

Volume

1.4

OPERATIONAL MANUAL

MODEL: 10"Z1/RB CORE DRILLING MACHINE



by BLUEROCK® Tools



UNPACKING THE ITEM

CAUTION: This machine is packed together with items that may be sharp, oily and overly heavy objects. Remove the machine from the packaging in a safe manner. Check to ensure all accessories are included with the item while unpacking. If any parts are found to be missing, contact the retailer as soon as possible. Do not throw away the packaging until the item is out of the guarantee period. Dispose of the packaging in an environmentally responsible manner. Recycle if possible. Keep all plastic bags away from children due to risk of suffocation.



WEEE - Waste Electrical & Electronic Equipment. Note this machine should be disposed of as electrical & electronic waste.

SLURRY DISPOSAL

NOTE: It is recommended to dispose of the drilling slurry (the muddy/dusty water material) in an environmentally responsible manner. The disposal of slurry directly into sewage systems, sewers, lakes, rivers, or direct earth without treatment can be environmentally harmful and possibly illegal. Ask your local public authorities about current regulations in your area.

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Safety

DO NOT USE THIS MACHINE UNLESS YOU HAVE READ THE OPERATING INSTRUCTIONS!



Safety glasses must be worn at all times in work areas.



Appropriate footwear must be worn.



Safety gloves should be worn at all times and jewelry must not be worn.



Hard-hat must be worn while using machine.



Read operational manual prior to use.



Long and loose hair must be contained.



Close fitting/protective clothing must be worn.



Hearing protection should be worn when using this machine.



Dust mask must be worn while using this machine.

PRE-OPERATIONAL SAFETY CHECKS

- Examine the power cord and plug for damage. This tool is supplied with a ground plug and must always be used with a properly grounded circuit.
- Examine the body of the machine and inspect for damage or defects.

OPERATIONAL SAFETY CHECKS

- ONLY to be operated by qualified personal who have read instructions.
 - NOTE: Failure to read and follow instructions could result in electrical shock, fire, property damage and/or serious injury!
- DO ensure all non-essential people are clear of the immediate work area.
- DO be attentive at all times. Keep your eye on the work piece. Always be in a sensible state of mind and do not use the machine if you cannot fully concentrate.
- DO keep body parts, clothing & power cords clear of turning/cutting pieces. Stay alert and use common sense when using this tool.
- DO allow machine to reach operating speed before starting a hole.

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➤ DO unplug machine while changing or adjusting cutting bits so as not to accidentally turn machine on.
➤ DO remove adjusting wrenches prior to turning the machine on.
➤ DO guard against electric shock by only operating this tool on a properly functioning GFCI (Ground Fault Circuit Interrupt) circuit.
➤ DO be mindful that power tools can expose an operator to vibrations transmitted through contact with the machine. Prolonged exposure can lead to medical issues which should be discussed with a medical professional.
➤ DO tie in a drip loop in the power cord to prevent water from running into the power receptacle.
➤ DO use a dust extraction system for cutting materials that create dust. The operator should also wear a protective respiratory device.
➤ DO NOT make adjustments to machine while the machine is running.
➤ DO NOT switch off the machine when it is under load, except in an emergency.
➤ DO NOT remove or modify grounding plug. Only to be used on a properly grounded GFCI circuit.
➤ DO NOT leave the machine running when not in use.
➤ DO NOT hold the work piece by hand or using body. Always mechanically clamp or secure work piece.
➤ DO NOT allow operator to make contact with grounded surfaces such as metal objects.
➤ DO NOT allow liquids to enter the machine's ventilation system.
➤ DO NOT operate machine outside of machine specifications.
➤ DO NOT touch moving parts while the machine is running as death or dismemberment could occur.
➤ DO NOT operate machine overhead (Inverted) when drilling "wet" type cores.
➤ DO NOT remove machines electrical components while connected to a power source. Only to be removed for service by qualified personal and put back on the machine after service is complete.
➤ DO NOT allow children or untrained personal to operate machine.
➤ DO NOT use this machine in the rain or a wet environment.
➤ DO NOT operate in the presence of explosive materials as power tools create sparks which may ignite dust or fumes.
➤ DO NOT drill into an area that may contain a live electrical wire/circuit.
➤ DO NOT use this machine without safely securing to the work piece being drilled.
➤ DO NOT use full water pressure when drilling with "wet" type bits! You only need minimal water to drill with these machines. Extreme water pressure can cause water to enter the gearbox!
➤ DO NOT operate this machine on a lower voltage as it may result in reduced power level and the machine could become unstable while cutting. This could also limit the motor life.

- NOTE: Use of long small gauge power extension cords can result in decreased voltage. As local voltages can vary, it may be a good idea to test the voltage at the end of the extension cord to ensure proper voltage requirements are met. You might also consult an electrician to make sure the length of cord matches up with the proper wire gauge for this size motor. Make sure to use outdoor cords when operating outdoors.

HEALTH WARNINGS

- Certain dust created by drilling contains chemicals known to cause cancer, birth defects or other reproductive harm. The examples of these chemicals are below:
 - Lead from lead based paint.

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- Crystalline silica from bricks, cement and assorted masonry products.

- TO REDUCE RISK OF EXPOSURE TO THESE CHEMICALS, WORK IN A WELL VENTILATED AREA WITH VACUUM SYSTEMS, RESPIRATORS AND WITH ALL SUITABLE SAFETY EQUIPMENT.

BLUEROCK® TOOLS

Specifications

ELECTRICAL DATA	
Voltage	110V, 50-60Hz, Single Phase
Current	21.6 Amps (30A Circuit Use Recommended)
Motor Size	2600W
Power Connection	US Standard 3 Prong Type B Plug

MECHANICAL DATA	
Cutter Range	1" to 10" Max Diameter (255mm)
Cutting Speed	460/900 RPM Two Speed Gearbox 1) Gear 2 (900 rpm) for 1"-4" Holes 2) Gear 1 (460 rpm) for 4"-10" Holes
Tool Holder	Direct Arbor 1-1/4" 7 UNC Spindle
Safety Clutch	Yes
Water hose and Valve	Yes
Large Rolling Base	Yes
Travel	21"
Stand Height	31.5"

SHIPPING DATA	
Shipping Weight	78 Lbs
Shipping Carton	40" x 20" x 17"

Included Accessories

DESCRIPTION	QTY
Instruction Manual	1
Wrenches	2
Feed Handle	1
Water Hose and Valve	1
Top Bolt for Binding in Ceilings	1
Hex Wrench	3
Spare Brushes (set)	1
Black Frame Handle	1

Note

UPON RECEIPT, CHECK CAREFULLY TO ENSURE THAT THE MACHINE IS IN GOOD CONDITION AND HAS ALL ACCESSORIES LISTED ABOVE.

Additional Available Accessories

Additional accessories for this machine can be found in BLUEROCK® Tools online shop at www.bluerocktools.com or from your local retailer.

<i>DESCRIPTION</i>
1" Wet Coring Bit
1.25" Wet Coring Bit
1.5" Wet Coring Bit
1.75" Wet Coring Bit
2" Wet Coring Bit
2.5" Wet Coring Bit
3" Wet Coring Bit
3.5" Wet Coring Bit
4" Wet Coring Bit
4.5" Wet Coring Bit
5" Wet Coring Bit
6" Wet Coring Bit
7" Wet Coring Bit
8" Wet Coring Bit
9" Wet Coring Bit
10" Wet Coring Bit
1" Dry Coring Bit
1.25" Dry Coring Bit
1.5" Dry Coring Bit
1.75" Dry Coring Bit
2" Dry Coring Bit
2.5" Dry Coring Bit
2.75" Dry Coring Bit
3" Dry Coring Bit
3.5" Dry Coring Bit
4" Dry Coring Bit
5" Dry Coring Bit
1-1/4" 7 UNC to 5/8" 11 UNC Core Bit Adapter
10" Extension Rod
12" Extension Rod
18" Extension Rod

Operations

Note

THOROUGHLY READ THROUGH THE ENTIRE MANUAL BEFORE OPERATING THIS MACHINE!

PURPOSE

- The purpose of the 10"Z1/RB Core Drill is to drill through masonry, concrete or other mineral rock types using annular coring bits.
- These drills are designed to be bolted to the drilling surface through their base.
 - NOTE: Make sure the base fits completely on the surface and the base is securely fastened using wedge anchors to bolt to the surface.
- These machines can be used vertically, horizontally or overhead (inverted) provided an acceptable work environment. NOTE: For safety, when drilling horizontally or overhead a safety chain/strap should always be used.
 - CAUTION: If drilling overhead you are only permitted to use dry type core bits with a vacuum system. "Wet" type holes overhead would allow water into the motor and create an extremely dangerous situation.

OPERATIONAL PRINCIPLES

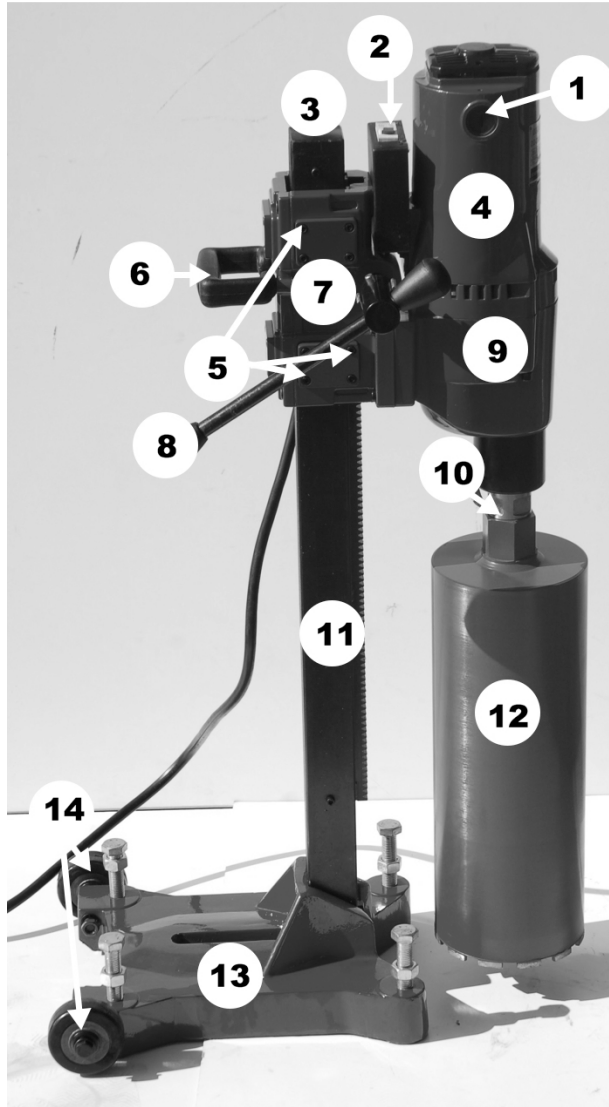
- The main drilling shaft rotates in a forward clockwise direction. The main drilling motor connects to the tool spindle to make contact with a surface and slowly bore a hole. Using the feed handles on the side of the drill, the user can raise or lower the drilling motor.
- These drills are ONLY to be used with diamond impregnated coring bits.
 - When drilling with "wet" type bits, the bit ends pulverizes the material and the water brings the material out of the cut.
 - When drilling with "dry" type bits, the bit end pulverizes the material and dust brings the material out of the cut.

MACHINE COMPONENTS

- The main components of the 10"Z1/RB are the spindle, gearbox, motor, carriage, drill stand and wheeled base. The spindle is driven by the transfer case and the motor.
 - These components must not be removed except by a qualified technician. Power must be disconnected prior to any service.
- This machine has one primary adjusting point for the travel between the drill carriage and the drill stand. The main way to increase or decrease the users ability to move the drill by hand is with this system. These

10" Z1RB CORE DRILL

are the black hex bolts on the side and back of the machine that have a locking nut around them. These are generally used to tighten up the travel as the slides wear over time. Be mindful to evenly adjust these so that the travel is even and smooth. The ideal travel generally keeps the drill in place when the user is not using the drill (this is usually on the tighter side) although individual users needs may vary. The side black carriage bolt can also be used for temporarily locking the carriage in place.



- | |
|-------------------------------------|
| 1) Motor Brush Holder |
| 2) Motor On/Off Switch |
| 3) Top Bolt for Binding in Ceilings |
| 4) Drill Motor |
| 5) Carriage Adjusting Bolts |
| 6) Black Frame Handle |
| 7) Drill Carriage |
| 8) Feed Handle |
| 9) Gearbox |
| 10) Spindle |
| 11) Drill Stand |
| 12) Coring Bit (not included) |
| 13) Stand Base |
| 14) Base Wheels |

TRANSPORTING THE MACHINE

- When transporting the machine, always use two hands.
- DO NOT transport the machine with bits in the spindle.
- When using the wheels, tilt the machine back towards the operator and once the wheels are engaged with the ground pull or push the machine on the ground.
- If transporting inside a vehicle, it is recommended to transport it on its side so as to avoid the item falling over.
- DO NOT carry/pull the machine by the cord.
- DO NOT allow the cord or plug to drag along the floor when transporting.

RUNNING THE MACHINE

- Do all pre-operational and operational safety checks from Chapter 1.
- Consider your security and stability as well as the orientation of the machine in the work area.
 - Consider the work surface material, condition, strength, density and rigidity. These factors directly affect the tools efficiency.
- Secure the machine base to the work surface by using a wedge anchor or other method to ensure the base does not move.
- Use the four leveling bolts on the corners of the base to level the machine.
- After placing the machine in work area, connect a safety chain or strap if necessary.
 - The safety chain should attach to the machine (preferably through the carrying handle or O bolt) as well as attached to the work area in such a manner that prevents the machine from detaching or falling from the work area.
- Ensure the feed handles are securely attached to the feed spindle.
- Ensure the work surface is free of debris, oil, etc.
- Select and set up fluid delivery method or dust system.
- Select the gear you will be using.
 - Do not force the gear shifter when changing between gears. There is a neutral position between gear 1 and gear 2.
 - Change gears when the machine is stopped or almost stopped.
- If using the machine horizontally with the water system, connect hose to the side of the machine using the connector.
 - This connector takes standard 3/4" US garden hose hookup.
 - Make sure the water valve is in the off position.
 - This is generally at a 90 degree angle from the valve hose.
 - Partially turn the water spigot on (usually half a turn).
 - **CAUTION: DO NOT** turn the hose on fully! You need sufficient water when using wet type bits. Using too much water pressure can cause the bits to not cut properly as well as water entering the gearbox.
- Select appropriate size cutting bit. See section below for details on securing bit.
- Check that the machine is firmly attached to the work area.
- Plug the machine into power source.
 - Form a loose knot in the power cord close to the plug connection to prevent fluid from running down the cord and into the power receptacle.
- Turn feed handle raising the cutter until the bit is above the work surface.
- Open the water valve to allow water to come out to the work surface.
- **ATTENTION: BE AWARE THESE MACHINES ARE EXTREMELY POWERFUL. THEY HAVE A TREMENDOUS AMOUNT OF TORQUE WHICH MIGHT NOT BE SUITABLE FOR ALL POTENTIAL USERS. ESPECIALLY IN LOW GEAR AND WITH LARGER BITS. DESPITE THE SAFETY CLUTCH, THESE DRILLS CAN STILL INJURE THE USER. IF IN DOUBT, CONTACT A PROFESSIONAL FOR ADVICE.**
- Turn the machine on by flipping the breaker switch to the "on" position.

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➤	Very slowly engage the cutting bit with the material surface by lightly engaging the hand crank down towards the material.
○	NOTE: During the initial stages of contact the bit may wander.
➤	After about 1/8" of cutting has been achieved in the work surface, slightly more force can be applied. This will be the normal amount of force the rest of the hole.
○	NOTE: Do not force the hole. Let the machine do most of the work. Excessive physical effort should be avoided as it can cause damage to the machine or the user.
○	If the unit jams in a hole, stop the drill immediately to prevent injury. Disconnect the drill from the power supply and loosen the cutter by turning drill spindle counterclockwise. Never attempt to free bit by starting motor!
▪	After an interruption in drilling, make sure the drill bit is free and turns before restarting the hole. Be very careful at this point to make certain the drill does not bind when restarting.
➤	Make sure to keep the cutting material lubricated.
➤	Ease up on feed pressure as the cutter starts breaking through the backside of the material.
○	Be certain all is clear on the output side of this core to prevent injury to persons or property.
➤	Finish drilling the hole.
➤	Turn the motor off and disconnect power once the drill is safely back up in the non-drilling position.
➤	Turn water valve off.
➤	Unbolt the wedge anchor.
➤	Disconnect safety chain/strap and move the drill to a new drilling location.

INSTALLING CORING BITS

➤	WARNING: Core bits can be sharp and should only be handled with gloves so as not to cut the user during installation or removal.
➤	Check that the bits are not damaged.
○	Coring bits that are damaged should not be used.
➤	Make certain the machine is unplugged from power.
➤	Raise the drill motor to ensure ample room to install the bit.
○	Apply grease to the spindle thread to prevent corrosion and allow easier core bit removal.
➤	Insert the coring bit and screw it onto the drill spindle.
➤	Tighten the bit until fully tightened.
○	Use wrenches that fit the spindle and coring bit to fully tighten.

Chapter 4

Troubleshooting

Note

SERVICING SHOULD ONLY BE DONE BY A QUALIFIED TECHNICIAN.

DON'T FORGET TO UNPLUG POWER TO UNIT PRIOR TO SERVICE!

PROBLEM	SOLUTION
Motor does not turn on.	<ol style="list-style-type: none"> 1) Check external power source (extension cord, breaker, etc). 2) Loose internal wire. Check and secure if necessary. 3) Motor brushes defective. Replace if necessary. 4) Check to ensure the motor on/off switch is operable. Replace if necessary.
Excessive sparking when motor is running.	<ol style="list-style-type: none"> 1) This may indicate the presence of debris in the motor or worn out carbon brushes. Check the brushes for unusual wear and replace if necessary. Clean out the internal motor armature if necessary. 2) Armature has a rough edge. Inspect and replace if necessary.
Hole is not cutting.	<ol style="list-style-type: none"> 1) Cutting bit is dull. Replace bit. 2) Work area material is not appropriate for bit type.
Bit is jammed while coring.	<ol style="list-style-type: none"> 1) Debris is lodged between core hole and bit. Rotate bit in both directions to and inspect bit for debris. 2) Make sure stand is secured to work surface.
Coring speed has reduced.	<ol style="list-style-type: none"> 1) Bit has hit rebar. Adjust feed control to prevent motor overload while cutting through rebar. 2) Diamonds on bit have glazed over. Deglaze bit or dress diamond rim on bit and check water flow rate. 3) Diamonds on bit have worn away. Replace core bit. 4) New core bit. Core at slow rate with new bits for 2-3 coring cycles. 5) The safety clutch is slipping. Tighten clutch. 6) Drilling progress is prevented by an accumulation of dust. Use suitable vacuum cleaner. 7) Water flow rate is too low. Increase water flow. 8) Core is stuck in the core bit. Remove core.
Core bit appears to wobble.	<ol style="list-style-type: none"> 1) Spindle is damaged. Replace spindle and check bearings. 2) Bit is bent or damaged. Replace bit. 3) The core bit is not screwed securely onto the spindle. 4) Coring material is attaching to the bit. Inspect bit and increase water flow rate.
Water escapes at the water swivel or gear housing.	<ol style="list-style-type: none"> 1) The water pressure is too high. Turn down water flow. 2) The shaft seal is defective. Replace seal 3) The water hose is damaged. Replace hose.

General Maintenance

- Inspect electrical cords and electrical connections.
- Keep machine clean and free of debris.
- Check for misalignment, binding and breakage of all moving parts. If damaged, repair tool before use.
- Keep cutting tools sharp and clean. Sharp bits are less likely to bind and are easier to control.

Occasional Maintenance

- Have the power tool serviced by a qualified service technician using identical replacement parts.

- Change motor brushes:

- 1) Disconnect drill from power.
- 2) Unscrew left and right side brush holder caps using a flathead screw driver.
- 3) Take out old brushes.

- If you need to, use the screw driver to nudge them out.

- 4) Replace with exact same size new brushes.
- 5) Screw in brush holder caps tightly.

- Adjusting Carriage:

- 1) Periodically check and adjust slides as necessary.
- 2) Use hex wrench to loosen the hex bolts on the carriage. There are four hex bolts on each adjusting slide. Backing out the bolts will loosen feed tension, while tightening the bolts will increase feed tension.
- 3) Adjust the bolts evenly while moving the handle up and down so that there's no free play yet not binding anywhere through its range of travel.

- Change Gear Oil:

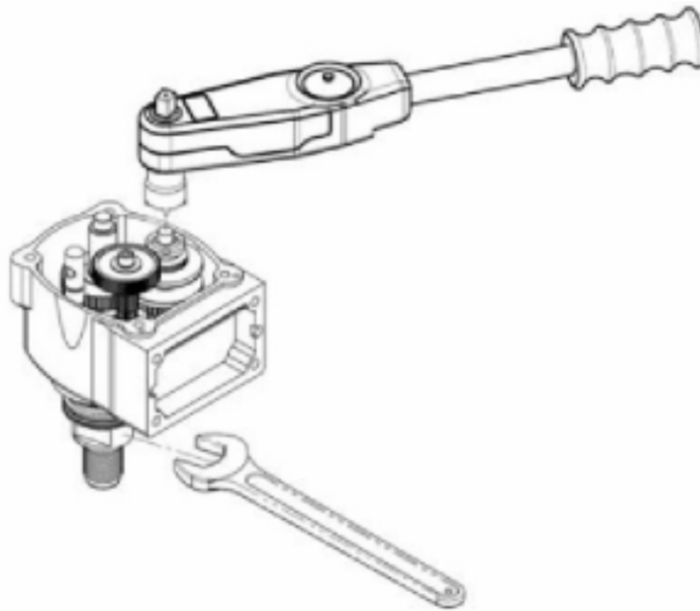
- 1) Change if necessary using NLGL-2 grade grease. This service is generally done around the 50 hour service mark.

- Adjust Safety Clutch:

- 1) Adjust clutch as necessary.

- NOTE: A torque wrench is necessary for this service.

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| <ul style="list-style-type: none">○ Make certain the spindle is facing the ground so as not to get oil/grease everywhere. Locate the hex screws holding the gear housing together and remove them. |
| <ul style="list-style-type: none">○ Gently pull the gear housing apart. You may use a couple flat screwdrivers to gently apply pressure to separate the housings. |
| <ul style="list-style-type: none">○ Take the main clutch nut off of the clutch. Apply some Loctite type of thread glue on the clutch threads. |
| <ul style="list-style-type: none">○ Reapply the nut to the thread. |
| <ul style="list-style-type: none">○ Hold the spindle in place using the box wrench. See diagram below. |
| <ul style="list-style-type: none">○ Use the torque wrench to tighten the clutch nut. |
| <ul style="list-style-type: none">○ Torque the tensioning nut to 40 NM (354 inch/lbs, 29.5 ft/lbs). |
| <ul style="list-style-type: none">○ With the clutch nut tightened, reassemble the housings. Make sure the orientation of the internal gears is correct and the housings mate correctly. |
| <ul style="list-style-type: none">○ Reattach the bolts that hold the housing together. |



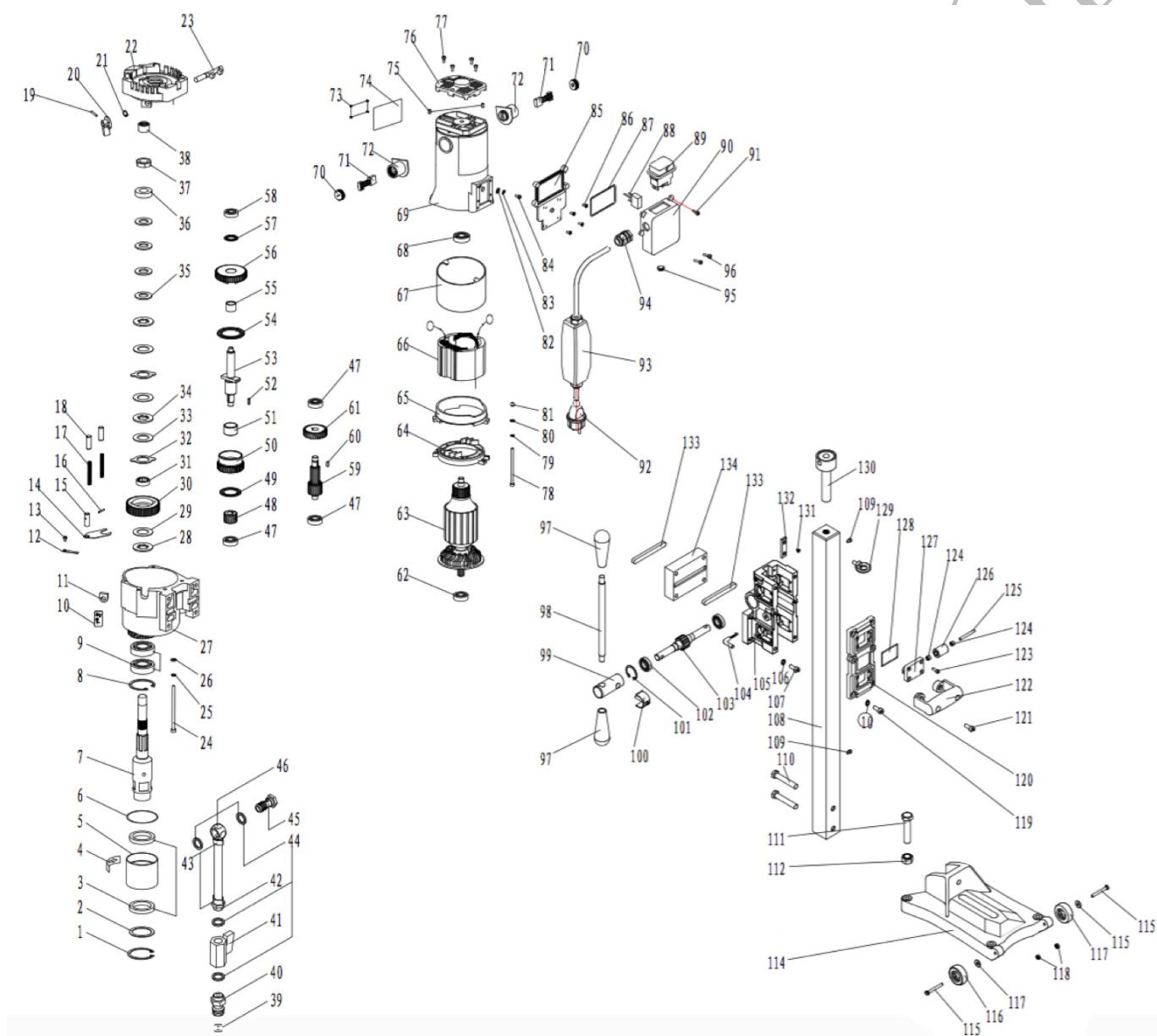
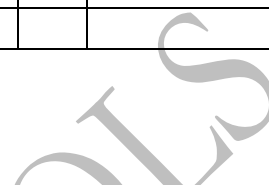
Parts List

No	Name	No	Name	No	Name	No	Name
1	Spring ring for holes	36	Shaft sleeve	71	Brush assembly	106	Spring washer
2	Washer	37	Hex nut	72	Brush holder	107	M8x55 nut bolt
3	Rubber sealing 42x55x8	38	Needle bearing BK1816	73	Rivet of label	108	Square pipe assembly
4	Label	39	Seal ring	74	Label	109	M5x8 nut bolt
5	Water sealer	40	Adapter of water switch	75	M5x10 socket head cap screw	110	M12x65 nut bolt
6	Adjust shim	41	Water switch	76	Rear cover of shell	111	M16x75 nut bolt
7	Main spindle	42	Ball valve	77	M4x14 nut bolt	112	NutM16
8	Spring ring for holes 52	43	Binding ring	78	Socket head cap screw M4x90		
9	6205 bearing	44	Shim	79	Spring washer	114	Large RB Base
10	Label	45	Binding bolt	80	Plain washer	115	M6x50 screw bolt
11	Seal gland	46	Water adapter with machine	81	Nut	116	2" wheel
12	Small cover plate	47	6201 bearing	82	Washer	117	Plain washer
13	M4x6 nut bolt	48	No7 gear spindle	83	Spring washer	118	Nut M6
14	Spring plate	49	Ball thrust bearingAXK3047	84	M5x6 nut bolt	119	M8x20 nut bolt
15	Pin 10x30	50	No6 gear	85	Cover of switch box	120	Elevating body cover
16	Spring column pin	51	Copper tube	86	M4x10 nut bolt	121	M8x35 nut bolt
17	Spring	52	Flat key C4x12	87	Seal of switch box	122	Handle
18	Spring plate	53	Change speed spindle	88	Electric capacity	123	M5x16 nut bolt
19	Column pin A3x25	54	Ball thrust bearingAXK4060	89	Switch	124	Bushing
20	Button	55	Copper tube	90	Switch box	125	Peg
21	Spring for shaft	56	No4 gear	91	ST4.2x13 nut bolt	126	Movable pulley
22	Middle cover	57	Ball thrust bearingAXK1730	92	Wire with plug	127	Pulley yoke
23	Mechanic stick	58	6200 bearing	93	PRCD switch (Optional)	128	Adjustment sheet
24	Inner hexagonal screwM6x105	59	Gear spindle	94	Protecting jacket	129	M8x10 nut bolt
25	Spring washer	60	Flat key C4x16	95	Ring of wire	130	Top nut bolt of stand
26	Plain washer	61	No2 gear	96	M4x16 nut bolt	131	M4x6 nut bolt
27	Gear box	62	6202 35mm bearing	97	Handle ball	132	Track
28	Pressing ring	63	Armature	98	Operating arm	133	Plain washer 8x12x110

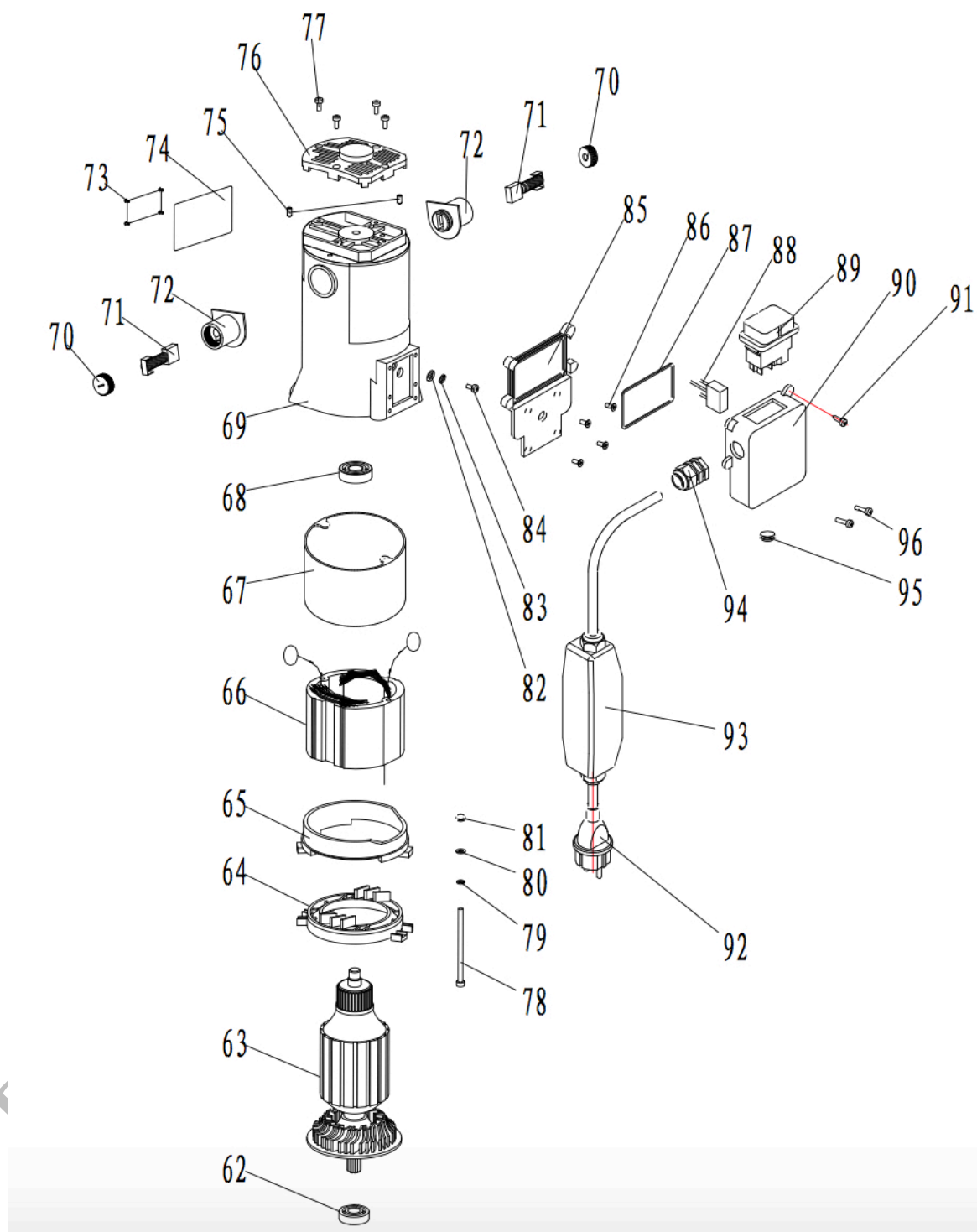
10" Z1RB CORE DRILL

29	Small friction disk	64	Draught ring	99	Sleeve of operating arm	134	Lengthen board
30	No8 gear	65	Bead flange	100	Fastener		
31	Spline tube	66	Stator	101	Bead flange		
32	Outer friction disk	67	Cover of stator	102	6003 bearing		
33	Friction disk	68	6201 32mm bearing	103	Operating gear spindle		
34	Inner spline friction disk	69	Shell	104	Stop pin		
35	Disk spring	70	Brush cap cover	105	Elevating body		

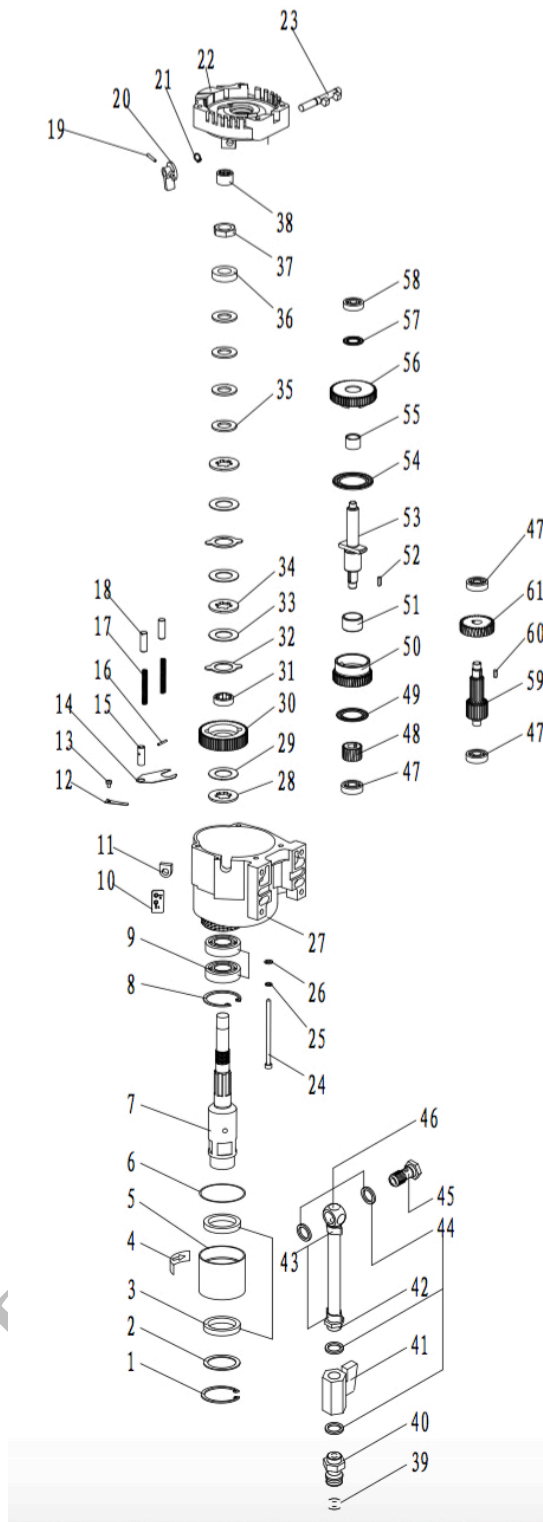
Breakdown View – Overview



Breakdown View – Motor



Breakdown View – Gearbox



Breakdown View – Drilling Stand

