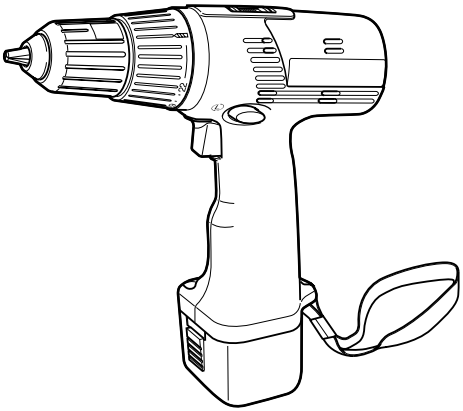
HITACHI

INSTRUCTION MANUAL AND SAFETY INSTRUCTIONS FOR CORDLESS DRIVER DRILL

Variable speed

MODEL DS 10DV2



⚠ WARNING:

Improper and unsafe use of this power tool can result in death or serious bodily injury!

This manual contains important information about product safety. Please read and understand this manual before operating the power tool. Please keep this manual available for others before they use the power tool.

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IMPORTANT INFORMATION

Read and understand all of the operating instructions, safety precautions and warnings in the Instruction Manual before operating or maintaining this power tool.

Most accidents that result from power tool operation and maintenance are caused by the failure to observe basic safety rules or precautions. An accident can often be avoided by recognizing a potentially hazardous situation before it occurs, and by observing appropriate safety procedures.

Basic safety precautions are outlined in the "SAFETY" section of this Instruction Manual and in the sections which contain the operation and maintenance instructions.

Hazards that must be avoided to prevent bodily injury or machine damage are identified by WARNINGS on the power tool and in this Instruction Manual.

Never use this power tool in a manner that has not been specifically recommended by HITACHI, unless you first confirm that the planned use will be safe for you and others.

The warranty of this power tool is separately packed. Before using this power tool, make sure to thoroughly read and understand the content of the warranty.

MEANINGS OF SIGNAL WORDS

WARNING indicates a potentially hazardous situations which, if ignored, could result in serious personal injury.

CAUTION indicates a hazardous situations which, if ignored, could result in moderate personal injury, or could cause machine damage.

NOTE emphasizes essential information.

SAFETY

IMPORTANT SAFETY INSTRUCTIONS FOR USING ALL POWER TOOLS

⚠ **WARNING:** **Death or serious bodily injury could result from improper or unsafe use of power tools. To avoid these risks, follow these basic safety instructions:**

READ ALL INSTRUCTIONS

1. **NEVER TOUCH MOVING PARTS.**
   Never place your hands, fingers or other body parts near the tool's moving parts.
2. **NEVER OPERATE WITHOUT ALL GUARDS IN PLACE.**
   Never operate this tool without all guards or safety features in place and in proper working order. If maintenance or servicing requires the removal of a guard or safety feature, be sure to replace the guard or safety feature before resuming operation of the tool.
3. **ALWAYS WEAR EYE AND EAR PROTECTION.**
   Protect yourself from flying or expelled wood chips, metal particles or other debris by using safety goggles or equivalent eye protection. Wear ear protection to protect yourself from excessive noise.
4. **AVOID UNINTENTIONAL STARTING.**
   Don't carry the tool with your finger near the power switch.
5. **STORE TOOL PROPERLY.**
   When not in use, the tool should be stored in a dry place. Keep out of reach of children. Lock-out the storage area.
6. **KEEP WORK AREA CLEAN.**
   Cluttered areas and benches invite injuries.
   Clear all work areas and work benches of unnecessary tools, debris, furniture, etc.
7. **CONSIDER WORK AREA ENVIRONMENT.**
   Don't expose power tools to rain.
   Don't use power tools in damp or wet locations.
   Keep work area well lit and well ventilated.
   Don't use tool in presence of flammable liquids or gases.
   Power tools produce sparks during operation. They also spark when switching ON/OFF. Never use power tools in sites containing lacquer, paint, benzine, thinner, gasoline, gases, adhesive agents, and other materials which are combustible or explosive.

8. **KEEP CHILDREN AWAY.**
   Do not let visitors contact tool.
   All visitors should be kept safely away from work area.
9. **DON'T FORCE TOOL.**
   It will do the job better and safer at the rate for which it was intended.
10. **USE RIGHT TOOL.**
    Don't force small tool or attachment to do the job of a heavy-duty tool.
    Don't use tool for purpose not intended-for example-don't use circular saw for cutting tree limbs or logs.
11. **DRESS PROPERLY.**
    Do not wear loose clothing or jewelry.
    They can be caught in moving parts. Rubber gloves and non-skid footwear are recommended when working outdoors.
    Wear protective hair covering to contain long hair.
12. **USE FACE OR DUST MAKE IF OPERATION IS DUSTY.**
13. **SECURE WORK.**
    Use clamps or a vise to hold work. It's safer than using your hand and it frees both hands to operate tool.
14. **DON'T OVERREACH.**
    Keep proper footing and balance at all times.
15. **MAINTAIN TOOLS WITH CARE.**
    Keep tools sharp and clean for better and safer performance.
    Follow instructions for lubricating and changing accessories.
    Keep handles dry, clean, and free from oil and grease.
16. **REMOVE ADJUSTING KEYS AND WRENCHES.**
    Keys and adjusting wrenches remove from tool before turning it on.
17. **STAY ALERT.**
    Watch what you are doing. Use common sense. Do not operate tool when you are tired.
    Tools should never be used by you if you are under the influence of alcohol, drugs or medication that makes you drowsy.
18. **CHECK DAMAGED PARTS.**
    Before further use of the tool, a guard or other part that is damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for alignment of moving parts, binding of moving parts, breakage of parts, mounting, and any other conditions that may affect its operation. A guard or other part that is damaged should be properly repaired or replaced by an authorized service center unless otherwise indicated elsewhere in this Instruction Manual.
    Have defective switches replaced by authorized service center.
    Do not use tool if switch does not turn it on and off.

19. **NEVER USE A POWER TOOL FOR APPLICATIONS OTHER THAN THOSE SPECIFIED.**
Never use a power tool for applications other than those specified in the Instruction Manual.

20. **HANDLE TOOL CORRECTLY.**
Operate the tool according to the instructions provided herein. Do not drop or throw the tool. Never allow the tool to be operated by children, individuals unfamiliar with its operation or unauthorized personnel.

21. **CHECK FOR LIVE WIRES.**
Avoid the risk of severe electrical shock by checking for live electrical wires that may be hidden by walls, floors or ceilings. The wires should be de-energized before work begins.

22. **KEEP ALL SCREWS, BOLTS AND COVERS TIGHTLY IN PLACE.**
Keep all screws, bolts, and plates tightly mounted. Check their condition periodically.

23. **DO NOT USE POWER TOOLS IF THE PLASTIC HOUSING OR HANDLE ARE CRACKED.**
Cracks in the tool's housing or handle can lead to electric shock.
Such tools should not be used until repaired.

24. **BLADES AND ACCESSORIES MUST BE SECURELY MOUNTED TO THE TOOL**
Prevent potential injuries to yourself or others. Blades, cutting implements and accessories which have been mounted to the tool should be secure and tight.

25. **NEVER USE A TOOL WHICH IS DEFECTIVE OR OPERATING ABNORMALLY.**
If the tool appears to be operating unusually, making strange noises, or otherwise appears defective, stop using it immediately and arrange for repairs by an authorized Hitachi service center.

26. **CAREFULLY HANDLE POWER TOOLS.**
Should a power tool be dropped or struck against hard materials inadvertently it may be deformed, cracked, or damaged.

27. **DO NOT WIPE PLASTIC PARTS WITH SOLVENT.**
Solvents such as gasoline, thinner, benzine, carbon tetrachloride, and alcohol may damage and crack plastic parts. Do not wipe them with such solvents. Wipe plastic parts with a soft cloth lightly dampened with soapy water.

28. **USE ONLY AUTHENTIC HITACHI REPLACEMENT PARTS.**
Replacement parts not manufactured by Hitachi may void your warranty and can lead to malfunction and resulting injuries. Authentic Hitachi parts are available from your dealer.

IMPORTANT SAFETY INSTRUCTIONS FOR USE OF THE CORDLESS DRIVER DRILL

⚠ WARNING: Death or serious bodily injury could result from improper or unsafe use of the cordless driver drill. To avoid these risks, follow these basic safety instructions:

1. Never place hands or other body parts near the drill bit or chuck during operation. Hold the drill by its handle only.
2. Because the cordless driver drill operates by battery power, be aware of the fact that it can begin to operate at any time.
3. Wear eye and ear protection at all times.
4. When working at elevated locations, clear the area of all other people and be aware of conditions below you.

IMPORTANT SAFETY INSTRUCTIONS FOR BATTERY CHARGER

1. This manual contains important safety and operating instructions for battery charger Model UC14YF/UC14YF2.
2. Before using battery charger, read all instructions and cautionary markings on (1) battery charger, (2) battery, and (3) product using battery.
3. To reduce risk of injury, charge HITACHI rechargeable battery type EB7, EB9, EB9B, EB12, EB12B. Other type of batteries may burst causing personal injury and damage.
4. Do not expose battery charger to rain or snow.
5. Use of an attachment not recommended or sold by the battery charger manufacturer may result in a risk of fire, electric shock, or injury to persons.
6. To reduce risk of damage to electric plug and cord, pull by plug when disconnecting battery charger.
7. Make sure cord is located so that it will not be stepped on, tripped over, or otherwise subjected to damage or stress.
8. An extension cord should not be used unless absolutely necessary. Use of improper extension cord could result in a risk of fire and electric shock.
   If extension cord must be used make sure:
   a. That blades of extension cord are the same number, size, and shape as those of plug on battery charger:
   b. That extension cord is properly wired and in good electrical condition; and
   c. That wire size is large enough for AC ampere rating of battery charger as specified in Table 1.

Table 1
RECOMMENDED MINIMUM AWG SIZE FOR
EXTENSION CORDS FOR BATTERY CHARGERS

AC Input Rating Amperes*		AWG Size of Cord			
Equal to or greater than	but less than	Length of Cord, Feet (Meter) 25 (7.5)	50 (15)	100 (30)	150 (45)
0	2	18	18	18	16
2	3	18	18	16	14
3	4	18	18	16	14

* If the input rating of a battery charger is given in watts rather than in amperes, the corresponding ampere rating is to be determined by dividing the wattage rating by the voltage rating–for example:

$$\frac{1250\text{watts}}{125\text{ volts}} = 10\text{ amperes}$$

9. Do not operate battery charger with damaged cord or plug-replace them immediately.
10. Do not operate battery charger if it has received a sharp blow, been dropped, or otherwise damaged in any way; take it to a qualified serviceman.
11. Do not disassemble battery charger; take it to a qualified serviceman when service or repair is required. Incorrect reassembly may result in a risk of electric shock or fire.
12. To reduce risk of electric shock, unplug charger from receptacle before attempting any maintenance or cleaning. Removing the battery will not reduce this risk.

IMPORTANT SAFETY INSTRUCTIONS FOR USE OF THE BATTERY AND BATTERY CHARGER

You must charge the battery before you can use the cordless driver drill. Before using the model UC14YF/UC14YF2 battery charger, be sure to read all instructions and cautionary statements on it, the battery and in this manual.
REMEMBER: USE ONLY HITACHI BATTERY TYPES EB7 SERIES, EB9 SERIES, EB12 SERIES. OTHER TYPES OF BATTERIES MAY BURST AND CAUSE INJURY!

Follow these instructions to avoid the risk of injury:

⚠ **WARNING:** **Improper use of the battery or battery charger can lead to serious injury. To avoid these injuries:**

1. **NEVER** disassemble the battery.
2. **NEVER** incinerate the battery, even if it is damaged or is completely worn out. The battery can explode in a fire.
3. **NEVER** short-circuit the battery.
4. **NEVER** insert any objects into the battery charger's air vents. Electric shock or damage to the battery charger may result.
5. **NEVER** charge outdoors. Keep the battery away from direct sunlight and use only where there is low humidity and good ventilation.
6. **NEVER** charge when the temperature is below 32°F (0°C) or above 104°F (40°C).
7. **NEVER** connect two battery chargers together.
8. **NEVER** insert foreign objects into the hole for the battery or the battery charger.
9. **NEVER** use a booster transformer when charging.
10. **NEVER** use an engine generator or DC power to charge.
11. **NEVER** store the battery or battery charger in places where the temperature may reach or exceed 104°F (40°C).
12. **ALWAYS** operate charger on standard household electrical power (120 volts). Using the charger on any other voltage may overheat and damage the charger.
13. **ALWAYS** wait at least 15 minutes between charges to avoid overheating the charger.
14. **ALWAYS** disconnect the power cord from its receptacle when the charger is not in use.

DISPOSAL OF THE EXHAUSTED BATTERY

⚠ **WARNING:** **Do not dispose of the exhausted battery. The battery must explode if it is incinerated. The product that you have purchased contains a rechargeable battery. The battery is recyclable. At the end of it's useful life, under various state and local laws, it may be illegal to dispose of this battery into the municipal waste stream. Check with your local solid waste officials for details in your area for recycling options or proper disposal.**

SAVE THESE INSTRUCTIONS AND MAKE THEM AVAILABLE TO OTHER USERS OF THIS TOOL!

OPERATION AND MAINTENANCE

NOTE: The information contained in this Instruction Manual is designed to assist you in the safe operation and maintenance of the power tool.

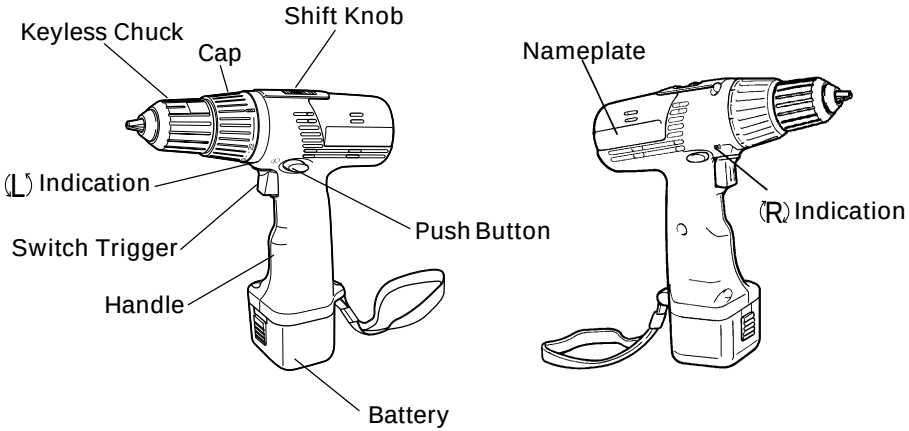
Some illustrations in this Instruction Manual may show details or attachments that differ from those on your own power tool.

MODEL

DS 10DV2 (BDK): with charger and case

NAME OF PARTS

1. Cordless Driver Drill (DS 10DV2)



○ Battery (EB9B)

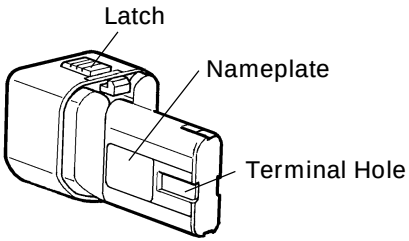


Fig. 1

2. Battery Charger (UC 14YF/UC 14YF2)

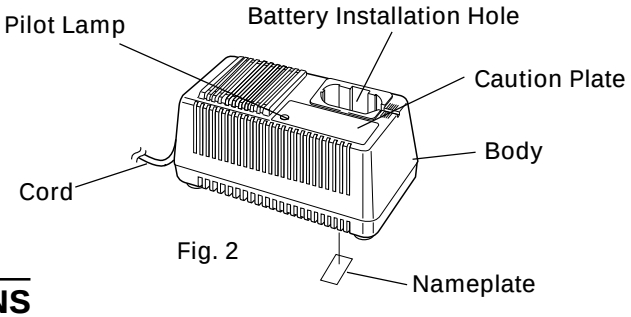


Fig. 2

SPECIFICATIONS

1. Cordless Driver Drill (DS 10DV2)

Model			DS 10DV2
Motor			DC motor
No-load speed		Low	0–350 rpm
		High	0–1200 rpm
Capacity	Drilling		Wood ..... 13/16″ (21mm) (Soft Wood) (Thickness 11/16″ (18mm)) Metal ..... 3/8″ (10mm) (Mild Steel or Aluminum) (Thickness 1/16″ (1.6mm))
	Screw Driver		Wood screw ..... #12 × 2–1/2″ (Soft Wood)(5.5mm × 63mm) Small screw ..... 1/4″ (6mm)
Drill chuck capacity			Maximum gripping diameter 3/8″ (10mm)
Battery	EB9B		Nickel cadmium battery Voltage ..... DC9.6V Charging & discharging frequency ..... about 1000
Weight			3.5 lbs (1.6 kg)

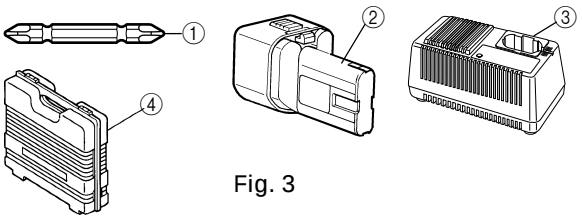
2. Battery Charger (UC 14YF/UC 14YF2)

Input power source	Single phase: AC120V 60Hz
Charging time	Approx. 60min. (At a temperature of 68°F (20°C))
Charger	Charging voltage ..... DC 2.4–14.4V Charging current ..... DC 1.9A
Weight	2.9 lbs (1.3kg)

ACCESSORIES

⚠ WARNING: Accessories for this power tool are mentioned in this Instruction Manual.
The use of any other attachment or accessory can be dangerous and could cause injury or mechanical damage.

STANDARD ACCESSORIES

DS 10DV2 (BFK)	 Fig. 3 ① Phillips bit (No. 2) ..... 1 (Code No. 983006) ② Battery (EB9B) (attached to body) ..... 2 ③ Battery Charger (UC 14YF or UC 14YF2) .. 1 ④ Plastic Case (Code No. 306966) 1

OPTIONAL ACCESSORIES.....sold separately

1. Battery (EB9B)

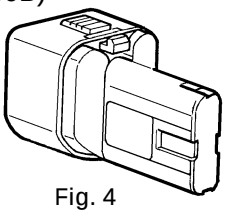


Fig. 4

2. Phillips bit

Use ....Driving of wood screws, tapping screws and machine screws with the head of a plus groove

Bit No.

Fig. 5

Bit No.	Screw Size
No. 1	5/64″–3/32″ (2–2.5mm)
No. 2	1/8″–3/16″ (3–5mm)
No. 3	15/64″–5/16″ (6–8mm)

3. Slotted bit

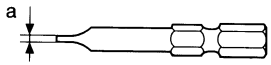


Fig. 6

Use .... Driving of wood screw and machine screws with the head of a minus groove

a	Screw Size
1/32″ (0.8mm)	5/32″ (4mm)
5/128″ (1mm)	13/64″–15/64″ (5–6mm)

4. Hexagonal socket

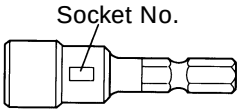


Fig. 7

Socket No.	Screw Size
7	5/32″ (4mm)
8	3/16″ (5mm)

NOTE:
Accessories are subject to change without any obligation on the part of the HITACHI.

APPLICATIONS

○ Use as a drill
Drilling of soft steel, wood, plastic and aluminum materials.
○ Use as a screwdriver
Tightening and loosening of machine screws, wood screws and tapping screws.

REMOVAL AND INSTALLATION METHOD OF BATTERY

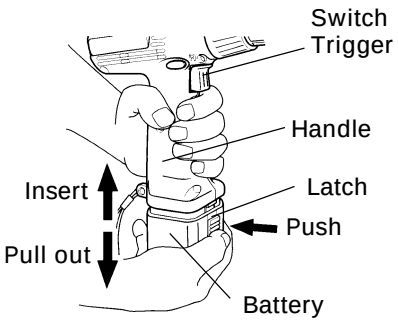


Fig. 8

○ How to remove the battery.
Hold the handle tight.
Press the latch located at the front of the battery and pull out the battery. (Fig. 8)
○ How to install the battery.
Position the battery so that the latch faces toward the switch trigger in the handle and insert the battery. (Fig.8)

CHARGING METHOD

NOTE: Before plugging into the receptacle, make sure the following points.

- ○ The power source voltage is stated on the nameplate.
- ○ The cord is not damaged.

⚠ WARNING: Do not charge at voltage higher than indicated on the nameplate.
If charged at voltage higher than indicated on the nameplate, the charger will burn up.

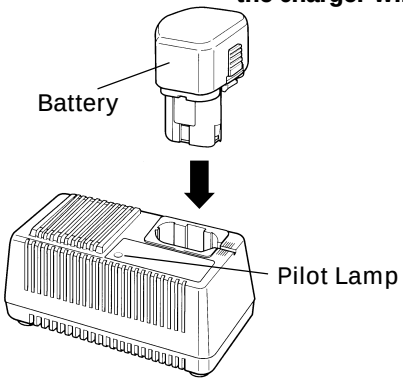


Fig. 9

1. Insert the plug of battery charger into the receptacle.
   When the plug of battery charger has been inserted into the receptacle, pilot lamp will blink in red. (At 1-second intervals)

⚠ WARNING: Do not use the electrical cord if damaged. Have it repaired immediately.

2. Insert the battery to the battery charger.
   Insert the battery into the battery charger as shown in Fig. 9. Make sure it contacts the bottom of the battery charger.

⚠ CAUTION:

- **If the batteries are inserted in the reverse direction, not only recharging will become impossible, but it may also cause the fuse to blow, or problems in the charger such as a deformed recharging terminal.**

NOTE: The piece fixed at the battery installation hole of the charger should not be pulled out.

3. Charging
   When inserting a battery in the charger, charging will commence and the pilot lamp will light continuously in red.
   When the battery becomes fully recharged, the pilot lamp will blink in red. (At 1-second intervals.) (See Table 2)

(1) Pilot lamp indication
The indications of the pilot lamp will be as shown in Table 2, according to the condition of the charger or the rechargeable battery.

Table 2

Indications of the lamp			
Before charging	Blinks (RED)	Lights for 0.5 seconds. Does not light for 0.5 seconds. (off for 0.5 seconds) 	
While charging	Lights (RED)	Lights continuously 	
Charging complete	Blinks (RED)	Lights for 0.5 seconds. Does not light for 0.5 seconds. (off for 0.5 seconds) 	
Charging impossible	Blinks (RED)	Lights for 0.1 seconds. Does not light for 0.1 seconds. (off for 0.1 seconds) 	Malfunction in the battery or the charger
Charging impossible	Lights (GREEN)	Lights continuously 	The battery temperature is high, making recharging impossible.

(2) Regarding the temperature of the rechargeable battery.
The temperatures for rechargeable batteries are as shown in the table below, and batteries that have become hot should be cooled for a while before being recharged.

Table 3 Recharging of batteries that have become hot

Rechargeable batteries	Temperatures at which the battery can be recharged	Drop in battery temperature and recharging.
EB 9B	23°F—140°F (–5°C—60°C)	The pilot lamp lights in GREEN. When the temperature of the battery drops to 60°C the pilot lamp will go out and recharging will start.

(3) Regarding recharging time (At 68°F (20°C))
In approx. 60 minutes.
NOTE: The charging time may vary according to temperature and power source voltage.

4. Disconnect battery charger from the receptacle.

⚠ **CAUTION:**
Do not pull the plug out of the receptacle by pulling on the cord.
Make sure to grasp the plug when removing from receptacle to avoid damaging cord.

5. Remove the battery from the battery charger.
   Supporting the battery charger with hand, pull out the battery from the battery charger.

⚠ **CAUTION:**

- **If the battery is charged while it is heated because it has been left for a long time in a location subject to direct sunlight or because the battery has just been used, the pilot lamp of the charger light up yellow. In such a case, first let the battery cool, then start charging.**
- **When the pilot lamp blinks rapidly in red (at 0.2–second intervals), check for and take out any foreign objects in the charger's battery installation hole. If there are no foreign objects, it is probable that the battery or charger is malfunctioning. Take it to your authorized Service Agent.**
- **Since the built-in micro computer takes about 3 seconds to confirm that the battery being charged with UC 14YF/UC 14YF2 is taken out, wait for a minimum of 3 seconds before reinserting it to continue charging. If the battery is reinserted within 3 seconds, the battery may not be properly charged.**

Regarding electric discharge in case of new batteries, etc.

As the internal chemical substance of new batteries and batteries that have not been used for an extended period is not activated, the electric discharge might be low when using them the first and second time. This is a temporary phenomenon, and normal time required for recharging will be restored by recharging the batteries 2 – 3 times.

How to make the batteries perform longer.

(1) Recharge the batteries before they become completely exhausted.
   When you feel that the power of the tool becomes weaker, stop using the tool and recharge its battery. If you continue to use the tool and exhaust the electric current, the battery may be damaged and its life will become shorter.
(2) Avoid recharging at high temperatures.
   A rechargeable battery will be hot immediately after use. If such a battery is recharged immediately after use, its internal chemical substance will deteriorate, and the battery life will be shortened. Leave the battery and recharge it after it has cooled for a while.

BEFORE USE

Check the work area to make sure that it is clear of debris and clutter.
Clear the area of unnecessary personnel. Ensure that lighting and ventilation is adequate.

OPERATION

1. Mounting and dismounting of the bit

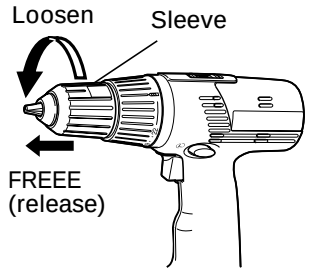


Fig. 10

(1) Mounting the bit

Slide the sleeve to the FREE (release) side.

Rotate the sleeve to the left (counterclockwise as seen from the front) to open the clip on the keyless chuck. (See Fig. 10)

Insert the bit, for instance an item such as a screwdriver into the keyless chuck and after tightening the sleeve to the right (as viewed from front), slide the sleeve to the LOCK side. (See Fig. 11)

⚠ **CAUTION:**

Always slide the sleeve to the LOCK side before attempting to use the drill.

(2) Dismounting the bit

Slide the sleeve to the FREE (release) side.

Rotate the sleeve to the left to loosen, and then take out the bit. (See Fig. 10)

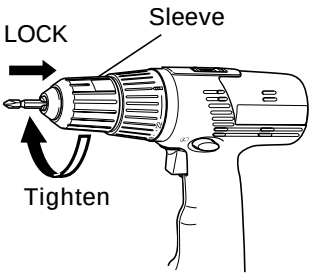


Fig. 11

⚠ **CAUTION:**

Never use excessive turning force while the sleeve is set at the LOCK side. Doing so may damage the keyless chuck.

NOTE:

Loosening stuck or hard to move sleeves.

Grasp the bit installed in the keyless chuck, in a vise or similar tool.

Slide the sleeve to the FREE (release) side.

Set the cap position to “3-13” and turn on the switch. The motor then starts.

Finally, rotate the sleeve to the left, and it will loosen.

2. Confirm that the battery is mounted correctly.

3. Check the rotational direction

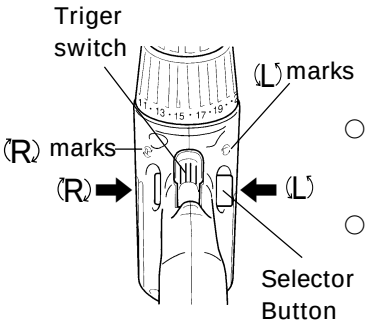


Fig. 12

The bit rotates clockwise (viewed from the rear side) by pushing the R-side of the selector button. The L-side of the selector button is pushed to turn the bit counterclockwise. (See Fig. 12). (The (L) and (R) marks are provided on the body.)

- ○ When the trigger switch is depressed, the tool rotates. When the trigger is released, the tool stops.
- ○ The rotational speed of the drill can be controlled by varying the amount that the trigger switch is pulled. Speed is low when the trigger switch is pulled slightly and increases as the trigger switch is pulled more.
- ○ When releasing the trigger of the switch, the brake will be applied for immediate stopping.

4. Change rotation speed

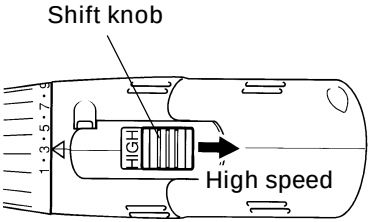


Fig. 13

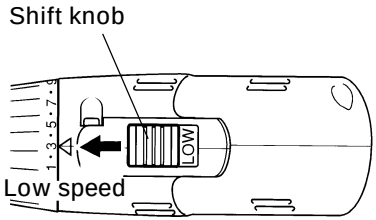


Fig. 14

Operate the shift knob to change the rotational speed. Move the shift knob in the direction of the arrow (see Figs. 13 and 14).
When the shift knob is set to "LOW", the drill rotates at a low speed. When set to "HIGH", the drill rotates at a high speed.

⚠ **CAUTION:**

- **When changing the rotational speed with the shift knob, confirm that the switch is off.**
  Changing the speed while the motor is rotating will damage the gears.
- **When a large force is required for operation (operations indicated in the following chart) set the shift knob to "LOW". If "HIGH" is set and the unit is used, it may cause the motor to burn out or malfunction prematurely.**

Metal Drilling	When the diameter of the hole exceeds 6.5 mm.
Wood Drilling	When the diameter of the hole exceeds 18 mm.
Wood Screw Tightening	When the size of the wood screw exceeds 4.1 diameter x 35mm.

5. Confirm the cap position (see Fig. 15)

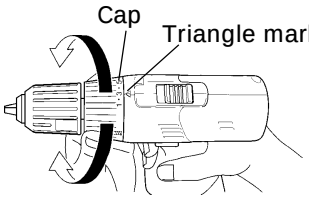


Fig. 15

The tightening torque of this unit can be adjusted according to the cap position, at which the cap is set.

(1) When using this unit as a screwdriver, line up the one of the numbers "1, 3, 5 ... 22" on the cap, or the white dot, with the triangle mark on the outer body.

(2) When using this unit as a drill, line up the cap drill mark "▲" with the triangle mark on the outer body.

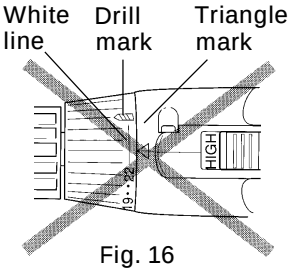


Fig. 16

⚠ **CAUTION:**

- **The cap cannot be set between the numerals "1, 3, 5 ... 22" or the white dot.**
- **Do not use with the cap numeral at "22" and the white line at the middle of the drill mark. Doing so may cause damage. (See Fig. 16)**

6. Tightening torque adjustment

(1) Tightening torque

Tightening torque should correspond in its intensity to the screw diameter. When too strong power is used, the screw head may be broken or be injured. Be sure to adjust the cap position according to the screw diameter.

(2) Tightening torque indication (See Fig. 15)

The tightening torque differs depending on the type of screw and the material being tightened.

The unit indicates the tightening torque with the numbers "1, 3, 5 ... 22" on the cap, and a white dot. The tightening torque at position "1" is the weakest and the torque is strongest at the highest number.

(3) Adjusting the tightening torque (See Fig. 15)

Rotate the cap and line up the numbers "1, 3, 5, ... 22" on the cap, or the white dot, with the triangle mark on the outer body. Adjust the cap in the weak or the strong torque direction according to the torque you need.

⚠ **CAUTION:**

- **The motor rotation may be locked to cease while the unit is used as drill. While operating the driver drill, take care not to lock the motor.**
- **When setting the shift knob to "HIGH" (high speed) and the position of the cap is "17" or "22", it may happen that the clutch does not engaged and that the motor is locked. In such a case, please set the shift knob to "LOW" (low speed).**

- **If the motor is locked, immediately turn the power off. If the motor is locked for a while, the motor or battery may be burnt.**
- **Too long hammering may cause the screw broken due to excessive tightening**.
- **A buzzing noise is produced when the motor is about to rotate; This is only a noise, not a machine failure.**

7. Hand tightening mechanism

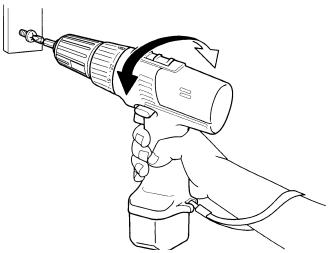


Fig. 17

This unit has a hand tightening mechanism to allow use as for instance as a hand screwdriver.

To use, turn the switch off and rotate the body. (See Fig. 17)

⚠ **CAUTION:**

- **Do not use the hand tightening mechanism for items such as hexagon sockets that require excessive tightening. Do not use for loosening screws or bolts that have been overtightened.**
  The maximum usable torque this can provide is 200 in-lbs. (230kg-cm).

THE SCOPE AND SUGGESTIONS FOR USES

Table 4

Work	Cap position	Usable range	Suggestions
Drilling		Steel: 3/8" (10mm) (Thickness 1/16" (1.6mm)	Take care not to lock the motor
		Aluminum: 3/8" (10mm) (Thickness 1/16" (1.6mm)	
		Wood: 13/16" (21mm) (Soft wood) (Thickness 11/16" (18mm))	
Screw tightening	1~22	Small screws: 1/4" (6mm)	Use the bit and socket matching the screw diameter
		Nut: 1/4" (6mm)	
	1~ 	Wood screws: #12 × 2-1/2" (Soft wood) (5.5mm×63mm)	Use after drilling a pilot hole

NOTE:

The numbers shown in Table 4 are references and vary according to type and hardness of material to be drilled or screwed and sharpness of drill bit.

HOW TO SELECT TIGHTENING TORQUE

Table 5

Cap position	Tightening torque	Operation example
1	Approximately 4 in-lbs. (5 kg-cm)	Machine screw tightening Screw tightening for soft wood material
3	Approximately 9 in-lbs. (10 kg-cm)	
9	Approximately 17 in-lbs. (20 kg-cm)	
13	Approximately 26 in-lbs. (30 kg-cm)	
17	Approximately 35 in-lbs. (40 kg-cm)	Screw tightening for hard wood material
22	Approximately 43 in-lbs.(50 kg-cm)	
	High speed: approximately 52 in-lbs. (60 kg-cm)	Thick screw tightening When used as a drill.
	Low speed: approximately 174 in-lbs. (200 kg-cm)	

NOTE:
The selected content shown in Table 5 indicates the differences according to screw type, screw size and material used.

⚠ **CAUTION:**

- **While operating the Cordless driver drill, take care not to lock the motor.**
  If the motor is locked, immediately turn the power off.
  If the motor is locked for a while, the motor or battery must be burnt.
- **Do tighten too strongly as the screw heads will be damaged.**

MAINTENANCE AND INSPECTION

⚠ **CAUTION: Pull out battery before doing any inspection or maintenance.**

1. Checking the condition of the bit.
   The bits should be checked regularly. If worn or broken bits can slip or decrease the efficiency of the motor and burn it out.
   Replace worn bits with new ones.

⚠ **CAUTION: If you use a driver bit of which point is worn or broken, it will be dangerous since it slips. So replace it with a new one.**

2. Check the Mounting Screws
   Loose mounting screws are dangerous. Regularly inspect them and make sure they are tight.

⚠ **CAUTION: Using this power tool with loosen, screws is extremely dangerous.**

3. Check for Dust
   Dust may be removed with a soft cloth or a cloth dampened with soapy water. Do not use bleach, chlorine, gasoline or thinner, for they may damage the plastics.

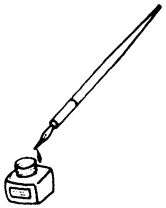
STORAGE

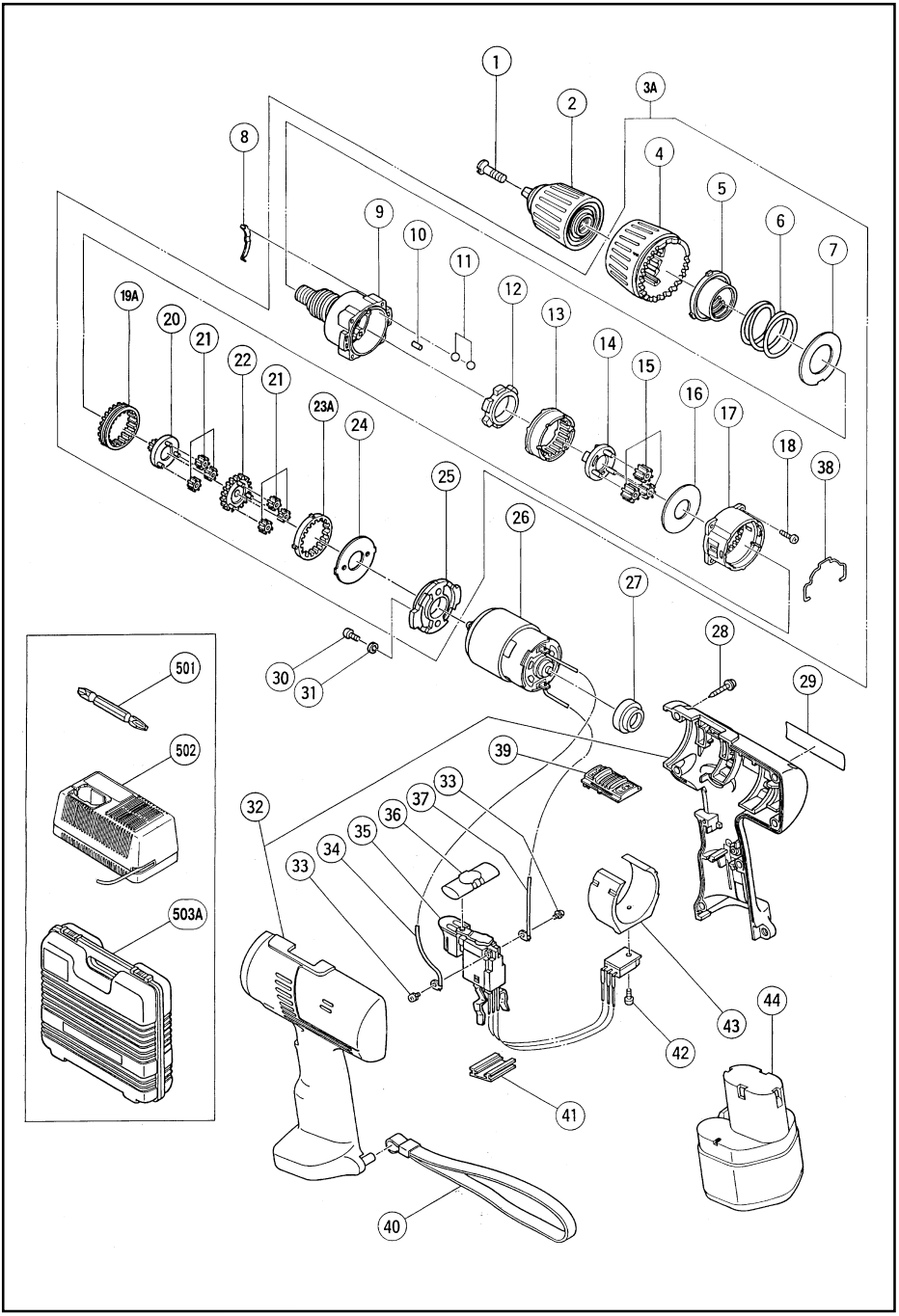
Storing in a place below 104°F (40°C) and out of the reach of children.

SERVICE AND REPAIRS

All quality power tools will eventually require servicing or replacement of parts because of wear from normal use. To assure that only authorized replacement parts will be used, all service and repairs must be performed by a HITACHI AUTHORIZED SERVICE CENTER, ONLY.

NOTE:
Specifications are subject to change without any obligation on the part of the HITACHI.

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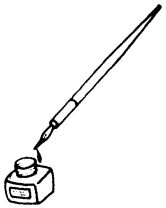
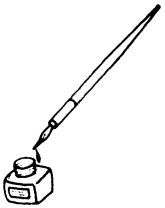
503A

Item No.	Part Name
1	Special Screw (Left Head) M6×23
2	Drill Chuck 10VLRB-N
3A	Gear Box Ass'y
4	Cap
5	Nut
6	Spring
7	Washer (D)
8	Crick Spring
9	Front Case
10	Needle Roller (C) Set
11	Steel Ball
12	Lock Ring
13	Ring Gear
14	Carrier
15	Planet Gear (C) Set
16	Washer (A)
17	Rear Case
18	Screw Set D3×12
19A	Slide Ring Gear
20	Pinion (C)
21	Planet Gear (A) Set
22	Pinion (B)
23A	First Ring Gear
24	Washer (B)
25	Motor Spacer
26	Motor
27	Spacer
28	Tapping Screw (W/Washer) D3×16
29	Nameplate
30	Machine Screw M4×6
31	Spring Washer
32	Housing (A)·(B) Set

Item No.	Part Name
33	Machine Screw (W/Sp. Washer) M3×5
34	Internal Wire (Black)
35	DC-Speed Control Switch
36	Pushing Button
37	Internal Wire (Red)
38	Shift Arm
39	Shift Knob
40	Strap
41	Terminal Support
42	Bind Screw M3×7
43	Fin
44	Battery EB9B
501	+Driver Bit No. 2 65L
502	Charger (Model UC 14YF or UC14 YF2)
503	Case

Parts are subject to change without any obligation on the part of the HITACHI due to improvements.





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Issued by

Hitachi Koki Co., Ltd.

Sinagawa Intercity Tower A, 15-1, Konan 2-chome,

Minato-ku, Tokyo 108-6020, Japan

Distributed by

Hitachi Koki U.S.A., Ltd.

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Norcross, GA 30093

Hitachi Koki Canada Co.

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Mississauga ON L5T 1Z5

001

Code No. C99071563 N

Printed in Japan