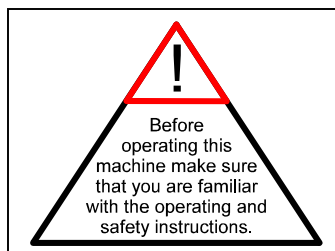


MODEL END 1521 P - CORE DRILL



OPERATING MANUAL



Icons



Warning of general danger



Warning of dangerous voltage



Warning of hot surface



Danger of being crushed



Danger of being ripped or cut

In order to protect yourself, implement the following actions:



Use ear protection



Wear safety goggles



Wear a helmet



Use protective gloves



Wear protective boots

Technical Data**Diamond Wet Drill END 1521 P U**

Rated voltage:	110 V ~
Rated power input:	1500 W
Rated current:	
Order number END 1521 P U:	0311U

Frequency:	40 - 60 Hz
Drilling diameter in concrete (wet drilling):	8 - 22 mm
Thread connection:	M 16
Load speed:	6000 rpm
Protection class:	II
Degree of protection:	IP 20
Net weight:	about 3.9 kg
Interference suppression:	EN 55014 and EN 61000

Subject to technical changes!

Supply

Diamond wet drill with PRCD protective switch integrated in the cable, quick-change adapter, centering device with water collection, 3 guide rings (Ø 12, 14, 18 mm), spare seals, adapter M16f - 5/8" - 11m and operating instructions in a case for transport.

Application for Indented Purpose

The Diamond wet drill END 1521 P U is indented for professional use and may be used only by instructed personnel.

It may be used either with or without an adequate drill rig.

With an appropriate diamond drill bit, the tool may be used for wet drilling of holes of 8 – 22 mm diameter in concrete (also reinforced), natural stone and brickwork.

Safety Instructions



Safe work with this machine is only possible if you read this operating instruction and the safety instructions completely and follow them strictly. Additionally, the general safety instructions of the leaflet supplied with the tool must be observed. Prior to the first use, the user should absolve a practical training.



If the connection cable gets damaged or cut during use, do not touch it, but immediately pull the plug out of the socket. Never use the tool with a damaged connection cable.



When drilling in ceilings or walls make sure you will not cut through electrical mains, gas or water pipes. Use metal detection systems if needed. Before you start working, consult a statics expert to determine the exact drilling position.



The tool must neither be wet nor used in humid environment.

- Do not use the tool in an environment with danger of explosion.
- Do not drill into materials containing asbestos.
- Do not use the tool standing on a ladder.
- Do not carry the tool at its cable, and always check the tool, cable and plug before use. Have damages only repaired by specialists. Insert the plug into the socket only when the tool switch is off.
- Modifications of the tool are prohibited.
- The machine should only work under supervision of somebody. Plug and switch the machine off if it is not under supervision, in case of putting up and stripping down the machine, in case of voltage drop or when fixing or mounting an accessory.
- Switch the machine off if it stops for whatever reason. This way, you avoid that it starts suddenly and not under supervision.
- Don't use the machine if a part of the housing is damaged or in case of damages on the switch, the cable or plug.
- When using the drill, always lead the line cord, extension cable and suction tube backwards away from the machine.
- Electrical tools have to be inspected visually by a specialist in regular intervals.
- When using the drill, cooling water is not allowed to get into the motor and all electrical parts.

- Overhead-drilling only with suitable safety measures (water collection).
- After an interruption of work the machine should only be switched on again if the drill bit can be turned.
- Only use the tool with both hands or on a drill rig.
- Keep the handles dry, clean and free of oil and grease.
- Do not touch rotating parts.
- Persons under 16 years of age are not allowed to use the tool.



- During use, the user and other persons standing nearby have to wear suitable goggles, helmets, ear protectors, protective clothes and boots.
- **During manual operation, always hold the machine with both hands and maintain a safe standing position. Always consider the reaction moment of the machine in case of blockage.**
- **Always work with concentration. Always work in a carefully considered way and do not use the tool when you are not concentrated.**

For further safety instructions please refer to the enclosure!



Electrical Connection

The END 1521 P U is made in protection class II. For protection purposes the machine can only be run with a GFCI. The machine is standard equipped with a PRCD protective switch integrated in the cord which allows to connect the unit directly to a grounded socket.



Attention!

- **The PRCD protective switch must not lay in water.**
- **PRCD protective switches must not be used to switch the tool on and off.**
- **Before starting your work, check the proper function by pressing the TEST button.**

Use only 3-wire extension cable with protecting conductor and sufficient cross-section (see chart). A cross-section which is too small could cause a failure of the machine.

Recommended minimum cross-sections and maximum cable lengths

Mains Voltage	Cross-Section mm ²	
	1.5	2.5
110 V	20 m	40 m
230 V	50 m	80 m

First, check the correspondence between voltage and frequency against the data mentioned on the identification plate.

Voltage differences of + 6 % to – 10 % are allowed.

The machine is equipped with a soft start which prevents that swift automatic circuit breakers are unintentionally triggered.

Additional Handle

For manual operation of the END 1521 P U always use the additional handle. This one has to be attached from ahead on the gearbox neck and tightened by turning the handle.

Switching on and off

Short-Time Operation

Switching-on: press the on/off switch

Switching-off: release the on/off switch

Permanent Operation

Switching-on: press the on/off switch and, keeping it pressed, engage the lock button

Switching-off: press the on/off switch and let it go off again

Attention!

Only press the arrestor button when using a stand. In case of every stop of the machine, the arrestor button has to be released immediately by pressing the on/off switch. Consequently, you can avoid an unintentional restart of the machine (physical hazard).

Water Supply

If the drill bit is not cooled enough with water, the diamond segments heat up and consequently get damaged and weakened. For this reason, always make sure that the cooling system is not blocked.

In order to supply the machine with water, please proceed as follows:

- Connect the tool to the water supply system or a water pressure vessel using the GARDENA connector.
- Always make sure that the machine only runs with enough clear water as the seals get damaged when the machine is running dry.
- Attention! The maximum water pressure should not be more than 3 bar.
- Make sure that the segments are well cooled. If the drilling water is clear, the segments are well cooled.
- Overhead-drilling only with water collection ring.
- In case of frost warning, drain the water system.

Drill Bits

The **END 1521 P U** is equipped with a M 16 external thread. For drill bits with 5/8" external thread use the enclosed adapter and for original Eibenstock drill bits use the mounted quick-change adapter. Pay attention that the diamond segments have enough relief cut toward the drill bit body.

Drill Bit Changing



Attention!

When you use or sharpen the machine, it might heat up enormously. You could burn your hands or get cut or ripped by the segments. Therefore, always use protective gloves when changing the drill bit.

The drill spindle of the **END 1521 P U** has a right-hand thread.
To hold on spindle always use an open-end wrench SW 17.
Never remove the drill bit with impacts because this way the machine will be damaged.
With some waterproof grease which is put on the drill bit thread you can remove the drill bit easier.

While mounting the drill bit of the **END 1521 P U**, firstly the adequate guide ring is pushed into the water collection. Then the drill bit is stuck through the opening of the guide ring (start on the machine side). This way, the collet of the drill bit is put on the quick-change adapter. Consequently, its flutes can be pushed over the grooved pins of the adapter. You can push the drill bit until it stops at the adapter (picture 1) by using an adequate pressure and you can turn it about 90° against the rotating direction of the machine (picture 2). In order to change the drill bit and to remove the drilling core, do it the other way round.



picture 1

picture 2

Using the Core Drill

In order to operate safely, please observe the following instructions:

- Make sure that your work-place is free of anything that might disturb your work.
- Pay attention that your work-place is well-lit.
- Make sure that you keep the conditions concerning the electrical connection.
- When laying the cables, make sure that it cannot be damaged by the tool.
- Make sure that you always can overlook the work-place in a sufficient way and that you always can reach all necessary control elements and safety devices.
- In order to avoid accidents, keep other persons away from your work-place.

Drilling

Preparation

- Before drilling in supporting parts, make sure that you do not disregard the statics. Observe the instructions of the experts who are responsible for the design.
- Make sure that you do not damage any gas mains, water mains or electric cables while drilling.
- Make sure that the drill bit is well fixed.
- Only use tools which are suitable for the particular material.

For the END 1521 P U we recommend the application of the centuring device with water collection (order number 35836). While drilling overhead the application of the water collection is compulsory.

Put the gas pressure spring together with the water collection ring and the guide ring matching the diameter of the drill bit with the clamping clip on the gearbox neck of the machine. Push the gas pressure spring until the segments of the bit are covered by the water collection ring. Tighten the wing screw in the clamping clip.

When drilling overhead, pay attention that you only open the water supply after having switched on and attached the vacuum cleaner on the wall or the ceiling.

Open the ball valve and switch the machine on. Hold the machine with both hands. Attach the machine with a small inclination. After the drill bit has penetrated into the surface (about $\frac{1}{8}$ – $\frac{1}{4}$ of the circumference), put the machine in a 90° angle and continue drilling.

While drilling, especially pay attention that the drill bit does not tilt.

Adapt the feed to the diameter of the drill bit and to the power of the machine.

You have hit reinforced iron when you recognise while drilling that the feed rate gets very low, when you need to use more force, or when the water leaking from the bore hole clearly shows some metal chips. Reduce the pressure on the drill bit to cut through the reinforced iron without any problems. You can increase the pressure again when you have cut through the reinforced iron.

If the drilling machine jams, do not try to solve this problem by switching on and off the machine. This would cause early wear of the safety clutch. Switch off the machine immediately and remove the drill bit by turning left and right with a open-ended wrench. At the same time, pull the machine carefully out of the bore hole.

Drilling – Using the Drill Rig

Ways of Fastening the Drill Rig:

Fastening with dowel

The most common way of fastening is dowel fastening. Use the dowels for concrete or the Rawl-dowels, which is available as special accessories, for the assembly.

Vacuum fastening (not for drilling in walls or ceilings)

When using the vacuum for the fastening, pay attention that there is enough low pressure. Make sure that the seals are not worn. Pay attention that in order not to reduce the vacuum, the levelling screws only can be loosen until a certain point.

Overload Protection

In order to protect the operator, the motor and the drill bit are equipped with an electronic and thermal overload protection.

- | | |
|-------------|---|
| Electronic: | In case of overload due to too large feed force, the electronic will cut OFF the machine. After discharge and switching ON you can continue drilling again. |
| Thermal: | By means of a thermal element, in case of continuous overload, the motor is protected against destruction. In fact, the machine switches OFF automatically and only can be switched ON again after a certain cooling period (about 2 minutes). This cooling period depends on the warming of the motor winding and ambient temperature. |

After Drilling

When you have finished drilling:

- Pull the drill bit out of the hole.
- Stop the motor by using the motor switch and not the PRCD switch.
- Close the water supply.
- Remove the core from the drill bit.

Care and Maintenance



Before the beginning of the maintenance or repair works you have to disconnect the plug from the mains.

Repairs may be executed only by appropriately qualified and experienced personnel. After every repair the machine has to be inspected by an electric specialist.

Due to its design, the machine needs a minimum of care and maintenance. The following works have to be carried out regularly or rather the component parts have to be inspected:

- The power tool as well as the ventilation slots always have to be clean.
- During work, please pay attention that no foreign elements get into the interior of the machine.
- In case of breakdown, a repair has to be carried out by an authorised service workshop.

Noise Emission

The indication of noise emission is measured after DIN 45 635, part 21. The level of acoustic pressure on work site could exceed 85 dB (A); in this case protection means must be used.



Wear ear protectors!

The typical hand-arm vibration is below 2.5 m/s².
Measured values determined according to EN 50 144.

Environmental Protection



Raw Material Recycling instead of Waste Disposal

In order to avoid damages on transportation, the tool has to be delivered in solid packaging. Packaging as well as unit and accessories are made of recyclable materials and can be disposed accordingly.

The tool's plastics components are marked according to their material, which makes it possible to remove environmental friendly and differentiated because of available collection facilities.

Only for EU countries



Do not dispose of electric tools together with household waste material!

In observance of European Directive 2002/96/EC on waste electrical and electronic equipment and its implementation in accordance with national law, electric tools that have reached the end of their life must be collected separately and returned to an environmentally compatible recycling facility.

Behaviour in Case of Breakdown



In case of breakdown, switch the machine off and disconnect the plug from the mains! Works on the electric parts of the tool may only be performed by an electrical specialist.

Trouble Shooting

Error	Possible Cause	Error Recovery
Machine does not work.	mains current supply interrupted	plug in another electric appliance and check the functioning
	line cord or plug damaged	have it checked by an electric specialist and replaced if necessary
	switch damaged	have it checked by an electric specialist and replaced if necessary
motor runs, drill bit does not rotate	gearbox damaged	have the tool repaired by an authorised service workshop
drilling speed too slow	water pressure / water flow rate too high	regulate the water quantity
	drill bit damaged	check if drill bit is damaged and replace it if necessary
	gearbox damaged	have the tool repaired by an authorised service workshop
	drill bit polished	sharpen the drill bit with a sharpening stick while using the flush
motor shuts down	the tool stops	lead the tool in a straight manner
	the tool overheats, overload protection of the motor has reacted	discharge the tool and restart it by pressing the switch a couple of times
water drops out of the gearbox housing	shaft sealing rings damaged	have the tool repaired by an authorised service workshop