

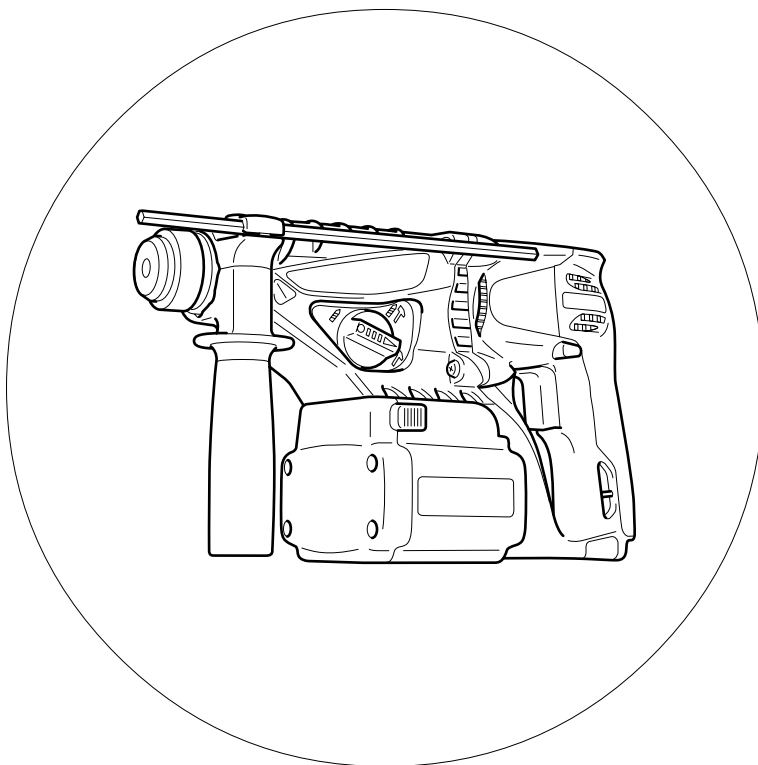
HITACHI

日立牌充电式锤钻 Cordless Rotary Hammer

DH 24DVA

使用说明书

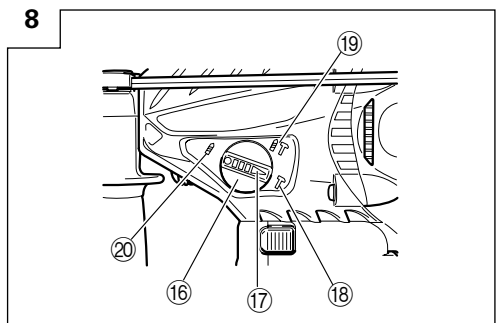
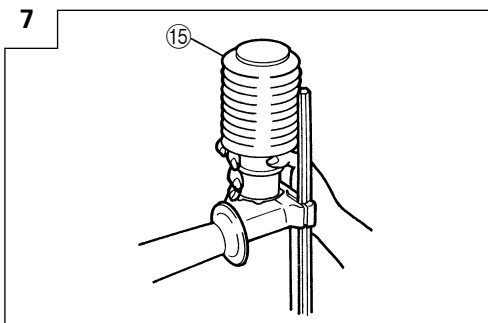
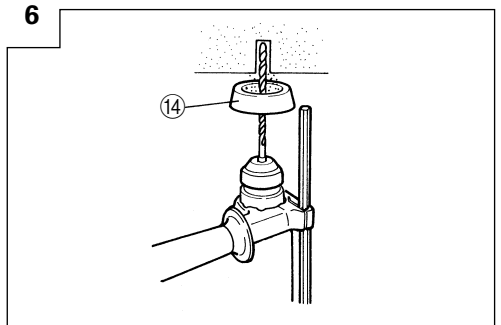
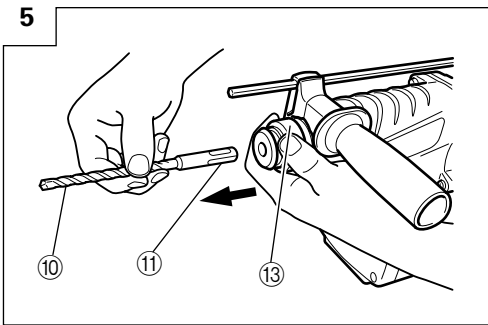
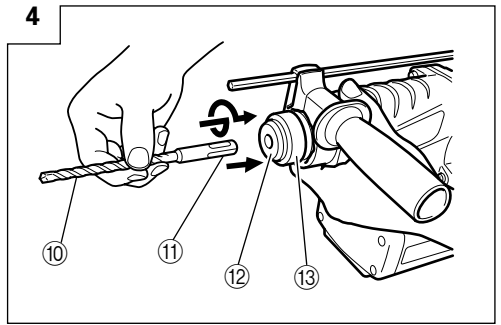
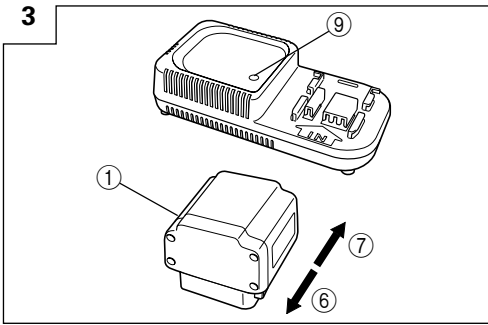
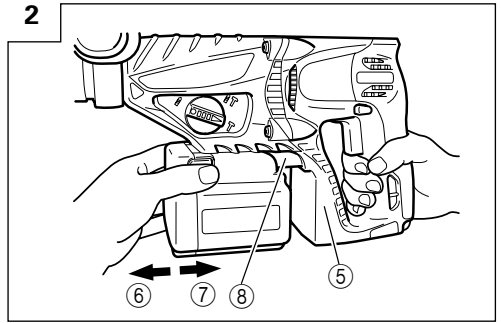
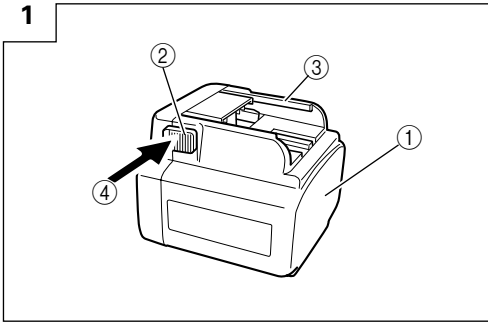
HANDLING INSTRUCTIONS

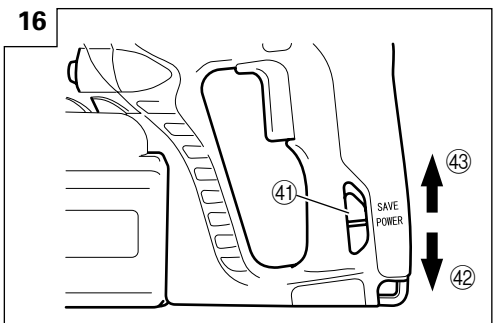
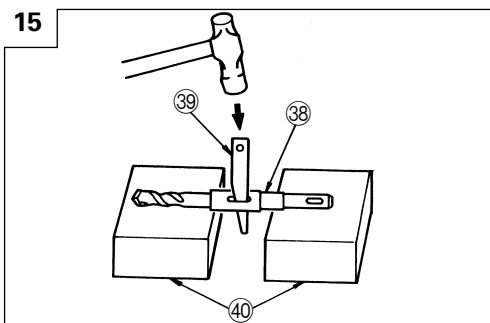
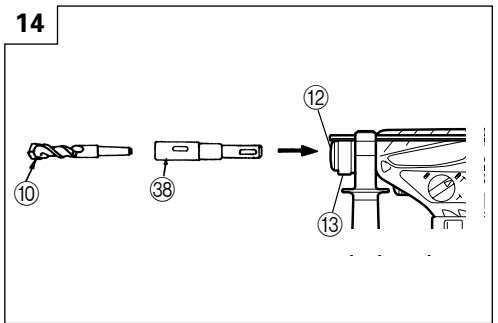
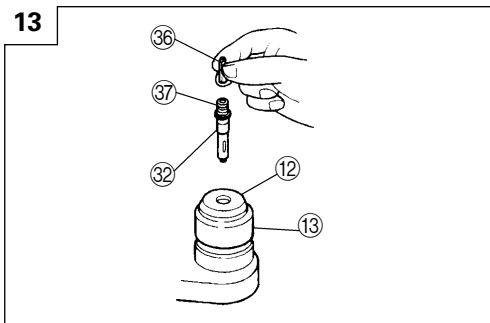
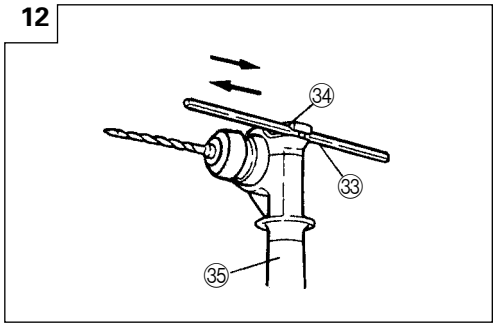
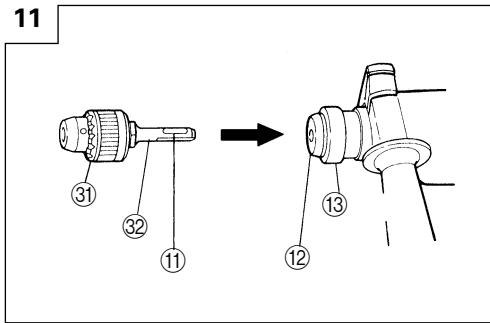
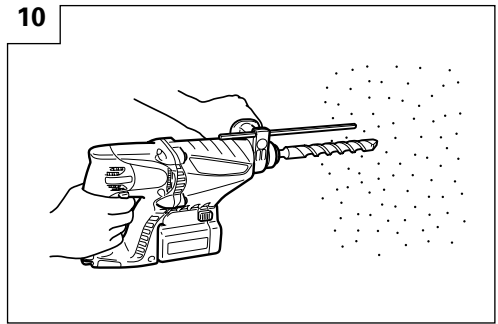
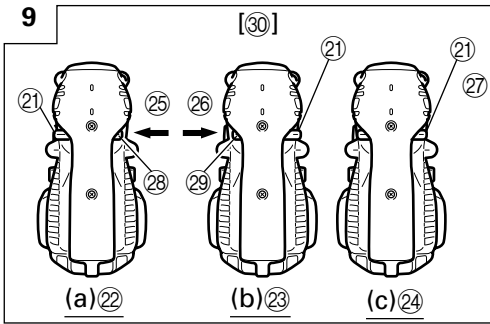


使用前务请详加阅读

Read through carefully and understand these instructions before use.

Hitachi Koki





	中国语	English
①	充电式电池	Rechargeable battery
②	插销	Latch
③	电池导轨	Guide rail of battery
④	按	Push
⑤	外壳	Housing
⑥	拉出	Pull out
⑦	插入	Insert
⑧	本体导轨	Guide rail of housing
⑨	指示灯	Pilot lamp
⑩	钻头	Drill bit
⑪	SDS-plus 长柄部	Part of SDS-plus shank
⑫	前帽	Front cap
⑬	夹卡	Grip
⑭	防尘杯	Dust cup
⑮	集尘器 (B)	Dust collector (B)
⑯	选择杆	Change lever
⑰	“▶”记号	“▶” mark
⑱	“T”记号	“T” mark
⑲	“T”记号	“T” mark
⑳	“⚡”记号	“⚡” mark
㉑	按钮	Push button
㉒	正转	Forward rotation
㉓	反转	Reverse rotation
㉔	不转	Does not rotate
㉕	按 (R) 侧	Push the (R) side
㉖	按 (L) 侧	Push the (L) side
㉗	中心位置	Center position
㉘	(R) 指示数值	(R) indication
㉙	(L) 指示数值	(L) indication
㉚	自侧柄所见之机体图示	Diagram seen from the handle side
㉛	钻头夹盘	Drill chuck
㉜	夹盘附加器	Chuck adapter
㉝	深度计	Depth gauge
㉞	安装孔	Mounting hole
㉟	侧柄	Side handle
㊱	螺丝钻头	Bit
㊲	夹紧器	Socket
㊳	锥柄附加器	Taper shank adapter
㊴	制销	Cotter
㊵	台座	Rest
㊶	换挡旋钮	Shift knob
㊷	「动力」模式	“POWER” mode
㊸	「节能」模式	“SAVE” mode

一般安全规则

警告！

阅读说明

没有按照以下列举的说明而使用或操作将导致触电、着火和/或严重伤害。

在所有以下列举的警告中术语“电动工具”指市电驱动（有线）电动工具或电池驱动（无线）电动工具。

保存这些说明

1) 工作场地

- 保持工作场地清洁和明亮。
混乱和黑暗的场地会引发事故。
- 不要在易爆环境，如有易燃液体、气体或粉尘的环境下操作电动工具。
电动工具产生的火花会点燃粉尘或气体。
- 让儿童和旁观者离开后操纵电动工具。
分心会使你放松控制。

2) 电气安全

- 电动工具插头必须与插座相配。
绝不能以任何方式改装插头。
需接地的电动工具不能使用任何转换插头。
未经改装的插头和相配的插座将减少触电危险。
- 避免人体接触接地表面，如管道、散热片和冰箱。
如果你身体接地会增加触电危险。
- 不得将电动工具暴露在雨中或潮湿环境中。
水进入电动工具将增加触电危险。
- 不得滥用电线。
绝不能用电线搬运、拉动电动工具或拔出其插头。
让电动工具远离热、油、锐边或运动部件。
受损或缠绕的电线会增加触电危险。
- 当在户外使用电动工具时，使用适合户外使用的外接电线。
适合户外使用的电线将减少触电危险。

3) 人身安全

- 保持警觉，当操作电动工具时关注所从事的操作并保持清醒。
切勿在有疲倦、药物、酒精或治疗反应下操作电动工具。
在操作电动工具期间精力分散会导致严重人身伤害。
- 使用安全装置。始终配戴护目镜。
安全装置，诸如适当条件下的防尘面具、防滑安全鞋、安全帽、听力防护等装置能减少人身伤害。
- 避免突然起动。
确保开关在插入插头时处于关断位置。
手指放在已接通电源的开关上或开关处于接通时插入插头可能会导致危险。

- 在电动工具接通之前，拿掉所有调节钥匙或扳手。
遗留在电动工具旋转零件上的扳手或钥匙会导致人身伤害。
- 手不要伸得太长。
时刻注意脚下和身体平衡。
这样在意外情况下能很好地控制电动工具。
- 着装适当。
不要穿宽松衣服或佩带饰品。
让你的头发、衣服和袖子远离运动部件。
宽松衣服、佩饰或长发可能会卷入运动部件。
- 如果提供了与排屑装置、集尘设备连接用的装置，则确保他们连接完好且使用得当。
使用这些装置可减少碎屑引起的危险。

4) 电动工具使用和注意事项

- 不要滥用电动工具，根据用途使用适当的电动工具。
选用适当的设计额定值的电动工具会使你工作更有效、更安全。
- 如果开关不能接通或关断工具电源，则不能使用该电动工具。
不能用开关来控制的电动工具是危险的且必须进行修理。
- 在进行任何调节、更换附件或贮存电动工具之前，必须从电源上拔掉插头和/或将电池盒脱开电源。
这种防护性措施将减少电动工具突然起动的危险。
- 将闲置电动工具贮存在儿童所及范围之外，并且不要让不熟悉电动工具或对这些说明不了解的人操作电动工具。
电动工具在未经训练的用户手中是危险的。
- 保养电动工具。检查运动件的安装偏差或卡住、零件破损情况和影响电动工具运行的其他条件。
如有损坏，电动工具必须在使用前修理好。
许多事故由维护不良的电动工具引发。
- 保持切削刀具锋利和清洁。
保养良好的有锋利切削刃的刀具不易卡住而且容易控制。
- 按照使用说明书以及打算使用的电动工具的特殊类型要求的方式，考虑作业条件和进行的作业来使用电动工具、附件和工具的刀头等。
将电动工具用作那些与要求不符的操作可能会导致危险情况。

5) 维修

- 将你的电动工具送交专业维修人员，必须使用同样的备件进行更换。
这样将确保所维修的电动工具的安全性。

注意事项

不可让儿童和体弱人士靠近工作场所。
应将不使用的工具存放在儿童和体弱人士接触不到的地方。

充电式冲击电钻的使用注意事项

1. 务请在 0~40°C 的温度下进行充电。温度低于 0°C 将会导致充电过度，极其危险。电池不能在高于 40°C 的温度下充电。最适合于充电的温度是 20~25°C。
2. 不要连续使用充电器。
一次充电完毕后，在 15 分钟内不要再使用该充电器对电池充电。
3. 勿让杂质进入充电式电池连结口内。
4. 切勿拆卸充电式电池与充电器。
5. 切勿使充电式电池短路。
使电池短路将会造成很大的电流和过热，从而烧坏电池。
6. 请勿将电池丢入火中。
电池受热将会爆炸。
7. 长时间连续使用本电钻，可能会导致机体过热，对马达及开关造成损害，因此使用本机请勿连续超过 15 分钟。
8. 充电后电池寿命太短不够使用时，请尽快将电池送往经销商。请勿将用过的电池乱丢。
9. 请勿使用耗竭了的电池，否则会损坏充电器。
10. 在对天花板、墙和地板钻孔时，要检查是否有埋设的电线等。
11. 请勿将异物插入充电器的通风口。
若将金属异物或易燃物插入通风口的话，将会引起触电事故或使充电器受损。
12. 佩戴护耳罩
噪音会导致听力丧失。
13. 作业之后的钻头仍处在高热状态下，切不可摸触，以免灼伤。
14. 使用工具附带的辅助把手。
失去控制会导致人身伤害。
15. 使用锤钻时，应牢牢握住工具的操作柄和侧柄。否则，所产生的反作用力会将孔钻歪，甚至会造成危险。
16. 佩戴防尘口罩
不要吸入在钻凿操作过程中产生的有害粉尘。粉尘会危机到自身和旁观者的身体健康。

规格

电动工具

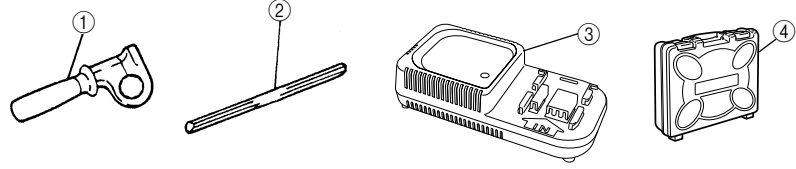
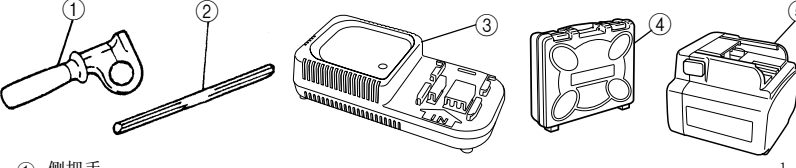
型式	DH24DVA		
无负荷速度（节能模式 / 动力模式）	0 - 520/0 - 1050 转/分		
无负荷冲击率（节能模式 / 动力模式）	0 - 2200/0 - 4500/分		
能力	钻孔	混凝土	24 mm
		金属	13 mm
		木材	30 mm
	螺丝紧固	木螺丝	6.2 mm（直径）40 mm（长）
充电式电池	EB2420: Ni-Cd 24 V（2.0 Ah 20 节电池） EB2430HA: Ni-MH 24 V（3.0 Ah 20 节电池） EB2433X: Ni-MH 24 V（3.3 Ah 20 节电池）		
重量	4.1 kg		

○ 使用木制钻头钻孔时，请勿采用「节能」模式，因为这很可能导致马达烧坏。

充电器

型式	UC24YFB
充电电压	24 V
重量	0.6 kg

标准附件

<p>DH24DVA (BFK) (HFK) (XFK)</p>	 <p>① 侧把手 1 ② 深度计 1 ③ 充电器 1 ④ 塑料箱 1</p>
<p>DH24DVA (2BFK) (2HFK) (2XFK)</p>	 <p>① 侧把手 1 ② 深度计 1 ③ 充电器 1 ④ 塑料箱 1 ⑤ 备用电池 1</p>

标准附件可能不预先通告而己予更改。

选购附件（分开销售）

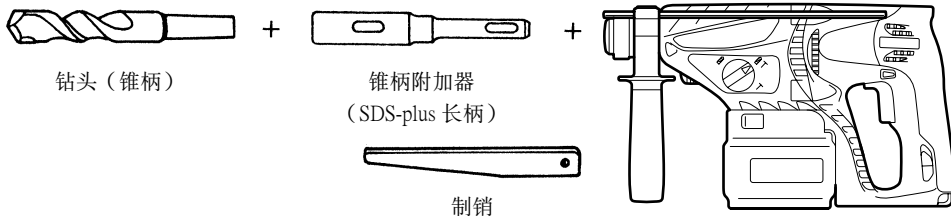
1. 电池 (EB2420、EB2430HA、EB2433X)



准备一些备用电池，工作起来较为便利。

2. 钻开锚栓孔（旋钻 + 锤钻）

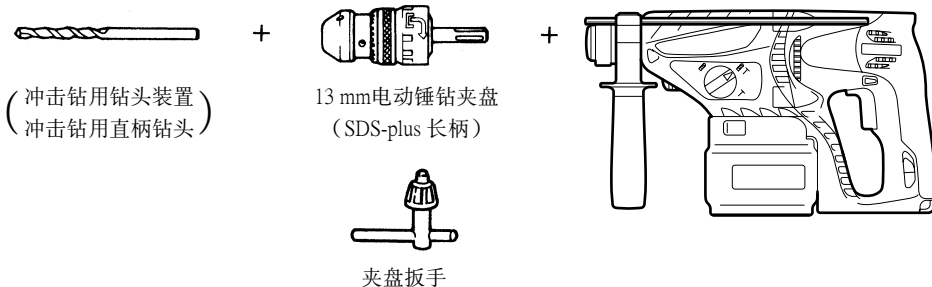
○ 钻头（锥柄）与锥柄附加器



外径
11.0 mm
12.3 mm
12.7 mm
14.3 mm
14.5 mm
17.5 mm
21.5 mm

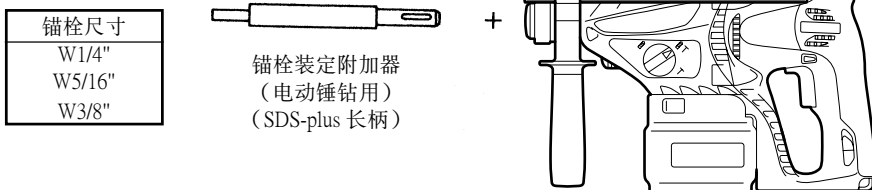
锥度模式	适用钻头	
1 号莫氏锥度	钻头 (锥柄)	11.0 ~ 17.5 mm
2 号莫氏锥度	钻头 (锥柄)	21.5 mm
A 号 - 锥度	锥柄附加器的 A 锥度或 B 锥度, 可以选购, 但与其适应的钻头不予供应。	
B 号 - 锥度		

○ 13 mm 电动锤钻夹盘和夹盘扳手

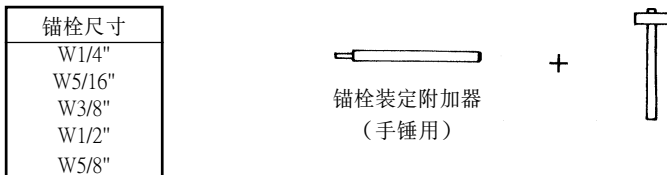


3. 锚栓的装定 (旋钻 + 锤钻)

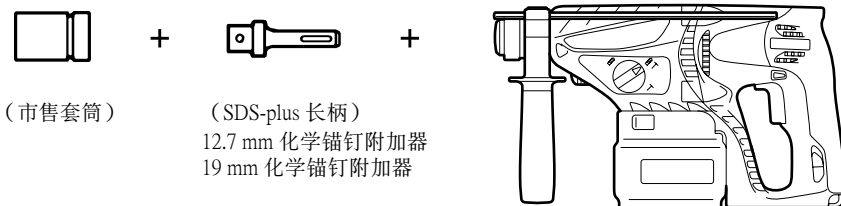
○ 锚栓装定附加器 (电动锤钻用)



○ 锚栓装定附加器 (手锤用)



4. 化学锚钉钻钉作业 (旋钻 + 锤钻)



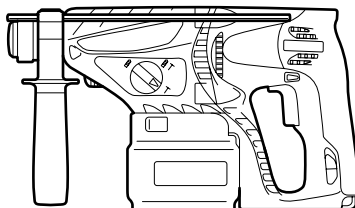
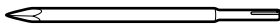
5. 粉碎作业（只锤钻）

尖钻（圆形）（SDS-plus 长柄）



+

尖钻（方形）（SDS-plus 长柄）



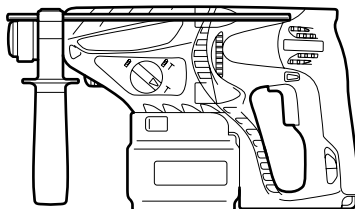
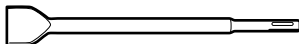
6. 开槽和修边（只锤钻）

冷镦（SDS-plus 长柄）



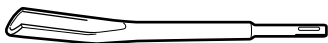
+

锯具（SDS-plus 长柄）

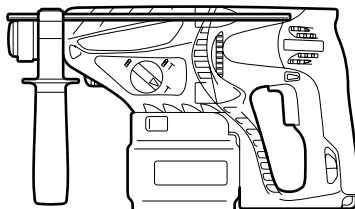


7. 开槽（只锤钻）

开槽镦（SDS-plus 长柄）



+



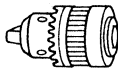
8. 钻孔和旋螺丝（只旋转）

○ 钻头夹盘、夹盘附加器（G）、特种螺丝和夹盘板手



特种螺栓

+



钻头夹盘（13VLR）

+

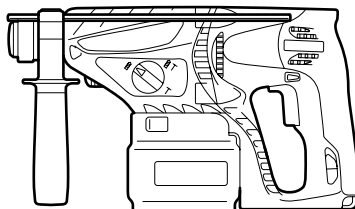


夹盘附加器（G）
（SDS-plus 长柄）

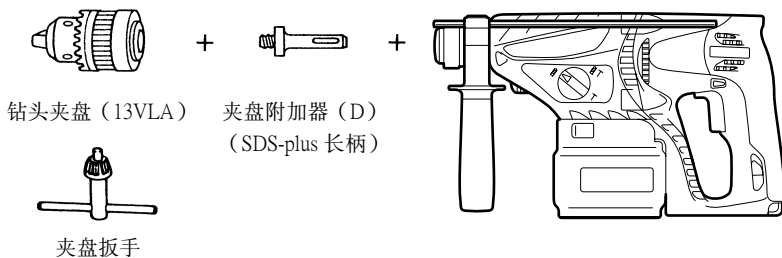
+



夹盘板手

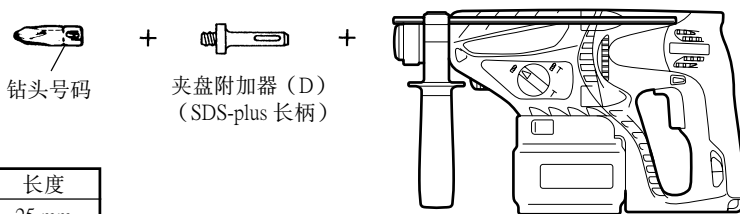


9. 钻孔（只旋转）



○ 13 mm 的钻头夹盘组件（包含夹盘扳手）和夹盘（用于对钢材和木材的钻孔）。

10. 旋螺丝（只旋转）



钻头号码	螺丝尺寸	长度
2 号	3 - 5 mm	25 mm
3 号	6 - 8 mm	25 mm

11. 集尘杯、集尘器（B）



选购附件可能不预先通告而予以更改。

用 途

旋钻与锤钻

- 钻开锚栓孔
- 对混凝土钻孔
- 对瓷砖钻孔

单纯旋钻

- 对钢材或木材钻孔
（与选购附件匹配使用）
- 旋紧机械螺丝、木螺丝
（与选购附件匹配使用）

单纯锤钻

- 轻凿混凝土、开槽和修边。

电池的拆卸/安装法

1. 电池的拆卸法

请先紧抓住把手，然后再推压电池插销以拆下电池（参照图 1 和图 2）。

注意

切勿使电池短路。

2. 电池的安装法

把电池的导轨对准本体，插入电池。一定要把电池装紧。

充电

在使用电动工具之前，请先按以下方法给电池充电。

- 1. 将充电器的电源线连接至电源插座。**
连接电源线时，充电器的指示灯将闪烁呈红色（以1秒的间隔）。
- 2. 将电池装入充电器。**
如参考图3所示把电池放入充电器中。一定要把电池完全放入充电器中。

3. 充电

将电池插入充电器后，充电开始，并且，充电器上的指示灯将持续点亮呈红色。

电池完全充电后，指示灯将闪烁呈红色（以1秒的间隔）（参见表1）。

(1) 指示灯显示

根据充电器或充电式电池的情况，指示灯的显示如表1所示。

表 1

指示灯的显示			
充电前	闪烁 (红色)	点亮 0.5 秒钟，不点亮 0.5 秒钟 (熄灭 0.5 秒钟) 	/
充电时	点亮 (红色)	连续点亮 	
充电完成	闪烁 (红色)	点亮 0.5 秒钟，不点亮 0.5 秒钟 (熄灭 0.5 秒钟) 	
无法充电	闪动 (红色)	点亮 0.1 秒钟，不点亮 0.1 秒钟 (熄灭 0.1 秒钟) 	电池或充电器有问题
无法充电	点亮 (绿色)	连续点亮 	电池温度太高，以致无法充电。

(2) 关于充电式电池的温度

充电式电池的温度如表2所示，在充电前应使已发热的电池冷却片刻。

表2

电池类型	电池可充电的温度
EB2420	-5°C - 60°C
EB2430HA, EB2433X	0°C - 45°C

(3) 关于充电时间

根据充电器和电池的组合，充电时间如表3所示。

表 3 充电时间（于 20°C）

电池类型	充电时间
EB2420	约50分钟
EB2430HA	约70分钟
EB2433X	约75分钟

注

充电时间可能根据周围环境温度和电压而有变化。

4. 从电源插座拔下充电器的电源线。

5. 握紧充电器并取出电池。

注

充电完成后，请先从充电器内取出电池，然后加以妥善保存。

关于新电池等的放电

因新的和长期未使用的充电式电池内部的化学物质无活性，故第一次和第二次使用时其放电能力可能较低。这是暂时现象，这种电池充电 2-3 次后即可恢复其充电所需的正常时间。

较长时间保持电池性能的方法

(1) 在电池电力完全耗尽之前进行充电。

感到电动工具的能力变弱时，请停止使用并给电池充电。若您继续使用电动工具并耗尽电力，电池可能会损坏或其使用寿命缩短。

(2) 避免在高温环境中充电。

使用后充电式电池的温度将迅速升高。若使用后立即对这种电池进行充电，其内部化学物质会劣化，电池使用寿命将缩短。请稍等片刻，待电池冷却后再进行充电。

注意

- 若在电池因长时间存放在有直射阳光的场所或刚使用后发热时进行充电，充电器的指示灯点亮呈绿色。遇此情况时，请先让电池冷却后再开始充电。
- 指示灯闪烁呈红色时（以0.2秒钟的间隔），请检查并取出充电器电池安装孔内的任何异物。若无异物，则可能电池或充电器发生故障。请带去经授权的维修中心检查。
- 因内置的微机需要约 3 秒钟才能确认正用 UC24YFB 进行充电的电池已被取出，因此请待 3 秒钟后再重新插入电池继续充电。

作业之前

1. 安装钻头（图 4, 5）

注意

为避免意外事故，请务必关闭开关。

注

当使用钻头等工具时，请务必使用本公司原装配件。

- (1) 清洁钻头柄。
- (2) 旋转钻头将其插入钻头夹盘直至插锁插紧。（图 4）
- (3) 拉钻头以检查是否完全插紧。
- (4) 卸下钻头时，首先请按箭头所示方向将夹卡完全拉出，然后将钻头从夹卡拉下。

2. 务必正确安装电池。

3. 安装集尘杯和集尘器（B）（选购附件）（图 6、图 7）

使用电动锤钻进行头上工作时，请装上集尘杯和集尘器（B），以减少灰尘的掉下，便于操作。

○ 集尘杯的安装方法

请按照图 6 所示方法，将集尘杯装在钻头上使用。使用粗径钻头时，请用本电动锤钻将集尘杯的中心孔开大。

○ 集尘器（B）的安装方法

使用集尘器（B）时，请将集尘器（B）与夹卡上的槽对准后，将集尘器（B）从钻头的顶端插进去（图 7）。

注意

- 集尘杯和集尘器（B）是专门用于混凝土的钻孔，请勿用于金属、木材的钻孔。
- 请将集尘器（B）完全插入主机的夹盘部。
- 当集尘器（B）与混凝土表面有一段距离的状态下，打开电动锤钻开关进行工作时，集尘器（B）会跟钻头同时旋转。因此，请务必将集尘杯紧压在混凝土表面上后再打开开关进行钻孔工作。（如将集尘器（B）用于全长 190 mm 以上的钻头时，集尘器（B）便无法贴紧混凝土表面而旋转。因此，请将集尘器（B）与全长 166 mm, 160 mm, 110 mm 的钻头配套使用。）
- 每钻 2~3 个孔后，请将粉尘丢掉。
- 更换钻头时，请卸下集尘器（B）以后再行进行。

4. 选择螺丝钻头

为了避免螺丝头或钻头被损坏，旋螺丝时一定要使用与螺丝直径相配的钻头。

5. 检查钻头的旋转方向（请参照图 9）

按按钮的 R（右）侧，钻头会顺时针转（从后方看）。（请参照图 9-a）。

按按钮的 L（左）侧，钻头会逆时针转。（请参照图 9-b）。

如果按钮放在中心位置，钻头就不会转。（请参照图 9-c）。

6. 连续钻孔

充电一次，可在混凝土材质上钻出的洞数如表 4 所示。

表 4

钻头直径 (mm)	深度(mm)	可连续钻孔数 (洞)		
		EB2420	EB2430HA	EB2433X
6.5	60	75	115	125
8.5		45	70	75
12.5		40	55	60
14.5		30	45	50
18		15	25	28
24		5	7	8

这些资料仅为参考数值。钻孔洞数的多少，会受到钻头的锐利度以及混凝土的坚硬度影响。

注意


长时间连续使用本电钻，可能会导致机体过热，对马达及开关造成损害。因此使用本机请勿连续超过15分钟。

使用方法

1. 开关操作

- 压下开关扳机，钻机钻动。松开扳机，钻机停止。
- 扳机拉出的量可以控制锤钻钻动速度。扳机拉出少许时，速度低，拉出多时，速度快。
- 松开扳机时，制动会即刻开始。

2. 旋钻 + 锤钻


旋转选择杆，将两个“▶”记号双双对准“T”记号，并设定为「旋转+锤钻」功能（图8）。

- (1) 安装钻头。
- (2) 将钻头尖端放在钻孔位置，然后拉动触发开关。（图10）
- (3) 使用电动锤钻进行作业时，不需要用力推压。只要稍加按压，让钻碎的粉尘徐徐排出即可。

注意

钻头碰到建筑物的钢筋时会立即停止转动。但电动锤钻又将随即转动（如图10），因此，必需握紧侧柄和操作柄。

3. 旋钻

旋转选择杆，将“▶”记号对准“”记号，并设定为「旋转+锤钻」功能（图8）。

若利用选购的钻头夹盘及夹盘附加器于木材或金属质材上钻洞，请依照下列步骤进行-安装钻头夹盘及夹盘附加器：（图11）

- (1) 将钻头夹盘装配在夹盘附加器上。
- (2) SDS-plus 长柄与钻头相同。因此，装配 SDS-plus 长柄时，请参照“安装钻头”处的说明。

注意

- 过分用力不仅无助于作业，而且还会损坏钻头的刃尖，缩短钻头的寿命。
- 从钻孔中抽出钻头时，电动锤钻可能会折断，所以抽出时必须小心。
- 装有钻头夹盘和夹盘附加器时，不要在旋钻加锤击的功能下使用电动锤钻，这会严重缩短机器各个部件的寿命。

4. 在旋木螺丝时（图13）

(1) 选择适当的钻头

如果可以的话，请尽量使用十字头螺丝，因为钻头很容易滑出一字头螺丝的槽。


(2) 旋进木螺丝

在旋进木螺丝之前，在木板上开适当的先导孔，然后把钻头放入螺丝头部的槽内，缓缓地将螺丝旋进孔内。

注意

在为木螺丝准备先导孔时，应特别注意木板的硬度。如果孔极小或极浅，用较大的力将螺丝旋进孔的话，有时会损坏木螺丝的螺纹。

5. 锤击

旋转选择杆，将“▶”记号对准“”记号，并设定为「旋转」功能（图8）。

(1) 安装尖钻或冷镦。

6. 使用深度计（图12）

- (1) 旋松侧柄的圆头螺丝，把深度计插进侧柄上的安装孔。
- (2) 按孔深调节深度计的位置，然后旋紧圆头螺栓。

7. 钻头（锥柄）和锥柄附加器的使用

- (1) 把锥柄附加器安装在电动锤钻上。（图14）
- (2) 把钻头（锥柄）安装在锥柄附加器上。（图14）
- (3) 接通开关，按预定深度钻开一个孔口。
- (4) 拆卸钻头时，可将制销插入锥柄附加器的缝隙，把钻头放在台座上，用锥子敲打制销头部。（图15）

8. 「节能」与「动力」模式之间的转换

电钻锤击的力量大小可随用途而调整，只需如图16所示操作换档旋钮即可。

(1) 「节能」模式...减少锤击力量

可防止直径小于5 mm 的细钻头弯曲或断裂。

(2) 「动力」模式...增加锤击力量

- 钻头若曾使用过或直径大于5 mm，则「动力」模式可迅速且有效率地完成钻孔作业。
- 适用于木材或金属材质上的钻孔作业。

注意

使用木制钻头钻孔时，请勿采用「节能」模式，因为这很可能导致马达烧坏。

润 滑

此一手提电动锤钻应使用低粘度滑脂。这样，可长时间使用而无需更换滑脂。若滑脂从松动的螺丝中泄漏出来，请与最邻近的服务站联系，更换滑脂。如果在滑脂缺少的状态下继续使用，手提电动锤钻就会卡住，并因而缩短使用寿命。

注意

此手提电动锤钻使用指定的滑脂（FG-6A），因此使用其他滑脂可能会对机器性能带来不利影响。请一定让服务站为你更换滑脂。

维 护 和 检 查

1. 检查工具

使用迟钝的工具会降低效率并导致马达故障，故若发现磨损，应立即磨锋或更换。

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，否则会导致严重的事故。

3. 电动机的维护

电动机绕线是电动工具的“心脏部”应仔细检查有无损伤，是否被油液或水沾湿。

4. 清理外部

电动工具沾污时，用软布或沾肥皂水的布擦拭。不要使用氯溶液、汽油或稀释剂。

5. 存放

电动工具请存放在温度低于40℃并远离小孩的场所。

6. 维修零部件一览表

- A: 项目号
- B: 代码号
- C: 使用数
- D: 备注

注意：

日立牌电动工具的维修、改造和检查须由经日立公司授权的维修中心进行。

当要求维修或其他保养服务时，若将此零部件一览表与电动工具一起呈交给经日立公司授权的维修中心，将有助于维修或保养工作。

在操作和维修电动工具时，必须遵守贵国制定的安全的有关规则和标准。

改造：

日立牌电动工具经常加以改善和改造以采用最新的先进技术。

因此，某些零部件（例如代码号和（或）设计）可能变更，恕不另行通知。

注

为求改进，本手册所载规格可能不预先通告而予以更改。

GENERAL SAFETY RULES

WARNING!

Read all instructions

Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury. The term "power tool" in all of the warnings listed below refers to your mains operated (corded) power tool or battery operated (cordless) power tool.

SAVE THESE INSTRUCTIONS

1) Work area

- a) **Keep work area clean and well lit.**
Cluttered and dark areas invite accidents.
- b) **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 of fumes.
- c) **Keep children and bystanders away while operating a power tool.**
Distractions can cause you to lose control.

2) Electrical safety

- a) **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.
- b) **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.
- c) **Do not expose power tools to rain or wet conditions.**
Water entering a power tool will increase the risk of electric shock.
- d) **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.
- e) **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.

3) Personal safety

- a) **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.
- b) **Use safety equipment. Always wear eye protection. Safety equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.**
- c) **Avoid accidental starting. Ensure the switch is in the off position before plugging in.**
Carrying power tools with your finger on the switch or plugging in power tools that have the switch on invites accidents.

- d) **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.

- e) **Do not overreach. Keep proper footing and balance at all times.**
This enables better control of the power tool in unexpected situations.

- f) **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.

- g) **If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used.**
Use of these devices can reduce dust related hazards.

4) Power tool use and care

- a) **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.

- b) **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.

- c) **Disconnect the plug from the power source before making any adjustments, changing accessories, or storing power tools.**
Such preventive safety measures reduce the risk of starting the power tool accidentally.

- d) **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.

- e) **Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tools operation.**
If damaged, have the power tool repaired before use.

- f) **Keep cutting tools sharp and clean.**
Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.

- g) **Use the power tool, accessories and tool bits etc., in accordance with these instructions and in the manner intended for the particular type of power tool, taking into account the working conditions and the work to be performed.**
Use of the power tool for operations different from intended could result in a hazardous situation.

5) Service

- a) **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.

PRECAUTION

Keep children and infirm persons away.

When not in use, tools should be stored out of reach of children and infirm persons.

PRECAUTIONS FOR CORDLESS ROTARY HAMMER

- Always charge the battery at a temperature of 0 – 40°C.
A temperature of less than 0°C will result in over charging which is dangerous. The battery cannot be charged at a temperature higher than 40°C. The most suitable temperature for charging is that of 20 – 25°C.
- Do not use the charger continuously.
When one charging is completed, leave the charger for about 15 minutes before the next charging of battery.
- Do not allow foreign matter to enter the hole for connecting the rechargeable battery.
- Never disassemble the rechargeable battery and charger.
- Never short-circuit the rechargeable battery. Short-circuiting the battery will cause a great electric current and overheat. It results in burn or damage to the battery.
- Do not dispose of the battery in fire.
If the battery is burnt, it may explode.
- When using this unit continuously, the unit may overheat, leading to damage in the motor and switch. Please leave it without using it for approximately 15 minutes.
- Do not insert object into the air ventilation slots of the charger.
Inserting metal objects or inflammables into the charger air ventilation slots will result in electrical shock hazard or damaged charger.
- Using an exhausted battery will damage the charger.
- When drilling in wall, floor or ceiling, check for buried electric power cord, etc.
- Bring the battery to the shop from which it was purchased as soon as the post-charging battery life becomes too short for practical use. Do not dispose of the exhausted battery.
- Wear ear protections
Exposure to noise can cause hearing loss.
- Do not touch the bit during or immediately after operation. The bit becomes very hot during operation and could cause serious burns.
- Use auxiliary handles supplied with the tool.
Loss of control can cause personal injury.
- Always hold the body handle and side handle of the power tool firmly. Otherwise the counterforce produced may result in inaccurate and even dangerous operation.
- Wear a dust mask
Do not inhale the harmful dusts generated in drilling or chiseling operation. The dust can endanger the health of yourself and bystanders.

SPECIFICATIONS

POWER TOOL

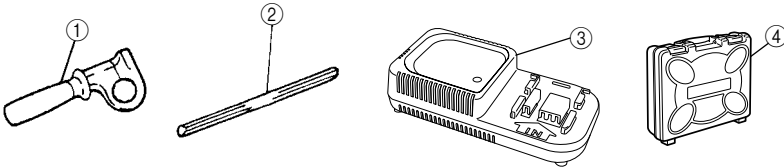
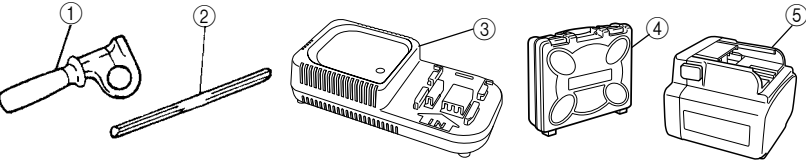
Model		DH24DVA	
No-load speed Save/Power		0 – 520 min / 0 – 1050 min	
Full-load impact rate Save/Power		0 – 2200 min / 0 – 4500 min	
Capacity	Drilling	Concrete	24 mm
		Steel	13 mm
		Wood	30 mm
	Driving	Wood screw	6.2 mm (diameter) × 40 mm (length)
Rechargeable battery		EB2420: Ni-Cd 24 V (2.0 Ah 20 cells) EB2430HA: Ni-MH 24 V (3.0 Ah 20 cells) EB2433X: Ni-MH 24 V (3.3 Ah 20 cells)	
Weight		4.1 kg	

- Do not use the "SAVE" mode when boring holes with the wood drill. There is a likelihood that the motor will burn out.

CHARGER

Model	UC24YFB
Charging voltage	24 V
Weight	0.6 kg

STANDARD ACCESSORIES

<p>DH24DVA (BFK) (HFK) (XFK)</p>	 <p>① Side handle 1 ② Depth gauge 1 ③ Charger 1 ④ Plastic case 1</p>
<p>DH24DVA (2BFK) (2HFK) (2XFK)</p>	 <p>① Side handle 1 ② Depth gauge 1 ③ Charger 1 ④ Plastic case 1 ⑤ Extra battery 1</p>

Standard accessories are subject to change without notice.

OPTIONAL ACCESSORIES (sold separately)

1. Battery (EB2420, EB2430HA, EB2433X)



It may be convenient to prepare some extra batteries.

2. Drilling anchor holes (rotation + hammering)

○ Drill bit (taper shank) and taper shank adapter



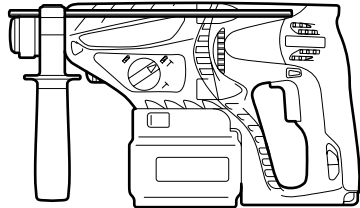
Drill bit (taper shank)

+



Taper shank adapter
(SDS plus shank)

+

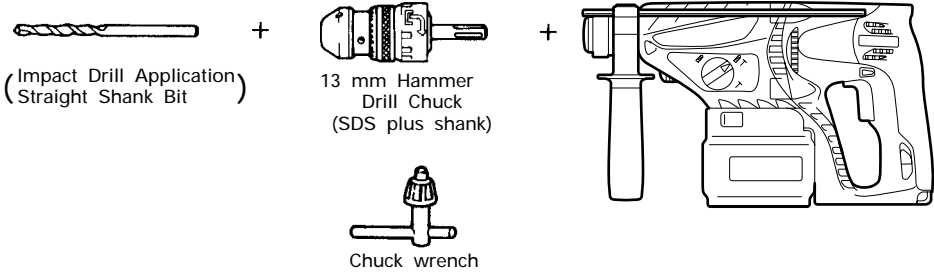


Cotter

Outer diameter
11.0 mm
12.3 mm
12.7 mm
14.3 mm
14.5 mm
17.5 mm
21.5 mm

Taper mode	Applicable drill bit	
Morse taper (No. 1)	Drill bit (taper shank)	11.0 – 17.5 mm
Morse taper (No. 2)	Drill bit (taper shank)	21.5 mm
A-taper	Taper shank adapter formed A-taper or B-taper is provided as an optional accessory, but drill bit for it is not provided.	
B-taper		

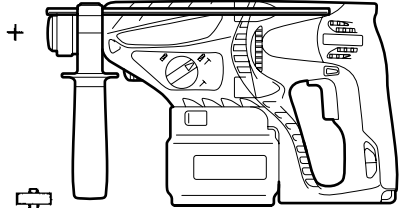
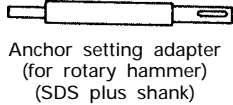
- 13 mm Hammer Drill chuck and Chuck wrench



3. Anchor setting (rotation + hammering)

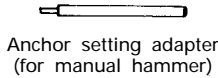
- Anchor setting adapter (for rotary hammer)

Anchor size
W1/4"
W5/16"
W3/8"

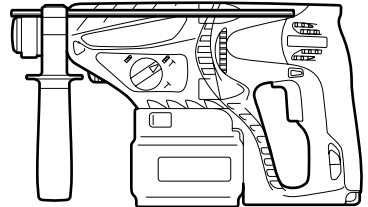
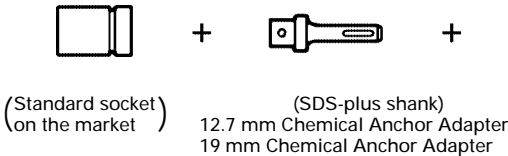


- Anchor setting adapter (for manual hammer)

Anchor size
W1/4"
W5/16"
W3/8"
W1/2"
W5/8"



4. Bolt placing operation with Chemical Anchor. (rotation + hammering)

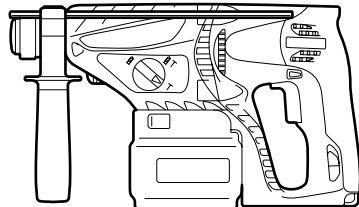
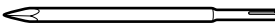


5. Demolishing operation (Hammering only)

Bull point (Round type) (SDS-plus shank)

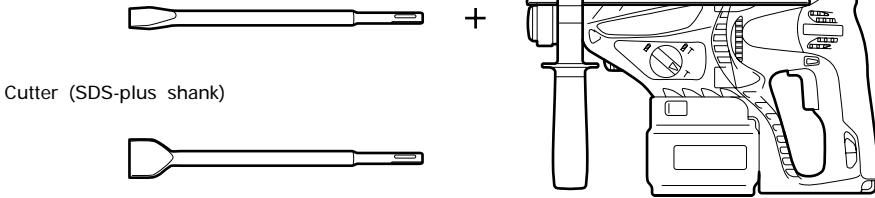


Bull point (Square type) (SDS-plus shank)



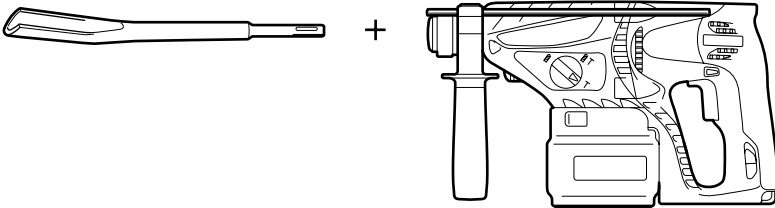
6. Groove digging and edging (Hammering only)

Cold chisel (SDS-plus shank)



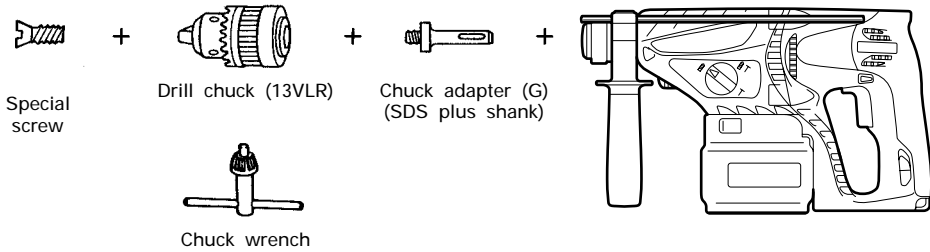
7. Grooving (Hammering only)

Grooving chisel (SDS-plus shank)

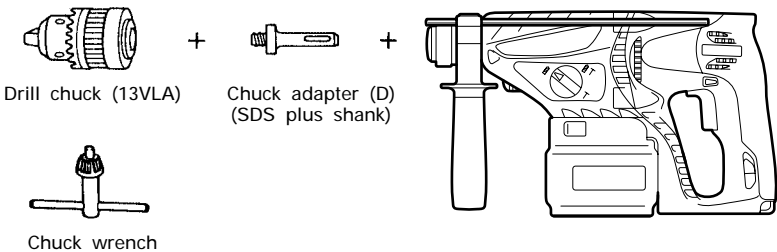


8. Drilling holes and driving screws (rotation only)

○ Drill chuck, chuck adapter (G) and chuck wrench

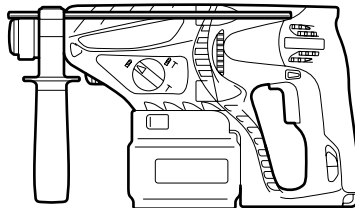
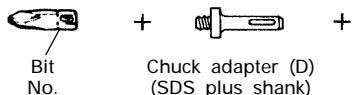


9. Drilling holes (rotation only)



○ 13 mm drill chuck ass'y (include chuck wrench ass'y) and chuck (for drilling in steel or wood).

10. Driving Screws (rotation only)

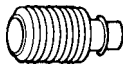


Bit No.	Screw Size	Length
No. 2	3-5 mm	25 mm
No. 3	5-8 mm	25 mm

11. Dust cup, Dust collector (B)



Dust cup



Dust collector (B)

Optional accessories are subject to change without notice.

APPLICATIONS

Rotation and hammering function

- Drilling anchor holes
- Drilling holes in concrete
- Drilling holes in tile

Rotation only function

- Drilling in steel or wood (with optional accessories)
- Tightening machine screws, wood screws (with optional accessories)

Hammering only function

- Light-duty chiselling of concrete, groove digging and edging.

BATTERY REMOVAL/INSTALLATION

1. Battery removal

Hold the handle tightly and push the battery latches to remove the battery (see **Figs. 1 and 2**).

CAUTION:

Never short-circuit the battery.

2. Battery installation

Insert the battery aligning both guide rail of battery and body. Make sure the battery is fixed firmly.

CHARGING

Before using the power tool, charge the battery as follows.

- 1. Connect the charger's power cord to a receptacle.**
When the power cord is connected, the charger's pilot lamp will blink in red. (At 1-second intervals).
- 2. Insert the battery into the charger.**
Insert the battery into the charger as shown in **Fig. 3**. Make sure the battery is fully seated in the charger.
- 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 1**)

(1) Pilot lamp indication

The indications of the pilot lamp will be as shown in **Table 1**, according to the condition of the charger or the rechargeable battery.

Table 1

		Indications of the pilot 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	Fricthers (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 temperatures of the rechargeable battery.

The temperatures for rechargeable batteries are as shown in the **table 2**, and batteries that have become hot should be cooled for a while before being recharged.

Table 2

Battery type	Temperatures at which the battery can be recharged
EB2420	-5°C – 60°C
EB2430HA, EB2433X	0°C – 45°C

(3) Regarding recharging time

Depending on the type of the battery, the charging time will become as shown in **Table 3**.

Table 3 Charging time (At 20°C)

Battery type	Recharging time
EB2420	Approx. 50 min.
EB2430HA	Approx. 70 min.
EB2433X	Approx. 75 min.

NOTE: The charging time may vary according to ambient temperature and power source voltage.

4. **Disconnect the charger's power cord from the receptacle.**

5. **Hold the charger firmly and pull out the battery.**

NOTE:

After operation, pull out batteries from the charger first, and then keep the batteries properly.

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.

CAUTION:

- If the battery has been heated right after operation (or due to sunlight, etc.), the charger's pilot lamp may not light in red. In such a case, first let the battery cool, then start charging.
- When the pilot lamp flickers 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 Center.
- Since the built-in micro computer takes about 3 seconds to confirm that the battery being charged with UC24YFB 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.

PRIOR TO OPERATION

1. **Mounting the drill bit (Fig. 4, 5)**

CAUTION:

To prevent accidents, make sure to turn the switch off.

NOTE:

When using tools such as drill bits, etc., make sure to use the genuine parts designated by our company.

- (1) Clean the shank portion of the drill bit.
- (2) Insert the drill bit in a twisting manner into the tool holder until it latches itself. (Fig. 4)
- (3) Check the latching by pulling on the drill bit.
- (4) To remove the drill bit, fully pull the grip in the direction of the arrow and pull out the drill bit.

2. **Confirm that the battery is mounted correctly.**
3. **Installation of dust cup or dust collector (B) (Optional accessories) (Fig. 6, Fig. 7)**

When using a rotary hammer for upward drilling operations attach a dust cup or a dust collector (B) to collect dust or particles for easy operation.

- Installing the dust cup
Use the dust cup by attaching to the drill bit as shown in Fig. 6.

When using a bit which has big diameter, enlarge the center hole of the dust cup with this rotary hammer.

- Installing dust collector (B)
When using dust collector (B), insert dust collector (B) from the tip of the bit by aligning it to the groove on the grip. (Fig. 7)

CAUTION:

- The dust cup and dust collector (B) are for exclusive use of concrete drilling work. Do not use them for wood or metal drilling work.
- Insert dust collector (B) completely into the chuck part of the main unit.
- When turning the rotary hammer on while dust collector (B) is detached from a concrete surface, dust collector (B) will rotate together with the drill bit. Make sure to turn on the switch after pressing dust cup on the concrete surface. (When using dust collector (B) attached to a drill bit that has more than 190 mm of overall length, dust collector (B) cannot touch the concrete surface and will rotate. Therefore, please use dust collector (B) by attaching to drill bits which have 166 mm, 160 mm, and 110 mm overall length.)
- Dump particles after every two or three holes when drilling.
- Please replace the drill bit after removing dust collector (B).

4. **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.

5. **Confirm the direction of bit rotation (Fig. 9)**

The bit rotates clockwise (viewed from the rear side) by pushing the R-side of the push button. (Fig. 9-a)

The L-side of the push button is pushed to turn the bit counterclockwise. (Fig. 9-b)

The motor does not rotate if the push button is set to the center position. (Fig. 9-c)

6. **Continuous drilling**

The number of holes that can be drilled in concrete after one recharge is shown in Table 4.

Table 4

Bit dia. (mm)	Depth (mm)	Possible continuous drilling number (holes)		
		EB2420	EB2430HA	EB2433X
6.5	60	75	115	125
8.5		45	70	75
12.5		40	55	60
14.5		30	45	50
18		15	25	28
24		5	7	8

These data are for the referential values. The number of holes that can be drilled varies according to the sharpness of the used bit or the conditions of the concrete being drilled.

CAUTION:

When using this unit continuously, the unit may overheat, leading to damage in the motor and switch. Please leave it without using it for approximately 15 minutes.

HOW TO USE

1. **Switch operation**

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

2. **Rotation + Hammering**

Align the "▶" mark with the "⚙️" mark by rotating the change lever to set the "Rotation + Hammering" function. (Fig. 8)

- (1) Mount the drill bit.
- (2) Pull the trigger switch after applying the drill bit tip to the drilling position. (Fig. 10)
- (3) Pushing the rotary hammer forcibly is not necessary at all. Pushing slightly so that drill dust comes out gradually is just sufficient.

CAUTION:

When the drill bit touches construction iron bar, the bit will stop immediately and the rotary hammer will react to revolve. Therefore please grip the side handle and handle tightly as shown in Fig. 10.

3. **Rotation only**

Align the "▶" mark with the "⚙️" mark by rotating the change lever to set the "Rotation only" function. (Fig. 8)

To drill a wood or metal material using the optional drill chuck and chuck adapter, proceed as follows. Installing drill chuck and chuck adapter: (Fig. 11)

- (1) Attach the drill chuck to the chuck adaptor.
- (2) The part of the SDS-plus shank is the same as the drill bit. Therefore, refer to the item of "Mounting the drill bit" for attaching it.

CAUTION:

- Application of force more than necessary will not only expedite work at all, but will deteriorate the tip edge of the drill bit and reduce the service life of the rotary hammer in addition.
- Drill bit may snap off while withdrawing the rotary hammer from the drilled hole. For withdrawing, it is important to use a pushing motion.
- Do not attempt to use the rotary hammer in the rotation and striking mode with the drill chuck and chuck adapter attached. This would seriously shorten the service life of every component of the machine.

4. When driving wood screws (Fig. 13)

- (1) Selecting a suitable driver bit
Employ plus-head screws, if possible, since the driver bit easily slips off the heads of slotted-head screws.
- (2) Tightening wood screws
Prior to tightening wood screws, make pilot holes suitable for them in the wooden board. Apply the bit to the screw head grooves and gently drive the screws in the holes.

CAUTION:

Exercise care in preparing a pilot hole suitable for the wood screw 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.

5. Hammering only

Align the "▶" mark with the "T" mark by rotating the change lever to set the "Hammering only" function. (Fig. 8)

- (1) Mount the bull point or cold chisel.

6. Using depth gauge (Fig. 12)

- (1) Loosen the knob on the side handle, and insert the depth gauge into the mounting hole on the side handle.

- (2) Adjust the depth gauge position according to the depth of the hole and tighten the knob bolt securely.

7. How to use the drill bit (taper shank) and the taper shank adapter

- (1) Mount the taper shank adapter to the rotary hammer. (Fig. 14)

- (2) Mount the drill bit (taper shank) to the taper shank adapter. (Fig. 14)

- (3) Turn the switch ON, and drill a hole to prescribed depth.

- (4) To remove the drill bit (taper shank), insert the cotter into the slot of the taper shank adapter and strike the head of the cotter with a hammer supporting on the rest. (Fig. 15)

8. Switching between the "SAVE" and the "POWER" modes

The hammering force of the hammer can be increased or decreased to conform with intended usage, by operating the shift knob as per Fig. 16. Adjust the force to match the usage intended.

- (1) "SAVE" mode ... decreased hammering force
This can prevent thin drill bits which are less than 5 mm in diameter, from being bent or broken.
- (2) "POWER" mode ... increased hammering force

- This can be used to speedily and efficiently drill holes when the drill bits which are being used are greater than 5 mm in diameter.

- This can be used to drill holes into wood or metal.

CAUTION:

Do not drill holes in wood with the "SAVE" mode. There is a likelihood that the motor will burn out because it can easily lock up due to the low power.

LUBRICATION

Low viscosity grease is applied to this rotary hammer so that it can be used for a long period without replacing the grease. Please contact the nearest service center for grease replacement when any grease is leaking from loosened screw.

Further use of the rotary hammer despite the grease shortage causes damage to reduce the service life.

CAUTION:

A specific grease (FG-6A) is used with this machine, therefore, the normal performance of the machine may be badly affected by use of different grease. Please be sure to let one of our service centers to undertake replacement of the grease.

MAINTENANCE AND INSPECTION

1. Inspecting the tool

Since use of a dull tool will degrade efficiency and cause possible motor malfunction, sharpen or replace the tool as soon as abrasion is noted.

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

4. Cleaning on the outside

When the power tool is stained, wipe with a soft dry cloth or a cloth moistened with soapy water. Do not use chloric solvents, gasoline or paint thinner, as they melt plastics.

5. Storage

Store the power tool in a place in which the temperature is less than 40°C and out of reach of children.

6. Service parts list

- A: Item No.
- B: Code No.
- C: No. Used
- D: Remarks

CAUTION

Repair, modification and inspection of Hitachi Power Tools must be carried out by a Hitachi Authorized Service Center.

This Parts List will be helpful if presented with the tool to the Hitachi Authorized Service Center when requesting repair or other maintenance.

In the operation and maintenance of power tools, the safety regulations and standards prescribed in each country must be observed.

MODIFICATION

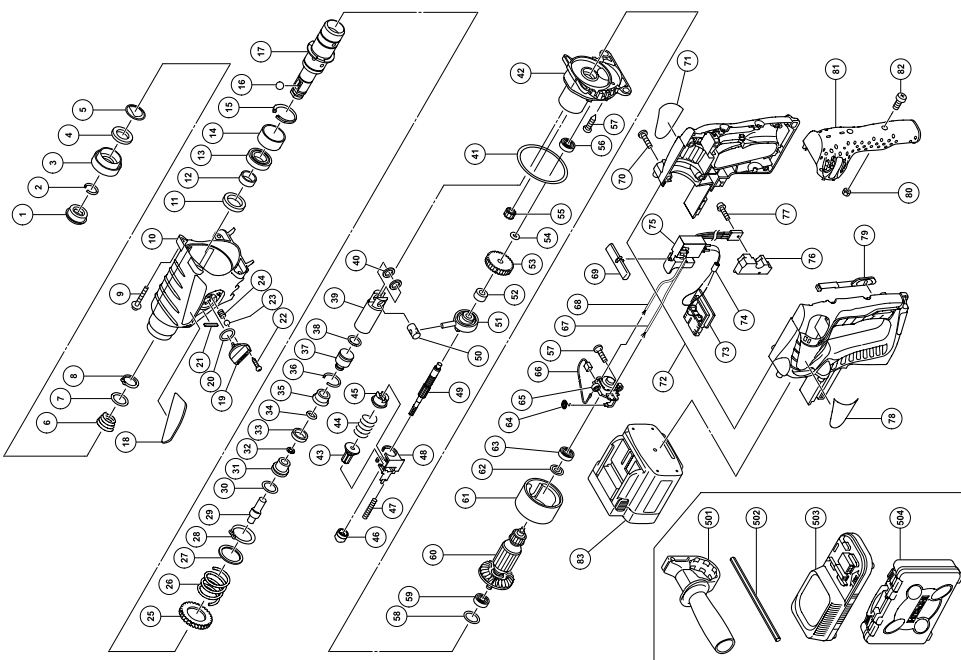
Hitachi Power Tools are constantly being improved and modified to incorporate the latest technological advancements.

Accordingly, some parts (i.e. code numbers and/or design) may be changed without prior notice.

NOTE:

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

A	B	C	D	A	B	C	D
1	306-345	1		48	325-553	1	
2	306-340	1		49	325-552	1	
3	323-154	1		50	322-798	1	
4	324-528	1		51	324-533	1	
5	324-526	1		52	323-152	1	
6	322-812	1		53	323-153	1	
7	984-118	1		54	301-663	1	
8	939-547	1		55	323-170	1	
9	305-558	4	D5 × 25	56	626-VVM	1	626VVC2PS2L
10	325-555	1		57	305-812	4	D4 × 16
11	307-688	1		58	876-796	1	P-22
12	322-815	1		59	608-DDM	1	608DDC2PS2L
13	690-4DD	1	6904DDPS2L	60	360-663	1	DC24V
14	324-522	1		61	323-156	1	
15	322-813	1		62	982-631	1	
16	959-156	1	D7.0	63	608-DDM	1	608DDC2PS2L
17	323-184	1		64	308-536	2	
18	323-172	1		65	323-164	1	
19	325-551	1		66	999-090	2	
20	878-885	1	S-18	67	323-166	1	
21	325-554	1		68	323-165	1	
22	323-239	1	D2.6 × 10	69	323-158	1	
23	959-155	1	D3.97	70	302-086	6	D4 × 20
24	981-328	1		71	---	1	
25	323-185	1		72	323-171	1	
26	317-233	1		73	323-163	1	
27	317-234	1		74	318-247	1	
28	317-235	1		75	319-811	1	
29	324-525	1		76	319-812	1	
30	944-486	1	1AP-20	77	993-963	1	M3 × 12
31	324-523	1		78	---	1	
32	322-802	1		79	323-159	1	
33	322-805	1		80	949-554	2	M4
34	322-808	1		81	323-160	1	
35	324-524	1		82	949-215	2	M4 × 8
36	322-807	1		83-1	319-805	2	EB2420
37	324-535	1		83-2	319-807	2	EB2430HA
38	322-834	1	I.D. 16	501	323-155	1	
39	324-534	1		502	303-709	1	
40	322-799	2	I.D. 72	503	---	1	UC24YFB
41	325-254	1	"56"	504	323-350	1	
42	323-157	1					
43	323-181	1					
44	323-182	1					
45	324-606	1					
46	323-249	1					
47	325-556	1					



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