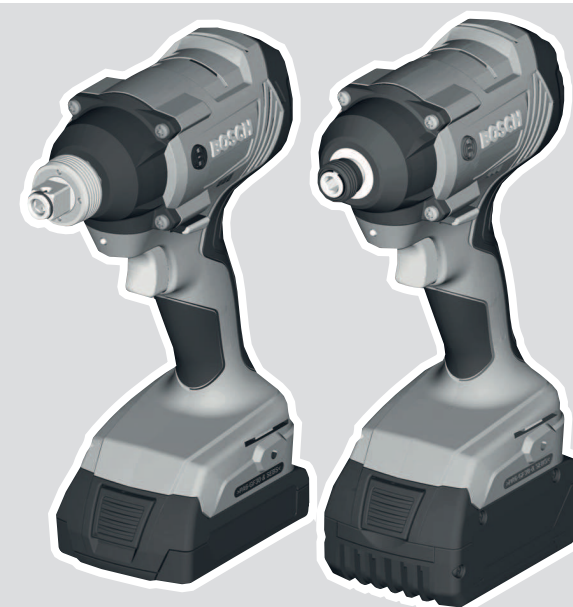




# GDR | GDX Professional

180-Li



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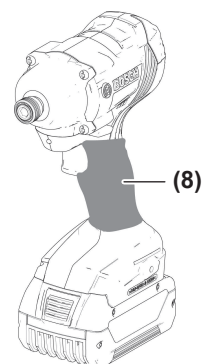
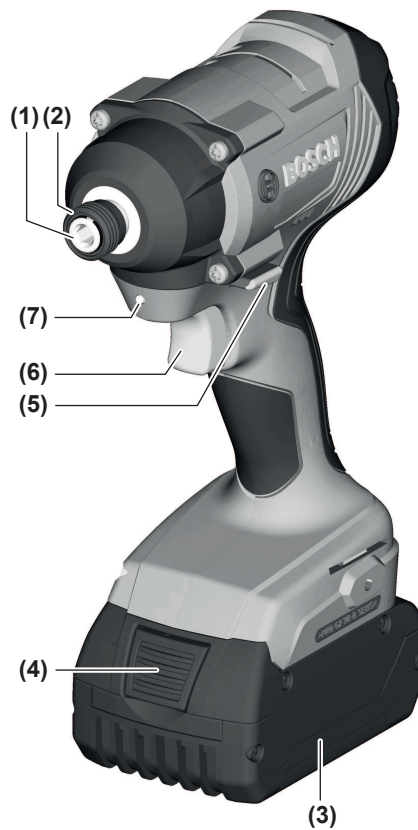
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en Original instructions

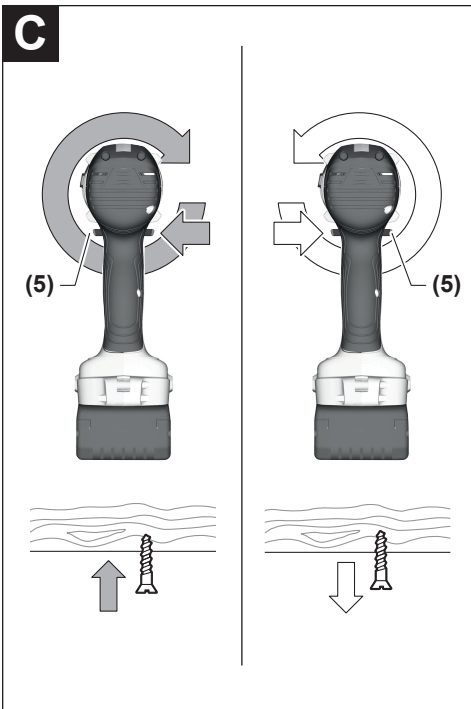
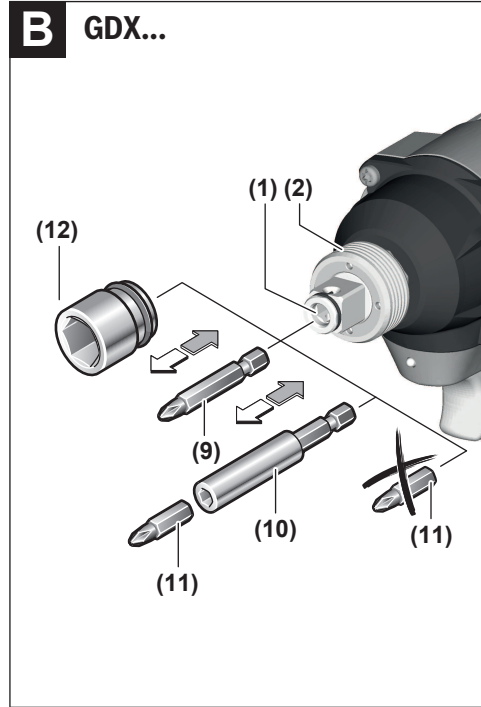
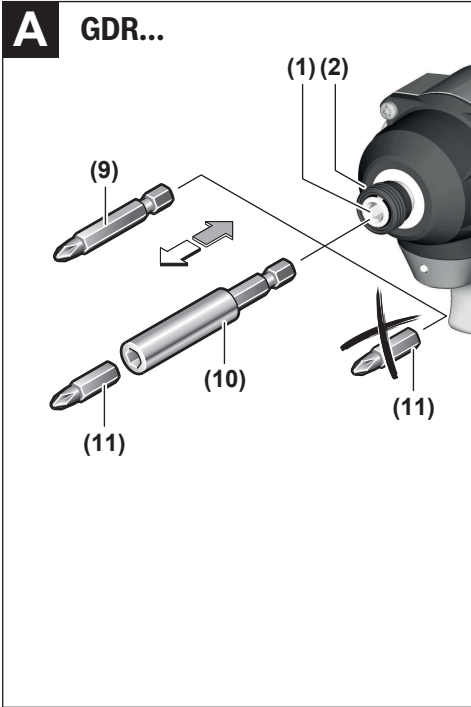
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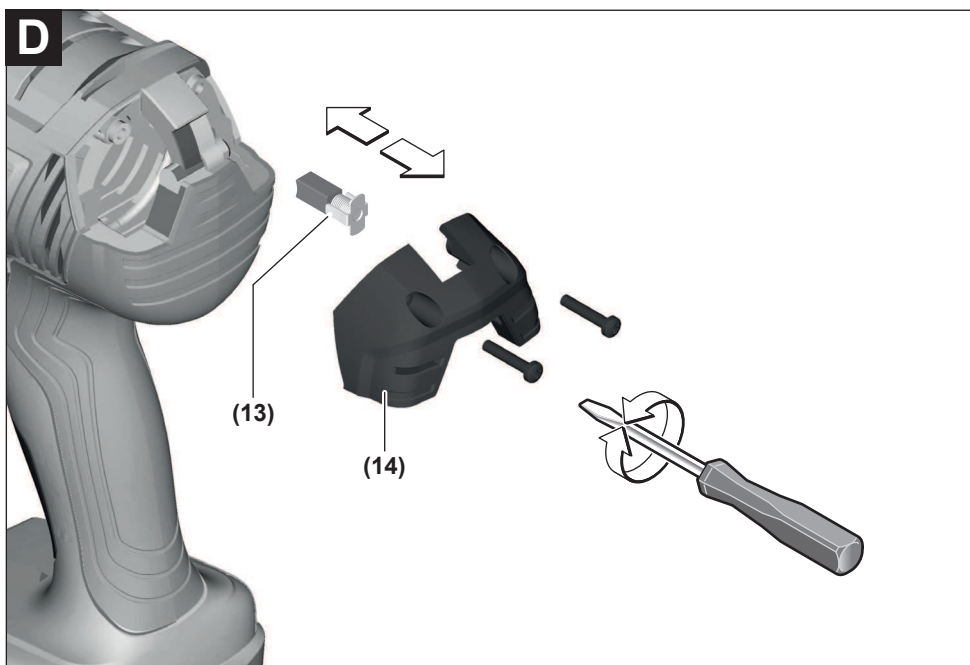


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**GDR 180-LI**





# English

## Safety Instructions

### General Power Tool Safety Warnings

**⚠ WARNING** Read all safety warnings, instructions, illustrations and specifications provided with this power tool. Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury.

**Save all warnings and instructions for future reference.**

The term "power tool" in the warnings refers to your mains-operated (corded) power tool or battery-operated (cordless) power tool.

#### Work area safety

- ▶ **Keep work area clean and well lit.** Cluttered or dark areas invite accidents.
- ▶ **Do not operate power tools in explosive atmospheres, such as in the presence of flammable liquids, gases or dust.** Power tools create sparks which may ignite the dust or fumes.
- ▶ **Keep children and bystanders away while operating a power tool.** Distractions can cause you to lose control.

#### Electrical safety

- ▶ **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.
- ▶ **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.
- ▶ **Do not expose power tools to rain or wet conditions.** Water entering a power tool will increase the risk of electric shock.
- ▶ **Do not abuse the cord. Never use the cord for carrying, pulling or unplugging the power tool. Keep cord away from heat, oil, sharp edges or moving parts.** Damaged or entangled cords increase the risk of electric shock.
- ▶ **When operating a power tool outdoors, use an extension cord suitable for outdoor use.** Use of a cord suitable for outdoor use reduces the risk of electric shock.
- ▶ **If operating a power tool in a damp location is unavoidable, use a residual current device (RCD) protected supply.** Use of an RCD reduces the risk of electric shock.

#### Personal safety

- ▶ **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 inatten-

tion while operating power tools may result in serious personal injury.

- ▶ **Use personal protective equipment. Always wear eye protection.** Protective equipment such as a dust mask, non-skid safety shoes, hard hat or hearing protection used for appropriate conditions will reduce personal injuries.
- ▶ **Prevent unintentional starting. Ensure the switch is in the off-position before connecting to power source and/or battery pack, picking up or carrying the tool.** Carrying power tools with your finger on the switch or energising power tools that have the switch on invites accidents.
- ▶ **Remove any adjusting key or wrench before turning the power tool on.** A wrench or a key left attached to a rotating part of the power tool may result in personal injury.
- ▶ **Do not overreach. Keep proper footing and balance at all times.** This enables better control of the power tool in unexpected situations.
- ▶ **Dress properly. Do not wear loose clothing or jewellery. Keep your hair and clothing away from moving parts.** Loose clothes, jewellery or long hair can be caught in moving parts.
- ▶ **If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used.** Use of dust collection can reduce dust-related hazards.
- ▶ **Do not let familiarity gained from frequent use of tools allow you to become complacent and ignore tool safety principles.** A careless action can cause severe injury within a fraction of a second.

#### Power tool use and care

- ▶ **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.
- ▶ **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.
- ▶ **Disconnect the plug from the power source and/or remove the battery pack, if detachable, from the power tool before making any adjustments, changing accessories, or storing power tools.** Such preventive safety measures reduce the risk of starting the power tool accidentally.
- ▶ **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.
- ▶ **Maintain power tools and accessories. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use.** Many accidents are caused by poorly maintained power tools.

- ▶ **Keep cutting tools sharp and clean.** Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.
- ▶ **Use the power tool, accessories and tool bits etc. in accordance with these instructions, taking into account the working conditions and the work to be performed.** Use of the power tool for operations different from those intended could result in a hazardous situation.
- ▶ **Keep handles and grasping surfaces dry, clean and free from oil and grease.** Slippery handles and grasping surfaces do not allow for safe handling and control of the tool in unexpected situations.

#### Battery tool use and care

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

#### Service

- ▶ **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.
- ▶ **Never service damaged battery packs.** Service of battery packs should only be performed by the manufacturer or authorized service providers.

#### Safety Warnings for Impact Wrenches

- ▶ **Hold the power tool by insulated gripping surfaces, when performing an operation where the fastener may contact hidden wiring.** Fasteners contacting a "live"

wire may make exposed metal parts of the power tool "live" and could give the operator an electric shock.

- ▶ **Use suitable detectors to determine if there are hidden supply lines or contact the local utility company for assistance.** Contact with electric cables can cause fire and electric shock. Damaging gas lines can lead to explosion. Breaking water pipes causes property damage.
- ▶ **Hold the power tool securely.** When tightening and loosening screws be prepared for temporarily high torque reactions.
- ▶ **Secure the workpiece.** A workpiece clamped with clamping devices or in a vice is held more secure than by hand.
- ▶ **Always wait until the power tool has come to a complete stop before placing it down.** The application tool can jam and cause you to lose control of the power tool.
- ▶ **In case of damage and improper use of the battery, vapours may be emitted. The battery can set alight or explode.** Ensure the area is well ventilated and seek medical attention should you experience any adverse effects. The vapours may irritate the respiratory system.
- ▶ **Do not open the battery.** There is a risk of short-circuiting.
- ▶ **The battery can be damaged by pointed objects such as nails or screwdrivers or by force applied externally.** An internal short circuit may occur, causing the battery to burn, smoke, explode or overheat.
- ▶ **Only use the battery with products from the manufacturer.** This is the only way in which you can protect the battery against dangerous overload.



**Protect the battery against heat, e.g. against continuous intense sunlight, fire, dirt, water and moisture.** There is a risk of explosion and short-circuiting.



## Product Description and Specifications



#### Read all the safety and general instructions.

Failure to observe the safety and general instructions may result in electric shock, fire and/or serious injury.

Please observe the illustrations at the beginning of this operating manual.

#### Intended Use

The machine is intended for driving in and loosening screws and bolts as well as for tightening and loosening nuts within the respective range of dimension.

#### Product Features

The numbering of the product features refers to the diagram of the power tool on the graphics page.

- (1) Tool holder
- (2) Locking sleeve<sup>a)</sup>

- (3) Battery<sup>a)</sup>
  - (4) Battery release button<sup>a)</sup>
  - (5) Rotational direction switch
  - (6) On/off switch
  - (7) "PowerLight" lamp
  - (8) Handle (insulated gripping surface)
  - (9) Screwdriver bit with ball catch<sup>a)</sup>
  - (10) Universal bit holder<sup>a)</sup>
  - (11) Screwdriver bit<sup>a)</sup>
  - (12) Application tool (e.g. screw nut)<sup>a)</sup>
  - (13) Carbon brushes
  - (14) Cover cap
- a) **Accessories shown or described are not included with the product as standard. You can find the complete selection of accessories in our accessories range.**

## Technical Data

Cordless Impact Screwdriver		GDR 180-LI	GDX 180-LI
Article number		<b>3 601 JG5 1..</b>	<b>3 601 JG5 2..</b>
Rated voltage	V	18	18
No-load speed <sup>A)</sup>	min <sup>-1</sup>	0 – 2800	0 – 2800
Impact rate <sup>A)</sup>	min <sup>-1</sup>	0 – 3600	0 – 3600
Max. torque <sup>A)</sup> , hard screwdriving application according to ISO 5393			
– ¼" internal hexagon	Nm	160	160
– ■ ½"	Nm	–	180
Machine screw diameter	mm	M6–M14	M6–M16
Tool holder		¼" internal hexagon	■ ½" ¼" internal hexagon
Weight according to EPTA-Procedure 01:2014 <sup>B)</sup>	kg	1.7	1.8
Recommended ambient temperature during charging	°C	0 to +35	0 to +35
Permitted ambient temperature during operation <sup>C)</sup> and during storage	°C	–20 to +50	–20 to +50
Recommended rechargeable batteries		GBA 18V... ProCORE18V...	GBA 18V... ProCORE18V...
Recommended chargers		GAL 18... GAX 18... GAL 36...	GAL 18... GAX 18... GAL 36...

A) measured at 20–25 °C with battery **GBA 18V 4.0Ah**.

B) Depends on battery in use

C) Limited performance at temperatures < 0 °C

## Rechargeable battery

**Bosch** sells some cordless power tools without a rechargeable battery. You can tell whether a rechargeable battery is included with the power tool by looking at the packaging.

### Charging the battery

► **Use only the chargers listed in the technical data.** Only these chargers are matched to the lithium-ion battery of your power tool.

**Note:** Lithium-ion rechargeable batteries are supplied partially charged according to international transport regulations. To ensure full rechargeable battery capacity, fully charge the rechargeable battery before using your tool for the first time.

### Inserting the Battery

Push the charged battery into the battery holder until it clicks into place.

### Removing the Battery

To remove the rechargeable battery, press the battery release button and pull the battery out. **Do not use force to do this.**



The rechargeable battery has two locking levels to prevent the battery from falling out if the battery release button is pressed unintentionally. The rechargeable battery is held in place by a spring when fitted in the power tool.

### Battery charge indicator

Note: Not all battery types have a battery charge indicator. The green LEDs on the battery charge indicator indicate the state of charge of the battery. For safety reasons, it is only



possible to check the state of charge when the power tool is not in operation.

Press the button for the battery charge indicator  or  to show the state of charge. This is also possible when the battery is removed.

If no LED lights up after pressing the button for the battery charge indicator, then the battery is defective and must be replaced.

#### Battery model GBA 18V...



LED	Capacity
3 × continuous green light	60–100 %
2 × continuous green light	30–60 %
1 × continuous green light	5–30 %
1 × flashing green light	0–5 %

#### Battery model ProCORE18V...



LED	Capacity
5 × continuous green light	80–100 %
4 × continuous green light	60–80 %
3 × continuous green light	40–60 %
2 × continuous green light	20–40 %
1 × continuous green light	5–20 %
1 × flashing green light	0–5 %

### Recommendations for Optimal Handling of the Battery

Protect the battery against moisture and water.

Only store the battery within a temperature range of –20 to 50 °C. Do not leave the battery in your car in the summer, for example.

Occasionally clean the ventilation slots on the battery using a soft brush that is clean and dry.

A significantly reduced operating time after charging indicates that the battery has deteriorated and must be replaced. Follow the instructions on correct disposal.

### Assembly

- ▶ **Remove the battery from the power tool before carrying out work on the power tool (e.g. maintenance, changing tool, etc.). The battery should also be removed for transport and storage.** There is risk of injury from unintentionally pressing the on/off switch.

#### Changing the Tool (see figures A and B)

- ▶ **When working with an application tool, ensure that the application tool is connected securely to the tool**

**holder.** If the application tool is not securely connected to the tool holder, it can come off during operation.

#### Inserting

##### GDR 180-LI:

Pull the locking sleeve **(2)** forward, guide the application tool into the tool holder **(1)** up to the stop and release the locking sleeve **(2)** to lock the application tool.

Only use screwdriver bits with ball catch **(9)** (DIN 3126-E6.3). Other screwdriver bits **(11)** can be inserted using a universal bit holder with ball catch **(10)**.

##### GDX 180-LI:

Slide the application tool **(12)** onto the square drive of the tool holder **(1)**.

Due to the way the system operates, the application tool **(12)** will move around slightly in the tool holder **(1)**; this has no effect on the function/safety.

#### Removing

Pull the locking sleeve **(2)** forward and remove the application tool.

## Operation

### Method of Operation

The tool holder **(1)** (with the application tool) is driven by an electric motor via a gear and impact mechanism.

The working procedure is divided into two phases:

**Screwing in** and **tightening** (impact mechanism in action).

The impact mechanism is activated as soon as the screwed connection runs tight and load is therefore put on the motor. The impact mechanism then converts the power of the motor to steady rotary impacts. When loosening screws or nuts, the process is reversed.

### Starting Operation

#### Set the rotational direction (see figure C)

The rotational direction switch **(5)** is used to change the rotational direction of the power tool. However, this is not possible while the on/off switch **(6)** is being pressed.

**Right rotation:** To drive in screws and tighten nuts, press the rotational direction switch **(5)** through to the left stop.

**Left Rotation:** To loosen and unscrew screws and nuts, press the rotational direction switch **(5)** through to the right stop.

#### Switching on/off

To **start** the power tool, press and hold the on/off switch **(6)**.

The lamp **(7)** lights up when the on/off switch **(6)** is lightly or fully pressed, meaning that the work area is illuminated in poor lighting conditions.

To **switch off** the power tool, release the on/off switch **(6)**.

#### Adjusting the speed

You can adjust the speed of the power tool when it is on by pressing in the on/off switch **(6)** to varying extents.

A light pressure on the on/off switch **(6)** results in a low rotational speed. Increased pressure on the switch causes an increase in speed.

### Practical advice

► **Only apply the power tool to the screw/nut when the tool is switched off.** Rotating tool inserts can slip off.

The torque depends on the impact duration. The maximum achieved torque results from the sum of all individual torques achieved through impact. Maximum torque is achieved after an impact duration of 6–10 seconds. After this duration, the tightening torque increases only minimally. The impact duration is to be determined for each required tightening torque. The tightening torque actually achieved should always be checked with a torque wrench.

#### Screw applications with hard, spring-loaded or soft seats

When the achieved torques in an impact series are measured during a test and transferred onto a diagram, the result is the curve of a torque characteristic. The height of the curve corresponds to the maximum achievable torque, and the steepness indicates the duration in which this is achieved.

#### Guide values for maximum screw tightening torques

Figures given in Nm; calculated from the tensional cross-section; utilization of the yield point: 90% (with friction coefficient  $\mu_{\text{total}} = 0.12$ ). As a control measure, always check the tightening torque with a torque wrench.

Property Classes according to DIN 267	Standard Screws/Bolts							High-strength Bolts			
	3.6	4.6	5.6	4.8	6.6	5.8	6.8	6.9	8.8	10.9	12.9
M6	2.71	3.61	4.52	4.8	5.42	6.02	7.22	8.13	9.7	13.6	16.2
M8	6.57	8.7	11	11.6	13.1	14.6	17.5	19.7	23	33	39
M10	13	17.5	22	23	26	29	35	39	47	65	78
M12	22.6	30	37.6	40	45	50	60	67	80	113	135
M14	36	48	60	65	72	79	95	107	130	180	215
M16	55	73	92	98	110	122	147	165	196	275	330

#### Tips

Before screwing larger, longer screws into hard materials, it is advisable to pre-drill a pilot hole with the core diameter of the thread to approx. 2/3 of the screw length.

**Note:** Ensure that no metal particles enter the power tool.

#### Belt clip

You can use the belt clip to hang the power tool on a belt, for example. You then have both hands free and the power tool is always at hand.

## Maintenance and Service

### Maintenance and Cleaning

► **Remove the battery from the power tool before carrying out work on the power tool (e.g. maintenance, changing tool, etc.). The battery should also be removed for transport and storage.** There is risk of injury from unintentionally pressing the on/off switch.

A torque characteristic depends on the following factors:

- Strength properties of the screws/nuts
- Type of backing (washer, disc spring, seal)
- Strength properties of the material being screwed/bolted together
- Lubrication conditions at the screw/bolt connection

Consequently, the following applies in each case:

- A **hard seat** is used for metal-to-metal screw applications that use washers. After a relatively short impact duration, the maximum torque is achieved (steep characteristic curve). An unnecessarily long impact duration only causes damage to the machine.
- A **spring-loaded seat** is used for metal-to-metal screw applications that use spring washers, disc springs, studs or screws/nuts with conical seats. It is also called a spring-loaded seat when extensions are used.
- A **soft seat** is used for screw applications of e.g. metal on wood or screw applications that use lead washers or fibre washers as backing.

For a spring-loaded seat, as well as for a soft seat, the maximum tightening torque is lower than for a hard seat. A much longer impact duration is also required.

► **To ensure safe and efficient operation, always keep the power tool and the ventilation slots clean.**

#### Replacing the carbon brushes (see figure D)

Check the length of the carbon brushes around every 2–3 months and replace both carbon brushes if required.

Never replace only a single carbon brush.

**Note:** Only use carbon brushes supplied by Bosch and intended specifically for your product.

- Unscrew the caps **(14)** using a suitable screwdriver.
- Replace the spring-loaded carbon brushes **(13)** and screw the caps back on.

#### After-Sales Service and Application Service

Der Kundendienst beantwortet Ihre Fragen zu Reparatur und Wartung Ihres Produkts sowie zu Ersatzteilen. Explosionszeichnungen und Informationen zu Ersatzteilen finden Sie auch unter: [www.bosch-pt.com](http://www.bosch-pt.com)

Das Bosch-Anwendungsberatungs-Team hilft Ihnen gerne bei Fragen zu unseren Produkten und deren Zubehör.

Geben Sie bei allen Rückfragen und Ersatzteilbestellungen bitte unbedingt die 10-stellige Sachnummer laut Typenschild des Produkts an.

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#### Weitere Serviceadressen finden Sie unter:

www.bosch-pt.com/serviceaddresses

#### Transport

The recommended lithium-ion batteries are subject to legislation on the transport of dangerous goods. The user can transport the batteries by road without further requirements.

When shipping by third parties (e.g.: by air transport or forwarding agency), special requirements on packaging and labelling must be observed. For preparation of the item being shipped, consulting an expert for hazardous material is required.

Dispatch battery packs only when the housing is undamaged. Tape or mask off open contacts and pack up the battery in such a manner that it cannot move around in the packaging. Please also observe the possibility of more detailed national regulations.

#### Disposal



Power tools, rechargeable batteries, accessories and packaging should be sorted for environmental-friendly recycling.



Do not dispose of power tools and batteries/rechargeable batteries into household waste!

#### Battery packs/batteries:

##### Li-ion:

Please observe the notes in the section on transport (see "Transport", page 11).

## 中文

### 安全规章

#### 电动工具通用安全警告

**警告！** 阅读随电动工具提供的所有安全警告、说明、图示和规定。不遵照以下所列说明会导致电击、着火和/或严重伤害。

**保存所有警告和说明书以备查阅。**

警告中的术语“电动工具”是指市电驱动（有线）电动工具或电池驱动（无线）电动工具。

#### 工作场地的安全

- ▶ **保持工作场地清洁和明亮。** 杂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。
- ▶ **操作电动工具时，远离儿童和旁观者。** 注意力不集中会使你失去对工具的控制。

#### 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降低电击风险。
- ▶ **避免人体接触接地表面，如管道、散热片和冰箱。** 如果你身体接触接地表面会增加电击风险。
- ▶ **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电击风险。
- ▶ **不得滥用软线。** 绝不能用软线搬运、拉动电动工具或拔出其插头。使软线远离热源、油、锐边或运动部件。受损或缠绕的软线会增加电击风险。
- ▶ **当在户外使用电动工具时，使用适合户外使用的延长线。** 适合户外使用的电线将降低电击风险。
- ▶ **如果无法避免在潮湿的环境中操作电动工具，应使用带有剩余电流装置（RCD）保护的电源。** RCD的使用可降低电击风险。

#### 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。** 当你感到疲倦，或在有药物、酒精或治疗反应时，不要操作电动工具。在操作电动工具时瞬间的疏忽会导致严重人身伤害。
- ▶ **使用个人防护装置。** 始终佩戴护目镜。防护装置，诸如适当条件下使用防尘面具、防滑安全鞋、安全帽、听力防护等装置能减少人身伤害。
- ▶ **防止意外起动。** 在连接电源和/或电池包、拿起或搬运工具前确保开关处于关断位置。手指放在开关上搬运工具或开关处于接通时通电会导致危险。
- ▶ **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。

- ▶ **手不要过分伸展。时刻注意立足点和身体平衡。**这样能在意外情况下能更好地控制住电动工具。
- ▶ **着装适当。不要穿宽松衣服或佩戴饰品。**让你的头发和衣服远离运动部件。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、集尘设备连接用的装置，要确保其连接完好且使用得当。**使用集尘装置可降低尘屑引起的危险。
- ▶ **不要因为频繁使用工具而产生的熟悉感而掉以轻心，忽视工具的安全准则。**某个粗心的动作可能在瞬间导致严重的伤害。

#### 电动工具使用和注意事项

- ▶ **不要勉强使用电动工具，根据用途使用合适的电动工具。**选用合适的按照额定值设计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电源，则不能使用该电动工具。**不能通过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/或卸下电池包（如可拆卸）。**这种防护性的安全措施降低了电动工具意外起动的风险。
- ▶ **将闲置不用的电动工具贮存在儿童所及范围之外，并且不允许不熟悉电动工具和不了解这些说明的人操作电动工具。**电动工具在未经培训的使用者手中是危险的。
- ▶ **维护电动工具及其附件。**检查运动部件是否调整到位或卡住，检查零件破损情况和影响电动工具运行的其他状况。如有损坏，应在使用前修理好电动工具。许多事故是由维护不良的电动工具引发的。
- ▶ **保持切削刀具锋利和清洁。**维护良好地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，并考虑作业条件和要进行的作业来选择电动工具、附件和工具的刀头等。**将电动工具用于那些与其用途不符的操作可能会导致危险情况。
- ▶ **保持手柄和握持表面干燥、清洁，不得沾有油脂。**在意外的情况下，湿滑的手柄不能保证握持的安全和对工具的控制。

#### 电池式工具使用和注意事项

- ▶ **仅使用生产者规定的充电器充电。**将适用于某种电池包的充电器用到其他电池包时可能会发生着火危险。
- ▶ **仅使用配有专用电池包的电动工具。**使用其他电池包可能会产生伤害和着火危险
- ▶ **当电池包不用时，将它远离其他金属物体，例如回形针、硬币、钥匙、钉子、螺钉或其他小金属物体，以防电池包一端与另一端连接。**电池组端部短路可能会引起燃烧或着火。
- ▶ **在滥用条件下，液体可能会从电池组中溅出；应避免接触。**如果意外碰到液体，用水冲洗。如果液体碰到了眼睛，还应寻求医疗帮助。从电池中溅出的液体可能会发生腐蚀或燃烧。

- ▶ **不要使用损坏或改装过的电池包或工具。**损坏或改装过的电池组可能呈现无法预测的结果，导致着火、爆炸或伤害。
- ▶ **不要将电池包暴露于火或者高温中。**电池包暴露于火或高于130 °C的高温中可能导致爆炸。
- ▶ **遵守所有充电说明，给电池组或工具充电时不要超出说明中规定的温度范围。**错误充电或温度超出规定的范围可能会损坏电池并提高着火的风险。

#### 维修

- ▶ **由专业维修人员使用相同的备件维修电动工具。**这将保证所维修的电动工具的安全。
- ▶ **决不能维修损坏的电池包。**电池包仅能由生产者或其授权的维修服务商进行维修。

#### 针对起子机的安全规章

- ▶ **当在紧固件可能触及暗线的场合进行操作时，通过绝缘握持面握持工具。**紧固件碰到带电导线会使工具外露金属零件带电而使操作者遭受电击。
- ▶ **使用合适的侦测装置侦察隐藏的电线，或者向当地的相关单位寻求支援。**接触电线可能引起火灾并使操作者触电。损坏了瓦斯管会引起爆炸。如果水管被刺穿了会导致财物损失。
- ▶ **请紧握电动工具。**拧紧和拧松螺丝时可能短时出现高反应扭矩。
- ▶ **固定好工件。**使用固定装置或老虎钳固定工件，会比用手持握工件更牢固。
- ▶ **等待电动工具完全静止后才能够放下机器。**机器上的工具可能在工作中被夹住，而令您无法控制电动工具。
- ▶ **如果充电电池损坏或者未按照规定使用，充电电池中会散发出有毒蒸汽。充电电池可能会燃烧或爆炸。**工作场所必须保持空气流通，如果身体有任何不适必须马上就医。蒸汽会刺激呼吸道。
- ▶ **切勿打开充电电池。**可能造成短路。
- ▶ **钉子、螺丝刀等尖锐物品或外力作用可能会损坏充电电池。**有可能出现内部短路、蓄电池燃烧、发出烟雾、爆炸或过热。
- ▶ **只能将此充电电池用在制造商的产品中。**这样才能确保充电电池不会过载。



保护充电电池免受高温（例如长期阳光照射）、火焰、脏污、水和湿气的侵害。有爆炸和短路的危险。



#### 产品和性能说明



请阅读所有安全规章和指示。不遵照以下警告和说明可能导致电击、着火和/或严重伤害。

请注意本使用说明书开头部分的图示。

#### 按照规定使用

本电动工具适用于拧入和拧出螺丝，并且可以拧紧和放松规定尺寸内的螺母。

## 插图上的机件

机件的编号和电动工具详解图上的编号一致。

- (1) 工具夹头
- (2) 锁定套筒<sup>a)</sup>
- (3) 充电电池<sup>a)</sup>
- (4) 充电电池的解锁按钮<sup>a)</sup>
- (5) 正逆转开关
- (6) 起停开关
- (7) “PowerLight”灯

- (8) 手柄（绝缘握柄）
- (9) 带滚珠制动功能的螺丝批嘴<sup>a)</sup>
- (10) 通用批头套筒<sup>a)</sup>
- (11) 螺丝批嘴<sup>a)</sup>
- (12) 工具刀头（螺母起子头）<sup>a)</sup>
- (13) 碳刷
- (14) 盖子

a) 图表或说明上提到的附件，并不包含在基本的供货范围中。本公司的附件清单中有完整的附件供应项目。

## 技术参数

充电式冲击钻/起子机		GDR 180-LI	GDX 180-LI
物品代码		3 601 JG5 1..	3 601 JG5 2..
额定电压	伏特	18	18
空载转速 <sup>A)</sup>	转/分钟	0-2800	0-2800
冲击次数 <sup>A)</sup>	次/分钟	0-3600	0-3600
根据ISO 5393, 硬拧转的最大扭矩 <sup>A)</sup>			
- ¼英寸内六角	牛顿米	160	160
- ■ ½英寸	牛顿米	-	180
机械螺栓直径	毫米	M6-M14	M6-M16
工具夹头		¼英寸内六角	■ ½英寸 ¼英寸内六角
重量符合EPTA-Procedure 01:2014 <sup>B)</sup>	公斤	1.7	1.8
充电时建议的环境温度	摄氏度	0至+35	0至+35
工作时和存放时允许的环境温度 <sup>C)</sup>	摄氏度	-20至+50	-20至+50
推荐的充电电池		GBA 18V... ProCORE18V...	GBA 18V... ProCORE18V...
推荐的充电器		GAL 18... GAX 18... GAL 36...	GAL 18... GAX 18... GAL 36...

A) 在20 - 25摄氏度的条件下带充电电池**GBA 18V 4.0Ah**测得。

B) 视所使用的充电电池而定

C) 温度 < 0 摄氏度时功率受限

## 充电电池

**Bosch**也销售不带充电电池的充电式电动工具。您可以在包装上查看电动工具的供货范围内是否包含充电电池。

### 为充电电池充电

► **请只使用在技术参数中列出的充电器。**只有这些充电器才适用于本电动工具上的锂离子电池。

**提示：**鉴于国际运输规定，锂离子充电电池在交货时只完成部分充电。首度使用电动工具之前，必须先充足充电电池的电量以确保充电电池的功率。

### 安装充电电池

将充好电的充电电池推入电池座，直到嵌入。



### 取出充电电池

如需取下充电电池，则请按压解锁按钮，然后拔出充电电池。**在此过程中请勿过度用力。**

充电电池具备双重锁定功能，即使不小心触动了充电电池的解锁按钮，充电电池也不会从机器中掉落下来。只要充电电池安装在电动工具中，就会被弹簧固定在其位置上。

### 充电电池电量指示灯

**提示：**并非每种充电电池型号均具备电量指示灯。充电电池电量指示灯的绿色LED灯显示充电电池的电量。基于安全原因，只能在电动工具静止时检查充电电池的电量。

按压充电电量指示灯按键或, 来显示充电电量。也可以在充电电池取下时操作。

如果按压充电电量指示灯按键后没有LED灯亮起，则说明充电电池损坏，必须进行更换。

#### 充电电池型号GBA 18V...



LED	电量
3个绿灯长亮	60–100 %
2个绿灯长亮	30–60 %
1个绿灯长亮	5–30 %
1个绿灯闪烁	0–5 %

#### 充电电池型号ProCORE18V...



LED	电量
5个绿灯长亮	80–100 %
4个绿灯长亮	60–80 %
3个绿灯长亮	40–60 %
2个绿灯长亮	20–40 %
1个绿灯长亮	5–20 %
1个绿灯闪烁	0–5 %

### 如何正确地使用充电电池

保护充电电池，避免湿气和水分渗入。

充电电池必须储存在-20 °C至50 °C的环境中。夏天不得将充电电池搁置在汽车中。

不定时地使用柔软，清洁而且干燥的毛刷清洁充电电池的通气孔。

充电后如果充电电池的使用时间明显缩短，代表充电电池已经损坏，必须更换新的充电电池。

请注意有关作废处理的规定。

### 安装

- ▶ 在电动工具上进行任何维护的工作（例如维修，更换工具等等），以及搬运、保存电动工具之前都必须从机器中取出蓄电池。无意间操作开关可能会造成伤害。

#### 更换刀具（参见插图A和B）

- ▶ 安装工具刀头时请注意务必将其牢牢地插在工具夹头上。如果工具刀头未牢固地插在工具夹头中，可能在拧转螺丝时松脱。

#### 安装工具刀头

##### GDR 180-LI:

将锁定套筒(2)向前拉，将工具刀头放入工具夹头(1)，直至限位，然后重新松开锁定套筒(2)，以便锁住工具刀头。

仅使用带球掣的螺丝批嘴(9) (DIN 3126-E6.3)。其他螺丝批嘴(11)可以通过一个带球掣的通用批头套筒(10)安装。

##### GDX 180-LI:

将工具刀头(12)推到工具夹头(1)的四角段上。

由于系统设计原因，工具刀头(12)和工具夹头(1)之间会有少许间隙，这不影响电动工具的功能和安全。

#### 拆卸工具刀头

将锁定套筒(2)向前拉，取下工具刀头。

### 运行

#### 功能原理

通过齿轮箱和冲击机构上方的电机驱动工具夹头(1)及工具刀头。

工作过程共分为两个阶段：

**拧螺丝和拧紧**（冲击机构工作）。

—当螺丝咬入工件中而且电机承受负荷，冲击机构便投入工作。冲击机构把电机的力转化为均匀的旋转冲击。松开螺丝或螺母时，整个过程以反向进行。

#### 投入使用

##### 调整旋转方向（见图片C）

通过正逆转开关(5)可以更改电动工具的旋转方向。按下起停开关(6)后无法更改。

**正转：**拧入螺丝并拧紧螺母时，向左按压正逆转开关(5)直至限位。

**逆转：**松开或拧出螺丝和螺母时，向右按压正逆转开关(5)直至极限位置。

##### 开动/关闭

将电动工具投入使用时按压起停开关(6)并按住。

轻按或是把起停开关(6)按到底时，灯(7)会亮起，在照明状况不佳的环境中可以借此照亮操作位置。

关闭电动工具时，请松开起停开关(6)。

##### 调整转速

根据按压起停开关(6)的程度，可以无级调节已接通的电动工具的转速。

轻按起停开关(6)，转速低。逐渐在开关上加压，转速也会跟着提高。

#### 工作提示

- ▶ 先关闭电动工具，然后再放置在螺母/螺栓上。旋转的工具刀头可能会滑开。

扭矩大小和冲击时间长短有关。最大扭矩是所有通过冲击所产生的单个扭矩的总和。在冲击约6–10秒后，扭矩可以达到最大。超过这段时间，拧紧扭矩只略微增加。

必须测量每个拧紧扭矩的持续冲击时间。总是需要用扭矩扳手检查实际达到的拧紧扭矩。

##### 使用硬垫、弹簧垫或软垫拧转

如果尝试测量一个冲击过程中达到的各个扭矩并记载在一张图表上，可以得到扭矩变化的曲线。曲线的最高点是可达到的最大扭矩，上升的线段则代表到达最大扭矩所需的时间。

扭矩曲线的走向受以下因素影响：

- 螺丝/螺母的强度

- 垫片的种类（圆垫片、碟形垫片、密封圈）
- 即将被拧入螺丝的物料的材质
- 螺丝是否涂抹了润滑油

综合以上因素，大概可以归类出下列的工作状况：

- **硬垫拧转**，是指在使用垫片的前提下将金属螺丝拧入金属物料中。经过短暂的冲击之后便可以达到最大扭矩（比较陡的上升曲线）。不必要的延长冲击时间只会损坏机器。

- **弹簧垫拧转**，是指在使用了弹簧圈、碟形垫片、双头螺栓、带圆锥座的螺栓/螺母以及延长件等的情况下将金属螺丝拧入金属物料中。

- **软垫拧转**，以下几个例子都属于软垫拧转：将金属螺丝拧入木材中，或者拧螺丝时使用了铅垫片、纤维垫片。

弹簧垫拧转和软垫拧转的最大扭矩小于硬垫拧转的最大扭矩。而且前者需要的冲击时间明显超越后者。

### 最大螺栓拧紧扭矩的标准值

所提供的数据的单位是牛顿米，数据是由切削截面积运算所得；屈服点的利用为百分之90%（在摩擦系数 $\mu_{\text{外}} = 0.12$ ）。随时用扭矩扳手检查拧紧扭矩。

强度等级根据 DIN 267	标准螺丝						高强度螺丝				
	3.6	4.6	5.6	4.8	6.6	5.8	6.8	6.9	8.8	10.9	12.9
M6	2.71	3.61	4.52	4.8	5.42	6.02	7.22	8.13	9.7	13.6	16.2
M8	6.57	8.7	11	11.6	13.1	14.6	17.5	19.7	23	33	39
M10	13	17.5	22	23	26	29	35	39	47	65	78
M12	22.6	30	37.6	40	45	50	60	67	80	113	135
M14	36	48	60	65	72	79	95	107	130	180	215
M16	55	73	92	98	110	122	147	165	196	275	330

### 建议

把大的、长的螺丝拧入坚硬的物料中之前，必须根据螺纹的中心直径预钻孔，预钻孔的深度大概为螺丝长度的2/3。

**提示：**注意不要让金属小零件进入电动工具。

### 腰带夹

使用腰带夹可以把电动工具挂在例如腰带上。不但能够空出双手，而且可随时够到电动工具。

## 维修和服务

### 维护和清洁

▶ 在电动工具上进行任何维护的工作（例如维修、更换工具等等），以及搬运、保存电动工具之前都必须从机器中取出蓄电池。无意间操作开关可能会造成伤害。

▶ 电动工具和通气孔必须随时保持清洁，以确保工作效率和工作安全。

### 更换碳刷（参见插图D）

每2到3个月检查一次碳刷的长度，必要时更换两个碳刷。

切勿只更换一个碳刷！

**提示：**只能向博世购买针对该产品的碳刷。

- 用合适的螺丝起子机松开盖帽(14)。
- 更换处于弹簧压力下的碳刷(13)并再次拧上盖帽。

### 客户服务和应用咨询

本公司顾客服务处负责回答有关本公司产品的修理、维护和备件的问题。备件的展开图纸和信息也可查看：[www.bosch-pt.com](http://www.bosch-pt.com)

博世应用咨询团队乐于就我们的产品及其附件问题提供帮助。

询问和订购备件时，务必提供机器铭牌上标示的10位数字物品代码。

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70538 斯图加特 / 德国

### 其他服务地址请见：

[www.bosch-pt.com/serviceaddresses](http://www.bosch-pt.com/serviceaddresses)

### 搬运

所推荐的锂离子充电电池必须符合危险物品法规。使用者无须另外使用保护包装便可以运送该充电电池。

但是如果将它交由第三者运送（例如：寄空运或委托运输公司）则要使用特殊的包装和标示。此时必须向危险物品专家请教有关寄送危险物品的相关事宜。

确定充电电池的外壳未受损后，才可以寄送充电电池。粘好未加盖的触点并包装好充电电池，不可以

让充电电池在包装中晃动。必要时也得注意各国有关的法规。

### 处理废弃物



必须以符合环保的方式，回收再利用损坏的电动工具、充电电池、附件和废弃的包装材料。



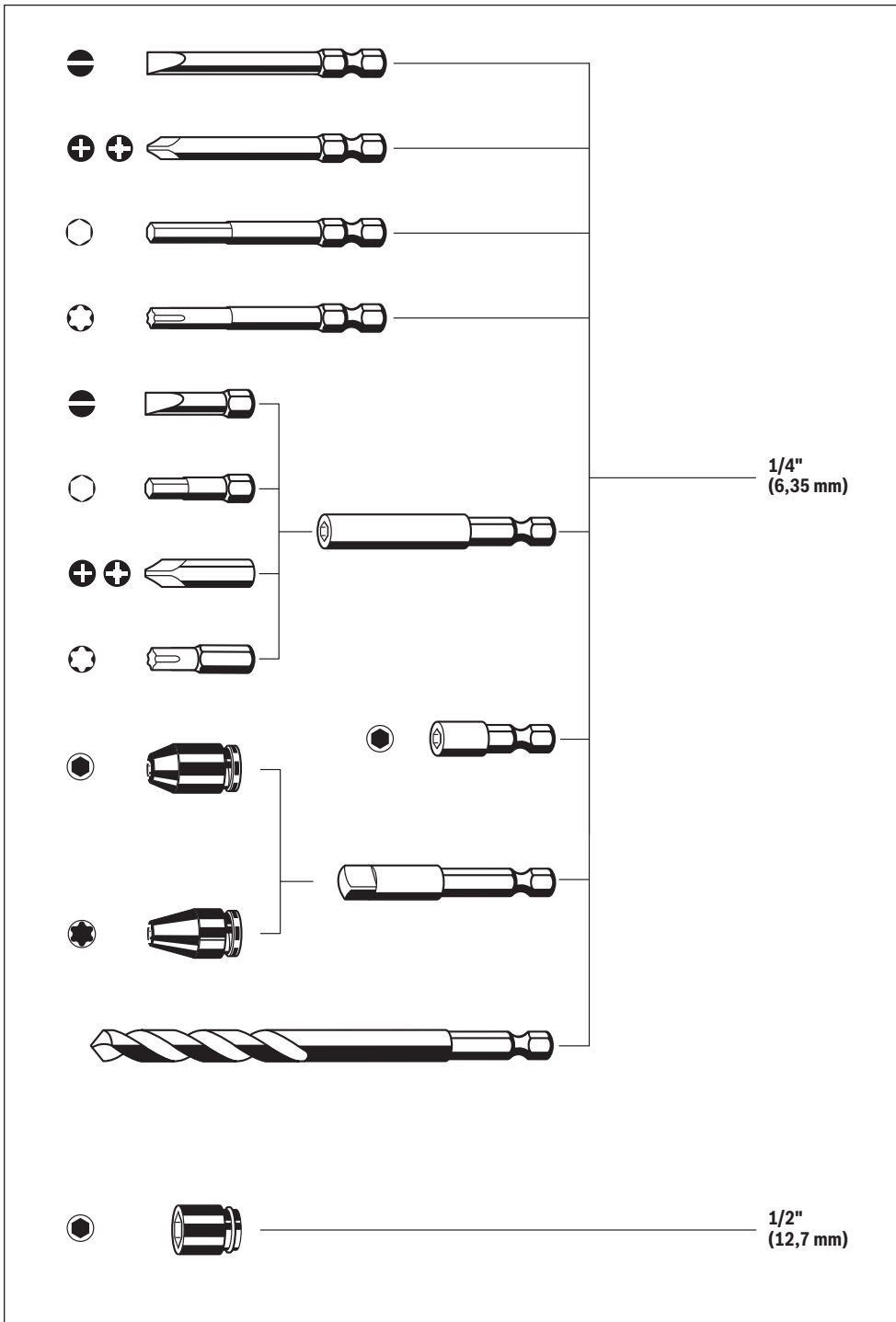
不可以把电动工具和充电电池/蓄电池丢入一般的家庭垃圾中！

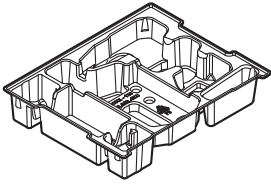
### 充电电池/电池：

#### 锂离子：

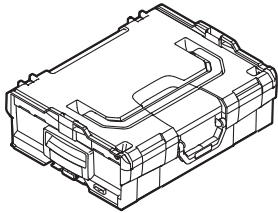
请注意“搬运”段落中的指示（参见“搬运”，页 15）确认设置。







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