

MEMO

Aimsak

Operation Instructions

BLDC



BL22RH

21.6 V Brushless Rotary Hammer Drill

Index

1. Tool Specification	2
2. Exploded View	2
3. Safety Instructions	3~7
4. Operating Instructions	7~12
5. Maintenance & Storage	13
6. Warranty	13

※ Product images may differ from the actual product.

△ To ensure safety, make sure that you read, understand and observe the safety instructions.

[CAUTION]

Do not use too much force to use the tool. Select the right tool for the purpose and application to enhance work efficiency. Be advised that any use of a tool that doesn't meet its specifications may result in decreased performance and shortened lifespan.

Aimsak

MADE IN KOREA <2018-06>

PU050291

Aimsak Inc.

【 Tool Specification 】

※ Check the model number and carefully read and understand the Manual.

► Specification

Spec	Model	BL22RH
		21.6 V Brushless Rotary Hammer Drill
Voltage		DC 21.6 Vd.c.
No load speed		0~1,400 min ⁻¹
Blows per minute		0~4,900 bpm
Impact energy		2.5 J
Chuck capacity		SDS Plus
Switch		Variable speed control
Weight		3.16 kg
Charger		ALC 4640M
Charger Power Input		AC 200~240V / 50~60 Hz

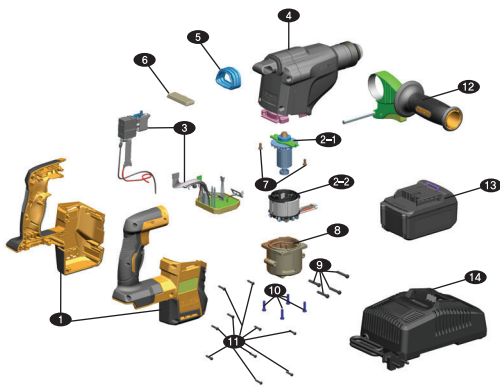
※ Aimsak battery is developed for Aimsak products only. Under the same voltage (e.g., 21.6V, 18V, 14.4V, 10.8V, 7.2V) or same mechanical specifications by battery type (e.g., slide, plug-in), it is compatible regardless of capacity (ampere: Ah).

【 Exploded View 】

※ In the exploded new for each product, functions and parts are subject to change without prior notice with performance improvement.

BL22RH

* Rotary Hammer Drill



Part Name

NO.	Part Name	Q'ty
1	Housing	1
2-1	Rotor	1
2-2	Stator	1
3	Switch	1
4	Gear Box	1
5	Rubber	1
6	Reversing Lever	1
7	Bolt (M4 *8)	2
8	Stator Body	1
9	Star Screw (M4 *25)	4
10	Bolt (M4 *14)	4
11	Star Screw (M3 *15)	10
12	Assistant Handle	1
13	Battery	2
14	Charger	1

【 Safety Instructions 】

Please read the Manual thoroughly and observe the safety instructions. Keep manual in a safe and handy place for easy reference.

Make sure to observe the following safety instructions at all times to remain safe from electric shock, fire or any other hazard while using or charging the tool. Do not become careless or inattentive after becoming familiar with its usage; always follow the safety rules. Any violation of the safety instructions or incorrect use of the tool may result in serious injury. The terms "power tool" in the CAUTION refers to either electric or battery-operated power tool.

1. Work Area Safety

- **Keep work area clean and well lit.**
Cluttered or dark areas invite accidents.
- **Do not operate power tools in an explosive atmospheres such as in the presence of flammable liquids, gases or dust.**
Any spark from power tools may ignite the dust or fumes.
- **Keep children and bystanders away while operating the power tool.**
Distractions can cause a loss of control.

2. Electrical Safety

- **Power tool plugs must match the outlet. Never modify the power plug in any way.**
Do not use any adapter plugs with grounded power tools.
Unmodified plugs and matching outlets will reduce the risk of electric shock.
- **Avoid body contact with grounded surfaces such as pipes, radiators, microwave ovens and refrigerators.**
There is an increased risk of electric shock by contacting these surfaces.
- **Do not expose power tools to rain or wet conditions.**
Water entering a power tool will increase the risk of electric shock.
- **Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the power tool. Keep the cord away from heat, oil, sharp edges or moving parts.**
Damaged or entangled cords increase the risk of electric shock.
- **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.
- **If operating a power tool in a humid place is unavoidable, use earth leakage circuit breaker (ELCB).**
The use of the ELCB reduces the risk of electric shock

3. User Safety

- **Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool when tired or under the influence of drugs, alcohol or medication.**
A moment of inattention while operating power tools may result in serious personal injury.

- ▶ **Use personal protective equipment. Always wear eye protection.** The use of protective equipment such as dust mask, non-skid safety shoes, hard hat or hearing protection under appropriate conditions will reduce the risk of personal injury.
- ▶ **Be careful to not start the tool accidentally. Ensure the switch is in the OFF position before connecting to a power source and/or battery pack, picking up or carrying the tool.** Carrying power tools with a finger on the switch or turning tools on while their switch is in the ON position invites accidents.
- ▶ **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.
- ▶ **Do not use the tool in an awkward position.** Keep proper footing and stay balanced at all times to enable better control of the power tool in unexpected situations.
- ▶ **Dress properly. Do not wear loose clothing or jewelry. Keep hair, clothing and gloves away from moving parts.** Loose clothes, jewelry or long hair can be caught in moving parts.
- ▶ **When using dust-proof equipment or dust collector, make sure that it is properly connected.** The use of such unit can reduce dust-related hazards.

4. Power Tool Use and Care

- ▶ **Do not use too much force when using the tool.**
Select the right tool for the purpose and application to enhance work efficiency and safety. Be advised that any use of a tool that doesn't meet its specifications may result in decreased performance and shortened lifespan.
- ▶ **Do not use a tool with a broken power switch.**
Any power tool with a broken switch is dangerous and must be repaired.
- ▶ **Disconnect the plug from the power source and/or the battery pack from the power tool before making any adjustments, changing accessories or storing power tools.**
These preventive safety measures reduce the risk of the accidental start of power tools.
- ▶ **Keep power tools out of the reach of children. Do not allow a person who is unfamiliar with the power tools or has failed to read the Manual to operate them.**
Power tools can be dangerous in the hands of untrained users.
- ▶ **Handle power tools with caution. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool operation.**
If any defect is found, make sure that it is repaired before use. Poor maintenance often causes accidents.
- ▶ **Keep cutting tools sharp and clean.** Well-managed cutting tools with sharp cutting edges are well operated and easy to control.
- ▶ **Before using power tools, accessories and tools, observe the instructions and guidelines for a particular type and consider work conditions and details.**
The use of such items for purposes other than those specified herein may result in hazardous situations.
- ▶ **Before operation, tightly fix the work piece. Do not hold it by hand.**
This may result in bodily injury. Make sure that it is fixed by a holding device before operation.
- ▶ **Check if the power is switched off before connecting the power cable or inserting the battery.**
If the battery is inserted when the power is ON, an accident may occur.
- ▶ **If a tool halts due to overload during operation, stop the operation immediately.**
If it is used in overload conditions, its lifespan can drop considerably.
- ▶ **If a rechargeable tool or charger having a USB port is used, make sure that there is no short between USB connector pins.**
Shorts may result in fire or explosion.

5. Cautions for Battery and Charger

- ▶ **Do not use the battery and charger in the vicinity of flammable materials (e.g., lacquer, paint, benzene, thinner, gasoline, etc.).**
Doing so can lead to fire or explosion.
- ▶ **Do not expose the battery and charger to sunlight or other high-temperature environments, and keep away from fire.**
Failure to do so may cause fire or explosion.
- ▶ **Check if the battery and charger terminals are stained with metal powders or dirt.**
Such contamination may result in electric shock.
- ▶ **Do not leave the tool in a place where strong static electricity can occur.**
Doing so may result in fire or explosion.
- ▶ **Make sure that there is no small metal pieces (e.g., chuck adapter, nail, clip, coin, etc.) near the battery and charger.**
Such metal can cause a short and result in fire.
- ▶ **Do not expose the battery or charger to wet or humid environments. Keep it dry at all times.**
If it is wet, overcurrent may occur, causing overheating, fire, electric shock or fault.
- ▶ **Do not keep the battery or charger together with small metallic pieces (e.g., screw, metallic adapter, nail, solder wire, cross bit, drill bit, metal clip/powder, etc.) in a plastic box or toolbox.**
Doing so can generate shorts and lead to fire or explosion.

6. Li-ion Battery Instructions

Li-ion batteries can give 100% performance when they are charged at any amount or are not completely discharged.

※ Li-ion batteries do not have a memory effect.

What is 'memory'?

At first use or after being left unused for a long time, the battery has 70-80% of its original storage capacity.

- ▶ **Do not expose the battery to rain or water.** A battery short circuit causes overcurrent and can result in overheating, fire or faults.
- ▶ **After charging, make sure that the battery is stored with a cover.**
- ▶ **Use the proper batteries for each power tool.**
The use of wrong batteries may result in bodily injury or fire.
- ▶ **If a tool is continuously operated until a battery pack is discharged, cool it down at room temperature for about 10 minutes prior to battery replacement.**
This measure can reduce the risk of battery and tool damage.
- ▶ **If batteries are hot, make sure that they are cooled before being charged.** They have a NTC temperature sensor for charging at 0-45°C only, which in turn extends their lifespan. They will not charge in a different temperature range. If the temperature returns back to the normal range, charging will resume. If used in normal conditions, Li-ion batteries can be charged more than 2,000 times.
- ▶ **Secondary batteries have their lifespan as well.** If a battery life shortens, contact the customer service center for battery replacement.
- ▶ **Do not store batteries fully discharged. If they are left unused for a long time, make sure that they are charged.** If fully discharged, batteries may not charge anymore. Please contact the customer service center.
- ▶ **Do not disassemble the batteries under any circumstances.**
Keep them safe from external shock. Short circuits may result in a fire or explosion.

- ▶ **Do not contact the positive and negative terminals with a metallic object.** If batteries are stored with a metal component, necklace, hairpin or other metallic object, a short may occur and result in bodily injury, fire or explosion.
- ▶ **Make sure that positive and negative poles are right corresponded.** Do not charge the battery when positive and negative poles are reversed. Doing so can lead to a fire or explosion.
- ▶ **In the event of excessive use or at high temperature, electrolytes can spill from the battery.** If this touches the user's skin, wash off with soap immediately. If this gets into eyes, wash with clean water and see a doctor right away. This substance can cause vision loss. It can damage skin and cause burns.
- ▶ **If the battery is severely damaged or fully discharged, do not leave it near fire.** Doing so may result in fire or explosion.
- ▶ **When the battery is dead, cover the terminals with insulation tape prior to disposal and have it collected by a professional battery collector or nearby agency. Do not throw the battery into a trash can, fire or water.** Doing so will cause environmental pollution and could lead to fire or explosion.
- ▶ **If any abnormalities such as heating is detected during charging, unplug the power cable immediately.** Failure to do so can lead to fire or explosion.

7. Li-ion Charger Instructions

- ▶ **Do not use the charger for purposes other than charging.**
- ▶ **Check the battery voltage prior to charging. Do not use unauthorized batteries.** Use the batteries specified in the Manual only. Failure to do so may lead to fire or explosion.
- ▶ **Check the power plug and cord before using the charger.** Any defect may result in a fault or electric shock.
- ▶ **Do not carry or hang the charger by the power cord. Do not unplug the cable from the outlet by the power cord.** Keep the charger safe from heat, moisture and sharp edges. Failure to do so may lead to a short circuit.
- ▶ **If the charger is damaged or overheated, unplug the power cable immediately.** Charging under such abnormal conditions may lead to fire or explosion.
- ▶ **Do not charge the battery in a plastic box or closed toolbox.** Doing so may result in fire or explosion.
- ▶ **Do not connect the charger to the DC outlet, engine generator, booster and transformer.** Doing so may lead to fire or explosion.
- ▶ **Do not cover the vent during charging.** Make sure that no metal or steel chip enters into the hole as these may cause fire or explosion.
- ▶ **Do not use the charger in a closed space. Use in well-ventilated environments.**
- ▶ **Do not cover with cloth or any other material while charging.** Doing so may lead to fire.
- ▶ **Do not disassemble the charger.** Doing so may lead to fire or fault.
- ▶ **Unplug the power cable after charging.** Failure to do so may result in fire or explosion.

8. Services

- ▶ **To repair a power tool, battery and charger, contact our customer service center.** Make sure that genuine parts are used for such repair to extend their safety.
- ▶ **Ensure that power tools are under proper care and management. Check that they are undamaged and function normally.** It is also important to check all conditions which can influence the operation of tools. If any abnormality is detected, repair before use. Unless the tools are properly repaired and managed, an accident can occur.
- ▶ **If any problem is found, contact our authorized customer service center.**

9. Operating & Safety Instructions - Rotary Hammer Drill

- ▶ **Wear ear protection.** Exposure to equipment noise can cause hearing loss.
- ▶ **Wear goggles (or other eye protection) and dust mask.** Debris may fly and hit you while hammering. Flying debris can cause permanent vision loss. If dirt will be produced, wear a dust or gas mask.
- ▶ **Do not use the tool for an extended period.** Vibrations from hammering can cause harm to hands and arms. Wear gloves and take breaks to reduce exposure to vibrations.
- ▶ **Wear gloves when operating the tool or change a drill bit.** The tool and drill bits can become very hot during or after operation. Be aware of the risk of burns.
- ▶ **Do not put tool down until the drill bit completely stops.** Failure to do this can result in bodily injury.
- ▶ **Do not pound on the tightly fastened drill bit with a hammer.** Metal debris can lead to bodily injury.
- ▶ **Keep the power cord away from the revolving drill bit. Do not wind the cord around any part of the body.** Winding the power cord can result in bodily injury, and loss of control of the tool.
- ▶ **When undertaking a task in which the cutting tool can touch unseen wires, grab the power tool at the insulated gripping surface.** Touching an electric wire can result in an electric shock.
- ▶ **Fix and secure the tools on a work table using a clamp or other suitable tools.** Holding a work piece by hand or supporting it with a part of the body is unstable and can cause a loss of control.
- ▶ **Firmly hold the tool at all times.** Do not attempt to operate the tool without holding it with both hands.
- ▶ **If an assist handle is provided, use it properly.** Using the tool with one hand can cause loss of control and bodily injury.
- ▶ **Do not readjust the chisel on your own.** The chisel should be adjusted by a certified expert. Any incorrect adjustment can result in bodily injury.
- ▶ **Fix the drill bit before operation.** Failure to do so can lead to accidents.

【 Operating Instructions 】

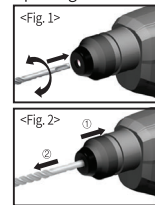
◆ Operation

▶ Notices prior to Operation

In the event of overcurrent in the Li-ion battery, the current is cut off and the tool is stopped. The tool is automatically stopped to prevent battery damage at over-discharge. This function is designed to protect the Li-ion batteries.
 * Any halt during operation because of overload is normal. It is safe to keep using the tool.


▶ How to Change the Drill Bit <See Figs. 1 and 2.>


- 1) Set the switch in the OFF position, and move the forward/reverse lever to the neutral position.
- 2) Push down the rotary hammer drill bit as shown in Fig. 1.
 - Push and turn the bit until it is firmly secured in place.
 - Pull and rock the drill bit to check if it is correctly seated.
- 3) As shown in Fig. 2, pull down the sleeve in the direction of the arrow (①). Then, grab the drill bit and pull it off in the direction of the arrow (②).





► Drill, Hammer and Chisel Work <See Figs. 3>

The tool has a separate mode lever to allow the user to choose the drill or hammer mode.

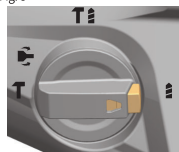
 **Drill Mode** For metal drilling, use well-grinded HSS drill bits.
Failure to do so can cause product performance to drop.

 **Hammer Mode** For hammering, choose concrete and masonry drill bits.
Failure to do so can cause product performance to drop.

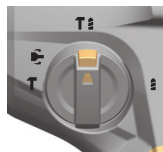
 **Chisel Mode** For chiseling, use chisel drill bits.
Failure to do so will cause product performance to drop.

 **Angle Unlock** A mode enabling the rotation of the drill bits in the desired angle during chiseling.
Set the angle and return to the chisel mode again prior to operation.
Failure to do so can cause the drill bit to spin and cause harm to the work piece.

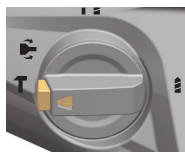
<Fig. 3>



<Drill Mode>



<Hammer Mode>



<Chisel Mode>

► Forward/Reverse Direction <See Figs. 4>

Push down the forward/reverse lever to the end in the direction of the arrow.

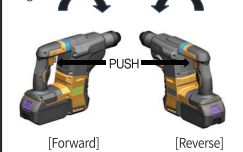
Forward: Screwing or drilling

Reverse: Unscrewing

⚠ CAUTION!

Set to Forward or Reverse when the tool is not running.

<Fig. 4>



[Forward]

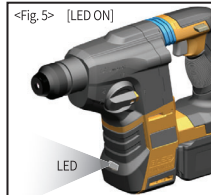
[Reverse]

► Switch <See Fig. 5>

The RPM is adjusted by the degree of triggering. To stop the tool, release the switch. Since the switch has a safety brake, the tool stops as soon as the switch is released.

※ Lighting

If the switch is pulled back, the front LED light is turned on for operation at night or in a dark place. If the tool stops, the LED light turns off in 10 seconds.



<Fig. 5> [LED ON]

► Error Mode Display

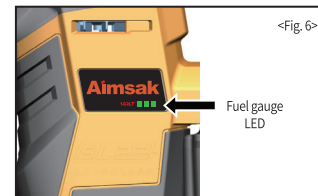
An error mode functions as follows in illumination LED:

Issue	LED Indicator On Off	Handling Tips
Terminal contact failure	LED Off [Indicator: Off]	In the event of an error, check with authorized repair center or repair shop
High temperature battery protection	LED On 0.7s / Off 0.3s [Indicator: On 0.7s / Off 0.3s]	Use the tool after let it rest for a whole. Do not overload the tool during the use.
High temperature switch protection	LED On 0.3s / Off 0.7s [Indicator: On 0.3s / Off 0.7s]	Use the tool after let it rest for a whole. Do not overload the tool during the use.
Overcurrent shutdown	LED On 0.05s / Off 0.1s On 0.2s / Off 0.65s (2 times Flashing) [Indicator: On 0.05s / Off 0.1s / On 0.2s / Off 0.65s (2 times Flashing)]	Avoid excessive work.
Motor sensor recognition error	LED On 0.5s / Off 0.5s [Indicator: On 0.5s / Off 0.5s]	In the event of an error, check with authorized repair center or repair shop

► Battery Level and Error Mode <See Fig. 6>

If the switch is pulled down, the battery level LED is turned on. Seconds later, it is turned off. Check the battery level as follows:

LED Display	Battery
■ ■ ■ 3 light on	(Over) 80%
□ ■ ■ 2 light on	(Over) 50~80%
□ □ ■ 1 light on	(Below) 20~50%
□ □ □ 1 Flickering	20% or less



<Fig. 6>

► Battery Installation and Removal <See Fig. 7 and 8.>

- Push down the battery until a click is heard. Failure to do so may cause the battery to be removed from the tool.
- Do not insert the battery while the switch is ON.

<Fig. 7> Inserting Battery



1. Push the battery in the direction of the arrow until a click is heard.

<Fig. 8>
Removing
Battery



1. Push the battery in the direction of the arrow until a click is heard.
2. While the battery button is pressed, pull up the battery in the direction of the arrow.

► Overload Clutch

The overload clutch cuts off the power to the drill spindle when the drill bit is stuck. This mechanism is designed to protect the tool from overload. If the overload clutch is turned on, pull the trigger and release it. The tool then resumes normal function. Hold the tool with both hands and take a stable position at all times to be prepared for any repulsion force caused by the overload clutch.

※ Mechanical/electronic overload clutch applied

► Indicators and Meaning (ALC 4540, ALC 4560, ALC 4640M, ALC 4650)

Indicators		Meaning
Standby		▶ Green LED blinking
Charging		▶ Red LED on
Finish		▶ Green LED on
Battery High Temperature		▶ Red & Green LED on
Battery low voltage	Red/Green	

- ▶ Ready for charging.
- ▶ Battery is charging.
- ▶ Fully charged.
- ▶ Battery temperature has missed the normal range (0~45 °C). Charge will automatically start when allowable temperature is reached.
- ▶ Pre-charging mode voltage of the battery is low. (When a constant voltage charging mode is switched to rise.)

► Battery Charger

※ To ensure the lifespan and safety of batteries, use the following chargers only: ALC 4540, ALC 4560, ALC 4640M and ALC 4650.

Voltage	Battery		Charger	
			18 V Charger	21.6 V Charger
18V		B40L18B		
		B40L18A B52L18A		
		B40L18D B50L18D B50L18DF		
21.6V		B50L22D B60L22D B50L22B B60L22B		

※ B52L18B, B20L14B, B25L18A, B40L18D, B40L18DF, B20L18D, B20L18DF and B60L22D, use a charger that can check individual cell voltage.

※ [ALC 4540, ALC 4560, ALC 4640M] An individual cell voltage balancing circuit is built in so that it improves the lifespan and safety of batteries by preventing over-charging.

→ BL22RH is compatible with 18V batteries. However, 18V models are not compatible with 21.6V batteries.
→ ALC 4525 (charger) is not compatible.

► Battery Charger Troubleshooting

1. The LED light is not turned on when the battery is inserted

Cause	Solution
The power cord is not plugged in.	Check the power connection.
The power cord is not plugged in. Contact error because the charger terminal is corroded or bent.	Check the charger and battery terminals.
The battery is short-circuited.	Insert another battery, and check if the charger functions normally.

Any colored LED light other than red is turned on when the battery is inserted

Cause	Solution
Battery temperature is high.	If the battery is hot, the green and red LED lights will be turned on simultaneously. Wait until the battery is cooled enough, and then reinsert it.
Battery temperature is low.	If the battery is cold, the LED light is OFF even though it is inserted into a charger. Leave the battery at room temperature. Once battery temperature rises to a rechargeable level, reinsert the battery.
Battery is at low voltage.	If the battery remains at low voltage due to over-discharge, the green and red LED lights will be turned on simultaneously in the beginning. This is a trickle charge mode activated to protect the battery. Check if the battery has returned to normal (red LED light) in a few minutes.

※ If the problem continues despite the said actions, contact the customer service center.

【Maintenance & Storage】

Make sure that the switch is turned off and the power supply disconnected before repair and maintenance.

► Keep the tool and vents clean at all times. Check and clean them regularly.

※ Remove dirt on the saw blade with air or a brush after use and then store properly.

◆ Noise / Vibration

► Wear earplugs.

► According to measurement under EM 50260-1:199, the average noise level of 'A' is 78 dB(A) or below. During operation, noise can exceed 85 dB(A). The standard violation applied to the hands and arms is 2.5m/sq or less.

【Warranty】

► **The term of warranty for the product is one year from the date of purchase. Unless the date of purchase is specified, the date of manufacture is applied.** However, please note whether the problem falls under the category of a paid repair service even during warranty period.

- The term of the warranty for the motor and battery is 6 months from the date of purchase.
- The battery is a consumable item. If the battery life ends, a new one must be purchased.

► Paid Repair Service Guidelines

- User negligence (soaking, external shock, overload work, etc.)
- Natural disaster (fire, earthquake, etc.)
- Product was randomly disassembled by the user
- A fault resulting from repair or remodeling by a person/company other than Aimsak (or authorized agency)
- A fault arising from operation in unusual work environments
- Consumable items which become less efficient over time (carbon brush, bearing, sealing, power cord, chuck, etc.)
- Bit, hand tools, giveaway, promotional gift (e.g., lantern)

Use the product within the scope of operation specified in the Manual.

Failure to do so may result in product damage, reduction of lifespan or bodily injury. We shall not be responsible for such problems and they will not be covered by the warranty.

MEMO

MEMO
