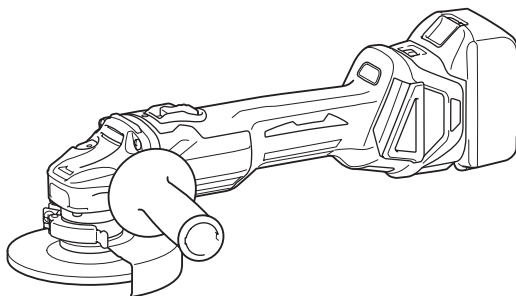


## INSTRUCTION MANUAL



# Cordless Angle Grinder

**DGA411, DGA412, DGA413, DGA414  
DGA461, DGA462, DGA463, DGA464  
DGA511, DGA512, DGA513, DGA514**



Read before use.

# SPECIFICATIONS

Model:	DGA411	DGA412	DGA413	DGA414
Wheel diameter	100 mm (4")			
Max. wheel thickness	6.4 mm			
Spindle thread	M10			
Rated speed (n)	8,500 min <sup>-1</sup>			
Overall length	382 mm			
Rated voltage	D.C. 18 V			
Net weight	2.2 - 2.8 kg			
Electric brake	-		✓	
Wireless activation function	-	✓	-	✓

Model:	DGA461	DGA462	DGA463	DGA464
Wheel diameter	115 mm (4-1/2")			
Max. wheel thickness	7.2 mm			
Spindle thread	M14 or 5/8" (country specific)			
Rated speed (n)	8,500 min <sup>-1</sup>			
Overall length	382 mm			
Rated voltage	D.C. 18 V			
Net weight	2.3 - 3.0 kg			
Electric brake	-		✓	
Wireless activation function	-	✓	-	✓

Model:	DGA511	DGA512	DGA513	DGA514
Wheel diameter	125 mm (5")			
Max. wheel thickness	7.2 mm			
Spindle thread	M14 or 5/8" (country specific)			
Rated speed (n)	8,500 min <sup>-1</sup>			
Overall length	382 mm			
Rated voltage	D.C. 18 V			
Net weight	2.3 - 3.0 kg		2.4 - 3.0 kg	
Electric brake	-		✓	
Wireless activation function	-	✓	-	✓

- Due to our continuing program of research and development, the specifications herein are subject to change without notice.
- Specifications may differ from country to country.
- The weight may differ depending on the attachment(s), including the battery cartridge. The lightest and heaviest combination, according to EPTA-Procedure 01/2014, are shown in the table.

## Applicable battery cartridge

BL1815N / BL1820 / BL1820B / BL1830 / BL1830B / BL1840 / BL1840B / BL1850 / BL1850B / BL1860B

- Some of the battery cartridges listed above may not be available depending on your region of residence.

**⚠ WARNING: Only use the battery cartridges listed above.** Use of any other battery cartridges may cause injury and/or fire.

## Symbols

The following show the symbols used for the equipment. Be sure that you understand their meaning before use.



Read instruction manual.



Wear safety glasses.



Ni-MH  
Li-ion

Only for EU countries

Do not dispose of electric equipment or battery pack together with household waste material! In observance of the European Directives, on Waste Electric and Electronic Equipment and Batteries and Accumulators and Waste Batteries and Accumulators and their implementation in accordance with national laws, electric equipment and batteries and battery pack(s) that have reached the end of their life must be collected separately and returned to an environmentally compatible recycling facility.

## Intended use

The tool is intended for grinding, sanding and cutting of metal and stone materials without the use of water.

## Noise

The typical A-weighted noise level determined according to EN60745:

Model	Sound pressure level ( $L_{pA}$ ) : (dB(A))	Sound power level ( $L_{WA}$ ) : (dB(A))	Uncertainty (K) : (dB(A))
DGA411	80	-	3
DGA412	80	-	3
DGA413	80	-	3
DGA414	80	-	3
DGA461	79	-	3
DGA462	79	-	3
DGA463	79	-	3
DGA464	79	-	3
DGA511	79	-	3
DGA512	79	-	3
DGA513	79	-	3
DGA514	79	-	3

The noise level under working may exceed 80 dB (A).

**⚠ WARNING: Wear ear protection.**

## Vibration

The vibration total value (tri-axial vector sum) determined according to EN60745:

**Work mode: surface grinding with normal side grip**

Model	Vibration emission ( $a_{h, AG}$ ) : ( $m/s^2$ )	Uncertainty (K) : ( $m/s^2$ )
DGA411	4.5	1.5
DGA412	4.5	1.5
DGA413	4.5	1.5
DGA414	4.5	1.5
DGA461	6.5	1.5
DGA462	6.5	1.5
DGA463	6.5	1.5
DGA464	6.5	1.5
DGA511	6.5	1.5
DGA512	6.5	1.5
DGA513	6.5	1.5
DGA514	6.5	1.5

**Work mode: surface grinding with anti vibration side grip**

Model	Vibration emission ( $a_{h, AG}$ ) : ( $m/s^2$ )	Uncertainty (K) : ( $m/s^2$ )
DGA411	4.0	1.5
DGA412	4.0	1.5
DGA413	4.0	1.5
DGA414	4.0	1.5
DGA461	6.0	1.5
DGA462	6.0	1.5
DGA463	6.0	1.5
DGA464	6.0	1.5
DGA511	6.0	1.5
DGA512	6.0	1.5
DGA513	6.0	1.5
DGA514	6.0	1.5

**Work mode: disc sanding with normal side grip**

Model	Vibration emission ( $a_{h, DS}$ ) : ( $m/s^2$ )	Uncertainty (K) : ( $m/s^2$ )
DGA411	2.5 $m/s^2$ or less	1.5
DGA412	2.5 $m/s^2$ or less	1.5
DGA413	2.5 $m/s^2$ or less	1.5
DGA414	2.5 $m/s^2$ or less	1.5
DGA461	2.5 $m/s^2$ or less	1.5
DGA462	2.5 $m/s^2$ or less	1.5
DGA463	2.5 $m/s^2$ or less	1.5
DGA464	2.5 $m/s^2$ or less	1.5
DGA511	2.5 $m/s^2$ or less	1.5
DGA512	2.5 $m/s^2$ or less	1.5
DGA513	2.5 $m/s^2$ or less	1.5
DGA514	2.5 $m/s^2$ or less	1.5

**Work mode: disc sanding with anti vibration side grip**

Model	Vibration emission ( $a_{h, DS}$ ) : ( $m/s^2$ )	Uncertainty (K) : ( $m/s^2$ )
DGA411	2.5 $m/s^2$ or less	1.5
DGA412	2.5 $m/s^2$ or less	1.5
DGA413	2.5 $m/s^2$ or less	1.5
DGA414	2.5 $m/s^2$ or less	1.5
DGA461	2.5 $m/s^2$ or less	1.5
DGA462	2.5 $m/s^2$ or less	1.5
DGA463	2.5 $m/s^2$ or less	1.5
DGA464	2.5 $m/s^2$ or less	1.5
DGA511	2.5 $m/s^2$ or less	1.5
DGA512	2.5 $m/s^2$ or less	1.5
DGA513	2.5 $m/s^2$ or less	1.5
DGA514	2.5 $m/s^2$ or less	1.5

**NOTE:** The declared vibration emission value has been measured in accordance with the standard test method and may be used for comparing one tool with another.

**NOTE:** The declared vibration emission value may also be used in a preliminary assessment of exposure.



**⚠ WARNING:** The vibration emission during actual use of the power tool can differ from the declared emission value depending on the ways in which the tool is used.

**⚠ WARNING:** Be sure to identify safety measures to protect the operator that are based on an estimation of exposure in the actual conditions of use (taking account of all parts of the operating cycle such as the times when the tool is switched off and when it is running idle in addition to the trigger time).

**⚠ WARNING:** The declared vibration emission value is used for main applications of the power tool. However if the power tool is used for other applications, the vibration emission value may be different.

## EC Declaration of Conformity

### For European countries only

The EC declaration of conformity is included as Annex A to this instruction manual.

## SAFETY WARNINGS

### General power tool safety warnings

**⚠ WARNING:** Read all safety warnings, instructions, illustrations and specifications provided with this power tool. Failure to follow all instructions listed below 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.

### Work area safety

1. **Keep work area clean and well lit.** Cluttered or dark areas invite accidents.
2. **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.
3. **Keep children and bystanders away while operating a power tool.** Distractions can cause you to lose control.

### Electrical Safety

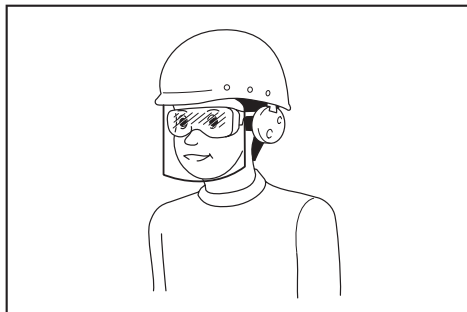
1. **Power tool plugs must match the outlet. Never modify the plug in any way. Do not use any adapter plugs with earthed (grounded) power tools.** Unmodified plugs and matching outlets will reduce risk of electric shock.
2. **Avoid body contact with earthed or grounded surfaces, such as pipes, radiators, ranges and refrigerators.** There is an increased risk of electric shock if your body is earthed or grounded.
3. **Do not expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.
4. **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.

5. **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.
6. **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.
7. **Power tools can produce electromagnetic fields (EMF) that are not harmful to the user.** However, users of pacemakers and other similar medical devices should contact the maker of their device and/or doctor for advice before operating this power tool.

### Personal Safety

1. **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.
2. **Use personal protective equipment. Always wear eye protection.** Protective equipment such as a dust mask, non-skid safety shoes, hard hat or hearing protection used for appropriate conditions will reduce personal injuries.
3. **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.
4. **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.
5. **Do not overreach. Keep proper footing and balance at all times.** This enables better control of the power tool in unexpected situations.
6. **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.
7. **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.
8. **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.

9. **Always wear protective goggles to protect your eyes from injury when using power tools.** The goggles must comply with ANSI Z87.1 in the USA, EN 166 in Europe, or AS/NZS 1336 in Australia/New Zealand. In Australia/New Zealand, it is legally required to wear a face shield to protect your face, too.



It is an employer's responsibility to enforce the use of appropriate safety protective equipments by the tool operators and by other persons in the immediate working area.

#### Power tool use and care

1. **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.
2. **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.
3. **Disconnect the plug from the power source and/or remove the battery pack, if detachable, from the power tool before making any adjustments, changing accessories, or storing power tools.** Such preventive safety measures reduce the risk of striking the power tool accidentally.
4. **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.
5. **Maintain power tools and accessories. 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.
6. **Keep cutting tools sharp and clean.** Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.
7. **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.
8. **Keep handles and grasping surfaces dry, clean and free from oil and grease.** Slippery handles and grasping surfaces do not allow for safe handling and control of the tool in unexpected situations.

9. **When using the tool, do not wear cloth work gloves which may be entangled.** The entanglement of cloth work gloves in the moving parts may result in personal injury.

#### Battery tool use and care

1. **Recharge only with the charger specified by the manufacturer.** A charger that is suitable for one type of battery pack may create a risk of fire when used with another battery pack.
2. **Use power tools only with specifically designed battery packs.** Use of any other battery packs may create a risk of injury and fire.
3. **When battery pack is not in use, keep it away from other metal objects, like paper clips, coins, keys, nails, screws or other small metal objects, that can make a connection from one terminal to another.** Shorting the battery terminals together may cause burns or a fire.
4. **Under abusive conditions, liquid may be ejected from the battery; avoid contact. If contact accidentally occurs, flush with water. If liquid contacts eyes, additionally seek medical help.** Liquid ejected from the battery may cause irritation or burns.
5. **Do not use a battery pack or tool that is damaged or modified.** Damaged or modified batteries may exhibit unpredictable behaviour resulting in fire, explosion or risk of injury.
6. **Do not expose a battery pack or tool to fire or excessive temperature.** Exposure to fire or temperature above 130 °C may cause explosion.
7. **Follow all charging instructions and do not charge the battery pack or tool outside the temperature range specified in the instructions.** Charging improperly or at temperatures outside the specified range may damage the battery and increase the risk of fire.

#### Service

1. **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.
2. **Never service damaged battery packs.** Service of battery packs should only be performed by the manufacturer or authorized service providers.
3. **Follow instruction for lubricating and changing accessories.**

### Cordless grinder safety warnings

#### Safety Warnings Common for Grinding, Sanding, Wire Brushing, or Abrasive Cutting-Off Operations:

1. **This power tool is intended to function as a grinder, sander, wire brush or cut-off tool.** Read all safety warnings, instructions, illustrations and specifications provided with this power tool. Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury.
2. **Operations such as polishing are not recommended to be performed with this power tool.** Operations for which the power tool was not designed may create a hazard and cause personal injury.

3. **Do not use accessories which are not specifically designed and recommended by the tool manufacturer.** Just because the accessory can be attached to your power tool, it does not assure safe operation.
4. **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.
5. **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.
6. **Threaded mounting of accessories must match the grinder spindle thread. For accessories mounted by flanges, the arbour hole of the accessory must fit the locating diameter of the flange.** Accessories that do not match the mounting hardware of the power tool will run out of balance, vibrate excessively and may cause loss of control.
7. **Do not use a damaged accessory. Before each use inspect the accessory such as abrasive wheels for chips and cracks, backing pad for cracks, tear or excess wear, wire brush for loose or cracked wires. If power tool or accessory is dropped, inspect for damage or install an undamaged accessory. After inspecting and installing an accessory, position yourself and bystanders away from the plane of the rotating accessory and run the power tool at maximum no-load speed for one minute.** Damaged accessories will normally break apart during this test time.
8. **Wear personal protective equipment.** Depending on application, use face shield, safety goggles or safety glasses. As appropriate, wear dust mask, hearing protectors, gloves and workshop 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.
9. **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.
10. **Hold the power tool by insulated gripping surfaces only, when performing an operation where the cutting tool may contact hidden wiring.** Contact with a "live" wire will also make exposed metal parts of the power tool "live" and could give the operator an electric shock.
11. **Never lay the power tool down until the accessory has come to a complete stop.** The spinning accessory may grab the surface and pull the power tool out of your control.
12. **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.
13. **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.
14. **Do not operate the power tool near flammable materials.** Sparks could ignite these materials.
15. **Do not use accessories that require liquid coolants.** Using water or other liquid coolants may result in electrocution or shock.

### Kickback and Related Warnings

Kickback is a sudden reaction to a pinched or snagged rotating wheel, backing pad, brush or any other accessory. Pinching or snagging causes rapid stalling of the rotating accessory which in turn causes the uncontrolled power tool to be forced in the direction opposite of the accessory'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.

1. **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.
2. **Never place your hand near the rotating accessory.** Accessory may kickback over your hand.
3. **Do not position your body in the area where power tool will move if kickback occurs.** Kickback will propel the tool in direction opposite to the wheel's movement at the point of snagging.
4. **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.
5. **Do not attach a saw chain woodcarving blade or toothed saw blade.** Such blades create frequent kickback and loss of control.

### Safety Warnings Specific for Grinding and Abrasive Cutting-Off Operations:

1. **Use only wheel types that are recommended for your power tool and the specific guard designed for the selected wheel.** Wheels for which the power tool was not designed cannot be adequately guarded and are unsafe.
2. **The grinding surface of centre depressed wheels must be mounted below the plane of the guard lip.** An improperly mounted wheel that projects through the plane of the guard lip cannot be adequately protected.
3. **The guard must be securely attached to the power tool and positioned for maximum safety, so the least amount of wheel is exposed towards the operator.** The guard helps to protect the operator from broken wheel fragments, accidental contact with wheel and sparks that could ignite clothing.

4. **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.
5. **Always use undamaged wheel flanges that are of correct size and shape for your selected wheel.** Proper wheel flanges support the wheel thus reducing the possibility of wheel breakage. Flanges for cut-off wheels may be different from grinding wheel flanges.
6. **Do not use worn down wheels from larger power tools.** Wheel intended for larger power tool is not suitable for the higher speed of a smaller tool and may burst.

#### **Additional Safety Warnings Specific for Abrasive Cutting-Off Operations:**

1. **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 of the wheel in the cut and the possibility of kickback or wheel breakage.
2. **Do not position your body in line with and behind the rotating wheel.** When the wheel, at the point of operation, is moving away from your body, the possible kickback may propel the spinning wheel and the power tool directly at you.
3. **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.
4. **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.
5. **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.
6. **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.

#### **Safety Warnings Specific for Sanding Operations:**

1. **Do not use excessively oversized sanding disc paper. Follow manufacturers recommendations, when selecting sanding paper.** Larger sanding paper extending beyond the sanding pad presents a laceration hazard and may cause snagging, tearing of the disc or kickback.

#### **Safety Warnings Specific for Wire Brushing Operations:**

1. **Be aware that wire bristles are thrown by the brush even during ordinary operation. Do not overstress the wires by applying excessive load to the brush.** The wire bristles can easily penetrate light clothing and/or skin.
2. **If the use of a guard is recommended for wire brushing, do not allow any interference of the wire wheel or brush with the guard.** Wire wheel or brush may expand in diameter due to work load and centrifugal forces.

#### **Additional Safety Warnings:**

1. **When using depressed centre grinding wheels, be sure to use only fiberglass-reinforced wheels.**
2. **NEVER USE Stone Cup type wheels with this grinder.** This grinder is not designed for these types of wheels and the use of such a product may result in serious personal injury.
3. **Be careful not to damage the spindle, the flange (especially the installing surface) or the lock nut.** Damage to these parts could result in wheel breakage.
4. **Make sure the wheel is not contacting the workpiece before the switch is turned on.**
5. **Before using the tool on an actual workpiece, let it run for a while. Watch for vibration or wobbling that could indicate poor installation or a poorly balanced wheel.**
6. **Use the specified surface of the wheel to perform the grinding.**
7. **Do not leave the tool running. Operate the tool only when hand-held.**
8. **Do not touch the workpiece immediately after operation; it may be extremely hot and could burn your skin.**
9. **Observe the instructions of the manufacturer for correct mounting and use of wheels. Handle and store wheels with care.**
10. **Do not use separate reducing bushings or adaptors to adapt large hole abrasive wheels.**
11. **Use only flanges specified for this tool.**
12. **For tools intended to be fitted with threaded hole wheel, ensure that the thread in the wheel is long enough to accept the spindle length.**
13. **Check that the workpiece is properly supported.**
14. **Pay attention that the wheel continues to rotate after the tool is switched off.**
15. **If working place is extremely hot and humid, or badly polluted by conductive dust, use a short-circuit breaker (30 mA) to assure operator safety.**
16. **Do not use the tool on any materials containing asbestos.**
17. **When use cut-off wheel, always work with the dust collecting wheel guard required by domestic regulation.**
18. **Cutting discs must not be subjected to any lateral pressure.**

19. **Do not use cloth work gloves during operation.**  
Fibers from cloth gloves may enter the tool, which causes tool breakage.

## SAVE THESE INSTRUCTIONS.

**⚠WARNING:** DO NOT let comfort or familiarity with product (gained from repeated use) replace strict adherence to safety rules for the subject product. MISUSE or failure to follow the safety rules stated in this instruction manual may cause serious personal injury.

### Important safety instructions for battery cartridge

1. Before using battery cartridge, read all instructions and cautionary markings on (1) battery charger, (2) battery, and (3) product using battery.
2. Do not disassemble battery cartridge.
3. If operating time has become excessively shorter, stop operating immediately. It may result in a risk of overheating, possible burns and even an explosion.
4. If electrolyte gets into your eyes, rinse them out with clear water and seek medical attention right away. It may result in loss of your eyesight.
5. Do not short the battery cartridge:
  - (1) Do not touch the terminals with any conductive material.
  - (2) Avoid storing battery cartridge in a container with other metal objects such as nails, coins, etc.
  - (3) Do not expose battery cartridge to water or rain.
6. Do not store the tool and battery cartridge in locations where the temperature may reach or exceed 50 °C (122 °F).
7. Do not incinerate the battery cartridge even if it is severely damaged or is completely worn out. The battery cartridge can explode in a fire.
8. Be careful not to drop or strike battery.
9. Do not use a damaged battery.
10. The contained lithium-ion batteries are subject to the Dangerous Goods Legislation requirements.

For commercial transports e.g. by third parties, forwarding agents, special requirement on packaging and labeling must be observed.  
For preparation of the item being shipped, consulting an expert for hazardous material is required. Please also observe possibly more detailed national regulations.  
Tape or mask off open contacts and pack up the battery in such a manner that it cannot move around in the packaging.

11. Follow your local regulations relating to disposal of battery.

12. **Use the batteries only with the products specified by Makita.** Installing the batteries to non-compliant products may result in a fire, excessive heat, explosion, or leak of electrolyte.

## SAVE THESE INSTRUCTIONS.

**⚠CAUTION:** Only use genuine Makita batteries. Use of non-genuine Makita batteries, or batteries that have been altered, may result in the battery bursting causing fires, personal injury and damage. It will also void the Makita warranty for the Makita tool and charger.

### Tips for maintaining maximum battery life

1. Charge the battery cartridge before completely discharged. Always stop tool operation and charge the battery cartridge when you notice less tool power.
2. Never recharge a fully charged battery cartridge. Overcharging shortens the battery service life.
3. Charge the battery cartridge with room temperature at 10 °C - 40 °C (50 °F - 104 °F). Let a hot battery cartridge cool down before charging it.
4. Charge the battery cartridge if you do not use it for a long period (more than six months).

### Important safety instructions for wireless unit

1. Do not disassemble or tamper with the wireless unit.
2. Keep the wireless unit away from young children. If accidentally swallowed, seek medical attention immediately.
3. Use the wireless unit only with Makita tools.
4. Do not expose the wireless unit to rain or wet conditions.
5. Do not use the wireless unit in places where the temperature exceeds 50°C (122°F).
6. Do not operate the wireless unit in places where medical instruments, such as heart pace makers are near by.
7. Do not operate the wireless unit in places where automated devices are near by. If operated, automated devices may develop malfunction or error.
8. The wireless unit can produce electromagnetic fields (EMF) but they are not harmful to the user.
9. The wireless unit is an accurate instrument. Be careful not to drop or strike the wireless unit.
10. Avoid touching the terminal of the wireless unit with bare hands or metallic materials.
11. Always remove the battery on the tool when installing the wireless unit.
12. When opening the lid of the slot, avoid the place where dust and water may come into the slot. Always keep the inlet of the slot clean.
13. Always insert the wireless unit in the correct direction.



14. Do not press the wireless activation button on the wireless unit too hard and/or press the button with an object with a sharp edge.
15. Always close the lid of the slot when operating.
16. Do not remove the wireless unit from the slot while the power is being supplied to the tool. Doing so may cause a malfunction of the wireless unit.
17. Do not remove the sticker on the wireless unit.
18. Do not put any sticker on the wireless unit.
19. Do not leave the wireless unit in a place where static electricity or electrical noise could be generated.
20. Do not leave the wireless unit in a place subject to high heat, such as a car sitting in the sun.
21. Do not leave the wireless unit in a dusty or powdery place or in a place corrosive gas could be generated.
22. Sudden change of the temperature may bedew the wireless unit. Do not use the wireless unit until the dew is completely dried.
23. When cleaning the wireless unit, gently wipe with a dry soft cloth. Do not use benzine, thinner, conductive grease or the like.
24. When storing the wireless unit, keep it in the supplied case or a static-free container.
25. Do not insert any devices other than Makita wireless unit into the slot on the tool.
26. Do not use the tool with the lid of the slot damaged. Water, dust, and dirt come into the slot may cause malfunction.
27. Do not pull and/or twist the lid of the slot more than necessary. Restore the lid if it comes off from the tool.
28. Replace the lid of the slot if it is lost or damaged.

## SAVE THESE INSTRUCTIONS.

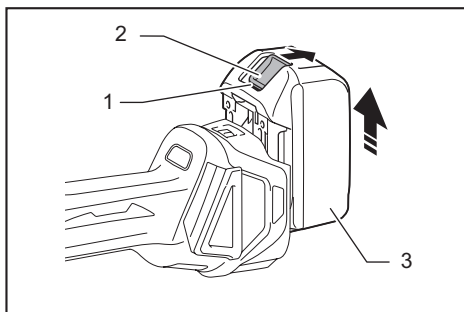
## FUNCTIONAL DESCRIPTION

**⚠ CAUTION:** Always be sure that the tool is switched off and the battery cartridge is removed before adjusting or checking function on the tool.

## Installing or removing battery cartridge

**⚠ CAUTION:** Always switch off the tool before installing or removing of the battery cartridge.

**⚠ CAUTION:** Hold the tool and the battery cartridge firmly when installing or removing battery cartridge. Failure to hold the tool and the battery cartridge firmly may cause them to slip off your hands and result in damage to the tool and battery cartridge and a personal injury.



► 1. Red indicator 2. Button 3. Battery cartridge

To remove the battery cartridge, slide it from the tool while sliding the button on the front of the cartridge.

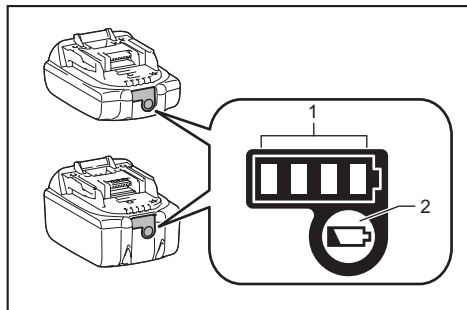
To install the battery cartridge, align the tongue on the battery cartridge with the groove in the housing and slip it into place. Insert it all the way until it locks in place with a little click. If you can see the red indicator on the upper side of the button, it is not locked completely.

**⚠ CAUTION:** Always install the battery cartridge fully until the red indicator cannot be seen. If not, it may accidentally fall out of the tool, causing injury to you or someone around you.

**⚠ CAUTION:** Do not install the battery cartridge forcibly. If the cartridge does not slide in easily, it is not being inserted correctly.

## Indicating the remaining battery capacity

Only for battery cartridges with the indicator



► 1. Indicator lamps 2. Check button

Press the check button on the battery cartridge to indicate the remaining battery capacity. The indicator lamps light up for a few seconds.

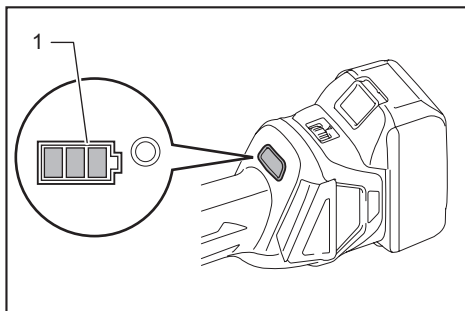
Indicator lamps			Remaining capacity
Lighted	Off	Blinking	
■ ■ ■ ■			75% to 100%
■ ■ ■ □			50% to 75%
■ ■ □ □			25% to 50%
■ □ □ □			0% to 25%
▨ □ □ □			Charge the battery.
■ ■ □ □	↑ ↓	□ □ ■ ■	The battery may have malfunctioned.

**NOTE:** Depending on the conditions of use and the ambient temperature, the indication may differ slightly from the actual capacity.

## Indicating the remaining battery capacity

Country specific

When you turn the tool on, the battery indicator shows the remaining battery capacity.



► 1. Battery indicator

The remaining battery capacity is shown as the following table.

Battery indicator status			Remaining battery capacity
On	Off	Blinking	
■ ■ ■ ■			50% to 100%
■ ■ ■ ■			20% to 50%
■ ■ ■ ■			0% to 20%
■ ■ ■ ■			Charge the battery

## Tool / battery protection system

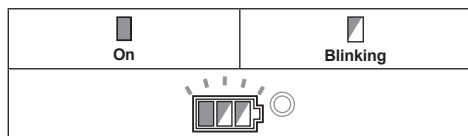
The tool is equipped with a tool/battery protection system. This system automatically cuts off power to the motor to extend tool and battery life. The tool will automatically stop during operation if the tool or battery is placed under one of the following conditions:

### Overload protection

When the tool is operated in a manner that causes it to draw an abnormally high current, the tool automatically stops without any indication. In this situation, turn the tool off and stop the application that caused the tool to become overloaded. Then turn the tool on to restart.

## Overheat protection

When the tool is overheated, the tool stops automatically and the battery indicator shows following state. In this situation, let the tool cool before turning the tool on again.



If the tool does not start, the battery may be overheated. In this situation, let the battery cool before starting the tool again.

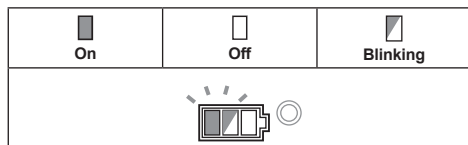
## Overdischarge protection

When the battery capacity is not enough, the tool stops automatically. In this case, remove the battery from the tool and charge the battery.

## Releasing protection lock

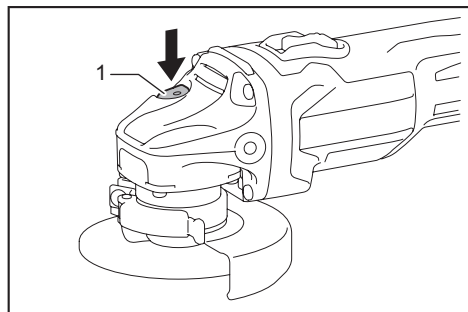
When the protection system works repeatedly, the tool is locked and the battery indicator shows the following state.

In this situation, the tool does not start even if turning the tool off and on. To release the protection lock, remove the battery, set it to the battery charger and wait until the charging finishes.



## Shaft lock

Press the shaft lock to prevent spindle rotation when installing or removing accessories.



► 1. Shaft lock

**NOTICE:** Never actuate the shaft lock when the spindle is moving. The tool may be damaged.

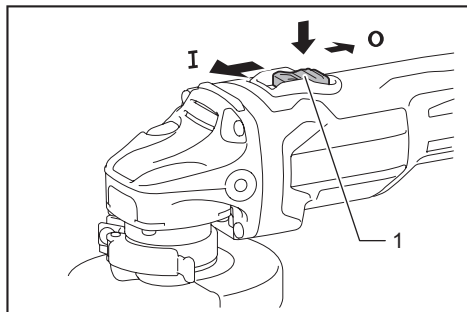
## Switch action

**CAUTION:** Before installing the battery cartridge into the tool, always check to see that the slide switch actuates properly and returns to the "OFF" position when the rear of the slide switch is depressed.

**CAUTION:** Switch can be locked in "ON" position for ease of operator comfort during extended use. Apply caution when locking tool in "ON" position and maintain firm grasp on tool.

To start the tool, slide the slide switch toward the "I (ON)" position by pushing the rear of the slide switch. For continuous operation, press the front of the slide switch to lock it.

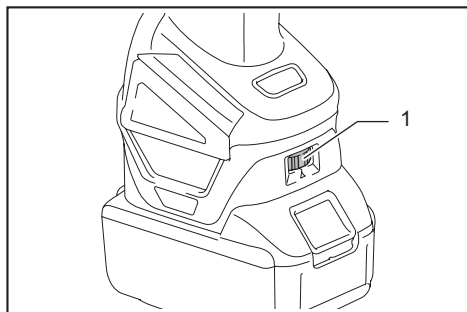
To stop the tool, press the rear of the slide switch, then slide it toward the "O (OFF)" position.



► 1. Slide switch

## Speed adjusting dial

The rotation speed of the tool can be changed by turning the speed adjusting dial. The table below shows the number on the dial and the corresponding rotation speed.



► 1. Speed adjusting dial

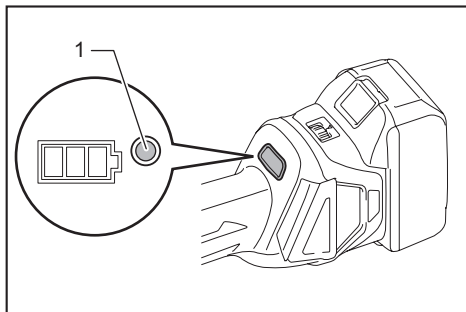
Number	Speed
1	3,000 min <sup>-1</sup>
2	4,500 min <sup>-1</sup>
3	6,000 min <sup>-1</sup>
4	7,500 min <sup>-1</sup>
5	8,500 min <sup>-1</sup>



**NOTICE:** If the tool is operated continuously at low speed for a long time, the motor will get overloaded, resulting in tool malfunction.

**NOTICE:** When changing the speed dial from "5" to "1", turn the dial counterclockwise. Do not turn the dial clockwise forcibly.

## Automatic speed change function



▶ 1. Mode indicator

Mode indicator status	Operation mode
	High speed mode
	High torque mode

This tool has "high speed mode" and "high torque mode". It automatically changes operation mode depending on the work load. When mode indicator lights up during operation, the tool is in high torque mode.

## Accidental re-start preventive function

Even if the battery cartridge is installed on the tool with the slide switch in the "I (ON)" position, the tool does not start.

To start the tool, first slide the slide switch toward the "O (OFF)" position and then slide it toward the "I (ON)" position.

## Electronic torque control function

The tool electronically detects situations where the wheel or accessory may be at risk to be bound. In the situation, the tool is automatically shut off to prevent further rotation of the spindle (it does not prevent kickback).

To restart the tool, switch off the tool first, remove the cause of sudden drop in the rotation speed, and then turn the tool on.

## Soft start feature

Soft start feature reduces starting reaction.

## Electric brake

**For model DGA413/DGA414/DGA463/DGA464/DGA513/DGA514 only**

Electric brake is activated after the tool is switched off. The brake does not work when the power supply is shut down, such as the battery is removed accidentally, with the switch still on.

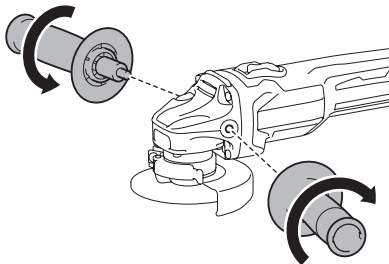
## ASSEMBLY

**CAUTION:** Always be sure that the tool is switched off and the battery cartridge is removed before adjusting or checking function on the tool.

## Installing side grip (handle)

**CAUTION:** Always be sure that the side grip is installed securely before operation.

Screw the side grip securely on the position of the tool as shown in the figure.



## Installing or removing wheel guard (For depressed center wheel, flap disc, flex wheel, wire wheel brush / abrasive cut-off wheel, diamond wheel)

**WARNING:** When using a depressed center wheel, flap disc, flex wheel or wire wheel brush, the wheel guard must be fitted on the tool so that the closed side of the guard always points toward the operator.

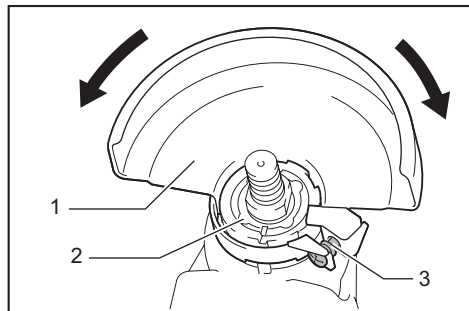
**WARNING:** When using an abrasive cut-off / diamond wheel, be sure to use only the special wheel guard designed for use with cut-off wheels.

(In some European countries, when using a diamond wheel, the ordinary guard can be used. Follow the regulations in your country.)

## For tool with locking screw type wheel guard

Mount the wheel guard with the protrusions on the wheel guard band aligned with the notches on the bearing box. Then rotate the wheel guard to such an angle that it can protect the operator according to work. Be sure to tighten the screw securely.

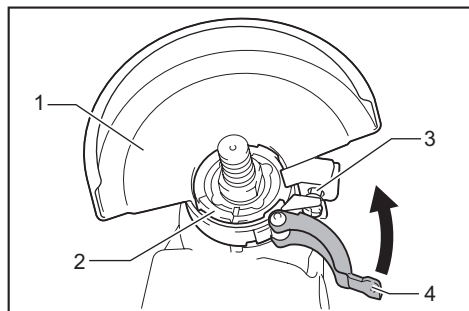
To remove wheel guard, follow the installation procedure in reverse.



► 1. Wheel guard 2. Bearing box 3. Screw

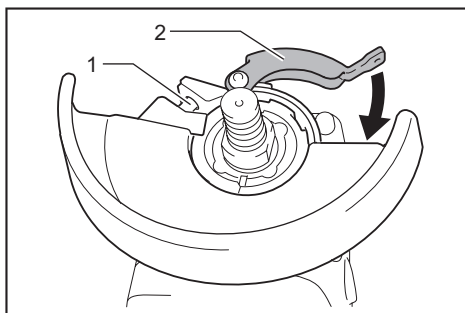
## For tool with clamp lever type wheel guard

Loosen the screw, and then pull the lever in the direction of the arrow. Mount the wheel guard with the protrusions on the wheel guard band aligned with the notches on the bearing box. Then rotate the wheel guard to such an angle that it can protect the operator according to work.



► 1. Wheel guard 2. Bearing box 3. Screw 4. Lever

Pull the lever in direction of the arrow. Then tighten the wheel guard with fastening the screw. Be sure to tighten the screw securely. The setting angle of the wheel guard can be adjusted with the lever.



► 1. Screw 2. Lever

To remove wheel guard, follow the installation procedure in reverse.

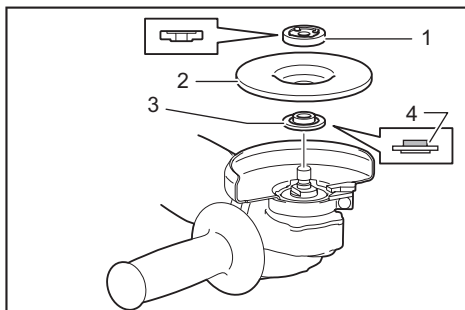
## Installing or removing depressed center wheel or flap disc

### Optional accessory

**⚠ WARNING:** When using a depressed center wheel or flap disc, the wheel guard must be fitted on the tool so that the closed side of the guard always points toward the operator.

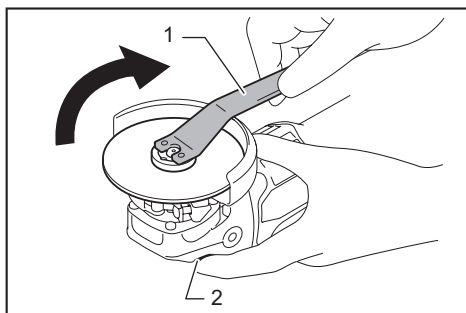
**⚠ CAUTION:** Make sure that the mounting part of the inner flange fits into the inner diameter of the depressed center wheel / flap disc perfectly. Mounting the inner flange on the wrong side may result in the dangerous vibration.

Mount the inner flange onto the spindle. Make sure to fit the dented part of the inner flange onto the straight part at the bottom of the spindle. Fit the depressed center wheel / flap disc on the inner flange and screw the lock nut onto the spindle.



► 1. Lock nut 2. Depressed center wheel 3. Inner flange 4. Mounting part

To tighten the lock nut, press the shaft lock firmly so that the spindle cannot revolve, then use the lock nut wrench and securely tighten clockwise.



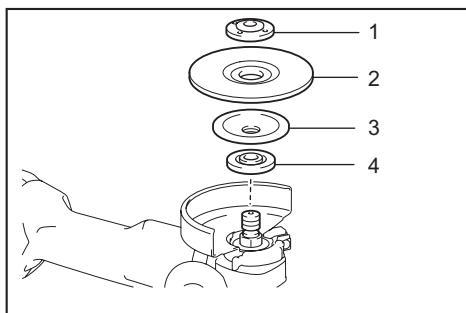
- 1. Lock nut wrench 2. Shaft lock

To remove the wheel, follow the installation procedure in reverse.

## Installing or removing flex wheel

### Optional accessory

**⚠ WARNING:** Always use supplied guard when flex wheel is on tool. Wheel can shatter during use and guard helps to reduce chances of personal injury.



- 1. Lock nut 2. Flex wheel 3. Back up pad 4. Inner flange

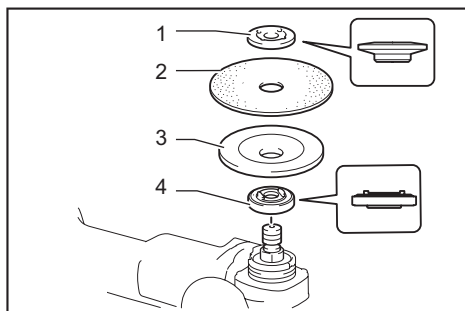
Follow instructions for depressed center wheel but also use back up pad over wheel. See order of assembly on accessories page in this manual.

## Installing or removing abrasive disc

### Optional accessory

**NOTE:** Use sander accessories specified in this manual. These must be purchased separately.

### For 100 mm (4") model

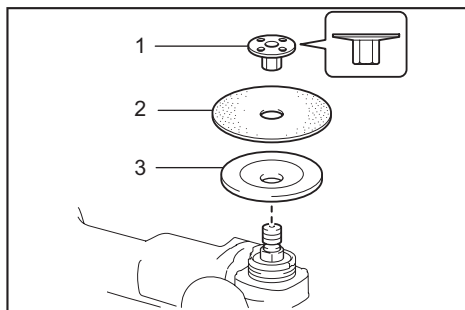


- 1. Sanding lock nut 2. Abrasive disc 3. Rubber pad 4. Inner flange

1. Mount the inner flange onto the spindle.
2. Mount the rubber pad onto the spindle.
3. Fit the disc on the rubber pad and screw the sanding lock nut onto the spindle.
4. Hold the spindle with the shaft lock, and securely tighten the sanding lock nut clockwise with the lock nut wrench.

To remove the disc, follow the installation procedure in reverse.

### For 115 mm (4 - 1/2") / 125 mm (5") model



- 1. Sanding lock nut 2. Abrasive disc 3. Rubber pad

1. Mount the rubber pad onto the spindle.
2. Fit the disc on the rubber pad and screw the sanding lock nut onto the spindle.
3. Hold the spindle with the shaft lock, and securely tighten the sanding lock nut clockwise with the lock nut wrench.

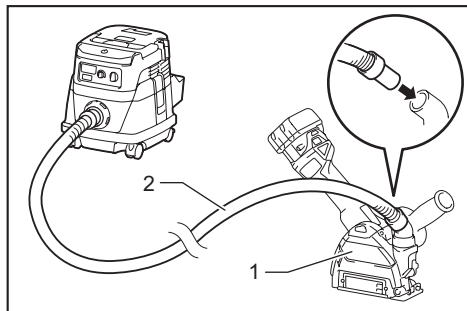
To remove the disc, follow the installation procedure in reverse.

## Connecting a vacuum cleaner

### Optional accessory

**⚠ WARNING:** Never vacuum metal particles created by grinding/cutting/sanding operation. Metal particles created by such operation are so hot that they ignite dust and the filter inside the vacuum cleaner.

To avoid dusty environment caused by masonry cutting, use a dust collecting wheel guard and a vacuum cleaner. Refer to the instruction manual attached to the dust collecting wheel guard for assembling and using it.



► 1. Dust collecting wheel guard 2. Hose of the vacuum cleaner

## OPERATION

**⚠ WARNING:** It should never be necessary to force the tool. The weight of the tool applies adequate pressure. Forcing and excessive pressure could cause dangerous wheel breakage.

**⚠ WARNING:** ALWAYS replace wheel if tool is dropped while grinding.

**⚠ WARNING:** NEVER bang or hit grinding disc or wheel onto work.

**⚠ WARNING:** Avoid bouncing and snagging the wheel, especially when working corners, sharp edges etc. This can cause loss of control and kickback.

**⚠ WARNING:** NEVER use tool with wood cutting blades and other saw blades. Such blades when used on a grinder frequently kick and cause loss of control leading to personal injury.

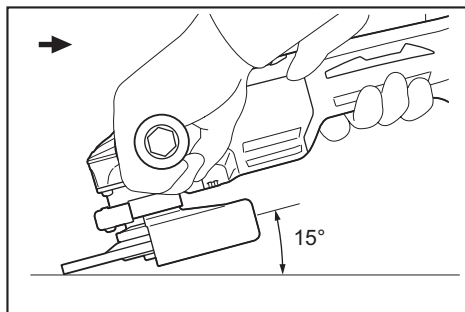
**⚠ CAUTION:** Never switch on the tool when it is in contact with the workpiece, it may cause an injury to operator.

**⚠ CAUTION:** Always wear safety goggles or a face shield during operation.

**⚠ CAUTION:** After operation, always switch off the tool and wait until the wheel has come to a complete stop before putting the tool down.

**⚠ CAUTION:** ALWAYS hold the tool firmly with one hand on housing and the other on the side grip (handle).

## Grinding and sanding operation



Turn the tool on and then apply the wheel or disc to the workpiece.

In general, keep the edge of the wheel or disc at an angle of about 15° to the workpiece surface.

During the break-in period with a new wheel, do not work the grinder in forward direction or it may cut into the workpiece. Once the edge of the wheel has been rounded off by use, the wheel may be worked in both forward and backward direction.

## Operation with abrasive cut-off / diamond wheel

### Optional accessory

**⚠ WARNING:** When using an abrasive cut-off / diamond wheel, be sure to use only the special wheel guard designed for use with cut-off wheels.

(In some European countries, when using a diamond wheel, the ordinary guard can be used. Follow the regulations in your country.)

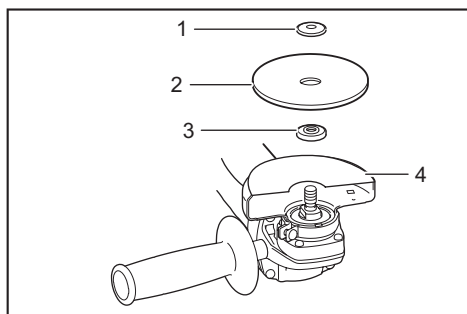
**⚠ WARNING:** NEVER use cut-off wheel for side grinding.

**⚠ WARNING:** Do not "jam" the 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 of the wheel in the cut and the possibility of kickback, wheel breakage and overheating of the motor may occur.

**⚠ WARNING:** Do not start the cutting operation in the workpiece. Let the wheel reach full speed and carefully enter into the cut moving the tool forward over the workpiece surface. The wheel may bind, walk up or kickback if the power tool is started in the workpiece.

**⚠ WARNING:** During cutting operations, never change the angle of the wheel. Placing side pressure on the cut-off wheel (as in grinding) will cause the wheel to crack and break, causing serious personal injury.

**⚠ WARNING:** A diamond wheel shall be operated perpendicular to the material being cut.



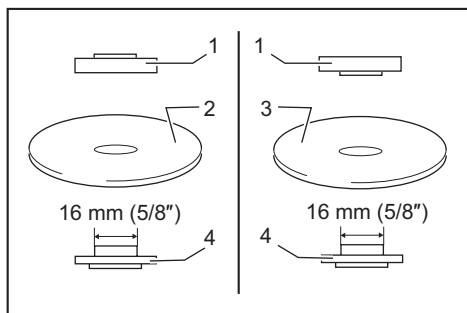
- 1. Lock nut 2. Abrasive cut-off wheel / diamond wheel 3. Inner flange 4. Wheel guard for abrasive cut-off wheel / diamond wheel

As for the installation, follow the instructions for depressed center wheel.

**The direction for mounting the lock nut and the inner flange varies by wheel type and thickness.** Refer to the following figures.

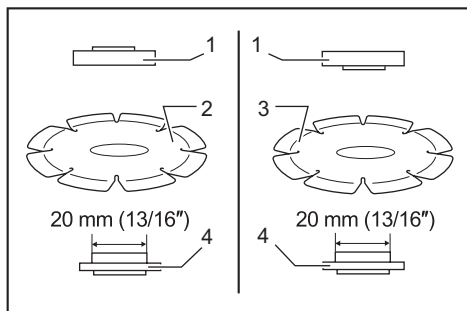
## For 100 mm (4") model

**When installing the abrasive cut-off wheel:**



- 1. Lock nut 2. Abrasive cut-off wheel (Thinner than 4mm (5/32")) 3. Abrasive cut-off wheel (4mm (5/32") or thicker) 4. Inner flange

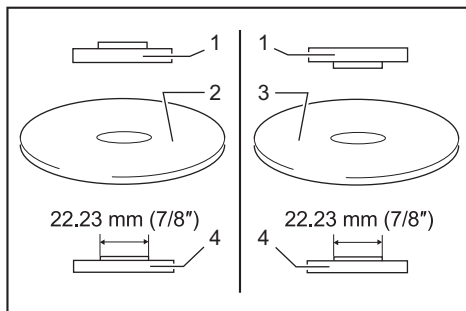
**When installing the diamond wheel:**



- 1. Lock nut 2. Diamond wheel (Thinner than 4mm (5/32")) 3. Diamond wheel (4mm (5/32") or thicker) 4. Inner flange

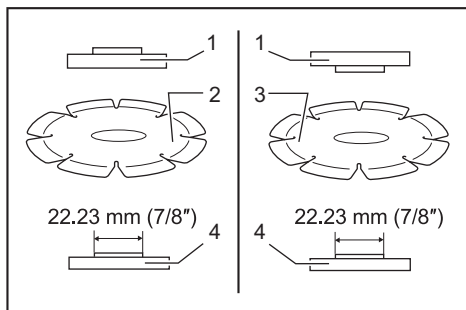
## For 115 mm (4 - 1/2") / 125 mm (5") model

**When installing the abrasive cut-off wheel:**



- 1. Lock nut 2. Abrasive cut-off wheel (Thinner than 4mm (5/32")) 3. Abrasive cut-off wheel (4mm (5/32") or thicker) 4. Inner flange

**When installing the diamond wheel:**



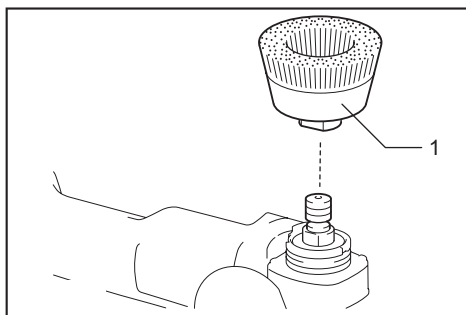
- 1. Lock nut 2. Diamond wheel (Thinner than 4mm (5/32")) 3. Diamond wheel (4mm (5/32") or thicker) 4. Inner flange

## Operation with wire cup brush

**Optional accessory**

**⚠ CAUTION:** Check operation of brush by running tool with no load, insuring that no one is in front of or in line with brush.

**⚠ CAUTION:** Do not use brush that is damaged, or which is out of balance. Use of damaged brush could increase potential for injury from contact with broken brush wires.



► 1. Wire cup brush

Remove the battery cartridge from the tool and place it upside down allowing easy access to spindle. Remove any accessories on spindle. Thread wire cup brush onto spindle and tighten with supplied wrench.

**NOTICE:** Avoid applying too much pressure which causes over bending of wires when using brush. It may lead to premature breakage.

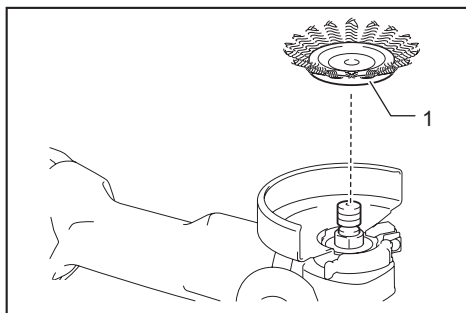
## Operation with wire wheel brush

### Optional accessory

**CAUTION:** Check operation of wire wheel brush by running tool with no load, insuring that no one is in front of or in line with the wire wheel brush.

**CAUTION:** Do not use wire wheel brush that is damaged, or which is out of balance. Use of damaged wire wheel brush could increase potential for injury from contact with broken wires.

**CAUTION:** ALWAYS use guard with wire wheel brushes, assuring diameter of wheel fits inside guard. Wheel can shatter during use and guard helps to reduce chances of personal injury.



► 1. Wire wheel brush

Remove the battery cartridge from the tool and place it upside down allowing easy access to spindle. Remove any accessories on spindle. Thread wire wheel brush onto spindle and tighten with the wrenches.

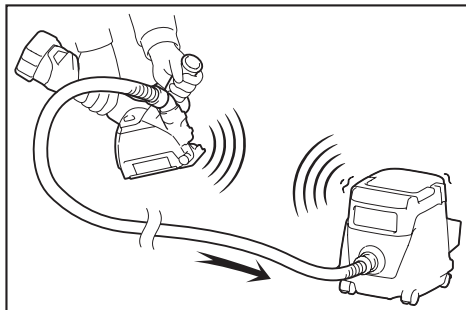
**NOTICE:** Avoid applying too much pressure which causes over bending of wires when using wire wheel brush. It may lead to premature breakage.

# WIRELESS ACTIVATION FUNCTION

For DGA412/DGA414/DGA462/DGA464/DGA512/DGA514 only

## What you can do with the wireless activation function

The wireless activation function enables clean and comfortable operation. By connecting a supported vacuum cleaner to the tool, you can run the vacuum cleaner automatically along with the switch operation of the tool.



To use the wireless activation function, prepare following items:

- A wireless unit
- A vacuum cleaner which supports the wireless activation function

The overview of the wireless activation function setting is as follows. Refer to each section for detail procedures.

1. Installing the wireless unit
2. Tool registration for the vacuum cleaner
3. Starting the wireless activation function

## Installing the wireless unit

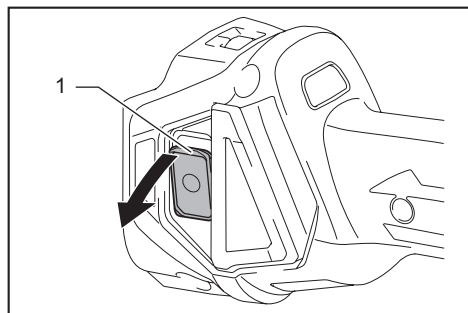
**CAUTION:** Place the tool on a flat and stable surface when installing the wireless unit.

**NOTICE:** Clean the dust and dirt on the tool before installing the wireless unit. Dust or dirt may cause malfunction if it comes into the slot of the wireless unit.

**NOTICE:** To prevent the malfunction caused by static, touch a static discharging material, such as a metal part of the tool, before picking up the wireless unit.

**NOTICE:** When installing the wireless unit, always be sure that the wireless unit is inserted in the correct direction and the lid is completely closed.

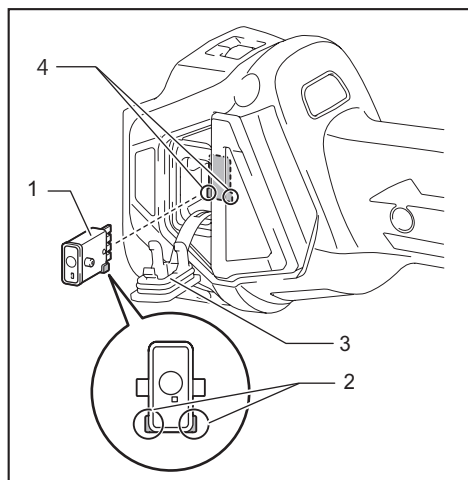
1. Open the lid on the tool as shown in the figure.



► 1. Lid

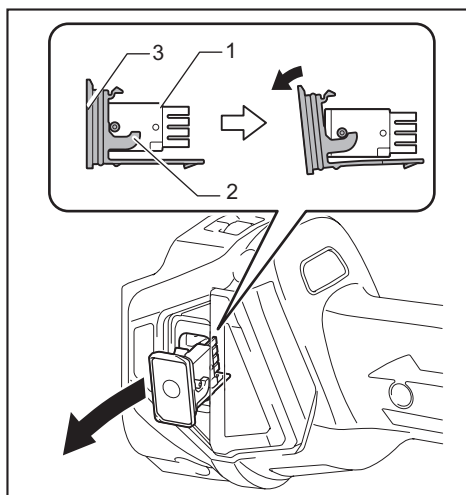
2. Insert the wireless unit to the slot and then close the lid.

When inserting the wireless unit, align the projections with the recessed portions on the slot.



► 1. Wireless unit 2. Projection 3. Lid 4. Recessed portion

When removing the wireless unit, open the lid slowly. The hooks on the back of the lid will lift the wireless unit as you pull up the lid.



► 1. Wireless unit 2. Hook 3. Lid

After removing the wireless unit, keep it in the supplied case or a static-free container.

**NOTICE:** Always use the hooks on the back of the lid when removing the wireless unit. If the hooks do not catch the wireless unit, close the lid completely and open it slowly again.

## Tool registration for the vacuum cleaner

**NOTE:** A Makita vacuum cleaner supporting the wireless activation function is required for the tool registration.

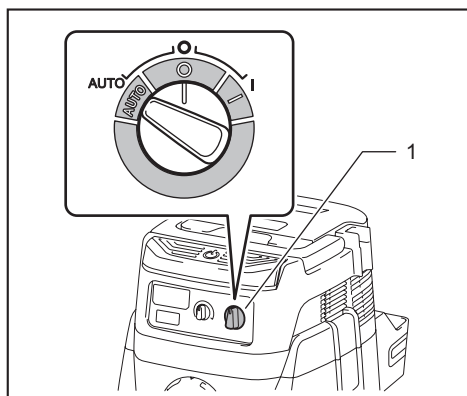
**NOTE:** Finish installing the wireless unit to the tool before starting the tool registration.

**NOTE:** During the tool registration, do not pull the switch trigger or turn on the power switch on the vacuum cleaner.

**NOTE:** Refer to the instruction manual of the vacuum cleaner, too.

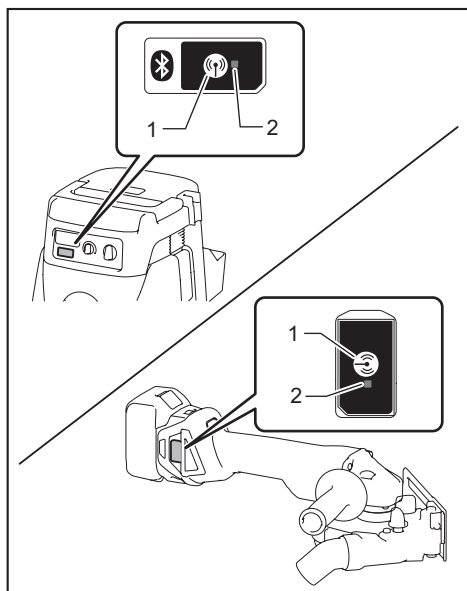
If you wish to activate the vacuum cleaner along with the switch operation of the tool, finish the tool registration beforehand.

1. Install the batteries to the vacuum cleaner and the tool.
2. Set the stand-by switch on the vacuum cleaner to "AUTO".



► 1. Stand-by switch

3. Press the wireless activation button on the vacuum cleaner for 3 seconds until the wireless activation lamp blinks in green. And then press the wireless activation button on the tool in the same way.



► 1. Wireless activation button 2. Wireless activation lamp

If the vacuum cleaner and the tool are linked successfully, the wireless activation lamps will light up in green for 2 seconds and start blinking in blue.

**NOTE:** The wireless activation lamps finish blinking in green after 20 seconds elapsed. Press the wireless activation button on the tool while the wireless activation lamp on the cleaner is blinking. If the wireless activation lamp does not blink in green, push the wireless activation button briefly and hold it down again.

**NOTE:** When performing two or more tool registrations for one vacuum cleaner, finish the tool registration one by one.

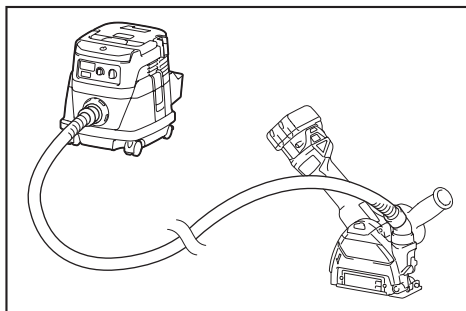
## Starting the wireless activation function

**NOTE:** Finish the tool registration for the vacuum cleaner prior to the wireless activation.

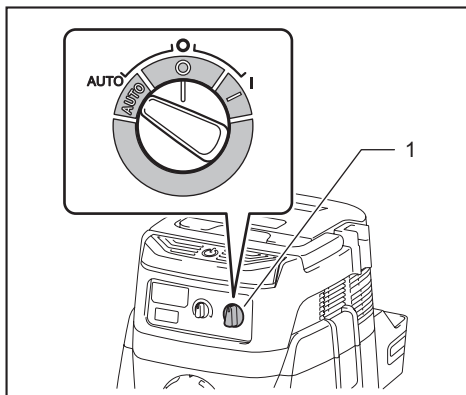
**NOTE:** Refer to the instruction manual of the vacuum cleaner, too.

After registering a tool to the vacuum cleaner, the vacuum cleaner will automatically runs along with the switch operation of the tool.

1. Install the wireless unit to the tool.
2. Connect the hose of the vacuum cleaner with the tool.



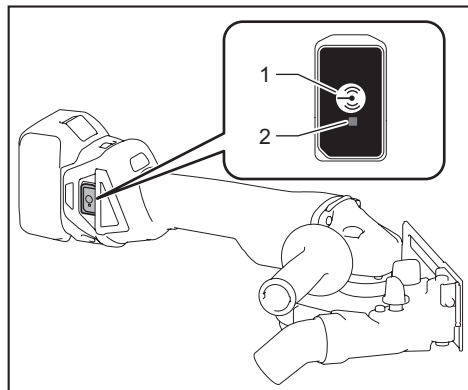
3. Set the stand-by switch on the vacuum cleaner to "AUTO".



► 1. Stand-by switch



4. Push the wireless activation button on the tool briefly. The wireless activation lamp will blink in blue.



- 1. Wireless activation button 2. Wireless activation lamp

5. Pull the switch trigger of the tool. Check if the vacuum cleaner runs while the switch trigger is being pulled.

To stop the wireless activation of the vacuum cleaner, push the wireless activation button on the tool.

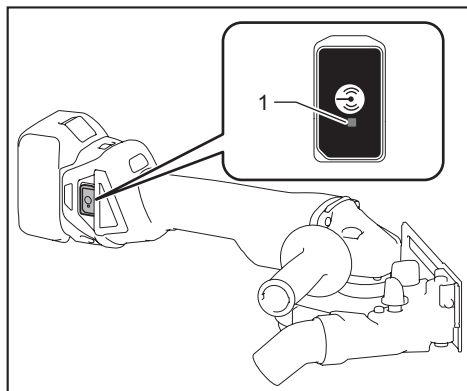
**NOTE:** The wireless activation lamp on the tool will stop blinking in blue when there is no operation for 2 hours. In this case, set the stand-by switch on the vacuum cleaner to "AUTO" and push the wireless activation button on the tool again.

**NOTE:** The vacuum cleaner starts/stops with a delay. There is a time lag when the vacuum cleaner detects a switch operation of the tool.

**NOTE:** The transmission distance of the wireless unit may vary depending on the location and surrounding circumstances.

**NOTE:** When two or more tools are registered to one vacuum cleaner, the vacuum cleaner may start running even if you don't pull the switch trigger because another user is using the wireless activation function.

## Description of the wireless activation lamp status



► 1. Wireless activation lamp

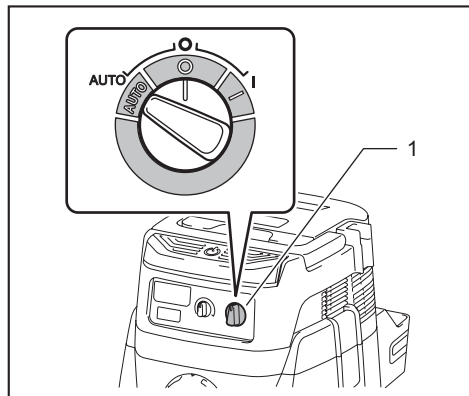
The wireless activation lamp shows the status of the wireless activation function. Refer to the table below for the meaning of the lamp status.

Status	Wireless activation lamp				Description
	Color	■ On	▣ Blinking	Duration	
Standby	Blue		▣	2 hours	The wireless activation of the vacuum cleaner is available. The lamp will automatically turn off when no operation is performed for 2 hours.
		■		When the tool is running.	The wireless activation of the vacuum cleaner is available and the tool is running.
Tool registration	Green		▣	20 seconds	Ready for the tool registration. Waiting for the registration by the vacuum cleaner.
		■		2 seconds	The tool registration has been finished. The wireless activation lamp will start blinking in blue.
Cancelling tool registration	Red		▣	20 seconds	Ready for the cancellation of the tool registration. Waiting for the cancellation by the vacuum cleaner.
		■		2 seconds	The cancellation of the tool registration has been finished. The wireless activation lamp will start blinking in blue.
Others	Red	■		3 seconds	The power is supplied to the wireless unit and the wireless activation function is starting up.
	Off	-		-	The wireless activation of the vacuum cleaner is stopped.

## Cancelling tool registration for the vacuum cleaner

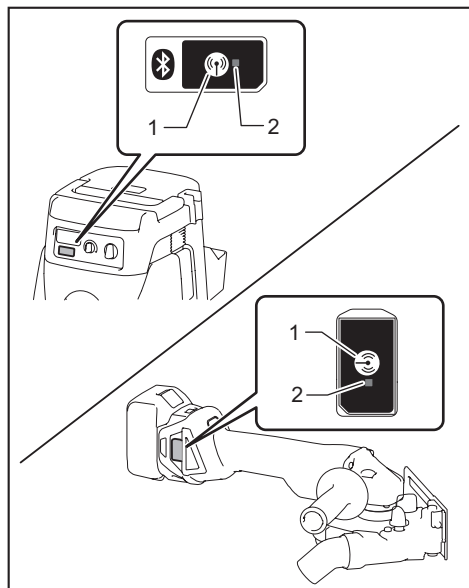
Perform the following procedure when cancelling the tool registration for the vacuum cleaner.

1. Install the batteries to the vacuum cleaner and the tool.
2. Set the stand-by switch on the vacuum cleaner to "AUTO".



► 1. Stand-by switch

3. Press the wireless activation button on the vacuum cleaner for 6 seconds. The wireless activation lamp blinks in green and then become red. After that, press the wireless activation button on the tool in the same way.



► 1. Wireless activation button 2. Wireless activation lamp

If the cancellation is performed successfully, the wireless activation lamps will light up in red for 2 seconds and start blinking in blue.

**NOTE:** The wireless activation lamps finish blinking in red after 20 seconds elapsed. Press the wireless activation button on the tool while the wireless activation lamp on the cleaner is blinking. If the wireless activation lamp does not blink in red, push the wireless activation button briefly and hold it down again.

## Troubleshooting for wireless activation function

Before asking for repairs, conduct your own inspection first. If you find a problem that is not explained in the manual, do not attempt to dismantle the tool. Instead, ask Makita Authorized Service Centers, always using Makita replacement parts for repairs.

State of abnormality	Probable cause (malfunction)	Remedy
The wireless activation lamp does not light/blink.	The wireless unit is not installed into the tool. The wireless unit is improperly installed into the tool.	Install the wireless unit correctly.
	The terminal of the wireless unit and/or the slot is dirty.	Gently wipe off dust and dirt on the terminal of the wireless unit and clean the slot.
	The wireless activation button on the tool has not been pushed.	Push the wireless activation button on the tool briefly.
	The stand-by switch on the vacuum cleaner is not set to "AUTO".	Set the stand-by switch on the vacuum cleaner to "AUTO".
	No power supply	Supply the power to the tool and the vacuum cleaner.
Cannot finish tool registration / cancelling tool registration successfully.	The wireless unit is not installed into the tool. The wireless unit is improperly installed into the tool.	Install the wireless unit correctly.
	The terminal of the wireless unit and/or the slot is dirty.	Gently wipe off dust and dirt on the terminal of the wireless unit and clean the slot.
	The stand-by switch on the vacuum cleaner is not set to "AUTO".	Set the stand-by switch on the vacuum cleaner to "AUTO".
	No power supply	Supply the power to the tool and the vacuum cleaner.
	Incorrect operation	Push the wireless activation button briefly and perform the tool registration/cancellation procedures again.
	The tool and vacuum cleaner is away from each other (out of the transmission range).	Get the tool and vacuum cleaner closer to each other. The maximum transmission distance is approximately 10 m however it may vary according to the circumstances.
	Before finishing the tool registration/cancellation; - the switch trigger on the tool is pulled or; - the power button on the vacuum cleaner is turned on.	Push the wireless activation button briefly and perform the tool registration/cancellation procedures again.
	The tool registration procedures for the tool or vacuum cleaner has not finished.	Perform the tool registration procedures for both the tool and the vacuum cleaner at the same timing.
	Radio disturbance by other appliances which generate high-intensity radio waves.	Keep the tool and vacuum cleaner away from the appliances such as Wi-Fi devices and microwave ovens.

State of abnormality	Probable cause (malfunction)	Remedy
The vacuum cleaner does not run along with the switch operation of the tool.	The wireless unit is not installed into the tool. The wireless unit is improperly installed into the tool.	Install the wireless unit correctly.
	The terminal of the wireless unit and/or the slot is dirty.	Gently wipe off dust and dirt on the terminal of the wireless unit and clean the slot.
	The wireless activation button on the tool has not been pushed.	Push the wireless activation button briefly and make sure that the wireless activation lamp is blinking in blue.
	The stand-by switch on the vacuum cleaner is not set to "AUTO".	Set the stand-by switch on the vacuum cleaner to "AUTO".
	More than 10 tools are registered to the vacuum cleaner.	Perform the tool registration again. If more than 10 tools are registered to the vacuum cleaner, the tool registered earliest will be cancelled automatically.
	The vacuum cleaner erased all tool registrations.	Perform the tool registration again.
	No power supply	Supply the power to the tool and the vacuum cleaner.
	The tool and vacuum cleaner is away from each other (out of the transmission range).	Get the tool and vacuum cleaner closer each other. The maximum transmission distance is approximately 10 m however it may vary according to the circumstances.
	Radio disturbance by other appliances which generate high-intensity radio waves.	Keep the tool and vacuum cleaner away from the appliances such as Wi-Fi devices and microwave ovens.
The vacuum cleaner runs while the tool's switch trigger is not pulled.	Other users are using the wireless activation of the vacuum cleaner with their tools.	Turn off the wireless activation button of the other tools or cancel the tool registration of the other tools.

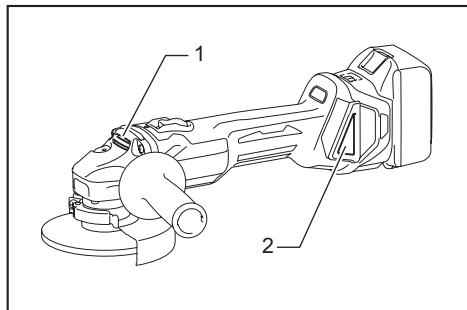
## MAINTENANCE

**CAUTION:** Always be sure that the tool is switched off and the battery cartridge is removed before attempting to perform inspection or maintenance.

**NOTICE:** Never use gasoline, benzine, thinner, alcohol or the like. Discoloration, deformation or cracks may result.

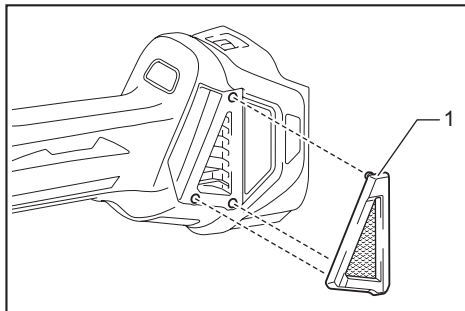
### Air vent cleaning

The tool and its air vents have to be kept clean. Regularly clean the tool's air vents or whenever the vents start to become obstructed.



► 1. Exhaust vent 2. Inhalation vent

Remove the dust cover from inhalation vent and clean it for smooth air circulation.



► 1. Dust cover

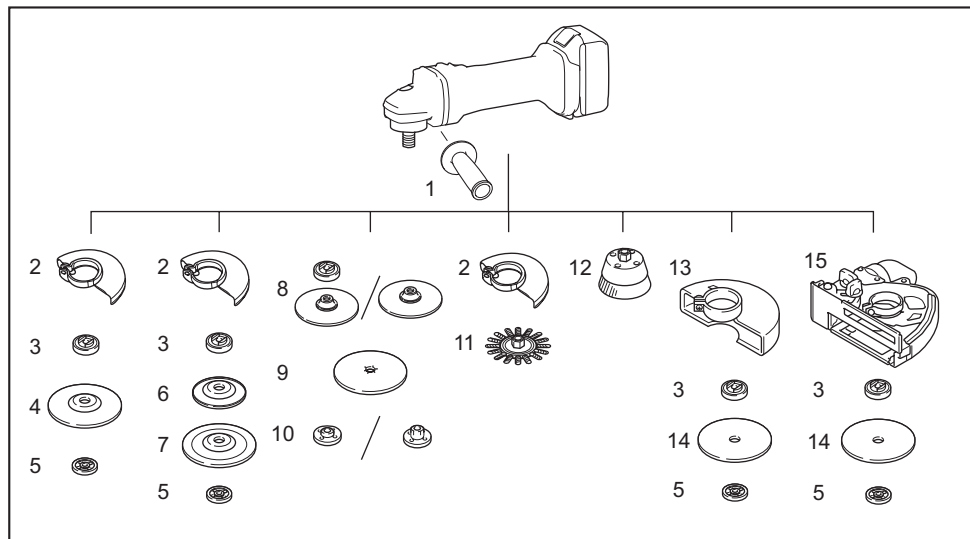
**NOTICE:** Clean out the dust cover when it is clogged with dust or foreign matters. Continuing operation with a clogged dust cover may damage the tool.

# OPTIONAL ACCESSORIES

**⚠ CAUTION:** These accessories or attachments are recommended for use with your Makita tool specified in this manual. The use of any other accessories or attachments might present a risk of injury to persons. Only use accessory or attachment for its stated purpose.

If you need any assistance for more details regarding these accessories, ask your local Makita Service Center.

- Makita genuine battery and charger
- Wireless unit (For models with wireless activation function)



	100 mm (4") model	115 mm (4-1/2") model	125 mm (5") model
-	Grip 36		
1	Wheel Guard (for grinding wheel)		
2	Inner flange		
3	Depressed center wheel / Flap disc		
4	Lock nut		
5	Back up pad		
6	Flex wheel		
7	Inner flange and rubber pad 76	Rubber pad 100	Rubber pad 115
8	Abrasive disc		
9	Sanding lock nut		
10	Wire wheel brush		
11	Wire cup brush		
12	Wheel Guard (for cut-off wheel) *1		
13	Abrasive cut-off wheel / Diamond wheel		
14	Dust collecting wheel guard		
15	Lock nut wrench		
-			

**NOTE:** \*1 In some European countries, when using a diamond wheel, the ordinary guard can be used instead of the special guard covering the both side of the wheel. Follow the regulations in your country.

**NOTE:** Some items in the list may be included in the tool package as standard accessories. They may differ from country to country.



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3070 Kortenberg, Belgium

**Makita Corporation** 3-11-8, Sumiyoshi-cho,  
Anjo, Aichi 446-8502 Japan

[www.makita.com](http://www.makita.com)

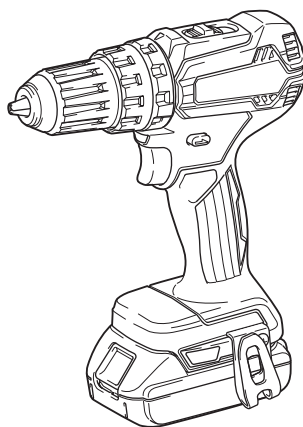
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## INSTRUCTION MANUAL



# Cordless Hammer Driver Drill DHP485



Read before use.

# SPECIFICATIONS

Model:		DHP485
Drilling capacities	Masonry	13 mm
	Steel	13 mm
	Wood	38 mm
Fastening capacities	Wood screw	6 mm x 75 mm
	Machine screw	M6
No load speed	High (2)	0 - 1,900 min <sup>-1</sup>
	Low (1)	0 - 500 min <sup>-1</sup>
Blows per minute	High (2)	0 - 28,500 min <sup>-1</sup>
	Low (1)	0 - 7,500 min <sup>-1</sup>
Overall length		182 mm
Rated voltage		D.C. 18 V
Net weight		1.5 - 1.8 kg

- Due to our continuing program of research and development, the specifications herein are subject to change without notice.
- Specifications may differ from country to country.
- The weight may differ depending on the attachment(s), including the battery cartridge. The lightest and heaviest combination, according to EPTA-Procedure 01/2014, are shown in the table.

## Applicable battery cartridge

BL1815N / BL1820 / BL1820B / BL1830 / BL1830B / BL1840 / BL1840B / BL1850 / BL1850B / BL1860B

- Some of the battery cartridges listed above may not be available depending on your region of residence.

**⚠ WARNING: Only use the battery cartridges listed above.** Use of any other battery cartridges may cause injury and/or fire.

## Symbols

The following show the symbols used for the equipment. Be sure that you understand their meaning before use.



Read instruction manual.



Only for EU countries  
Do not dispose of electric equipment or battery pack together with household waste material!  
In observance of the European Directives, on Waste Electric and Electronic Equipment and Batteries and Accumulators and Waste Batteries and Accumulators and their implementation in accordance with national laws, electric equipment and batteries and battery pack(s) that have reached the end of their life must be collected separately and returned to an environmentally compatible recycling facility.

## Intended use

The tool is intended for impact drilling in brick, brickwork and masonry. It is also suitable for screw driving and drilling without impact in wood, metal, ceramic and plastic.

## Noise

The typical A-weighted noise level determined according to EN60745-2-1:

Sound pressure level ( $L_{pA}$ ): 82 dB(A)

Sound power level ( $L_{WA}$ ): 93 dB (A)

Uncertainty (K): 3 dB(A)

**⚠ WARNING: Wear ear protection.**

## Vibration

The vibration total value (tri-axial vector sum) determined according to EN60745-2-1:

Work mode: impact drilling into concrete

Vibration emission ( $a_{h,D}$ ): 8.0 m/s<sup>2</sup>

Uncertainty (K): 1.5 m/s<sup>2</sup>

Work mode: drilling into metal

Vibration emission ( $a_{h,D}$ ): 2.5 m/s<sup>2</sup> or less

Uncertainty (K): 1.5 m/s<sup>2</sup>

**NOTE:** The declared vibration emission value has been measured in accordance with the standard test method and may be used for comparing one tool with another.

**NOTE:** The declared vibration emission value may also be used in a preliminary assessment of exposure.

**⚠WARNING:** The vibration emission during actual use of the power tool can differ from the declared emission value depending on the ways in which the tool is used.

**⚠WARNING:** Be sure to identify safety measures to protect the operator that are based on an estimation of exposure in the actual conditions of use (taking account of all parts of the operating cycle such as the times when the tool is switched off and when it is running idle in addition to the trigger time).

## EC Declaration of Conformity

### For European countries only

The EC declaration of conformity is included as Annex A to this instruction manual.

## SAFETY WARNINGS

### General power tool safety warnings

**⚠WARNING:** Read all safety warnings, instructions, illustrations and specifications provided with this power tool. Failure to follow all instructions listed below 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.

#### Work area safety

1. **Keep work area clean and well lit.** Cluttered or dark areas invite accidents.
2. **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.
3. **Keep children and bystanders away while operating a power tool.** Distractions can cause you to lose control.

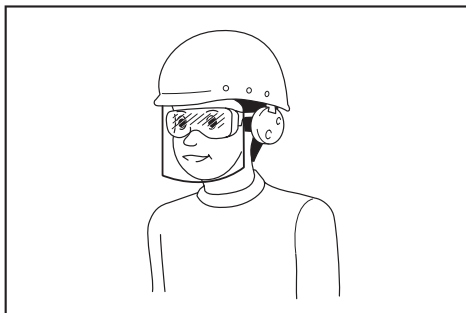
#### Electrical Safety

1. **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.
2. **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.
3. **Do not expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.
4. **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.

5. **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.
6. **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.
7. **Power tools can produce electromagnetic fields (EMF) that are not harmful to the user.** However, users of pacemakers and other similar medical devices should contact the maker of their device and/or doctor for advice before operating this power tool.

#### Personal Safety

1. **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.
2. **Use personal protective equipment. Always wear eye protection.** Protective equipment such as a dust mask, non-skid safety shoes, hard hat or hearing protection used for appropriate conditions will reduce personal injuries.
3. **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.
4. **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.
5. **Do not overreach. Keep proper footing and balance at all times.** This enables better control of the power tool in unexpected situations.
6. **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.
7. **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.
8. **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.
9. **Always wear protective goggles to protect your eyes from injury when using power tools. The goggles must comply with ANSI Z87.1 in the USA, EN 166 in Europe, or AS/NZS 1336 in Australia/New Zealand. In Australia/New Zealand, it is legally required to wear a face shield to protect your face, too.**



It is an employer's responsibility to enforce the use of appropriate safety protective equipments by the tool operators and by other persons in the immediate working area.

#### Power tool use and care

1. **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.
2. **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.
3. **Disconnect the plug from the power source and/or remove the battery pack, if detachable, 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.
4. **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.
5. **Maintain power tools and accessories. 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.
6. **Keep cutting tools sharp and clean.** Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.
7. **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.
8. **Keep handles and grasping surfaces dry, clean and free from oil and grease.** Slippery handles and grasping surfaces do not allow for safe handling and control of the tool in unexpected situations.
9. **When using the tool, do not wear cloth work gloves which may be entangled.** The entanglement of cloth work gloves in the moving parts may result in personal injury.

#### Battery tool use and care

1. **Recharge only with the charger specified by the manufacturer.** A charger that is suitable for one type of battery pack may create a risk of fire when used with another battery pack.
2. **Use power tools only with specifically designed battery packs.** Use of any other battery packs may create a risk of injury and fire.
3. **When battery pack is not in use, keep it away from other metal objects, like paper clips, coins, keys, nails, screws or other small metal objects, that can make a connection from one terminal to another.** Shorting the battery terminals together may cause burns or a fire.
4. **Under abusive conditions, liquid may be ejected from the battery; avoid contact. If contact accidentally occurs, flush with water. If liquid contacts eyes, additionally seek medical help.** Liquid ejected from the battery may cause irritation or burns.
5. **Do not use a battery pack or tool that is damaged or modified.** Damaged or modified batteries may exhibit unpredictable behaviour resulting in fire, explosion or risk of injury.
6. **Do not expose a battery pack or tool to fire or excessive temperature.** Exposure to fire or temperature above 130 °C may cause explosion.
7. **Follow all charging instructions and do not charge the battery pack or tool outside the temperature range specified in the instructions.** Charging improperly or at temperatures outside the specified range may damage the battery and increase the risk of fire.

#### Service

1. **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.
2. **Never service damaged battery packs.** Service of battery packs should only be performed by the manufacturer or authorized service providers.
3. **Follow instruction for lubricating and changing accessories.**

### Cordless hammer driver drill safety warnings

1. **Wear ear protectors when impact drilling.** Exposure to noise can cause hearing loss.
2. **Use auxiliary handle(s), if supplied with the tool.** Loss of control can cause personal injury.
3. **Hold power tool by insulated gripping surfaces, when performing an operation where the cutting accessory may contact hidden wiring.** Cutting accessory contacting a "live" wire may make exposed metal parts of the power tool "live" and could give the operator an electric shock.
4. **Hold power tool by insulated gripping surfaces, when performing an operation where the fastener may contact hidden wiring.** Fasteners contacting a "live" wire may make exposed metal parts of the power tool "live" and could give the operator an electric shock.

5. Always be sure you have a firm footing. Be sure no one is below when using the tool in high locations.
6. Hold the tool firmly.
7. Keep hands away from rotating parts.
8. Do not leave the tool running. Operate the tool only when hand-held.
9. Do not touch the bit or the workpiece immediately after operation; they may be extremely hot and could burn your skin.
10. Some material contains chemicals which may be toxic. Take caution to prevent dust inhalation and skin contact. Follow material supplier safety data.
11. If the drill bit cannot be loosened even you open the jaws, use pliers to pull it out. In such a case, pulling out the drill bit by hand may result in injury by its sharp edge.

## SAVE THESE INSTRUCTIONS.

**⚠WARNING:** DO NOT let comfort or familiarity with product (gained from repeated use) replace strict adherence to safety rules for the subject product. MISUSE or failure to follow the safety rules stated in this instruction manual may cause serious personal injury.

### Important safety instructions for battery cartridge

1. Before using battery cartridge, read all instructions and cautionary markings on (1) battery charger, (2) battery, and (3) product using battery.
2. Do not disassemble battery cartridge.
3. If operating time has become excessively shorter, stop operating immediately. It may result in a risk of overheating, possible burns and even an explosion.
4. If electrolyte gets into your eyes, rinse them out with clear water and seek medical attention right away. It may result in loss of your eyesight.
5. Do not short the battery cartridge:
  - (1) Do not touch the terminals with any conductive material.
  - (2) Avoid storing battery cartridge in a container with other metal objects such as nails, coins, etc.
  - (3) Do not expose battery cartridge to water or rain.

A battery short can cause a large current flow, overheating, possible burns and even a breakdown.
6. Do not store the tool and battery cartridge in locations where the temperature may reach or exceed 50 °C (122 °F).
7. Do not incinerate the battery cartridge even if it is severely damaged or is completely worn out. The battery cartridge can explode in a fire.
8. Be careful not to drop or strike battery.
9. Do not use a damaged battery.
10. The contained lithium-ion batteries are subject to the Dangerous Goods Legislation requirements.

For commercial transports e.g. by third parties, forwarding agents, special requirement on packaging and labeling must be observed. For preparation of the item being shipped, consulting an expert for hazardous material is required. Please also observe possibly more detailed national regulations.

Tape or mask off open contacts and pack up the battery in such a manner that it cannot move around in the packaging.

11. Follow your local regulations relating to disposal of battery.
12. Use the batteries only with the products specified by Makita. Installing the batteries to non-compliant products may result in a fire, excessive heat, explosion, or leak of electrolyte.

## SAVE THESE INSTRUCTIONS.

**⚠CAUTION:** Only use genuine Makita batteries. Use of non-genuine Makita batteries, or batteries that have been altered, may result in the battery bursting causing fires, personal injury and damage. It will also void the Makita warranty for the Makita tool and charger.

### Tips for maintaining maximum battery life

1. Charge the battery cartridge before completely discharged. Always stop tool operation and charge the battery cartridge when you notice less tool power.
2. Never recharge a fully charged battery cartridge. Overcharging shortens the battery service life.
3. Charge the battery cartridge with room temperature at 10 °C - 40 °C (50 °F - 104 °F). Let a hot battery cartridge cool down before charging it.
4. Charge the battery cartridge if you do not use it for a long period (more than six months).

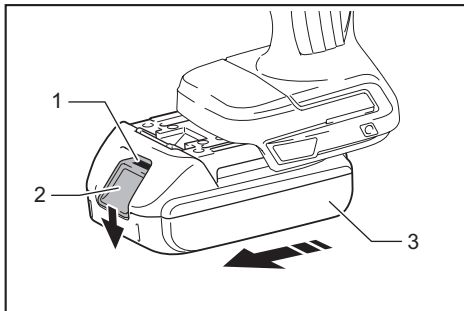
# FUNCTIONAL DESCRIPTION

**⚠ CAUTION:** Always be sure that the tool is switched off and the battery cartridge is removed before adjusting or checking function on the tool.

## Installing or removing battery cartridge

**⚠ CAUTION:** Always switch off the tool before installing or removing of the battery cartridge.

**⚠ CAUTION:** Hold the tool and the battery cartridge firmly when installing or removing battery cartridge. Failure to hold the tool and the battery cartridge firmly may cause them to slip off your hands and result in damage to the tool and battery cartridge and a personal injury.



► 1. Red indicator 2. Button 3. Battery cartridge

To remove the battery cartridge, slide it from the tool while sliding the button on the front of the cartridge.

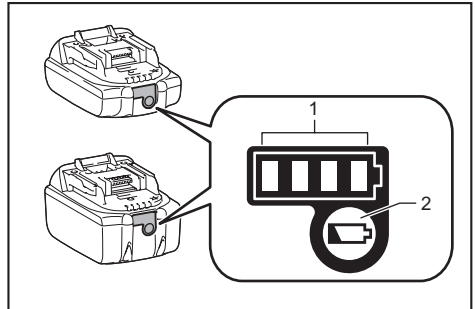
To install the battery cartridge, align the tongue on the battery cartridge with the groove in the housing and slip it into place. Insert it all the way until it locks in place with a little click. If you can see the red indicator on the upper side of the button, it is not locked completely.

**⚠ CAUTION:** Always install the battery cartridge fully until the red indicator cannot be seen. If not, it may accidentally fall out of the tool, causing injury to you or someone around you.

**⚠ CAUTION:** Do not install the battery cartridge forcibly. If the cartridge does not slide in easily, it is not being inserted correctly.

## Indicating the remaining battery capacity

Only for battery cartridges with the indicator



► 1. Indicator lamps 2. Check button

Press the check button on the battery cartridge to indicate the remaining battery capacity. The indicator lamps light up for a few seconds.

Indicator lamps			Remaining capacity
Lighted	Off	Blinking	
			75% to 100%
			50% to 75%
			25% to 50%
			0% to 25%
			Charge the battery.
			The battery may have malfunctioned.

**NOTE:** Depending on the conditions of use and the ambient temperature, the indication may differ slightly from the actual capacity.

## Tool / battery protection system

The tool is equipped with a tool/battery protection system. This system automatically cuts off power to the motor to extend tool and battery life. The tool will automatically stop during operation if the tool or battery is placed under one of the following conditions:

### Overload protection

When the tool/battery is operated in a manner that causes it to draw an abnormally high current, the tool stops automatically. In this situation, turn the tool off and stop the application that caused the tool to become overloaded. Then turn the tool on to restart.

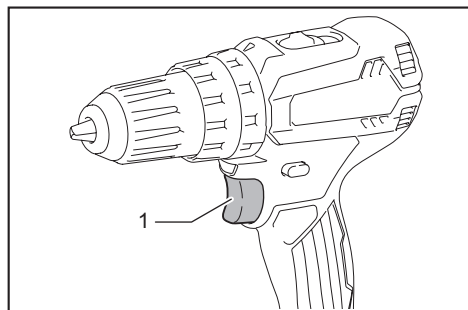
## Overheat protection

When the tool/battery is overheated, the tool stops automatically. In this situation, let the tool/battery cool before turning the tool on again.

## Overdischarge protection

When the battery capacity is not enough, the tool stops automatically. In this case, remove the battery from the tool and charge the battery.

### Switch action



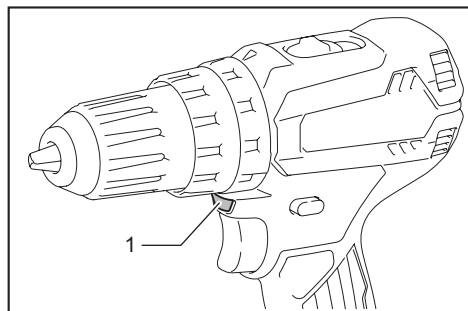
► 1. Switch trigger

**⚠ CAUTION:** Before installing the battery cartridge into the tool, always check to see that the switch trigger actuates properly and returns to the "OFF" position when released.

To start the tool, simply pull the switch trigger. Tool speed is increased by increasing pressure on the switch trigger. Release the switch trigger to stop.

**NOTE:** The tool automatically stops if you keep pulling the switch trigger for about 6 minutes.

### Lighting up the front lamp



► 1. Lamp

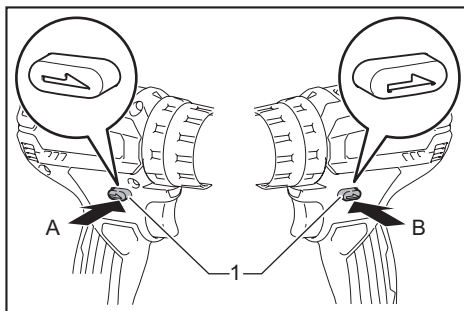
**⚠ CAUTION:** Do not look in the light or see the source of light directly.

Pull the switch trigger to light up the lamp. The lamp keeps on lighting while the switch trigger is being pulled. The lamp goes out approximately 10 seconds after releasing the switch trigger.

**NOTE:** When the tool is overheated, the tool stops automatically and the lamp starts flashing. In this case, release the switch trigger. The lamp turns off in one minute.

**NOTE:** Use a dry cloth to wipe the dirt off the lens of the lamp. Be careful not to scratch the lens of lamp, or it may lower the illumination.

### Reversing switch action



► 1. Reversing switch lever

**⚠ CAUTION:** Always check the direction of rotation before operation.

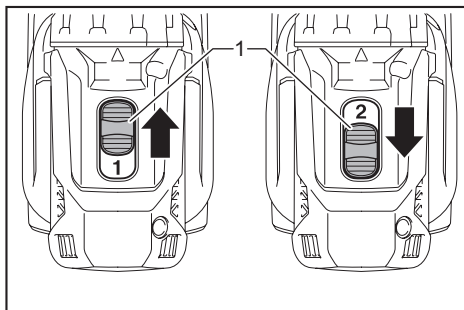
**⚠ CAUTION:** Use the reversing switch only after the tool comes to a complete stop. Changing the direction of rotation before the tool stops may damage the tool.

**⚠ CAUTION:** When not operating the tool, always set the reversing switch lever to the neutral position.

This tool has a reversing switch to change the direction of rotation. Depress the reversing switch lever from the A side for clockwise rotation or from the B side for counterclockwise rotation.

When the reversing switch lever is in the neutral position, the switch trigger cannot be pulled.

### Speed change



► 1. Speed change lever



**⚠ CAUTION:** Always set the speed change lever fully to the correct position. If you operate the tool with the speed change lever positioned halfway between the "1" side and "2" side, the tool may be damaged.

**⚠ CAUTION:** Do not use the speed change lever while the tool is running. The tool may be damaged.



Displayed Number	Speed	Torque	Applicable operation
1	Low	High	Heavy loading operation
2	High	Low	Light loading operation

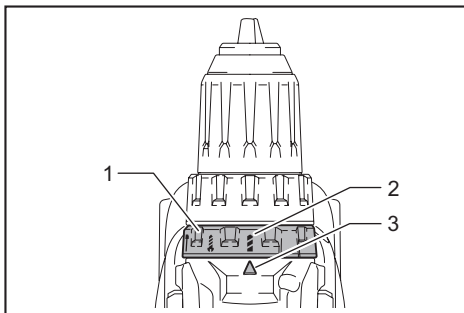
To change the speed, switch off the tool first. Push the speed change lever to display "2" for high speed or "1" for low speed but high torque. Be sure that the speed change lever is set to the correct position before operation.

If the tool speed is coming down extremely during the operation with display "2", push the lever to display "1" and restart the operation.

## Selecting the action mode




**⚠ CAUTION:** Always set the ring correctly to your desired mode mark. If you operate the tool with the ring positioned halfway between the mode marks, the tool may be damaged.

**⚠ CAUTION:** When you change the position from "  " to other modes, it may be a little difficulty to slide the action mode changing ring. In this case, switch on and run the tool for a second at the "  " position, then stop the tool and slide the ring to your desired position.



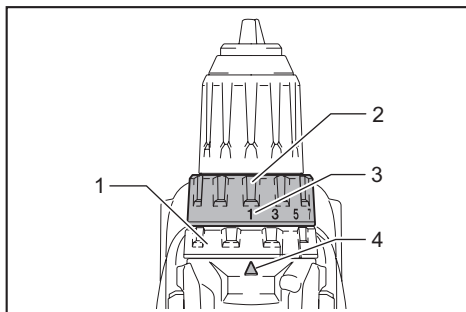
► 1. Action mode changing ring 2. Mark 3. Arrow

This tool has three action modes.

-  Drilling mode (rotation only)
-  Hammer drilling mode (rotation with hammering)
-  Screwdriving mode (rotation with clutch)

Select one mode suitable for your work. Turn the action mode changing ring and align the mark that you selected with the arrow on the tool body.

## Adjusting the fastening torque



► 1. Action mode changing ring 2. Adjusting ring  
3. Graduation 4. Arrow

The fastening torque can be adjusted in 21 levels by turning the adjusting ring. Align the graduations with the arrow on the tool body. You can get the minimum fastening torque at 1 and maximum torque at 21. Before actual operation, drive a trial screw into your material or a piece of duplicate material to determine which torque level is required for a particular application. The following shows the rough guide of the relationship between the screw size and graduation.

Graduation		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Machine screw		M4					M5									M6						
Wood screw	Soft wood (e.g. pine)	—					ø3.5 x 22				ø4.1x 38				—							
	Hard wood (e.g. lauan)	—					ø3.5 x 22				ø4.1x 38				—							

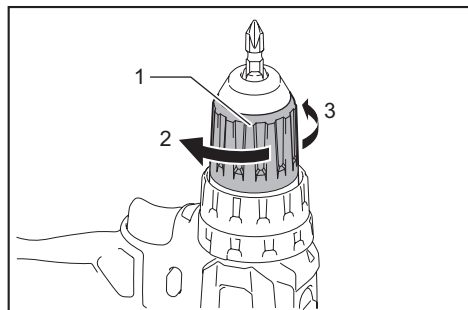


## ASSEMBLY

**⚠ CAUTION:** Always be sure that the tool is switched off and the battery cartridge is removed before carrying out any work on the tool.

### Installing or removing driver bit/drill bit

#### Optional accessory

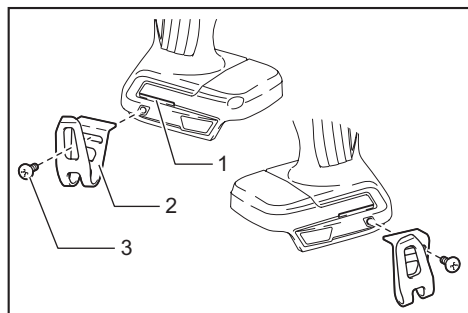


► 1. Sleeve 2. Close 3. Open

Turn the sleeve counterclockwise to open the chuck jaws. Place the driver bit/drill bit in the chuck as far as it will go. Turn the sleeve clockwise to tighten the chuck. To remove the driver bit/drill bit, turn the sleeve counterclockwise.

### Installing hook

**⚠ CAUTION:** When installing the hook, always secure it with the screw firmly. If not, the hook may come off from the tool and result in the personal injury.

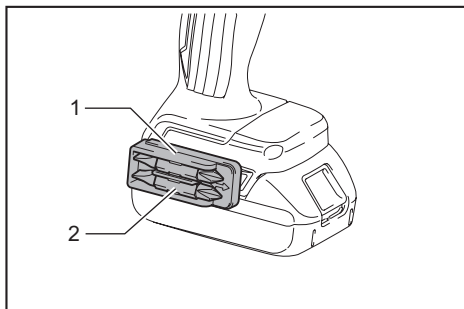


► 1. Groove 2. Hook 3. Screw

The hook is convenient for temporarily hanging the tool. This can be installed on either side of the tool. To install the hook, insert it into a groove in the tool housing on either side and then secure it with a screw. To remove, loosen the screw and then take it out.

## Installing driver bit holder

#### Optional accessory



► 1. Driver bit holder 2. Driver bit

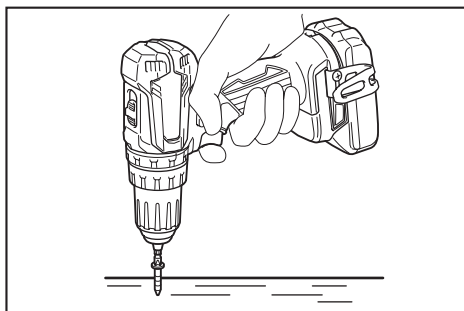
Fit the driver bit holder into the protrusion at the tool foot on either right or left side and secure it with a screw. When not using the driver bit, keep it in the driver bit holders. Driver bits 45 mm-long can be kept there.

## OPERATION

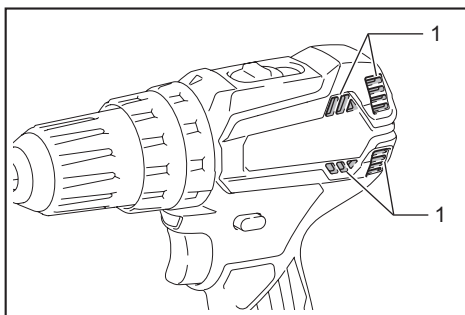
**⚠ CAUTION:** Always insert the battery cartridge all the way until it locks in place. If you can see the red indicator on the upper side of the button, it is not locked completely. Insert it fully until the red indicator cannot be seen. If not, it may accidentally fall out of the tool, causing injury to you or someone around you.

**⚠ CAUTION:** When the speed comes down extremely, reduce the load or stop the tool to avoid the tool damage.

Hold the tool firmly with one hand on the grip and the other hand on the bottom of the battery cartridge to control the twisting action.



**NOTICE:** Do not cover vents, or it may cause overheating and damage to the tool.




► 1. Vent

## Screwdriving operation

**⚠CAUTION:** Adjust the adjusting ring to the proper torque level for your work.


**⚠CAUTION:** Make sure that the driver bit is inserted straight in the screw head, or the screw and/or driver bit may be damaged.

First, turn the action mode changing ring so that the arrow on the tool body points to the  marking. Place the point of the driver bit in the screw head and apply pressure to the tool. Start the tool slowly and then increase the speed gradually. Release the switch trigger as soon as the clutch cuts in.

**NOTE:** When driving wood screw, pre-drill a pilot hole 2/3 the diameter of the screw. It makes driving easier and prevents splitting of the workpiece.

## Hammer drilling operation

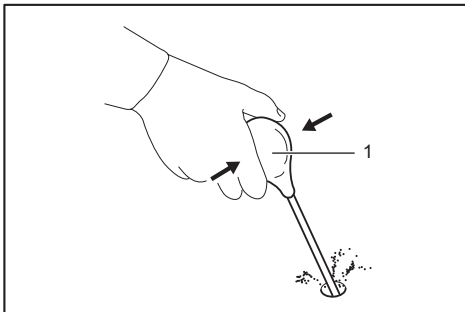
**⚠CAUTION:** There is a tremendous and sudden twisting force exerted on the tool/drill bit at the time of hole breakthrough, when the hole becomes clogged with chips and particles, or when striking reinforcing rods embedded in the concrete.

First, turn the action mode changing ring so that the arrow on the tool body points to the  marking. The adjusting ring can be aligned in any torque levels for this operation.

Be sure to use a tungsten-carbide tipped drill bit. Position the drill bit at the desired location for the hole, then pull the switch trigger. Do not force the tool. Light pressure gives best results. Keep the tool in position and prevent it from slipping away from the hole. Do not apply more pressure when the hole becomes clogged with chips or particles. Instead, run the tool at an idle, then remove the drill bit partially from the hole. By repeating this several times, the hole will be cleaned out and normal drilling may be resumed.

## Blow-out bulb


### Optional accessory



► 1. Blow-out bulb

After drilling the hole, use the blow-out bulb to clean the dust out of the hole.

## Drilling operation

First, turn the action mode changing ring so that the arrow points to the  marking. Then proceed as follows.

### Drilling in wood

When drilling in wood, the best results are obtained with wood drills equipped with a guide screw. The guide screw makes drilling easier by pulling the drill bit into the workpiece.

### Drilling in metal

To prevent the drill bit from slipping when starting a hole, make an indentation with a center-punch and hammer at the point to be drilled. Place the point of the drill bit in the indentation and start drilling. Use a cutting lubricant when drilling metals. The exceptions are iron and brass which should be drilled dry.

**⚠CAUTION:** Pressing excessively on the tool will not speed up the drilling. In fact, this excessive pressure will only serve to damage the tip of your drill bit, decrease the tool performance and shorten the service life of the tool.

**⚠CAUTION:** Hold the tool firmly and exert care when the drill bit begins to break through the workpiece. There is a tremendous force exerted on the tool/drill bit at the time of hole break through.

**⚠CAUTION:** A stuck drill bit can be removed simply by setting the reversing switch to reverse rotation in order to back out. However, the tool may back out abruptly if you do not hold it firmly.

**⚠CAUTION:** Always secure workpieces in a vise or similar hold-down device.

**⚠CAUTION:** If the tool is operated continuously until the battery cartridge has discharged, allow the tool to rest for 15 minutes before proceeding with a fresh battery.

# MAINTENANCE

**⚠ CAUTION:** Always be sure that the tool is switched off and the battery cartridge is removed before attempting to perform inspection or maintenance.

**NOTICE:** Never use gasoline, benzine, thinner, alcohol or the like. Discoloration, deformation or cracks may result.

To maintain product SAFETY and RELIABILITY, repairs, any other maintenance or adjustment should be performed by Makita Authorized or Factory Service Centers, always using Makita replacement parts.

# OPTIONAL ACCESSORIES

**⚠ CAUTION:** These accessories or attachments are recommended for use with your Makita tool specified in this manual. The use of any other accessories or attachments might present a risk of injury to persons. Only use accessory or attachment for its stated purpose.

If you need any assistance for more details regarding these accessories, ask your local Makita Service Center.

- Drill bits
- Driver bits
- Tungsten-carbide tipped drill bit
- Blow-out bulb
- Driver bit holder
- Hook
- Tool hanger
- Makita genuine battery and charger

**NOTE:** Some items in the list may be included in the tool package as standard accessories. They may differ from country to country.

**Makita Europe N.V.** Jan-Baptist Vinkstraat 2,  
3070 Kortenberg, Belgium

**Makita Corporation** 3-11-8, Sumiyoshi-cho,  
Anjo, Aichi 446-8502 Japan

[www.makita.com](http://www.makita.com)

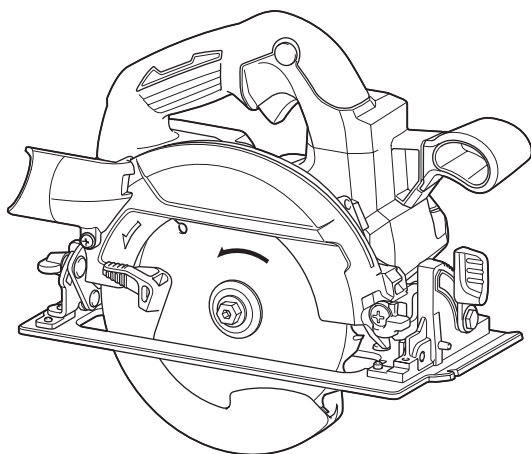
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## INSTRUCTION MANUAL



# Cordless Circular Saw

**DHS660**  
**DHS661**



Read before use.

# SPECIFICATIONS

Model:		DHS660	DHS661
Blade diameter		165 mm	
Max. Cutting depth	at 0°	57 mm	
	at 45° bevel	41 mm	
	at 50° bevel	37 mm	
No load speed		5,000 min <sup>-1</sup>	
Overall length		270 mm	
Rated voltage		D.C. 18 V	
Net weight		2.9 - 3.2 kg	

- Due to our continuing program of research and development, the specifications herein are subject to change without notice.
- Specifications and battery cartridge may differ from country to country.
- The weight may differ depending on the attachment(s), including the battery cartridge. The lightest and heaviest combination, according to EPTA-Procedure 01/2014, are shown in the table.

## Applicable battery cartridge and charger

Battery cartridge	BL1815N / BL1820 / BL1820B / BL1830 / BL1830B / BL1840 / BL1840B / BL1850 / BL1850B / BL1860B
Charger	DC18RC / DC18RD / DC18SD / DC18SE / DC18SF

- Some of the battery cartridges and chargers listed above may not be available depending on your region of residence.

**⚠ WARNING:** Only use the battery cartridges and chargers listed above. Use of any other battery cartridges and chargers may cause injury and/or fire.

## Symbols

The following show the symbols used for the equipment. Be sure that you understand their meaning before use.



Read instruction manual.



Only for EU countries  
Do not dispose of electric equipment or battery pack together with household waste material! In observance of the European Directives, on Waste Electric and Electronic Equipment and Batteries and Accumulators and Waste Batteries and Accumulators and their implementation in accordance with national laws, electric equipment and batteries and battery pack(s) that have reached the end of their life must be collected separately and returned to an environmentally compatible recycling facility.

## Intended use

The tool is intended for performing lengthways and crossways straight cuts and mitre cuts with angles in wood while in firm contact with the workpiece.

## Noise

The typical A-weighted noise level determined according to EN62841:

Sound pressure level ( $L_{pA}$ ): 93 dB(A)

Sound power level ( $L_{WA}$ ): 104 dB(A)

Uncertainty (K): 3 dB(A)

**⚠ WARNING:** Wear ear protection.

## Vibration

The vibration total value (tri-axial vector sum) determined according to EN62841:

Work mode: cutting wood

Vibration emission ( $a_{h,w}$ ): 2.5 m/s<sup>2</sup> or less

Uncertainty (K): 1.5 m/s<sup>2</sup>

**NOTE:** The declared vibration emission value has been measured in accordance with the standard test method and may be used for comparing one tool with another.

**NOTE:** The declared vibration emission value may also be used in a preliminary assessment of exposure.

**⚠ WARNING:** The vibration emission during actual use of the power tool can differ from the declared emission value depending on the ways in which the tool is used.

**⚠ WARNING:** Be sure to identify safety measures to protect the operator that are based on an estimation of exposure in the actual conditions of use (taking account of all parts of the operating cycle such as the times when the tool is switched off and when it is running idle in addition to the trigger time).

## EC Declaration of Conformity

**For European countries only**

The EC declaration of conformity is included as Annex A to this instruction manual.

# SAFETY WARNINGS

## General power tool safety warnings

**⚠ WARNING:** Read all safety warnings, instructions, illustrations and specifications provided with this power tool. Failure to follow all instructions listed below 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.

#### Work area safety

1. **Keep work area clean and well lit.** Cluttered or dark areas invite accidents.
2. **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.
3. **Keep children and bystanders away while operating a power tool.** Distractions can cause you to lose control.

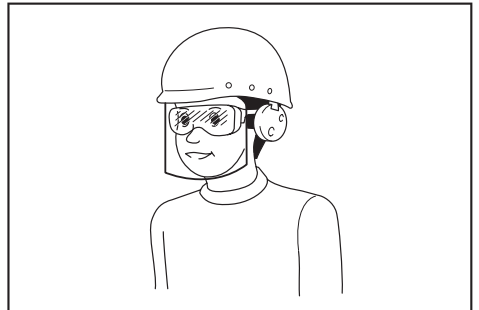
#### Electrical Safety

1. **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.
2. **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.
3. **Do not expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.
4. **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.
5. **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.
6. **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.
7. **Power tools can produce electromagnetic fields (EMF) that are not harmful to the user.** However, users of pacemakers and other similar medical devices should contact the maker of their device and/or doctor for advice before operating this power tool.

#### Personal Safety

1. **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.

2. **Use personal protective equipment. Always wear eye protection.** Protective equipment such as a dust mask, non-skid safety shoes, hard hat or hearing protection used for appropriate conditions will reduce personal injuries.
3. **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.
4. **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.
5. **Do not overreach. Keep proper footing and balance at all times.** This enables better control of the power tool in unexpected situations.
6. **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.
7. **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.
8. **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.
9. **Always wear protective goggles to protect your eyes from injury when using power tools. The goggles must comply with ANSI Z87.1 in the USA, EN 166 in Europe, or AS/NZS 1336 in Australia/New Zealand. In Australia/New Zealand, it is legally required to wear a face shield to protect your face, too.**



It is an employer's responsibility to enforce the use of appropriate safety protective equipments by the tool operators and by other persons in the immediate working area.

#### Power tool use and care

1. **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.
2. **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.

3. **Disconnect the plug from the power source and/or remove the battery pack, if detachable, 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.
4. **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.
5. **Maintain power tools and accessories.** 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.
6. **Keep cutting tools sharp and clean.** Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.
7. **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.
8. **Keep handles and grasping surfaces dry, clean and free from oil and grease.** Slippery handles and grasping surfaces do not allow for safe handling and control of the tool in unexpected situations.
9. **When using the tool, do not wear cloth work gloves which may be entangled.** The entanglement of cloth work gloves in the moving parts may result in personal injury.

#### Battery tool use and care

1. **Recharge only with the charger specified by the manufacturer.** A charger that is suitable for one type of battery pack may create a risk of fire when used with another battery pack.
2. **Use power tools only with specifically designated battery packs.** Use of any other battery packs may create a risk of injury and fire.
3. **When battery pack is not in use, keep it away from other metal objects, like paper clips, coins, keys, nails, screws or other small metal objects, that can make a connection from one terminal to another.** Shorting the battery terminals together may cause burns or a fire.
4. **Under abusive conditions, liquid may be ejected from the battery; avoid contact.** If contact accidentally occurs, flush with water. If liquid contacts eyes, additionally seek medical help. Liquid ejected from the battery may cause irritation or burns.
5. **Do not use a battery pack or tool that is damaged or modified.** Damaged or modified batteries may exhibit unpredictable behaviour resulting in fire, explosion or risk of injury.
6. **Do not expose a battery pack or tool to fire or excessive temperature.** Exposure to fire or temperature above 130 °C may cause explosion.
7. **Follow all charging instructions and do not charge the battery pack or tool outside the temperature range specified in the instructions.** Charging improperly or at temperatures outside the specified range may damage the battery and increase the risk of fire.

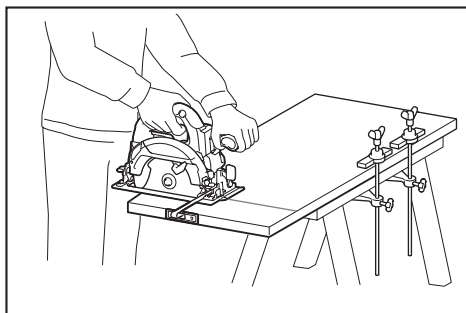
#### Service

1. **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.
2. **Never service damaged battery packs.** Service of battery packs should only be performed by the manufacturer or authorized service providers.
3. **Follow instruction for lubricating and changing accessories.**

### Cordless circular saw safety warnings

#### Cutting procedures

1. **⚠ DANGER:** Keep hands away from cutting area and the blade. Keep your second hand on auxiliary handle, or motor housing. If both hands are holding the saw, they cannot be cut by the blade.
2. **Do not reach underneath the workpiece.** The guard cannot protect you from the blade below the workpiece.
3. **Adjust the cutting depth to the thickness of the workpiece.** Less than a full tooth of the blade teeth should be visible below the workpiece.
4. **Never hold the workpiece in your hands or across your leg while cutting. Secure the workpiece to a stable platform.** It is important to support the work properly to minimise body exposure, blade binding, or loss of control.



5. **Hold the power tool by insulated gripping surfaces, when performing an operation where the cutting tool may contact hidden wiring.** Contact with a "live" wire will also make exposed metal parts of the power tool "live" and could give the operator an electric shock.
6. **When ripping, always use a rip fence or straight edge guide.** This improves the accuracy of cut and reduces the chance of blade binding.
7. **Always use blades with correct size and shape (diamond versus round) of arbour holes.** Blades that do not match the mounting hardware of the saw will run off-centre, causing loss of control.
8. **Never use damaged or incorrect blade washers or bolt.** The blade washers and bolt were specially designed for your saw, for optimum performance and safety of operation.

#### Kickback causes and related warnings

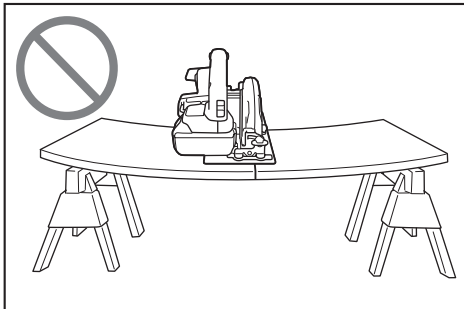
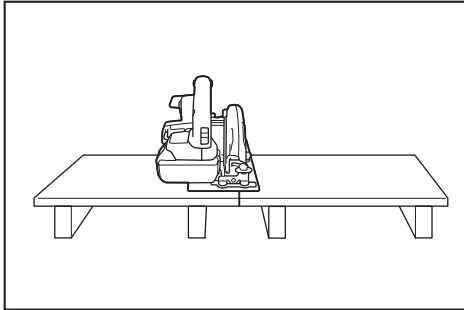
- kickback is a sudden reaction to a pinched, jammed or misaligned saw blade, causing an uncontrolled saw to lift up and out of the workpiece toward the operator;



- when the blade is pinched or jammed tightly by the kerf closing down, the blade stalls and the motor reaction drives the unit rapidly back toward the operator;
- if the blade becomes twisted or misaligned in the cut, the teeth at the back edge of the blade can dig into the top surface of the wood causing the blade to climb out of the kerf and jump back toward the operator.

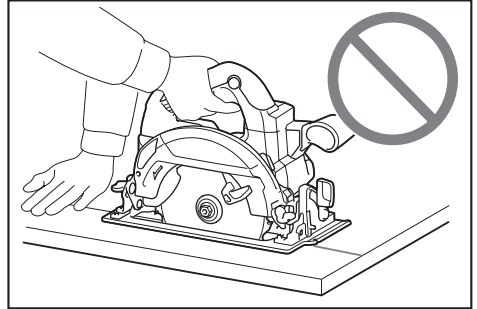
Kickback is the result of saw misuse and/or incorrect operating procedures or conditions and can be avoided by taking proper precautions as given below.

1. **Maintain a firm grip with both hands on the saw and position your arms to resist kickback forces. Position your body to either side of the blade, but not in line with the blade.** Kickback could cause the saw to jump backwards, but kickback forces can be controlled by the operator, if proper precautions are taken.
2. **When blade is binding, or when interrupting a cut for any reason, release the trigger and hold the saw motionless in the material until the blade comes to a complete stop. Never attempt to remove the saw from the work or pull the saw backward while the blade is in motion or kickback may occur.** Investigate and take corrective actions to eliminate the cause of blade binding.
3. **When restarting a saw in the workpiece, centre the saw blade in the kerf so that the saw teeth are not engaged into the material.** If a saw blade binds, it may walk up or kickback from the workpiece as the saw is restarted.
4. **Support large panels to minimise the risk of blade pinching and kickback.** Large panels tend to sag under their own weight. Supports must be placed under the panel on both sides, near the line of cut and near the edge of the panel.



5. **Do not use dull or damaged blades.** Unsharpened or improperly set blades produce narrow kerf causing excessive friction, blade binding and kickback.

6. **Blade depth and bevel adjusting locking levers must be tight and secure before making the cut.** If blade adjustment shifts while cutting, it may cause binding and kickback.
7. **Use extra caution when sawing into existing walls or other blind areas.** The protruding blade may cut objects that can cause kickback.
8. **ALWAYS hold the tool firmly with both hands. NEVER place your hand, leg or any part of your body under the tool base or behind the saw, especially when making cross-cuts.** If kickback occurs, the saw could easily jump backwards over your hand, leading to serious personal injury.



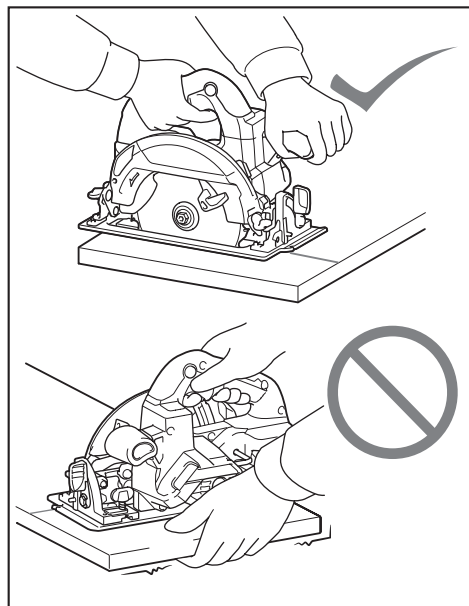
9. **Never force the saw. Push the saw forward at a speed so that the blade cuts without slowing.** Forcing the saw can cause uneven cuts, loss of accuracy, and possible kickback.

#### Lower guard function

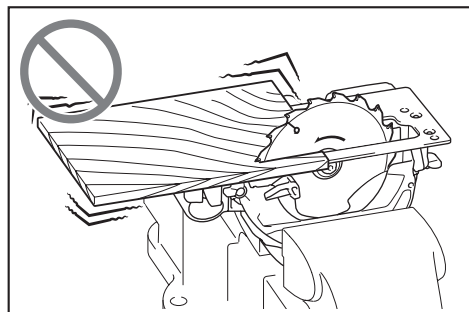
1. **Check the lower guard for proper closing before each use. Do not operate the saw if the lower guard does not move freely and close instantly. Never clamp or tie the lower guard into the open position.** If the saw is accidentally dropped, the lower guard may be bent. Raise the lower guard with the retracting handle and make sure it moves freely and does not touch the blade or any other part, in all angles and depths of cut.
2. **Check the operation of the lower guard spring. If the guard and the spring are not operating properly, they must be serviced before use.** Lower guard may operate sluggishly due to damaged parts, gummy deposits, or a build-up of debris.
3. **The lower guard may be retracted manually only for special cuts such as "plunge cuts" and "compound cuts". Raise the lower guard by the retracting handle and as soon as the blade enters the material, the lower guard must be released.** For all other sawing, the lower guard should operate automatically.
4. **Always observe that the lower guard is covering the blade before placing the saw down on bench or floor.** An unprotected, coasting blade will cause the saw to walk backwards, cutting whatever is in its path. Be aware of the time it takes for the blade to stop after switch is released.
5. **To check lower guard, open lower guard by hand, then release and watch guard closure. Also check to see that retracting handle does not touch tool housing.** Leaving blade exposed is VERY DANGEROUS and can lead to serious personal injury.

### Additional safety warnings

1. Use extra caution when cutting damp wood, pressure treated lumber, or wood containing knots. Maintain smooth advancement of tool without decrease in blade speed to avoid overheating the blade tips.
2. Do not attempt to remove cut material when blade is moving. Wait until blade stops before grasping cut material. Blades coast after turn off.
3. Avoid cutting nails. Inspect for and remove all nails from lumber before cutting.
4. Place the wider portion of the saw base on that part of the workpiece which is solidly supported, not on the section that will fall off when the cut is made. If the workpiece is short or small, clamp it down. **DO NOT TRY TO HOLD SHORT PIECES BY HAND!**



5. Before setting the tool down after completing a cut, be sure that the guard is closed and the blade has come to a complete stop.
6. Never attempt to saw with the circular saw held upside down in a vise. This is extremely dangerous and can lead to serious accidents.



7. Some material contains chemicals which may be toxic. Take caution to prevent dust inhalation and skin contact. Follow material supplier safety data.
8. Do not stop the blades by lateral pressure on the saw blade.
9. Do not use any abrasive wheels.
10. Only use the saw blade with the diameter that is marked on the tool or specified in the manual. Use of an incorrectly sized blade may affect the proper guarding of the blade or guard operation which could result in serious personal injury.
11. Keep blade sharp and clean. Gum and wood pitch hardened on blades slows saw and increases potential for kickback. Keep blade clean by first removing it from tool, then cleaning it with gum and pitch remover, hot water or kerosene. Never use gasoline.
12. Wear a dust mask and hearing protection when use the tool.
13. Always use the saw blade intended for cutting the material that you are going to cut.
14. Only use the saw blades that are marked with a speed equal or higher than the speed marked on the tool.
15. (For European countries only)  
Always use the blade which conforms to EN847-1.

## SAVE THESE INSTRUCTIONS.

**⚠ WARNING:** DO NOT let comfort or familiarity with product (gained from repeated use) replace strict adherence to safety rules for the subject product. MISUSE or failure to follow the safety rules stated in this instruction manual may cause serious personal injury.

### Important safety instructions for battery cartridge

1. Before using battery cartridge, read all instructions and cautionary markings on (1) battery charger, (2) battery, and (3) product using battery.
2. Do not disassemble battery cartridge.
3. If operating time has become excessively shorter, stop operating immediately. It may result in a risk of overheating, possible burns and even an explosion.
4. If electrolyte gets into your eyes, rinse them out with clear water and seek medical attention right away. It may result in loss of your eyesight.
5. Do not short the battery cartridge:
  - (1) Do not touch the terminals with any conductive material.
  - (2) Avoid storing battery cartridge in a container with other metal objects such as nails, coins, etc.
  - (3) Do not expose battery cartridge to water or rain.

A battery short can cause a large current flow, overheating, possible burns and even a breakdown.

6. Do not store the tool and battery cartridge in locations where the temperature may reach or exceed 50 °C (122 °F).
7. Do not incinerate the battery cartridge even if it is severely damaged or is completely worn out. The battery cartridge can explode in a fire.
8. Be careful not to drop or strike battery.
9. Do not use a damaged battery.
10. The contained lithium-ion batteries are subject to the Dangerous Goods Legislation requirements.  
For commercial transports e.g. by third parties, forwarding agents, special requirement on packaging and labeling must be observed.  
For preparation of the item being shipped, consulting an expert for hazardous material is required. Please also observe possibly more detailed national regulations.  
Tape or mask off open contacts and pack up the battery in such a manner that it cannot move around in the packaging.
11. Follow your local regulations relating to disposal of battery.
12. Use the batteries only with the products specified by Makita. Installing the batteries to non-compliant products may result in a fire, excessive heat, explosion, or leak of electrolyte.
5. Do not use the wireless unit in places where the temperature exceeds 50°C (122°F).
6. Do not operate the wireless unit in places where medical instruments, such as heart pace makers are near by.
7. Do not operate the wireless unit in places where automated devices are near by. If operated, automated devices may develop malfunction or error.
8. The wireless unit can produce electromagnetic fields (EMF) but they are not harmful to the user.
9. The wireless unit is an accurate instrument. Be careful not to drop or strike the wireless unit.
10. Avoid touching the terminal of the wireless unit with bare hands or metallic materials.
11. Always remove the battery on the tool when installing the wireless unit.
12. When opening the lid of the slot, avoid the place where dust and water may come into the slot. Always keep the inlet of the slot clean.
13. Always insert the wireless unit in the correct direction.
14. Do not press the wireless activation button on the wireless unit too hard and/or press the button with an object with a sharp edge.
15. Always close the lid of the slot when operating.

## SAVE THESE INSTRUCTIONS.

**⚠CAUTION:** Only use genuine Makita batteries. Use of non-genuine Makita batteries, or batteries that have been altered, may result in the battery bursting causing fires, personal injury and damage. It will also void the Makita warranty for the Makita tool and charger.

## Tips for maintaining maximum battery life

1. Charge the battery cartridge before completely discharged. Always stop tool operation and charge the battery cartridge when you notice less tool power.
2. Never recharge a fully charged battery cartridge. Overcharging shortens the battery service life.
3. Charge the battery cartridge with room temperature at 10 °C - 40 °C (50 °F - 104 °F). Let a hot battery cartridge cool down before charging it.
4. Charge the battery cartridge if you do not use it for a long period (more than six months).

## Important safety instructions for wireless unit

1. Do not disassemble or tamper with the wireless unit.
2. Keep the wireless unit away from young children. If accidentally swallowed, seek medical attention immediately.
3. Use the wireless unit only with Makita tools.
4. Do not expose the wireless unit to rain or wet conditions.
5. Do not pull and/or twist the lid of the slot more than necessary. Restore the lid if it comes off from the tool.
28. Replace the lid of the slot if it is lost or damaged.

## SAVE THESE INSTRUCTIONS.

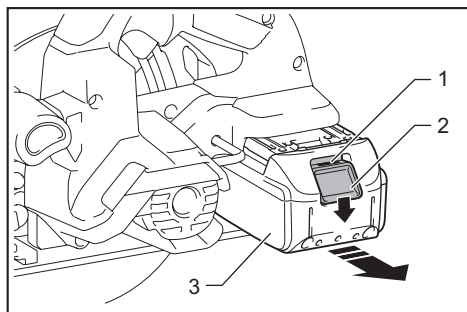
# FUNCTIONAL DESCRIPTION

**⚠ CAUTION:** Always be sure that the tool is switched off and the battery cartridge is removed before adjusting or checking function on the tool.

## Installing or removing battery cartridge

**⚠ CAUTION:** Always switch off the tool before installing or removing of the battery cartridge.

**⚠ CAUTION:** Hold the tool and the battery cartridge firmly when installing or removing battery cartridge. Failure to hold the tool and the battery cartridge firmly may cause them to slip off your hands and result in damage to the tool and battery cartridge and a personal injury.



► 1. Red indicator 2. Button 3. Battery cartridge

To remove the battery cartridge, slide it from the tool while sliding the button on the front of the cartridge.

To install the battery cartridge, align the tongue on the battery cartridge with the groove in the housing and slip it into place. Insert it all the way until it locks in place with a little click. If you can see the red indicator on the upper side of the button, it is not locked completely.

**⚠ CAUTION:** Always install the battery cartridge fully until the red indicator cannot be seen. If not, it may accidentally fall out of the tool, causing injury to you or someone around you.

**⚠ CAUTION:** Do not install the battery cartridge forcibly. If the cartridge does not slide in easily, it is not being inserted correctly.

## Tool / battery protection system

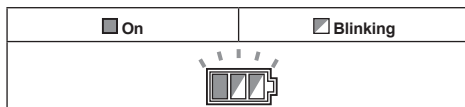
The tool is equipped with a tool/battery protection system. This system automatically cuts off power to the motor to extend tool and battery life. The tool will automatically stop during operation if the tool or battery is placed under one of the following conditions.

## Overload protection

When the tool/battery is operated in a manner that causes it to draw an abnormally high current, the tool automatically stops. In this situation, turn the tool off and stop the application that caused the tool to become overloaded. Then turn the tool on to restart.

## Overheat protection

When the tool/battery is overheated, the tool stops automatically, and the battery indicator blink about 60 seconds. In this situation, let the tool cool down before turning the tool on again.

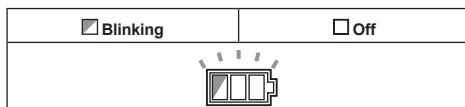


## Overdischarge protection

When the battery capacity becomes low, the tool stops automatically. If the product does not operate even when the switches are operated, remove the batteries from the tool and charge the batteries.

## Releasing protection lock

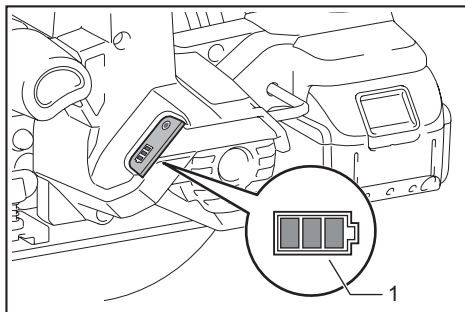
When the protection system works repeatedly, the tool is locked and the battery indicator shows the following state.



In this situation, the tool does not start even if turning the tool off and on. To release the protection lock, remove the battery, set it to the battery charger and wait until the charging finishes.





## Indicating the remaining battery capacity

When you pull the switch trigger, the battery indicator shows the remaining battery capacity.



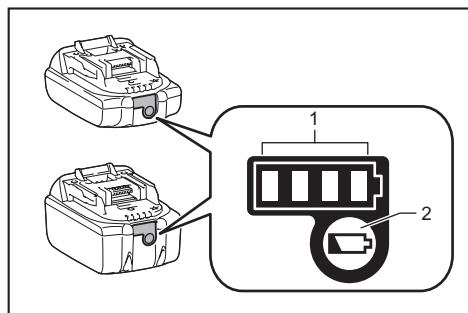
► 1. Battery indicator

The remaining battery capacity is shown as the following table.

Battery indicator status			Remaining battery capacity
On	Off	Blinking	
			50% to 100%
			20% to 50%
			0% to 20%
			Charge the battery






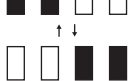
## Indicating the remaining battery capacity

Only for battery cartridges with the indicator



► 1. Indicator lamps 2. Check button

Press the check button on the battery cartridge to indicate the remaining battery capacity. The indicator lamps light up for a few seconds.

Indicator lamps			Remaining capacity
Lighted	Off	Blinking	
			75% to 100%
			50% to 75%
			25% to 50%
			0% to 25%
			Charge the battery.
			The battery may have malfunctioned.

**NOTE:** Depending on the conditions of use and the ambient temperature, the indication may differ slightly from the actual capacity.

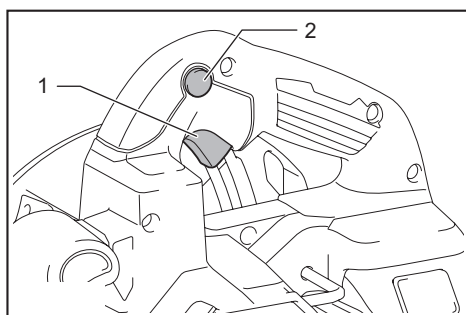
## Switch action

**⚠ WARNING:** Before installing the battery cartridge into the tool, always check to see that the switch trigger actuates properly and returns to the "OFF" position when released.

**⚠ WARNING:** NEVER defeat the lock-off button by taping down or some other means. A switch with a negated lock-off button may result in unintentional operation and serious personal injury.

**⚠ WARNING:** NEVER use the tool if it runs when you simply pull the switch trigger without pressing the lock-off button. A switch in need of repair may result in unintentional operation and serious personal injury. Return tool to a Makita service center for proper repairs BEFORE further usage.

To prevent the switch trigger from being accidentally pulled, a lock-off button is provided. To start the tool, depress the lock-off button and pull the switch trigger. Release the switch trigger to stop.



► 1. Switch trigger 2. Lock-off button

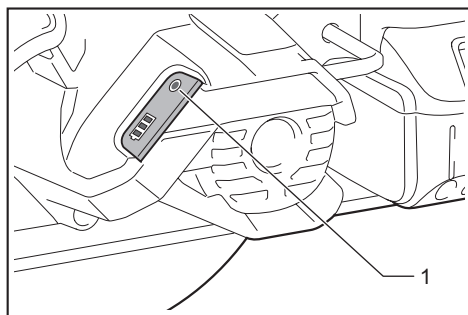
**NOTICE:** Do not pull the switch trigger hard without pressing in the lock-off button. This can cause switch breakage.

**⚠ CAUTION:** The tool starts to brake the circular saw blade rotation immediately after you release the switch trigger. Hold the tool firmly to respond the reaction of the brake when releasing the switch trigger. Sudden reaction can drop the tool off your hand and can cause a personal injury.

## Automatic speed change function

This tool has "high speed mode" and "high torque mode".

The tool automatically changes the operation mode depending on the work load. When the work load is low, the tool will run in the "high speed mode" for quicker cutting operation. When the work load is high, the tool will run in the "high torque mode" for powerful cutting operation.



► 1. Mode indicator

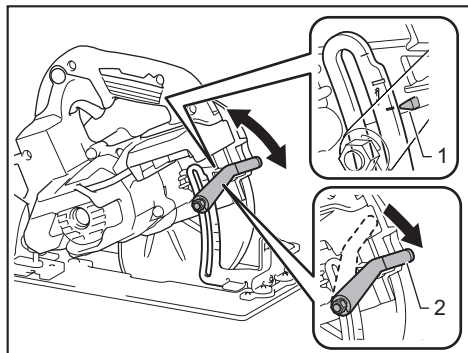
The mode indicator lights up in green when the tool is running in "high torque mode".  
If the tool is operated with excessive load, the mode indicator will blink in green. The mode indicator stops blinking and then lights up or turns off if you reduce the load on the tool.

Mode indicator status			Operation mode
● On	○ Off	● Blinking	
	○		High speed mode
	●		High torque mode
	○	●	Overload alert

## Adjusting depth of cut

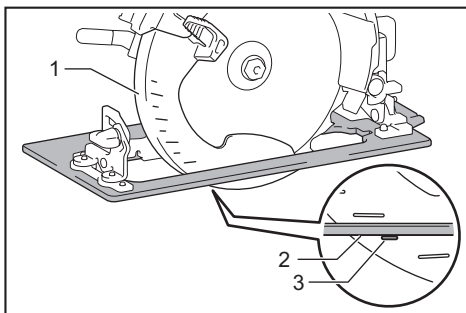
**CAUTION:** After adjusting the depth of cut, always tighten the lever securely.

Loosen the lever and move the base up or down to align the pointer with your desired depth on the depth guide. At the desired depth of cut, secure the base by tightening the lever. For cleaner, safer cuts, set cut depth so that no more than one blade tooth projects below workpiece. Using proper cut depth helps to reduce potential for dangerous KICKBACKS which can cause personal injury.



► 1. Pointer 2. Lever

You can read the cut depth with the scale on the lower guard.

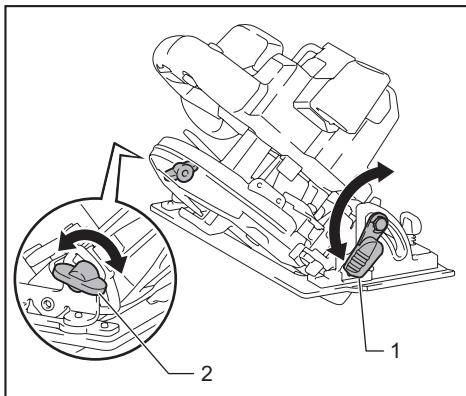


► 1. Lower guard 2. Bottom of the tool base 3. Scale

## Bevel cutting

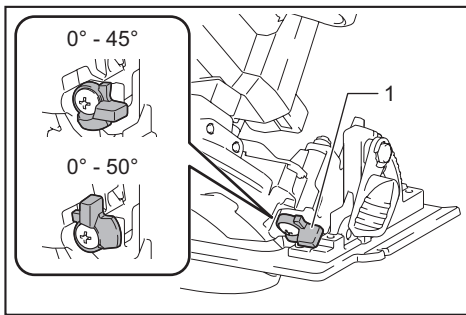
**CAUTION:** After adjusting the bevel angle, always tighten the lever and clamping screw securely.

Loosen the lever and clamping screw. Set for the desired angle by tilting accordingly, then tighten the lever and clamping screw securely.



► 1. Lever 2. Clamping screw

Use the stopper when you do precise 45° angle cutting. Fully turn the stopper as illustrated depending on 0° - 45° bevel cut or 0° - 50° bevel cut.

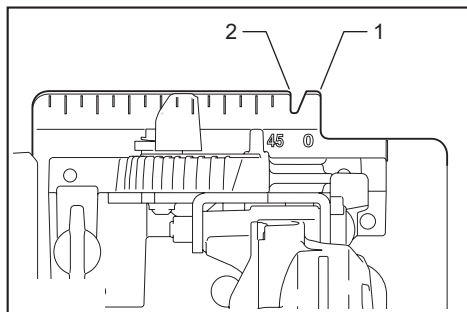


► 1. Stopper



## Sighting

For straight cuts, align the 0° position on the front of the base with your cutting line. For 45° bevel cuts, align the 45° position with it.

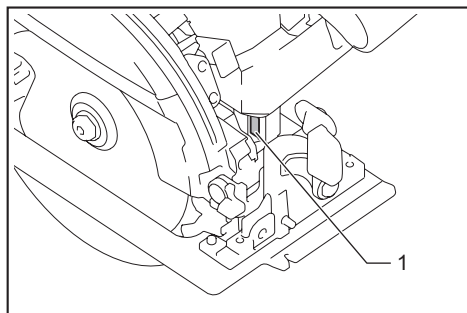


- 1. Cutting line (0° position) 2. Cutting line (45° position)

## Lighting the lamp

**CAUTION:** Do not look in the light or see the source of light directly.

To turn on the lamp without running the tool, pull the switch trigger without pressing the lock-off button. To turn on the lamp with the tool running, press and hold the lock-off button and pull the switch trigger. The lamp goes out 10 seconds after releasing the switch trigger.



- 1. Lamp

**NOTE:** Use a dry cloth to wipe the dirt off the lens of the lamp. Be careful not to scratch the lens of lamp, or it may lower the illumination.

## Hook

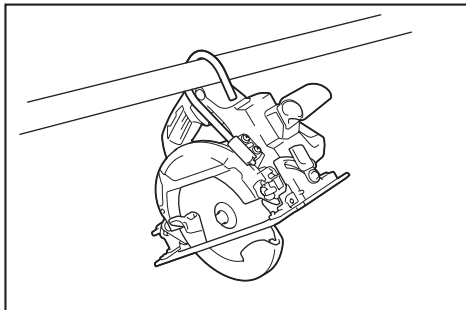
### Optional accessory

**CAUTION:** Always remove the battery when hanging the tool with the hook.

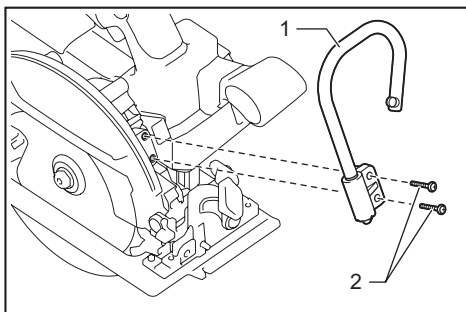
**CAUTION:** Never hook the tool at high locations or on the surfaces where the tool may lose the balance and fall.

**CAUTION:** Do not pull the tool downward when it is hooked.

The hook is convenient for hanging the tool temporarily.



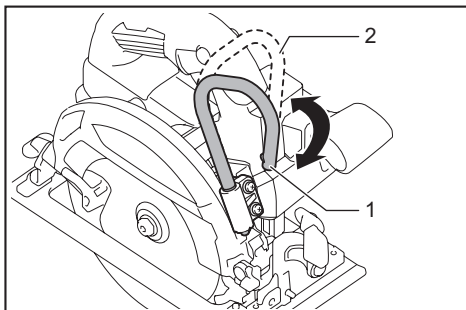
Attach the hook with the screws as illustrated.



- 1. Hook 2. Screw

To use the hook, simply turn the hook until it snaps into the open position.

When not in use, always turn the hook until it snaps into the closed position.



- 1. Open position 2. Closed position

## Electronic function

The tools equipped with electronic function are easy to operate because of the following feature(s).

### Soft start feature

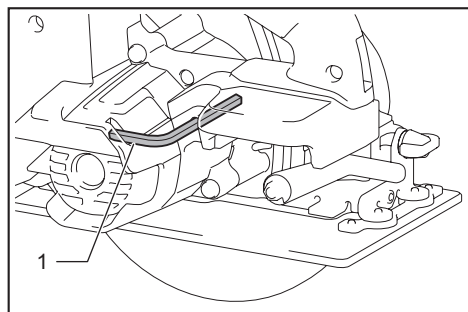
Soft start because of suppressed starting shock.

## ASSEMBLY

**⚠CAUTION:** Always be sure that the tool is switched off and the battery cartridge is removed before carrying out any work on the tool.

### Hex wrench storage

When not in use, store the hex wrench as shown in the figure to keep it from being lost.



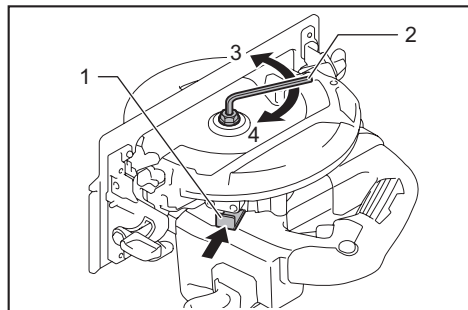
► 1. Hex wrench

### Removing or installing circular saw blade

**⚠CAUTION:** Be sure the circular saw blade is installed with teeth pointing up at the front of the tool.

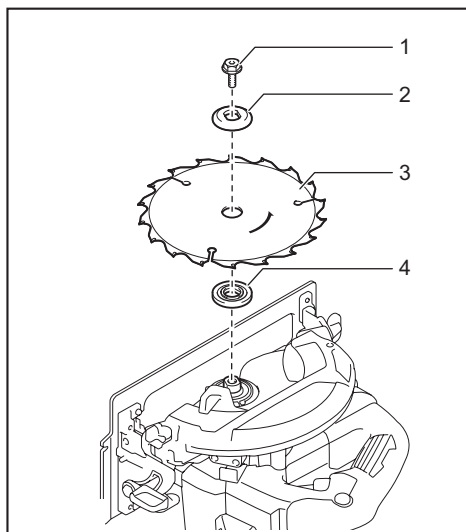
**⚠CAUTION:** Use only the Makita wrench to install or remove the circular saw blade.

To remove the circular saw blade, press the shaft lock fully so that the circular saw blade cannot revolve and use the hex wrench to loosen the hex bolt. Then remove the hex bolt, ring (country specific), outer flange and circular saw blade.



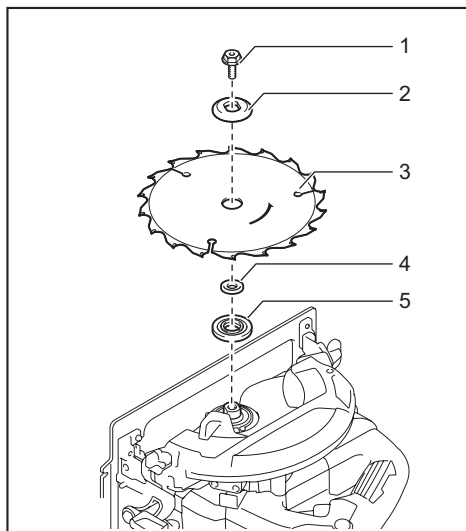
► 1. Shaft lock 2. Hex wrench 3. Loosen 4. Tighten

### For tool without the ring



► 1. Hex bolt 2. Outer flange 3. Circular saw blade  
4. Inner flange

### For tool with the ring



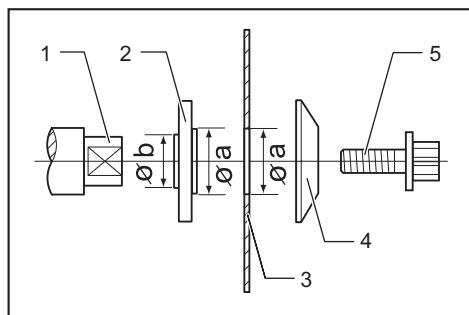
► 1. Hex bolt 2. Outer flange 3. Circular saw blade  
4. Ring 5. Inner flange

To install the circular saw blade, follow the removal procedure in reverse.



## For tool with the inner flange for other than 15.88 mm hole-diameter saw blade

The inner flange has a certain diameter protrusion on one side of it and a different diameter protrusion on the other side. Choose a correct side on which protrusion fits into the saw blade hole perfectly. Mount the inner flange onto the mounting shaft so that the correct side of protrusion on the inner flange faces outward and then place saw blade and outer flange.



► 1. Mounting shaft 2. Inner flange 3. Circular saw blade 4. Outer flange 5. Hex bolt

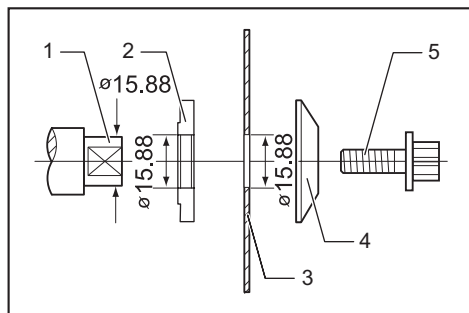
**⚠ WARNING:** BE SURE TO TIGHTEN THE HEX BOLT CLOCKWISE SECURELY. Also be careful not to tighten the bolt forcibly. Slipping your hand from the hex wrench can cause a personal injury.

**⚠ WARNING:** Make sure that the protrusion "a" on the inner flange that is positioned outside fits into the saw blade hole "a" perfectly. Mounting the blade on the wrong side can result in the dangerous vibration.

## For tool with the inner flange for a 15.88 mm hole-diameter saw blade (country specific)

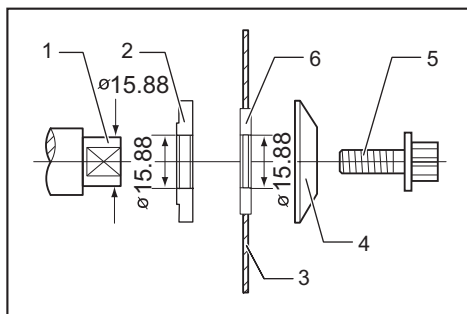
Mount the inner flange with its recessed side facing outward onto the mounting shaft and then place circular saw blade (with the ring attached if needed), outer flange and hex bolt.

### For tool without the ring



► 1. Mounting shaft 2. Inner flange 3. Circular saw blade 4. Outer flange 5. Hex bolt

### For tool with the ring



► 1. Mounting shaft 2. Inner flange 3. Circular saw blade 4. Outer flange 5. Hex bolt 6. Ring

**⚠ WARNING:** BE SURE TO TIGHTEN THE HEX BOLT CLOCKWISE SECURELY. Also be careful not to tighten the bolt forcibly. Slipping your hand from the hex wrench can cause a personal injury.

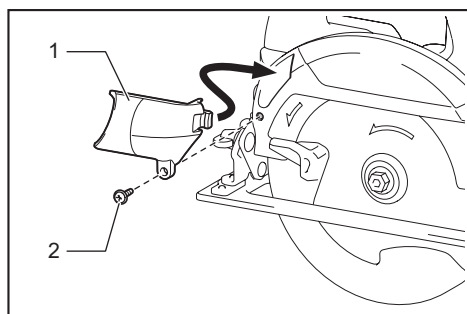
**⚠ WARNING:** If the ring is needed to mount the blade onto the spindle, always be sure that the correct ring for the blade's arbor hole you intend to use is installed between the inner and the outer flanges. Use of the incorrect arbor hole ring may result in the improper mounting of the blade causing blade movement and severe vibration resulting in possible loss of control during operation and in serious personal injury.

## Blade guard cleaning

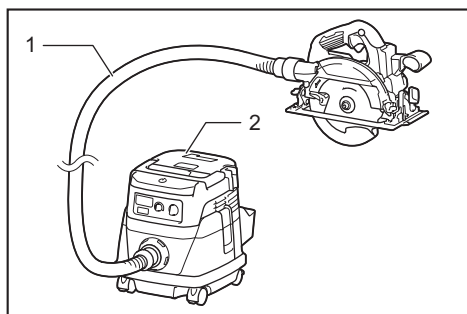
When changing the circular saw blade, make sure to also clean the upper and lower blade guards of accumulated sawdust as discussed in the Maintenance section. Such efforts do not replace the need to check lower guard operation before each use.

## Connecting a vacuum cleaner

When you wish to perform clean cutting operation, connect a Makita vacuum cleaner to your tool. Connect a hose of the vacuum cleaner to the dust nozzle as shown in the figure.



► 1. Dust nozzle 2. Screw

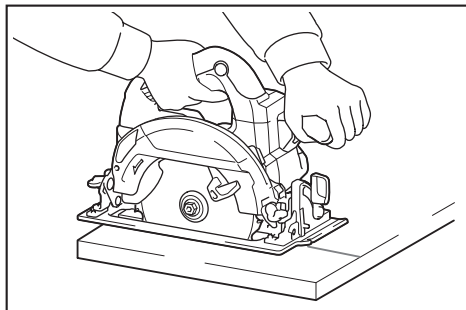


► 1. Hose 2. Vacuum cleaner

## OPERATION

**CAUTION:** Be sure to move the tool forward in a straight line gently. Forcing or twisting the tool will result in overheating the motor and dangerous kickback, possibly causing severe injury.

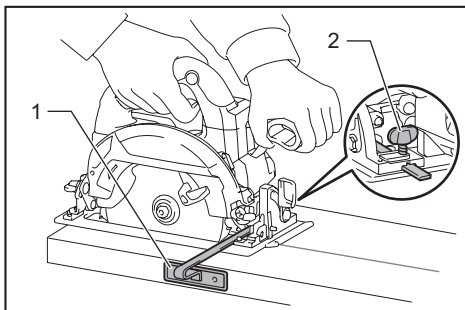
**NOTE:** When the battery cartridge temperature is low, the tool may not work to its full capacity. At this time, for example, use the tool for a light-duty cut for a while until the battery cartridge warms up as high as room temperature. Then, the tool can work to its full capacity.



Hold the tool firmly. The tool is provided with both a front grip and rear handle. Use both to best grasp the tool. If both hands are holding saw, they cannot be cut by the circular saw blade. Set the base on the workpiece to be cut without the circular saw blade making any contact. Then turn the tool on and wait until the circular saw blade attains full speed. Now simply move the tool forward over the workpiece surface, keeping it flat and advancing smoothly until the sawing is completed. To get clean cuts, keep your sawing line straight and your speed of advance uniform. If the cut fails to properly follow your intended cut line, do not attempt to turn or force the tool back to the cut line. Doing so may bind the circular saw blade and lead to dangerous kickback and possible serious injury. Release switch, wait for circular saw blade to stop and then withdraw tool. Realign tool on new cut line, and start cut again. Attempt to avoid positioning which exposes operator to chips and wood dust being ejected from saw. Use eye protection to help avoid injury.

## Rip fence (Guide rule)

### Optional accessory



► 1. Rip fence (Guide rule) 2. Clamping screw

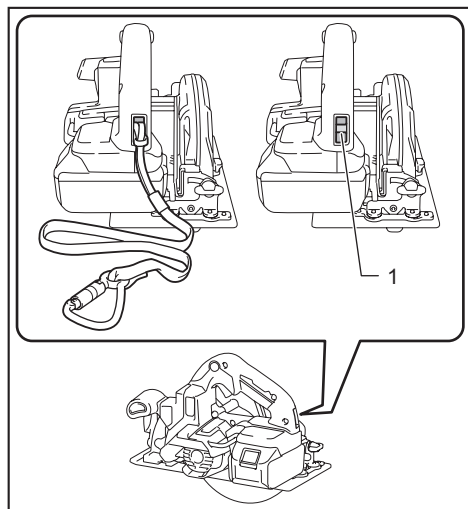
The handy rip fence allows you to do extra-accurate straight cuts. Simply slide the rip fence up snugly against the side of the workpiece and secure it in position with the clamping screw on the front of the base. It also makes repeated cuts of uniform width possible.

## Lanyard (tether strap) connection

**SAFETY** Safety warnings specific for use at height  
Read all safety warnings and instructions. Failure to follow the warnings and instructions may result in serious injury.

1. Always keep the tool tethered when working "at height". Maximum lanyard length is 2 m (6.5 ft).
2. Use only with lanyards appropriate for this tool type and rated for at least 4.0 kg (8.8 lbs).
3. Do not anchor the tool lanyard to anything on your body or on movable components. Anchor the tool lanyard to a rigid structure that can withstand the forces of a dropped tool.
4. Make sure the lanyard is properly secured at each end prior to use.
5. Inspect the tool and lanyard before each use for damage and proper function (including fabric and stitching). Do not use if damaged or not functioning properly.
6. Do not wrap lanyards around or allow them to come in contact with sharp or rough edges.
7. Fasten the other end of the lanyard outside the working area so that a falling tool is held securely.
8. Attach the lanyard so that the tool will move away from the operator if it falls. Dropped tools will swing on the lanyard, which could cause injury or loss of balance.
9. Do not use near moving parts or running machinery. Failure to do so may result in a crush or entanglement hazard.
10. Do not carry the tool by the attachment device or the lanyard.
11. Only transfer the tool between your hands while you are properly balanced.
12. Do not attach lanyards to the tool in a way that keeps guards, switches or lock-offs from operating properly.
13. Avoid getting tangled in the lanyard.
14. Keep lanyard away from the cutting area of the tool.

15. Use multi-action and screw gate type carabineers. Do not use single action spring clip carabineers.
16. In the event the tool is dropped, it must be tagged and removed from service, and should be inspected by a Makita Factory or Authorized Service Center.



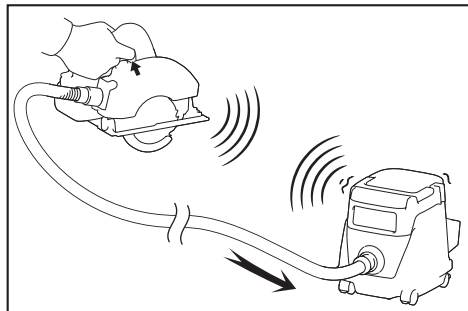
► 1. Hole for lanyard (tether strap)

## WIRELESS ACTIVATION FUNCTION

*For DHS661 only*

### What you can do with the wireless activation function

The wireless activation function enables clean and comfortable operation. By connecting a supported vacuum cleaner to the tool, you can run the vacuum cleaner automatically along with the switch operation of the tool.



To use the wireless activation function, prepare following items:

- A wireless unit (optional accessory)
- A vacuum cleaner which supports the wireless activation function

The overview of the wireless activation function setting is as follows. Refer to each section for detail procedures.

1. Installing the wireless unit
2. Tool registration for the vacuum cleaner
3. Starting the wireless activation function

### Installing the wireless unit

#### Optional accessory

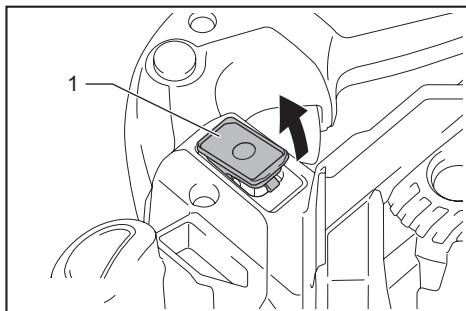
**CAUTION:** Place the tool on a flat and stable surface when installing the wireless unit.

**NOTICE:** Clean the dust and dirt on the tool before installing the wireless unit. Dust or dirt may cause malfunction if it comes into the slot of the wireless unit.

**NOTICE:** To prevent the malfunction caused by static, touch a static discharging material, such as a metal part of the tool, before picking up the wireless unit.

**NOTICE:** When installing the wireless unit, always be sure that the wireless unit is inserted in the correct direction and the lid is completely closed.

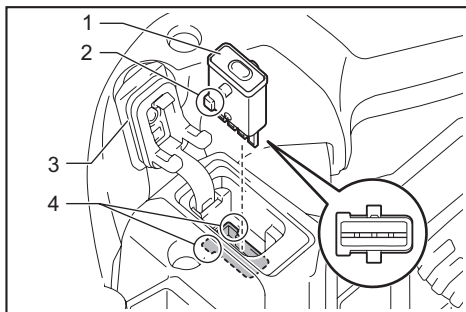
1. Open the lid on the tool as shown in the figure.



► 1. Lid

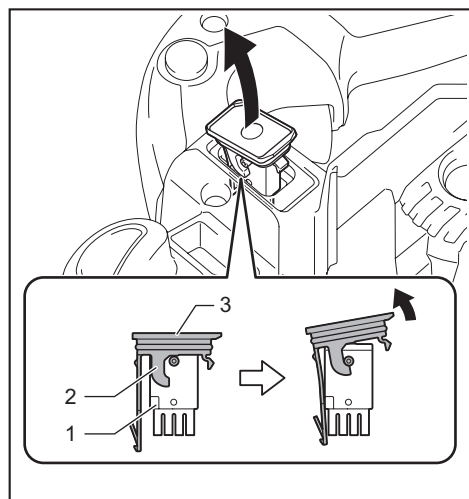
2. Insert the wireless unit to the slot and then close the lid.

When inserting the wireless unit, align the projections with the recessed portions on the slot.



► 1. Wireless unit 2. Projection 3. Lid 4. Recessed portion

When removing the wireless unit, open the lid slowly. The hooks on the back of the lid will lift the wireless unit as you pull up the lid.



► 1. Wireless unit 2. Hook 3. Lid

After removing the wireless unit, keep it in the supplied case or a static-free container.

**NOTICE:** Always use the hooks on the back of the lid when removing the wireless unit. If the hooks do not catch the wireless unit, close the lid completely and open it slowly again.

## Tool registration for the vacuum cleaner

**NOTE:** A Makita vacuum cleaner supporting the wireless activation function is required for the tool registration.

**NOTE:** Finish installing the wireless unit to the tool before starting the tool registration.

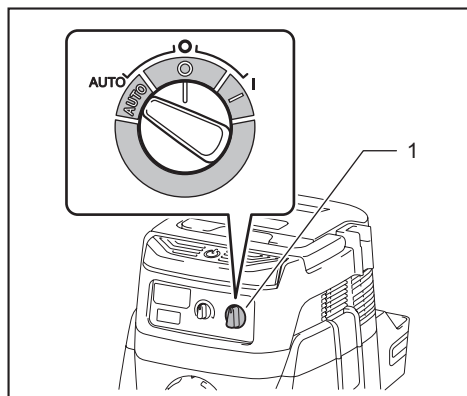
**NOTE:** During the tool registration, do not pull the switch trigger or turn on the power switch on the vacuum cleaner.

**NOTE:** Refer to the instruction manual of the vacuum cleaner, too.

If you wish to activate the vacuum cleaner along with the switch operation of the tool, finish the tool registration beforehand.

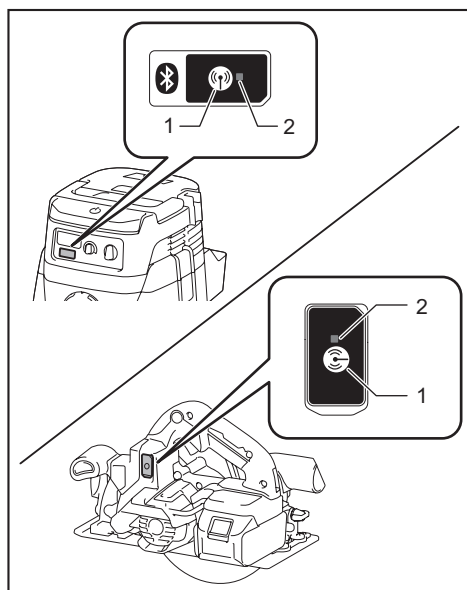
1. Install the batteries to the vacuum cleaner and the tool.

2. Set the stand-by switch on the vacuum cleaner to "AUTO".



► 1. Stand-by switch

3. Press the wireless activation button on the vacuum cleaner for 3 seconds until the wireless activation lamp blinks in green. And then press the wireless activation button on the tool in the same way.



► 1. Wireless activation button 2. Wireless activation lamp

If the vacuum cleaner and the tool are linked successfully, the wireless activation lamps will light up in green for 2 seconds and start blinking in blue.

**NOTE:** The wireless activation lamps finish blinking in green after 20 seconds elapsed. Press the wireless activation button on the tool while the wireless activation lamp on the cleaner is blinking. If the wireless activation lamp does not blink in green, push the wireless activation button briefly and hold it down again.

**NOTE:** When performing two or more tool registrations for one vacuum cleaner, finish the tool registration one by one.

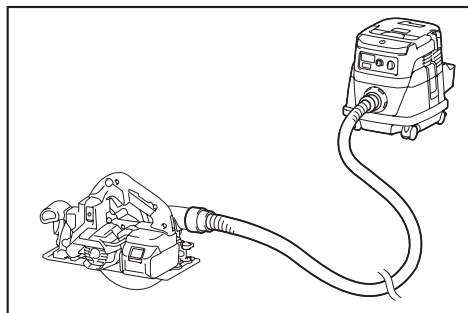
## Starting the wireless activation function

**NOTE:** Finish the tool registration for the vacuum cleaner prior to the wireless activation.

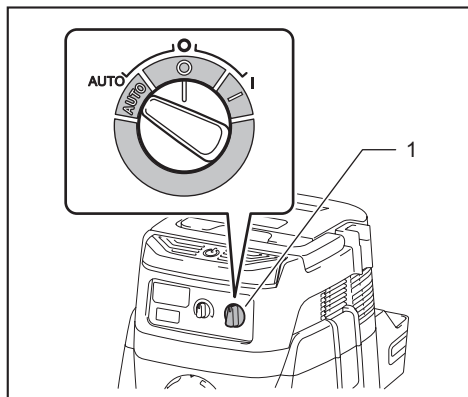
**NOTE:** Refer to the instruction manual of the vacuum cleaner, too.

After registering a tool to the vacuum cleaner, the vacuum cleaner will automatically runs along with the switch operation of the tool.

1. Install the wireless unit to the tool.
2. Connect the hose of the vacuum cleaner with the tool.

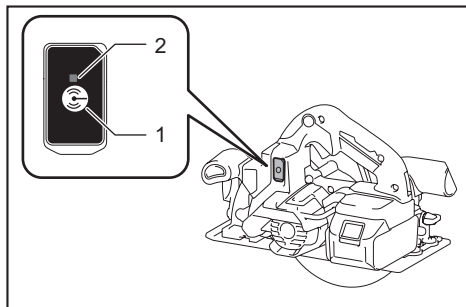


3. Set the stand-by switch on the vacuum cleaner to "AUTO".



- 1. Stand-by switch

4. Push the wireless activation button on the tool briefly. The wireless activation lamp will blink in blue.



- 1. Wireless activation button 2. Wireless activation lamp

5. Pull the switch trigger of the tool. Check if the vacuum cleaner runs while the switch trigger is being pulled.

To stop the wireless activation of the vacuum cleaner, push the wireless activation button on the tool.

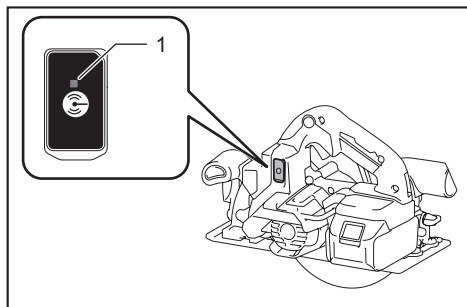
**NOTE:** The wireless activation lamp on the tool will stop blinking in blue when there is no operation for 2 hours. In this case, set the stand-by switch on the vacuum cleaner to "AUTO" and push the wireless activation button on the tool again.

**NOTE:** The vacuum cleaner starts/stops with a delay. There is a time lag when the vacuum cleaner detects a switch operation of the tool.

**NOTE:** The transmission distance of the wireless unit may vary depending on the location and surrounding circumstances.

**NOTE:** When two or more tools are registered to one vacuum cleaner, the vacuum cleaner may start running even if you don't pull the switch trigger because another user is using the wireless activation function.

## Description of the wireless activation lamp status



### ► 1. Wireless activation lamp

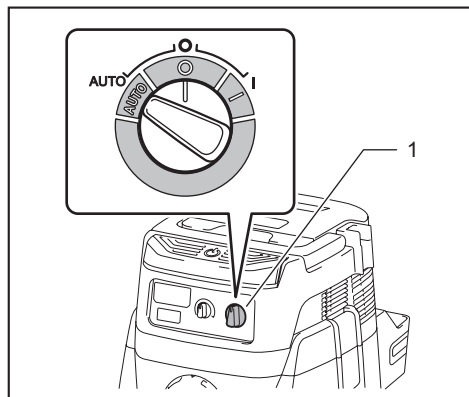
The wireless activation lamp shows the status of the wireless activation function. Refer to the table below for the meaning of the lamp status.

Status	Wireless activation lamp				Description
	Color	■ On	▣ Blinking	Duration	
Standby	Blue		▣	2 hours	The wireless activation of the vacuum cleaner is available. The lamp will automatically turn off when no operation is performed for 2 hours.
		■		When the tool is running.	The wireless activation of the vacuum cleaner is available and the tool is running.
Tool registration	Green		▣	20 seconds	Ready for the tool registration. Waiting for the registration by the vacuum cleaner.
		■		2 seconds	The tool registration has been finished. The wireless activation lamp will start blinking in blue.
Cancelling tool registration	Red		▣	20 seconds	Ready for the cancellation of the tool registration. Waiting for the cancellation by the vacuum cleaner.
		■		2 seconds	The cancellation of the tool registration has been finished. The wireless activation lamp will start blinking in blue.
Others	Red	■		3 seconds	The power is supplied to the wireless unit and the wireless activation function is starting up.
	Off	-		-	The wireless activation of the vacuum cleaner is stopped.

## Cancelling tool registration for the vacuum cleaner

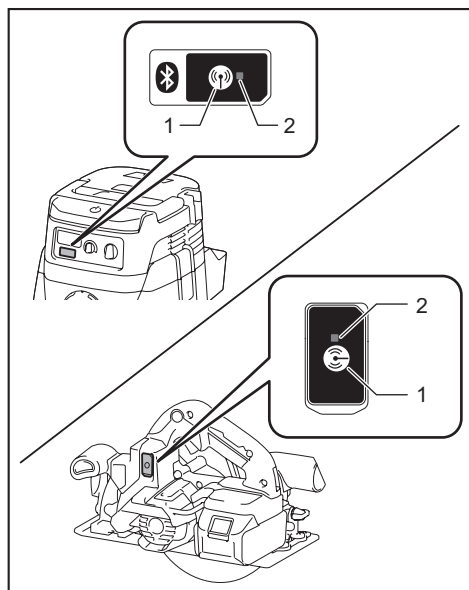
Perform the following procedure when cancelling the tool registration for the vacuum cleaner.

1. Install the batteries to the vacuum cleaner and the tool.
2. Set the stand-by switch on the vacuum cleaner to "AUTO".



► 1. Stand-by switch

3. Press the wireless activation button on the vacuum cleaner for 6 seconds. The wireless activation lamp blinks in green and then become red. After that, press the wireless activation button on the tool in the same way.



► 1. Wireless activation button 2. Wireless activation lamp

If the cancellation is performed successfully, the wireless activation lamps will light up in red for 2 seconds and start blinking in blue.

**NOTE:** The wireless activation lamps finish blinking in red after 20 seconds elapsed. Press the wireless activation button on the tool while the wireless activation lamp on the cleaner is blinking. If the wireless activation lamp does not blink in red, push the wireless activation button briefly and hold it down again.

## Troubleshooting for wireless activation function

Before asking for repairs, conduct your own inspection first. If you find a problem that is not explained in the manual, do not attempt to dismantle the tool. Instead, ask Makita Authorized Service Centers, always using Makita replacement parts for repairs.

State of abnormality	Probable cause (malfunction)	Remedy
The wireless activation lamp does not light/blink.	The wireless unit is not installed into the tool. The wireless unit is improperly installed into the tool.	Install the wireless unit correctly.
	The terminal of the wireless unit and/or the slot is dirty.	Gently wipe off dust and dirt on the terminal of the wireless unit and clean the slot.
	The wireless activation button on the tool has not been pushed.	Push the wireless activation button on the tool briefly.
	The stand-by switch on the vacuum cleaner is not set to "AUTO".	Set the stand-by switch on the vacuum cleaner to "AUTO".
	No power supply	Supply the power to the tool and the vacuum cleaner.
Cannot finish tool registration / cancelling tool registration successfully.	The wireless unit is not installed into the tool. The wireless unit is improperly installed into the tool.	Install the wireless unit correctly.
	The terminal of the wireless unit and/or the slot is dirty.	Gently wipe off dust and dirt on the terminal of the wireless unit and clean the slot.
	The stand-by switch on the vacuum cleaner is not set to "AUTO".	Set the stand-by switch on the vacuum cleaner to "AUTO".
	No power supply	Supply the power to the tool and the vacuum cleaner.
	Incorrect operation	Push the wireless activation button briefly and perform the tool registration/cancellation procedures again.
	The tool and vacuum cleaner is away from each other (out of the transmission range).	Get the tool and vacuum cleaner closer to each other. The maximum transmission distance is approximately 10 m however it may vary according to the circumstances.
	Before finishing the tool registration/cancellation; - the switch trigger on the tool is pulled or; - the power button on the vacuum cleaner is turned on.	Push the wireless activation button briefly and perform the tool registration/cancellation procedures again.
	The tool registration procedures for the tool or vacuum cleaner has not finished.	Perform the tool registration procedures for both the tool and the vacuum cleaner at the same timing.
The vacuum cleaner does not run along with the switch operation of the tool.	Radio disturbance by other appliances which generate high-intensity radio waves.	Keep the tool and vacuum cleaner away from the appliances such as Wi-Fi devices and microwave ovens.
	The wireless unit is not installed into the tool. The wireless unit is improperly installed into the tool.	Install the wireless unit correctly.
	The terminal of the wireless unit and/or the slot is dirty.	Gently wipe off dust and dirt on the terminal of the wireless unit and clean the slot.
	The wireless activation button on the tool has not been pushed.	Push the wireless activation button briefly and make sure that the wireless activation lamp is blinking in blue.
	The stand-by switch on the vacuum cleaner is not set to "AUTO".	Set the stand-by switch on the vacuum cleaner to "AUTO".
	More than 10 tools are registered to the vacuum cleaner.	Perform the tool registration again. If more than 10 tools are registered to the vacuum cleaner, the tool registered earliest will be cancelled automatically.
	The vacuum cleaner erased all tool registrations.	Perform the tool registration again.
	No power supply	Supply the power to the tool and the vacuum cleaner.
	The tool and vacuum cleaner is away from each other (out of the transmission range).	Get the tool and vacuum cleaner closer each other. The maximum transmission distance is approximately 10 m however it may vary according to the circumstances.
	Radio disturbance by other appliances which generate high-intensity radio waves.	Keep the tool and vacuum cleaner away from the appliances such as Wi-Fi devices and microwave ovens.
	The vacuum cleaner runs while the tool's switch trigger is not pulled.	Turn off the wireless activation button of the other tools or cancel the tool registration of the other tools.



# MAINTENANCE

**⚠ CAUTION:** Always be sure that the tool is switched off and the battery cartridge is removed before attempting to perform inspection or maintenance.

**⚠ CAUTION:** Clean out the upper and lower guards to ensure there is no accumulated sawdust which may impede the operation of the lower guarding system. A dirty guarding system may limit the proper operation which could result in serious personal injury. The most effective way to accomplish this cleaning is with compressed air. **If the dust is being blown out of the guards be sure the proper eye and breathing protection is used.**

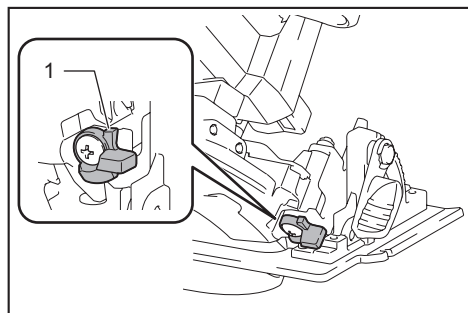
**NOTICE:** Never use gasoline, benzine, thinner, alcohol or the like. Discoloration, deformation or cracks may result.

To maintain product SAFETY and RELIABILITY, repairs, any other maintenance or adjustment should be performed by Makita Authorized or Factory Service Centers, always using Makita replacement parts.

## Adjusting 0°-cut or 45°-cut accuracy

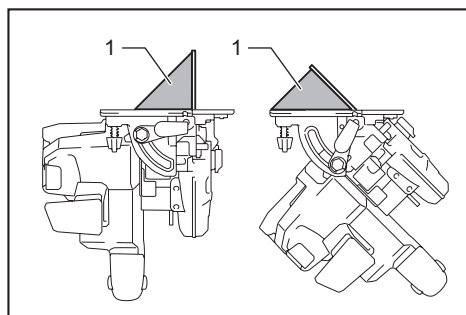
This adjustment has been made at the factory. But if it is off, you can adjust it as the following procedure.

1. Loosen the lever and clamping screw on the front and rear of the tool so that the bevel angle can be changed. Set the stopper to 0° - 45° bevel angle position if you are going to adjust 45°-cut accuracy.

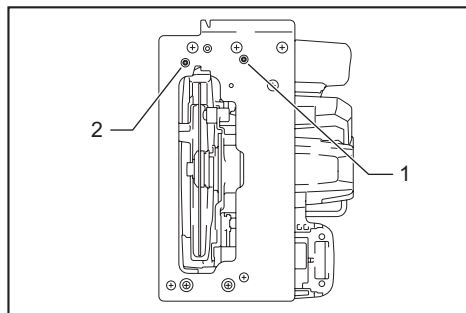


► 1. Stopper

2. Make the base perpendicular or 45° to the circular saw blade using a triangular rule by turning the adjusting screw with a hex wrench. You can also use a square rule to adjust 0° angle.



► 1. Triangular rule



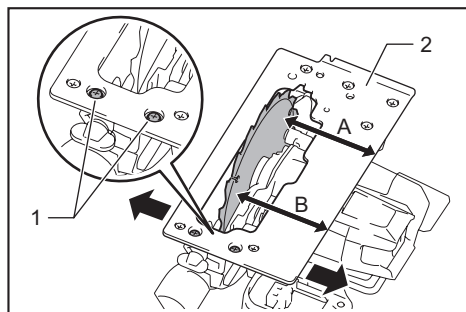
► 1. Adjusting screw for 0° angle 2. Adjusting screw for 45° angle

3. Tighten the lever and clamping screw and then make a test cut to check if desired angle is obtained.

## Adjusting the parallelism

This adjustment has been made at the factory. But if it is off, you can adjust it as the following procedure.

1. Set the tool to the maximum cutting depth.
2. Make sure all levers and screws are tightened. Slightly loosen the screw illustrated.



► 1. Screw 2. Base

3. While opening the lower guard, move the rear of the base so that the distance A and B becomes equal.

4. Tighten the screws and make a test cut to check the parallelism.

## OPTIONAL ACCESSORIES

**⚠ CAUTION:** These accessories or attachments are recommended for use with your Makita tool specified in this manual. The use of any other accessories or attachments might present a risk of injury to persons. Only use accessory or attachment for its stated purpose.

If you need any assistance for more details regarding these accessories, ask your local Makita Service Center.

- Circular saw blade
- Rip fence (Guide rule)
- Hook
- Guide rail
- Bevel guide
- Clamp
- Sheet
- Rubber sheet
- Position sheet
- Guide rail adapter
- Rule bar
- Dust nozzle
- Hex wrench
- Wireless unit (for DHS661)
- Makita genuine battery and charger

**NOTE:** Some items in the list may be included in the tool package as standard accessories. They may differ from country to country.



**Makita Europe N.V.** Jan-Baptist Vinkstraat 2,  
3070 Kortenberg, Belgium

**Makita Corporation** 3-11-8, Sumiyoshi-cho,  
Anjo, Aichi 446-8502 Japan

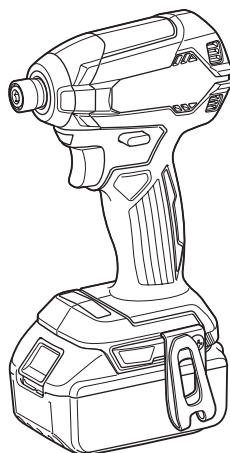
[www.makita.com](http://www.makita.com)

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## INSTRUCTION MANUAL



# Cordless Impact Driver DTD153



Read before use.

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# SPECIFICATIONS

Model:		DTD153	
Fastening capacities	Machine screw	4 mm - 8 mm	
	Standard bolt	5 mm - 16 mm	
	High tensile bolt	5 mm - 14 mm	
No load speed		0 - 3,400 min <sup>-1</sup>	
Impacts per minute		0 - 3,600 min <sup>-1</sup>	
Overall length		126 mm	
Rated voltage		D.C. 18 V	
Battery cartridge		BL1815, BL1815N, BL1820, BL1820B	BL1830, BL1830B, BL1840, BL1840B, BL1850, BL1850B, BL1860B
Net weight		1.3 kg	1.5 kg

- Due to our continuing program of research and development, the specifications herein are subject to change without notice.
- Specifications and battery cartridge may differ from country to country.
- Weight, with battery cartridge, according to EPTA-Procedure 01/2003

## Symbols

The following show the symbols used for the equipment. Be sure that you understand their meaning before use.



Read instruction manual.



Only for EU countries  
Do not dispose of electric equipment or battery pack together with household waste material!  
In observance of the European Directives, on Waste Electric and Electronic Equipment and Batteries and Accumulators and Waste Batteries and Accumulators and their implementation in accordance with national laws, electric equipment and batteries and battery pack(s) that have reached the end of their life must be collected separately and returned to an environmentally compatible recycling facility.

Vibration emission ( $a_h$ ) : 13.0 m/s<sup>2</sup>  
Uncertainty (K) : 1.5 m/s<sup>2</sup>

**NOTE:** The declared vibration emission value has been measured in accordance with the standard test method and may be used for comparing one tool with another.

**NOTE:** The declared vibration emission value may also be used in a preliminary assessment of exposure.

**WARNING:** The vibration emission during actual use of the power tool can differ from the declared emission value depending on the ways in which the tool is used.

**WARNING:** Be sure to identify safety measures to protect the operator that are based on an estimation of exposure in the actual conditions of use (taking account of all parts of the operating cycle such as the times when the tool is switched off and when it is running idle in addition to the trigger time).

## Intended use

The tool is intended for screw driving in wood, metal and plastic.

## Noise

The typical A-weighted noise level determined according to EN60745:

Sound pressure level ( $L_{pA}$ ) : 96 dB(A)

Sound power level ( $L_{WA}$ ) : 107 dB (A)

Uncertainty (K) : 3 dB(A)

**WARNING:** Wear ear protection.

## Vibration

The vibration total value (tri-axial vector sum) mined according to EN60745:  
Work mode: impact tightening of fasteners of maximum capacity of the tool

## EC Declaration of Conformity

### For European countries only

The EC declaration of conformity is included as Annex A to this instruction manual.

## SAFETY WARNINGS

### General power tool safety warnings

**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.

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## 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.

### Work area safety

1. **Keep work area clean and well lit.** Cluttered or dark areas invite accidents.
2. **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.
3. **Keep children and bystanders away while operating a power tool.** Distractions can cause you to lose control.

### Electrical Safety

1. **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.
2. **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.
3. **Do not expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.
4. **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.
5. **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.
6. **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.

### Personal Safety

1. **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.
2. **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.
3. **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.
4. **Remove any adjusting key or wrench before turning the power tool on.** A wrench or key left attached to a rotating part of the power tool may result in personal injury.

5. **Do not overreach. Keep proper footing and balance at all times.** This enables better control of the power tool in unexpected situations.
6. **Dress properly. Do not wear loose clothing or jewellery. Keep your hair, clothing, and gloves away from moving parts.** Loose clothes, jewellery or long hair can be caught in moving parts.
7. **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.

### Power tool use and care

1. **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.
2. **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.
3. **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.** Such preventive safety measures reduce the risk of starting the power tool accidentally.
4. **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.
5. **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.
6. **Keep cutting tools sharp and clean.** Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.
7. **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.

### Battery tool use and care

1. **Recharge only with the charger specified by the manufacturer.** A charger that is suitable for one type of battery pack may create a risk of fire when used with another battery pack.
2. **Use power tools only with specifically designated battery packs.** Use of any other battery packs may create a risk of injury and fire.
3. **When battery pack is not in use, keep it away from other metal objects, like paper clips, coins, keys, nails, screws or other small metal objects, that can make a connection from one terminal to another.** Shorting the battery terminals together may cause burns or a fire.
4. **Under abusive conditions, liquid may be ejected from the battery; avoid contact.** If contact accidentally occurs, flush with water. If liquid contacts your eyes, additionally seek medical help. Liquid ejected from the battery may cause irritation or burns.

## Service

1. 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.
2. Follow instruction for lubricating and changing accessories.
3. Keep handles dry, clean and free from oil and grease.

## Cordless impact driver safety warnings

1. Hold power tool by insulated gripping surfaces, when performing an operation where the fastener may contact hidden wiring. Fasteners contacting a "live" wire may make exposed metal parts of the power tool "live" and could give the operator an electric shock.
2. Always be sure you have a firm footing. Be sure no one is below when using the tool in high locations.
3. Hold the tool firmly.
4. Wear ear protectors.
5. Do not touch the bit or the workpiece immediately after operation. They may be extremely hot and could burn your skin.
6. Keep hands away from rotating parts.

## SAVE THESE INSTRUCTIONS.

**⚠ WARNING:** DO NOT let comfort or familiarity with product (gained from repeated use) replace strict adherence to safety rules for the subject product.

MISUSE or failure to follow the safety rules stated in this instruction manual may cause serious personal injury.

## Important safety instructions for battery cartridge

1. Before using battery cartridge, read all instructions and cautionary markings on (1) battery charger, (2) battery, and (3) product using battery.
2. Do not disassemble battery cartridge.
3. If operating time has become excessively shorter, stop operating immediately. It may result in a risk of overheating, possible burns and even an explosion.
4. If electrolyte gets into your eyes, rinse them out with clear water and seek medical attention right away. It may result in loss of your eyesight.
5. Do not short the battery cartridge:
  - (1) Do not touch the terminals with any conductive material.
  - (2) Avoid storing battery cartridge in a container with other metal objects such as nails, coins, etc.
  - (3) Do not expose battery cartridge to rain.

A battery short can cause a large current flow, overheating, possible burns and even a breakdown.

6. Do not store the tool and battery cartridge in locations where the temperature may reach or exceed 50 °C (122 °F).
7. Do not incinerate the battery cartridge even if it is severely damaged or is completely worn out. The battery cartridge can explode in a fire.
8. Be careful not to drop or strike battery.
9. Do not use a damaged battery.
10. The contained lithium-ion batteries are subject to the Dangerous Goods Legislation requirements. For commercial transports e.g. by third parties, forwarding agents, special requirement on packaging and labeling must be observed. For preparation of the item being shipped, consulting an expert for hazardous material is required. Please also observe possibly more detailed national regulations. Tape or mask off open contacts and pack up the battery in such a manner that it cannot move around in the packaging.
11. Follow your local regulations relating to disposal of battery.

## SAVE THESE INSTRUCTIONS.

**⚠ CAUTION:** Only use genuine Makita batteries. Use of non-genuine Makita batteries, or batteries that have been altered, may result in the battery bursting causing fires, personal injury and damage. It will also void the Makita warranty for the Makita tool and charger.

## Tips for maintaining maximum battery life

1. Charge the battery cartridge before completely discharged. Always stop tool operation and charge the battery cartridge when you notice less tool power.
2. Never recharge a fully charged battery cartridge. Overcharging shortens the battery service life.
3. Charge the battery cartridge with room temperature at 10 °C - 40 °C (50 °F - 104 °F). Let a hot battery cartridge cool down before charging it.
4. Charge the battery cartridge if you do not use it for a long period (more than six months).



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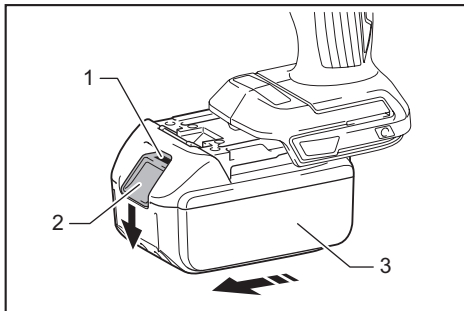
# FUNCTIONAL DESCRIPTION

**CAUTION:** Always be sure that the tool is switched off and the battery cartridge is removed before adjusting or checking function on the tool.

## Installing or removing battery cartridge

**CAUTION:** Always switch off the tool before installing or removing of the battery cartridge.

**CAUTION:** Hold the tool and the battery cartridge firmly when installing or removing battery cartridge. Failure to hold the tool and the battery cartridge firmly may cause them to slip off your hands and result in damage to the tool and battery cartridge and a personal injury.



► 1. Red indicator 2. Button 3. Battery cartridge

To remove the battery cartridge, slide it from the tool while sliding the button on the front of the cartridge.

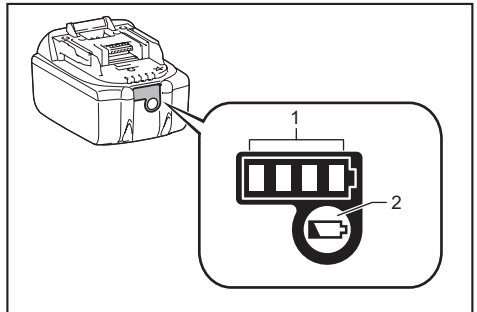
To install the battery cartridge, align the tongue on the battery cartridge with the groove in the housing and slip it into place. Insert it all the way until it locks in place with a little click. If you can see the red indicator on the upper side of the button, it is not locked completely.

**CAUTION:** Always install the battery cartridge fully until the red indicator cannot be seen. If not, it may accidentally fall out of the tool, causing injury to you or someone around you.

**CAUTION:** Do not install the battery cartridge forcibly. If the cartridge does not slide in easily, it is not being inserted correctly.

## Indicating the remaining battery capacity

*Only for battery cartridges with "B" at the end of the model number*



► 1. Indicator lamps 2. Check button

Press the check button on the battery cartridge to indicate the remaining battery capacity. The indicator lamps light up for few seconds.

Indicator lamps			Remaining capacity
Lighted	Off	Blinking	
			75% to 100%
			50% to 75%
			25% to 50%
			0% to 25%
			Charge the battery.
			The battery may have malfunctioned.

**NOTE:** Depending on the conditions of use and the ambient temperature, the indication may differ slightly from the actual capacity.

## Tool / battery protection system

The tool is equipped with a tool/battery protection system. This system automatically cuts off power to the motor to extend tool and battery life. The tool will automatically stop during operation if the tool or battery is placed under one of the following conditions:

### Overload protection

When the battery is operated in a manner that causes it to draw an abnormally high current, the tool automatically stops without any indication. In this situation, turn the tool off and stop the application that caused the tool to become overloaded. Then turn the tool on to restart.

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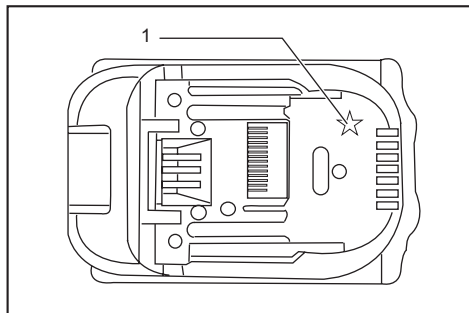
## Overheat protection

When the tool/battery is overheated, the tool stops automatically. In this situation, let the battery cool before turning the tool on again.

## Overdischarge protection

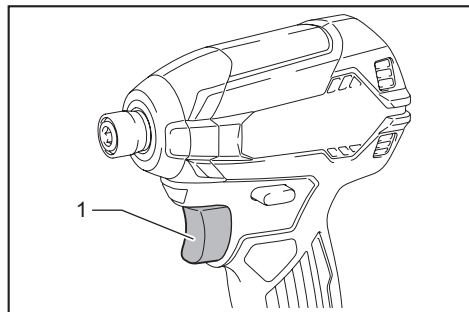
When the battery capacity is not enough, the tool stops automatically. In this case, remove the battery from the tool and charge the battery.

**NOTE:** Overload protection will work only with batteries with star marking.



► 1. Star marking

## Switch action

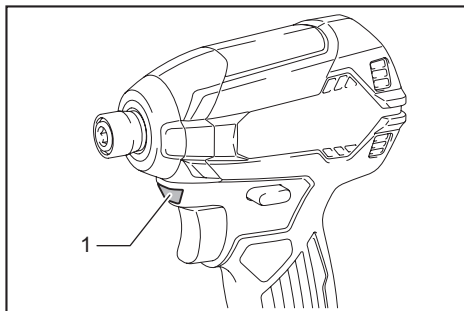


► 1. Switch trigger

**CAUTION:** Before installing the battery cartridge into the tool, always check to see that the switch trigger actuates properly and returns to the "OFF" position when released.

To start the tool, simply pull the switch trigger. Tool speed is increased by increasing pressure on the switch trigger. Release the switch trigger to stop.

## Lighting up the front lamp



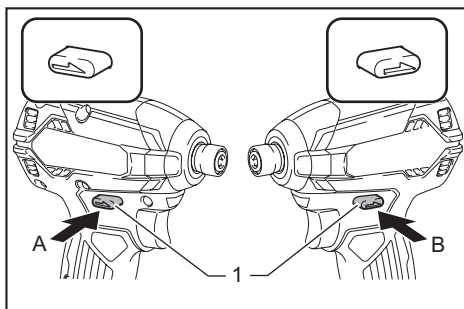
► 1. Lamp

**CAUTION:** Do not look in the light or see the source of light directly.

Pull the switch trigger to light up the lamp. The lamp keeps on lighting while the switch trigger is being pulled. The lamp goes out approximately 10 seconds after releasing the switch trigger.

**NOTE:** Use a dry cloth to wipe the dirt off the lens of the lamp. Be careful not to scratch the lens of lamp, or it may lower the illumination.

## Reversing switch action



► 1. Reversing switch lever

**CAUTION:** Always check the direction of rotation before operation.

**CAUTION:** Use the reversing switch only after the tool comes to a complete stop. Changing the direction of rotation before the tool stops may damage the tool.

**CAUTION:** When not operating the tool, always set the reversing switch lever to the neutral position.

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This tool has a reversing switch to change the direction of rotation. Depress the reversing switch lever from the A side for clockwise rotation or from the B side for counter-clockwise rotation.

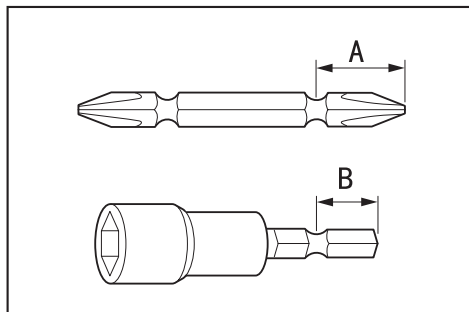
When the reversing switch lever is in the neutral position, the switch trigger cannot be pulled.

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# ASSEMBLY

**⚠ CAUTION:** Always be sure that the tool is switched off and the battery cartridge is removed before carrying out any work on the tool.

## Installing or removing driver bit/ socket bit



Use only driver bit/socket bit that has inserting portion shown in the figure. Do not use any other driver bit/ socket bit.

### For tool with shallow driver bit hole

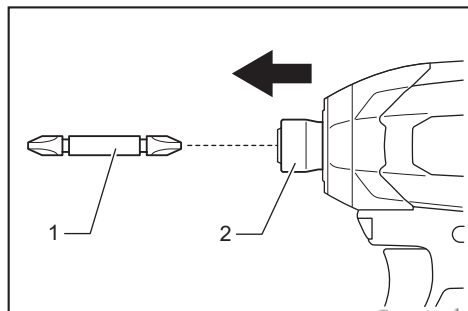
A=12mm B=9mm	Use only these type of driver bit. Follow the procedure 1. (Note) Bit-piece is not necessary.
-----------------	---

### For tool with deep driver bit hole

A=17mm B=14mm	To install these types of driver bits, follow the procedure 1.
A=12mm B=9mm	To install these types of driver bits, follow the procedure 2. (Note) Bit-piece is necessary for installing the bit.

## Procedure 1

### For tool without one-touch type sleeve



► 1. Driver bit 2. Sleeve

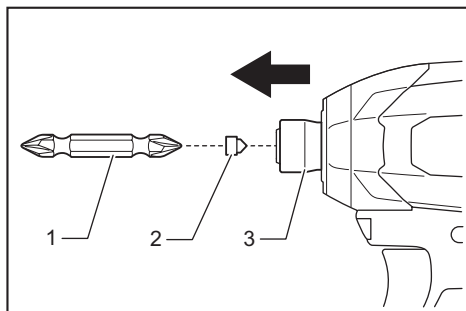
To install the driver bit, pull the sleeve in the direction of the arrow and insert the driver bit into the sleeve as it will go. Then release the sleeve to secure the driver bit.

### For tool with one-touch type sleeve

To install the driver bit, insert the driver bit into the sleeve as far as it will go.

## Procedure 2

In addition to **Procedure 1**, insert the bit-piece into the sleeve with its pointed end facing in.



► 1. Driver bit 2. Bit-piece 3. Sleeve

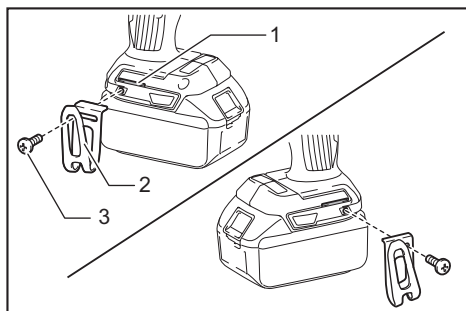
To remove the driver bit, pull the sleeve in the direction of the arrow and pull the driver bit out.

**NOTE:** If the driver bit is not inserted deep enough into the sleeve, the sleeve will not return to its original position and the driver bit will not be secured. In this case, try re-inserting the bit according to the instructions above.

**NOTE:** When it is difficult to insert the driver bit, pull the sleeve and insert it into the sleeve as far as it will go.

**NOTE:** After inserting the driver bit, make sure that it is firmly secured. If it comes out, do not use it.

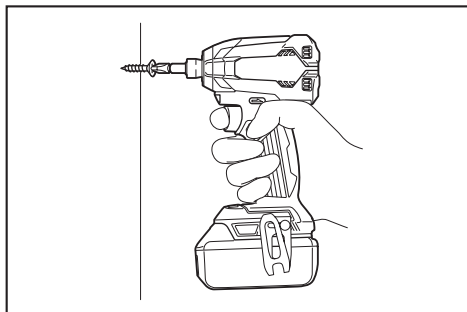
## Installing hook



► 1. Groove 2. Hook 3. Screw

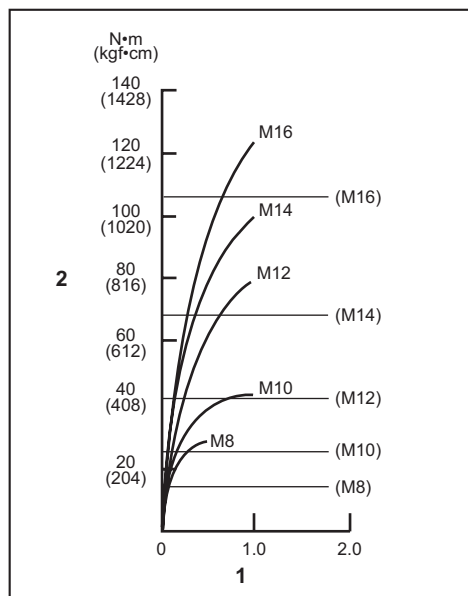
The hook is convenient for temporarily hanging the tool. This can be installed on either side of the tool. To install the hook, insert it into a groove in the tool housing on either side and then secure it with a screw. To remove, loosen the screw and then take it out.

# OPERATION



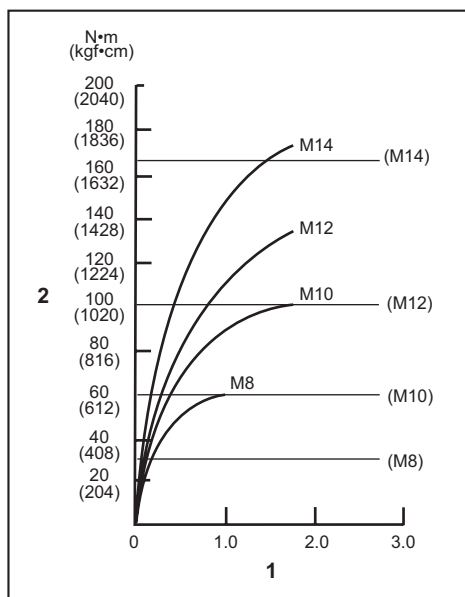
The proper fastening torque may differ depending upon the kind or size of the screw/bolt, the material of the workpiece to be fastened, etc. The relation between fastening torque and fastening time is shown in the figures.

## Proper fastening torque for standard bolt



► 1. Fastening time (second) 2. Fastening torque

## Proper fastening torque for high tensile bolt



► 1. Fastening time (second) 2. Fastening torque

Hold the tool firmly and place the point of the driver bit in the screw head. Apply forward pressure to the tool to the extent that the bit will not slip off the screw and turn the tool on to start operation.

**NOTICE:** If you use a spare battery to continue the operation, rest the tool at least 15 min.

**NOTE:** Use the proper bit for the head of the screw/bolt that you wish to use.

**NOTE:** When fastening M8 or smaller screw, carefully adjust pressure on the switch trigger so that the screw is not damaged.

**NOTE:** Hold the tool pointed straight at the screw.

**NOTE:** If the impact force is too strong or you tighten the screw for a time longer than shown in the figures, the screw or the point of the driver bit may be overstressed, stripped, damaged, etc. Before starting your job, always perform a test operation to determine the proper fastening time for your screw.

The fastening torque is affected by a wide variety of factors including the following. After fastening, always check the torque with a torque wrench.

1. When the battery cartridge is discharged almost completely, voltage will drop and the fastening torque will be reduced.
2. Driver bit or socket bit  
Failure to use the correct size driver bit or socket bit will cause a reduction in the fastening torque.
3. Bolt

• Even though the torque coefficient and the class of bolt are the same, the proper fastening torque will differ according to the diameter of bolt.

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- Even though the diameters of bolts are the same, the proper fastening torque will differ according to the torque coefficient, the class of bolt and the bolt length.
4. The manner of holding the tool or the material of driving position to be fastened will affect the torque.
  5. Operating the tool at low speed will cause a reduction in the fastening torque.

## MAINTENANCE

**⚠ CAUTION:** Always be sure that the tool is switched off and the battery cartridge is removed before attempting to perform inspection or maintenance.

**NOTICE:** Never use gasoline, benzine, thinner, alcohol or the like. Discoloration, deformation or cracks may result.

To maintain product SAFETY and RELIABILITY, repairs, any other maintenance or adjustment should be performed by Makita Authorized or Factory Service Centers, always using Makita replacement parts.

## OPTIONAL ACCESSORIES

**⚠ CAUTION:** These accessories or attachments are recommended for use with your Makita tool specified in this manual. The use of any other accessories or attachments might present a risk of injury to persons. Only use accessory or attachment for its stated purpose.

If you need any assistance for more details regarding these accessories, ask your local Makita Service Center.

- Driver bits
- Socket bits
- Bit piece
- Hook
- Plastic carrying case
- Battery protector
- Tool hanger
- Makita genuine battery and charger

**NOTE:** Some items in the list may be included in the tool package as standard accessories. They may differ from country to country.

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