

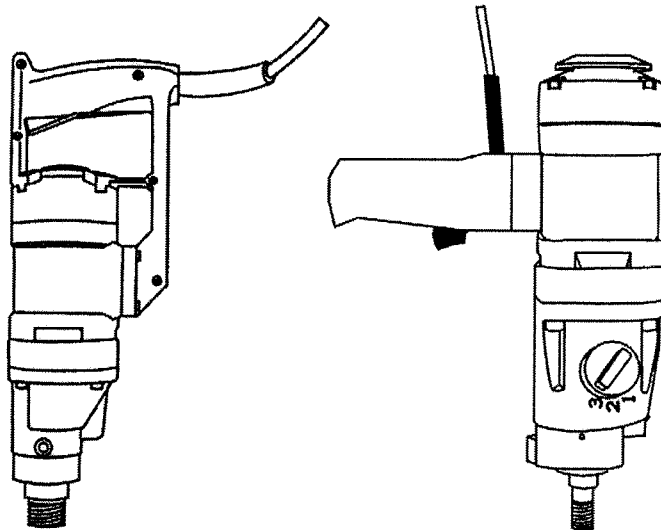
# **Betriebsanleitung**

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## **Elektro-Bohrmotor**

**DME16**

**DME20**



Please read carefully before putting the machine into operation!

With the TYROLIT-HYDROSTRESS core drilling machine you own an excellent product of quality, with which you will certainly be fully satisfied if you use it for its designed use.

## 1. GENERAL SAFETY PRECAUTIONS



**WARNING! Read all safety precautions and instructions.** Failures in the compliance with these safety precautions and instructions can cause electric shock, fire and/or heavy injuries.

Please keep these safety precautions and instructions for the future.

The term "electric tool" used in the safety precautions corresponds to mains operated electric tools (with mains cord) and to battery operated electric tools (without mains cord).

### 1) Security of employment

- a) **Keep your working area clean and well illuminated.** Disorder or unilluminated working areas can cause accidents.
- b) **Do not work in explosive ambiances with the electric tool, in which there are flammable liquid, gases or dusts.** Electric tools generate sparks which can inflame the dust or vapors.
- c) **Keep children and other persons away from the electric tool while using it.** When being distracted, you can lose the control on the device.

### 2) Electrical safety

- a) **The mains plug of the electric tool must fit into the socket. The plug must not be changed in any kind. Do not use adapter plugs together with earthed electric tools.** Unmodified plugs and fitting sockets reduce the risk of electric shock.
- b) **Avoid body contact with earthed surfaces, like tubes, heatings, cookers and fridges.** There is a higher risk of electric shock when your body is earthed.
- c) **Keep your electric tool away from rain or wetness.** The infiltration of water into an electric tool increases the risk of an electric shock.
- d) **Do not divert the cord from its intended use from carrying or hanging up the electric tool, or for pulling the plugs from the socket. Keep the cord away from heat, oil, sharp edges or moving device parts.** Damaged or tangled cords increase the risk of an electric shock.
- e) **If you work outside with your electric tool, only use extension cords that are appropriate for outside use.** The use of a extension cord which is appropriate for outside use reduces the risk of an electric shock.
- f) **If the use of the electric tool in humid areas is inevitable, use a ground fault circuit interrupter (GFCI).** The use of a GFCI reduces the risk of an electric shock.

### 3) Personal safety

- a) **Be attentive, pay attention to what you do and go to work with the electric tool with reason. Do not use an electric tool when you are tired or under the influence of drugs, alcohol or pharmaceuticals.** One moment of carelessness while using an electric tool kann cause serious injuries.
- b) **Wear personal protective equipment and always goggles.** The wearing of personal protective equipment, like dust mask, skid-proof shoes, protection helmet or hearing protection, depending on the kind and use of the electric tool reduces the risk of injuries.
- c) **Avoid unintended start up. Make sure that the electric tool is switched off before connecting it to the mains and/or the battery, picking it up or carrying it.** When you have your finger on the switch while carrying the electric tool or connect the device to the mains when it is switched on, this can cause accidents.
- d) **Remove adjusting tools or wrenches before switching on the electric tool.** A tool or wrench which is located on a turning device can cause injuries.
- e) **Avoid abnormal posture. Care for safe standing and keep the balance anytime. Do not work on a ladder.** Thus you can control the electric tool better in unexpected situations.

- f) **Wear suitable clothing. Do not wear wide clothing or jewelry. Keep hair, clothing and gloves away from moving parts.** Wide clothing, jewelry or long hair can be caught by moving parts.
- g) **If there is the possibility to assemble a dust exhaustor and collecting device, make sure that these are connected and used correctly.** The use of a dust exhaustor can reduce dangers by dust.

#### 4) Use and handling of the electric tool

- a) **Do not overload the device. Use the appropriate electric tool for your work.** With the appropriate electric tool you work better and saver in the declared range of performance.
- b) **Do not use an electric tool whose switch is damaged.** An electric tool which can not be switched on and off is dangerous and has to be repaired.
- c) **Unplug the plug from the socket and/or remove the battery before carrying out instrument settings, exchanging accessories or put the device aside.** This safety measure avoids the unintended start of the electric tool.
- d) **Keep unused electric tools out of reach of children. Do not allow persons to use the device who are not familiar with it or have not read these instructions.** Electric tools are dangerous if they are used by inexperienced persons.
- e) **Maintain electric tools with care. Check if movable parts function correctly and do not jam, if parts are broken or damaged in that way, that the function of the electric tool affected. Have damaged parts repaired before using the device.** Many accidents originate from bad maintained electric tools.
- f) **Keep the cutting tool sharp and clean.** Carefully maintained cutting tools with sharp edges do jam less and are easier to guide.
- g) **Use electric tool, accessory, operation tools, etc. according to these instructions. Thereby consider the conditions of employment and the work to be done.** The use of electric tools for others than the intended task can result in dangerous situations.

#### 5) Service

- a) **Have your tool only repaired by qualified personnel and only with original spare parts.** Thus it is assured that the safety of the electric tool is being obtained.

#### 6) Safety precautions for drilling machines

- a) **Wear hearing protection while using drilling machines.** The effect of noise can cause hearing loss.
- b) **Use the additional handles that are supplied with the device.** The loss of control on the machine can cause injuries.
- c) **While drilling keep a sufficient big distance to the drill bit and do not touch rotating parts. Protect the danger zone and keep children and other persons away from it.** Falling or catapulted parts can cause injuries.

## 2. SPECIAL SAFETY PRECAUTIONS - PLEASE NOTE !

This diamond core drill is assigned for commercial use only. It may only be used by trained people. Proper use extends only to the drilling of rock, concrete and masonry..

Pay attention that water gets not into the machine, switch handle, terminal case and the electrical connections.

For operation, the national regulations for working with this core drill must be observed.

Electric tools must regularly (approx. 6 months) be checked for safety by a specialist.

Pay attention drill vertically (overhead drilling) only with appropriate safety equipments (water-collecting ring).

**It is strictly to pay attention that water does not get into the motor.**

After an interruption of work first see for yourself that the core bit turns loosely before you start the machine again.

Wear ear protection when working with this machine.

### 3. TECHNICAL DESCRIPTION

The DME16PW<sup>\*\*\*</sup>/20PW<sup>\*\*\*</sup> are universal core drills with water supply. They can be used manually as well as in a stand (3) (drilling hand-held or by stand). They are suitable for drilling rock, concrete and masonry.

The DME20PU<sup>\*\*\*</sup> is an universal core drill, which may be used wet (with water supply, adapter 1a) as well as dry (with dust exhauster, adapter 1b). It is used especially as a hand-held machine, but it can also be used in a drill stand (3).

The DME20CW<sup>\*\*\*</sup> is a core drill with water supply. It can only be used when fixed to a drill stand (drilling directed by stand).

The material that is loosened by drilling is washed away by water provided through the diamond core bits (4). The supply of water can be controlled by the ball valve (1a). At the same time, the tool is cooled (wet drilling).

The boring tool (4) consists of a tube with an appropriate tool adapter G ½", or 1 1/4" UNC, and with soldered-on or welded-on diamond segments.

In case of wet drilling it is possible to suck up the water again with a vacuum cleaner through a water-collecting ring (5).

The machine may not be used for a different purpose or with a different tool.



**ATTENTION: Avoid wet drilling upwards (overhead drilling). If it is indispensable use absolutely a perfect, all right and functioning water-collecting ring.**

**Only for DME20PU<sup>\*\*\*</sup>:** By exhausting the removed material through the drill bit and the hose coupling (1b) with a vacuum cleaner, the tool is cooled, too (dry drilling only possible in masonry)

#### 3.1 Technical Data

Type		DME16	DME20
Rated Voltage	V	110	110
Rated Current	A	15	18,6
Power input	W	1600	2000
Power output	W	1080	1340
Frequency	Hz	50 - 60	50 - 60
Rated Speeds (Rated Load)	1/min	580/1400/2900	540/1200/2520
Speed (no load)	1/min	1000/2300/4700	900/1900/3900
Drilling ø drill rig/concrete	mm	15 - 130	20 - 180
Drilling ø hand-held/concrete	mm	15 - 80	20 - 100
Drilling ø hand-held/masonry	mm	20 - 150	20 - 180
Weight	kg	DME16PW <sup>***</sup> : 5,9	DME20/PW/CW <sup>***</sup> : 5,9 DME20PU <sup>***</sup> : 6,3
Tool fixture	G ½", 1 1/4" UNC + G ½"		

#### Operating data

Gear/Speed	1/min	1/580/540	2/1400/1200	3/2900/2520
Release Torque/Safety Clutch	Nm	58	25	12
Core bit diam. concrete	mm	65 - 130	30 - 55	15 - 25
Water volume approx.	l/min	1	0,7	0,5

### 3.2 List of contents

- DME16/20PW\*\*\* - Diamond core drill (1), with ball valve and connect-nipple (1a), handle with clamp ring (1c), PRCD inline protector (1d), carrying case and instructions manual.
- DME20PU\*\*\* - Diamond core drill (1), with ball valve and connect-nipple (1a), tail end (1b), handle with clamp ring (1c), PRCD inline protector (1d), carrying case and instructions manual.
- DME20CW\*\*\* - Diamond core drill (1), with ball valve and connect-nipple (1a), PRCD inline protector (1d) and instructions manual.

### 3.3 Sound emission and vibration acceleration (EN 50144)

The typical A-weighted sound pressure level is 86 dB(A).

The typical A-weighted sound capacity level is 99 dB.

The typical weighted acceleration is <2,5 m/s<sup>2</sup>.

## 4. PREPARATION

Make sure that the machine did not get damaged by the transport. Check that the rated voltage indicated on rating plate conforms with main voltage.

### 4.1 Connection to the power supply

According to the general safety precautions the electric connection of diamond core drills with water supply is on principle to be done by a ground fault current interrupter (GFCI). Likewise, those machines are only to be used at sockets with protective plug reception, earthed according to the regulations.

According to those regulations TYROLIT-HYDROSTRESS core drills with water supply are provided with a PRCD inline protector assembled between the cord.

The PRCD includes a ground fault current interrupter as well as an undervoltage breaker.

The PRCD is ready for service after connecting the electric main by pressing the ON button. If the voltage is disconnected, the PRCD switches off and is, after the voltage returns, to start once more.



**ATTENTION: Do not put the PRCD into water. It is regularly to be checked on perfect functioning by pressing the TEST-key. Never use a core drill without a GFCI being directly connected to the mains connection.**

### 4.2 Water supply

Connect the machine with the water supply by using a GEKA coupling to the Quick Connect Nipple.  
**ATTENTION: maximum water pressure 3 bar.**

Use only clean water because the sealing wears more quickly with dirty water.

If water comes out of the indicator hole the rotary shaft seals are to be replaced immediately.

It is preferable to have this done in an authorized specialist's workshop only.

### 4.3 Installation in the drill stand

In the drill stand, the DME16/20 is fastened by clamping the gearbox (Ø 60 mm). Put the machine into a solidly designed drill stand that is equipped with a clamping ring that exactly fits the machine. Divided clamping devices which do not tighten exactly in the middle of the gear's neck are unsuitable and damage it.

Be careful that the machine's axis is absolutely parallel to the stand column.

#### 4.4 Motor switch (1e) and overload protection

After having switched on the motor starts softly. If the machine is being overloaded, the motor electronic switches over to the pulsating operation for showing the operator the overload. If the force is then not reduced, the motor switches off after a few seconds. After switching the machine off and on again, the motor start again softly.

The motor electronic can temporarily be used on 260 Volt (resp. 140 Volt on 110 Volt machines). Higher voltages however can cause irreparable damages. Please note that when operating the machine via a generator, this does not generate higher voltage peaks.

#### 4.5 Gear changing

The DME16/20 is equipped with a 3-speed gear unit. Please do never change gears forcibly but only when the machine is just coming or has already come to a stop.

#### 4.6 Safety clutch

The integrated safety clutch protects the operator, the machine and the tools against high mechanical overstrain.

**Please notice that the safety clutch is activated after only 2-3 seconds because otherwise the wear and the development of heat increases greatly.**

### 5. OPERATING INSTRUCTIONS

#### 5.1 Diamond core bits

The tool fixture is prepared for standard drill bits with G ½", 1 1/4" UNC.

Combined spindle with female thread G ½" + male thread 1 1/4" UNC. So it is possible to fix tools with G ½" as well as 1 1/4" UNC thread.

The DME20PU\*\*\* is provided with a 1 1/4" UNC spindle. By using the additional adapter (2) it is possible to fix tools with G ½" female thread.

Only use appropriate diamond tools of high quality.

Especially when drilling manually use core bits that cut easily and have a low specific initial pressure.

Take care that the segments jut out sufficiently against the tube.

It is useful to apply some water resistant grease to the thread of your tool so it can be taken off again more easily.

Take care that the radial run out at the diamond segments of the core bits is not more than 1 mm.

Only use suitable wrenches for changing the core bit. Thereby hold the drilling spindle with another wrench.



**Never use a hammer or something similar to open the core bit. If necessary elongate the wrench.**

#### 5.2 Drilling - directed by a drill rig

Since the drill stand is not included in the delivery, we merely want to point out some important things you should note when using the machine.

**Please observe the special instructions for the drill rig.**

##### Kinds for fixing the rig

Fixing the stand using dowels, by vacuum and by a brace.

The mainly applied method to fix the stand is given by using dowels. It is preferable to use metal dowels. The diameter must be at least 10 mm.

When fixing the stand by vacuum, take care that the vacuum is sufficient high.

Make sure the seals are not worn out.

Please take care that the rig is really fixed solid and stable, if by the aid of the adjusting screws at the base plate of the rig the vacuum seal is released.

### 5.3 Drilling - hand held

Open the ball valve and start the machine.

Hold the core drill as rigidly as possible.

Touch the surface you want to work on with the core bit in a slight angle (of about 30° to the axe) or use the start drilling aid (special accessories).

After the bit has worked its way into the object for about 1/8-1/4 of the circle's circumference, turn the core drill up into a right-angled position, using sufficient initial pressure.

Formula: drilling diameter in mm x 8 = contact power in N.

Use especially for bigger core bits a drilling-start aid which helps to keep track for the first few millimeters. This can simply be a wooden plate with a recess in it in the shape of a triangle in which the core bit can be guided.

Take special care that the core bit is directed in a straight way in the drilled hole so it does not block.



**ATTENTION: Please do consider that the machine has a very high torque, especially in the first gear. Therefore, drill manually only extremely concentrated, especially when working in the first gear and with diameters of more than 60 mm. In case of a sudden blocking of the core bit the machine, despite the safety clutch, might get out of control and hurt you considerably. Avoid working positions at face level.**

### 5.4 Dry drilling

In case of dry drilling fix the exhaust hose on the tail end (DME20PU\*\*\*), resp. into the dust exhauster and start the dust exhauster.

**Use by dry drilling absolutely a powerful dust exhauster which's filter doesn't obstruct. Drilling dry is only possible if the masonry is absolutely dry - risk of obstruction.**

Before working dry with the DME20PU\*\*\* in order to avoid obstruction, take care that the inner side of the spindle is absolutely dry.

By the rest proceed as explained in 3.3.

### 5.5 General directions for drilling

Adjust the quantity of water by using the ball valve to such an extent that the loose material gets completely washed out of the drilled hole.

You do not wash out enough material if mud occurs around the drilled hole.

Use sufficient contact pressure. If it is too low the diamonds tend to polish. This means that the feed speed becomes less until finally no material is cleared away any more.

In this case the segments are to "sharpen" again by means of a SiC-grindstone.

Take care that the core bit does not vibrate; otherwise the diamonds are detached by force.

By drilling of reinforcements you might have to use greater initial pressure and the next lower gear.

In case the machine gets stuck do not try to loosen it by switching it on and off. Immediately switch off the machine and loosen the bit by turning an appropriate wrench to the left and right. At the same time, pull the machine out of the drilled hole carefully.

**Take care not to cut a water-pipe or even an electric mains. In case of doubt use a line detector for searching the drilling area.**

## 6. MAINTENANCE



**Always and on principle pull the mains plug before beginning with works of maintenance or repairs.**

Clean the machine after you have finished drilling. Do not forget to clean the core bit thread and grease it.

Clean the machine with a dry or moist cleaning-rag and not with a jet of water. Keep the ventilation apertures clean.

Damaged PRCDs, cords and plugs have to be repaired or exchanged exclusively in an authorized repair station ([www.tyrolit.com](http://www.tyrolit.com)).

## 6.1 Oil-bath lubrication

After the first 100 hours of using the machine you should replace the gear system's oil. Get this done in a specialist's workshop or demand on the appropriate technical documents for this work.

ATTENTION: If oil comes out of the machine, stop working with it immediately. Leakage of oil does damage the gear system.

## 6.2 Carbon brushes

After you have used the machine for about 300 hours you should check the carbon brushes for wear and replace them if necessary. Like any other work on the motor this must be done by an electrical specialist.

## 7. GUARANTEE

This product is covered by a guarantee for a period of 12 months from the date of purchase. The guarantee covers all defects or damages of the product during the guarantee period evidently due the defaults in workmanship or material and is limited to repair and/or adjustment. The guarantee is not valid in case of normally wear and tear, if the product has been misused, used contrary to the instruction manual, or by using extraneous parts.

## 8. DECLARATION OF CONFORMITY

Description: Diamond core drill - for drilling holes in concrete, stone and masonry  
Type: DME16, DME20 (and versions)  
from serial no.: 0110001

We hereby declare under our sole responsibility that this product conforms with the following standards: EN60745-1, EN60745-2-1, EN55014-1, EN55014-2, EN61000-3-2, EN61000-3-3 in accordance to the regulations of directive 2006/42/EG and 2004/108/EG.

TYROLIT Hydrostress AG  
Witzbergstraße 18  
CH 8330 Pfäffikon

Pfäffikon, 29.12.2009  
Roland Kägi, Purchasing Manager



## 9. RECYCLING



According to the European regulation 2002/96/EG we have to take back old machines for departing them by substance and for recycling (see sign on name plate). Please make sure that the old tool does not get into the unsorted municipal solid waste, but that it is given back to us, resp. abroad to our distributors.