OPTIMUM®
MASCHINEN - GERMANY

Operating manual

Version 1.0.1

Drilling machine

○ OPTI drill® B 20 — 3008201
3008203

○ OPTI drill® B 25 — 3008253

○ OPTI drill® B 32 — 3008323


B20


B25


B32

EN

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Preface

Dear customer,

Thank you very much for purchasing a product made by OPTIMUM.

OPTIMUM metal working machines offer a maximum of quality, technically optimum solutions and convince by an outstanding price performance ratio. Continuous enhancements and product innovations guarantee state-of-the-art products and safety at any time.

Before commissioning the machine please thoroughly read these operating instructions and get familiar with the machine. Please also make sure that all persons operating the machine have read and understood the operating instructions beforehand.
Keep these operating instructions in a safe place nearby the machine.

The operating instructions include indications for safety-relevant and proper installation, operation and maintenance of the machine. The continuous observance of all notes included in this manual guarantee the safety of persons and of the machine.

The manual determines the intended use of the machine and includes all necessary information for its economic operation as well as its long service life.

In the paragraph "Maintenance" all maintenance works and functional tests are described which the operator must perform in regular intervals.

The illustration and information included in the present manual can possibly deviate from the current state of construction of your machine. Being the manufacturer we are continuously seeking for improvements and renewal of the products. Therefore, changes might be performed without prior notice. The illustrations of the drilling machine may be different from the illustrations in these instructions with regard to a few details. However, this does not have any influence on the operability of the machine.
Therefore, no claims may be derived from the indications and descriptions. Changes and errors are reserved !

Your suggestion with regard to these operating instructions are an important contribution to optimising our work which we offer to our customers. For any questions or suggestions for improvement, please do not hesitate to contact our service department.

If you have any further questions after reading these operating instructions and you are not able to solve your problem with a help of these operating instructions, please contact your specialised dealer or directly the company OPTIMUM.

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1 Safety

Glossary of symbols

☞	provides further instructions
➜	calls on you to act
❍	listings

This part of the operating instructions

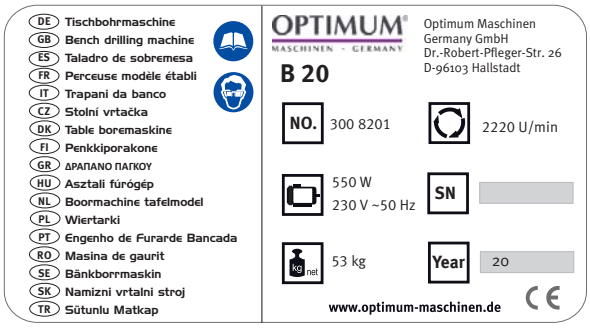
- ❍ explains the meaning and use of the warning notes included in these operating instructions,
- ❍ defines the intended use of the drilling machine,
- ❍ points out the dangers that might arise for you or others if these instructions are not observed,
- ❍ informs you about how to avoid dangers.

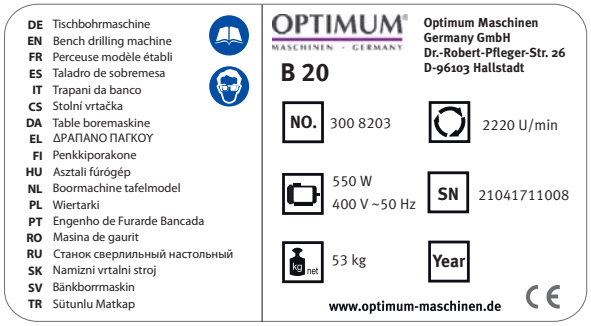
In addition to these operating instructions, please observe

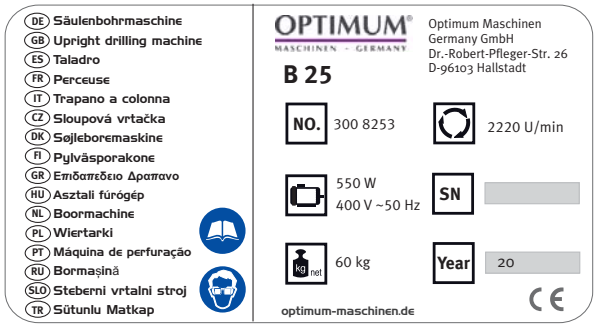
- ❍ the applicable laws and regulations,
- ❍ the statutory provisions for accident prevention,
- ❍ the prohibition, warning and mandatory signs as well as the warning notes on the drilling machine.

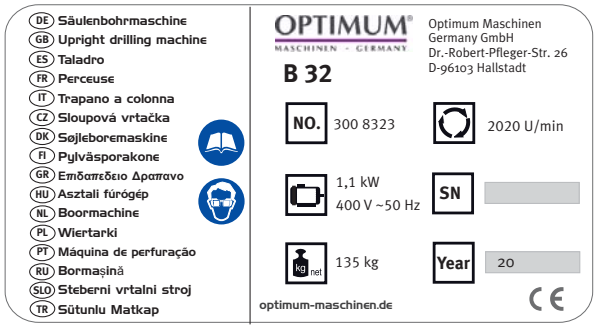
Always keep this documentation close to the drilling machine.

1.1 Rating plates









1.2 Safety instructions (warning notes)

1.2.1 Classification of hazards

We classify the safety warnings into different categories. The table below gives an overview of the classification of symbols (ideogram) and the warning signs for each specific danger and its (possible) consequences.

Symbol	Alarm expression	Definition / consequence
	**DANGER!**	Impending danger that will cause serious injury or death to people.
	WARNING!	A danger that can cause serious injury or death.
	CAUTION!	A danger or unsafe procedure that can cause personal injury or damage to property.
	**ATTENTION!**	Situation that could cause damage to the drilling machine and product, as well as other types of damage. No risk of injury to persons.
	**Information**	Practical tips and other important or useful information and notes. No dangerous or harmful consequences for people or objects.

In case of specific dangers, we replace the pictogram with

general danger — with a warning of — injury to hands, — hazardous electrical voltage, — or — risk of entanglement.

1.2.2 Other pictograms

Warning: danger of slipping!

Warning: risk of stumbling!

Warning: hot surface!

Warning: biological hazard!

Warning: automatic start-up!

Warning: tilting danger!

Warning: suspended loads!

Caution, danger of explosive substances!

B20-B25-B32_GB.fm


Switching on forbidden!


Do not climb onto the machine!


Read the operating instructions before commissioning!


Pull out the mains plug!


Wear protective glasses!


Wear protective gloves!


Wear safety shoes!


Wear a protective suit!


Use ear protection!


Protect the environment!


Contact address

1.3 Intended use

WARNING!

In the event of improper use of the drilling machine

- **will endanger personnel,**
- **will endanger the machine and other material property of the operating company,**

the correct function of the drilling machine may be affected.

The drilling machine is designed and manufactured to be used in a non-explosive environment. The drilling machine is designed and manufactured for holes in cold metals or other non flammable materials or that not constitute a health hazard using a rotating filing-stripping tool that has a number of grooves for collecting the filings.

If the drilling machine is used in any way other than described above, modified without authorization of Optimum Maschinen Germany GmbH, then the geared drill is being used improperly.

We will not be held liable for any damages resulting from any operation which is not in accordance with the intended use.

We expressly point out that the guarantee will expire, if any constructive, technical or procedural changes are not performed by the company Optimum Maschinen Germany GmbH.

It is also part of the intended use that you

- observe the limits of the drilling machine,
- observe the operating instructions,
- the inspection and maintenance instructions are observed.

☞ Technical specification on page 17

WARNING!

Extremely severe injuries.

It is forbidden to make any modifications or alternations to the operation values of the drilling machine! They could endanger the personnel and cause damage to the drilling machine.

1.4 Reasonably foreseeable misuse

Any use other than that specified under "Intended use" or any use beyond that described will be deemed non-intended use and is not permissible.

Any other use has to be discussed with the manufacturer.

It is only allowed to process metal, cold and non-inflammable materials with the drilling machine.

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

Operators must be qualified.

1.4.1 Avoiding misuse

➜ Use of suitable cutting tools.
➜ Adapting the speed setting and feed to the material and workpiece.
➜ Clamp workpieces firmly and free of vibration.

ATTENTION!

The workpiece is always to be fixed by a machine vice, jaw chuck or by another appropriate clamping tool such as for the clamping claws.

WARNING!

Risk of injury caused by flying workpieces.

Clamp the workpiece in the machine vice. Make sure that the workpiece is firmly clamped in the machine vice and that the machine vice is firmly clamped onto the machine table.

➜ Use cooling and lubricating agents to increase the durability of the tool and to improve the surface quality.
➜ Clamp the cutting tools and workpieces on clean clamping surfaces.
➜ Sufficiently lubricate the machine.
➜ Set the bearing clearance and guides correctly.

Recommendations:

➜ Insert the drill in a way that it is exactly positioned between the three clamping jaws of the quick action chuck.

When drilling, make sure that

➜ the suitable speed is set depending on the diameter of the drill,
➜ the pressure must only be such that the drill can cut without load,
➜ if there is too much pressure, the drill will wear quickly and may even break or jam in the borehole. If the drill gets jammed immediately stop the main motor by pressing the emergency stop button,
➜ use commercial cooling/lubricating agents for hard materials, e.g. steel and
➜ generally always back the spindle out of the workpiece while it is still turning.

1.5 Possible dangers caused by the drilling machine

The drilling machine was built using state-of-the-art technology.

Nevertheless, there is a residual risk as the drilling machine operates with

❍ at high speeds,
❍ rotating parts,
❍ electrical voltage and currents.

We have used design and safety engineering to minimize the health risk to personnel resulting from these hazards.

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

INFORMATION

Everyone involved in the assembly, commissioning, operation and maintenance must

- be duly qualified
- and strictly follow these operating instructions.

In the event of improper use

- there may be a risk to personnel,
- there may be a risk to the machine and other material values,
- the correct function of the drilling machine may be affected.

Always disconnect the drilling machine if cleaning or maintenance work is being carried out, or is no longer in use.

WARNING!

The drilling machine may only be operated with functional safety devices.

Disconnect the drilling machine immediately, whenever you detect a failure in the safety devices or when they are not fitted!

All additional devices installed by the operator must be equipped with the stipulated safety devices. This is your responsibility being the operating company!

☞ **Safety devices on page 11**

1.6 Qualification

It is indispensable that the operator is suitably qualified for safe use and secure setting and operation of the machine.

1.6.1 Private Users

The drilling machine is also used in the private domain. The acumen of people in the private sector with training in metal working was taken into consideration for creating this operation manual. Vocational training or further instruction in a metal working profession is a prerequisite for safe operation of the machine. It is essential that the private user is aware of the dangers involved in operating this machine.

1.6.2 Obligations of the User

The user must

- have read and understood the operating manual,
- be familiar with all safety devices and regulations,
- be able to operate the drilling machine.

1.6.3 Craftsman or industrial use

This manual is addressed to

- the operating companies,
- the operators,
- the maintenance personnel.

Therefore, the warning notes refer to both, operation and maintenance personnel of the drilling machine.

WARNING!

Always disconnect the drilling machine from the electrical power supply. This will prevent it from being used by unauthorized persons. The qualifications of the personnel for the different tasks are mentioned below:

Operator

The operator has been instructed by the operating company regarding the assigned tasks and possible risks in case of improper behaviour. Any tasks which need to be performed beyond the operation in standard mode must only be performed by the operator, if so indicated in these instructions and if the operator has been expressively commissioned by the operating company.

Qualified electrician

With professional training, knowledge and experience as well as knowledge of respective standards and regulations, qualified electricians are able to perform work on the electrical system and recognise and avoid any possible dangers. Qualified electricians have been specially trained for the working environment, in which they are working and know the relevant standards and regulations.

Qualified personnel

Due to their professional training, knowledge and experience as well as knowledge of relevant regulations, qualified personnel are able to perform the assigned tasks and to independently recognise and avoid any possible dangers.

Instructed person

Instructed persons were instructed by the operating company regarding the assigned tasks and any possible risks of improper behaviour.

INFORMATION

Everyone involved in the assembly, commissioning, operation and maintenance must

- be duly qualified
- and strictly follow these operating instructions.

In the event of improper use

- there may be a risk to personnel,
- there may be a risk to the drilling machine and other material values,
- the correct function of the drilling machine may be affected.

1.7 User positions

The operator position is in front of the drilling machine.

1.8 Safety measures during operation

CAUTION!

Danger due to inhaling dust and mist that is hazardous to health.

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

Ensure that the harmful dust and mist generated are safely sucked off at the point of origin and routed away from the working area or filtered. To do so, use a suitable extraction unit.

CAUTION!

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

Before processing inflammable materials (e.g. aluminium, magnesium) or using inflammable auxiliary materials (e.g. spirit) it is necessary to take additional preventive measures in order to safely avoid health risks.

1.9 Safety devices

Use the drilling machine only with properly functioning safety devices.

Stop the drilling machine immediately, if a safety device fails or is faulty or becomes ineffective.

It is your responsibility!

If a safety device has been activated or has failed, the drilling machine must only be used if you

- the cause of the fault has been eliminated,
- you have verified that there is no danger to personnel or objects.

WARNING!

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

- **injuries due to components or workpieces flying off at high speed,**
- **contact with rotating parts,**
- **fatal electrocution,**

The drilling machine features the following safety devices:

- an emergency stop push button,
- a drilling table with T-slots to fix the workpiece or a vice,
- a drill chuck guard, in order to prevent interference with the rotating tool.
- a switch in the protective cover of the V-belt.

INFORMATION

The drilling machine can only be switched on if the drill chuck guard is closed.

WARNING!

Although the isolating safety devices provided and delivered with the machine are designed to reduce the risks of workpieces being ejected or parts of tools or workpieces breaking off, they cannot eliminate these risks completely. Always work carefully and observe the limits of the machining process.

1.10 Safety check

Check the drilling machine before each start-up or at least once per shift. Inform the person responsible immediately of any damage, defects or changes in the operating function.

Check all safety devices

- at the beginning of each shift (with the machine stopped),

- once a week (with the machine in operation) and
- after all maintenance and repair work.

Check that prohibition, warning and information signs and the labels on the drilling machine

- are legible (clean them, if necessary)
- are complete (replace if necessary).

INFORMATION

Organise the checks according to the following table;

General check		
Equipment	**check**	**OK**
Guards	Mounted, firmly bolted and not damaged	
Signs, Markers	Installed and legible	
Date:	**Checked by (signature):**	

Functional check		
Equipment	**check**	**OK**
Emergency-stop switch	After the emergency stop button is pressed, the drilling machine must switch off.	
Drill chuck guard	The drilling machine may only switch on, if the drill chuck guard is closed. The engine must switch off when the drill chuck guard is opened during operation.	
Protective cover of V-belt.	The drilling machine may only switch on, if the protective cover of V-belt is closed. The integrated switch must shut off the motor when opening during operation.	
Date:	**Checked by (signature):**	

1.11 Emergency stop button

ATTENTION!

The drilling spindle keeps turning for a short time even after actuating the emergency stop push button depending on the preset speed.

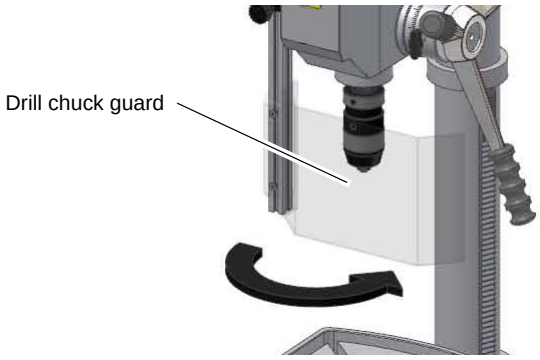
1.12 Drill chuck guard

INFORMATION

The machine cannot be started, if the drill chuck guard is not closed.

Adjust the guard to the correct height before you start working.
To do so, slacken the clamping screw, set the required height and re-tighten the clamping screw.

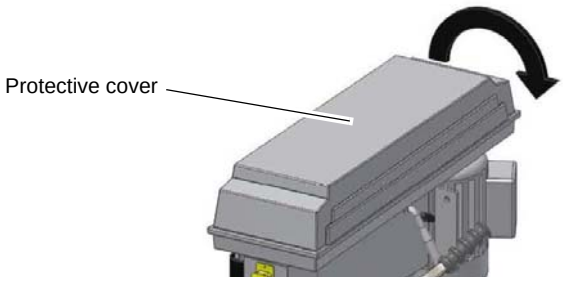
There is a switch integrated in the spindle protection mounting which monitors the closed position.



1.13 Protective cover of V-belt.

INFORMATION

The machine cannot be started, if the protective cover is not closed.



1.14 Personal protective equipment

For some works you need personnel protective equipment as protective equipment. These are

- safety helmet,
- protective glasses or face guard,
- protective gloves,
- safety shoes with steel toe caps,
- ear protection.

Before starting work make sure that the required personnel protective equipment is available at the work place.

CAUTION!

Soiled personal protection equipment that may be contaminated may cause illness.

Clean your personal protective equipment

- **after each use,**
- **regularly once a week.**

Personal protective equipment for special works

Protect your face and your eyes: Wear a safety helmet with facial protection when performing work where your face and eyes are exposed to hazards.

Wear protective gloves when handling pieces with sharp edges.

Wear safety shoes when you assemble, disassemble or transport heavy components.

1.15 Safety during operation

We provide information about the specific dangers when working with and on the drilling machine in the descriptions for these types of work.

WARNING!

Before switching on the drilling machine make sure that there are

- **no dangers generated for persons,**
- **no objects are damaged.**

Avoid any unsafe work methods:

- Make sure that your operation does not create a safety hazard.
- The rules specified in these operating instructions must be observed during assembly, operation, maintenance and repair.

- Do not work on the drilling machine if your concentration is reduced, for example, because you are taking medication.
- Observe the accident prevention regulations issued by your Employers Liability Insurance Association or other supervisory authorities applicable to your company.
- Inform the supervisor about all hazards or faults.
- Stay on the drilling machine until the machine completely stopped moving.
- Use the specified personal protective equipment. Ensure you wear close-fitting clothing and, if necessary, a hairnet.
- Do not use protective gloves when drilling.

1.16 Safety during maintenance

Inform the operators in good time of any maintenance and repair works.

Report all safety relevant changes and performance details of the drilling machine or their operational behavior. Any changes must be documented, the operating instructions updated and machine operators instructed accordingly.

1.16.1 Disconnecting and securing the drilling machine

Switch off the drilling machine with the main switch and secure the main switch with a padlock against unauthorised switching-on or switching-on by accident.

All machine parts as well as all dangerous voltages are switched off. Excepted are only the positions which are marked with the adjoining pictogram.

1.17 Using lifting equipment

WARNING!

The use of unstable lifting and load suspension equipment that might break under load can cause severe injuries or even death.

Check that the lifting and load suspension gear

- **they have sufficient load carrying,**
- **and that it is in perfect condition.**

Observe the accident prevention regulations issued by your Employers Liability Insurance Association or other supervisory authorities applicable to your company.

Fasten the loads carefully. Never walk under suspended loads!

1.17.1 Mechanical maintenance

Reinstall all protection and safety devices after any maintenance work once the work has been completed.This includes:

- covers,
- safety instructions and warning signs,
- grounding cables.

Check if they are working properly!

1.18 Accident report

Inform your supervisors and Optimum Maschinen Germany GmbH 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 for "near misses".

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

1.19 Electronics

Craftsman or industrial use

Have the machine and/or the electric equipment checked regularly. Immediately eliminate 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 machine immediately if there is a malfunction in the power supply!

Comply with the required inspection intervals in accordance with the factory safety directive, operating equipment inspection.

The operator of the machine must ensure that the electrical systems and operating equipment are inspected with regards to their proper condition, namely,

- by a qualified electrician or under the supervision and direction of a qualified electrician, prior to initial commissioning and after modifications or repairs, prior to recommissioning
- and at set intervals.

The deadlines must be set so that arising, foreseeable defects can be detected in a timely manner.

The relevant electro-technical rules must be followed during the inspection.

The inspection prior to initial commissioning is not required if the operator receives confirmation from the manufacturer or installer that the electrical systems and operating equipment comply with the accident prevention regulations, see conformity declaration.

Permanently installed electrical systems and operating equipment are considered constantly monitored if they are continually serviced by qualified electricians and inspected by means of measurements in the scope of operation (e.g. monitoring the insulation resistance).

1.20 Inspection deadlines

Technical or Industrial Use

Define and document the inspection deadlines for the machine in accordance with § 3 of the Factory Safety Act and perform an operational risk analysis in accordance with § 6 of the Work Safety Act. Also use the inspection intervals in the maintenance section as reference values.

2 Technical specification

2.1 Electrical connection

	B 20	B 25	B 32
400V~50Hz (~60Hz)	3 x 400 V 550 W or 230 V 550 W	3 x 400 V 550 W	3 x 400 V 1.1 kW

2.2 Drilling capacity

	B 20	B 25	B 32
Drilling capacity in steel [mm]	20	20	32
Throat [mm]	170	170	225
Spindle sleeve stroke [mm]	80	80	125

2.3 Spindle seat

	B 20	B 25	B 32
Spindle seat	MT2	MT3	MT4

2.4 Drilling table

	B 20	B 25	B 32
Table size [mm] Length x Width of the working surface	275 x 275	275 x 275	360 x 360
T-slot size [mm]	14	14	14
Maximum distance [mm] spindle - table	465	760	660
Working surface stand [mm] Length x Width of the working surface	205 x 200	235 x 220	260 x 270

2.5 Dimensions

	B 20	B 25	B 32
Height [mm]	990	1570	1730
Depth [mm]	700	690	790
Width [mm]	300	390	400
Total weight [kg]	53	57	137
Column diameter [mm]	70	70	92

2.6 Work area

	B 20	B 25	B 32
Height [mm]	2050	2050	2050
Depth [mm]	2000	2000	2000
Width [mm]	1400	1400	1400

2.7 Speeds			
	B 20	B 25	B 32
Spindle speeds [rpm]	•		•

2.8 Environmental conditions			
	B 20	B 25	B 32
Temperature	5 ~ 35 °C		
Relative humidity	25 - 80 %		

2.9 Operating material	
Toothed rod	standard plain bearing grease
Drill column	Acid-free lubricating oil

2.10 Emissions

The generation of noise emitted by the drilling machine is lower than 80 dB(A). If the drilling is installed in an area where various machines are in operation, the noise exposure (immission) on the operator of the drilling machine at the working place may exceed 80 dB(A).

INFORMATION

This numerical value was measured on a new machine under the operating conditions specified by the manufacturer. The noise behaviour of the machine might change depending on the age and wear of the machine.

Furthermore, the noise emission also depends on production engineering factors, e.g. speed, material and clamping conditions.

INFORMATION

The specified numerical value represents the emission level and does 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 working area, e.g. size or damping behaviour,
- other noise sources, e.g. the number of machines,
- other processes taking place in 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 should, however, allow the operator of the machine to more easily evaluate the hazards and risks.

CAUTION!

Depending on the overall noise exposure and the basic threshold values, machine operators must wear appropriate hearing protection. We generally recommend the use of noise and ear protection.

3 Delivery, interdepartmental transport and unpacking

CAUTION!

Injuries caused by parts falling over or off a forklift, pallet truck or transport vehicle. Only use means of transport that can carry the total weight and are suitable for it.

3.1 Notes on transport, installation and unpacking

Improper transport of individual devices and minor machines, unsecured devices and minor machines stacked on top of each other or next to each other in packed or already unpacked condition is accident-prone and can cause damage or malfunctions for which we do not grant any liability or guarantee.

Transport the scope of delivery secured against shifting or tilting with a sufficiently dimensioned industrial truck to the installation site.

3.1.1 General risks during internal transport

CAUTION: DANGER OF TIPPING!

The device may be lifted unsecured by a maximum of 2cm.

Employees must be outside the danger zone, the reach of loads. Warn employees and, if necessary, advise employees of the hazard.

Act responsibly during transport and always consider the consequences. Refrain from daring and risky actions.

Gradients and descents (e.g. driveways, ramps and the like) are particularly dangerous. If such passages are unavoidable, special caution is required.

Before starting the transport check the transport route for possible danger points, unevenness and disturbances as well as for sufficient strength and load capacity.

Danger points, unevenness and disturbance points must be inspected before transport. The removal of danger spots, disturbances and unevenness at the time of transport by other employees leads to considerable dangers.

Careful planning of internal transport is therefore essential.

3.2 Scope of delivery

Check the drilling machine immediately after delivery for transport damage, missing parts and loose locking bolts.

Compare the scope of delivery with the delivery note. Drilling machines in the standard package will be delivered as indicated below.

The standard delivery are:

B20	B25 / B32
• Drill head	• Drill head
• Drilling table • Drilling table support • Handle	• Drilling table • Drilling table support • Handle
• Stand	• Stand
• Column component • Toothed rod • Guide ring	• Column component • Toothed rod • Guide ring
• Drill chuck • Taper mandrel MT2 • Drill drift	• Drill chuck • Taper mandrel MT3 (B25) • Taper mandrel MT4 (B32) • Drill drift
• 3 x handle bar for spindle sleeve lever	• 3 x handle bar for spindle sleeve lever
• Assembly set	• Assembly set
• Operating Manual	• Operating Manual
• for 400 V: CEE - 16 A, with phase inverter	• CEE - 16 A, with phase inverter

3.3 Storage

ATTENTION!

Incorrect and improper storage might result in damage or destruction of electrical and mechanical machine components.

Store packed and unpacked parts only under the intended environmental conditions. Follow the instructions and information on the transport box.

Consult Optimum Maschinen Germany GmbH if the machine and accessories are stored for more than three months or are stored under different environmental conditions than those specified here .

3.4 Installation and assembly

3.4.1 Installation site requirements

Organize the working area around the drilling machine according to the local safety regulations.

WARNING!

The drilling machine must be connected to the substructure.

INFORMATION

In order to attain good functionality as well as a long service life of the machine, the place of installation should fulfil certain criteria.

Please observe the following points:

- The device must only be installed and operated in a dry and well-ventilated place.
- Avoid places close to machines which cause chips or dust.
- The installation site must be vibration-free, i.e. located away from presses, planing machines, etc.
- The substructure must be suitable for the drilling machine. Make sure that the floor has sufficient load-bearing capacity and is level.
- The ground must be prepared in a way that potential coolants cannot penetrate the floor.
- Any parts sticking out such as stops, handles, etc. have to be secured by measures taken by the customer if necessary in order to avoid endangering persons.
- Provide sufficient space for the personnel preparing and operating the machine and transporting the material.
- Also make sure the machine is accessible for setting and maintenance works.
- Provide for sufficient backlight (Minimum value: 500 Lux, measured at the tool tip). In the event of a lower level of lighting, additional illumination must be provided, e.g. by means of a separate workplace light.

CAUTION!

Arrange the machine's connection cable in such a way that it will not cause a tripping hazard.

INFORMATION

The mains plug of the drilling machine must be freely accessible.

3.5 Assembly

WARNING!

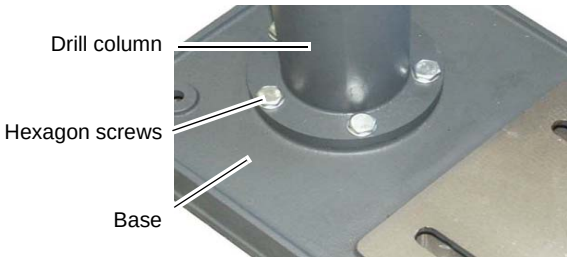
Danger of crushing when assembling and installing the machine components.

3.5.1 Mounting of base and drill column

INFORMATION

To mount the drilling machine, you will need a 17 mm hexagonal wrench and the hexagonal screws supplied.

➜ Put the stand on the floor and fix the drill column to the stand. Hexagon bolts are provided to fix it.



Img. 3-1: Stand

3.5.2 Assembly drilling column

Assemble of the drill table B20, B25 and B32

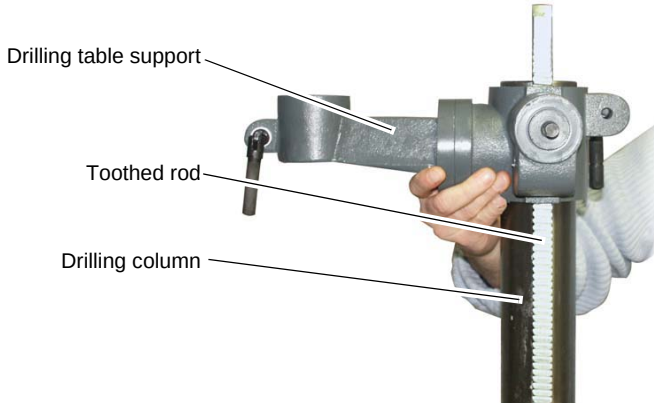
INFORMATION

The longer side of the toothed rack without toothing must be upside.

➜ Push the toothed rack into the table support.

➜ Adjust the toothed rack within the table support in a way that the teeth of the toothed rack cam into the spiral wheel of the support for the drilling machine table.

➜ Push the drilling table support with the toothed rack on the drill column.

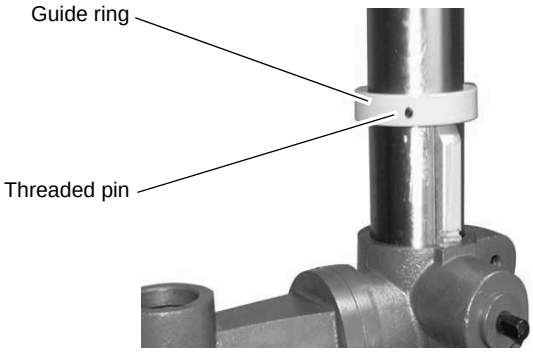


Img.3-2: Assembly drilling column

➜ Insert the guide ring on to the column and on the toothed rack.

➜ Fix the guide ring and the threaded pin.

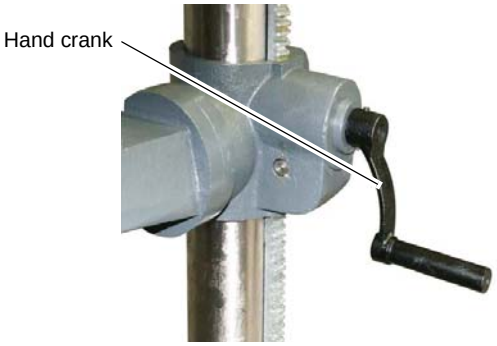
➜ Make sure that you can still easily turn the drilling table round the drill column.



Img.3-3: Assembly drilling column

➜ Mount the crank handle for the height-adjustment of the drilling table.

➜ Clamp the crank handle with the threaded pin.



Img.3-4: Assembly crank handle

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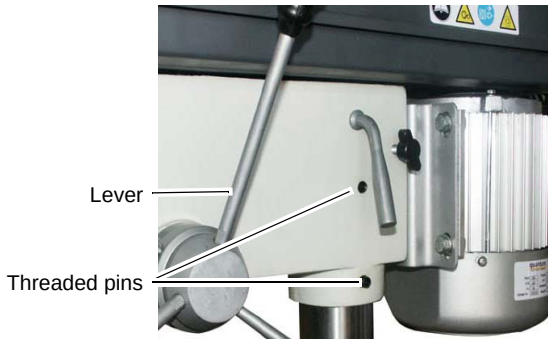
➜ Place the drilling table at the drilling table support. Mount the clamping lever.

Img. 3-5: Assembly clamping lever

Fitting the drill head

➜ Put the drilling head on the drill column and turn it as much until is aligned with the stand.
➜ Make sure that the drilling head is completely fixed in the drill column.
➜ Lock the drill head with the two threaded pins.
➜ Mount the three levers of the spindle sleeve feed.



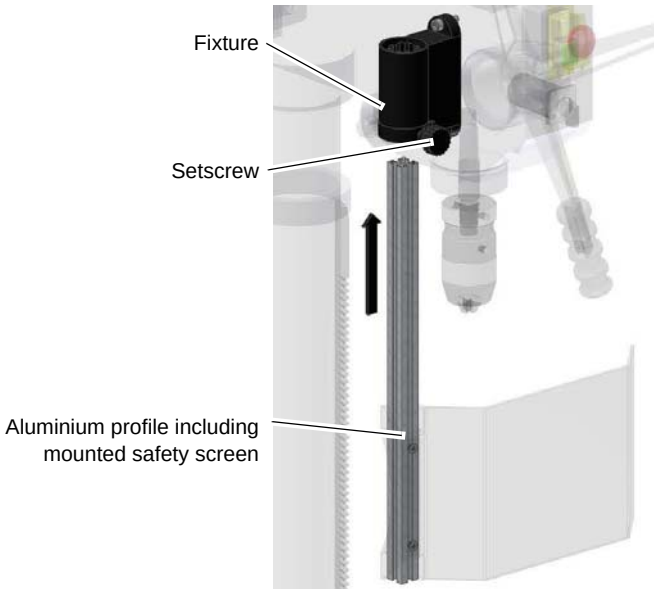
Img. 3-6: Assembly drill head

Assembly of the drill chuck protection

WARNING!

Never operate drilling machines without drill chuck protection.

➜ Shift the aluminium profile including the mounted safety screen (plastic screen) into the fixture which is mounted on the drilling head.
➜ After assembly of the aluminium profile screw down the adjusting screw.
➜ Screw the hexagon socket screw with the locking washer into the aluminium profile.



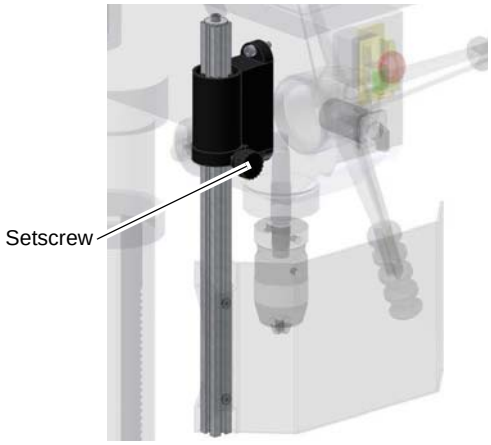
Img. 3-7: Mounting drill chuck protection

WARNING!

Make sure that the hexagon socket screw and the locking washer are mounted and tightly screwed. Otherwise the aluminium profile would slide out of the fixture when the setting screw is screwed off.

➜ After assembly, make sure that the adjusting screw points forward when the drill chuck protection is closed.

Img. 3-8: Mounting drill chuck protection



Img. 3-9: Mounting drill chuck protection

3.6 Installation

WARNING!

The condition of the underground and the fixing type of the machine foot to the underground must be in a way that it can bear the loads of the drilling machine. The foundation must be level. Check that the drilling machine foundation is horizontal with a spirit level.

➜ Check that the drilling machine foundation is horizontal with a spirit level.

➜ Check that the foundation has sufficient load-bearing capacity and rigidity.

➜ Place the drilling machine on the provided foundation.

➜ Fix the drilling machine base to the substructure through the holes pre-drilled for this purpose.

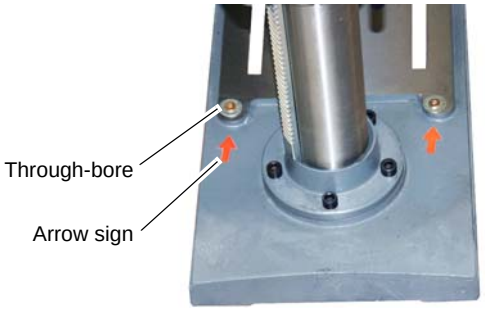
3.6.1 Fixing

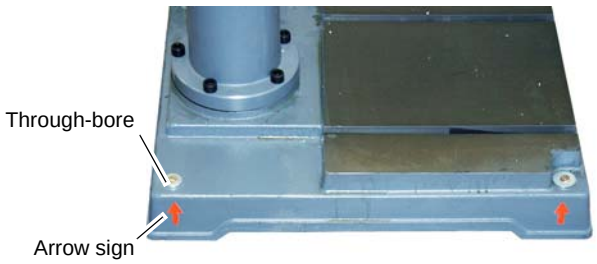
In order to provide for the necessary stability of the drilling machine, connect the machine with its foot to the substructure.

We recommend that you use shear connector cartridges or heavy-duty anchors.

➜ Fix the foot of the drilling machine to the substructure with the holes pre-drilled for this purpose.

The through-bore are marked with arrows on the machine base.





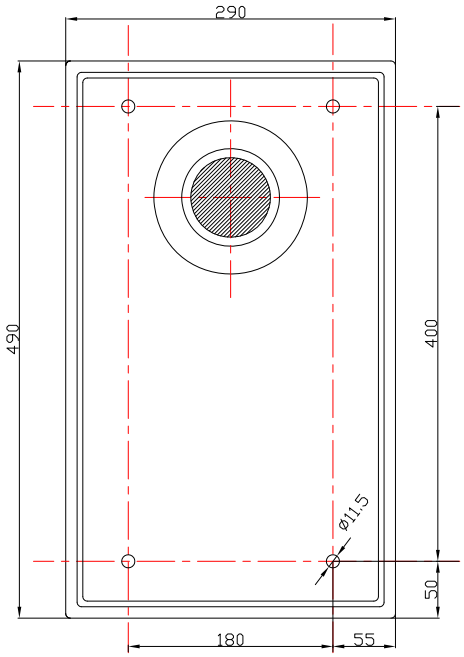
Img.3-10: Stand

ATTENTION!

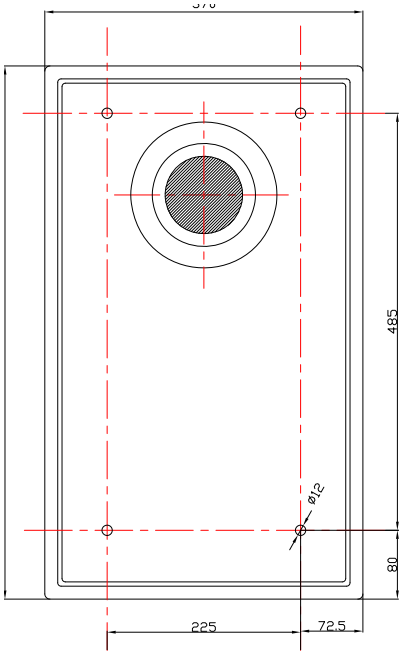
Tighten the fixing screws of the drilling machine only as much that it is safely fixed and cannot break away or tilt over.

If the fixing screws are too tight in particular in connection with an uneven substructure it may result in a broken stand of the machine.

3.6.2 Installation diagrams B25, B32



B25



B32

3.7 First commissioning

WARNING!

Risk from using improper workpiece clamping materials or operating the machine at an inadmissible speed.

Only use the tool holders (e.g. drill chuck) which were delivered with the machine or which are offered as optional equipment by OPTIMUM.

Only use tool holders in the intended admissible speed range.

Tool holders may only be modified in compliance with the recommendation of OPTIMUM or of the manufacturer of the clamping devices.

There is a danger to persons and equipment, if the first commissioning of the drilling machine is carried out by inexperienced personnel.

We do not accept any liability for damages caused by incorrectly performed commissioning.

3.7.1 Electrical connection

Connect the electrical supply cable.

ATTENTION!

For 400V machines: Ensure that all 3 phases (L1, L2, L3) are connected correctly.

Most motor defects result of wrong connections. For instance if a motor phase is not correctly clamped or connected to the neutral conductor (N).

Effects may be as follows:

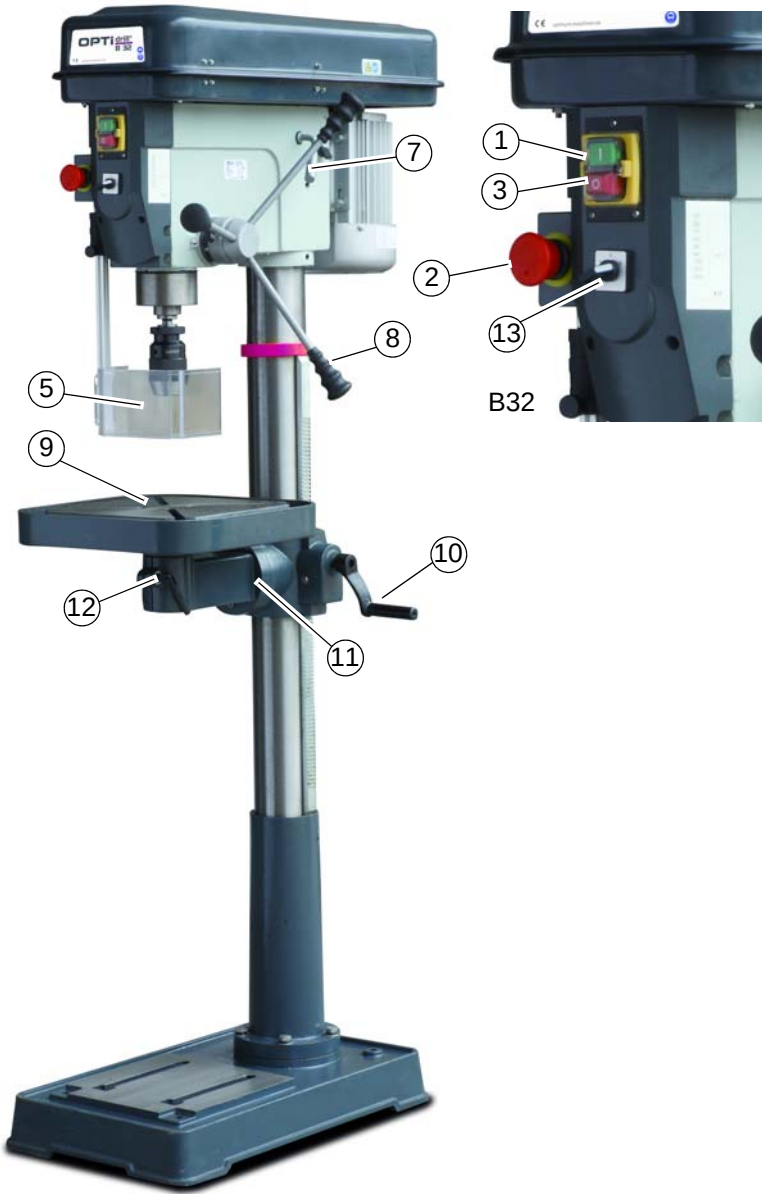
- The motor is getting hot very rapidly.
- Increased motor noises.
- The motor has no power.

ATTENTION!

Make sure that the direction of rotation of the drive motor is correct. The switch position of the rotation selector switch for right-handed rotation (R) has to turn the drill spindle clockwise. If necessary, exchange two phase connections. If your connector plug is equipped with a phase inverter, this is done by turning it by 180°. The guarantee will become null and void if the machine is connected incorrectly.

4 Operation

4.1 Control and indicating elements



Pos.	Designation	Pos.	Designation
1	On	8	Lever for spindle sleeve feed
2	Emergency-stop switch	9	Drilling table
3	Off	10	Table height adjustment
4	Drill depth stop	11	Adjustment for the inclination of the table
5	Drill chuck guard	12	Clamping lever
6	Belt drive with housing	13	Direction of rotation switch
7	Belt tension handle		

4.2 Safety

Commission the machine only under the following conditions:

- The machine is in proper working order.
- The machine is used as prescribed.
- The operating instructions are observed.
- All safety devices are installed and activated.

Eliminate or have all malfunctions rectified promptly. Stop the machine immediately in the event of any anomaly in operation and make sure it cannot be started up accidentally or without authorization. Notify the person responsible immediately of any modification.

4.3 Operating elements

4.3.1 Drill depth stop

Use the drilling depth stop when drilling several holes of the same depth.

Img. 4-1: Drill depth stop

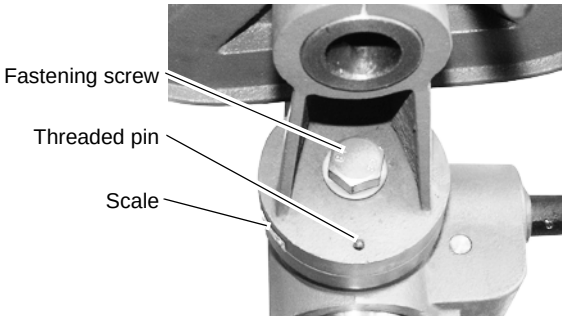
➜ Loosen the locking screw and turn the graduated collar until the required drilling depth matches with the indicator.

➜ Re-tighten the locking screw.

4.3.2 Table Inclination

The drilling table can be inclined to the right or to the left.

➜ Loosen the fixing screw.



Img. 4-2: Table Inclination

➜ Pull out the threaded pin.

INFORMATION

If you can not pull out the threaded pin, so the seat can be solved by turning at the nut clockwise.

➜ Set the desired angle using the scale.

➜ Re-tighten the fixing screw again.

INFORMATION

The threaded pin is only provided for correct positioning of a horizontal level of the drilling table.

4.4 Speed variation

WARNING!

Only disassemble the cover hood if the drilling machine is disconnected from the electrical supply.

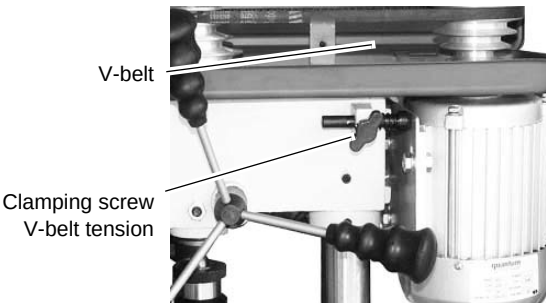
Close and screw down the protective cover after each change of speed.

Disconnect the machine from the electrical supply.

➜ Remove the screw on the protective cover.

➜ Open the protective cover of the belt drive.

➜ Loosen the clamping screw of the V-belt tension and slide the motor in direction drill chuck.



Img. 4-3: Speed variation

INFORMATION

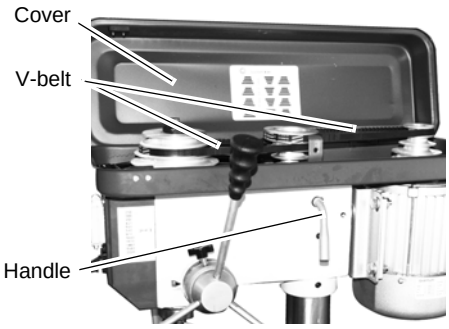
A handle is attached to the drills with which the motor can be pushed towards the drill chuck.

➜ Thus the pre-tension of the V-belts is loosened.

➜ Put the V-belt/-s onto the required V-belt pulley/-s.

➜ Re-tighten the V-belt/-s.

➜ Close and screwing the protective cover again.



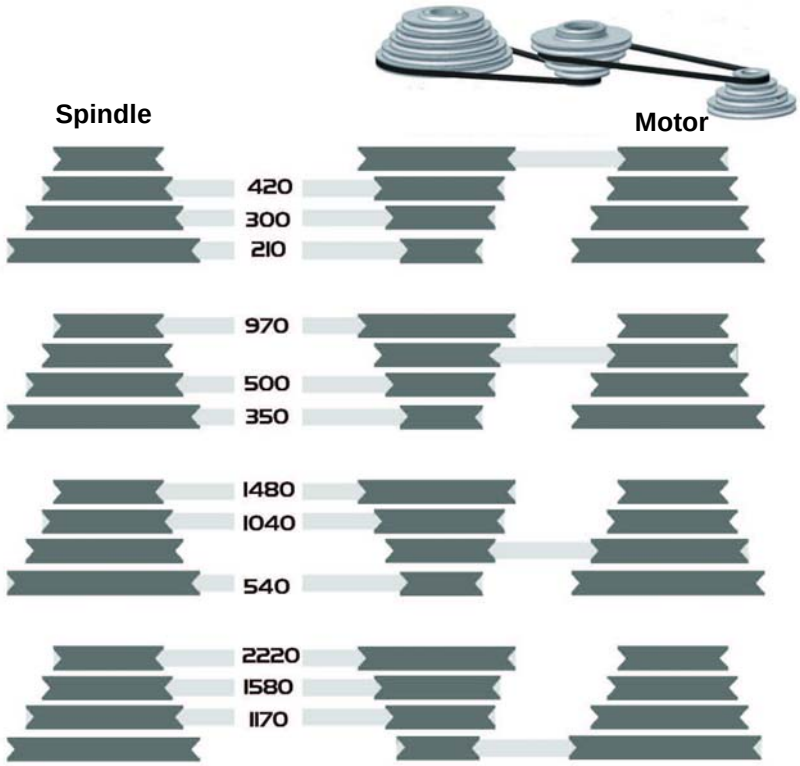
Img. 4-4: Protective cover

ATTENTION!

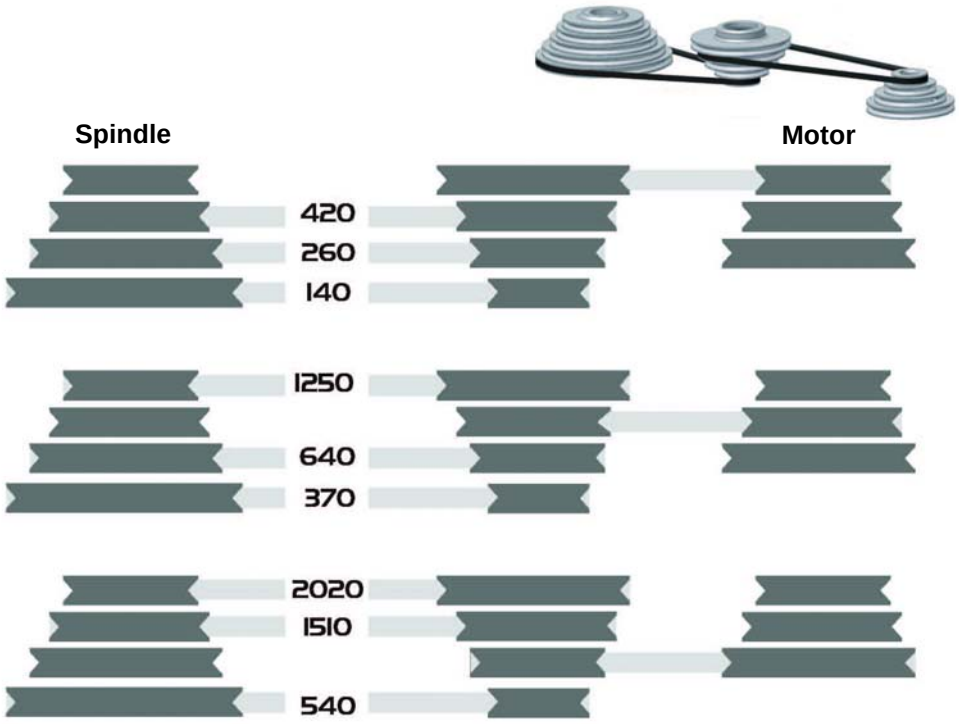
Watch for the proper tension of V-belts. Too heavy or too low tension of the belt can cause damage. The belts are correctly tensioned, when it can be by pressing with the fingers for about 1 cm.

4.4.1 Speed tables

Speed table B20 / B25 ~50Hz



Speed table B32 ~50Hz



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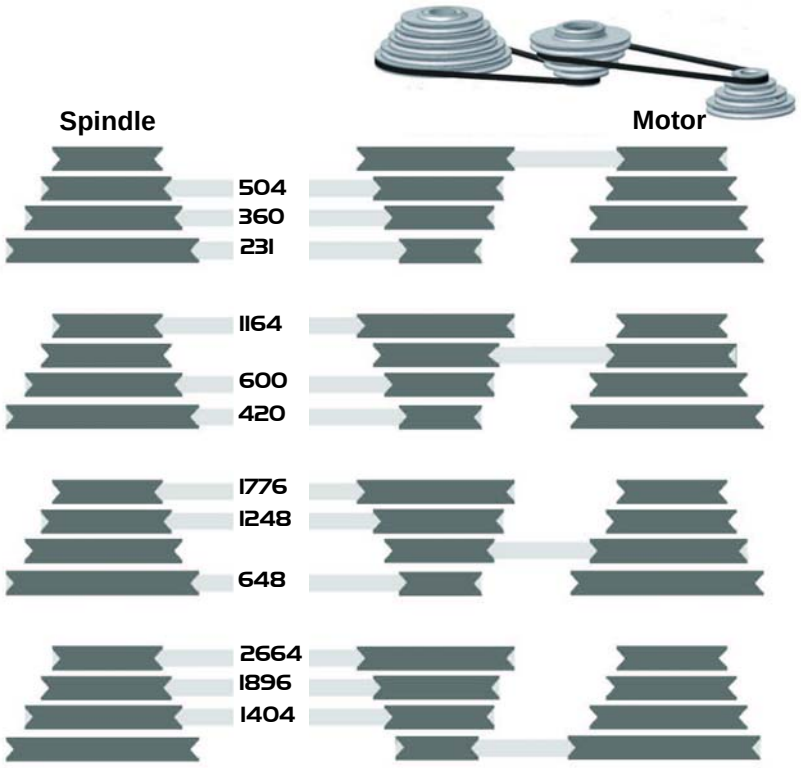
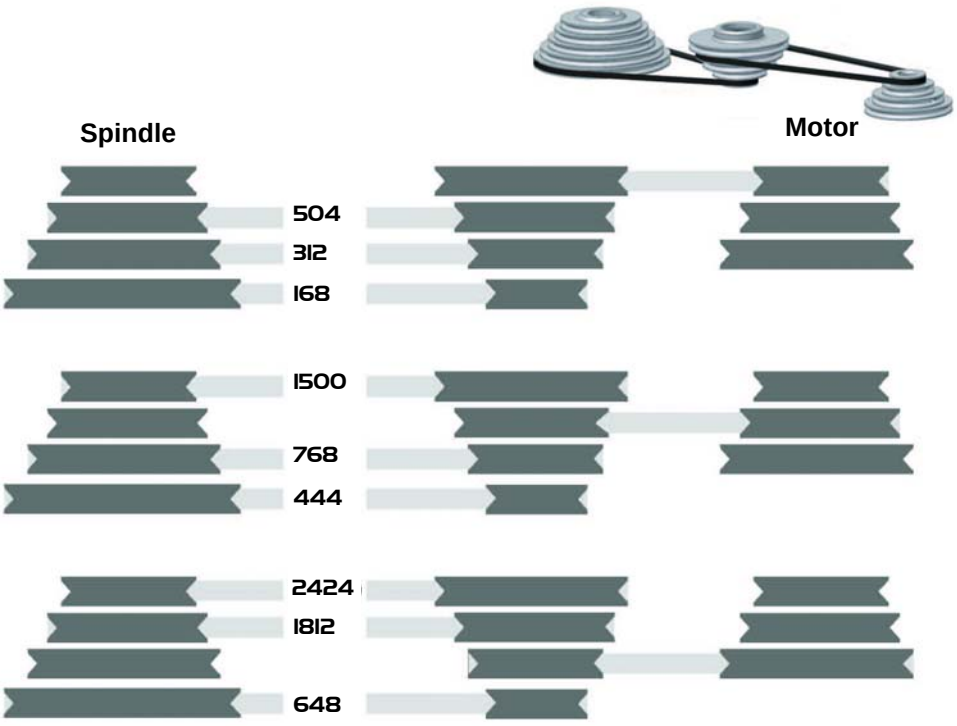
Speed table B20 / B25 ~ 60Hz



Speed table B32 ~60Hz



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4.5 Drill chuck

Mounting Morse taper and drill chuck

A friction-locking connector holds and centres the drill chuck in the B16 holding fixture.

➜ Check and clean the conical seat at the drill spindle and on drill chuck.

➜ Push the drill chuck with a firm jerk onto the B16 receptacle.

The drill chuck with MT taper is secured through a form-fit union (driver) against twisting in the drilling spindle.

A frictionally engaged connection keeps and centres the drill chuck or the drill in the drill spindle.

➜ Check and, if necessary, clean the conical seat in the drilling spindle and at the taper mandrel of the tool or the drill chuck.

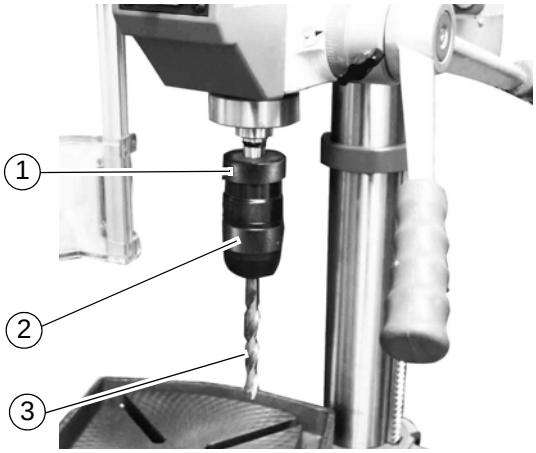
➜ Shift the morse taper with a firm jerk into the spindle sleeve.

4.5.1 Function quick action drill chuck

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

➜ Hold the upper part (1) of the drill chuck. With the bottom part of the drill chuck (2) it is possible to tighten or loosen the jaws of the drill chuck.

➜ Turn the tool, drill (3) firmly.



Img. 4-5: Quick-action drill chuck

ATTENTION!

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

4.5.2 Dismounting the quick action drill chuck

WARNING!

Only disassemble the drill chuck if the drilling machine is disconnected from the electrical supply.

➜ Disconnect the machine from the electrical supply.

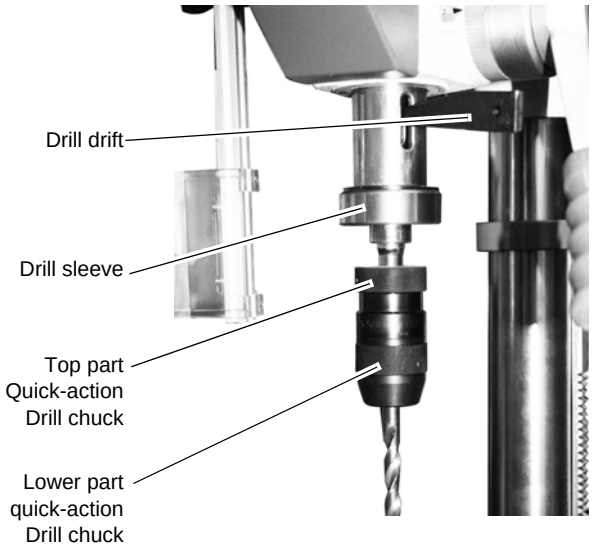
➜ The cone connection can be separated with a plastic or a rubber hammer.

The drill chuck and the taper mandrel are loosened from the drill spindle by means of a drill drift.

➜ Move the drill sleeve down.

➜ Turn the drilling spindle until the openings of the sleeve and of the drilling spindle are superimposed.

➜ Loosen the taper mandrel of the drill chuck with the help of a drill drift.



Img.4-6: Removal

4.6 Cooling

The friction generated during rotation can cause the edge of the tool to become very hot.

The tool should be cooled during the drilling process. Cooling the tool with a suitable cooling lubricant ensures better working results and a longer edge life of the tools.

This is best realised by a separate cooling equipment. If there is no cooling equipment included in the delivery volume, you can cool by means of a spray gun or a washing bottle.

CAUTION!

Danger of injury due to brushes getting caught or pulled in. Use a spray gun or a washing bottle for cooling.

INFORMATION

Use a water-soluble and non-pollutant emulsion as a cooling agent.This can be acquired from authorised distributors.

Make sure that the cooling agent is being collected.

Respect the environment when disposing of lubricants and coolants.

Follow the manufacturer's disposal instructions.

4.7 Before starting work

Before starting work, select the desired speed. It is depending on the used drilling diameter and on the material.

WARNING!

For drilling jobs, it is necessary to clamp the workpiece firmly to prevent the bit catching on the pieces. A machine vice or clamping claws is a suitable clamping device.

Put a wooden or plastic board beneath the workpiece to avoid drilling through to the work table, vice, etc. If required, adjust the desired drilling depth by means of the drilling depth stop in order to obtain a uniform drilling depth. Please make sure to use a suitable dust suction when treating wood since wood dust may be health hazardous. Wear a suitable dust mask when performing works at which dust is generated.

4.8 During work

The spindle sleeve feed is done via the star grip. Make sure that the feed is constant and not too fast. The spindle sleeve is returned to its initial position by the return spring.

WARNING!

Seizing of clothes and / or hair.

- ❍ Make sure to wear well-fitting work during drilling work.
- ❍ Do not use gloves.
- ❍ If necessary, use a hairnet.

CAUTION!

Danger of bumps from the levers on the star grip.

Do not release the star grip when repositioning the drilling spindle sleeve. Danger of crushing. Do not place your hand between the drilling head and the spindlesleeve.

INFORMATION

The smaller the bit the more easily it may break.

In the case of deep drilling, remove the bit from time to time to remove filings from the drill. Add a few drops of oil to reduce friction and prolong the service life of the bit.

5 Maintenance

In this chapter you will find important information about

- Inspection,
- Maintenance and
- Repair.

ATTENTION!

- Properly performed regular maintenance is an essential prerequisite for
- operational safety,
- failure-free operation,
- long service life of the machine and
- the quality of the products which you manufacture.

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

ENVIRONMENTAL PROTECTION

Disposal

Never dump oil or other environmentally hazardous substances which are harmful to the environment in water inlets, rivers or channels. Used oils must be delivered to a collection centre. Please consult your supervisor for further information on your nearest collection point.

5.1 Safety

WARNING!

The consequences of incorrect maintenance and repair work may include:

- **extremely serious injuries to those working on the drilling machine and**
- **damage to the machine.**

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

5.1.1 Preparation

WARNING!

Only work on the drilling machine if it has been disconnected from the power supply. Attach a warning label.

5.1.2 Restarting

Before restarting, run a safety check.

WARNING!

Before starting the machine you must be sure that

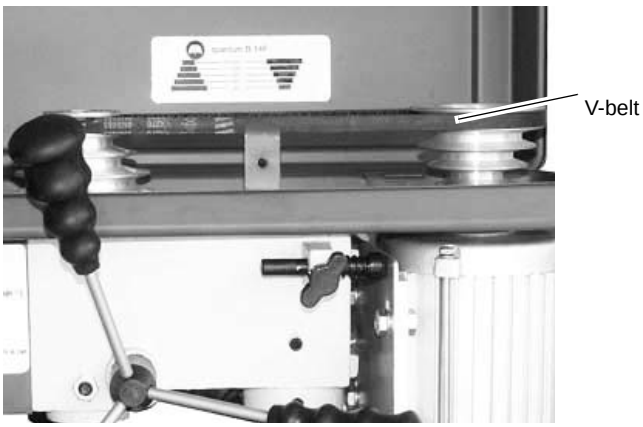
- **no dangers generated for persons,**
- **the machine is not damaged.**

5.2 Inspection and maintenance

The type and level of wear depends to a large extent on the individual usage and operating conditions. Any indicated intervals therefore are only valid for the corresponding approved conditions.

5.3 Inspection and maintenance

The type and level of wear depends to a large extent on the individual usage and operating conditions. Any indicated intervals therefore are only valid for the corresponding approved conditions.

Interval	Where?	What?	How?
Start of shift After each maintenance or repair work	**Drilling machine**	☞ Safety check on page 11	
weekly	**Clamping bolts**	**V-belt tension**	➜ Check if the attachment screws for the V-belt tension on the left and right side of the drilling head are well fastened. ➜ Check if the V-belts are well tightened. Checking the tension of V-belts, ☞ Speed variation on page 30.
Every month	**Drill column and toothed rack**	**Oiling**	➜ Lubricate the drill column regularly with commercial oil. ➜ Lubricate the toothed rod regularly with commercial grease (e.g. friction bearing grease).  Img. 5-1: B 20
Every 6 months	**V-belts at the drill head**	**Visual inspection**	➜ Check whether the V-belts have become porous and worn.  Img. 5-2: V-belt housing

Interval	Where?	What?	How?
Every 6 months	Electronics	Testing	➜ Check the electrical equipment / parts of the drilling machine. ☞ Qualification on page 9

5.4 Repair

5.4.1 Customer service technician

For any repair work request the assistance of an authorised customer service technician. Contact your specialist dealer if you do not have customer service's information or contact Stürmer Maschinen GmbH in Germany who can provide you with a specialist dealer's contact information. Optionally, the

Stürmer Maschinen GmbH

Dr.-Robert-Pfleger-Str. 26

D- 96103 Hallstadt

can provide a customer service technician, however, the request for a customer service technician can only be made via your specialist dealer.

If the repairs are carried out by qualified technical personnel, they must follow the indications given in these operating instructions.

Optimum Maschinen Germany GmbH accepts no liability nor does it guarantee against damage and operating malfunctions resulting from failure to observe these operating instructions.

For repairs, only use

- faultless and suitable tools only,
- original parts or parts from series expressly authorised by Optimum Maschinen Germany GmbH.

6 Malfunctions

Malfunction	Cause/ possible effects	Solution
Noise during work.	• Spindle is too little lubricated • Tool is blunt or wrongly clamped	• Grease spindle • Use new tool and check tension (fixed setting of the bit, drill chuck and taper mandril)
Bit „burnt“	• Drill speed too high /feed too high • Chips do not come out of the drill hole. • Drill blunt • No or too little cooling	• Select another speed • Extract drill more often during work • Sharpen or use new drill • Use coolant.
Drill tip is running off centre, the drilled hole is non-round	• Hard points on the workpiece • Length of the cutting spirals/or angles on the tool are unequal • Drill deformed	• Use new drill
Drill is defective	• No base / support used.	• Use support and clamp it with the workpiece
Drill is running non-round or shaking	• Bit deformed • Bearing worn down • Drill is not correctly clamped. • Drill chuck defective	• Use new drill • Have the spindle bearings replaced • Correctly clamp drill • Replace the drill chuck
The drill chuck or the taper mandrel cannot be inserted.	• Dirt, grease or oil on the taper inside of the drill chuck or on the taper surface of the drill spindle	• Clean surfaces well • Keep surfaces free of grease
Motor does not start.	• Motor is wrongly connected • Fuse is defective	• Have it checked by qualified
Motor is overheating and there is no power	• Motor overloaded? • Too low mains voltage • Motor is wrongly connected	• Reduce feed Disconnect immediately and have it checked by authorized personnel • Have it checked by qualified
Precision of the work deficient	• Irregularly heavy or tensed workpiece • Inexact horizontal position of the work-piece holder	• Balance the piece statically and secure without straining • Adjust workpiece-holder
Drilling spindle sleeve does not return to its initial position	• Spindle return spring does not work • Locking bolt inserted	• Check spindle return spring, replace it, if necessary • Pull out locking pin
The drilling sleeve may not be moved downwards.	• Locking bolt inserted • Drill depth adjustment no released	• Pull out locking pin • Release drill depth adjustment

Malfunction	Cause/ possible effects	Solution
Spindle bearing overheating	• Bearing worn down • Bearing pretension is too high • Working at high drilling speed over a longer period of time.	• Replacing • Increase bearing clearance for fixed bearing (taper roller bearing) • Reduce drill speed and feed rate
Rattle the spindle if the workpiece surface is rough.	• Excessive slack in bearing. • Spindle moves up and down • Adjustment strip loose • Clamping chuck is loose • Tool is blunt. • Workpiece is loose	• Readjust the bearing slack or replace the bearing. • Readjust bearing clearance (fixed bearing)? • Adjust strip to the correct slack using the adjusting screw • Check, re-tighten • Sharpen or renew the tool. • Clamp the workpiece firmly.

7 Appendix

7.1 Copyright

This document is protected by copyright. All derived rights are reserved, especially those of translation, re-printing, use of figures, broadcast, reproduction by photo-mechanical or similar means and recording in data processing systems, either partial or total.

Subject to technical changes without notice.

7.2 Liability claims/warranty

Besides 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 were promised as part of a single contractual provision.

- ❍ Liability or warranty claims are processed at OPTIMUM GmbH's discretion 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. Ownership of replaced products or components is transferred to OPTIMUM Maschinen Germany GmbH.
- ❍ 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 from the following circumstances are excluded from liability and warranty claims:
  - Using the product beyond the technical options and proper use, in particular due to overstraining 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
  - Unauthorized 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

- Neither are the following items covered by liability or warranty claims:
  - Wearing parts and components which are subject to normal and intended wear, such as V-belts, ball bearings, lighting, filters, seals, etc.
  - Non reproducible software errors
- Any services, which OPTIMUM GmbH or one of its agents performs in order to fulfil any additional warranty are neither an acceptance of the defects nor an acceptance of its obligation to compensate. These services neither delay nor interrupt the warranty period.
- The court of jurisdiction for legal disputes between businessmen is Bamberg.
- If any of the aforementioned agreements is totally or partially inoperative and/or invalid, a provision which nearest approaches the intent of the guarantor and remains within the framework of the limits of liability and warranty which are specified by this contract is deemed agreed.

7.3 Advice for disposal / Options of reuse:

Please dispose of your equipment in an environmentally friendly manner, by not placing waste in the environment but in a professional manner.

Please do not simply throw away the packaging and later the disused machine, but dispose of both in accordance with the guidelines laid down by your city council/local authority or by an authorised disposal company.

7.3.1 Decommissioning

CAUTION!

Immediately decommission used machines in order to avoid later misuse and endangering of the environment or of persons.

- **Unplug the power cord.**
- **Cut the connection cable.**
- **Remove all operating materials from the used device which are harmful to the environment.**
- **If applicable remove batteries and accumulators.**
- **Disassemble the machine if required into easy-to-handle and reusable assemblies and component parts.**
- **Dispose of machine components and operating fluids using the intended disposal methods.**

7.3.2 Disposal of new device packaging

All used packaging materials and packaging aids from 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 passed to a collection station or to the appropriate waste management enterprise.

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

7.3.3 Disposal of the old device

INFORMATION

Please take care in your interest and in the interest of the environment that all component parts of the machine are only disposed of in the intended and admitted way.

Please note that the electrical devices comprise a variety of reusable materials as well as environmentally hazardous components. Please ensure that these components are disposed of separately and professionally. 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.

7.3.4 Disposal of electrical and electronic components

Please make sure that the electrical components are disposed of professionally and according to the statutory provisions.

The device is composed of electrical and electronic components and must not be disposed of as household waste. According to the European Directive regarding electrical and electronic used devices and the implementation of national legislation, used power tools and electrical machines need to be collected separately and supplied to an environmentally friendly recycling centre.

As the machine operator, you should obtain information regarding the authorised collection or disposal system which applies for your company.

Please make sure that the electrical components are disposed of professionally and according to the legal regulations. Please only throw depleted batteries in the collection boxes in shops or at municipal waste management companies.

7.4 Disposal via municipal collection facilities

Disposal of used electrical and electronic components
(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 handled as common household waste, but that is needs to be disposed of at a central collection point for recycling. Your contribution to the correct disposal of this product will protect the environment and the public health. Incorrect disposal constitutes a risk to the environment and public health. Recycling of material will help reduce the consumption of raw materials. For further information about the recycling of this product, please consult your District Office, municipal waste collection station or the shop where you have purchased the product.

7.4.1 Change information operating manual

Chapter	Short summary	new version number
3	Interdepartmental transport	1.0.1

7.5 Product follow-up

We are required to perform a follow-up service for our products which extends beyond shipment.

We would be grateful if you could inform us of the following:

- Modified settings
- Any experiences with the geared drill which might be important for other users
- Recurring malfunctions.

8 Determining the cutting speed and the speed

8.1 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

8.2 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
Vc in m/min	4	6	8	10	12	15	18	20	25	30	35	40	50	60	80	100

Drilling_VC_GB.fm

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

Drilling_Vc_GB.fm

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

8.3 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

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

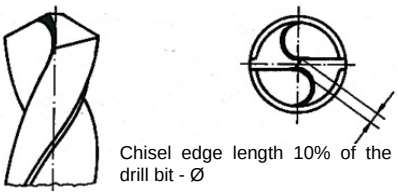
Set a speed on your drilling machine which is less than the determined speed.

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.



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.

Drilling_VC_GB.fm

9 Ersatzteile - Spare parts

9.1 Ersatzteilbestellung - *Ordering spare parts*

Bitte geben Sie folgendes an - *Please indicate the following :*

- Seriennummer - *Serial No.*
- Maschinenbezeichnung - *Machines name*
- Herstellungsdatum - *Date of manufacture*
- Artikelnummer - *Article no.*

Die Artikelnummer befindet sich in der Ersatzteilliste. *The article no. is located in the spare parts list.* Die Seriennummer befindet sich am Typschild. *The serial no. is on the rating plate.*

9.2 Hotline Ersatzteile - Spare parts Hotline

+49 (0) 951-96555 -118

ersatzteile@stuermer-maschinen.de

9.3 Service Hotline

+49 (0) 951-96555 -100

service@stuermer-maschinen.de

9.4 Bohrfutterschutz - Drill chuck protection

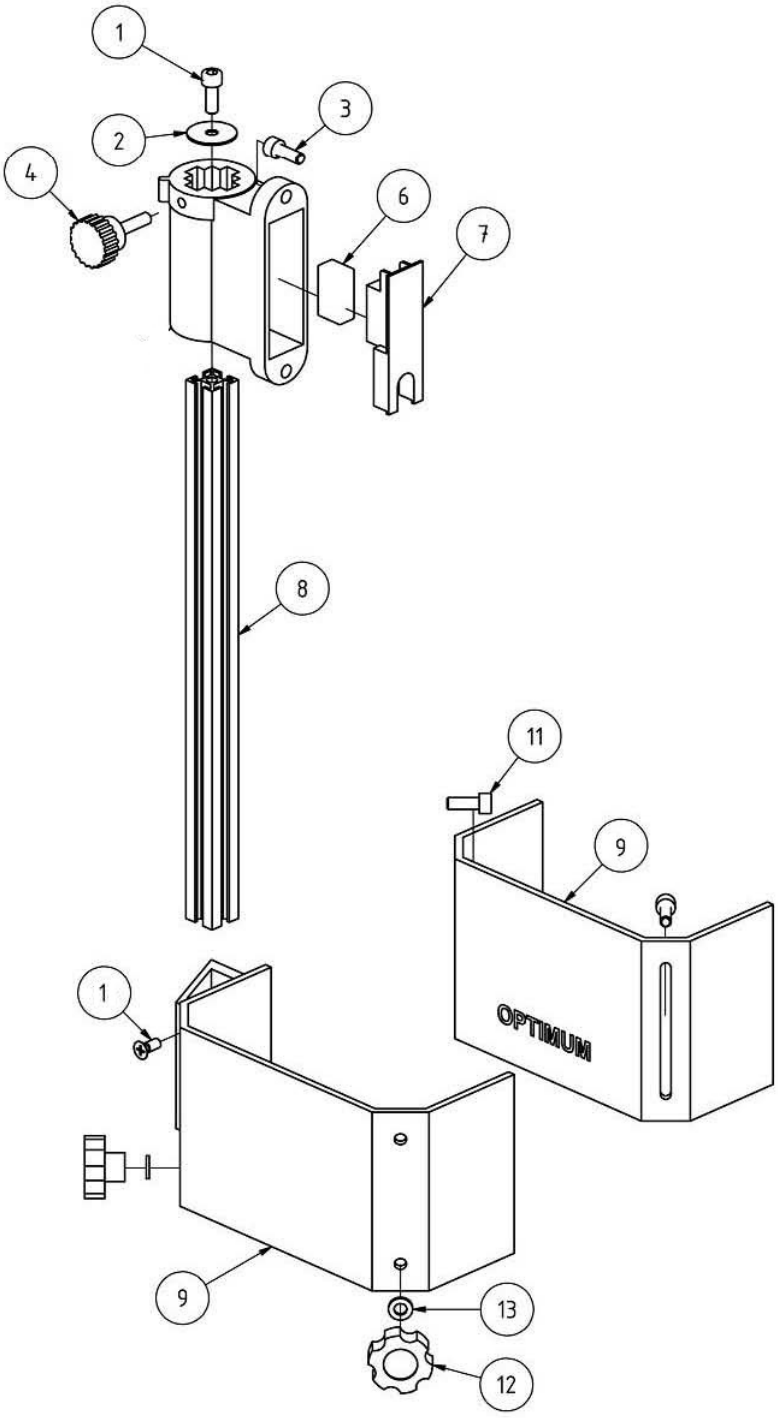


Abb. 9-1: Bohrfutterschutz - Drill chuck protection

9.4.1 Ersatzteilliste - Parts list - Bohrfutterschutz - Drill chuck protection

Bohrfutterschutz - Drill chuck protection B20 / B25 / B32					
Pos.	**Bezeichnung**	**Designation**	**Menge**	**Grösse**	**Artikelnummer**
			Qty.	**Size**	**Item no.**
1	Spezialschraube		2	M5x10	
2	Beilagscheibe			5	
3	Innensechskantschraube				
4	Rändelschraube				030031712014
6	Mikroschalter				030031712018
7	Abdeckung Halter				030031712019
8	Aluprofil		1	B20/B25/B32	03011233209
9	Sichtschutzscheibe				03003171207
11	Nutschraube			M5x20	
12	Rändelschraube				03003171212
13	Beilagscheibe			5	
Komplett-Sätze - Complete sets					
Pos.	**Bezeichnung**	**Designation**	**Menge**	**Grösse**	**Artikelnummer**
			Qty.	**Size**	**Item no.**
0	Bohrfutterschutz Kpl		1	B20-B32	03003231125

B20-B32_parts.fm

9.5 B20 | B25 - Ersatzteilzeichnung - Parts drawing

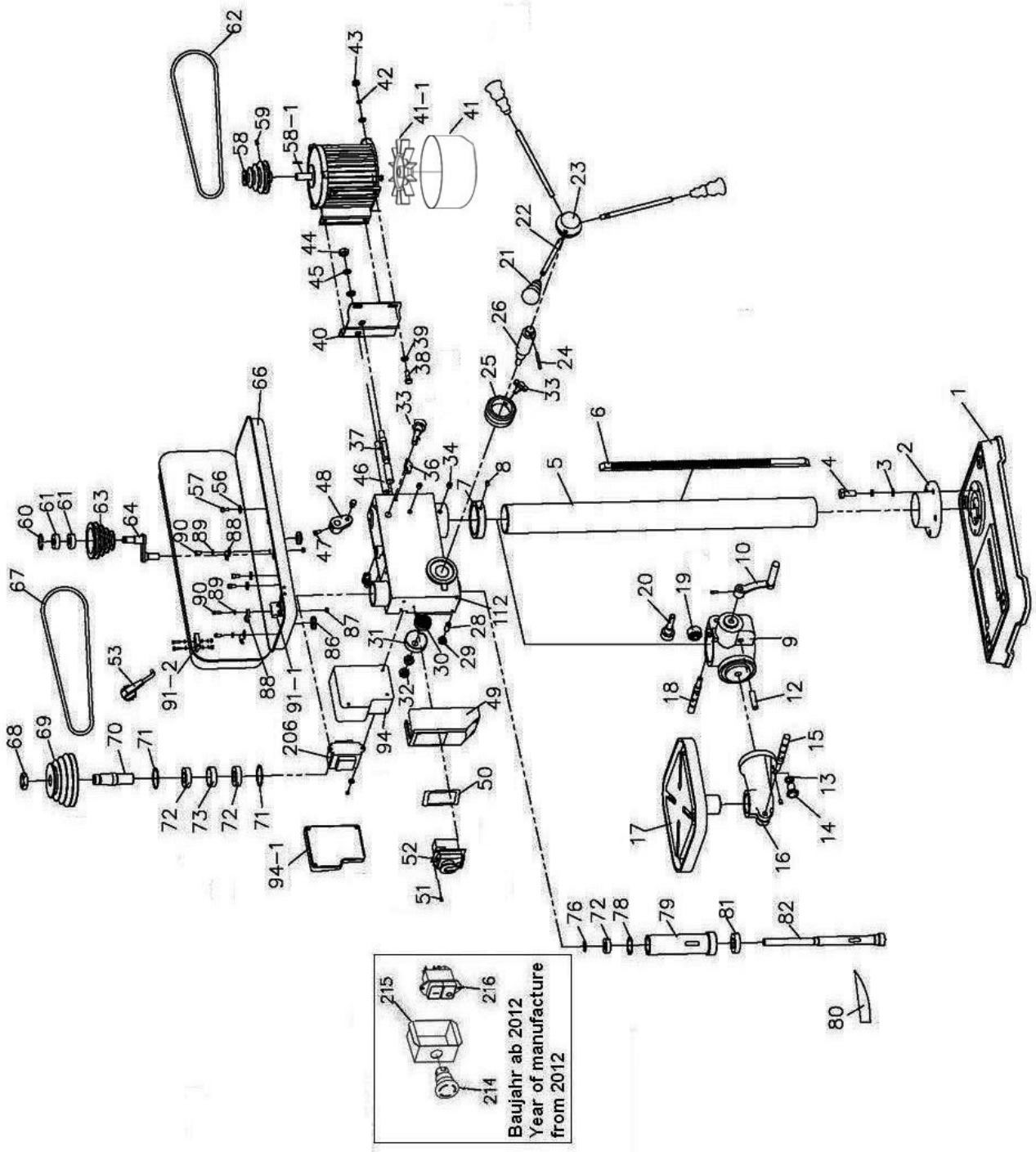


Abb. 9-2: B20 / B25

B20-B32_parts.fm

9.5.1 B20 | B25 - Ersatzteilliste - Parts list

B20 / B25					
Pos.	Bezeichnung	Designation	Menge	Grösse	Artikelnummer
			Qty.	Size	Item no.
1	Bodenplatte	Base	1		0300820101
2	Säulenflansch		1	B20	0300820102
2	Säulenflansch		1	B25	0300825302
3	Scheibe	Washer	4	M12	
4	Schraube	Screw	4	M12	
5	Säule	Column	1	B20	0300820105
5	Säule	Column	1	B25	0300825305
6	Zahnstange	Rack	1	B20	0300820106
6	Zahnstange	Rack	1	B25	0300825306
7	Säulenring	Colum Ring	1		0300820107
8	Madenschraube	Grub screw	1	M 8x10	
9	Bohrtischhalter	Support	1		0300820109
10	Kurbel+Schraube	Crank+Sscrew	1		0300820110
12	Bolzen	Bolt	1		0300820112
14	Schraube	Screw	1	M 6x15	
15	Klemmhebel	Clamp Handle	1		0300813107
16	Bohrtischträger	Drill table holder	1		0300820116
17	Bohrtisch	Work Table	1		0300820117
18	Klemmhebel	Clamp Handle	1		0300820118
19	Zahnrad	Gear	1		0300820119
20	Schneckenrad	Worm Gear	1		0300820120
21	Knopf	Knob	3		0300813116
22	Hebel	Lever	3		0300820122
23	Nabe	Collet	1		0300820123
24	Hohlspannstift	Spring pin	1	5 x 32	0300832369
25	Skalenring	Dial	1		0300820125
26	Ritzelwelle	Pinion Shaft	1		0300820126
27	Bohrkopf	Drill head	1		0300820127
28	Madenschraube	Grub screw	1	M10 x 10	
29	Mutter	Nut	1	M 10	
30	Rückholfeder	Turbination Spring	1		0300820130
31	Federgehäuse	Cover of Spring	1		0300820131
32	Mutter	Nut	2	M12x1,5	
33	Klemmschraube	Clamping screw	1		0300813118
34	Madenschraube	Grub screw	2	M10 x 10	0300820134
35	Griff	Grip	1		0300820135
37	Gleitstange	Rod	1		0300820137
38	Schraube	Screw	4	M8 x 25	
39	Scheibe	Washer	9	8	
40	Motorbodenplatte	Motor Bottom Board	1		0300820140

41	Motor	Motor	1	230 V	0300820141
41	Motor	Motor	1	400 V	0300820341
41-1	Motorlüfter	Motor Fan	1		03008203411
42	Federscheibe	Lock washer	4	8	
43	Mutter	nut	4	M 8	
44	Mutter	nut	2	M 10	
45	Scheibe	Washer	2	10	
46	Gleitstange	Rod	1		0300820146
47	Schraube	Screw	1	M 6x12	
48	Excenter	Eccentric	1		0300820148
49	Schaltergehäuse	Switch housing	1	230 V	0300820149
49	Schaltergehäuse	Switch housing	1	400 V	0300820349
51	Bleichschraube	Screw	1		
52	Schalter	Switch	1	230 V	0300820152
52	Schalter	Switch	1	400 V	0300820352
53	Anschlusskabel	Power Wire	1	230V	0342025107
53	Anschlusskabel	Power Wire	1	400V	0300825353
55	Bolzen	Bolt	1	M 6x10	
56	Scheibe	Washer	4	6	
58	Riemenscheibe Motor	Motor pulley	1		0300820158
58-1	Passfeder	Fitting key	1		042P5540
59	Madenschraube	Grub screw	1	M 5 x 6	
60	Sicherungsring	Retaining ring	1	35	042SR35I
61	Kugellager	Bearing	2	6201	0406201R
62	Keilriemen	V-belt	1	10 x 610	0300820162
63	Riemenscheibe Mitte	Middle Pulley	1		0300820163
64	Zentrierteil	Centering Device	1		0300820164
66	Riemenabdeckung	Pulley Cover	1		0300820166
67	Keilriemen	V-belt	1	10 x 605	0300820167
68	Rundmutter	Round Nut	1		0300820168
69	Spindelriemenscheibe	Spindle pulley	1		0300820169
70	Mitnehmer	Actuator	1		0300820170
71	Sicherungsring	Retaining ring	1	47	042SR47I
72	Kugellager	Bearing	1	6005	0406005R
73	Distanzscheibe	Collet	1		0300820173
76	Sicherungsring	Retaining ring	1	15	042SR15W
77	Kugellager	Bearing	1	6005	0406005R
78	O-Ring	O-Ring	1	B25 , B20	0300820178
79	Pinole	Pinole	1		0300820179
80	Austreiber	Drill Drift	1		0300816174
81	Kugellager	Bearing	1	6205	0406205R
82	Spindel B20	Spindle B20	1	MT2	0300820182
82	Spindel B25	Spindle B25	1	MT3	0300825382
85	Bohrfutterschutz alter typ	Drill chuck protection old type	1	B20 , B25	3008205 + 3008206 + 3008207 + 3008206
86	Ring für Kabelschutz	Ring for Protecting Wire	1		
87	Mutter	Nut	1		

88	Kabelklemme	Press Wire	1		
89	Scheibe	Washer	1		
90	Bolzen	Bolt	1		
94	Trafogehäuse	Transformer housing	1		03008201205
94-1	Deckel Trafo	Transformer cover	1		0300820194-1
206	Transformator	Transformer	1	230V	03021303RK
206	Transformator	Transformer	1	400V	03302300TC
214	Not-Aus-Schalter ab 2012	Emergency Stop switch from 2012	1	LA103	0460058
215	Klemmkasten ab 2012	Terminal box from 2012	1		03003171114
216	Ein-Aus-Taster ab 2012	On-off button from 2012	1	B20-230V	03008131216
216	Ein-Aus-Taster ab 2012	On-off button from 2012	1	B20/B25-400V	03008203216
Teile ohne Abbildung - Parts without illustration					
0	Kondensator	capacitor	1		0300820192
0	Schütz	Contactor	1	400V	0460025
0	O-Anzeige	O-Pointer			0322025
0	Lüfterraddeckel	fan cover			0300820193
Komplett-Sätze - Complete sets					
0	Pinole Komplett	Spindle sleeve complete	1	B20	0300820179CPL
0	Pinole Komplett	Spindle sleeve complete	1	B25	0300825379CPL
201-1	Bohrfutterschutz komplett	Drill chuck protection complete	1		03003231125
0	Säule kplt.	Column complete	1	B20	0300820105CPL
0	Gehäuse (Trafo) kpl.	Housing (transformer) compl.	1		03008201205CPL
0	Halter kplt. Bohrfutterschutz	Holder cplt. Drill chuck protection	1		03008131201CPL
0	Riemenscheibe komplett	Pulley complete			0300820163CPL

9.6 B32 - Ersatzteilzeichnung - Parts drawing

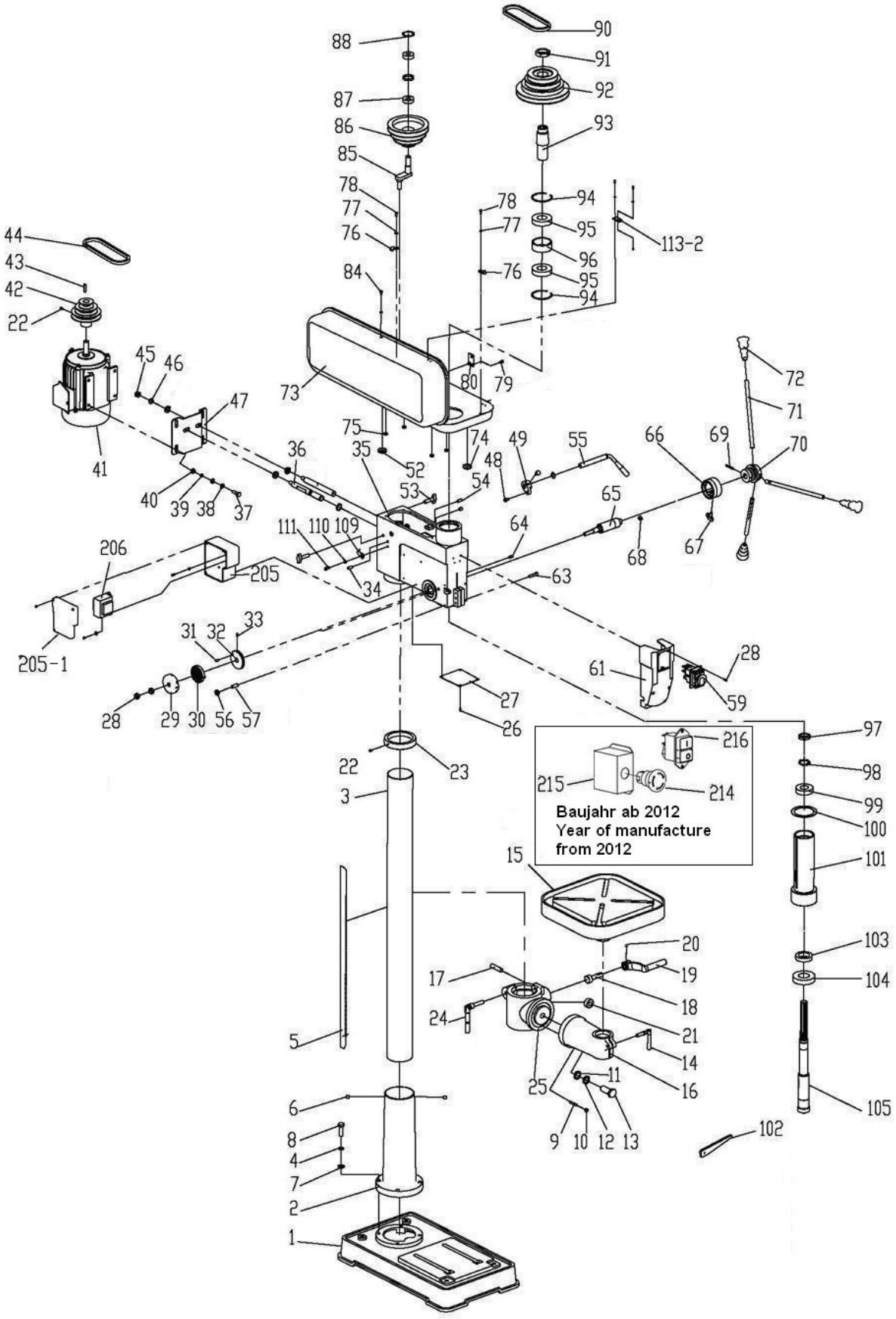


Abb. 9-3: B32

B20-B32_parts.fm

9.6.1 B32 - Ersatzteilliste - Parts list

B32					
Pos.	Bezeichnung	Designation	Menge	Grösse	Artikelnummer
			Qty.	Size	Item no.
1	Bodenplatte	Base Plate	1		0300832301
2	Säulenhalterung	Column Holder	1		0300832302
3	Säule	Column	1		0300832303
4	Scheibe	Washer	1		
5	Zahnstange	Rack	1		0300832305
6	Schraube	Screw	2	M8x10	
7	Scheibe	Washer	4	12	
8	Schraube	Screw	4	M12x40	
9	Fixierstift	Fixing Pin	1		0300832309
10	Mutter	Nut	1	M6	
13	Schraube	Screw	1	M20x50	0300832313
14	Klemmhebel	Clamp Handle	1		0300813107
15	Bohrtisch	Work Table	1		0300832315
16	Arm	Arm	1		0300832316
17	Bolzen	Pin	1		0300832317
18	Antriebschnecke	Worm Gear	1		0300832318
19	Kurbel	Crank	1		0300832319
20	Schraube	bolt	1	M 6 x 12	
21	Zahnrad	Gear	1		0300832321
22	Madenschraube	Grub screw	1	M5x10	
23	Säulenring	Column Ring	1		0300832323
24	Klemmhebel	Clamp Handle	1		0300323188
25	Bohrtischhalter	Support	1		0300832325
26	Madenschraube	Grub Screw	1	M 5 x 8	
27	Abdeckung	Cover Board	1		
28	Mutter	Nut	2		
29	Rückholfedergehäuse	Cover of Spring	1		0300832329
30	Rückholfeder	Turbination Spring	1		0300832330
31	Hohlspannstift	Spring Pin	1	6 x 21	0300832331
32	Federsitz	Spring Seat	1		0300832332
33	Hohlspannstift	Spring Pin	1	3 x 15	0300832333
34	Madenschraube	Grub Screw	1	M10 x 12	
35	Bohrkopfgehäuse	Drilling Head Housing	1		0300832335
36	Gleitstange	Pole	2		0300832336
37	Schraube	Screw	4		
38	Mutter	Nut	4	M8	
41	Motor	Motor	1	400 V	0300832341
42	Motorriemenscheibe	Motor pulley	1		0300832342
43	Paßfeder	Key	1	6x6x80 mm	
44	Keilriemen	V - belt	1	neuer typ / new type 13 x 750	0300832344

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44	Keilriemen	V - belt	1	15x740Li (old type)	0323259
45	Mutter	Nut			
47	Motorbodenplatte	Motor Bottom Board	1		0300832347
49	Nocke	Cam	1		0300832349
52	Gummidichtung	Rubber Washer	1		
53	Klemmhebel	Clamping Lever	1		0300813118
54	Bolzen	Bolt	1		
55	Griff	Grip	1		0300832355
56	Mutter	Nut	1	M10	
57	Bolzen	Bolt	1	10 mm	
58	Schraube	Screw			0300832358
59	Schalter	Switch	1		0301143259
61	Schaltergehäuse	Switch Housing	1		0300832361
62	Zeiger	Pointer	1		0300832362
63	Bolzen	Bolt	1		
64	Einstellschraube	Adjusting Screw	1		0300832364
65	Schaftritzel	Pinion Shaft			0300832365
66	Skalenring	Dial	1		0300832366
67	Klemmschraube	Clamping Screw	1		
68	Klemmstück	Clamping Piece	1		
69	Hohlspannstift	Spring Pin	1	6	0300832369
70	Nabe	Hub	1		0300832370
71	Hebel	Lever	3		0300832371
72	Griff	Grip	3		0300813116
73	Riemengehäuse	Pulley Cover	1		0300832373
74	Schutz Kabelring	Protect Wire Ring	2		
75	Mutter	Nut	2		
76	Druckkabelblock	Press Wire Block	2		
77	Scheibe	Washer	2		
78	Bolzen	Bolt	2		
79	Schraube	Screw	1	M5x8	
80	Verschlußplatte	Locking Plate	1		0300832380
84	Bolzen	Bolt	1		
85	Zentriervorrichtung	Centering Device	1		0300832385
86	Keilriemenscheibe Mitte	Middle pulley	1		0300832386
87	Kugellager	Bearing	1	6202	0406202R
88	Sicherungsring	Circlip	1	35	042SR35I
90	Keilriemen	V - belt	1	HC MN SPA 832 (new type) 13 x 850	0300832390
90	Keilriemen	V - belt	1	15x845Li (old type)	0323258
91	Mutter	Nut	1		0300832391
92	Spindel-Keilriemenscheibe	Spindle pulley	1	neuer typ / new type	0300832392
92	Spindel-Keilriemenscheibe	Spindle pulley	1	alter typ / old type	0323237

93	Mitnehmer	Pinion	1		0300832393
94	Sicherungsring	Circlip	1	72	042SR72I
95	Kugellager	Bearing	1	6207	0406207R
96	Distanzscheibe	Distance Plate	1		0300832396
97	Nutmutter	Nut	1		03338160107
98	Sicherungsblech	Saftey Plate	1		0300832398
99	Kugellager	Bearing	1	6206	0406206R
100	Scheibe	Washer	1		03008323100
101	Pinole	Pinole	1		03008323101
102	Austreiber	Drill Drift	1		0300317197
103	Kugellager	Bearing	1	6007	0406007R
104	Kugellager	Bearing	1	6208-2Z	0406208ZZ
105	Spindel	Spindle	1		03008323105
109	Druckkabelblock	Press Wire Block	1		
111	Scheibe	Washer	1		
113-2	Reed-Kontakt	Reed Contact	1		0302024192
205	Gehäuse (Trafo)	Housing (trafo)	1		0300820194
205-1	Deckel	Cover	1		0300820194-1
206	Transformator	Transformer	1		03302300TC
214	Not-Aus-Schalter ab 2012	Emergency Stop switch from 2012	1	LA103	0460058
215	Klemmkasten ab 2012	Terminal box from 2012	1		03003171114
216	Ein-Aus-Taster ab 2012	On-off button from 2012	1	400V	03008203216
Teile ohne Abbildung - Parts without illustration					
0	Schütz	Contactor	1		0460025
0	Skala Bohrtisch	Scale table	1		0323229
0	Skala Skalenring	Scale for dial	1		0323251
Komplett-Sätze - Complete sets					
0	Pinole Komplett	pinole complete	1		03008323101CPL
0	Bohrfutterschutz komplett	Drill chuck protection complete	1		03003333125
0	Halter kplt. Bohrfutterschutz	Holder cplt. Drill chuck protection	1		03008131201CPL

9.7 Schaltplan - Wiring diagram - B20 (~230V)

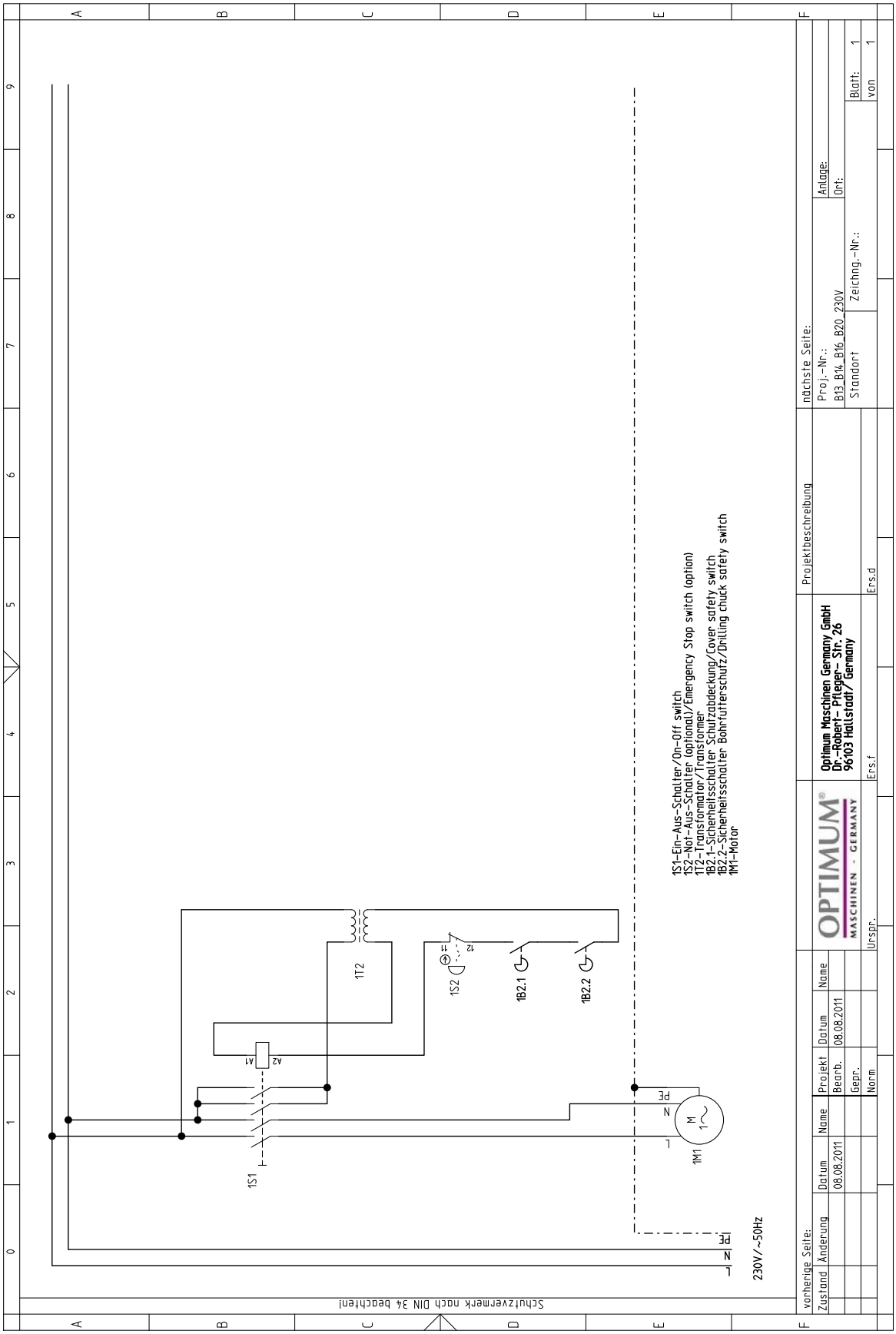

Abb. 9-4: Schaltplan - Wiring diagram B13/ B14/ B16/ B20 (~230V)

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9.8 Schaltplan - Wiring diagram B20/ B25/ B32 (~400V)

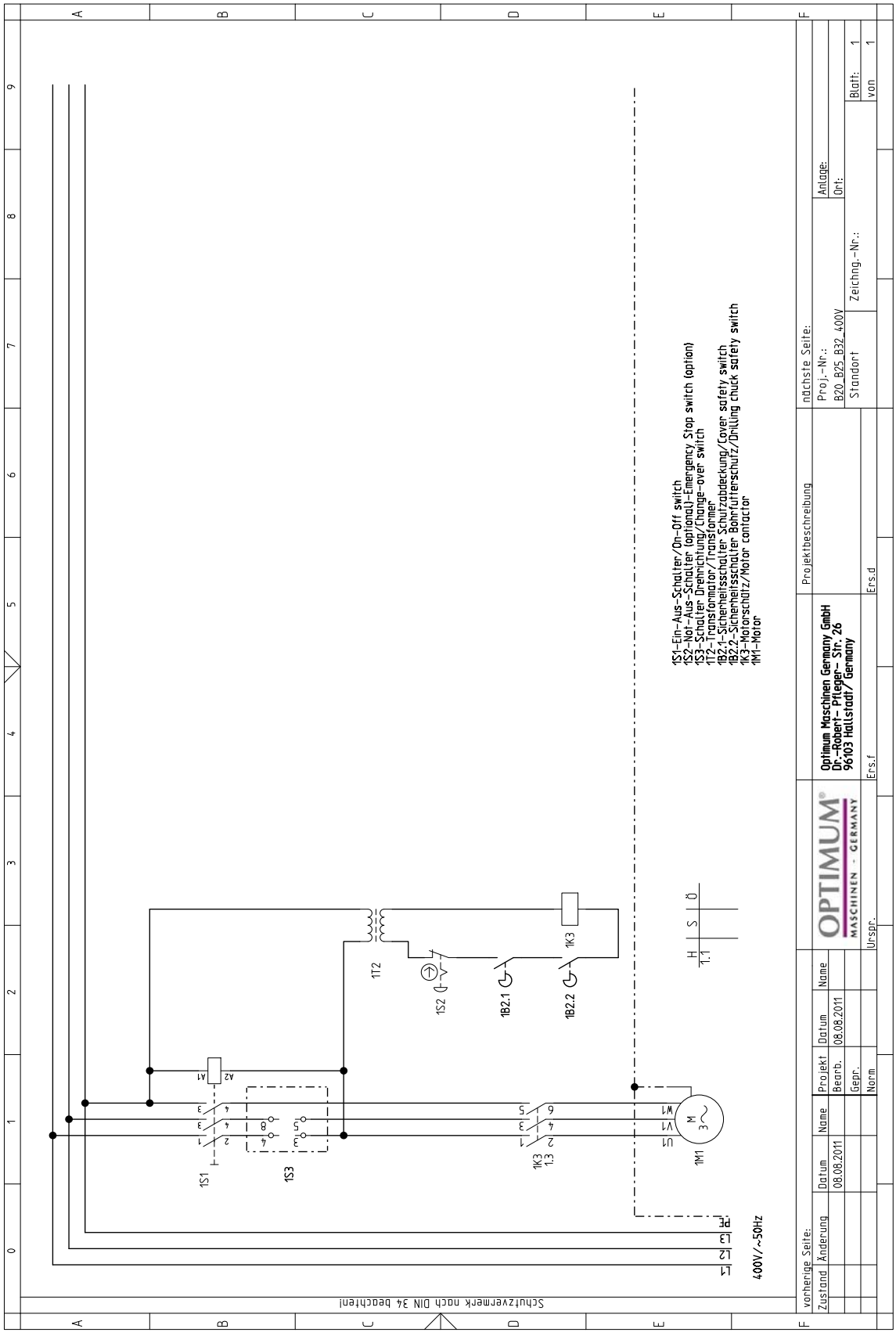

Abb. 9-5: Schaltplan - Wiring diagram B20/ B25/ B32 (~400V)

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9.8.1 Ersatzteilliste Elektrik- Parts list electrical components B20 (~230V)

B20 (~230V)					
Pos.	Bezeichnung	Designation	Menge	Grösse	Artikelnummer
			Qty.	Size	Item no.
1S1	EIN-AUS-Taster	ON-OFF-switch	1	230V	03008131216
1S2	Not-Aus-Schalter	Emergency Stop switch	1		0460058
1B2.1	Schalter Schutzabdeckung	Cover safety switch	1		0302024192
1B2.2	Schalter Borhfutterschutz	Drilling chuck safety switch	1		030081312031
1T2	Transformator	Trafo	1		03021303RK
1M1	Motor B13/B14	Motor B13/B14	1	230V	0300813127
1M1	Motor B16	Motor B16	1	230V	0300816140
1M1	Motor B20	Motor B20	1	230V	0300820141
1M1	Motor B20	Motor B20	1	400V	0300825341

9.8.2 Ersatzteilliste Elektrik- Parts list electrical components B20, B25, B32 (~400)

B20, B25, B32 (~400)					
Pos.	Bezeichnung	Designation	Menge	Grösse	Artikelnummer
			Qty.	Size	Item no.
1S1	EIN-AUS-Taster	ON-OFF-switch	1	400V	03008203216
1S2	Not-Aus-Schalter	Emergency Stop switch	1		0460058
1B2.1	Schalter Schutzabdeckung	Cover safety switch	1		0302024192
1B2.2	Schalter Borhfutterschutz	Drilling chuck safety switch	1		030081312031
1S2	Drehrichtungschalter	Change-over switch	1		0460009
1T2	Transformator	Trafo	1		0302024196
1M1	Motor	Motor	1	230 V	0300820141
1M1	Motor	Motor	1	400 V	0300825341
1M1	Motor B32	Motor B32	1	400 V	0300832341
1K3	Motorschütz	Motor contactor	1		0460025

OPTIMUM®
MASCHINEN - GERMANY

EC - Declaration of Conformity

according to Machinery directive 2006/42/EC, Annex II 1.A

The manufacturer / distributor Optimum Maschinen Germany GmbH
Dr.-Robert-Pfleger-Str. 26
D - 96103 Hallstadt, Germany

hereby declares that the following product

Product designation: Drilling machine

Type designation: B20 ; B25 ; B32

fulfills all the relevant provisions of the directive specified above and the additionally applied directives (in the following) - including the changes which applied at the time of the declaration.

Description:

Hand-controlled drilling machine.

The following additional EU directives have been applied:

EMC Directive 2014/30/EU ; Restriction of the use of certain hazardous substances in electrical and electronic equipment 2015/863/EU

The following harmonized standards were applied:

EN 12717: 2001 - Machine tools - Safety - Drilling machines

EN 60204-1 - Safety of machinery - Electrical equipment of machines - Part 1: General requirements

EN 13849-1:2015 - Safety of machinery - Safety related parts of controls - Part 1: General design principles

EN 13849-2:2012 - Safety of machinery - Safety related parts of controls - Part 2: Validation

EN ISO 12100:2013 - Safety of machinery - General principles for design - Risk assessment and risk reduction

Name and address of the person authorized to compile the technical file:

Kilian Stürmer, phone: +49 (0) 951 96555 - 800

Kilian Stürmer (CEO, General Manager)
Hallstadt, 2019-12-11

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