OPTIMUM®
MASCHINEN - GERMANY

Operating Manual

Version 1.0.2

Drilling machine

○ OPTIdrill® DQ 25 — Part no. 3191047 (400V)
3191046 (230V)

○ OPTIdrill® DQ 32 — Part no. 3191049 (400V)
3191048 (230V)

DQ25

DQ32

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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.

Information

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 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.

INFORMATION

If you are unable to rectify an issue using these operating instructions, please contact us for advice:

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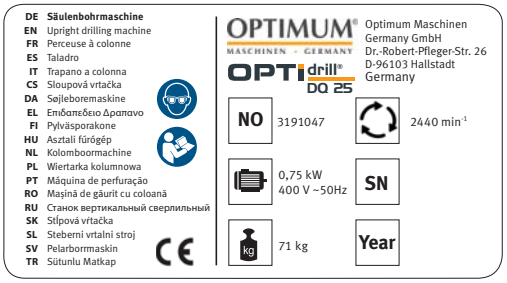
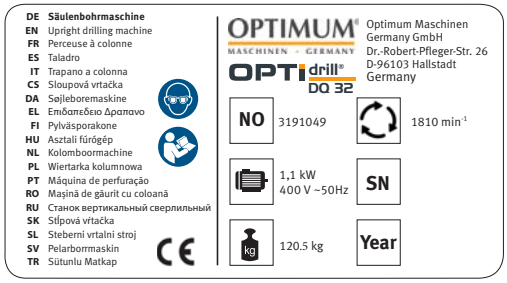
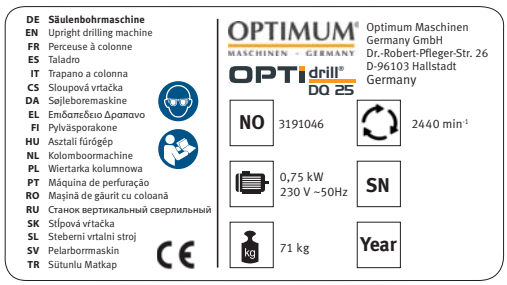
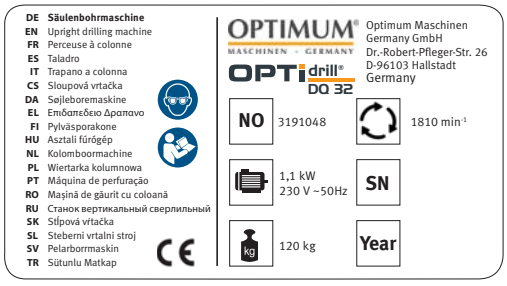
email: info@optimum-maschinen.de

1.1 Rating plates









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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


rotating parts.

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!

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Switching on forbidden!

Use ear protection!

Read the operating instructions before commissioning!

Pull out the mains plug!

Wear protective glasses!

Wear protective gloves!

Wear safety shoes!

Wear a protective suit!

1.3 Intended use

WARNING!

If the drilling machine is not used as intended or if the safety directives or the operating instructions are ignored the liability of the manufacturer for any damages to persons or objects resulting hereof is excluded and the claim under guarantee is becoming null and avoid!

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. The drilling machine is equipped with a drill chuck protection. The drill may only be operated with this chuck guard.

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 explicitly point out that any construction, technical or process engineering changes that have not been approved by Optimum Maschinen Germany GmbH will render the warranty null and void

It is also part of intended use that the maximum values for the drilling machine are complied with and the operating manual is observed.

ATTENTION!

If the drilling machine is not used as intended or if the safety directives or the operating instructions are ignored the liability of the manufacturer for any damages to persons or objects resulting hereof is excluded and the claim under guarantee is becoming null and avoid!

1.4 Reasonably foreseeable misuses

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.

The table height adjustment must not be used as a drill feed. The clamping of the table is released, the possible load capacity of the table height adjustment is not intended for this.

➜ 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 drill 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 positioned exactly between the three clamping jaws of the drill 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,
- For hard materials, e.g. steel, it is necessary to use commercial cooling/lubricating agents.Basically, always pull out the drill with rotating spindle from the workpiece.
- The processing of plastics on the drilling machine leads to static charging. The static charging of machine parts due to the processing of plastics cannot be safely dissipated by the drilling machine.

1.5 Possible dangers posed 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

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- 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 when cleaning or maintenance work is being carried out.

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!

This is your responsibility being the operator!

1.6 Qualification

1.6.1 Target group private users

The machine can be 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. We recommend attending a training course in the use of drills. Your specialist dealer can offer you an appropriate training course. These courses are also offered at adult education centres in Germany.

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 Additional requirements regarding the qualification

The following additional requirements apply for work on electrical components or equipment:

- They must only be performed by a qualified electrician or person working under the instructions and supervision of a qualified electrician.

Before starting work on electrical parts or operating agents, the following actions must be taken in the order given:

➜ disconnect all poles,

➜ secure against restarting,

➜ check that there is no voltage.

1.7 User positions

The operator position is in front of the drilling machine.

INFORMATION

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

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,
- 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 and**
- **fatal electrocution.**

The drilling machine features the following safety devices:

- an emergency stop push button,
- a drilling table with grooves for fixing the workpiece or a vice,
- a fixed protective cover for the pulleys with position switch,
- a foldable drill chuck guard.

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 Personal protective equipment

For certain work, personal protective equipment is required.

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.

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

Use ear protection if the noise level (emission) in the workplace exceeds 80 dB (A).

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

CAUTION!

Soiled personal protection equipment that may be contaminated may cause illness. It must be cleaned after each use and at least once a week.

1.11 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
Drill chuck guard	After opening the drill chuck guard, the drill must switch off. The drill must not start when the chuck guard is open.	
Emergency stop button	After the emergency stop button is pressed, the drilling machine must switch off.	
Position switch of protective cover V-belt	The drilling machine must not be switched on, if the protective cover of the V-belts is opened.	
Date:	Checked by (signature):	

1.12 Emergency stop switch

CAUTION!

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

1.12.1 Drilling table

Seats for T-slots are attached to the clamping table.

WARNING!

Risk of injury due to workpieces flying off at high speed. Securely fix the workpiece on the drilling table.

1.13 Separating protective devices

1.13.1 Drill chuck guard

Adjust the guard to the correct height before you start working. To do this, loosen the clamping screw, set the required height and tighten the clamping screws again.

1.13.2 Protective cover of the V-belts

A protective cover for the belt pulleys is mounted on the drilling head. There is a switch integrated in the protective cover which monitors that the cover is closed.

INFORMATION

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

1.13.3 Prohibition, warning and mandatory signs

INFORMATION

All warning signs must be legible. They must be checked regularly.

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. It must be cleaned after each use and at least once a week.

Personal protective equipment for special works

Protect your face and your eyes: Wear safety glasses for all work where your eyes are at risk.

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 activating the drilling machine, double-check that make sure that there are no dangers generated for persons, not cause damage to equipment.

Avoid any unsafe work methods.

- Make sure that your work does not endanger anyone.
- The instructions described in these operating instructions must be strictly 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.
- 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

Disconnect the mains plug before starting maintenance and repairs.

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

Attach a warning sign to the machine.

1.16.2 Mechanical maintenance

Remove or install protection safety devices before starting or after completing any maintenance work; this include:

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

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

1.17 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. If there is a fault in the power supply, switch off the drilling machine immediately!

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.

No check is required before first commissioning, if the manufacturer or installer has confirmed to the operator that the electrical system and operating materials have been procured in accordance with the stipulations of the accident prevention regulations.

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

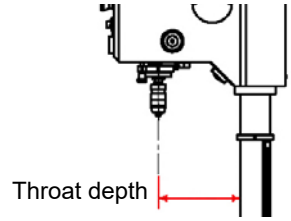
1.18 Inspection deadlines

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

The following information represents the dimensions and indications of weight and the manufacturer's approved machine data.

	DQ 25	DQ 32
Electrical connection	400V~50 Hz (~60Hz) or 230V~50 Hz (~60Hz)	400V~50 Hz (~60Hz) or 230V~50 Hz (~60Hz)
Spindle drive motor power	750 W	1.1 kW
Drilling capacity in steel (ST60 - E335) [mm]	Ø 25	Ø 30
Continuous drilling capacity in steel (ST60 - E335) [mm]	Ø 20	Ø 25
	181.5 mm	254 mm
Spindle sleeve travel [mm]	80	120
Spindle seat	MT3	MT4
Table size Length x Width of the working surface	280 mm x 280 mm	355 mm x 355 mm
Table load max.	40 kg	55 kg
Table side tilt / Turning the table	± 45° / 360°	± 45° / 360°
Drilling table T-slot size [mm]	14 mm diagonal	14 mm diagonal
T-slot size machine base	15 mm	15 mm
Distance spindle - table [mm]	max. 690 mm	max. 640 mm
Distance [mm] spindle - base	1200	1170
Machine stand [mm]	500 mm x 300 mm	575 mm x 350 mm
Working surface machine stand [mm] Length x Width of the working surface	200 mm x 260 mm	230 mm x 295 mm
Dimensions of the machine	☞ Page 17	☞ Page 18
Required space		
Machine net weight [kg]	71	120.5
Spindle speeds [rpm]	☞ DQ25 spindle speeds ~50Hz connection on page 28	☞ DQ32 spindle speeds ~50Hz connection on page 28
Column diameter [mm]	Ø 73	Ø 92
Environmental conditions temperature	5 - 35 °C	5 - 35 °C
Environmental conditions Relative humidity	25 - 80 %	25 - 80 %

	DQ 25	DQ 32
Operating material Toothed rod and oiler	Acid-free lubricating oil	Acid-free lubricating oil

2.1 Emissions

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.

The A-weighted sound pressure level L_{pA} is 73 to 75 dB.

The A-weighted sound power level L_{WA} is 98 to 102 dB.

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.

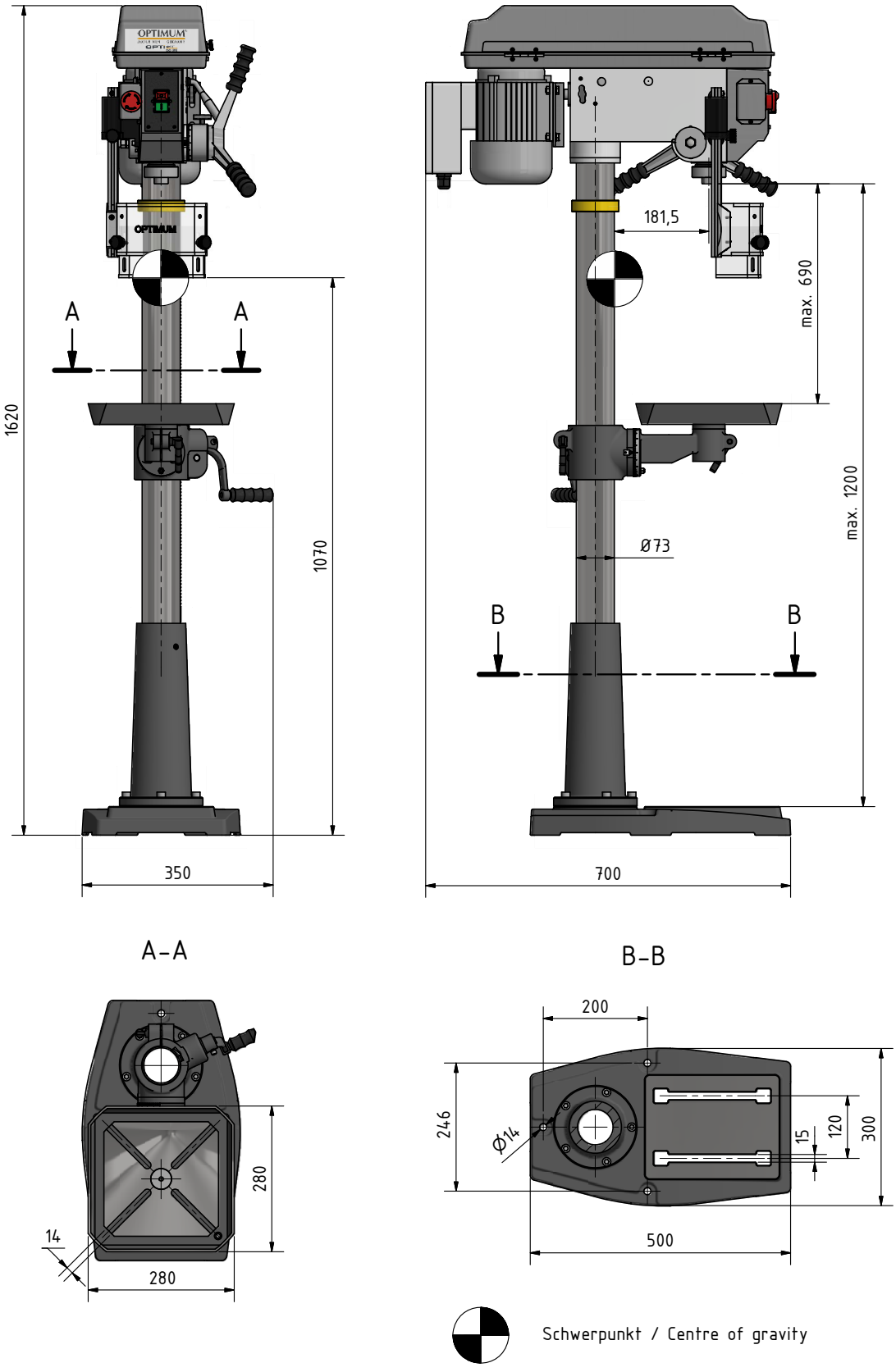
INFORMATION

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

- Characteristics of the working area, e.g. size of 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.

2.2 Dimensions DQ25



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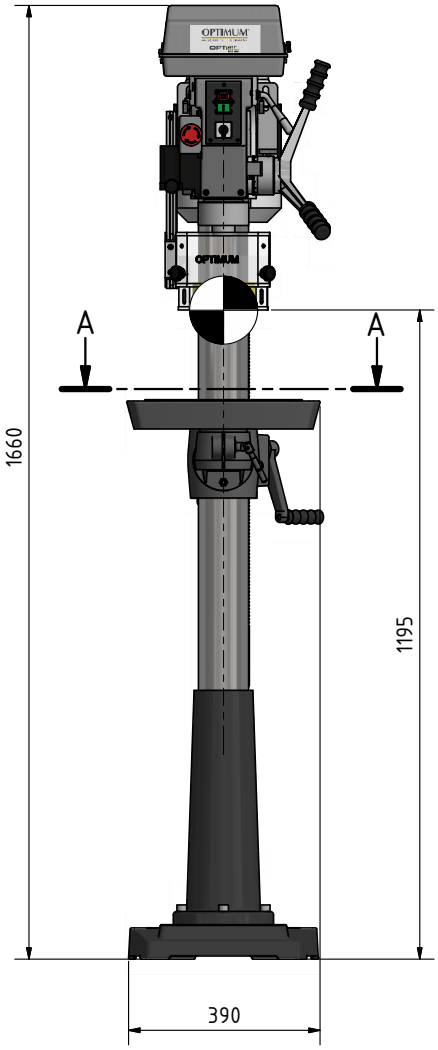
2.3 Dimensions DQ32



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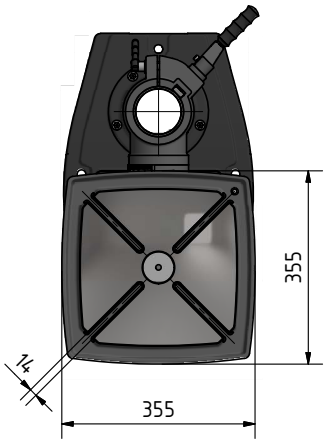

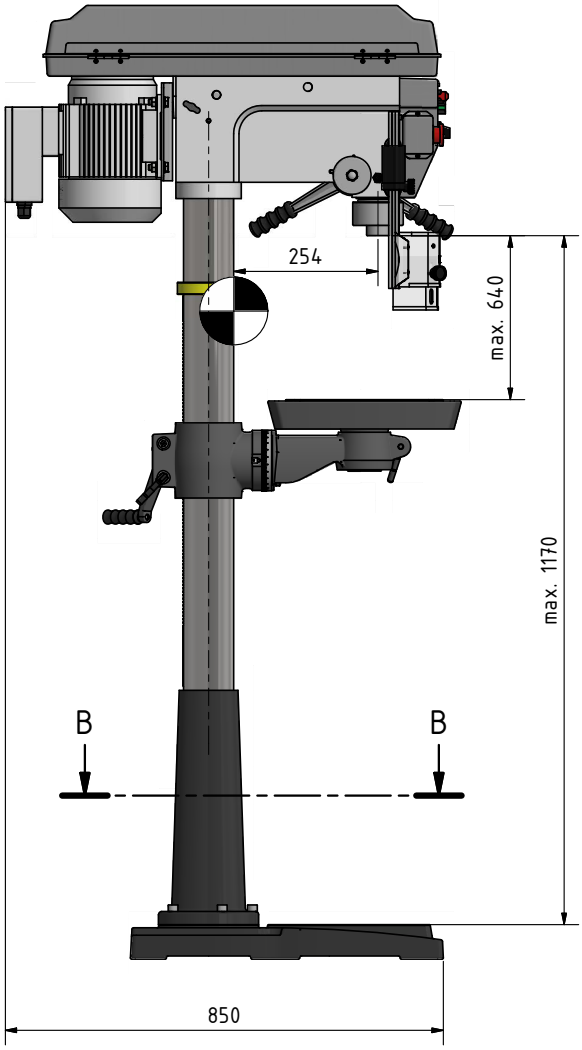

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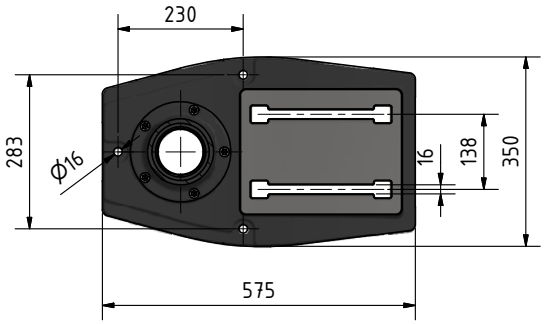

Schwerpunkt / Centre of gravity

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3 Delivery, internal transport and commissioning

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 commissioning

Improper transport of individual devices, unsecured devices 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 machine may be lifted unsecured by a maximum of 2 cm.

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.

3.2 Delivery

Check the status of the machine immediately upon receipt and claim possible damages at the last carrier also if the packing is not being damaged. In order to ensure claims towards the freight carrier we recommend you to leave the machines, devices and packing material for the time being in the status at which you have determined the damage or to take photos of this status. Please inform us about any other claims within six days after receipt of delivery.

3.3 Unpacking

Install the machine close to its final position before unpacking. If the packaging shows signs of having possibly been damaged during transport, take the appropriate precautions to prevent the machine being damaged when unpacking. If damage is discovered, the carrier and/or shipper must be notified immediately so the necessary steps can be taken to register a complaint.

Examine the complete machine carefully and check whether all materials, such as shipping documents, instructions and accessories have been delivered with the machine.

3.3.1 Standard accessories

- 1 x Drill chuck B16 / 0-16mm
- 1 x Morse taper MT3 - B16 (DQ25)
- 1 x Morse taper MT4 - B16 (DQ32)
- 2 pcs T-nuts
- 1 x drill drift for morse taper

3.4 Assembly

WARNING!

Danger of crushing when assembling and installing the machine components.

The drilling machine must be installed by at least 2 people, because various elements and individual parts have to be sustained and joined during assembly.

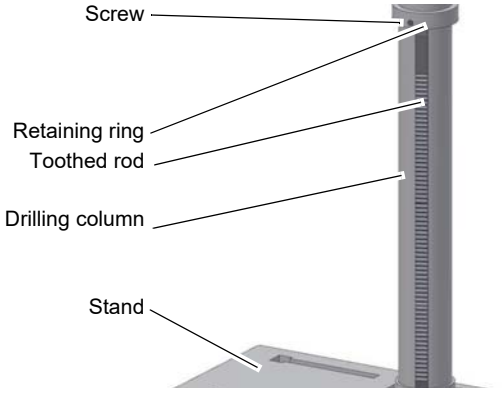
INFORMATION

The following description of the assembly refers to the DDQ32 drilling machine. It was chosen for the description of the following work because of its similarity to the DQ25 drill.

Mounting of base and drill column

➜ Position the base on the floor and attach the column to the base. Fastening screws for the column have been provided on the base.

➜ Loosen the screw on the retaining ring and remove the retaining ring and toothed rack.

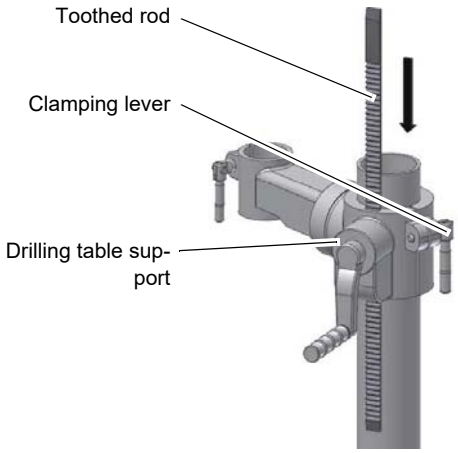


Img. 3-1: Assembly of the base

Mounting of the drilling table support

➜ Position the worm gear in the support of the drilling table.

➜ 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.



Img. 3-2: Mounting of the drilling table support

INFORMATION

The longer untoothed end of the rack must point upward.

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

➜ Push the retaining ring onto the upright and the rack.

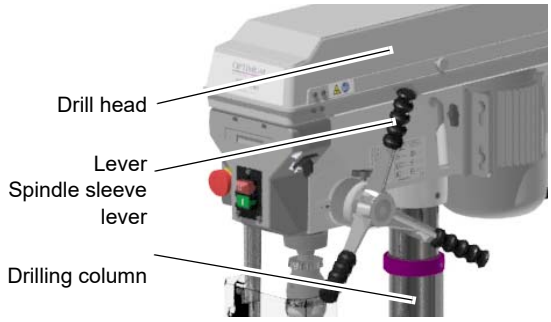
➜ Tighten the screw of the retaining ring slightly. Make sure that the drilling table support still can be easily turned around the column.

➜ Attach the clamping lever for drilling table fastening.

Fitting the drill head

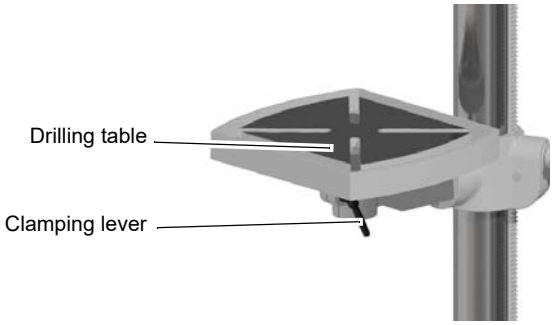
➜ Place the drill head on the column and turn it until it is aligned with the base. Immobilise the drill head with the two screws in the drill head over the toothed rack.

➜ Screw in the spindle sleeve lever and attach the crank of the table height adjustment.



Img. 3-3: DQ32

➜ Insert the drilling table in the drilling table support and clamp it with the clamping lever.



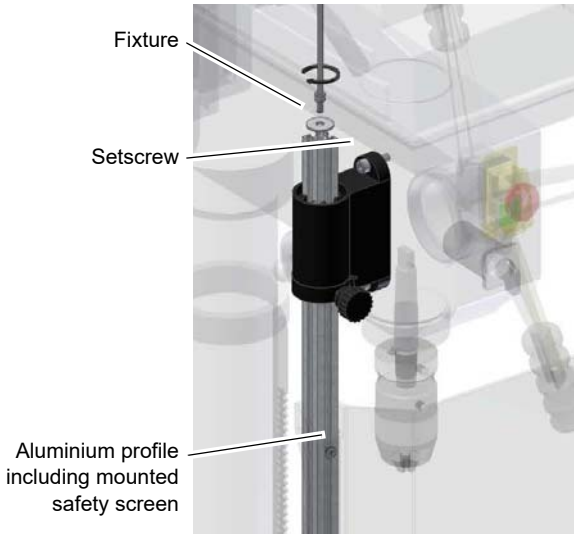
Img. 3-4: DQ32

Assembly of the drill chuck protection

WARNING!

Never operate drilling machines without drill chuck protection.

1. Shift the aluminium profile including the mounted safety screen (plastic screen) into the fixture which is mounted on the drilling head.
2. After assembly of the aluminium profile screw down the adjusting screw.



Img. 3-5: Assembly-1

DQ25_DQ32_GB_3.fm

3. Screw the hexagon socket screw with the locking washer into the aluminium profile.

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.

Img.3-6: Assembly-2

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

Img.3-7: Assembly-3

INFORMATION

There is a switch integrated in the fixture of drill chuck protection which monitors the closed position. The machine cannot be started, if the drill chuck guard is not closed.

3.5 Installation requirements

Organise the working area around the machine according to the local safety regulations. The work area for operation, maintenance and repair must not be restrictive.

The illumination of the workplace must be designed in such a manner that an illumination of 500 Lux is attained at the tool tip.

If this is not guaranteed with the normal installation site lighting, workplace lights (available as an option) must be used.

- Follow the prescribed safety areas and escape routes according to VDE 0100 part 729 as well as the environmental conditions for the operation of the machine.
- The mains plug of the drilling machine must be freely accessible.
- The machine must only be installed and operated in a dry and well-ventilated place.
- Avoid places near machines generating chips or dust.
- The installation site must be free from vibrations also at a distance of presses, planing machines, etc.
- 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.

3.5.1 Foundation and ground

➜ Check the substructure. The substructure must provide adequate load capacity.

➜ The substructure must be prepared in such a way as to ensure that, if any lubricant is used, it cannot penetrate the floor.

3.5.2 Fixing

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

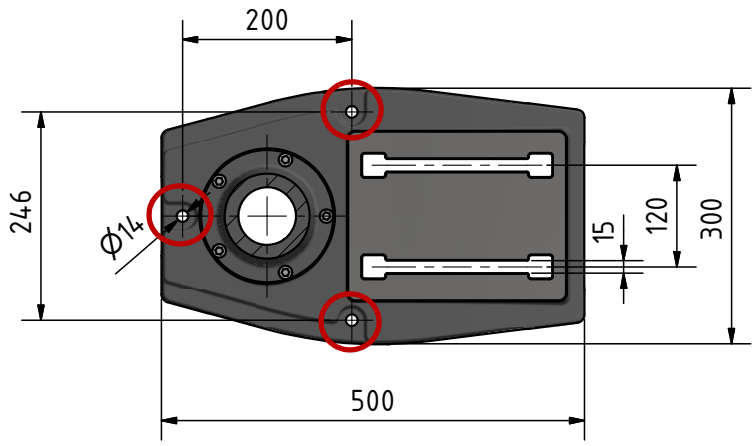
➜ Fix the foot of the drilling machine to the substructure with the holes pre-drilled for this purpose.

ATTENTION!

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

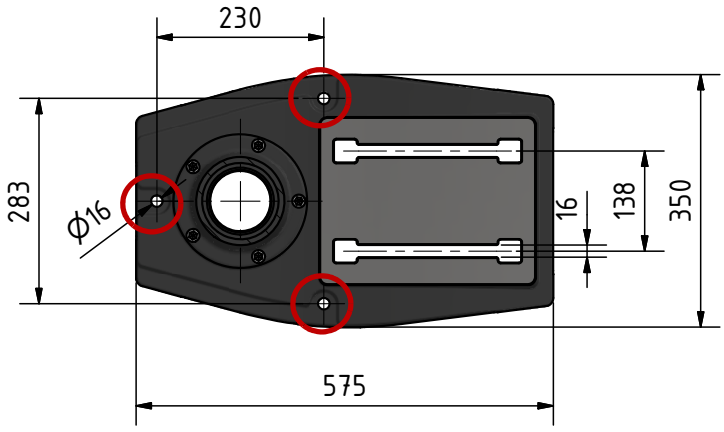
If the fixing screws are too tight in particular in connection with an uneven substructure it may result in a broken stand of the machine.

DQ25



Img. 3-8: Foot fixing DQ25

DQ32



Img. 3-9: Foot fixing DQ32

DQ25_DQ32_GB_3.fm

3.6 First commissioning

CAUTION!

First commissioning may only take place after proper installation.

WARNING!

The use of improper tool holders or their operation at inadmissible speeds constitutes a hazard.

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.

WARNING!

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 Electrical connection

WARNING!

400V three-phase connection

The three-phase electrical connection may only be performed by an electrician or under the guidance and supervision of an electrician.

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

Ensure that all 3 phases (L1, L2, L3) and the ground wire are connected correctly.

The neutral conductor (N) of its power supply is not connected.

ATTENTION!

Observe the rotating field!

Please check that the type of current, voltage and protection fuse correspond to the values specified. A protective earth ground wire connection must be available.

➜ Mains fuse 10A to 16A

Use the rotational direction switch on DQ32 400V to set the correct direction of rotation. In the switching position "R", the spindle should turn clockwise. If necessary, swap two phases on the power plug to obtain the correct direction of rotation.

3.7.1 Warming up the machine

ATTENTION!

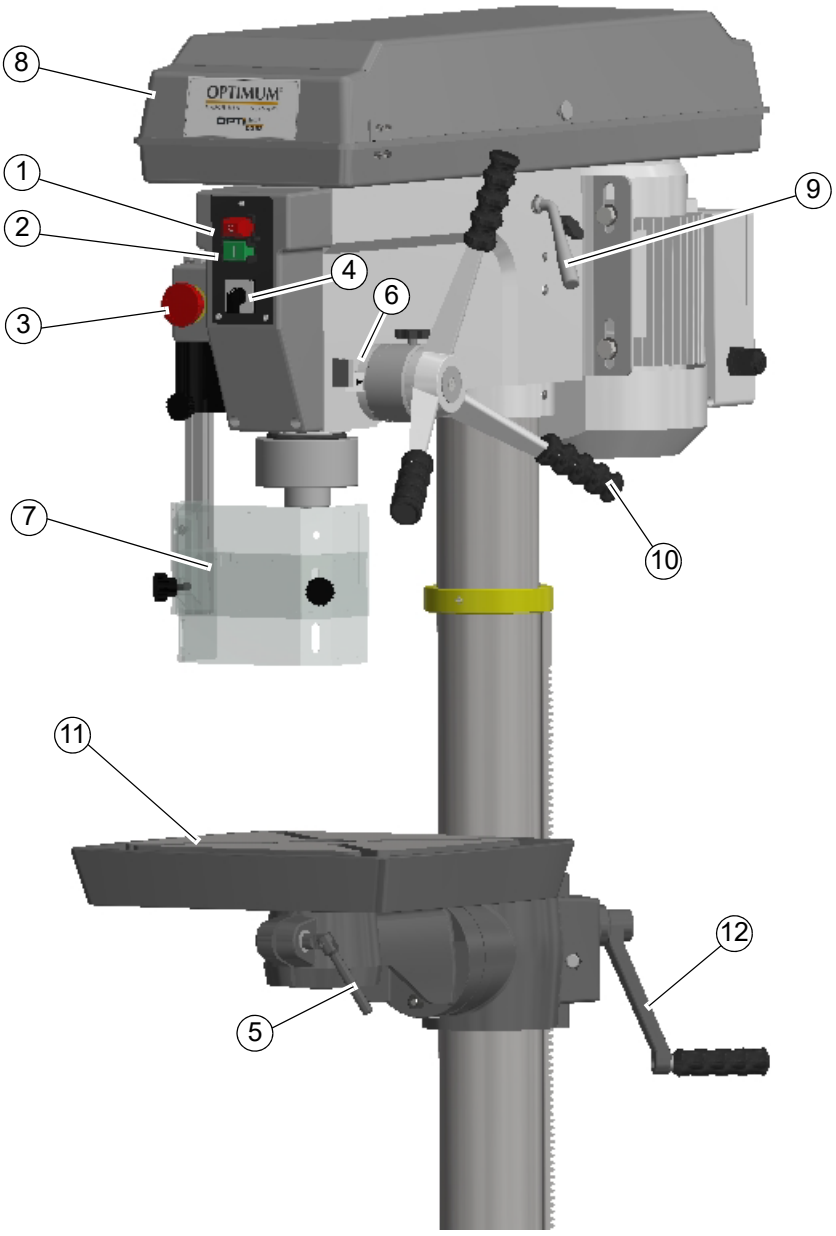
If the drilling machine and in particular the drilling spindle is immediately operated at maximum load when it is cold it may result in damages.

If the machine is cold, e.g. directly after having transported the machine, it should be warmed up at a spindle speed of only 500 1/min for the first 30 minutes.

DQ25_DQ32_GB_3.fm

4 Operation

4.1 Control and indicating elements



Img. 4-1: Control and indicating elements

Item	Designation	Pos.	Designation
1	Push button "Off"	2	Push button "On"
3	Emergency-stop switch	4	Direction of rotation switch (on DQ32 -400V only)
5	Turn table clamping lever	6	Scale of drill depth stop
7	Drill chuck protection	8	Protective cover of V-belt housing
9	Handle for V-belt tension	10	Lever for spindle sleeve feed
11	Drilling table	12	Table height adjustment

4.2 Control panel

Push button ON

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

Push button Off

The "push button OFF“ switches the rotation of the drilling spindle off.

Direction of rotation selector switch

Switches the direction of rotation of the drilling spindle (DQ 32 - 400V only).

4.3 Switching the machine on

INFORMATION

As long as the drill chuck guard and the V-belt cover are not closed, the machine cannot be started.

➜ Determine and adjust the position of the V-belt and close the V-belt cover again.

➜ Set the height of drill chuck guard and close the drill chuck guard.

➜ Switch on the machine, observe the direction of rotation switch.

4.4 Switching off the machine

CAUTION!

Only press the emergency-stop button in a genuine emergency. You may not use the emergency stop button to stop the machine during normal operation.

➜ Actuate the push button "OFF".

➜ Unplug the power plug if the machine is not used for a longer period of time.

4.5 Drill depth

4.5.1 Drill depth stop

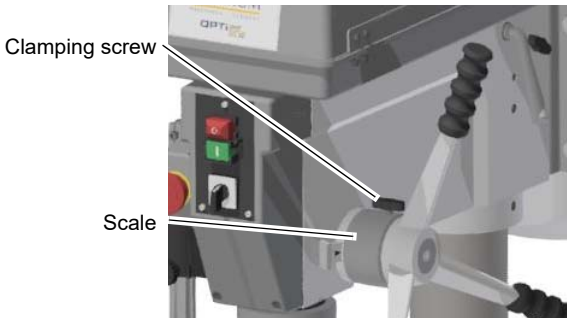
➜ Loosen the clamping screw and turn the scale ring to the desired drilling depth.

➜ Tighten the clamping screw again.

The spindle can only be lowered to the set value.

or

set the digital readout to "zero" to read the drilling depth.



Img.4-2: Scale of drill depth stop

4.6 Table Inclination

CAUTION!

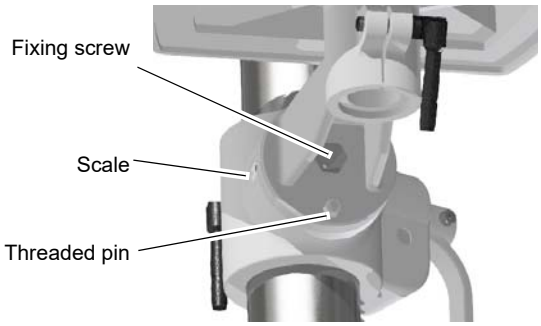
The further the drilling table is tilted to the left or right, the lower the carrying capacity and the clamping action of the inclined drilling table.

DQ25_DQ32_GB_4.fm

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

➜ Loosen the fastening screw.

➜ Pull out the set screw.



Img. 4-3: Fixing screw

➜ Set the desired angle using the scale.

➜ Re-tighten the fixing screw again.

INFORMATION

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

INFORMATION

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

4.7 Speed variation

CAUTION!

Preventive safety measure. Disconnect the machine from the power supply.

ATTENTION!

Watch for the proper tension of V-belts.

Too heavy or too low tension of the belt can cause damage.

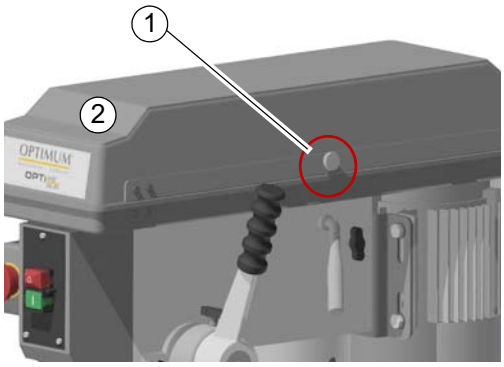
The belts are correctly tensioned, when it can be by pressing with the fingers for about 1 cm.

➜ Disconnect the machine from the power supply.

➜ Loosen the screw plug (1) on the V-belt protective cover.

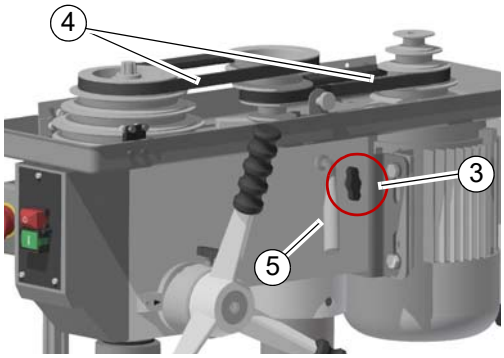
➜ Fold the protective cover (2) back.

Pay attention to the correct position of the different lengths of the V-belts!

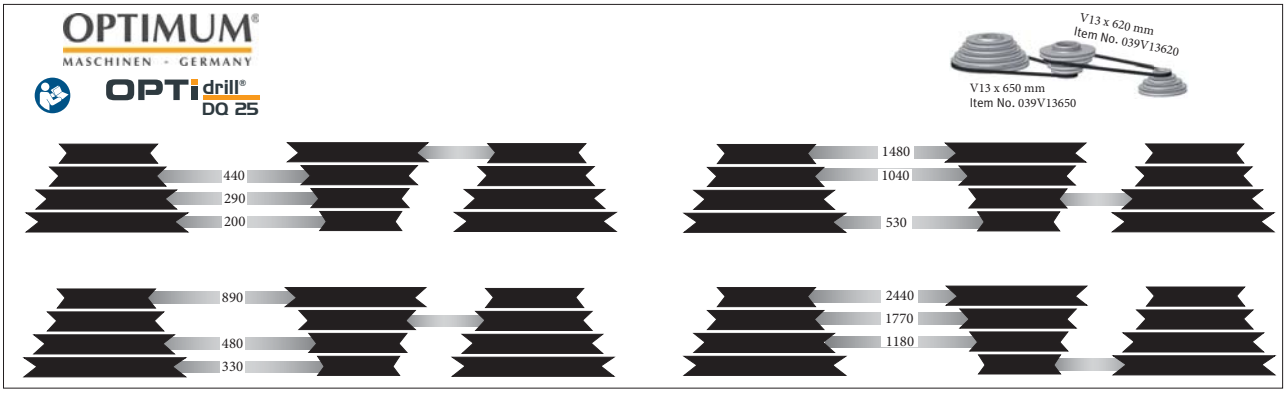


DQ25_DQ32_GB_4.fm

➜ Loosen clamping screw (3) on both sides.
➜ Release the V-belt tension with the lever (5).
➜ Set the V-belts (4) to the desired position of the V-belt pulleys.

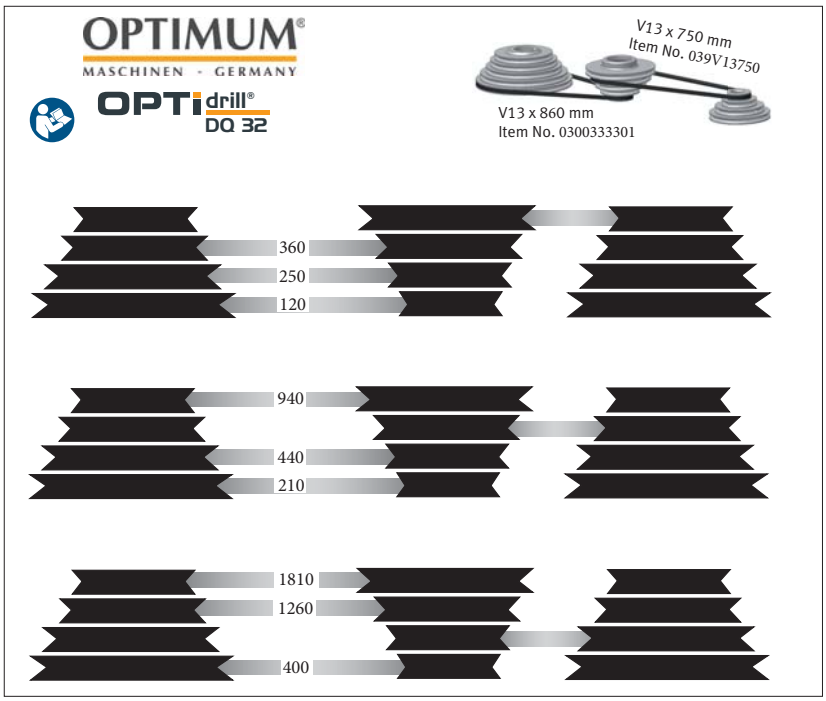


4.7.1 DQ25 spindle speeds ~50Hz connection



Img.4-4: ~50Hz connection

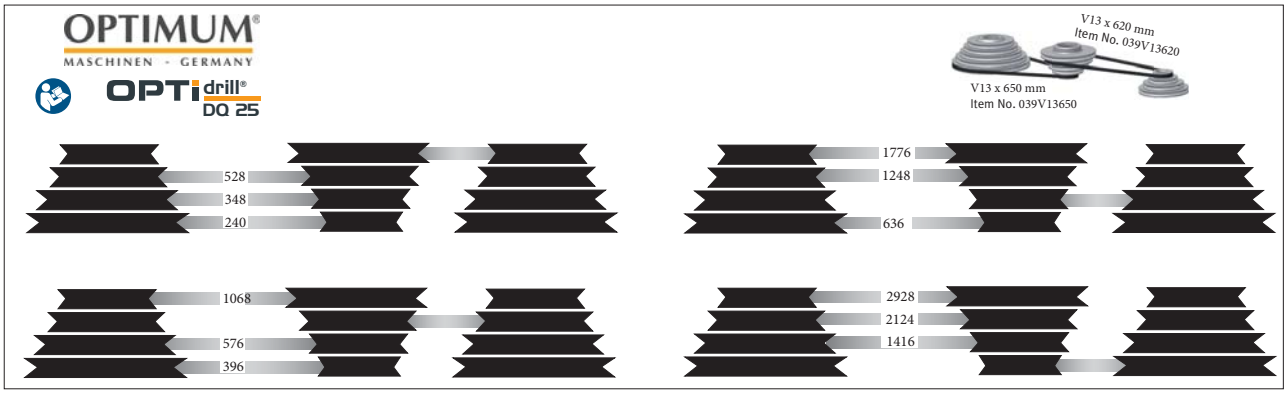
4.7.2 DQ32 spindle speeds ~50Hz connection



Img.4-5: ~50Hz connection

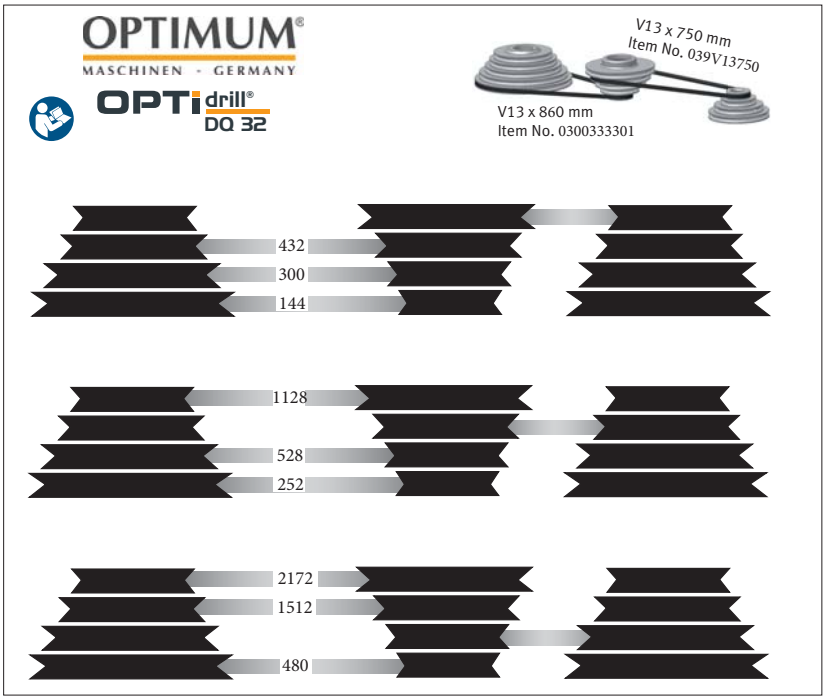
DQ25_DQ32_GB_4.fm

4.7.3 DQ25 spindle speeds ~60Hz connection



Img. 4-6: ~60Hz connection

4.7.4 DQ32 spindle speeds ~60Hz connection



Img. 4-7: ~60Hz connection

4.8 Before starting work

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.

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

If required, adjust the desired drilling depth by means of the drilling depth stop in order to obtain a uniform drilling depth.

4.9 During work

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.**

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.

4.10 Spindle sleeve feed

CAUTION!

Risk of impact by the spindle sleeve lever upon completion of the drilling feed. The return spring biases and discharges the stored energy.

Move the sleeve downward by means of the spindle sleeve lever. The sleeve is returned to its initial position by means of the spring force.

4.11 Disassembly, assembly of drill chucks and drill bits

CAUTION!

Preventive safety measure. Disconnect the machine from the electrical supply.

ATTENTION!

The tool and/or the drill chuck will fall down. Hold the tool or the drill chuck while drifting it out.

Taper mandrels can be disassembled with an common drill drift.

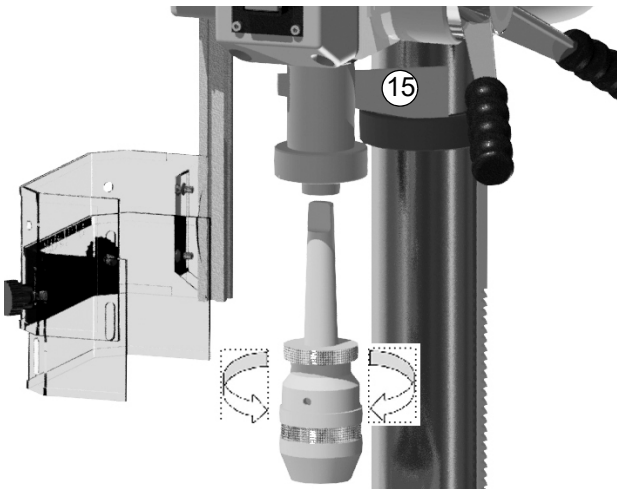
➜ Disconnect the machine from the electrical supply. Pull out the mains plug.

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

➜ Hold the tool with your hand.

➜ Loosen the tool with the help of a drill drift (15).

➜ Hold the tool by hand and remove it from the conical seat.



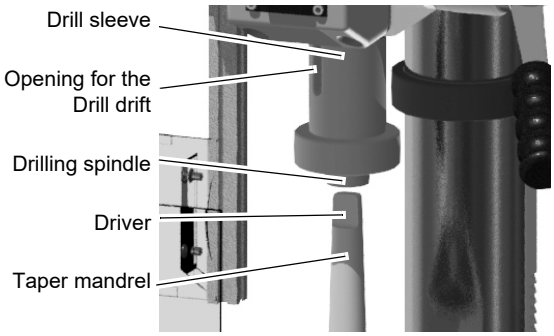
Img.4-8: Tool removal

DQ25_DQ32_GB_4.fm

4.11.1 Fitting the drill chuck

The drill chuck is secured in the drill spindle against turning over by means of a form-locking connection (driver).

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



Img. 4-9: Taper mandrel

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

➜ Press the taper mandrel into the drill spindle.

4.12 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.

5 Determining the cutting speed and the speed

5.1 Table cutting speeds / infeed

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

5.2 Speed table

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

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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

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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

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

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

Material which needs to be drilled: St37

Cutting material (drill bit): HSS spiral bit

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

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

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

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

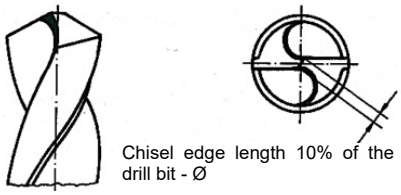
Set a speed on your drilling machine which is less than the determined speed.

INFORMATION

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

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

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



Chisel edge length 10% of the drill bit - Ø

Recommended working steps for a drilling diameter of 30 mm

Example:

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

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

3rd working step: Drilling with Ø 30 mm.

Drilling_VC_qt_GB.fm

6 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

During work on the spindle head, please make sure that

- **collecting containers with sufficient capacity for the amount of liquid to be collected are used.**
- **liquids and oils should not be split on the ground.**

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.

Collect leakages

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 container for disposal.

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.

6.1 Safety

WARNING!

The consequences of incorrect maintenance and repair work may include:

- **very serious injury to personnel working on the machine,**
- **damage to the machine.**

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

6.1.1 Preparation

WARNING!

Only work on the machine if it has been disconnected from the power supply.

Attach a warning sign which secures against unauthorized switching on.

6.1.2 Restarting

Before restarting, run a safety check.

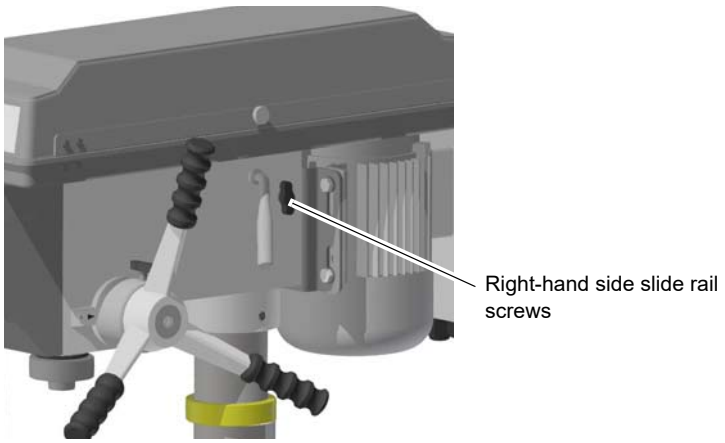
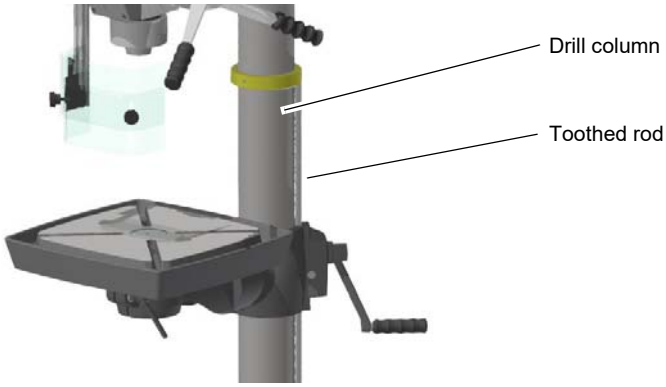
☞ Safety check on page 11

WARNING!

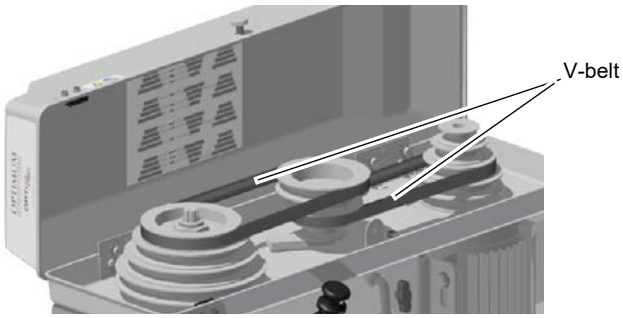
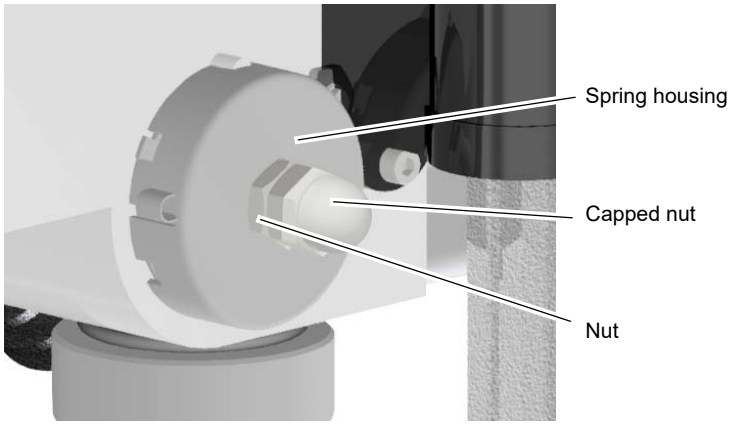
Before starting the machine you must be sure that
- ❍ **no dangers generated for persons,**
- ❍ **the machine is not damaged.**

6.2 Inspection and maintenance

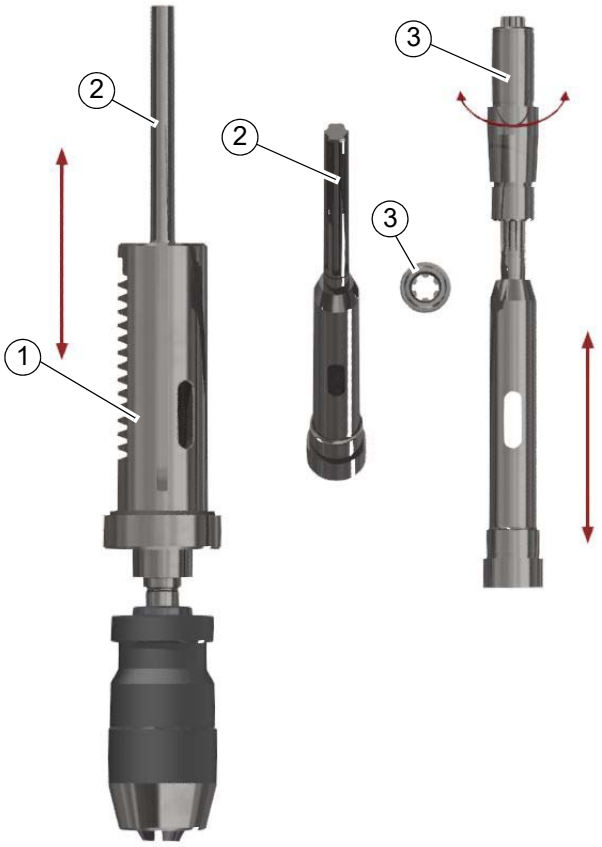
The type and level of wear depends to a large extent on the individual usage and operating conditions. Any indicated intervals therefore are only valid for the corresponding approved conditions.

Interval	Where?	What?	How?
Start of shift After each maintenance or repair work	**Drilling machine**	Examination for outside damages. ☞ Safety check on page 11	
weekly	**Slide rail screws**	**Loosening**	➜ Check if the slide rail 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 27. 
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). 

DQ25_DQ32_GB_6.fm

Interval	Where?	What?	How?
Every 6 months	**V-belts at the drill head**	**Visual inspection**	➜ Check whether the V-belts have become porous and worn.  Img.6-1: V-belt housing
as required	**Drill depth stop**	**Retightening**	**CAUTION !** **Parts may fly off at high speed. When disassembling the spring housing, please make sure that the machine is only maintained and prepared by qualified staff.** ➜ Loosen both nuts on the spring housing, approximately 1/4 counter-clockwise rotation. Under no circumstances must the nuts be completely removed from the screw thread! ➜ Hold the spring housing with one hand, while using the other hand to slowly remove the housing. ➜ Rotate the spring housing about its own axis until the pin snaps into the next notch.  Img.6-2: Spindle return spring **INFORMATION** **If the tension has increased, rotate the housing clockwise and if the tension has decreased rotate the housing counter-clockwise.** **Ensure that the notch is always snapped into the spring housing properly and subsequently tighten the nut.** **The second nut secures the first nut (capped nut).** **When the nuts have been tightened they should not touch the return spring housing.**

Interval	Where?	What?	How?
Every month	**Drill column and toothed rack**	**Oiling**	➜ Lubricate the drill column regularly with commercial oil, machine oil, engine oil. ➜ Lubricate the toothed rod regularly with commercial grease (e.g. friction bearing grease).
Every month	**Oiler cup**	**Oiling**	➜ Lubricate all oiler cups (height adjustment drilling table) with machine oil, do not use grease guns or the like.

Interval	Where?	What?	How?
in case of need	**Toothing of the spindle**	**Lubrication**	Any unusual rattling noises can be eliminated by **regreasing**. The sleeve (1) moves downwards or upwards with the toothed spindle (2) in the fixed driven sleeve (3) during drill feed. The noises are caused by the necessary clearance between the two toothings of the sleeve and spindle. The grease in the delivery condition may have been used up.  Img.6-3: Regreasing is carried out from above via the spindle drive. Apply grease at the visible toothed area of the spindle. It is recommended to use a grease which can remain permanently inside the toothing. The grease "Staburag NBU 30 PTM" from Klüber is recommended and has proved to be a successful assembly grease for clearance fits.

Interval	Where?	What?	How?
according to operator's historic values in accordance with German DGUV (BGV A3)	Electronics	Electrical inspection	☞ Obligations of the User on page 9 ☞ Electronics on page 13

INFORMATION

The spindle bearing is lifetime-lubricated. It is not necessary to lubricate it again.

6.3 Repair

6.3.1 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.

7 Ersatzteile - Spare parts

7.1 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.*

7.2 Hotline Ersatzteile - Spare parts Hotline

+49 (0) 951-96555 -118

ersatzteile@stuermer-maschinen.de

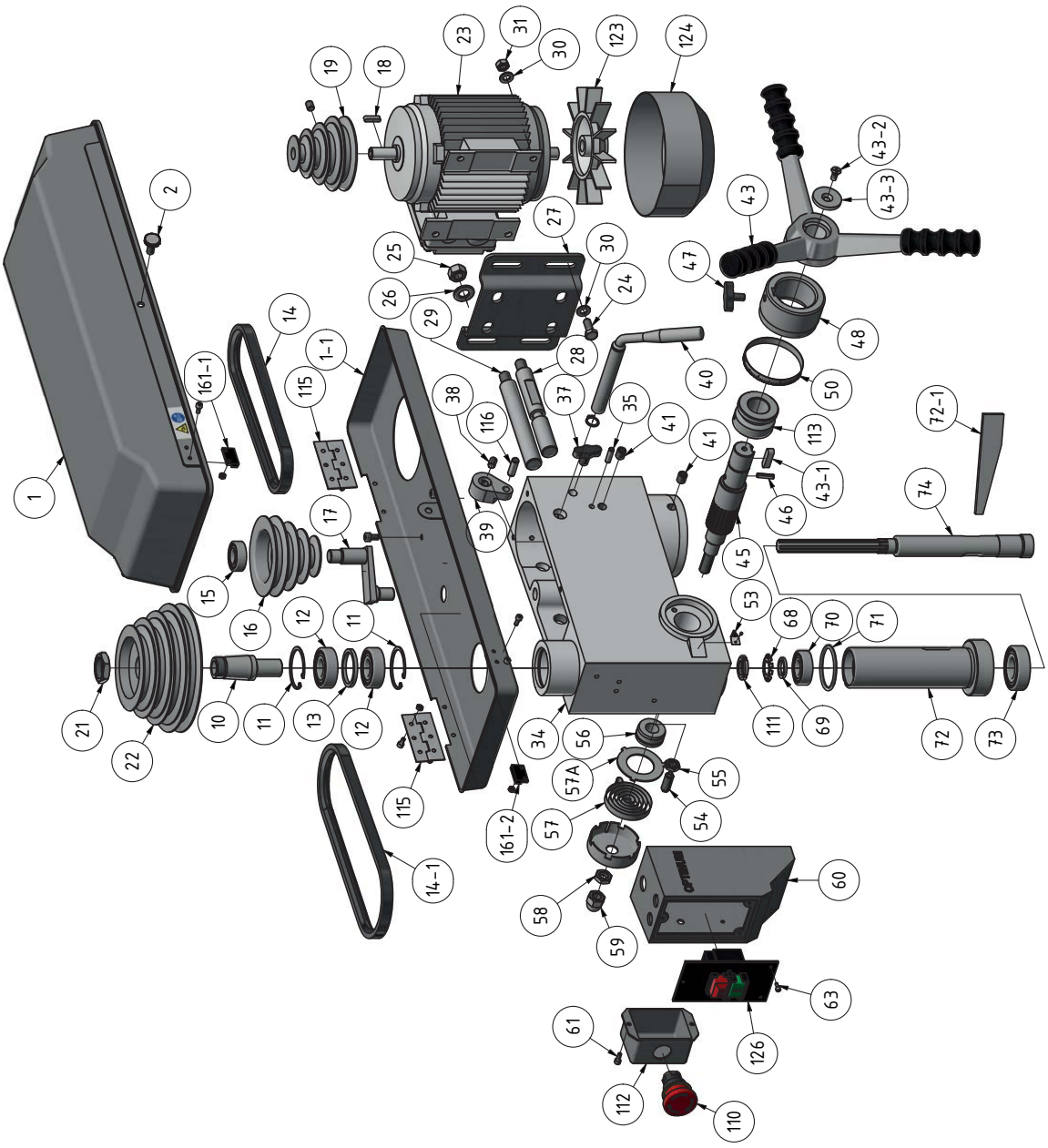
7.3 Service Hotline

+49 (0) 951-96555 -100

service@stuermer-maschinen.de

7.4 Ersatzteilzeichnungen - Spare part drawings

A DQ25 Bohrkopf - Drill head DQ25



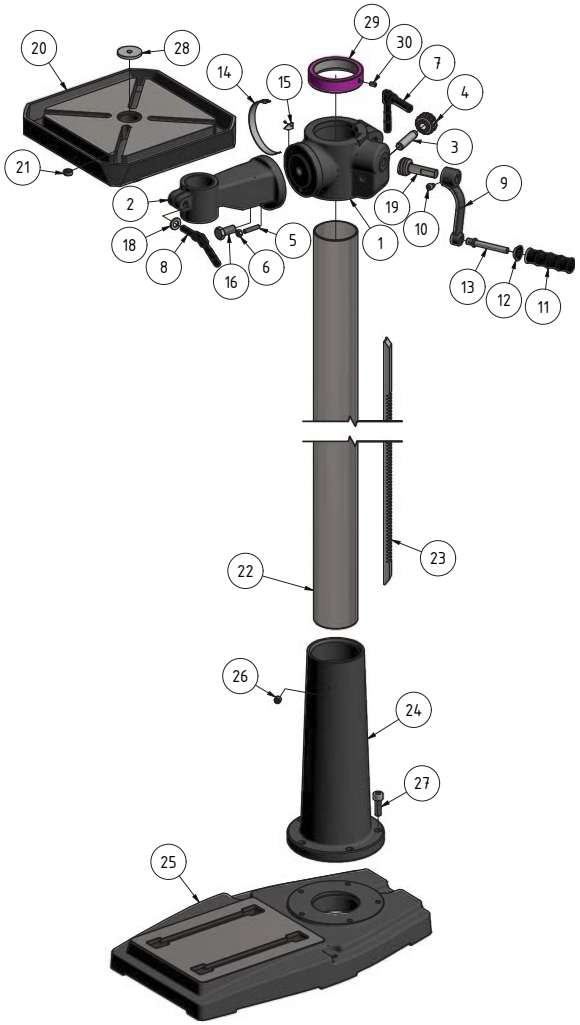
DQ25_DQ32_parts.fm

Img.7-1: Bohrkopf DQ25 - Drill head DQ25

DQ25 - Bohrkopf - Drill head					
Pos.	**Bezeichnung**	**Description**	**Menge Qty.**	**Grösse Size**	**Artikelnummer Item no.**
1	Deckel DQ25	Cover DQ25	1		0300323101D
1-1	Unterteil DQ25	Base part DQ25	1		0300323101U
2	Rändelschraube DQ25	Knurled screw DQ25	1		03003171208
10	Mitnehmer DQ25	Driving pin DQ25	1		0300323110
11	Seegering DQ25	Circlip DQ25	2		0300323111
12	Kugellager DQ25	Ball bearing DQ25	2	6204.2R	0406204R
13	Ring DQ25	Ring DQ25	1		0300323113
14	Keilriemen Motor DQ25	V-belt motor DQ25	1	13 x 650	039V13650
14-1	Keilriemen Spindel DQ25	V-belt spindle DQ25	1	13 x 620	039V13620
15	Kugellager DQ25	Ball bearing DQ25	1	62202.2R	04062202R
16	Riemenscheibe Mitte DQ25	Middle Pulley DQ25	1		0300323116
17	Zentriervorrichtung DQ25	Centring device DQ25	1		0300323117
18	Paßfeder DQ25	Key DQ25	1		
19	Riemenscheibe Motor DQ25	Motor Pulley DQ25	1		0300323119
21	Spindelmutter DQ25	Spindle nut DQ25	1		0300323121
22	Riemenscheibe Spindel DQ25	Spindle Pulley DQ25	1		0300323122
23	Motor DQ25	Motor DQ25	1	400 V	0300323323
23	Motor DQ25	Motor DQ25	1	230 V	0300323123
24	Schraube DQ25	Screw DQ25	1	M8 x 30	
25	Mutter DQ25	Nut DQ25	4	M12	
26	Unterlegscheibe DQ25	Washer DQ25	2	12	
27	Motorplatte DQ25	Motor plate DQ25	1		0300323127
28	Gleitstange rechts DQ25	Sliding rod right DQ25	1		0300323128
29	Gleitstange links DQ25	Sliding rod left DQ25	1		0300323129
30	Unterlegscheibe DQ25	Washer DQ25	1	8	
31	Mutter DQ25	Nut DQ25	4	M8	
34	Bohrkopf DQ25	Head DQ25	1		0300323134
35	Stift DQ25	Pin DQ25	1		
37	Klemmschraube DQ25	Clamping screw DQ25	1	M10x25	0300323137
38	Schraube DQ25	Screw DQ25	2	M8 x 16	0300323138
39	Exzenter DQ25	Eccentric bolt DQ25	1		0300323139
40	Griff Riemenspannung DQ25	Grip belt tension DQ25	1		0300323140
41	Schraube DQ25	Screw DQ25	1	M10 x 12	
43	Aludruckgussgriff DQ25	Aluminium casting lever DQ25	1		03003231102
43-1	Passfeder Alugriff DQ25	Key aluminum lever DQ25	1		03003231105
43-2	Schraube Alugriff DQ25	Screw aluminium lever DQ25	1		03003231104
43-3	Scheibe Alugriff DQ25	Washer aluminium lever DQ25	1		03003231103
45	Schaftritzel mit Nabe DQ25	Shaft pinion with hub DQ25	1		0300323145
47	Klemmschraube DQ25	Clamping screw DQ25	1	M8 x 17	0300813118
48	Skalenring DQ25	Scale ring DQ25	1		0300323148
50	Skala DQ25	Scale DQ25	2		0300326350
53	Anzeiger DQ25	Pointer DQ25	1		
54	Gewindestift DQ25	Grub screw DQ25	1	M10x30	0340182
55	Mutter DQ25	Nut DQ25	1	M10	
56	Rückholfedersitz DQ25	Spring seat DQ25	1		0300323156
57	Rückholfeder m. Abdeckung DQ25	Turbination spring with cover DQ25	1		0300323157
58	Mutter DQ25	Nut DQ25	1		0300317126
59	Hutmutter DQ25	Capped nut DQ25	1	1/2"-20	0300317125
60	Schaltergehäuse DQ25	Switch housing DQ25	1		0300323160
61	Schraube DQ25	Screw DQ25	1		0300323161
63	Schraube DQ25	Screw DQ25	3	M4,2 x 12	0300323163
68	Sicherungsblech DQ25	Safety plate DQ25	1		0300323168
69	Zwischenring DQ25	Ring DQ25	1		0300323169
70	Kugellager DQ25	Ball bearing DQ25	1	6203.2R	0406203R
71	O-Ring DQ25	O-ring DQ25	1		0300323171
72	Pinole DQ25	Pinole DQ25	1		0300323172
72-1	Austreiber DQ25	Drill drift DQ25	1		0300317197
73	Kugellager DQ25	Ball bearing DQ25	1	6205.2R	0406205R
74	Spindel DQ25	Spindle DQ25	1		0300323174
110	Not-Halt Schalter DQ25	Emergency Stop switch DQ25	1		0460082
111	Nutmutter DQ25	Grooved nut DQ25	1		0300323167
112	Klemmkasten DQ25	Terminal box DQ25	1		03003171114
113	Buchse DQ25	Buching DQ25	1		03003231113
115	Scharnier DQ25	Hinge DQ25	2		
116	Zylinderstift DQ25	Cilindrical pin DQ25	1	8x24	
123	Lüfter DQ25	Fan DQ25	1	Ø137x16 (400V motor)	03003231123A
	Lüfter DQ25	Fan DQ25	1	230V Motor	

DQ25 - Bohrkopf - Drill head					
Pos.	**Bezeichnung**	**Description**	**Menge Qty.**	**Grösse Size**	**Artikelnummer Item no.**
124	Motordeckel DQ25	Motor cover DQ25	1	400V motor	
	Motordeckel DQ25	Motor cover DQ25	1	230V motor	
126	Schaltereinheit 400V DQ25	Switch unit 400V DQ25	1	KJD18 400V	0300326362
	Schaltereinheit 230V	Switch unit 230V	1	230V	03003171113
161-1	Reed Kontakt Keilriemendeckel DQ25	Reed contact belt cover DQ25	1	SQ2 (PS-3150)	0302024192
161-2	Reed Kontakt Keilriemendeckel DQ25	Reed contact belt cover DQ25	1	PS-3150	0302024192
Komplett-Sätze - Complete sets					
Pos. 72 CPL	Pinole kplt.	Pinole cpl.	1		0300301572CPL
16-CPL	Riemenscheibe Mitte kpl.	Middle pulley with centring device	1		0300323116CPL
CPL	Bohrfutterschutz komplett mit Schalter	Drill chuck guard complete with micro switch	1	24V	03003231125
CPL	Halter Bohrfutterschutz	Holder Drill chuck guard complete	1		03008131201CPL

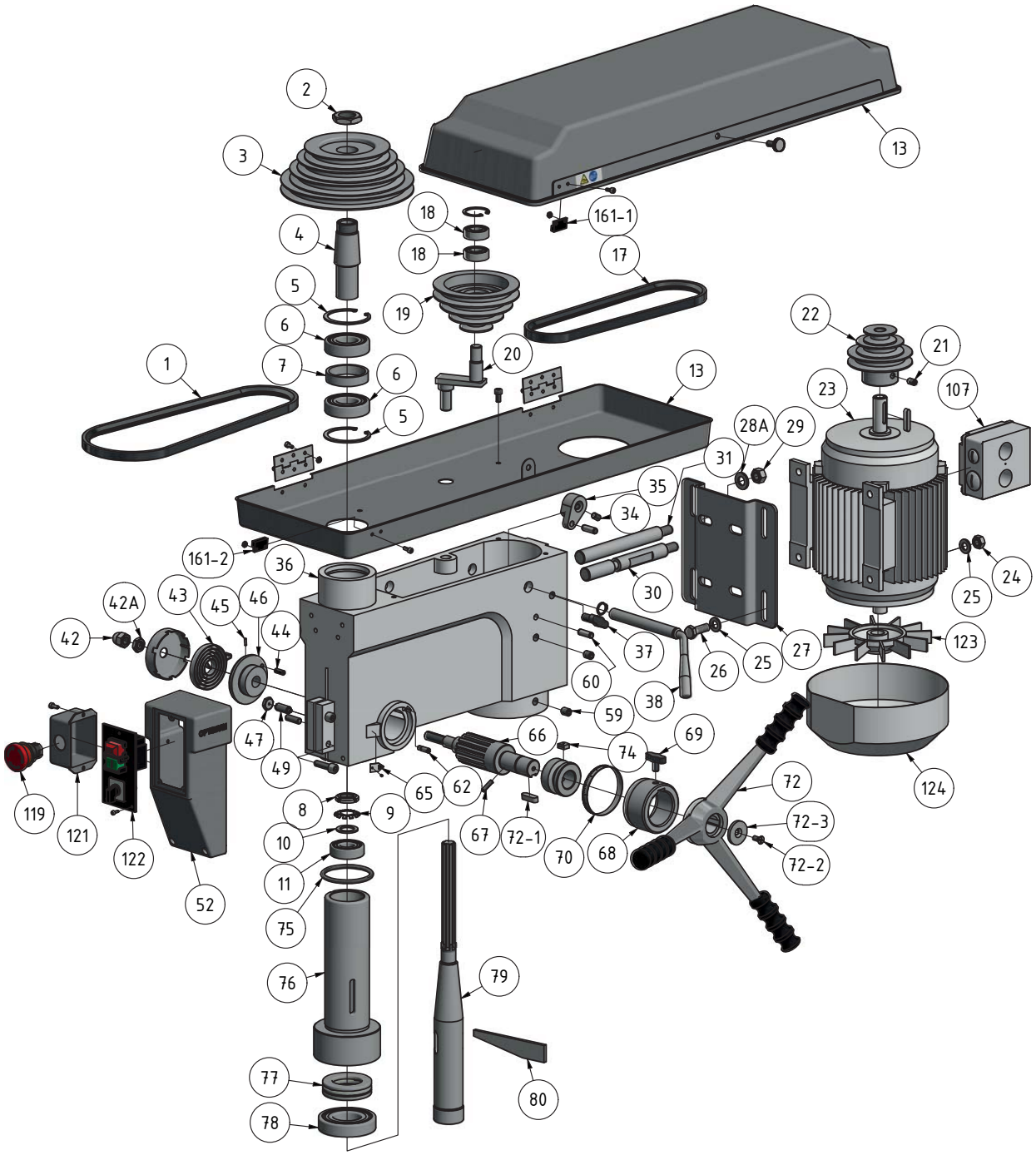
B DQ25 Säule - Column DQ25



DQ25_DQ32_parts.fm

DQ25 - Säule - Column					
Pos.	**Bezeichnung**	**Description**	**Menge Qty.**	**Grösse Size**	**Artikelnummer Item no.**
1	Führung DQ25	Guide DQ25	1		03191047201
2	Träger DQ25	Support DQ25	1		03191047202
3	Welle DQ25	Shaft DQ25	1		03191047203
4	Zahnrad DQ25	Gear wheel DQ25	1		03191047204
5	Kegelstift DQ25	Taper pin DQ25	1		03191047205
6	Sechskantmutter DQ25	Hexagon nut DQ25	1	M6	
7	Klemmhebel DQ25	Clamping lever DQ25	1		03191047207
8	Klemmhebel DQ25	Clamping lever DQ25	1		03191047208
9	Kurbel DQ25	Crank DQ25	1		03191047209
10	Schraube DQ25	Screw DQ25	1	M6x10	
11	Hülse DQ25	Sleeve DQ25	1		03191047211
12	Scheibe DQ25	Washer DQ25	1		03191047212
13	Schraube DQ25	Screw DQ25	1		03191047213
14	Skala DQ25	Scale DQ25	1		03191047214
15	Anzeige DQ25	Indicator DQ25	1		03191047215
16	Sechskantschraube DQ25	Hexagon head screw DQ25	1	M12x25	
17	Niet DQ25	Rivet DQ25	1		03191047217
18	Scheibe DQ25	Washer DQ25	1	10	
19	Welle DQ25	Shaft DQ25	1		03191047219
20	Bohrtisch DQ25	Drilling table DQ25	1		03191047220
21	Stopfen DQ25	Plug DQ25	1		03191047221
22	Säule DQ25	Column DQ25	1		03191047222
23	Zahnstange DQ25	Rack DQ25	1		03191047223
24	Flansch DQ25	Flange DQ25	1		03191047224
25	Maschinenfuss DQ25	Machine foot DQ25	1		03191047225
26	Gewindestift DQ25	Grub screw DQ25	1		03191047226
27	Schraube DQ25	Screw DQ25 DQ25	5	M10x30	
28	Verschluss DQ25	Cap DQ25	1		03191047228
29	Ring DQ25	Ring DQ25	1		03191047229
30	Gewindestift DQ25	Grub screw DQ25	1	M6x10	

C DQ32 Bohrkopf - Drill head DQ32



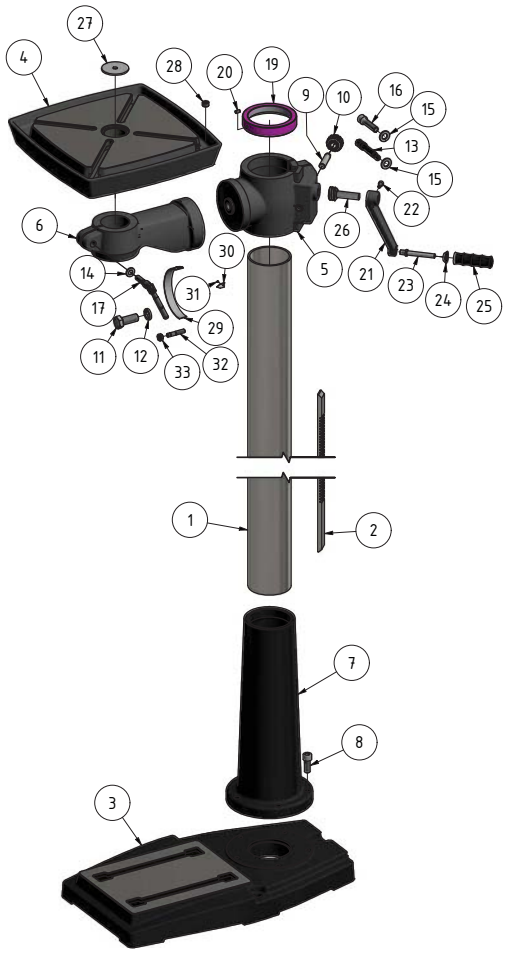
Img. 7-2: Bohrkopf DQ 32 - Drill head DQ32

DQ32 - Bohrkopf - Drill head					
Pos.	**Bezeichnung**	**Description**	**Menge Qty.**	**Grösse Size**	**Artikelnummer Item no.**
1	Keilriemen Spindel DQ32	V-belt spindle DQ32	1	13 x 750	039V13750
2	Mutter DQ32	Nut DQ32	1		0300333302
3	Riemenscheibe Spindel DQ32	Spindle pulley DQ32	1		0300333303
4	Mitnehmer DQ32	Driving pin DQ32	1		0300333304
5	Sicherungsring DQ32	Safety ring DQ32	2	65mm	0300333305
6	Kugellager DQ32	Ball bearing DQ32	2	6206-2R	0406206ZZ
7	Distanzbuchse DQ32	Bushing DQ32	1		0300333307
8	Mutter DQ32	Nut DQ32	1		0300333308
9	Zahnscheibe DQ32	Serrated disc DQ32	1		0300333309

DQ25_DQ32_parts.fm

DQ32 - Bohrkopf - Drill head					
Pos.	**Bezeichnung**	**Description**	**Menge Qty.**	**Grösse Size**	**Artikelnummer Item no.**
10	Unterlegscheibe DQ32	Washer DQ32	1		
11	Kugellager DQ32	Ball bearing DQ32	1	6204.2R	0406204R
13	Riemengehäuse DQ32	Belt housing DQ32	1		0300333313D
13	Riemengehäuse DQ32	Belt housing DQ32	1		0300333313U
17	Keilriemen Motor DQ32	V-belt motor DQ32	1	13 x 860	0300333301
18	Kugellager DQ32	Ball bearing DQ32	1	6202.2R	0406202R
19	Riemenscheibe Mitte DQ32	Middle Pulley DQ32	1		0300333319
20	Zentrierstück DQ32	Centring piece DQ32	1		0300333320
21	Schraube DQ32	Screw DQ32	1	M 8x12	
22	Riemenscheibe Motor DQ32	Motor Pulley DQ32	1		0300333322
23	Motor DQ32	Motor DQ32	1	400V	0300333323
	Motor DQ32	Motor DQ32	1	230V	
24	Mutter DQ32	Nut DQ32	4	M 10	
25	Beilegscheibe DQ32	Washer DQ32	8	10	
26	Schraube DQ32	Screw DQ32	4	M 10x30	
27	Motorhalteplatte DQ32	Motor plate DQ32	1		0300333327
28A	Unterlegscheibe DQ32	Washer DQ32	2	12	
29	Mutter DQ32	Nut DQ32	2	M12	
30	Gleitstange rechts DQ32	Sliding rod right DQ32	1		0300333330
31	Gleitstange links DQ32	Sliding rod left DQ32	1		0300333331
34	Schraube DQ32	Screw DQ32	1	M8x16	
35	Exzenter DQ32	Eccentric bolt DQ32	1		0300323139
36	Bohrkopf DQ32	Drilling head DQ32	1		0300333336
37	Klemmschraube DQ32	Clamping screw DQ32	2	M10x30	0300333337
38	Hebel DQ32	Lever DQ32	1		0300333338
42A	Mutter DQ32	Nut DQ32	1		0300317126
42	Hutmutter DQ32	Capped Nut DQ32	1		0300317125
43	Rückholfeder mit Gehäuse DQ32	Return spring with housing	1		0300333343
44	Stift DQ32	Pin DQ32	1	6x16	0300333344
45	Stift DQ32	Pin DQ32	1	25 x 10	0300333345
46	Federsitz DQ32	Spring seat DQ32	1		0300333346
47	Mutter DQ32	Nut DQ32	1	M 10	
49	Schraube DQ32	Screw DQ32	1	M 10x27	0340182
52	Schaltergehäuse DQ32	Switch housing DQ32	1		0300333352
59	Schraube DQ32	Screw DQ32	2	M10x12	
60	Stift DQ32	Pin DQ32	2	8x25	
62	Stop-Stift DQ32	Stop-pin DQ32	1		0300333362
65	Zeiger DQ32	Pointer DQ32	1		
66	Schaftritzel DQ32	Shaft pinion DQ32	1		0300333366
67	Stift DQ32	Pin DQ32	1	5x20	0300333367
68	Skalenring DQ32	Scale ring DQ32	1		0300333368
69	Klemmschraube DQ32	Clamping screw DQ32	1		0300813118
70	Bohrtiefenskala DQ32	Scale - drilling depth DQ32	1		0300333370
72	Aludruckgussgriff DQ32	Aluminium casting lever	1		03003333104
72-1	Passfeder Alugriff DQ32	Key aluminum handle DQ32	1		03003231105
72-2	Schraube Alugriff DQ32	Screw aluminium handle	1		03003231103
72-3	Scheibe Alugriff DQ32	Washer aluminium handle	1		03003231104
74	Keil DQ32	Key DQ32	1		0300333374
75	Gummiring DQ32	Rubber ring DQ32	1		0300333375
76	Pinole DQ32	Pinole DQ32	1		0300333376CPL
77	Kugellager DQ32	Ball bearing DQ32	1		04051208
78	Kugellager DQ32	Ball bearing DQ32	1	6208.2R	0406208R
79	Spindel DQ32	Spindle DQ32	1		0300333379
80	Austreiber DQ32	Drill drive DQ32	1		0300317197
107	Klemmkasten Motor 400V DQ32	Terminal box motor 400V	1		03003333107
119	Not-Halt Schalter DQ32	Emergency Stop switch	1		0460082
121	Klemmkasten DQ32	Terminal box DQ32	1		03003171114
122	Schaltereinheit 400V DQ32	Switch unit 400V DQ32	1	KJD18 400V	0300326362
	Schaltereinheit 230V	Switch unit 230V	1		03003171113
123	Lüfter DQ32	Fan DQ32	1		03003333123
124	Motordeckel DQ32	Motor cover DQ32	1	400V	03003333124
	Motordeckel DQ32	Motor cover DQ32	1	230V	
161-1	Reed Kontakt Keilriemendeckel	Reed contact belt cover	1	PS-3150	0302024192
161-2	Reed Kontakt Keilriemendeckel	Reed contact belt cover	1	PS-3150	0302024192
Komplett-Sätze - Complete sets					
CPL	Pinole kpl.	Pinole complete			0300333376CPL
CPL	Bohrkopf kpl.	Drilling head cpl			0300333336CPL
CPL	Werkzeugsatz in einer Box	Tool box			03003333110
CPL	Halter Bohrfutterschutz	Holder Drill chuck guard			03008131201CPL
CPL	Bohrfutterschutz mit Schalter	Drill chuck guard with micro		24V	03003333125

D DQ32 Säule - Column DQ32



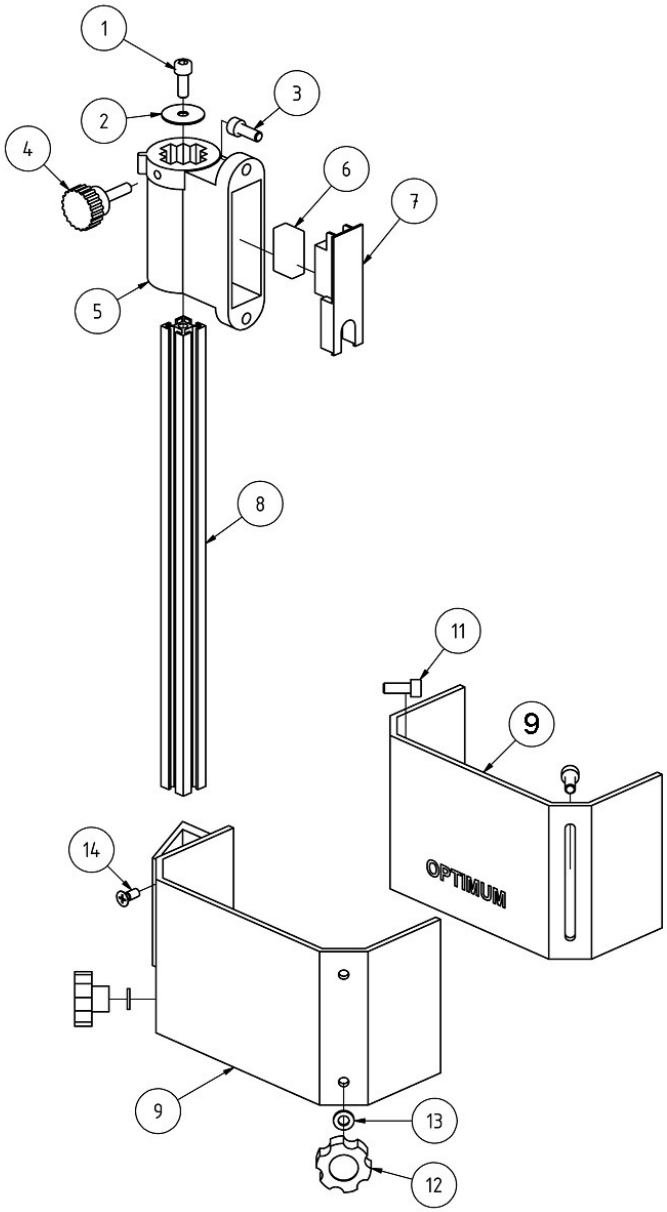
Img.7-3: Säule DQ32 - Column DQ32

DQ32 - Säule - Column					
Pos.	**Bezeichnung**	**Description**	**Menge Qty.**	**Grösse Size**	**Artikelnummer Item no.**
1	Säule DQ32	Column DQ32	1		03191049201
2	Zahnstange DQ32	Rack DQ32	1		03191049202
3	Maschinenfuss DQ32	Machine foot DQ32	1		03191049203
4	Bohrtisch DQ32	Drilling table DQ32	1		03191049204
5	Führung DQ32	Guide DQ32	1		03191049205
6	Träger DQ32	Support DQ32	1		03191049206
7	Flansch DQ32	Flange DQ32	1		03191049207
8	Schraube DQ32	Screw DQ32	5	M12x30	
9	Welle DQ32	Shaft DQ32	1		03191049209
10	Zahnrad DQ32	Gear wheel DQ32	1		03191049210
11	Schraube DQ32	Screw DQ32	1	M16 x 40	
12	Scheibe DQ32	Washer DQ32	1		03191049212
13	Klemmhebel DQ32	Clamping lever DQ32	1		03191049213
14	Scheibe DQ32	Washer DQ32	1	10	
15	Scheibe DQ32	Washer DQ32	2	12	
16	Schraube DQ32	Screw DQ32	1	M12x50	
17	Klemmhebel DQ32	Clamping lever DQ32	1		03191049217
19	Ring DQ32	Ring DQ32	1		03191049219
20	Gewindestift DQ32	Grub screw DQ32	1	M6x10	
21	Kurbel DQ32	Crank DQ32	1		03191049221
22	Gewindestift DQ32	Grub screw DQ32	1	M6x12	
23	Welle DQ32	Shaft DQ32	1		03191049223
24	Scheibe DQ32	Washer DQ32	1		03191049224
25	Hülse DQ32	Sleeve DQ32	1		03191049225
26	Zahnwelle DQ32	Toothed shaft DQ32	1		03191049226
27	Verschluss DQ32	Plug DQ32	1		03191049227
28	Stopfen DQ32	Stopper DQ32	1		03191049228

DQ25_DQ32_parts.fm

DQ32 - Säule - Column					
Pos.	Bezeichnung	Description	Menge Qty.	Grösse Size	Artikelnummer Item no.
29	Skala DQ32	Scale DQ32	1		03191049229
30	Anzeige DQ32	Indicator DQ32	1		03191049230
31	Niet DQ32	Rivet DQ32	1		03191049231
32	Stiftschraube DQ32	Stud bolt DQ32	1	M8 x 35	
33	Mutter DQ32	Nut DQ32	1	M8 x 35	

E DQ25 / DQ32 - Bohrfutterschutz - Drill chuck protection DQ25 / DQ32



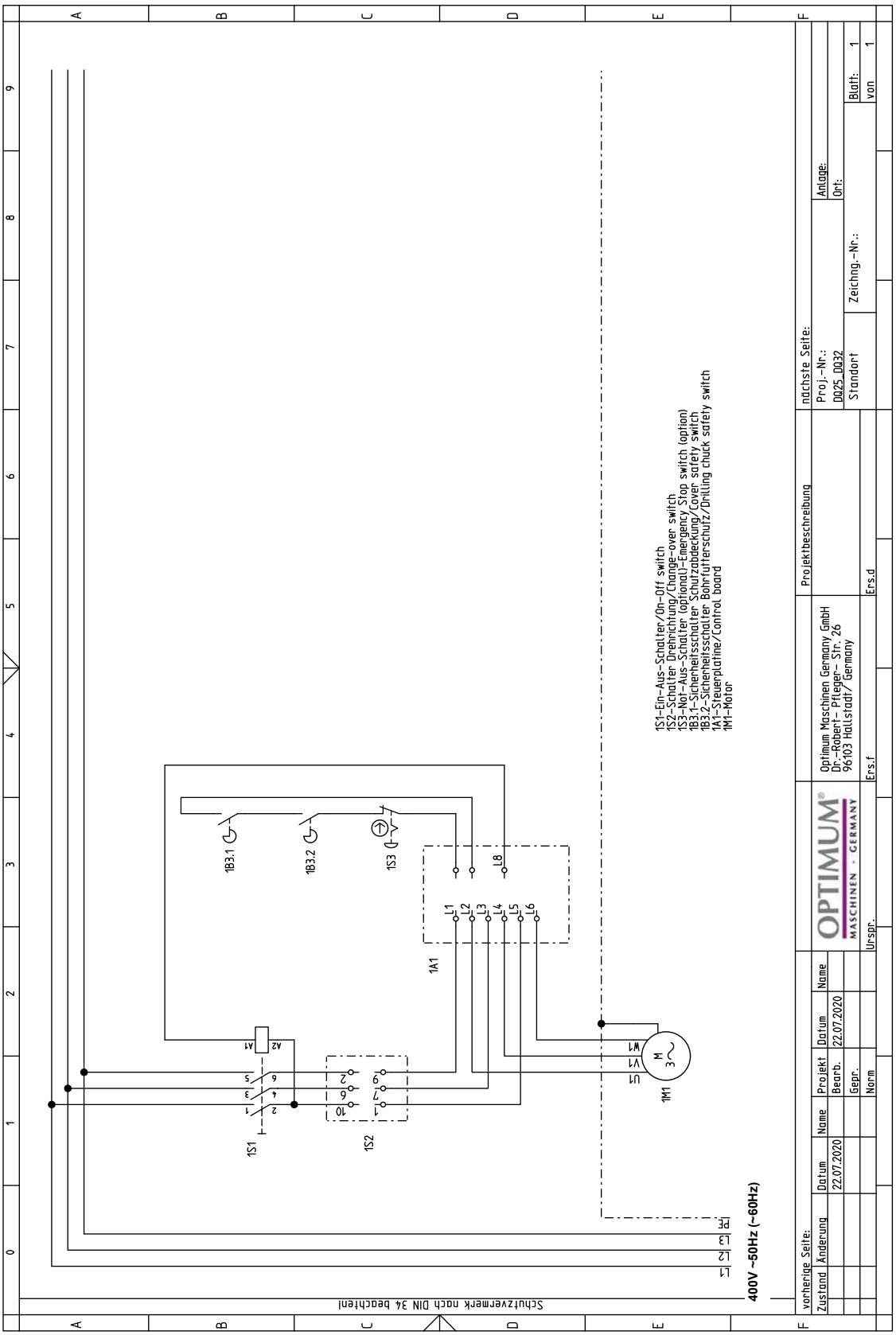
DQ25 / DQ32 - Bohrfutterschutz - Drill chuck protection					
Pos.	Bezeichnung	Description	Menge Qty.	Grösse Size	Artikelnummer Item no.
1	Innensechskantschraube DQ25/	Socket head screw DQ25/	1	GB 70-85 - M6 x 10	
2	Scheibe DQ25/DQ32	Washer DQ25/DQ32	1		
3	Innensechskantschraube DQ25/	Socket head screw DQ25/	2	GB 70-85 - M6 x 16	
4	Rändelschraube DQ25/DQ32	Knurled screw DQ25/DQ32	1		030031712014
5	Halterung DQ25/DQ32	Fixture DQ25/DQ32	1		
6	Mikroschalter DQ25/DQ32	Microswitch DQ25/DQ32	1		030031712018
7	Platte DQ25/DQ32	Plate DQ25/DQ32	1		030031712019
8	Alu- Profil DQ25/DQ32	Aluminium profile DQ25/	1		03011233209
9	Bohrfutterschutz A DQ25/DQ32	Drill chuck protection A	1		03003171207

DQ25_DQ32_parts.fm

DQ25 / DQ32 - Bohrfutterschutz - Drill chuck protection					
Pos.	**Bezeichnung**	**Description**	**Menge Qty.**	**Grösse Size**	**Artikelnummer Item no.**
11	Innensechskantschraube DQ25/	Socket head screw DQ25/	2	GB 70-85 - M6 x 16	
12	Rändelschraube DQ25/DQ32	Knurled screw DQ25/DQ32	2		03003171212
13	Scheibe DQ25/DQ32	Washer DQ25/DQ32	2	6	
14	Schraube DQ25/DQ32	Screw DQ25/DQ32	2	M6x16	
Komplette-Sätze / Complete Sets					
0	Bohrfutterschutz	Drill Chuck Guard		DQ25	03003231125
0	Bohrfutterschutz	Drill Chuck Guard		DQ32	03003333125

7.5 DQ25 / DQ32 Schaltplan, 400V - Wiring diagram DQ25 / DQ32, 400V

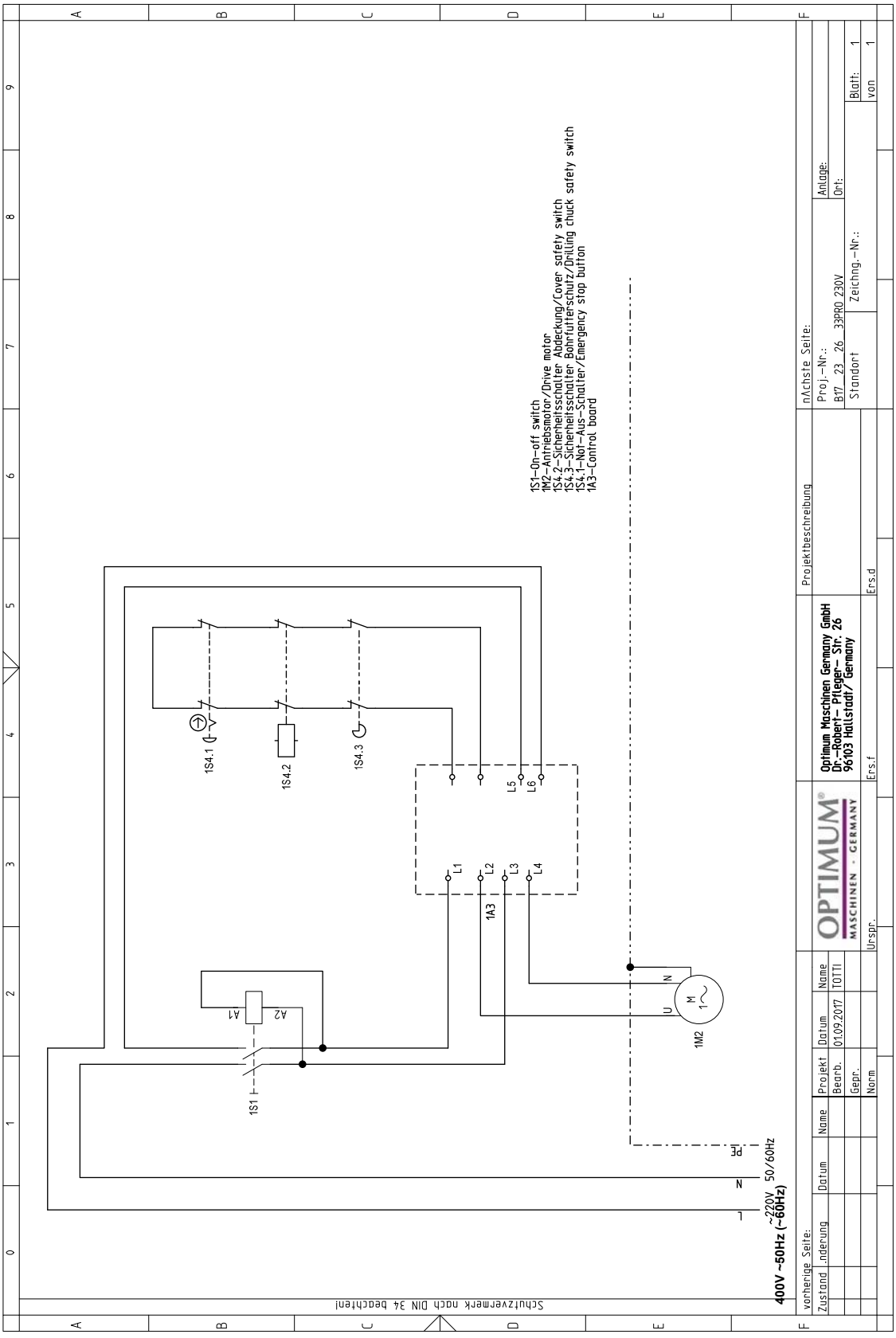
F



400V - DQ25 - DQ32 - Elektrik - Electric					
Pos.	**Bezeichnung**	**Description**	**Menge Qty.**	**Grösse Size**	**Artikelnummer Item no.**
1S1 / 1S2	Schaltereinheit 400V DQ25	Switch unit 400V DQ25	1	KJD18 400V	0300326362
	Schaltereinheit 400V DQ32	Switch unit 400V DQ32	1	KJD18 400V	0300326362
1M1	Motor DQ25	Motor DQ25	1	400 V	0300323323
	Motor DQ32	Motor DQ32	1	230 V	
1B3.1	Reed Kontakt Keilriemendeckel	Reed contact belt cover	1	PS-3150	0302024192
1B3.2	Mikroschalter DQ25/DQ32	Microswitch DQ25/DQ32	1		030031712018
1S3	Not-Halt Schalter	Emergency Stop switch	1		0460082
1A1	Steuerplatine	Control board	1		03003233111

7.6 DQ25 / DQ32 Schaltplan, 230V - Wiring diagram DQ25 / DQ32, 230V

G



DQ25_DQ32_parts.fm

230V - DQ25 - DQ32 - Elektrik - Electric					
Pos.	**Bezeichnung**	**Description**	**Menge** **Qty.**	**Grösse** **Size**	**Artikelnummer** **Item no.**
1S1 / 1S2	Schaltereinheit 230V	Switch unit 230V	1		0300326362
1M2	Motor DQ25	Motor DQ25	1	230 V	0300323123
	Motor DQ32	Motor DQ32	1	230 V	
1B3.1	Reed Kontakt Keilriemendeckel	Reed contact belt cover	1	PS-3150	0302024192
1B3.2	Mikroschalter DQ25/DQ32	Microswitch DQ25/DQ32	1		030031712018
1S3	Not-Halt Schalter	Emergency Stop switch	1		0460082
1A1	Steuerplatine	Control board	1		03003233111

8 Malfunctions

Malfunction	Cause/ possible effects	Solution
Noise during work.	• Spindle runs dry. • Tool blunt or incorrectly clamped. • Missing grease in the toothing • Pulley on the motor has come loose.	• Grease spindle • Use new tool and check tension (fixed setting of the bit, drill chuck and taper mandrel) • ☞ Toothing of the spindle on page 39 • Check the fastening of the pulley, tighten the fastening nut.
Bit „burnt“	• Incorrect speed • Chips are not coming out of the drilled hole. • Blunt drill bit. • Operating without cooling agent.	• Choose a different speed, excessive feed. • Retract the drill bit from the bore hole more often. • Sharpen the drill bit or insert new drill bit. • Use coolant.
Drill point runs off, drilled hole is not circular.	• Hard material or length of the cutting spirals/or angles on the tool are unequal • Drill bit is bent.	• Use a new drill bit.
Drill is running non-round or shaking	• Drill bit is bent. • Bearings worn down in the spindle head. • Drill is not correctly clamped. • Drill chuck defective	• Replace drill bit • Have the bearings in the spindle head replaced. • Clamp the drill bit properly. • Replace the drill bit 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 from grease.
Motor does not start.	• Motor is wrongly connected • Defective fuse.	• Have it checked by qualified personnel.
Motor is overheating and there is no power.	• Motor overloaded? • Too low mains voltage • Motor is wrongly connected	• Switch off immediately and have it checked by qualified personnel
Precision of the work deficient	• Heavy and unbalanced or deformed work-piece. • 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	• ☞ „Img.6-2: Spindle return spring“ on page 37

DQ25_DQ32_GB_8.fm

9 Appendix

9.1 Copyright

9.2 Terminology/Glossary

Term	Explanation
Drill drift	Tool to release the bit or the drill chuck from the drill spindle
Drill chuck	Drill bit adapter
Drill head	Upper part of the drilling machine
Drill sleeve	Fixed hollow shaft which runs in the drill spindle.
Drilling spindle	Shaft activated by the motor
Drilling table	Supporting surface, clamping surface
Taper mandrel	Cone of the drill or of the drill chuck
Spindle sleeve lever	Manual operation for the drill feed
Quick-action drill chuck	Drill holding fixture to be clamped manually.
Workpiece	Part to be drilled, part to be machined.
Tool	Drill bit, countersink, etc.

9.3 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 over-straining of the machine.
  - Any defects arising by one's own fault due to faulty operations or if the operating manual is disregarded.
  - Inattentive or incorrect handling and use of improper equipment
  - 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.

9.4 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.

- 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 further packing case on top of the first one.

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.

9.5 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.

9.5.1 Decommissioning

CAUTION!

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

- **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.**

9.5.2 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.

9.5.3 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.

9.5.4 Disposal of electrical and electronic components

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

The machine contains electrical and electronic components and must not be disposed of as household waste. According to the European Directive 2011/65/EU 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.

9.6 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.

9.7 Change information manual

Chapter	Short summary	new version number
4	Spindle speed tables	1.0.1
0 ; 1 ; 2 ; 4 ; parts	Expanded to include 230V versions	1.0.2

9.8 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

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D-96103 Hallstadt

Fax +49 (0) 951 - 96 555 - 888
email: info@optimum-maschinen.de

OPTIMUM®
MASCHINEN - GERMANY

EC Declaration of Conformity

according to Machinery Regulation 2023/1230 Annex V Part A

The manufacturer / distributor Optimum Maschinen Germany GmbH
Dr.-Robert-Pfleger-Str. 26
D96103 Hallstadt

hereby declares that the following product

Product designation: Drilling machine

Type designation: DQ 25 | DQ32

fulfils 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 other 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 12717:2009-07 Safety of machine tools - Drilling machines

EN IEC 55014-1:2022-12 Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 1: Emission

EN IEC 55014-2:2022-10 Electromagnetic compatibility - Requirements for household appliances, electric tools and similar apparatus - Part 2: Immunity

EN IEC 61000-3-2:2023-10 Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions (equipment input current <= 16 A per phase)

EN 61000-3-3:2023-02 Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current <= 16 A per phase and not subject to conditional connection

EN ISO 12100:2011-03 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, 2023-11-08

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