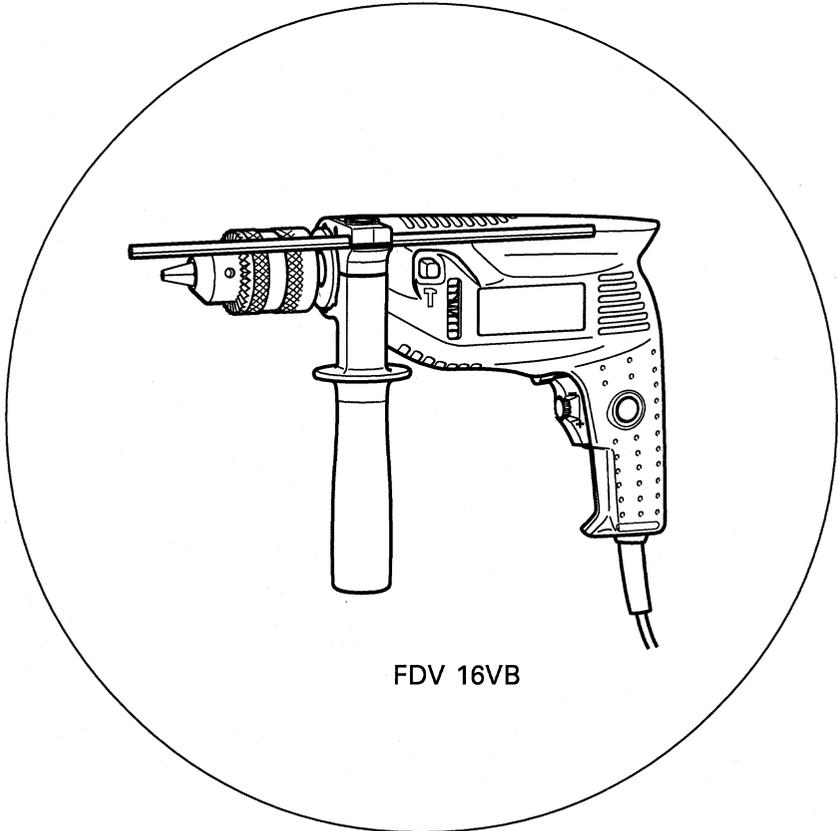


# HITACHI

## 日立牌冲击电钻 IMPACT DRILL

FDV 16VB • FDV 16T • FDV 16

使用说明书  
Handling instructions

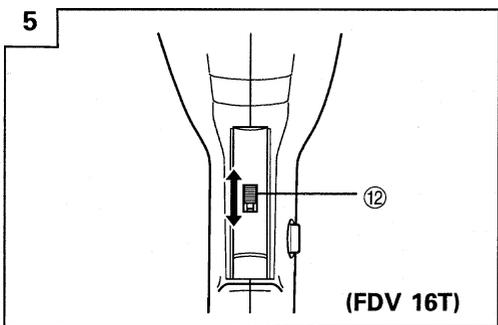
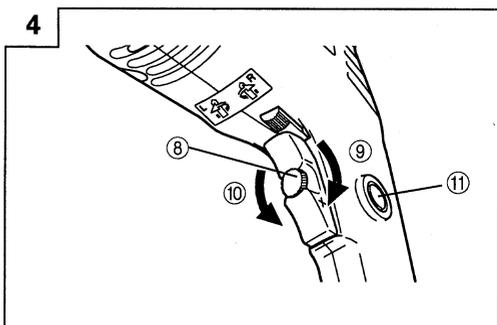
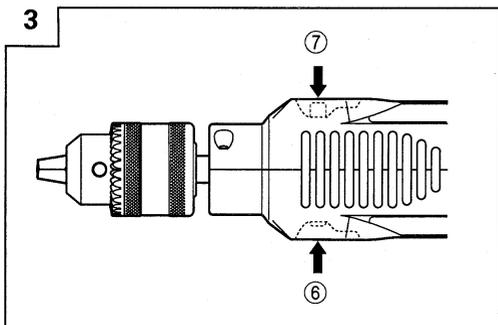
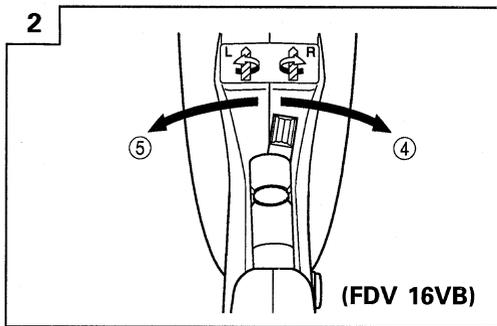
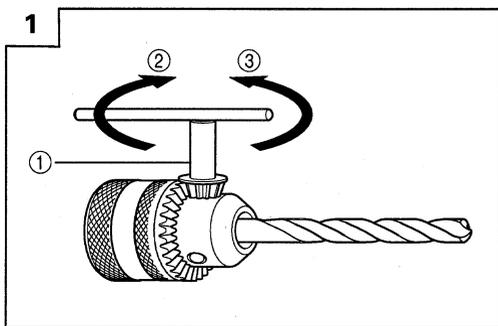


FDV 16VB



使用前务请详加阅读

Read through carefully and understand these instructions before use.



①	卡盘扳手	Chuck wrench
②	拧紧	Tighten
③	拧松	Loosen
④	顺时针方向	Clockwise
⑤	逆时针方向	Counterclockwise
⑥	旋钻 + 冲击	Rotation + Impact
⑦	旋钻	Rotation
⑧	调节手柄	Adjust knob
⑨	高转速	High speed
⑩	低转速	Low speed
⑪	挡块	Stopper
⑫	变速手柄	Shift knob

## 作业上的一般注意事项

**警告!** 当使用电动工具时, 为了减少造成火灾、电击和人身伤害, 必须时刻遵守基本注意事项, 以及下述操作注意事项。

在操作本机之前, 请通读本说明书, 并予以妥善保管。

### 安全操作注意事项:

1. 工作场所应打扫干净, 清理妥当, 杂乱无章将导致事故。
2. 确保舒适的作业环境。电动工具不可任其风吹雨打。不得在潮湿的地方作业。工作场所需保持充分的亮度。请勿在有可能造成火灾或爆炸的地方使用电动工具。
3. 谨防触电事故。应避免身体同大地或接地表面不可让访客触摸电动工具或延伸线缆接触(例如: 管道、散热器、炉灶、冰箱等)
4. 不可让孩童靠近工作场所。与作业无关的访客也必须保持安全距离。
5. 不使用的电动工具应存放于干燥而孩童伸不到的高处, 并加锁保管。
6. 不得使劲用力推压。电动工具需按设计条件才能有效而安全地工作, 绝不可勉强。
7. 妥选使用工具。不可用小型工具或附件去干重活。不可用于规定外的作业。举例说, 用圆锯进行伐木打枝或原木锯切作业。
8. 工作时衣服穿戴要合适。不要让松散的衣角和宝石类卷入转动部份。屋外作业时, 最好手戴橡胶手套, 脚穿防滑胶鞋。同时要戴上能够罩笼长发的工作帽。
9. 绝大多数的电动工具作业时, 均需戴安全眼镜。进行粉尘飞扬的切削作业时, 需戴防尘面罩。
10. 连接除尘设备  
如果提供连击除尘和集尘的设备, 请确认是否已经连接好并且使用正常。
11. 不要拿电线提起电动工具, 也不得拉扯电线从电源插座拆除插头。电线需从热源和油液隔开, 并避免与锐利的边缘接触。
12. 作业以安全第一为原则。工件要用夹具或台钳卡紧。这样做, 比用手按压更为可靠, 也能够让双手专心操作。
13. 作业时脚步要站稳, 身体姿势要保持平衡。

14. 工具应维护妥善, 经常保持锋利、清洁才能充分发挥性能, 落实作业安全的要求。应按规定加注润滑脂、更换附件。线缆应定期检查, 如发现损伤应立即委托专业性的服务单位加以修复。延伸线缆如有损伤应予更换。手柄要保持干燥, 并防止沾附油脂类。
15. 不使用时, 维修前以及更换附件(如: 刀具、钻头、锯具等)之前, 都必须拆卸电源插头才行。
16. 开动前务必把调整用键和扳手类拆除下来。这一点与安全有关。应养成习惯, 严格遵守。
17. 谨防误开动。插头一插上电源插座, 指头就不可随便接触电源开关。插接电源之前, 应先确认: 开关是否切断。
18. 屋外延伸线缆的使用。屋外作业时, 必须使用专用的延伸线缆。
19. 保持高度警觉, 充分掌握情况, 以正常的判断力从事作业。疲惫时切不可开动电动工具。
20. 检查损坏部件。在继续使用电动工具之前, 应详细检查各部零件以及防护装置有无损坏, 以便判断具能否正常工作, 能否发挥正常效能。检查转动部份的对准、空转、各零件有无异常, 安装是否妥善以及其它足以给工作带来不良影响的情况。  
如防护以及其它零件损伤了。除非本说明书中已有记载否则应立即委托服务中心进行妥善修理或更换。开关一旦发现缺陷, 应立即委托服务中心加以更换。如开关不能正常地接通或切断, 绝不可使用该电动工具。
21. 警告  
使用非本说明书中的推荐的附件可能有发生人身损害的危险。
22. 本工具必须委托有资格的维修人员进行维修。  
本电动工具满足相关的安全要求。维修必须由专业人员使用纯正配件来进行。否则有可能会给用户造成人身损害。

# 规格

型 式	FDV16VB	FDV16T	FDV16
电 压 (按地区)*	(110 伏, 115 伏, 120 伏, 127 伏, 220 伏, 230 伏, 240 伏)∩		
输入功率*	550 瓦		
空载转速	0~2900/分	高	低
		2900/分	2300/分
能 力	钢 铁	13 毫米	
	混凝土	16 毫米	
	木 材	25 毫米	
重 量 (不含线缆)	1.6 公斤		

\*当须改变地区时应检查产品上的铭牌。

## 标准附件

用于全地区	
(1) 边 柄 .....	1
(2) 深度量规 .....	1
(3) 卡盘板手 .....	1
用于部分地区	
(1) 塑料 套 .....	1

标准附件可能不预先通告而径予更改。

## 用 途

- 旋钻 + 冲击：混凝土、大理石、花岗岩、瓷钻以及其它类似材料的钻孔。
- 旋钻：金属、木材、塑料的钻孔。  
拧木螺丝。

## 作 业 之 前

1. 电源  
确认所使用的电源与产品名牌上标示的规格是否相符。
2. 电源开关  
确认电源开关是否切断。若电源开关接通，则插头插入电源插座时电动工具将出其不意地立刻转动，从而招致严重事故。
3. 延伸线缆：  
若作业场所移到离开电源的地点，应使用容量足够、铠装合适的延伸线缆，并且要尽可能地短些。

4. 边柄的装配：  
先将边柄插在连接部。  
然后，按顺时针方向旋转边柄扣，将边柄固定住。  
请将边柄设在适合于操作的位置，然后旋紧边柄扣。
5. 装配钻头：  
把钻头套入夹盘，用夹盘键加以固定。具体上可将夹盘键插入夹盘上三个孔，逐一扭紧。（图1）
6. 选择合适的钻头：  
○ 混凝土或石材…使用混凝土用钻头。  
○ 金属或塑料…使用通常的金属用钻头。  
○ 木材钻孔：使用通常的木工用钻头。  
但钻开直径6.5毫米或更小的孔口时，宜使用金属用钻头。
7. 选择螺丝刀头：  
只有选用与螺钉直径相适合的螺丝刀来拧螺丝才不致于损坏螺钉头和螺丝刀。
8. 确认钻头转动方向（图2）：  
(FDV16VB)  
把换向开关推到右边，钻头顺时针旋转（从后面看）。  
把开关推到左边，逆时针旋螺丝（也就是松螺丝）。

### 注意

- 绝不能在钻头旋转期间改变其转动方向。  
在改变钻头转动方向之前，要把电源开关打到关位置。否则，马达会烧掉。
- 当把它作为冲击式电钻时，总是在顺时针方向使用。

## 9. 冲击式倒旋转式的转换（图3）：

只要简单地滑动转换杆，就能把冲击式电钻从冲击式（冲击加旋转）转换为旋转式（只旋转）。当钻水泥、石头、砖瓦或类似的板材时，将转换杆向右滑。钻头在旋转的同时对所钻的材料进行冲击。当钻金属、木头或塑胶时，把转换杆滑到最左端。此钻便象通常电钻一样只是旋转。

### 注意

若被钻的材料用平常的只旋转的方式就能钻，就不要用冲击方式。因为这种功能不仅会降低钻的效率，而且容易损坏钻头。

当转换时，要保证将转换杆滑到头。

## 使用 方法

### 1. 压力：

进行钻孔作业时，绝不可使劲推压钻头以加快作业速度。这样做，只会引起钻头损伤，并降低效率，从而缩短钻头的使用寿命。

### 2. 使用大口径钻头：

钻头口径越大，手上受到的反力也越大，因而必需注意会不会因反力过大而失去控制。

为了获得良好的控制，脚步要站稳，并用双手牢靠地握住钻机。同时，钻头与被钻面要保持垂直。

### 3. 进行穿孔作业时：

穿孔作业时，常因操作不慎使钻机突然移动而损坏钻头或钻机主体。因此，必需提高警觉准备随时放松推力。

### 4. 速度调整和切换操作：

#### ○ FDV16VB

控制起动器的压力，可以将钻的速度从0调至最大值。对起动器的压力越大，钻便转得越快。当将起动器完全压下时，转速为最大。

需要高转速时，朝顺时针方向转动调节手柄；需要低转速时，朝反时针方向转动调节手柄（将手柄旋转大约2又2/3圈）（图4）。

#### ○ FDV16T

按图5箭头所示的方向滑动转换钮，可以改变速度。转换钮上的“H”表示高速；“L”表示低速。

当转换钮在高速位置时，钻头的转速可以随按此切换起动器的方法不同实现两级（高速/低速）转换。

#### ○ FDV16

扳动扳机可获得最大速度。

- 拉起起动器开关并且推推动器，这会保持开关合的状态并且便于继续运转。当开关关时，再次拉起起动器，制动器便可释放。

### 注意

在木材上开孔时，请用全速度开孔。

## 5. 当拧木螺丝时 (FDV16VB)

### (1) 选择合适的螺丝刀头

如果可能的话，应使用“十”字头螺丝，因为螺丝刀的头容易从“一”字头螺丝的头上滑出来。

### (2) 拧木螺丝

- 在拧木螺丝之前，要在木板上开出与之相适合的孔。把螺丝刀头插到螺丝头的槽中，慢慢地将其拧进孔中。

- 低速旋转（螺丝刀）一会，使木螺丝的一部分进入木头之后，用力压起动器以获得最佳的驱动压力。

### 注意

- 要注意开一个适合于木螺丝的孔，同时还要把木头的硬度考虑进去。万一孔太小或太浅，就需要用更大的力量来拧进它。这样，有时候会损坏木螺丝的螺纹。
- 不要拧机器上的螺丝。

## 维 护 和 检 查

### 1. 检查钻头：

继续使用已磨损或损伤的钻头，不仅使工作效率大为降低，同时又会导致电动机过载。因此，钻头必须时常检查，并根据情况需要换新件。

### 2. 检查安装螺钉：

要经常检查安装螺钉是否紧固妥善。若发现螺钉松了，应立即重新扭紧，否则会导致严重事故。

### 3. 电动机的维护：

电动机绕线是电动工具的“心脏”。应仔细检查有无损伤，是否被油液或水沾湿。

### 4. 维修：

电动工具一旦发生任何异常，应毫不迟疑地商询服务中心。

注：为求改进，本手册所载规格可能不预先通告而径予更改。

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## GENERAL OPERATIONAL PRECAUTIONS

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**WARNING!** When using electric tools, basic safety precautions should always be followed to reduce the risk of fire, electric shock and personal injury, including the following.

Read all these instructions before operating this product and save these instructions.

For safe operations:

1. Keep work area clean. Cluttered areas and benches invite injuries.
2. Consider work area environment. Do not expose power tools to rain. Do not use power tools in damp or wet locations. Keep work area well lit. Do not use power tools where there is risk to cause fire or explosion.
3. Guard against electric shock. Avoid body contact with earthed or grounded surfaces. (e.g. pipes, radiators, ranges, refrigerators).
4. Keep children away. Do not let visitors touch the tool or extension cord. All visitors should be kept away from work area.
5. Store idle tools. When not in use, tools should be stored in a dry, high or locked up place, out of reach of children.
6. Do not force the tool. It will do the job better and safer at the rate for which it was intended.
7. Use the right tool. Do not force small tools or attachments to do the job of a heavy duty tool. Do not use tools for purposes not intended; for example, do not use circular saw to cut tree limbs or logs.
8. Dress properly. Do not wear loose clothing or jewellery, they can be caught in moving parts. Rubber gloves and non-skid footwear are recommended when working outdoors. Wear protecting hair covering to contain long hair.
9. Use eye protection. Also use face or dust mask if the cutting operation is dusty.
10. Connect dust extraction equipment.  
If devices are provided for the connection of dust extraction and collection facilities ensure these are connected and properly used.
11. Do not abuse the cord. Never carry the tool by the cord or yank it to disconnect it from the receptacle. Keep the cord away from heat, oil and sharp edges.
12. Secure work. Use clamps or a vise to hold the work. It is safer than using your hand and it frees both hands to operate tool.
13. Do not overreach. Keep proper footing and balance at all times.
14. Maintain tools with care. Keep cutting tools sharp and clean for better and safer performance. Follow instructions for lubrication and changing accessories. Inspect tool cords periodically and if damaged, have it repaired by authorized service center. Inspect extension cords periodically and replace, if damaged. Keep handles dry, clean, and free from oil and grease.
15. Disconnect tools. When not in use, before servicing, and when changing accessories such as blades, bits and cutters.
16. Remove adjusting keys and wrenches. Form the habit of checking to see that keys and adjusting wrenches are removed from the tool before turning it on.
17. Avoid unintentional starting. Do not carry a plugged-in tool with a finger on the switch. Ensure switch is off when plugging in.
18. Use outdoor extension leads. When tool is used outdoors, use only extension cords intended for outdoor use.
19. Stay alert. Watch what you are doing. Use common sense. Do not operate tool when you are tired.
20. 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, free running 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 in this handling instructions. Have defective switches replaced by an authorized service center. Do not use the tool if the switch does not turn it on and off.
21. Warning  
The use of any accessory or attachment, other than those recommended in this handling instructions, may present a risk of personal injury.
22. Have your tool repaired by a qualified person.  
This electric tool is in accordance with the relevant safety requirements. Repairs should only be carried out by qualified persons using original spare parts. Otherwise this may result in considerable danger to the user.

## SPECIFICATIONS

Model	FDV16VB	FDV16T		FDV16
Voltage (by areas)*	(110V, 115V, 120V, 127V, 220V, 230V, 240V) ~			
Power Input	550W*			
No-Load Speed	0 – 2900/min	High	Low	2900/min
		2900/min	2300/min	
Capacity:	Steel Concrete Wood	13mm 16mm 25mm		
Weight (w/o cord)	1.6kg			

\* Be sure to check the nameplate on product as it is subject to change by areas.

## STANDARD ACCESSORIES

### For entire area

- (1) Side handle ..... 1  
 (2) Depth stopper ..... 1  
 (3) Chuck wrench ..... 1

### For partial areas

- (1) Plastic case ..... 1  
 Standard accessories are subject to change without notice.

## APPLICATION

- By combined action of ROTATION and IMPACT:  
Boring holes in concrete, marble, granite, tile, and similar materials.
- By ROTATION only:  
Boring holes in metals, wood and plastics.  
Tightening wood screws.

## PRIOR TO OPERATION

- 1. Power source**  
Ensure that the power source to be utilized conforms to the power requirements specified on the product nameplate.
- 2. Power switch**  
Ensure that the power switch is in the OFF position. If the plug is connected to a receptacle while the power switch is in the ON position, the power tool will start operating immediately, which could cause a serious accident.
- 3. Extension cord**  
When the work area is removed from the power source, use an extension cord of sufficient thickness and rated capacity. The extension cord should be kept as short as practicable.
- 4. Side handle attachment**  
Attach the side handle to the mounting part. Rotate the side handle grip in a clockwise direction to secure it.  
Set the side handle to a position that is suited to the operation and then securely tighten the side handle grip.
- 5. Fitting the drill bit.**  
Fit the drill bit into the chuck and use the chuck

wrench to secure it, tightening the chuck by each of the three holes in turn. (Fig.1)

### 6. Selecting the appropriate drill bit

- When boring concrete or stone:  
Use the drill bits for concrete.
- When boring metal or plastic:  
Use an ordinary metalworking drill bit.
- When boring wood:  
Use an ordinary woodworking drill bit. However, when drilling 6.5mm or smaller holes, use a metalworking drill bit.

### 7. Selecting the driver bit

Screw heads or bits will be damaged unless a bit appropriate for the screw diameter is employed to drive in the screws.

### 8. Confirm the direction of bit rotation (Fig.2) (FDV16VB)

The bit rotates clockwise (viewed from the rear) by pushing the R-side of the reverse switch. The L-side of the switch is pushed to turn screws counterclockwise (i.e. to loosen them.)

### CAUTION

- Never change the direction of bit rotation during operation.  
Turn the power switch OFF before changing the direction of bit rotation; otherwise, the motor will burn.
- Always use with clockwise rotation, when using it as an impact drill.

### 9. IMPACT to ROTATION changeover (Fig.3)

The impact drill can be switched from IMPACT (impact plus rotation) to ROTATION (rotation only) by simply sliding the change lever. When boring concrete, stone, tile or similar board materials, slide the change lever right. The drill head impacts against the material while continuing to rotate. When boring metal, wood or plastic, slide the change lever fully to the left. The drill simply rotates as an ordinary electric drill.

### CAUTION

Do not use the impact drill in the IMPACT mode if the material can be bored by rotation only. Such action will not only reduce drill efficiency, but may also damage the drill tip.  
When changing over, ensure the change lever is slid as far as it will go.

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## HOW TO USE

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### 1. Pressure

Drilling will NOT be accelerated by placing heavy pressure on the drill. Such action will only result in a damaged drill bit, decreased drilling efficiency and/or shortened service life of the drill.

### 2. Using a large diameter drill bit

The larger the drill bit diameter, the larger the reactive force on your arm. Be careful not to lose control of the drill because of this reactive force. To maintain firm control, establish a good foothold, hold the drill tightly with both hands, and ensure that the drill is vertical to the material being drilled.

### 3. When drilling completely through the material

When the drill bit bores completely through the material, careless handling often results in a broken, drill bit or damage to the drill body itself due to the sudden movement of the drill. Always be alert and ready to release pushing force when drilling through the material.

### 4. Speed adjustment and switch operation

#### ○ FDV16VB

The drill speed can be adjusted from 0 through maximum speed by regulating the trigger squeezing force.

The more the trigger is squeezed, the faster the drill rotates. When the trigger is squeezed fully, the speed becomes maximum speed.

Turn the adjusting knob clockwise for higher speed and counterclockwise for lower speed. (Rotate the adjusting knob approximately 2-2/3 turns.) (Fig.4)

#### ○ FDV16T

To change speed, slide the shift knob in the appropriate direction, as indicated by the arrow in Fig.5.

The mark "H" printed on the shift knob denotes High speed. The mark "L" denotes Low speed. When the shift knob is in High speed position, the rotation speed of the drill bit can be changed in two stages (High speed/Low speed) according to the method of pressing the switch trigger.

#### ○ FDV16

The maximum speed can be obtained by pulling the trigger switch.

- Pull the trigger switch and push the stopper, this keeps the switched in the on position, which is convenient for continuous running. The stopper can be released by pulling the trigger again.

#### **CAUTION**

Drill at a maximum rotation speed when drilling wooden materials.

### 5. When driving wood screws (FDV16VB)

#### (1) Selecting a suitable driver bit

Employ plus-head screws, if possible, since the driver bit easily slips off the heads of minus-head screws.

#### (2) Driving in wood screws

- Prior to driving in wood screws, make holes suitable for them on the wooden board. Apply the bit to the screw head grooves and gently drive the screws into the holes.

- After rotating the screwdriver at low speed for a while until a wood screw is partly driven into the wood, squeeze the trigger more strongly to obtain optimum driving force.

#### **CAUTION**

- Exercise care in preparing a hole suitable for the wood screws taking the hardness of the wood into consideration. Should the hole be excessively small or shallow, requiring much power to drive the screw into it, the thread of the wood screw may sometimes be damaged.
- Do not drive machine screws.

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## MAINTENANCE AND INSPECTION

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### 1. Inspection the drill bit

Continued use of a worn and/or damaged drill bit will result in reduced drilling efficiency and may seriously overload the drill motor. Inspect the drill bit often and replace it with a new bit as necessary.

### 2. Inspecting the mounting screws:

Regularly inspect all mounting screws and ensure that they are properly tightened. Should any of the screws be loose, retighten them immediately. Failure to do so could result in serious hazard.

### 3. Maintenance of the motor

The motor unit winding is very "heart" of the power tool. Exercise due care to ensure the winding does not become damaged and/or wet oil or water.

### 4. Servicing

Consult an authorized Service Center in the event of power tool failure.

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#### **NOTE**

Due to HITACHI's continuing program of research and development, the specifications herein are subject to change without prior notice.

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**Hitachi Koki Co., Ltd.**

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