

AGP[®]

Ring Saw

R13



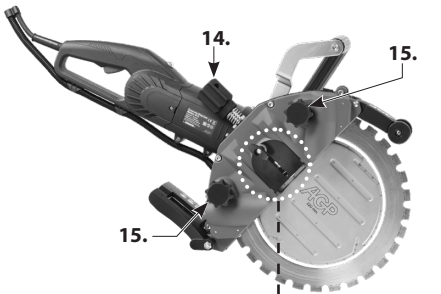
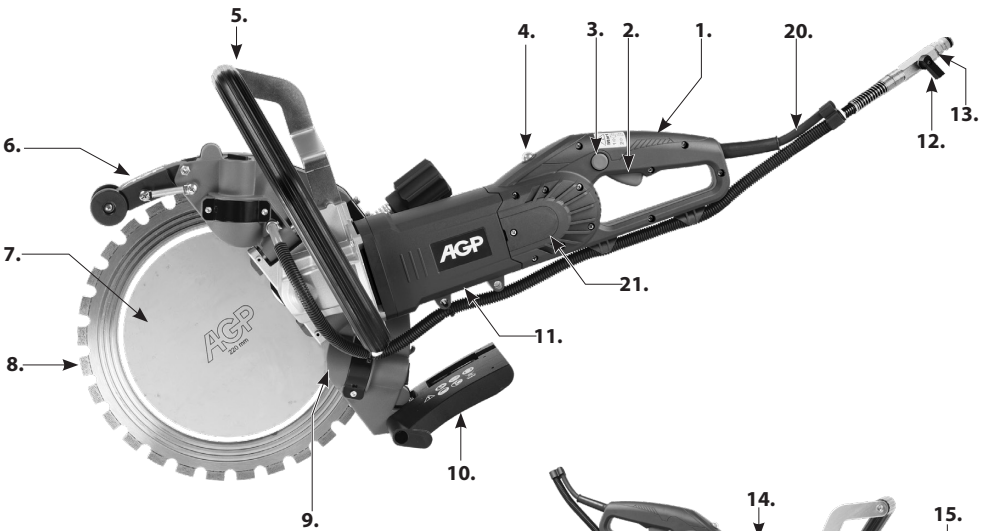
Instruction Manual

CE CB



SPECIFICATIONS

Power	230-240 V: 3200 W (16 A), 220 V: 3000 W (16 A), or 110-120 V: 2800 W (25 A)
Voltage	220-240 V~ 50/60 Hz or 110-120 V~ 50/60 Hz (See Machine Nameplate)
Spindle No Load Speed	14000 min ⁻¹
Blade No Load Speed	2850 min ⁻¹
Linear Speed	49.2 m/s
Blade Diameter	330 mm (13")
Max. Depth of Cut	220 mm (8.7")
Dimensions (incl. blade)	730 x 280 x 450 mm
Weight	12.4 kg (27.3 lb) (not including blade)



- 1.** Main Handle

2. Trigger Switch

3. Release Button

4. Load Warning Lamp

5. Side Handle

6. Upper Splash Guard

7. Water Plate

8. Ringsaw Blade (3-groove type)

9. Guide Wheel

10. Lower Splash Guard

11. Motor
- 12.** Water Feed Valve

13. Water Coupling

14. Drive Tensioner Knob

15. Guide Tensioner Knobs

16. Thumb Knob

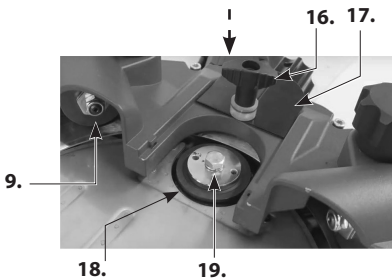
17. Cover Plate

18. Drive Wheel

19. Arbor Bolt

20. Power Supply Cable

21. Brush Cover



GENERAL SAFETY RULES



WARNING! Read all safety warnings and all instructions. Failure to follow the warnings and instructions may result in electric shock, fire and/or serious injury.

Save all warnings and instructions for future reference.

The term “power tool” in the warnings refers to your mains-operated (corded) power tool or battery-operated (cordless) power tool.

1. WORK AREA SAFETY

- a. **Keep work area clean and well lit.** Cluttered and dark areas invite accidents.
- b. **Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust.** Power tools create sparks which may ignite the dust or fumes.
- c. **Keep children and bystanders away while operating a power tool.** Distractions can cause you to lose control.
- d. **Never leave the electric power tool unattended.** Only leave the machine when the tool in use has come to a complete standstill.

2. ELECTRICAL SAFETY

- a. **Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools.** Unmodified plugs and matching outlets will reduce risk of electric shock.
- b. **Avoid body contact with earthed or grounded surfaces, such as pipes, radiators, ranges and refrigerators.** There is an increased risk of electric shock if your body is earthed or grounded.
- c. **Do not expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.
- d. **Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts.** Damaged or entangled cords increase the risk of electric shock.
- e. **When operating a power tool outdoors, use an extension cord suitable for outdoor use.** Use of a cord suitable for outdoor use reduces the risk of electric shock.
- f. **If operating a power tool in a damp location is unavoidable, use a residual current device (RCD) protected supply.** Use of an RCD reduces the risk of electric shock.

3. PERSONAL SAFETY

- a. **Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication.** A moment of inattention while operating power tools may result in serious personal injury.
- b. **Use personal protective equipment. Always wear eye protection.** Protective equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.

- c. **Prevent unintentional starting. Ensure the switch is in the off-position before connecting to power source and/or battery pack, picking up or carrying the tool.** Carrying power tools with your finger on the switch or energising power tools that have the switch on invites accidents.
- d. **Remove any adjusting key or wrench before turning the power tool on.** A wrench or a key left attached to a rotating part of the power tool may result in personal injury.
- e. **Do not overreach. Keep proper footing and balance at all times.** This enables better control of the power tool in unexpected situations.
- f. **Dress properly. Do not wear loose clothing or jewellery. Keep your hair and clothing away from moving parts.** Loose clothes, jewellery or long hair can be caught in moving parts.
- g. **If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used.** Use of dust collection can reduce dust-related hazards.
- h. **Do not let familiarity gained from frequent use of tools allow you to become complacent and ignore tool safety principles.** A careless action can cause severe injury within a fraction of a second.

4. POWER TOOL USE AND CARE

- a. **Do not force the power tool. Use the correct power tool for your application.** The correct power tool will do the job better and safer at the rate for which it was designed.
- b. **Do not use the power tool if the switch does not turn it on and off.** Any power tool that cannot be controlled with the switch is dangerous and must be repaired.
- c. **Disconnect the plug from the power source and/or battery pack from the power tool before making any adjustments, changing accessories, or storing power tools.** Such preventive safety measures reduce the risk of starting the power tool accidentally.
- d. **Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool.** Power tools are dangerous in the hands of untrained users.
- e. **Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use.** Many accidents are caused by poorly maintained power tools.
- f. **Keep cutting tools sharp and clean.** Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.
- g. **Use the power tool, accessories and tool bits etc. in accordance with these instructions taking into account the working conditions and the work to be performed.** Use of the power tool for operations different from those intended could result in a hazardous situation.
- h. **Keep handles dry, clean and free of oil and grease.** Slippery handles do not allow for safe handling and control of the tool in unexpected situations.

5. SERVICE

- a. **Have your power tool serviced by a qualified repair person using only identical replacement parts.** This will ensure that the safety of the power tool is maintained.
- b. **Only use original parts for repair and maintenance.** The use of incompatible accessories or spare parts can result in electric shocks or other injuries.

Symbols used in this manual

V.....volts

A.....amperes

Hz.....hertz

W.....watt

~.....alternating current

nrated speed

min⁻¹.....revolutions or reciprocation
per minute

1Ø.....Single Phase Current



... with electrical earth



.....warning of general danger



.....read these instructions



.....always wear eye protection



.....always wear a dust mask.



.....always wear hearing protection



.....wear safety-approved hard hat



.....DANGER! Keep hands away from cutting area
and the blade.



do not dispose of electric tools, accessories and
packaging together with household waste
material



.....Always use with water cooling

CUT-OFF MACHINE SAFETY WARNINGS

- **The guard provided with the tool must be securely attached to the power tool and positioned for maximum safety, so the least amount of wheel is exposed towards the operator. Position yourself and bystanders away from the plane of the rotating wheel.** The guard helps to protect operator from broken wheel fragments and accidental contact with wheel.
- **Use only diamond cut-off wheels for your power tool.** Just because an accessory can be attached to your power tool, it does not assure safe operation.
- **The rated speed of the accessory must be at least equal to the maximum speed marked on the power tool.** Accessories running faster than their rated speed can break and fly apart.
- **Wheels must be used only for recommended applications. For example: do not grind with the side of cut-off wheel.** Abrasive cut-off wheels are intended for peripheral grinding, side forces applied to these wheels may cause them to shatter.
- **Always use undamaged wheel flanges that are of correct diameter for your selected wheel.** Proper wheel flanges support the wheel thus reducing the possibility of wheel breakage.
- **Do not use worn down reinforced wheels from larger power tools.** Wheels intended for larger power tools are not suitable for the higher speed of a smaller tool and may burst.
- **The outside diameter and the thickness of your accessory must be within the capacity rating of your power tool.** Incorrectly sized accessories cannot be adequately guarded or controlled.
- **The arbour size of wheels and flanges must properly fit the spindle of the power tool.** Wheels and flanges with arbour holes that do not match the mounting hardware of the power tool will run out of balance, vibrate excessively and may cause loss of control.
- **Do not use damaged wheels. Before each use, inspect the wheels for chips and cracks. If power**

tool or wheel is dropped, inspect for damage or install an undamaged wheel. After inspecting and installing the wheel, position yourself and bystanders away from the plane of the rotating wheel and run the power tool at maximum no load speed for one minute. Damaged wheels will normally break apart during this test time.

- **Wear personal protective equipment. Depending on application, use face shield, safety goggles or safety glasses. As appropriate, wear dust mask, hearing protectors, gloves and shop apron capable of stopping small abrasive or workpiece fragments.** The eye protection must be capable of stopping flying debris generated by various operations. The dust mask or respirator must be capable of filtering particles generated by your operation. Prolonged exposure to high intensity noise may cause hearing loss.
- **Keep bystanders a safe distance away from work area. Anyone entering the work area must wear personal protective equipment.** Fragments of workpiece or of a broken accessory may fly away and cause injury beyond immediate area of operation.
- **Hold the power tool by insulated gripping surfaces only, when performing an operation where the cutting accessory may contact hidden wiring or its own cord.** Cutting accessory contacting a “live” wire may make exposed metal parts of the power tool “live” and could give the operator an electric shock.
- **Position the cord clear of the spinning accessory.** If you lose control, the cord may be cut or snagged and your hand or arm may be pulled into the spinning wheel.
- **Never lay the power tool down until the accessory has come to a complete stop.** The spinning wheel may grab the surface and pull the power tool out of your control.
- **Do not run the power tool while carrying it at your side.** Accidental contact with the spinning accessory could snag your clothing, pulling the accessory into your body.
- **Regularly clean the power tool’s air vents.** The motor’s fan will draw the dust inside the housing and excessive accumulation of powdered metal may cause electrical hazards.
- **Do not operate the power tool near flammable materials.** Sparks could ignite these materials.

Kickback and related warnings

- Kickback is a sudden reaction to a pinched or snagged rotating wheel. Pinching or snagging causes rapid stalling of the rotating wheel which in turn causes the uncontrolled power tool to be forced in the direction opposite of the wheel’s rotation at the point of the binding. For example, if an abrasive wheel is snagged or pinched by the workpiece, the edge of the wheel that is entering into the pinch point can dig into the surface of the material causing the wheel to climb out or kick out. The wheel may either jump toward or away from the operator, depending on direction of the wheel’s movement at the point of pinching. Abrasive wheels may also break under these conditions. Kickback is the result of power tool misuse and/or incorrect operating procedures or conditions and can be avoided by taking proper precautions as given below.
- **Maintain a firm grip on the power tool and position your body and arm to allow you to resist kickback forces. Always use auxiliary handle, if provided, for maximum control over kickback or torque reaction during start-up.** The operator can control torque reactions or kickback forces, if proper precautions are taken.
- **Never place your hand near the rotating accessory.** Accessory may kickback over your hand.
- **Do not position your body in line with the rotating wheel.** Kickback will propel the tool in direction opposite to the wheel’s movement at the point of snagging.
- **Use special care when working corners, sharp edges, etc. Avoid bouncing and snagging the**

accessory. Corners, sharp edges or bouncing have a tendency to snag the rotating accessory and cause loss of control or kickback.

- **Do not attach a saw chain, woodcarving blade, segmented diamond wheel with a peripheral gap greater than 10 mm or toothed saw blade.** Such blades create frequent kickback and loss of control.
- **Do not “jam” the cut-off wheel or apply excessive pressure. Do not attempt to make an excessive depth of cut.** Overstressing the wheel increases the loading and susceptibility to twisting or binding the wheel in the cut and the possibility of kickback or wheel breakage.
- **When wheel is binding or when interrupting a cut for any reason, switch off the power tool and hold the power tool motionless until the wheel comes to a complete stop. Never attempt to remove the cut-off wheel from the cut while the wheel is in motion otherwise kickback may occur.** Investigate and take corrective action to eliminate the cause of wheel binding.
- **Do not restart the cutting operation in the workpiece. Let the wheel reach full speed and carefully re-enter the cut.** The wheel may bind, walk up or kickback if the power tool is restarted in the workpiece.
- **Support panels or any oversized workpiece to minimize the risk of wheel pinching and kickback.** Large workpieces tend to sag under their own weight. Supports must be placed under the workpiece near the line of cut and near the edge of the workpiece on both sides of the wheel.
- **Use extra caution when making a “pocket cut” into existing walls or other blind areas.** The protruding wheel may cut gas or water pipes, electrical wiring or objects that can cause kickback.

Cut-Off Machine Safety Warnings - Additional Safety Rules

WARNING: Avoid cutting in the upper quadrant of the blade, especially when beginning the cut. This area is highly likely to lead to kickback.

WARNING: When cutting plastics, do not allow the plastic to melt. If the plastic melts, it can stick to the blade, leading to kickback.

ELECTRICAL CONNECTION

The network voltage must conform to the voltage indicated on the tool name plate. Under no circumstances should the tool be used when the power supply cable is damaged. A damaged cable must be replaced immediately by an authorized Customer Service Center. Do not try to repair the damaged cable yourself. The use of damaged power cables can lead to an electric shock.

WARNING: Never operate a damaged machine. Always tag a damaged machine and take it out of service until repairs can be made.

INTRODUCTION

This machine is equipped with two handles and a blade guard. It has an integrated water feed system as required for diamond cutting. It is equipped with a portable residual current device (PRCD) aka GFCI for electrical safety as well as overload and thermal protection. It must only be used with a diamond blade. It is intended for cutting masonry, stone, concrete, reinforced concrete and similar materials. All other uses are prohibited.

LIST OF CONTENTS

- Ring Saw
- Water Coupling Hose
- Face Spanner Wrench
- T-Handle Box Wrench

ASSEMBLY

- Mount the blade. (See below “Mounting the Blade”)

DIAMOND BLADES

ALLOWED TYPES OF BLADES

This machine may only use diamond ring saw blades.

- Only use either segmented or continuous rim diamond blades.
- If the diamond blades are segmented, the maximum allowable peripheral gap between segments is 10mm and must be with a negative rake angle.
- Only diamond ring saw blades of 13" (330mm) diameter of the 3 groove style may be used.

BLADE STORAGE AND TRANSPORT

Store the machine and blade in such a way that it is protected from being bent or damaged when the machine is not in use.

A damaged blade can cause irregular conditions, which can cause imbalance and result in a hazard.

Always inspect new blades for storage or transport damage.

ABOUT DIAMOND BLADES

Diamond blades consist of a steel core with diamond segments added to its periphery.

Diamond blades are available for different hardnesses of masonry materials, stone, concrete, reinforced concrete, etc.

This machine must always be used with water.

Water will prevent the blade from overheating, greatly reduce the amount of harmful dust created by cutting, remove the slurry from the cut, and extend the life of the blade.

The diamond impregnated segments operate on a principle of controlled erosion. The bond matrix holding the diamonds is continually worn away by abrasion with the workpiece, exposing the harder diamonds to stand proud from the bond matrix. Blades made for cutting harder materials will have a softer bond, allowing the diamonds project more aggressively (but will not last as long). Blades made for cutting softer, abrasive materials will have a harder bond, allowing them to resist the abrasiveness of the material and to last longer. Without enough erosion of the bond matrix (the diamonds not exposed) and the blade becomes dull. This is called glazing. If the blade seems to refuse to cut anymore, it is glazed.

See below: **"Sharpening a Glazed Blade"**

Never use a sharp motion or the blade will be damaged. Conversely, don't feed too gently or the diamond segments will become glazed. Keep the blade steadily working.

Take great care to keep the blade perpendicularly aligned to the kerf. If the blade is crooked, it will easily bind. When cutting reinforced concrete, if embedded steel is encountered, take special care. Reduce the feed pressure by about 1/3 and let the blade go at its own pace, if there is too much vibration the blade may be destroyed. Once the steel is passed, continue normally.

WARNING: Never use blades for cutting a material other than the material they were intended for.

SHARPENING A GLAZED BLADE

Diamond blades may become glazed (dull). Once the diamond segments are glazed, the blade's cutting performance will degrade and the segments will overheat. To sharpen the blade, turn down the water feed and make a few cuts in a very soft, abrasive material such as brick or an alumina oxide or silicon carbide dressing stone.

MOUNTING THE BLADE

First make sure that the machine is unplugged.

1. Loosen the drive tensioner knob fully.
2. Loosen the thumb knob and slide the drive wheel cover plate out of the way. Remove the old drive wheel if it is fitted.
3. Loosen both guide tensioner knobs fully.
4. Fit the blade in position with its grooves facing the male grooves in the left side guide wheels and ensure that the blade is centered.
5. Fit the drive wheel on the spindle with the tapered side facing out. If the drive wheel cannot fit past the water plate, tighten the drive tensioner just enough so that the wheel can fit past the water plate. Fit the flange and turn it so that it aligns with the spindle. Using the face spanner wrench to immobilize the wheel, tighten the arbor bolt using the T-handle box wrench.
6. Tighten one guide tensioner knob, just enough to keep the guide wheel from slipping on the blade. To

test for slipping, use the T-handle wrench on the nut of the guide wheel and turn it back and forth. When the thrust tension is just enough so that the blade follows the guide wheel movement, tighten a further 1/8 turn. **Do not over tension the guide tensioner. Overtensioning will unnecessarily increase the load on the motor and increase wear on the mechanism.** Repeat for the other guide tensioner.

7. Use the T-handle wrench on the arbor bolt and rotate it back and forth while tightening the drive tensioner knob until there is just enough tension so that the drive wheel is turning the blade without skidding. Then tighten a further 1/4 turn. **Do not over tension.**
8. Slide the drive wheel cover plate into position over the drive wheel and tighten the thumb knob.
9. The drive tension will need to be periodically adjusted because, over time, the drive wheel and blade interface will wear. When this happens, tighten the drive tensioner slightly, just enough to keep the blade from slipping.

WARNING: Never adjust the drive tension while the saw is running.

NOTE: Always replace the drive wheel with a new one when replacing a worn blade. The drive wheel and blade wear together and should be replaced as a set.

Inspect the blade before use. It must not be cracked, warped or damaged in any way that would cause a hazard in operation. Loose diamond segments can be ejected at high speed, causing possible injury. Always check that the diamond segments are not under cut. If the diamond segments are thinner or nearly thinner than the blade core, the kerf will be too tight fitting and could easily lead to kickback.

Inspect the blades for segment damage, or any other damage which could cause hazardous operation.

SPLASH GUARDS

The spring-loaded splash guards are useful to help contain slurry which splashes toward the back. The upper guard has an over-center spring which will lock into the fully open position if it is pulled all the way back. The lower guard has a clip which can be used to lock the guard in the fully open position.

WATER CONNECTION

Water is a basic requirement for this tool. The water also serves as a coolant to avoid the working surface of the diamond segments from overheating. Water also keeps down dust and flushes away abrasive particles.

WARNING: Check all connections of the water feed system to ensure there are no leaks. Inspect hoses and other critical parts which could deteriorate.

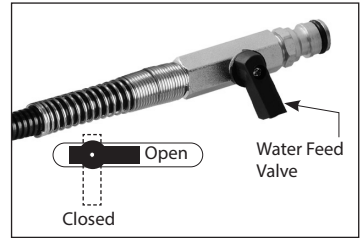
WARNING: The maximum water pressure should not exceed 70 psi (4 bar).

Note: Use a wet vacuum to collect cooling water if nearby objects could be damaged by water.

WATER FEED VALVE

The water flow is controlled by the water feed valve. The water to the blade may be finely adjusted to the required amount.

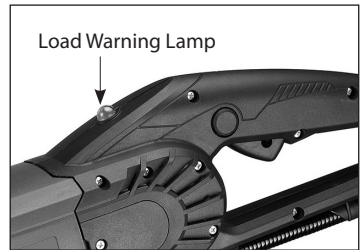
NOTE: Contaminants in the water supply can easily plug up the fine water nozzles in the blade guard. Ensure that the supply water is clean. If you find that there is no water flow to the blade, then clean out the water feed system on the machine with compressed air.



OVERLOAD PROTECTION, OVERHEAT PROTECTION

Overload & Load Warning Lamp

When full load is reached, the load warning lamp will flash red. If full load is exceeded and sustained for too long, the motor will shut down and the load warning lamp will glow solid red. In this case, the motor must be first shut off and then restarted. When this happens, the motor will very likely be near overheating, so it is also a good idea to run the motor at no load for a few minutes to cool it before continuing.



Overheat Thermal Protection

If the temperature of the motor gets too high, the thermal protection will shut the motor down. The switch must be first shut off and then restarted. When this happens, do not immediately start cutting after restarting the motor. Always run the machine at no load for a few minutes to return to a normal operating temperature before continuing.

CAUTION: The motor will be damaged if it is repeatedly overloaded or overheated. Always cool the motor by running at no load for a few minutes whenever it stops from either overheat or overload.

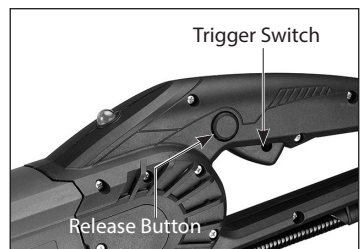
SET UP

- Connect the water supply
- Check for water leaks
- Connect to the power supply

THE SWITCH:

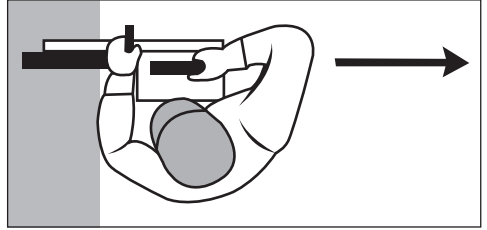
To start the machine, first press the Release Button, then press the Trigger Switch.

To stop the machine, release the Trigger Switch.



HOW TO HOLD THE MACHINE

- Always hold the machine with both hands, with the right hand on the main handle and with the left hand on the side handle. (This applies even if the operator is left-handed)
- Do not stand directly in line with the blade. Rather, stand in such a way that, if it kicks back, you will not be in the path of the blade.
- Never lean over the blade path. That would put your body in line with the blade if it kicks back.
- Do not cut above shoulder height.
- Never cut while standing on a ladder or other unstable platform.

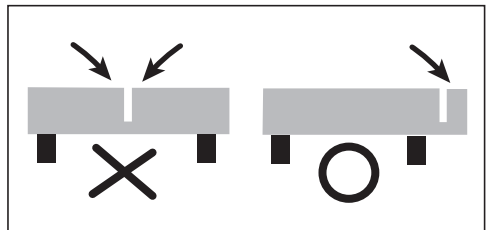


BEFORE CUTTING

- Check the area where the cut is to be made to ensure that it is clear of objects which could cause the operator to stumble.
- Before cutting, it is sometimes useful to mark the line of cut with chalk or the like. For straight cutting, a wood plank is also useful in guiding the machine to make a straight cut.
- Ensure that all bystanders are at a safe distance.
- Ensure that all safety equipment is in place.

PROPER SUPPORT FOR THE WORKPIECE

- Support the workpiece on in such a way that the kerf will not pinch down on the blade.
- Secure the workpiece so that it will not roll, slip away or move due to vibration while cutting
- The cutting sequence is important when making cutouts. Always make the last cut in a way that avoids the blade being pinched. Thus, make the bottom horizontal cut first, then the sides and finally make the top horizontal cut last.
- Make note of the weight of the workpiece and the direction which it will fall when it is cut through.
- Whenever there is a situation where severing the workpiece will cause a hazardous situation, leave a tab of material intact and finish off the operation with a chisel or the like.



CUTTING TECHNIQUE

- Holding the machine with both hands to resist the start up torque, press the release button and then squeeze the trigger switch.
- Allow the machine to reach full speed before contacting the workpiece.
- Adjust the water flow as needed by turning the water feed valve.
- Then gently begin the cut with the rear portion of the blade until the kerf is established.
- It's a good idea to pre cut a guiding groove using a conventional circular diamond saw with a wide kerf blade before proceeding to make the main cut with the ring saw. This will save wear on the ring saw blade. Take care to avoid the blade being pinched.
- In round workpieces, the best technique is to use a slow, uniform back and forth motion while cutting with the bottom quadrant of the blade.
- Never side load the blade in the kerf.

STOPPING

Release the trigger to stop the machine. After the trigger is released, the blade will continue spinning for a short time.

WARNING: Do not set the machine down until the blade has stopped turning.

DAILY MAINTENANCE

Keep the machine clean

Check to ensure that the power supply cable is in good condition.

Ensure all screws are tight.

Check the condition of all safety equipment such as the blade guard

Check the blade for damage.

CARBON BRUSHES

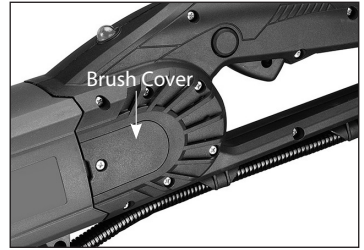
The carbon brushes are a normal wearing part and must be replaced when they reach their wear limit. This machine is equipped with auto-stop carbon brushes. If the machine comes to a stop unexpectedly, the brushes should be checked. The auto-stop brush design protects the motor by stopping the machine before the carbon brushes are completely worn out.

Caution: Always replace the brushes as a pair.

TO REPLACE

1. Remove the screw and remove the brush cover.

2. Using pliers rotate the brush spring out of the way and slide the old carbon brush out of the brush holder.
3. Unscrew the screw to remove the brush lead. The old carbon brush may now be lifted away.
4. Install a new brush. Installation is the reverse of removal.
5. Replace the brush cover.



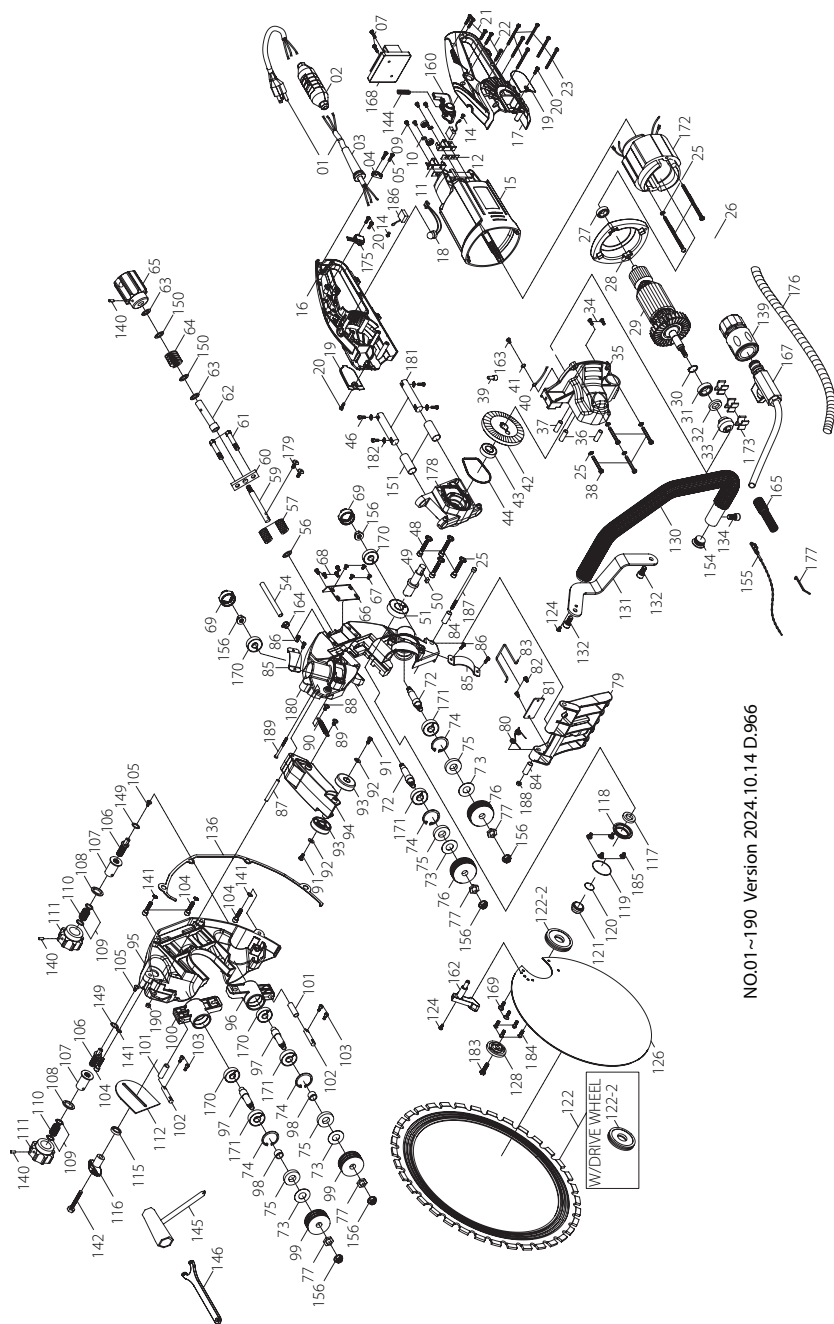
If the replacement of the power supply cord is necessary, this has to be done by the manufacturer or their agent in order to avoid a safety hazard.

WARNING: All repairs must be entrusted to an authorized service center. Incorrectly performed repairs could lead to injury or death.

Do not throw electric power tools into the household waste!

In accordance with the European Directive 2002/96/EG on Waste Electrical and Electronic Equipment and transposition into national law, used electric power tools must be collected separately and recycled in an environmentally friendly manner.

EXPLODED VIEW



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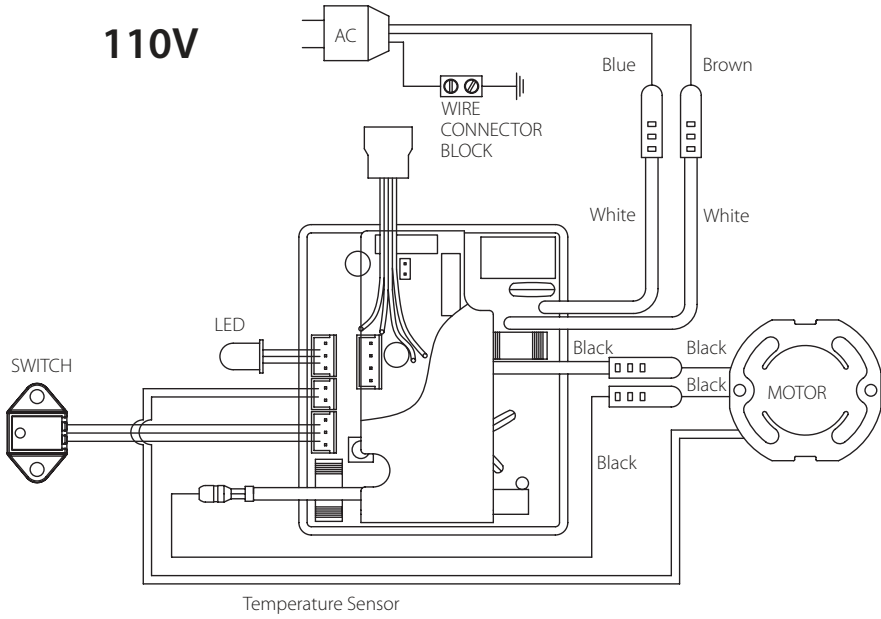
PARTS LIST

NO.	Parts Name	Q'ty	NO.	Parts Name	Q'ty
1	POWER SUPPLY CABLE (VDE-1.5x3Cx3M-H07RNF)	1	50	PARALLEL KEY (5 x 5 x 12)	1
2	PRCD INTERRUPTER PROTECTION (220V)	1	51	BALL BEARING (6203)	1
3	CORD ARMOR	1	56	SEAL (Ø9.7 x Ø16 x 1.5)	1
4	CABLE CLIP	1	57	COIL SPRING	2
5	PANHEAD TAPPING SCREW (M4 x 14)	2	59	DRIVE ADJUSTOR SCREW	1
7	PANHEAD TAPPING SCREW (M4 x 16)	2	60	DRIVE ADJUSTOR PLATE	1
9	PANHEAD TAPPING SCREW (M4 x 16)	4	61	POSITIONING SCREW	2
10	BRUSH SPRING (0.4 x 4 x 3T)	2	62	ADJUSTOR SLEEVE	1
11	CARBON BRUSH HOLDER (7 x 17)	2	63	GASKET	2
12	INSULATION PLATE (10 x 38 x 1)	2	64	COIL SPRING	1
14	TRUSS HEAD MACHINE SCREW (M4x6xP0.7)	2	65	KNOB	1
15	MOTOR HOUSING	1	66	COVER PLATE	1
16	HANDLE HALF-RIGHT	1	67	FLAT HEAD MACHINE SCREW (M4x10xP0.7)	4
17	HANDLE HALF-LEFT	1	68	SOCKET CAP SCREW (M5-0.8 x 12)	4
18	LED INDICATOR LIGHT	1	69	PLUG	2
19	BRUSH CAP	2	72	GUIDE ROLLER AXLE	2
20	PANHEAD TAPPING SCREW (M4 x 12)	4	73	RETAINING PLATE	4
21	PANHEAD TAPPING SCREW (M4 x 20)	3	74	INTERNAL CIRCLIP (R-32)	4
22	PANHEAD TAPPING SCREW (M4 x 25)	2	75	OIL SEAL (Ø15 x Ø32 x 7)	4
23	PANHEAD TAPPING SCREW (M4 x 50)	6	76	GUIDE ROLLER	2
25	SPRING WASHER (M5)	10	77	HEX WASHER	4
26	PANHEAD TAPPING SCREW (M5 x 90)	2	79	LOWER SPLASH GUARD	1
27	BALL BEARING (6200)	1	80	TORSION SPRING	1
28	FAN BAFFLE	1	81	RETAINING PLATE	1
29	ARMATURE (220V-100 x 54.1 x 75)	1	82	PANHEAD TAPPING SCREW (M4x12)	4
30	EXTERNAL CIRCLIP (S-15)	1	83	CLIP	1
31	BALL BEARING (6202)	1	84	SLEEVE (Ø8xØ10x25)	2
32	OIL SEAL (Ø15 x Ø25.4 x 4.6)	1	85	MOUNTING STRAP	2
33	BEVEL PINION GEAR (M1.5 x 16T)	1	86	SOCKET CAP SCREW (M4-0.7 x 10)	4
34	TRUSS HEAD MACHINE SCREW (M4-0.7 x 8)	2	87	SLEEVE (Ø6xØ8x38.5)	1
35	GEAR CASE	1	88	TRUSS HEAD MACHINE SCREW (M5-0.8 x 8)	1
36	SPRING PIN (Ø5 x 20)	2	89	TRUSS HEAD TAPPING SCREW (3/16x3/8)	1
37	PIVOT PIN	1	90	SPRING	1
38	PANHEAD TAPPING SCREW (M5x35)	4	91	TRUSS HEAD TAPPING SCREW (M5x12)	2
39	CRIMP CAP CONNECTOR (C4)	1	92	FLAT WASHER (Ø5 x Ø12 x 1)	2
40	WIRE LEAD (1007-20#35CM)	1	93	WHEEL	2
41	EXTERNAL STAR WASHER (M4)	1	94	UPPER SPLASH GUARD	1
42	BEVEL GEAR (M1.5 x 30T)	1	95	MAIN HOUSING-RIGHT	1
43	BALL BEARING (6002)	1	96	TENSION ROLLER CARRIER-LOWER	1
44	GASKET	1	97	TENSION ROLLER AXLE	2
46	SOCKET CAP SCREW (M4-0.7 x 25)	4	98	BUSHING	2
48	SOCKET CAP SCREW (M5x55xP0.8)	4	99	TENSION ROLLER	2
49	SPINDLE	1	100	TENSION ROLLER CARRIER-UPPER	1

NO.	Parts Name	Q'ty	NO.	Parts Name	Q'ty
101	SLEEVE	2	146	LOCK NUT WRENCH (30MM)	1
102	PIVOT PIN	2	149	FLAT WASHER (Ø4xØ10x1)	2
103	SOCKET CAP SCREW (M4x20xP0.7)	4	150	FLAT WASHER (1/2"xØ23x2)	2
104	SOCKET CAP SCREW (M6x30xP1.0)	4	151	SLEEVE	2
105	OVAL HEAD SOCKET SCREW (M4x10xP0.7)	2	154	PLUG	1
106	TENSION ADJUSTOR SCREW	2	155	ZIP TIE (KTV-150BK)	1
107	TENSION ADJUSTOR SLEEVE	2	156	CONICAL WASHER NUT (M8)	6
108	GASKET	2	160	SWITCH ACTUATOR (LOCK-OFF)	1
109	FLAT WASHER (Ø18 x Ø22 x 1)	4	162	WATER MANIFOLD	1
110	SPRING (Ø1.7xØ18.5xØ21.9x31x25L)	2	163	TRUSS HEAD MACHINE SCREW (M4x6xP0.7)	1
111	KNOB	2	164	CLIP	1
112	COVER PLATE	1	165	SPRING	1
115	PU WASHER	1	167	WATER FEED CONNECTOR KIT	1
116	HAND KNOB	1	168	ELECTRONICS UNIT (220V)	1
117	OIL SEAL	1	169	FLAT HEAD TAPPING SCREW (M4x14)	2
118	BEARING PLATE	1	170	BALL BEARING (6200)	4
119	O-RING	1	171	BALL BEARING (6201)	4
120	O-RING	1	172	STATOR (220V-100x54.1x75)	1
121	SPACER	1	173	HOSE JOINER (Ø10xØ14.4)	3
122	BLADE SET	1	175	HALL EFFECT SWITCH	1
122-2	DRIVE WHEEL	1	176	CABLE PROTECTOR (Ø10x113CM)	1
124	SOCKET CAP SCREW (M4x12xP0.7)	2	177	ZIP TIE (2.5x200MM)	1
126	WATER PLATE	1	178	GEAR PLATE	1
128	FLANGE	1	179	TORX FLAT HEAD MACHINE SCREW (M5x20)	2
130	SIDE HANDLE	1	180	MAIN HOUSING-LEFT	1
131	BRACKET	1	181	SHAFT	2
132	SOCKET CAP SCREW (M8-1.25 x 16)	2	182	LOCK WASHER (M4)	4
134	SOCKET CAP SCREW (M8x35xP1.25)	1	183	ARBOR SCREW (M8xP1.25)	1
136	MOLDED GASKET	1	184	TORX FLAT HEAD MACHINE SCREW (M4x10)	4
139	WATER COUPLING (1/2")	1	185	TORX TRUSS HEAD MACHINE SCREW (M5x10)	4
140	ROLL PIN (Ø4x35)	3	186	CARBON BRUSH (7x17x19)(220V)	2
141	LOCK WASHER	4	187	SOCKET CAP SCREW (M8x110xP1.25)	1
142	HEX BOLT (M6x40xP1.0)	1	188	NYLOCK NUT (M8xP1.25)	1
144	SPRING (Ø1.0xØ6xØ8x81x26L)	1	189	TRUSS HEAD SOCKET CAP SCREW (M6x60xP1.0)	1
145	T-WRENCH	1	190	NYLOCK NUT (M6xP1.0)	1

WIRING

110V



220V

