear selector



INFORMATION

To select the speed refer to the speed table on the drilling head.



ATTENTION!

Wait until the turning of the drilling spindle has come to a complete hold before modifying the speed by pressing the gear selector switches.

Changing the gearing during operation may lead to damages of the gear.

4.4 Geared drill switching-off

→ Press the hand-actuated auxiliary switch Stop. For long-term standstill switch the geared drill off by pressing the main switch.

4.5 Drill depth stop

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

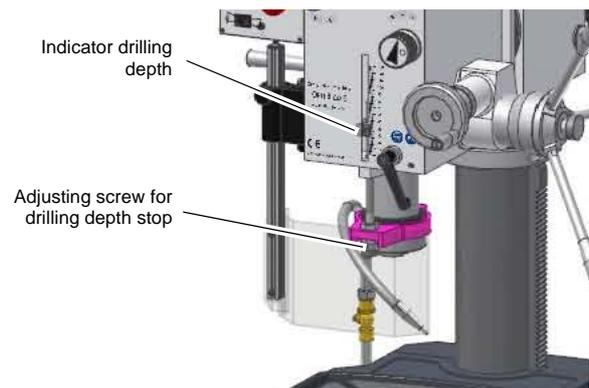


Fig.4-6: Drill depth stop

The spindle can now only be lowered to the set value.



INFORMATION

When using the automatic sleeve speed (B40 PTE) a feed switch-off is taking place. The sleeve is returned to the initial position by spring force.

4.6 Spindle sleeve feed

The sleeve feed can be performed manually or automatically.

4.6.1 Manual sleeve feed with fine feed (only applies for B40 E)

- Turn the knurled screw (clockwise). The sleeve lever moves in direction of the drilling head and activates the coupler of the fine feed.
- Turn the fine feed of the sleeve in order to move the sleeve.

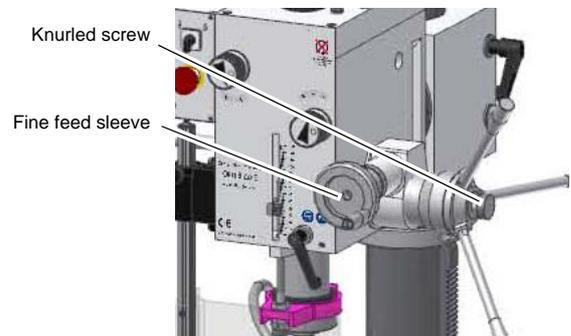


Fig.4-7: Knurled screw B40 E

4.6.2 Manual sleeve feed using the sleeve lever

B40 E:



ATTENTION!

The coupler of the fine feed must be released before it is possible to use the sleeve lever. If the sleeve lever is actuated with the activated fine feed the coupler may get damaged.

- Unscrew the knurled screw (anti-clockwise). The sleeve lever moves away from the drilling milling head and deactivates the coupler of the fine feed.
- Check if the clamping lever of the sleeve is released.
 - Now it is possible to move the sleeve downward using the sleeve lever.

B40 PTE:

- Make sure that the clamping screw (knurled screw) of the sleeve lever is tensioned and that it is not possible to pull the sleeve lever outward.
- Turn the selector rotary switch and the rotary switch to set the sleeve feed speed to "OFF".
 - Now it is possible to move the sleeve downward by means of the sleeve lever.

4.6.3 Automatic sleeve feed (only applies for B40 PTE)

In order to switch on the automatic sleeve feed:

- Select the sleeve feed speed by means of the selector rotary switch.
 - 0.10 mm / turn (0,0039 inch/turn)
 - 0.18 mm / turn (0,0071 inch/turn)
 - 0.26 mm / turn (0,0102 inch/turn)

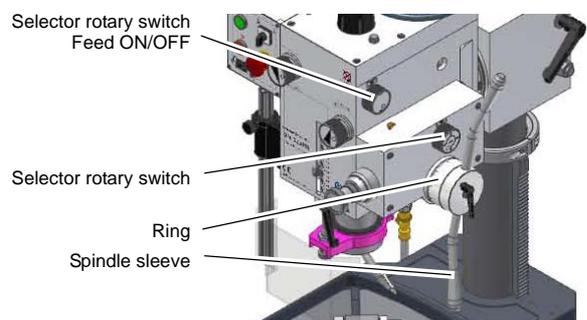


Fig.4-8: Selector rotary switch sleeve feed



ATTENTION!

The higher the preset number of revolutions, the greater the feed speed in the sleeve. Make sure to use the correct speeds depending on the used material and on the drill diameter.

☞ „Drill depth stop“ on page 29

- Turn the selector rotary switch to the position "ON" in order to activate the feed.
- Adjust the drill depth stop.
- Check if the clamping lever of the sleeve is released.
- Check if the clamping screw (knurled screw) of the sleeve lever is released. If the knurled screw is not released it is not possible to activate the automatic sleeve feed.
- Pull the sleeve lever outward. This way the sleeve feed is activated.

4.6.4 Sleeve clamping lever

The sleeve is returned to its initial position by spring force.

Use the sleeve clamping lever in order to fix the sleeve at a determined height.

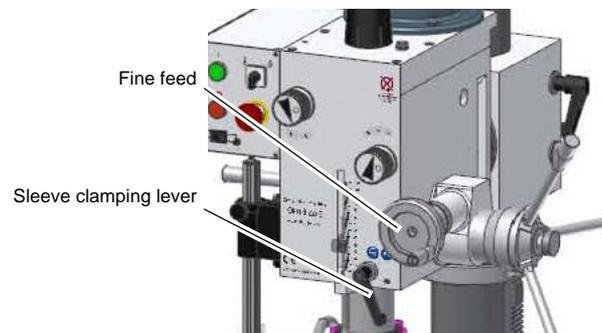


Fig. 4-9: Sleeve clamping lever

4.7 Drilling head

4.7.1 Swiveling the drilling head

It is possible to swivel the drilling head to the right or to the left.

- Release the clamping screws on both sides of the drilling head.

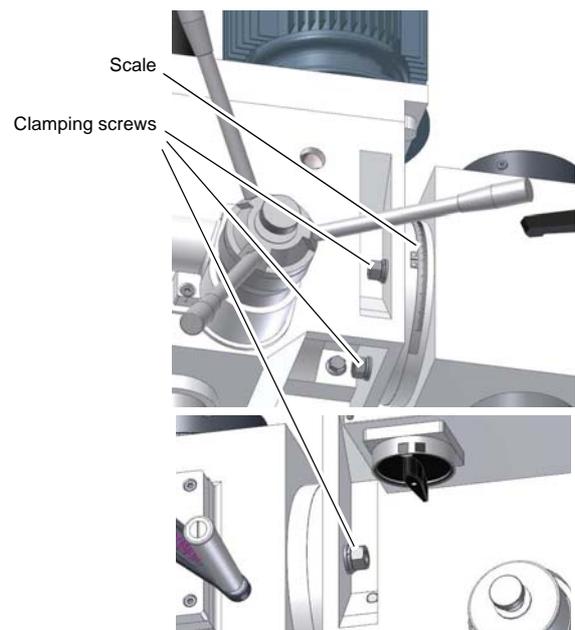


Fig. 4-10: Clamping screws drilling head

- Adjust the required angle by means of the scale.
- Firmly tighten the clamping screw of the drilling head.



CAUTION!

If the screws are completely screwed out the milling head might fall down.
 When swiveling the working head only release the screws as much as necessary to perform the adjustments. After having adjusted the swiveling angle retighten the fixing screws.

4.7.2 Turning the drilling head

The drilling head can be turned around the axis of the drilling column.

- Release the clamping lever respectively the locknut on the drilling head.
- Turn the drilling head to the required position.
- Retighten the clamping lever respectively the locknut on the drilling nut.

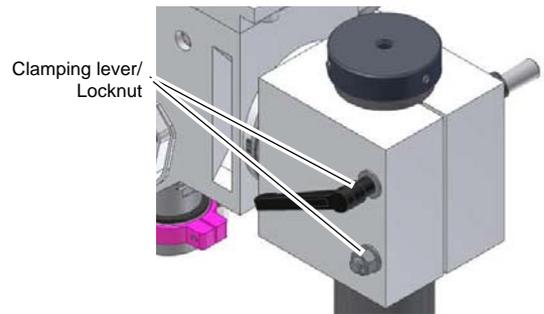


Fig.4-11: Clamping lever/ Locknut drilling head

4.7.3 Lifting and lowering the drilling head

It is only possible to lift the drilling head using the crank handle of the drilling head.

Position the drilling head at a higher position if you need a larger distance between the drilling sleeve and the drilling table.

- Release the clamping lever respectively the locknut on the drilling head.
- Lift or lower the drilling head using the crank handle of the drilling head.
- Retighten the clamping lever respectively the locknut on the drilling head.

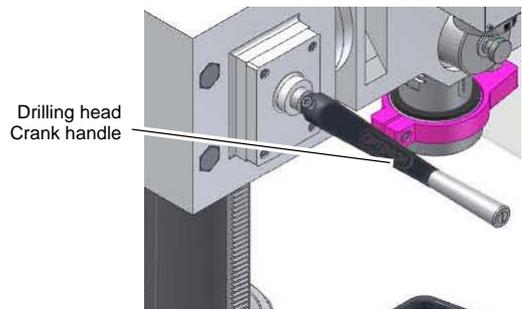


Fig.4-12: Drilling head height adjustment

4.8 Tool holder

4.8.1 Fitting the bit-holder



INFORMATION

Remove the holding bolt (if existing) from the drilling spindle in order to install the drill chuck.

☞ „Working table“ on page 34

Handling

The quick-action drill chuck is secured against distortion in the drilling spindle by a positive connection (carrier).

A friction-locking connection fixes and centers the quick-action drill chuck with the taper mandrel in the drilling spindle.

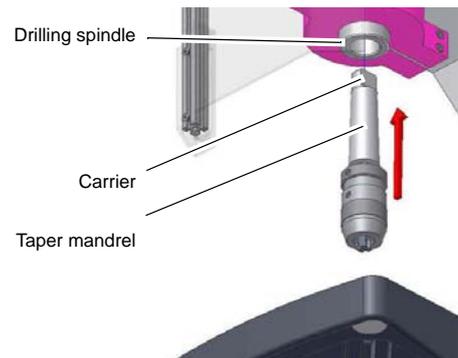


Fig.4-13: Taper mandrel

- Check respectively clean the conical holder of the drilling spindle and on the taper mandrel of the tool or of the quick-action drill chuck.
- Press the taper mandrel into the bit-holder spindle.

4.8.2 Disassembly of the drill chuck

The taper mandrel is detached from the drilling spindle using an ejector rod.

WARNING!

Only perform the following works if the geared drill is disconnected from the electrical supply.



- Insert the ejector rod into drilling spindle from the top.
- Firmly hold the drill chuck respectively the taper mandrel before it is / they are pressed out of the drilling spindle.
- Disassemble the taper mandrel from the drilling spindle by pressing the taper mandrel out of the drilling spindle with slight strokes (e.g. using a blowback rubber mallet) on the hexagon of the drill drift rod.
- After completing the disassembly, take the drill drift rod out of the drilling spindle.

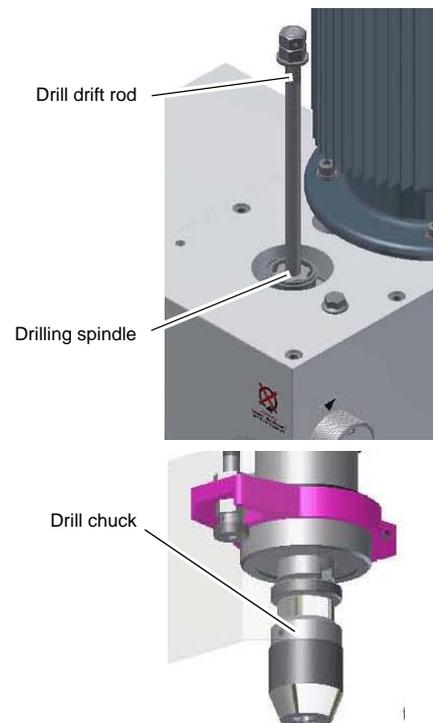


Fig.4-14: Drill chuck/ taper mandrel

4.8.3 Quick-action drill chuck

The drill chuck is composed of two parts (1 and 2).

- Firmly hold the top part of the drill chuck (No. 1). Use the bottom part of the drill chuck (No. 2) in order to tighten respectively release the jaws of the quick-action drill chuck.
- Firmly bolt the tool (drill).



CAUTION!

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

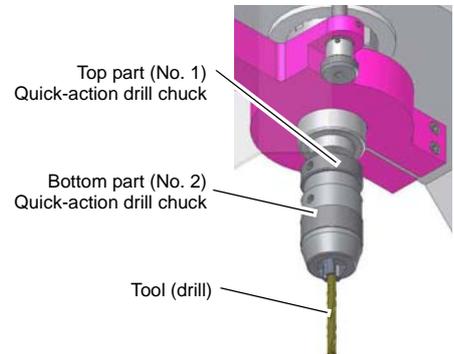


Fig.4-15: Quick-action drill chuck

4.9 Working table

4.9.1 Modifying the height of the working table

- Release the working table by releasing the clamping lever of the lock.
- Turn the crank in order to lower or lift the working table.
- Finally lock the working table by tightening the clamping lever of the lock.

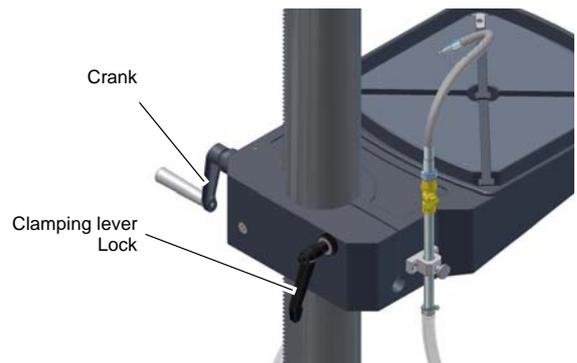


Fig.4-16: Table height adjustment

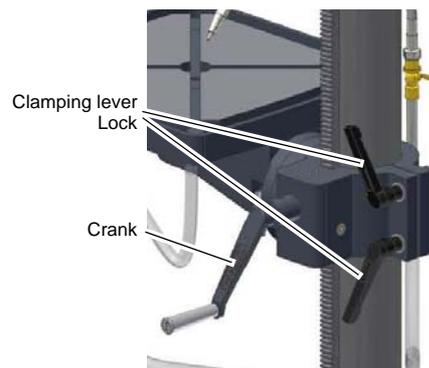


Fig.4-17: Table height adjustment B40 PTE

Handling

4.9.2 Turning the working table (B40 PTE)

- Release the working table by pushing the clamping lever of the lock backward.
- Turn the working table to the required position.
- Finally lock the working table by pulling the clamping lever of the lock forward.

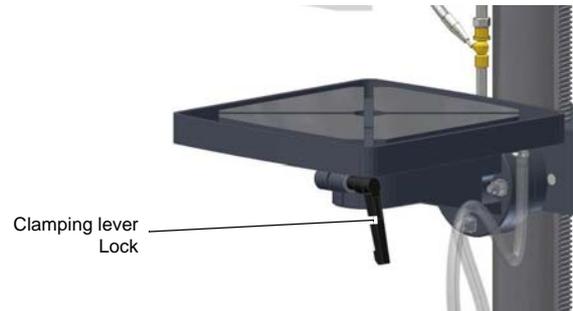


Fig.4-18: Working table B40 PTE

4.9.3 Swiveling a working table (B40 PTE)

- Unscrew the clamping screws.
- Swivel the working table to the required position. The tilt angle is visible on the scale.
- Retighten the clamping screws.

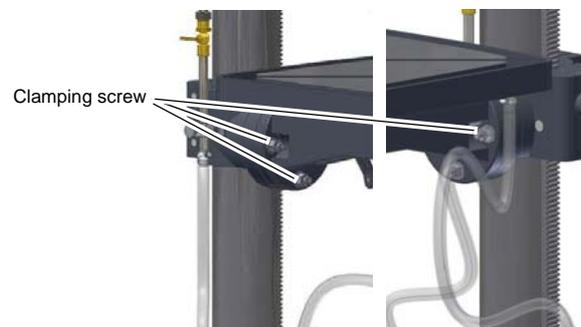


Fig.4-19: Working table B40 PTE

4.10 Cooling

High temperatures are generated on the tool tip due to the occurring friction heat caused by the rotary movements.

The tool should be cooled down when drilling. By cooling with an appropriate cooling/lubricating agent you attain better working results and a longer service life of the tools.

This is done at the best by a separate cooling system. If no cooling system is included in the scope of delivery it is possible to cool by means of a spray gun or a wash bottle.

CAUTION!

Risks of injury if the brush is getting caught or pulled in.
Use a spray gun or a wash bottle for cooling.



4.10.1 Coolant unit

ATTENTION!

Failure of the pump in the event of a dry run. The pump is lubricated with the cooling agent. Do not start up the pump without cooling agent.

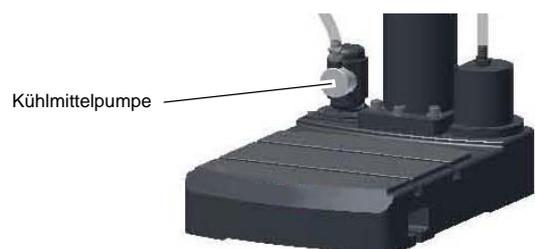


Fig.4-20: Cooling pump



INFORMATION

Use a water soluble environmentally compatible drilling emulsion as cooling agent procured from the specialized trade.

Make sure that the cooling agent is collected.

Make sure to dispose of the used cooling and lubricating agent in an environmentally friendly way.

Follow the manufacturer's disposal instructions.



- Switch on the cooling units by pressing the switch.

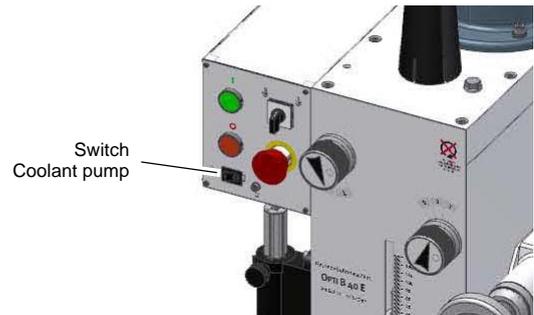


Fig.4-21: Switch cooling unit

4.11 Before starting work

Before you start working select the required speed. It is depending on the diameter of the bit being used and of the material.

☞ „Determining the cutting speed and the speed“ on page 47



WARNING!

For drilling works the workpiece must be safely clamped in order to secure it against being taken by the drill. A machine vice or clamping jaws are appropriate clamping tools.

Underlay the workpiece with a wooden or plastic plate so that the working table, vice, etc. are not tapped.

If necessary, adjust the required drill depth using the drill depth stop in order to attain a constant result.

Please make sure to use an appropriate dust suction when working wood since hardwood dust may be health hazardous. If performing works which generate dust wear an appropriate dust protection mask.

Handling

4.12 During the working process

The manual sleeve feed is performed by actuating the sleeve lever. Make sure to work with a constant feed which is not too strong.

The sleeve is reset by means of a restoring pin.



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!

Risk of crushing due to the sleeve lever.

Do not release the sleeve lever when resetting the drill sleeve.

Smaller drills more easily break. For deep drill holes pull out the drill more often in order to pull out the drill chips from the hole. A few drops of cooling lubricants reduce the friction and increase the life of the drill bit.



CAUTION!

Danger of crushing, do not place your hand between the bit-holder head and the spindle sleeve.

5 Determining the cutting speed and the speed

5.1 Table cutting speeds / infeed

Material table	Recommended infeed f in mm/revolution					
Material to be processed	Recommended cutting speed Vc in m/min	Drill bit diameter d in mm				
		2...3	>3...6	>6...12	>12...25	>25...50
		Unalloyed construction steels < 700 N/mm ²	30 - 35	0.05	0.10	0.15
Alloyed construction steels > 700 N/mm ²	20 - 25	0.04	0.08	0.10	0.15	0.20
Alloyed steels < 1000 N/mm ²	20 - 25	0.04	0.08	0.10	0.15	0.20
Steels, low stability < 800 N/mm ²	40	0.05	0.10	0.15	0.25	0.35
Steel, high stability > 800 N/mm ²	20	0.04	0.08	0.10	0.15	0.20
non-rust steels > 800 N/mm ²	12	0.03	0.06	0.08	0.12	0.18
Cast iron < 250 N/mm ²	15 - 25	0.10	0.20	0.30	0.40	0.60
Cast iron > 250 N/mm ²	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

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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

Determining the cutting speed and the speed

V _c 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

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

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

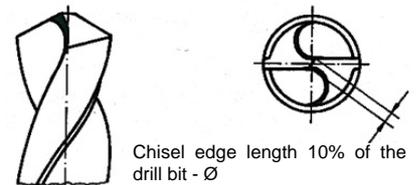


INFORMATION

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.



Recommended working steps for a drilling diameter of 30 mm

Example:

1st working step: Pre-drilling with Ø 5 mm (0.2").

2nd working step: Pre-drilling with Ø 15 mm (0.6").

3rd working step: Drilling with Ø 30 mm (1.2").

6 Ersatzteile - Spare parts - B40E, B40PTE

6.1 Bohrkopf 1 von 8 - Drilling head 1 of 8

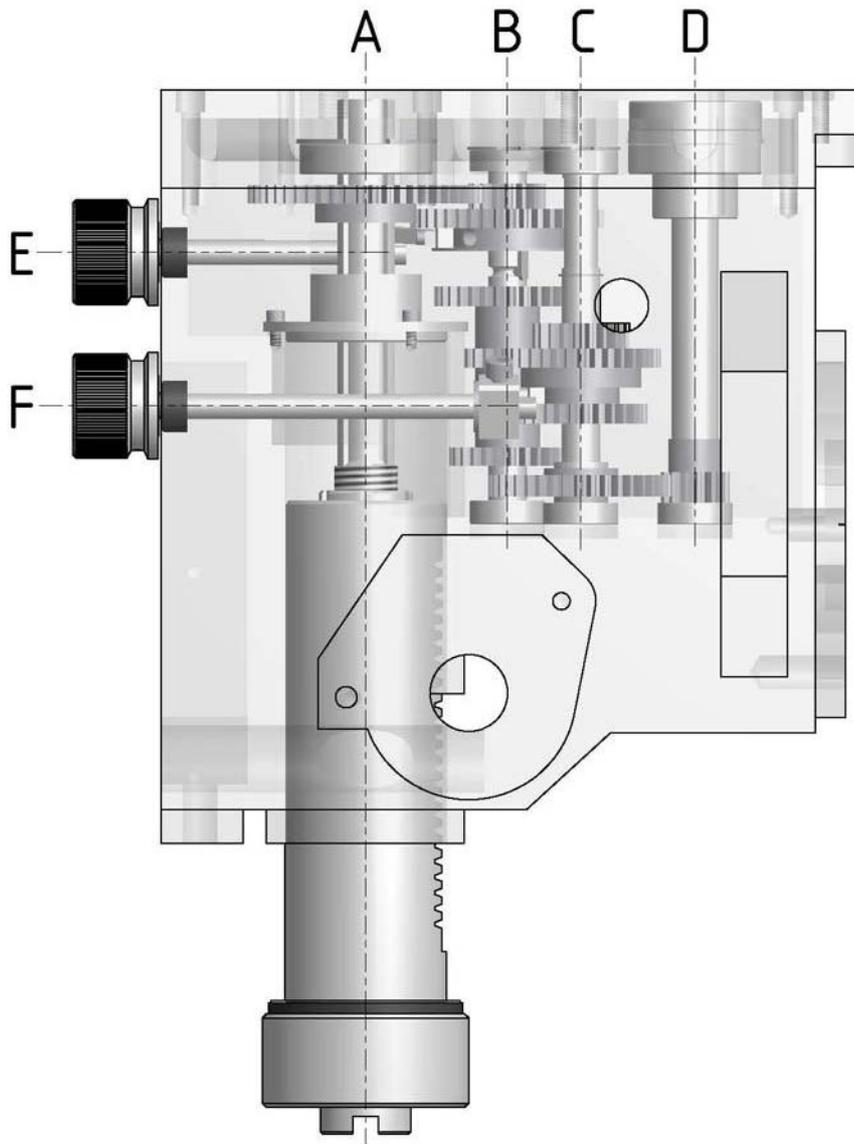


Abb.6-1: Bohrkopf 1 von 8 - Drilling head 1 von 8

6.2 Bohrkopf 2 von 8 - Drilling head 2 of 8

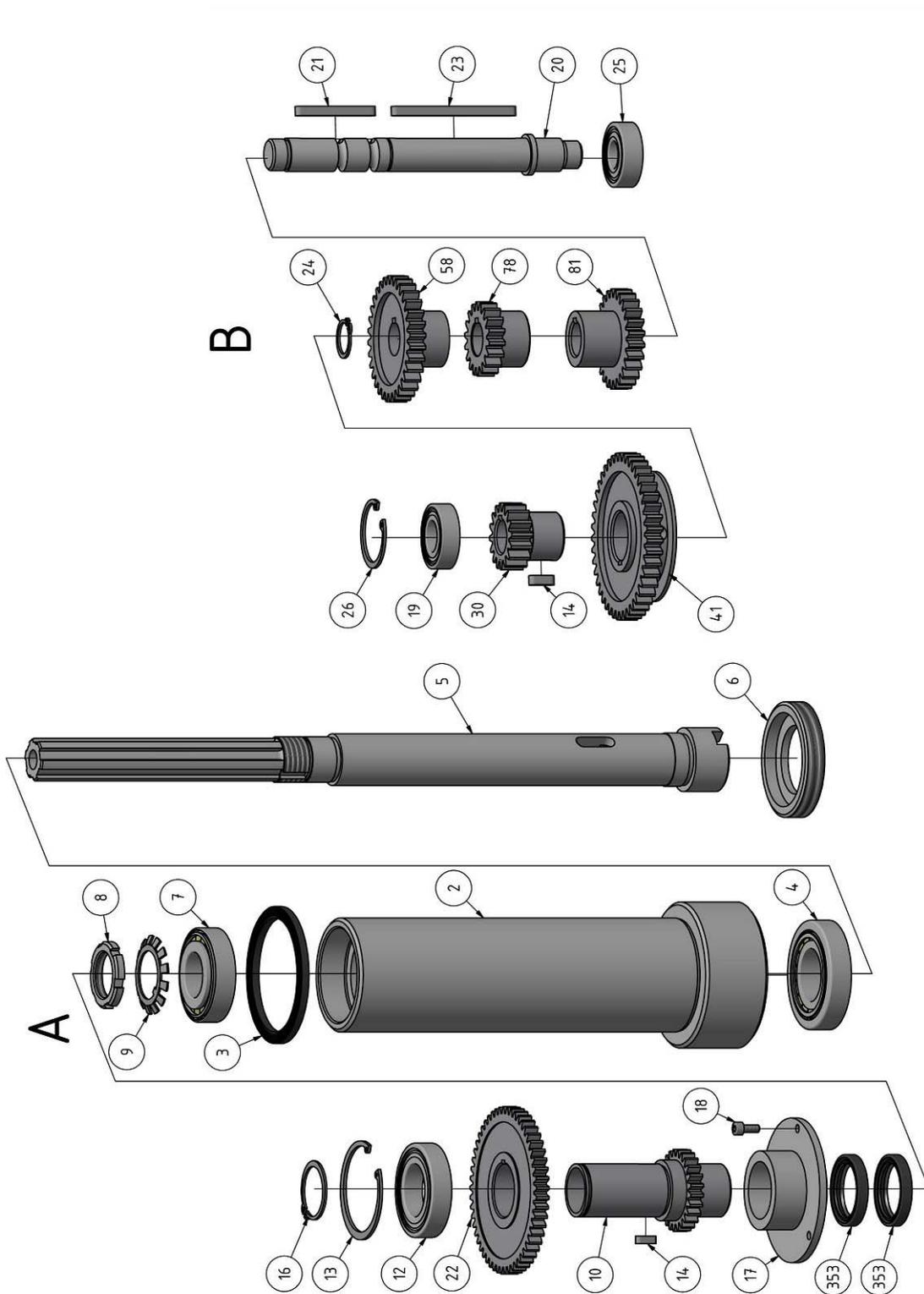


Abb.6-2: Bohrkopf 2 von 8 - Drilling head 2 von 8

6.3 Bohrkopf 3 von 8 - Drilling head 3 of 8

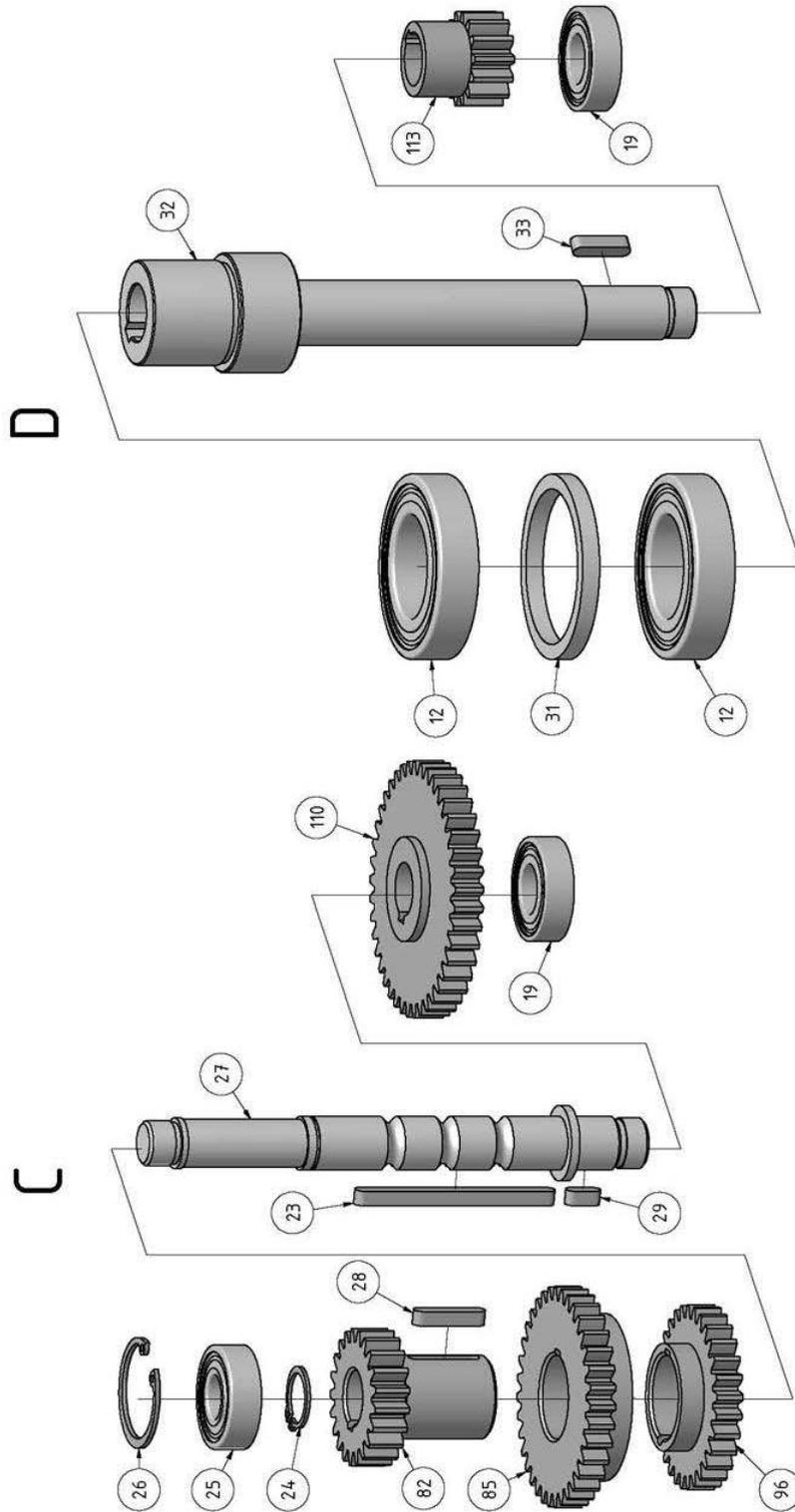


Abb.6-3: Bohrkopf 3 von 8 - Drilling head 3 von 8

6.4 Bohrkopf 4 von 8 - Drilling head 4 of 8

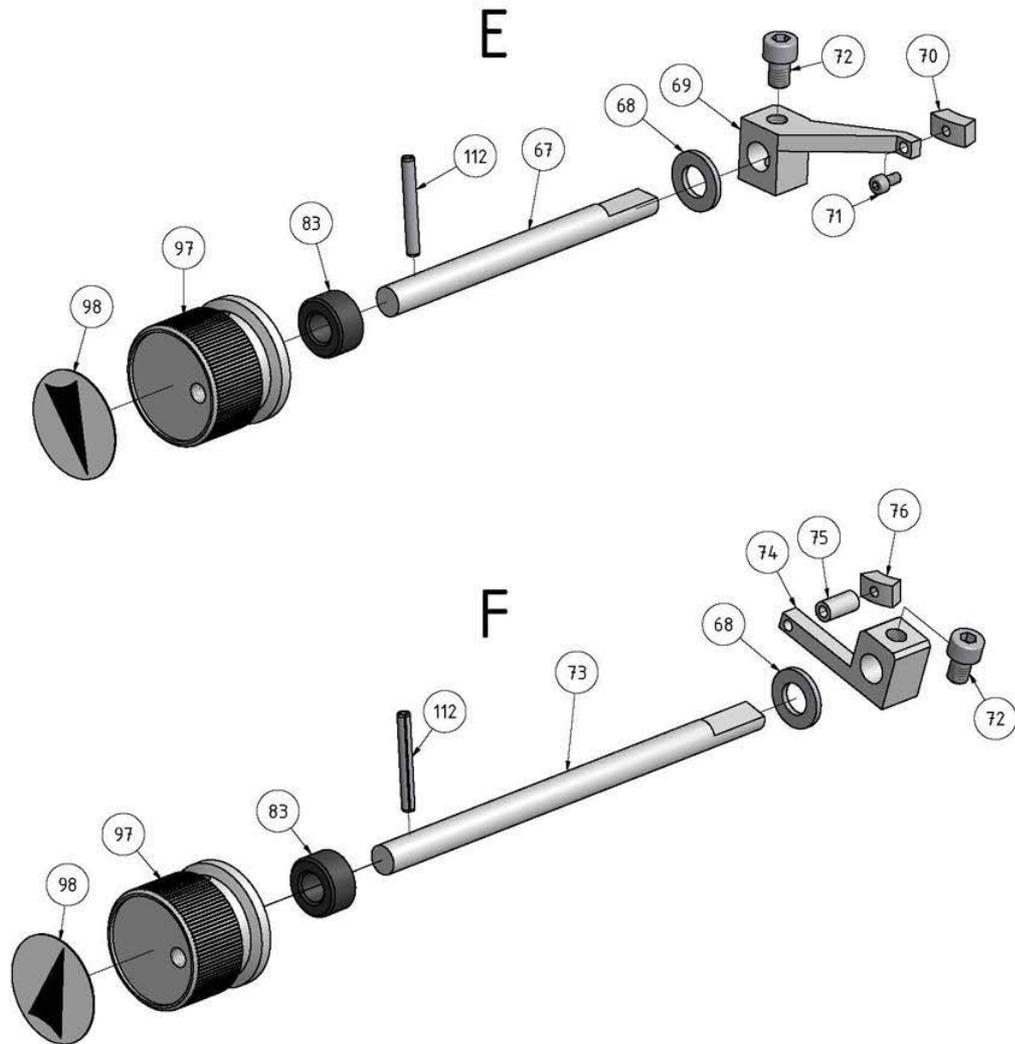


Abb.6-4: Bohrkopf 4 von 8 - Drilling head 4 von 8

6.5 Bohrkopf 5 von 8 - Drilling head 5 of 8- B40E

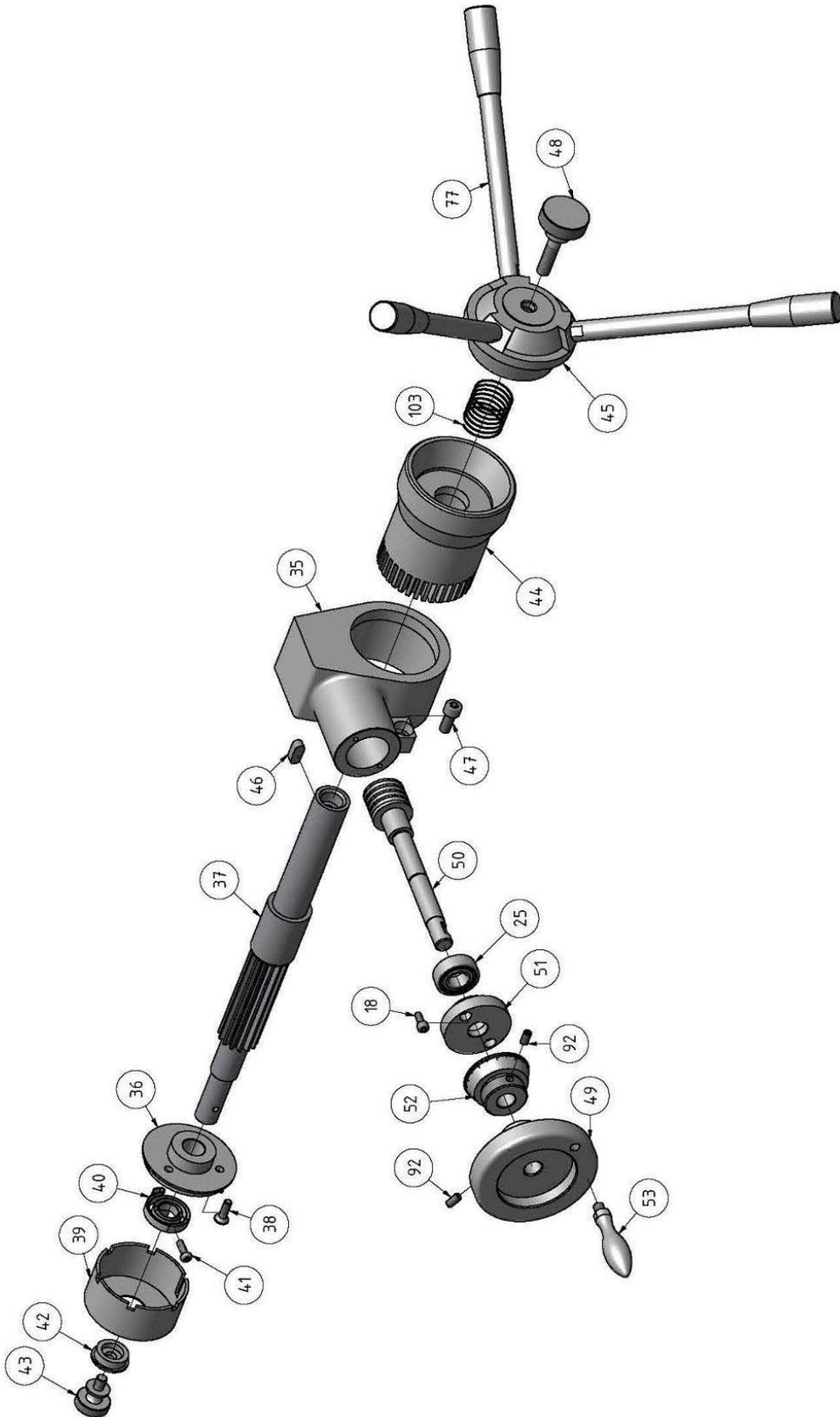


Abb.6-5: Bohrkopf 5 von 8 - Drilling head 5 von 8- B40E, B40BE

6.7 Bohrkopf 7 von 8 - Drilling head 7 of 8- B40PTE

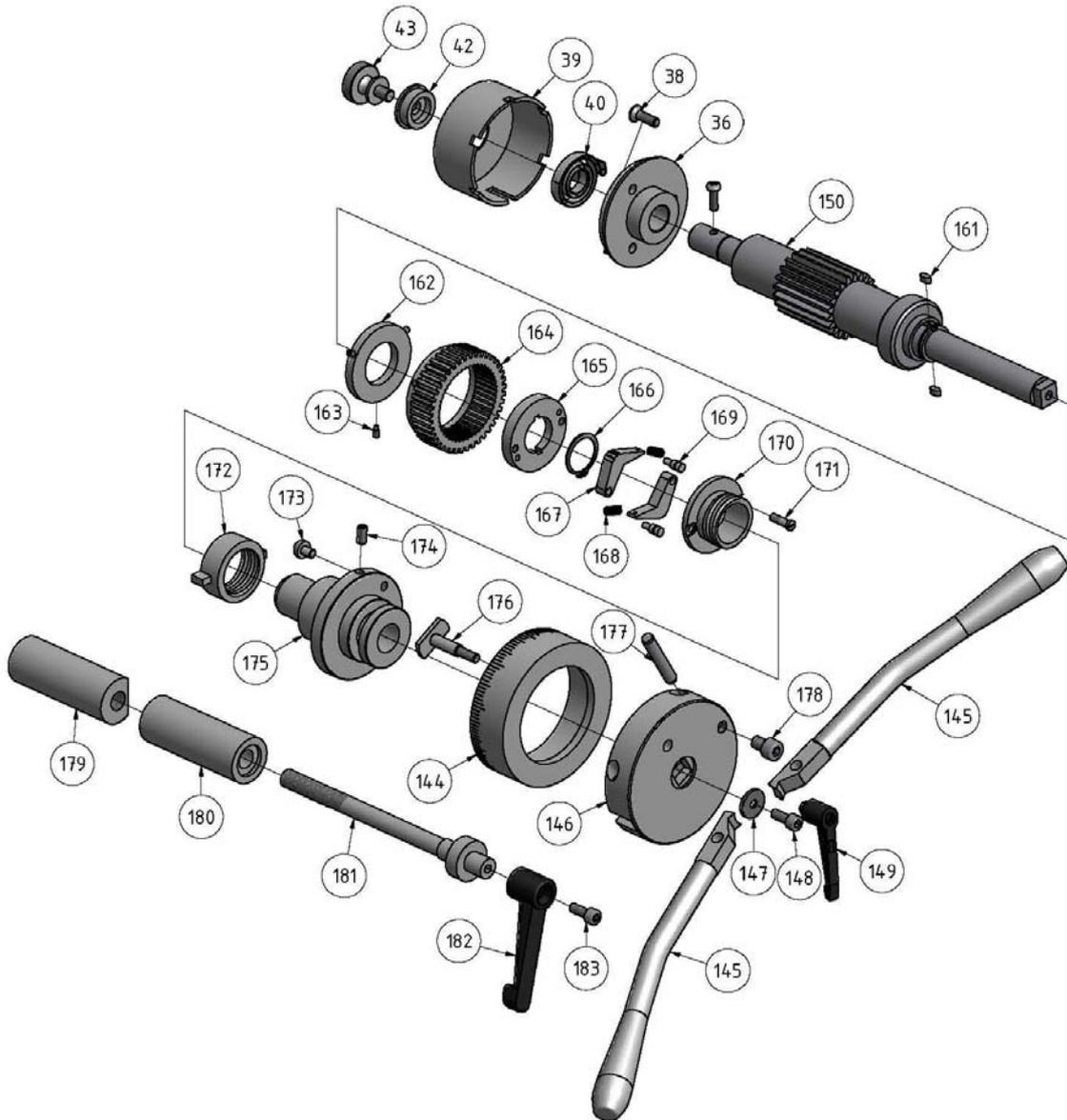


Abb.6-7: Bohrkopf 7 von 8 - Drilling head 7 von 8- B40PTE

6.8 Bohrkopf 8 von 8 - Drilling head 8 of 8- B40PTE

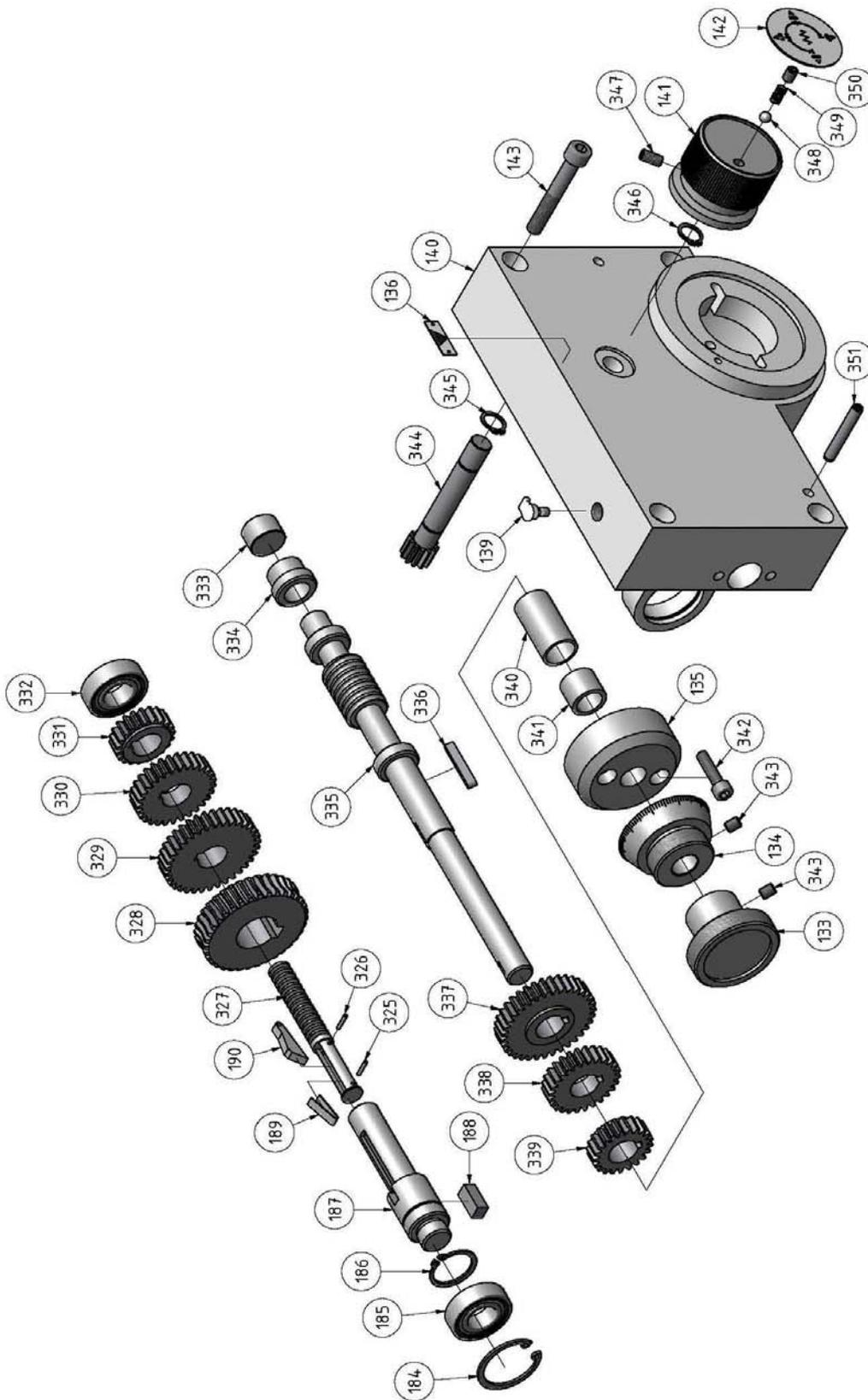


Abb.6-8: Bohrkopf 8 von 8 - Drilling head 8 von 8- B40PTE

6.9 Bohrfutterschutz - Drilling chuck protection

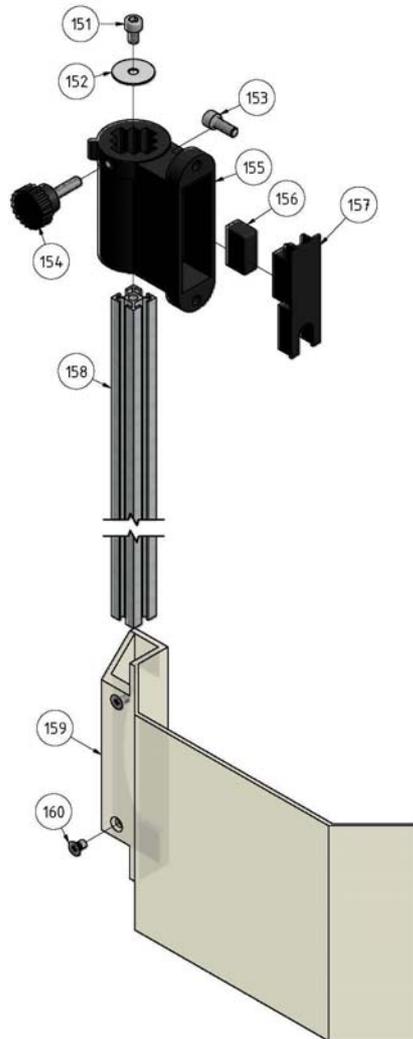


Abb.6-9: Bohrfutterschutz - Drilling chuck protection

6.9.1 Teileliste Bohrkopf - Parts list drilling head

Pos.	Bezeichnung	Designation	Menge	Grösse	Artikelnummer
			Qty.	Size	Item no.
1	Gehäuse	Housing	1		0303434001
2	Pinole	Slieve	1		0303434002
3	Dichtung	Seal	1		0303434003
4	Kegelrollenlager	Taper roller bearing	1	30207 J2_Q	04030207
5	Bohrspindel	Drilling spindle	1		0303434005
6	Klemmmutter	Clamping nut	1		0303434006
7	Kegelrollenlager	Taper roller bearing	1	30206 J2_Q	04030206
8	Nutmutter	Grooved nut	1		0303434008
9	Sicherungsscheibe	Safety washer	1	DIN 981 - MB6.4	
10	Zahnrad	Gear	1		0303434010
11	Platte	Plate	1		0303434011
12	Kugellager	Ball bearing	3	6007-2Z	0406007.2R
13	Sicherungsring	Retaining ring	1	DIN 472 - 62 x 2	
14	Passfeder	Fitting key	2	DIN 6885 - 5 x 5 x 14	
15	Passfeder	Fitting key	1	DIN 6885/6x20	
16	Sicherungsring	Retaining ring	1	DIN 471 - 35x1,5	
17	Flansch	Flange	1		0303434017
18	Innensechskantschraube	Hexagon socket screw	5	ISO 4762 - M5 x 12	
19	Kugellager	Ball bearing	3	6003-2Z	0406003.2R
20	Welle	Shaft	1		0303434020
21	Passfeder	Fitting key	1	DIN 6885 - 5 x 5 x 45	
22	Zahnrad	Gear	1		0303434022
23	Passfeder	Fitting key	2	DIN 6885 - 5 x 5 x 50	
24	Sicherungsring	Retaining ring	2	DIN 471 - 18x1,2	
25	Kugellager	Ball bearing	3	6202-2RSL	0406202.2R
26	Sicherungsring	Retaining ring	2	DIN 472 - 35 x 1,5	
27	Welle	Shaft	1		0303434027
28	Passfeder	Fitting key	1	DIN 6885 - 5 x 5 x 25	
29	Passfeder	Fitting key	1	DIN 6885 - 5 x 5 x 12	
30	Zahnrad	Gear	1		0303434030
31	Abstandring	Spacer ring	1		0303434031
32	Welle	Shaft	1		0303434032
33	Passfeder	Fitting key	1	DIN 6885 - 5 x 5 x 20	
34	Motor	Motor 230V	1		
35	Gehäuse	Housing	1		0303434035
36	Flansch	Flange	1		0303434036
37	Welle	Shaft	1		0303434037
38	Schraube	Screw	3	ISO 10642 - M6x20	
39	Gehäuse	Housing	1		0303434039
40	Feder	Spring	1		0303434040
41	Zahnrad	Gear	1		0303434041
42	Buchse	Bush	1		0303434042
43	Schraube	Screw	1		0303434043
44	Schneckenrad	Worm gear	1		0303434044
45	Nabe	Handle base	1		0303434045
46	Passfeder	Fitting key	1	DIN 6885 - 8 x 7 x 20	
47	Innensechskantschraube	Hexagon socket screw	6	ISO 4762 - M8 x 20	
48	Griffschraube	Screw	1		0303434048
49	Handrad	Handle	1		0303434049
50	Welle	Shaft	1		0303434050
51	Flansch	Flange	1		0303434051
52	Skalenring	Scale ring	1		0303434052
53	Griff	Grip	1		0303434053
54	Griffschraube	Grip screw	1		0303434054
55	Klemmbolzen	Clamping bolt	1		0303434055
56	Klemmbolzen	Clamping bolt	1		0303434056
57	Schraube	Screw	1		0303434057
58	Zahnrad	Gear	1		0303434058
59	Halter	Holder	1		0303434059
60	Innensechskantschraube	Hexagon socket screw	1	ISO 4762 - M8 x 30	
61	Buchse	Bushing	1		0303434061
62	Sechskantmutter	Hexagon screw	1		0303434062
63	Gewindestange	Graduated rod	1		0303434063
64	Endanschlag	Limited block	1		0303434064
65	Spannstift	Spring pin	1	3 X 16	
66	Schraube	Screw	1		0303434066
67	Welle	Shaft	1		0303434067
68	Scheibe	Washer	4	DIN 125 - A 13	

Ersatzteile - Spare parts - B40E, B40PTE

Pos.	Bezeichnung	Designation	Menge	Grösse	Artikelnummer
			Qty.	Size	Item no.
69	Schalthebel	Control lever	1		0303434069
70	Platte	Plate	1		0303434070
71	Innensechskantschraube	Hexagon socket screw	1	ISO 4762 - M4 x 8	
72	Innensechskantschraube	Hexagon socket screw	2	ISO 4762 - M8 x 12	
73	Welle	Shaft	1		0303434073
74	Schalthebel	Control lever	1		0303434074
75	Hülse	Sleeve	1		0303434075
76	Platte	Plate	1		0303434076
77	Hebel	Lever	3		0303434077
78	Zahnrad	Gear	1		0303434078
79	Abdeckung	Cover cap	1		
80	Innensechskantschraube	Hexagon screw	6	ISO 4762 - M8 x 55	0303434080
81	Zahnrad	Gear	1		0303434081
82	Zahnrad	Gear	1		0303434082
83	Dichtung	Seal	2		0303434083
84	Ölschauglas	Oil glass	1		0303434084
85	Zahnrad	Gear	1		0303434085
86	Vierkantschraube	Square head bolt	2	M12-50	
87	Sechskantmutter	Hexagon nut	2	ISO 4032 - M12	
88	Federring	Spring ring	2	DIN 127 - A 12	
89	Label	Label	1	B40E	0303434089
89	Label	Label	1	B40PTE	0303434589
89	Label	Label	1	B40BE	0303433589
90	Hebel	Lever	1		0303434090
91	Innensechskantschraube	Hexagon socket screw	1	ISO 4762 - M8 x 16	
92	Gewindestift	Grub screw	2	ISO 4026 - M6 x 12	
93	Scheibe	Washer	4	DIN 125 - A 8,4	
94	Federring	Spring ring	4	DIN 127 - A 8	
95	Griff	Grip			0303434095
96	Zahnrad	Gear	1		0303434096
97	Schaltknopf	Control knob	2		0303434097
98	Zeiger	Indicator	3		0303434098
99	Sechskantschraube	Hexagon screw	2	ISO 4014/M18x130	
100	Schraube	Screw	1		03034340100
101	Innensechskantschraube	Hexagon socket screw	1	ISO 4762 - M3 x 16	
102	Scheibe	Washer	1	DIN 125 - A 3,2	
103	Feder	Spring	1		03034340103
104	Kurbel	Crank	1		03034340104
105	Skale	Scale	1		03034340105
106	Zeiger	Indicator	2		03034340106
107	Niet	Rivet	4		03034340107
108	Innensechskantschraube	Hexagon socket screw	1	DIN 4762 M8x12	
109	Federring	Spring ring	3	DIN 128 - A8	
110	Zahnrad	Gear	1		03034340110
111	Sicherungsring	Retaining ring	2	DIN 471/14x1,2	
112	Spannstift	Spring pin	2	ISO 8752 - 5 x 40	
113	Zahnrad	Gear	1		03034340113
114	Anzugstange	Drawin bar 5/8"-11	1		
115	Innensechskantschraube	Socket head screw	1	GB 70-85 - M6 x 10	
116	Scheibe	Washer	1		03034340116
117	Innensechskantschraube	Socket head screw	2	GB 70-85 - M6 x 16	
118	Rändelschraube	Knurled screw	1		03034340118
119	Halterung	Fixture	1		03034340119
120	Mikroschalter	Microswitch	1		03034340120
121	Platte	Plate	1		03034340121
122	Alu- Profil	Aluminium profile	1		03034340122
123	Bohrfutterschutz	Drill chuck protection	1		03034340123
124	Schraube	Screw	2	GB819-85/M5x8	
125	Zylinderstift	Cylindrical pin	1		03034340125
126	Halter	Holder	1		03034340126
127	Zahnritzel	Pinion	1		03034340127
128	Zahnrad	Gear	1		03034340128
129	Führung	Guide	1		03034340129
130	Scheibe	Washer	2	DIN 125/19	
131	Spannhebel	Lever	1		03034340131
132	Sechskantmutter	Hexagon nut	2	DIN4032/M18	
133	Rändelschraube	Knurled screw	1		03034340133
134	Skalenring	Scale ring	1		03034340134
135	Buchse	Sleeve	1		03034340135
136	Anzeige	Scale	2		03034340136

Ersatzteile - Spare parts - B40E, B40PTE

Pos.	Bezeichnung	Designation	Menge	Grösse	Artikelnummer
			Qty.	Size	Item no.
137	Knopf	Knob	1		03034340137
138	Platte	Plate	1		03034340138
139	Öler	Oil cup	1		03034340139
140	Abdeckung	Cover	1		03034340140
141	Knopf	Knob	1		03034340141
142	Platte	Plate	1		03034340142
143	Innensechskantschraube	Socket head screw	4		03034340143
144	Skalenring	Scale ring	1		03034340144
145	Hebel	Lever	2		03034340145
146	Aufnahme	Collet	1		03034340146
147	Scheibe	Washer	1		03034340147
148	Innensechskantschraube	Socket head screw	1		03034340148
149	Hebel	Lever	1		03034340149
150	Welle	Shaft	1		03034340150
151	Innensechskantschraube	Socket head screw	1	GB 70-85 - M6 x 10	
152	Scheibe	Washer	1		
153	Innensechskantschraube	Socket head screw	2	GB 70-85 - M6 x 16	
154	Rändelschraube	Knurled screw	1		03034340
155	Halterung	Fixture	1		03034340
156	Mikroschalter	Microswitch	1		03034340
157	Platte	Plate	1		03034340
158	Alu- Profil	Aluminium profile	1		03034340
159	Bohrfutterschutz	Drill chuck protection	1		03034340
160	Schraube	Screw	2	GB819-85/M5x8	
161	Passfeder	Fitting key	2	DIN 6885/4x4x8	
162	Ring	Ring	1		03034345162
163	Gewindestift	Grub screw	3	DIN 4028/ M4x8	
164	Zahnrad	Gear	1		03034345164
165	Scheibe	Washer	1		03034345165
166	Sicherungsring	Retaining ring	1	DIN 471/25	
167	Schaltklaue	Shifting claw	2		03034345167
168	Feder	Spring	2		03034345168
169	Stift	Pin	2		03034345169
170	Buchse	Sleeve	1		03034345170
171	Schraube	Screw	2		03034345171
172	Klemmmutter	Clamping nut	1		03034345172
173	Stift	Pin	1		03034345173
174	Gewindestift	Grub screw	1	ISO 4026/ M5x12	
175	Nabe	Fixed hub	1		03034345175
176	Schraube	Screw	1		03034345176
177	Zylinderstift	Cylindrical pin	2	DIN 2338/8x45	
178	Innensechskantschraube	Socket head screw	1	DIN 4762/ M8x12	
179	Klemmbuchse	Clamping sleeve	1		03034345179
180	Klemmbuchse	Clamping sleeve	1		03034345180
181	Schraube	Screw	1		03034345181
182	Klemmhebel	Clamping lever	1		03034345182
183	Innensechskantschraube	Socket head screw	1	DIN 4762/ M6x16	
184	Sicherungsring	Retaining ring	1	DIN 471/35	
185	Kugellager	Ball bearing	1	6003-2Z	0406003.2R
186	Sicherungsring	Retaining ring	1	DIN 471/24	
187	Welle	Shaft	1		03034345187
188	Passfeder	Fitting key	1	DIN 6885/ 8x7x18	
189	Mitnehmer	Carrier	1		03034345189
190	Mitnehmer	Carrier	1		03034345190
325	Zylinderstift	Cylindrical pin	1	2x10	
326	Zylinderstift	Cylindrical pin	1	2x10	
327	Welle	Shaft	1		03034345327
328	Zahnrad	Gear	1		03034345328
329	Zahnrad	Gear	1		03034345329
330	Zahnrad	Gear	1		03034345330
331	Zahnrad	Gear	1		03034345331
332	Kugellager	Ball bearing	1	6003-2Z	0406003.2R
333	Verschluss	Plug	1		03034345333
334	Buchse	Bushing	1		03034345334
335	Welle	Shaft	1		03034345335
336	Passfeder	Fitting key	1	DIN 6885/5x5x32	
337	Zahnrad	Gear	1		03034345337
338	Zahnrad	Gear	1		03034345338
339	Zahnrad	Gear	1		03034345339
340	Buchse	Bushing	1		03034345340

Ersatzteile - Spare parts - B40E, B40PTE

Pos.	Bezeichnung	Designation	Menge	Grösse	Artikelnummer
			Qty.	Size	Item no.
341	Buchse	Bushing	1		03034345341
342	Innensechskantschraube	Hexagon socket screw	2	DIN4762/M6x25	
343	Gewindestift	Grub screw	2	DIN4026/M6x25	
344	Welle	Shaft	1		03034345344
345	Sicherungsring	Retaining ring	1	DIN 471/12	
346	Sicherungsring	Retaining ring	1	DIN 471/12	
347	Gewindestift	Grub screw	1	DIN4026/M6x12	
348	Stahlkugel	Stell ball	1	6	03034345348
349	Feder	Spring	1		03034345349
350	Gewindestift	Grub screw	1	DIN4026/M6x8	
351	Zylinderstift	Cylindrical pin	2	6x40	

6.9.2 Säule und Bohrtisch - Column and drilling table- B40E

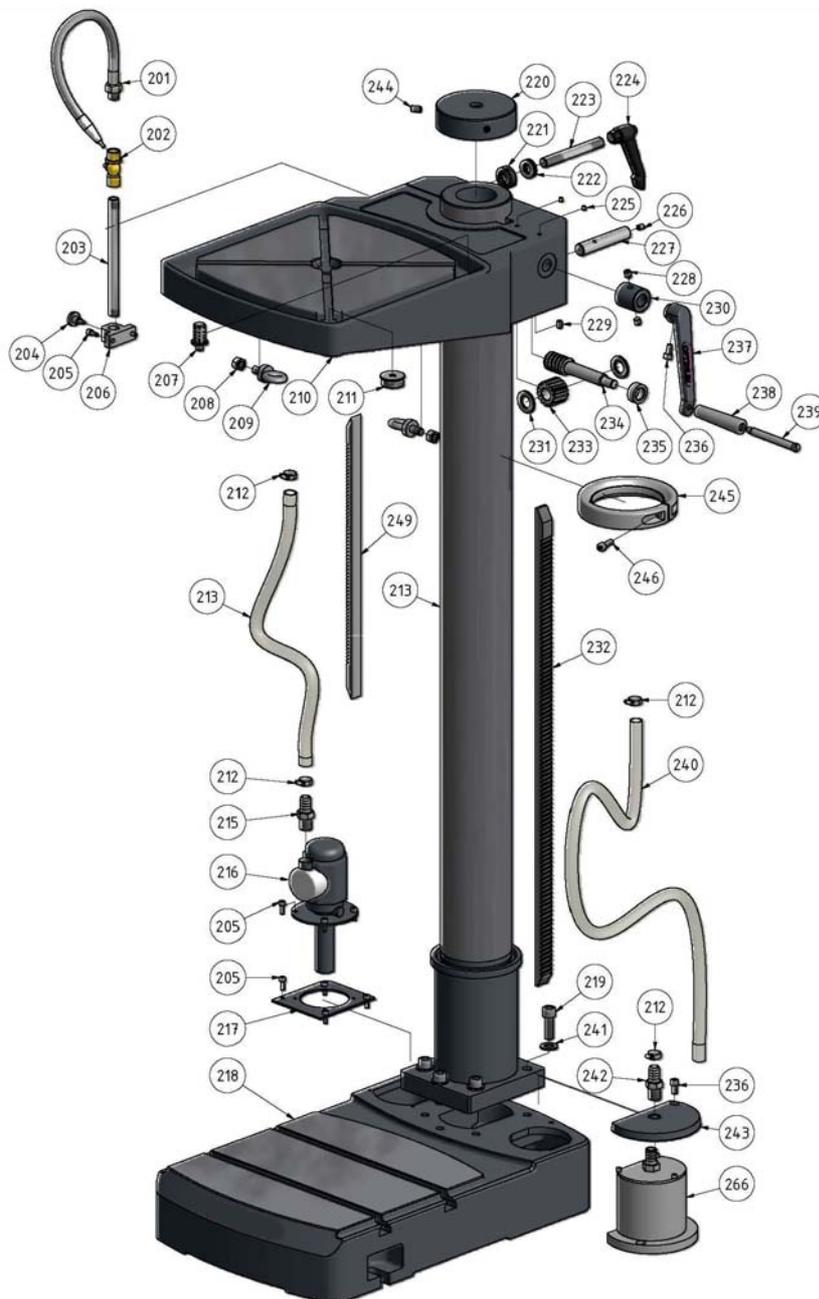


Abb.6-10: Säule und Bohrtisch - Column and drilling table B40E

6.9.3 Säule und Bohrtisch - Column and drilling table- B40PTE

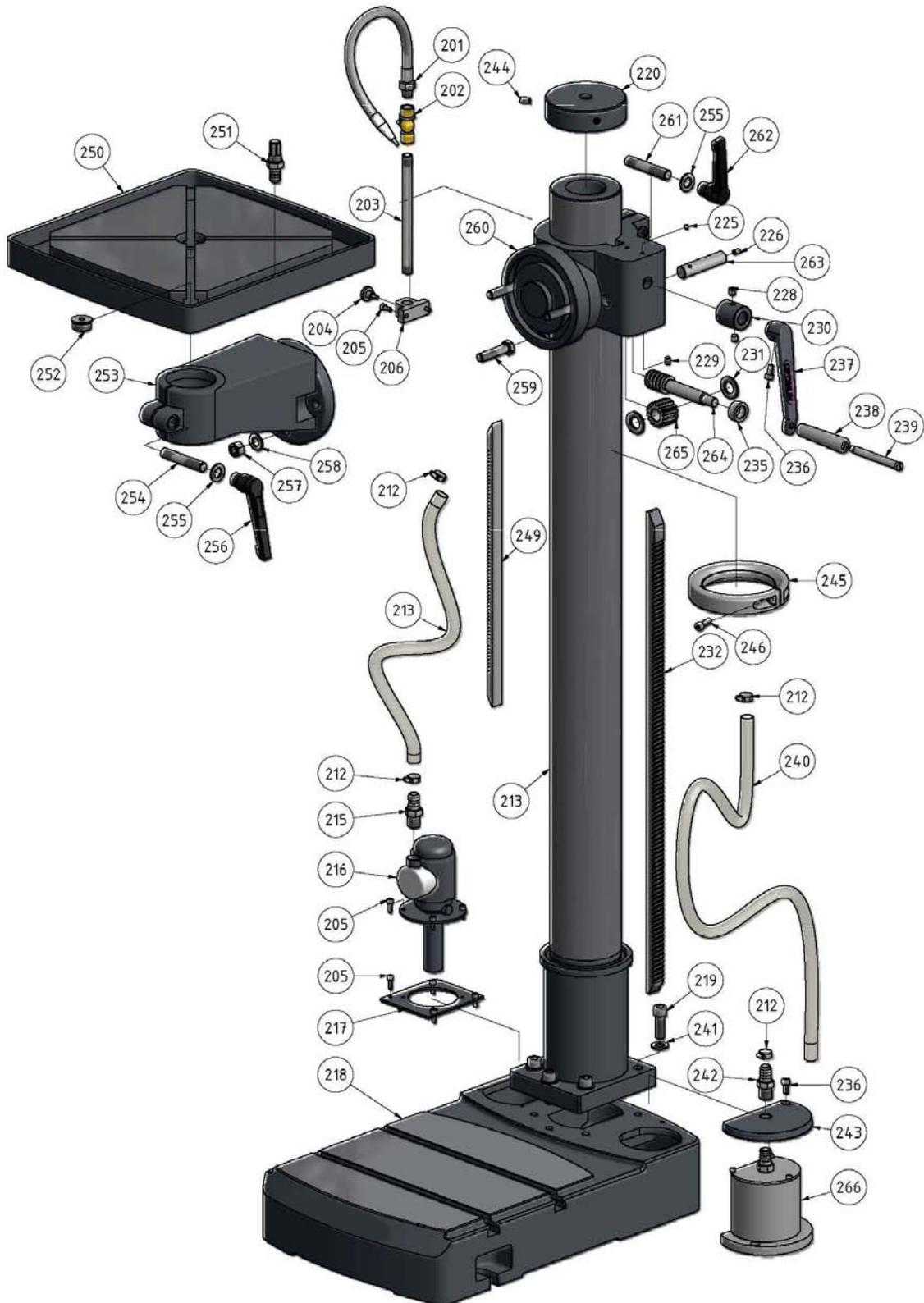


Abb.6-11: Säule und Bohrtisch - Column and drilling table B40PTE

6.9.4 Teileliste Säule und Bohrtisch - Parts list column, column and drilling table

Pos.	Bezeichnung	Designation	Menge	Grösse	Artikel-
			Qty.	Size	nummer
					Item no.
201	Flexibler Kühlmittelschlauch	Flexible coolant hose	1		03020335139
202	Kugelhahn Kühlmittelschlauch	Ball valve	1		03020335140
203	Rohr Kühlmittelschlauch	Coolant hose	1		03020335141
204	Klemmschraube	Clamping screw	1		03020335142
205	Innensechskantschraube	Socket head screw	8	GB 70-85 - M6 x 16	03020335143
206	Halter	Holder	1		03020335144
207	Kühlmittelfilter	Coolant filter	3		03020335145
208	Sechskantmutter	Hexagon nut	2	GB 6170-86 - M12	
209	Ringschraube	Ring bolt	2	AS 2317 - M12	
210	Bohrtisch	Drilling table	1		03020335148
211	Stopfen	Plug	1		03020335149
212	Schlauchselle	Hose clamp	4		03020335150
213	Bohrsäule	Column	1		03034340213
214	Kühlmittelschlauch	Coolant hose	1		03020335152
215	Schlauchtüle	Hose clip	1		03020335153
216	Kühlmittelpumpe	Coolant pump	1		03020335154
217	Platte Pumpe	Plate pump	1		03020335155
218	Standfuss	Base	1		03020335156
219	Innensechskantschraube	Socket head screw	13	GB 70-85 - M14x50	
220	Abdeckung	Cover	1		03034340220
221	Buchse	Protection bush	1		03020335159
222	Axiallager	Axial bearing	1	51103	04051103
223	Stiftschraube	Locking screw	1		03020335161
224	Klemmhebel	Clamping lever	1	HY8310.12-2	03020335162
225	Schmiernippel	Lubrication cup	2		03020335163
226	Schmiernippel	Lubrication cup	1		03020335164
227	Welle	Shaft	1		03020335165
228	Gewindestift	Grub screw	2	M10x10	
229	Gewindestift	Grub screw	1	GB 77-85 - M8 x 12	
230	Distanzhülse	Spacer	1		03020335168
231	Scheibe	Washer	2	GB 97.1-85 - 20	
232	Zahnstange	Toothead rack	1		03034340232
233	Schneckenrad	Worm wheel	1		03020335171
234	Schnecke	Worm	1		03020335172
235	Distanzhülse	Spacer	1		03020335173
236	Innensechskantschraube	Socket head screw	2	GB 70-85 - M8 x 16	
237	Kurbel	Crank	1		03020335175
238	Griff	Handle	1		03020335176
239	Schraube	Screw	1		03020335177
240	Kühlmittelschlauch	Coolant hose	1		03020335178
241	Scheibe	Washer	5	DIN 125-A 14	
242	Schlauchtüle	Hose clip	1		03020335180
243	Platte Kühlmittelbehälter	Plate coolant reservoir	1		03020335181
244	Gewindestift	Grub screw	3	M10x16	
245	Ring	Ring	1		03034330245
246	Innensechskantschraube	Hexagon socket screw	1	ISO4762/M8x25	
247	Zahnstange	Toothead rack	1	B40BE	03034330247
248	Standfuss	Base	1	B40BE	03020333158
249	Zahnstange	Toothead rack	1	B40E/B40PTE	03034330249
250	Bohrtisch	Drilling table	1		03034345250
251	Kühlmittelfilter	Coolant filter	1		03034345251
252	Stopfen	Plug	1		03034345252
253	Halter	Holder	1		03034345253
254	Bolzen	Bolt	1		03034345254
255	Scheibe	Washer	1	DIN125/17	
256	Hebel	Lever	1		03034345256
257	Sechskantmutter	Hexagon nut	3	ISO 4032/M14	
258	Scheibe	Washer	3	DIN125/14	
259	Bolzen	Bolt	3		03034345259
260	Führung	Guide	1		03034345260
261	Bolzen	Bolt	2		03034345261
262	Hebel	Lever	2		03034345262
263	Welle	Shaft	1		03034345263
264	Schnecke	Worm	1		03034345264
265	Schneckenrad	Worm wheel	1		03034345265
266	Spänefilter kpl.	Chip filter cpl.	1		03020285304

6.10 Schaltkasten - Switch box

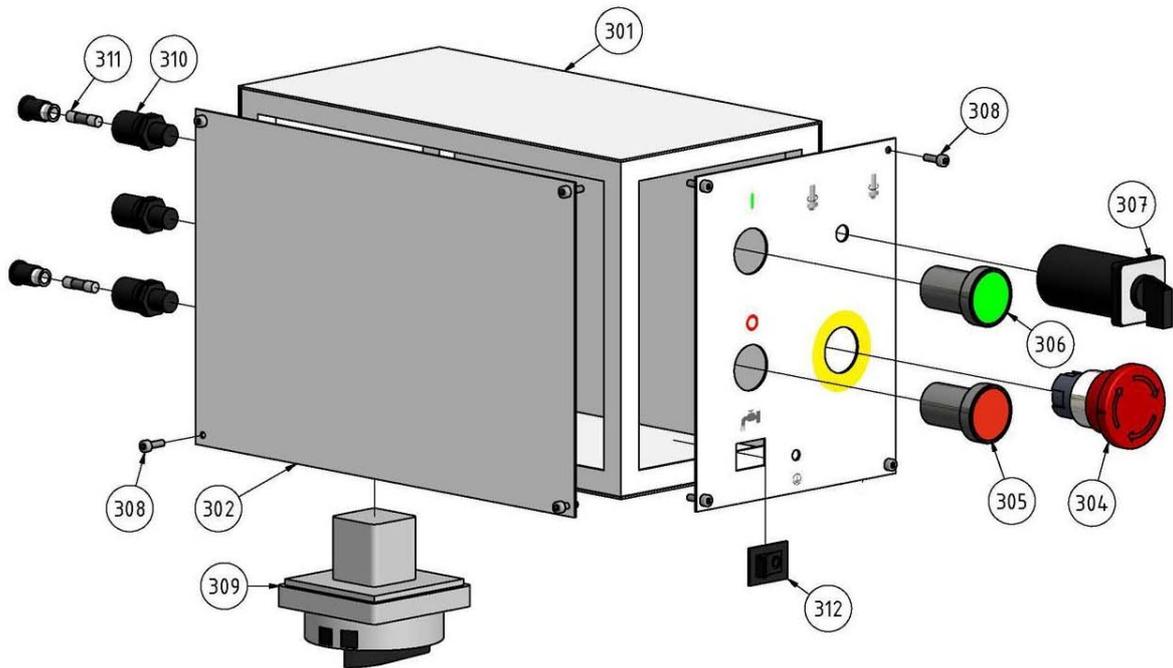


Abb.6-12: Schaltkasten - Switch box

6.10.1 Teileliste Elektrik - Parts list electrical components

Pos.	Bezeichnung	Designation	Menge	Grösse	Artikel-
			Qty.	Size	nummer
					Item no.
301	Schaltkasten	Switch box	1		03034340301
302	Abdeckung	Cover	1		03034340302
303	Abdeckung	Cover	1		03034340303
304	Not-Aus-Schalter	Emergency stop button	1	LA58-XD/10A, 250V	03034340304
305	Taster Aus	Button Off	1	LA103-11N/208B	03034340305
306	Taster Ein	Button On	1	LA103XD-22	03034340306
307	Funktionsschalter	Operation switch	1	F62003/001	03034340307
308	Innensechskantschraube	Hexagon socket switch	8	ISO 4762 - M3 x 10	
309	Hauptschalter	Main switch	1	LW38D 400V/16A	03034340309
310	Gehäuse Sicherung kpl.	Housing fuse cpl.	3		03034340310
311	Sicherung	Fuse	2	4A	03034340311
312	Schalter Kühlmittelpumpe B40E/ B40PTE	Coolant pump switch B40E/B40PTE	1		03034340312

6.11 Schaltplan - Wiring diagram- B40E/ B40PTE

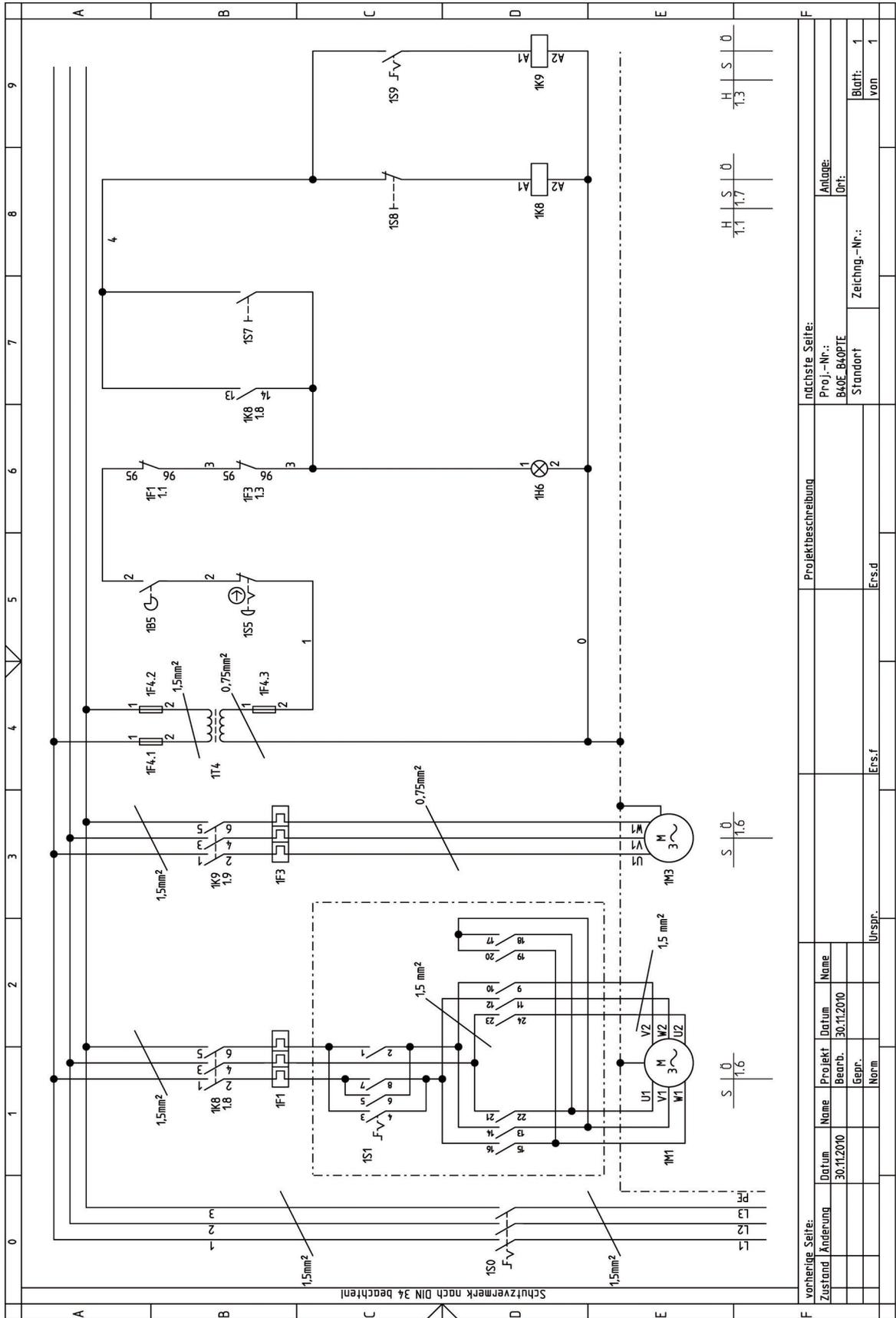


Abb.6-13: Schaltplan - Wiring diagram- B40E/B40PTE

6.11.1 Teileliste Elektrik - Parts list electrical components B40E/B40PTE

Pos.	Bezeichnung	Designation	Menge	Maschinentyp	Artikelnummer
			Qty.	Machine type	Item no.
1S0	Hauptschalter	Main switch	1	B40E/B40PTE/B40BE	03034340309
1M1	Antriebsmotor	Drive motor	1	B40E/B40PTE/B40BE	030343401M1
1F1	Motorschutzschalter Antriebsmotor	Motor safety switch	1	B40E/B40PTE/B40BE	030343401F1
1S1	Funktionsschalter	Function switch	1	B40E/B40PTE/B40BE	03034340307
1F3	Motorschutzschalter Kühlmittelpumpe	Coolant pump safety switch	1	B40E/B40PTE	030343401F3
1M3	Motor Kühlmittelpumpe	Coolant pump motor	1	B40E/B40PTE	030343401M3
1T4	Transformator	Transformer	1	B40E/B40PTE/B40BE	030343401T4
1F4.1	Sicherung	Fuse	1	B40E/B40PTE/B40BE	03034340311
1F4.2	Sicherung	Fuse	1	B40E/B40PTE/B40BE	03034340311
1F4.3	Sicherung	Fuse	1	B40E/B40PTE/B40BE	03034340311
1B5	Sicherheitschalter Bohrfutterschutz	Drilling chuck safety switch	1	B40E/B40PTE/B40BE	030343401B5
1S5	Not-Aus-Schalter	Emergency stop button	1	B40E/B40PTE/B40BE	03034340304
1H6	Lampe Betriebsleuchte	Work light lamp	1	B40E/B40PTE/B40BE	030343401H6
1S7	Taster Ein	Button On	1	B40E/B40PTE/B40BE	03034340306
1K8	Schütz Antriebsmotor	Drive motor contactor	1	B40E/B40PTE/B40BE	030343401K8
1S8	Taster Aus	Button Off	1	B40E/B40PTE/B40BE	03034340305
1S9	Schalter Kühlmittelpumpe	Coolant pump switch	1	B40E/B40PTE	03034340312
1K9	Schütz Kühlmittelpumpe	Coolant pump contactor	1	B40E/B40PTE	030343401K9

7 Maintenance

In this chapter you will find important information about

- Inspection
- Maintenance
- Repairs

of the geared drill.

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

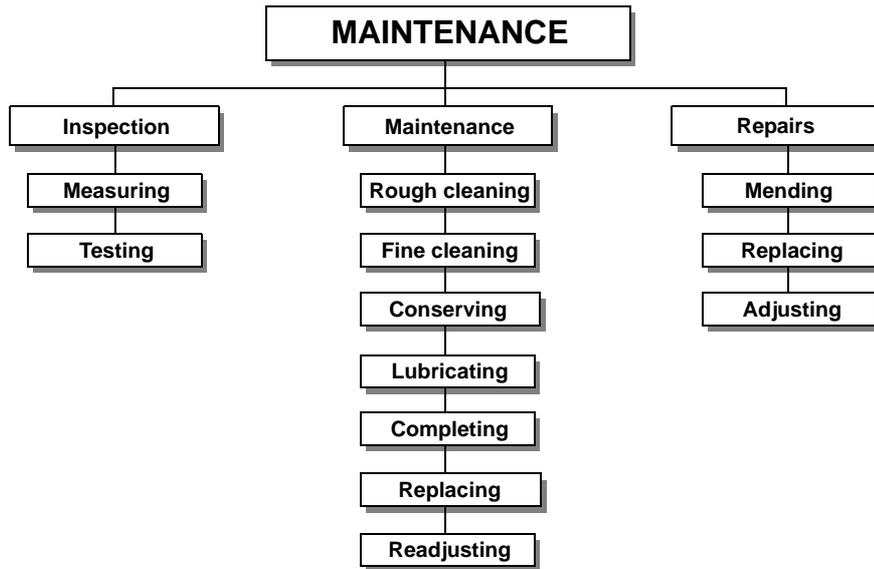


Fig. 7-1: Maintenance – Definition according to DIN 31051



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 company condition.



ENVIRONMENTAL PROTECTION

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

- collector vessels are used, with sufficient capacity for the amount of liquid to be collected.
- Liquids and oils must not be poured on the floor.

Clean up any spilt liquid 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 not know where the collection centre is.

7.1 Safety



WARNING!

The consequences of incorrect maintenance and repair work may include:

- Very serious injury to personnel working on the geared drill,
- Damage to the geared drill.

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

7.1.1 Preparation



WARNING!

Only carry out work on the geared drill if it has been unplugged from the mains power supply.

☞ „Disconnecting the geared drill and making it safe“ on page 14

Place a warning label.

7.1.2 Restarting

Before restarting run a safety check.

☞ „Safety check“ on page 12



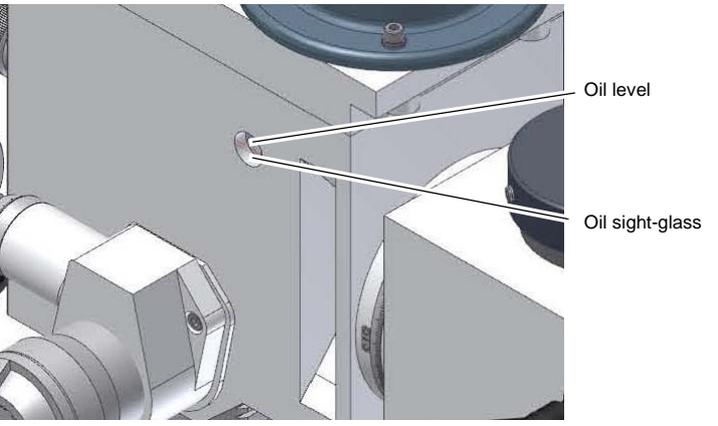
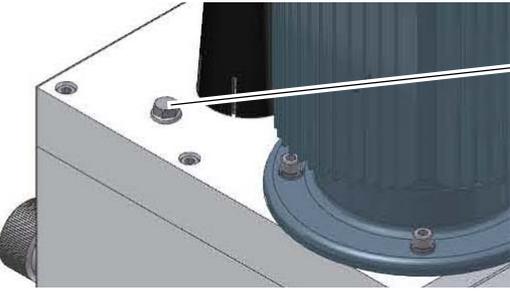
WARNING!

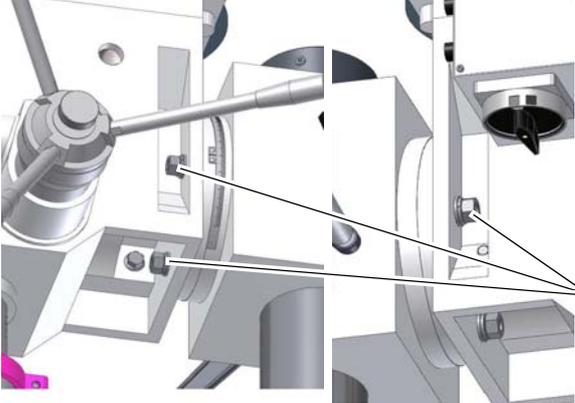
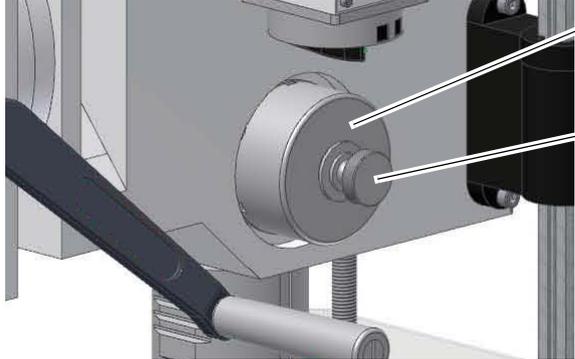
Before connecting the geared drill you must check that

- there is no danger for personnel,
- the geared drill is undamaged.

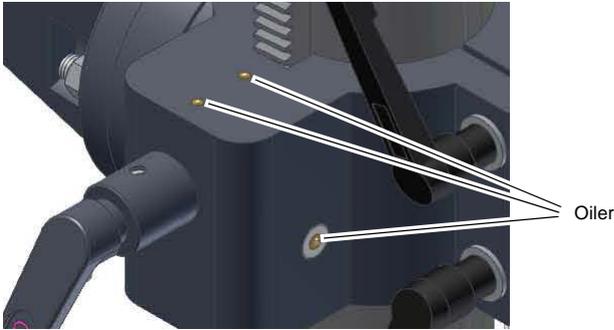
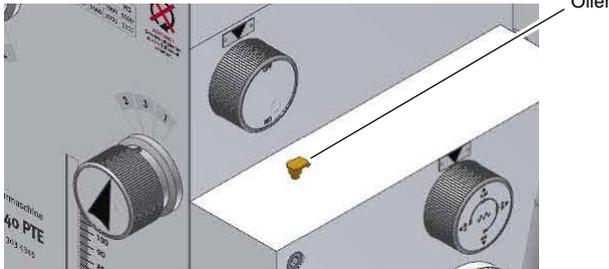
7.2 Revision and maintenance

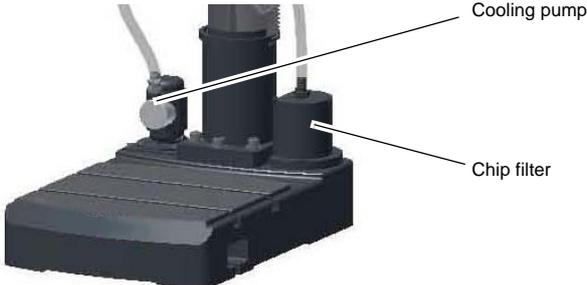
The type and extent of wear depends to a large extent on the individual usage and service conditions. For this reason, all the intervals are only valid for the authorized conditions.

Interval	Where?	What?	How?
Start of shift after each maintenance or repair operation	Geared drill		<ul style="list-style-type: none"> →  „Safety check“ on page 12
Start of shift after each maintenance or repair operation	Drill head	Oil level	<ul style="list-style-type: none"> → Check if the oil level can be seen in the oil sight glass. The sight glass should be half-covered.  <p>Abb.7-2: Oil sight-glass</p>
First after 20 operating hours, then every 30 operating hours	Drill head	Oil change	<ul style="list-style-type: none"> → Use an appropriate collecting vessel with a capacity of at least 3 liters when performing the oil change. → Unscrew the oil filling screw. → Swivel the drilling head in order to allow the oil to drain of.  „Swiveling the drilling head“ on page 31  <p>Abb.7-3: Oil filling screw</p> <ul style="list-style-type: none"> → Refill the drilling head after having drained the oil. Make sure to fill to the right filling level.  „Operating material“ on page 17

Interval	Where?	What?	How?
Every month	Clamping screw drilling head	Firmly tightened	<p>→ Check if the clamping screws to slew the drilling head are firmly tightened.</p>  <p>Clamping screw on the right</p> <p>Abb.7-4: Clamping screw to slew the drilling head</p>
Every month	Drilling column and toothed rod	Oiling	<p>→ Oil the drilling column in regular intervals using standard oil.</p> <p>→ Lubricate the toothed rod in regular intervals using a commercially available lubricant (e.g. sliding bearing grease).</p>
As required	Drill depth stop	Spindle return spring	<p>→ If required it is possible to tension respectively release the spindle return spring by means of the knurled screw.</p>  <p>Spring housing Knurled screw</p> <p>Abb.7-5: Spindle return spring</p>

Maintenance

Interval	Where?	What?	How?
Every month	Oiler	Oil	<p>→ Grease all oilers using machine oil. Do not use a grease gun or similar tools. ☞ „Operating material“ on page 17</p>  <p>Abb. 7-6:</p>
Weekly	Geared drill	Lubricate	<p>→ Fill up machine oil at the oiler (Spindle sleeve feed B40 PTE).</p>  <p>Fig. 7-7: Refilling oil</p>
Every six month	Electrical system	Checking	Check electrical equipment / parts of the geared drill.

Interval	Where?	What?	How?
As required	Coolant unit / Chip filter	Check / clean	<p>Cooling pump:</p> <ul style="list-style-type: none"> → The cooling pump is almost maintenance free. Replace the cooling agent in regular intervals and adapted to the usage. → When using coolants which are leaving remnants it is necessary to rinse the cooling pump. <p>Chip filter:</p> <ul style="list-style-type: none"> → Clean the chip filter. To do so, unscrew the chip container and remove the chips or other soiling. <div style="text-align: center;">  </div> <p>Abb. 7-8: Cooling pump/ Chip filter</p>

7.3 Repair

For any repair work, get assistance from an employee of the company 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 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

- only faultless and suitable tools,
- only original spare parts or serial parts expressly authorized by the company.

8 Appendix

8.1 Copyright

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8.2 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.

8.3 LIMITED WARRANTY

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C.H.HANSON
2000 North Aurora Rd.
Naperville, IL 60563
Call 800-827-3398

9 Anomalies

Problem	Cause/possible effects	Solution
Noise during work	<ul style="list-style-type: none"> Spindle turning dry Tool blunt or incorrectly secured 	<ul style="list-style-type: none"> Grease spindle Use new tool and check securing (fixed setting of the bit, bit holder and chuck).
Bit „burnt“	<ul style="list-style-type: none"> Incorrect speed/feed too fast The chips have not been removed from the bore hole Bit blunt Operating without or too little cooling agent 	<ul style="list-style-type: none"> Select another rate Extract bit more often during work Sharpen or replace bit Use cooling agent
Bit tip moves, bore hole is not circular	<ul style="list-style-type: none"> Hard fibre in the workpiece Unequal length of the cutting spiral or angles in the bit Bit deformed 	<ul style="list-style-type: none"> Replace bit
Defective bit	<ul style="list-style-type: none"> Not support used 	<ul style="list-style-type: none"> Place a wooden board beneath the workpiece and secure them one another
Bit running off-centre or „hopping“	<ul style="list-style-type: none"> Bit deformed Bearings worn down in the spindle head Bit badly secured Drill chuck defective 	<ul style="list-style-type: none"> Replace bit Have the bearings replaced Secure the bit properly Replace the drill chuck
Impossible to introduce drill chuck or morse taper	<ul style="list-style-type: none"> There is dirt, grease or oil on the inner conical surface or the drill chuck or on the conical surface of the drilling spindle 	<ul style="list-style-type: none"> Clean surfaces well Keep surfaces free of grease
Engine does not start	<ul style="list-style-type: none"> Engine connected wrongly Defective fuse 	<ul style="list-style-type: none"> Have it checked by authorised personnel
Overheating of engine and lack of power	<ul style="list-style-type: none"> Engine overloaded Insufficient mains voltage Engine connected wrongly 	<ul style="list-style-type: none"> Disconnect immediately and have it checked by authorized personnel Have it checked by authorised personnel
Precision of the work deficient	<ul style="list-style-type: none"> Heavy and unbalanced or twisted workpiece. Inexact horizontal position of the workpiece holder 	<ul style="list-style-type: none"> Balance the piece statically and secure without straining Adjust workpiece holder
Drilling spindle sleeve does not return to its initial position	<ul style="list-style-type: none"> Spindle restoring spring does not work properly Locking pin is being introduced 	<ul style="list-style-type: none"> Check spindle restoring spring, replace it, if necessary Pull out locking pin
The drilling sleeve may not be moved downwards.	<ul style="list-style-type: none"> The locking pin is introduced The drill depth setting is not released 	<ul style="list-style-type: none"> Pull out the locking pin Release the drill depth setting

Problem	Cause/possible effects	Solution
Spindle bearing overheating	<ul style="list-style-type: none"> • Bearing worn down • Excessive pre-tension of the bearing • Working at high speeds for a long time 	<ul style="list-style-type: none"> • Replace • Reduce bearing clearance in the fixed bearing • Reduce feed rate
Working spindle rattling on rough piece surfaces	<ul style="list-style-type: none"> • Excessive slack in bearing • Working spindle goes up and down • Adjustment strip loose • Chuck loose • Tool blunt • Piece loose 	<ul style="list-style-type: none"> • 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

