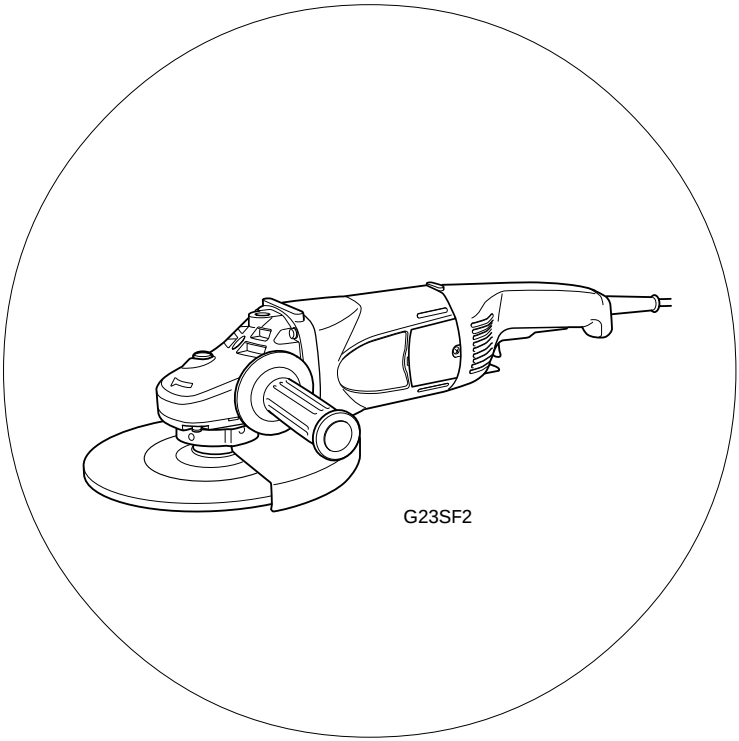
HITACHI

日立牌角磨机
Disc Grinder

G 18SH2 • G 23SF2
G 18SR • G 23SR

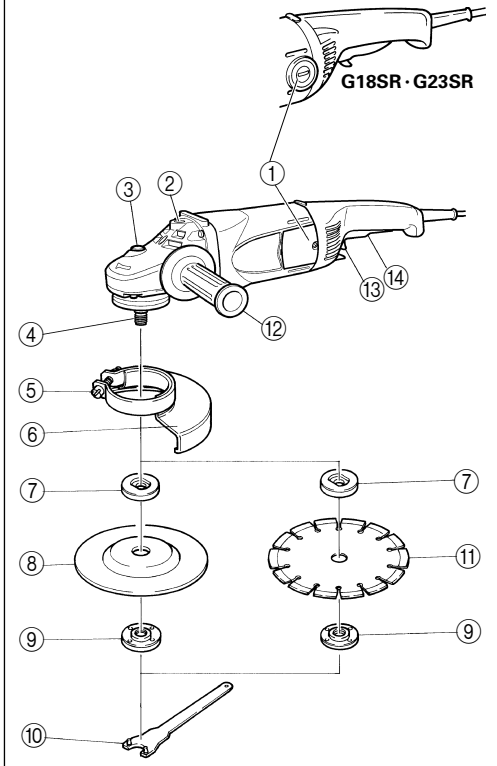
使用说明书
Handling Instructions



使用前务请详加阅读
Read through carefully and understand these instructions before use.

Hitachi Koki

1



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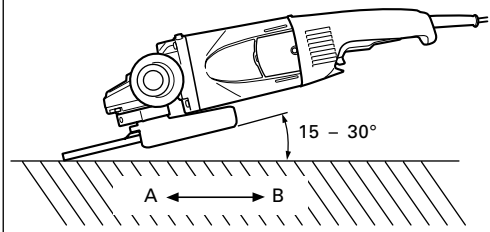
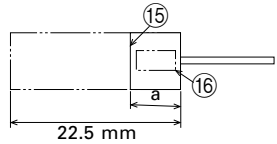


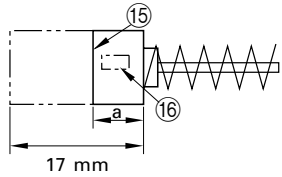
3

G18SH2 · G23SF2



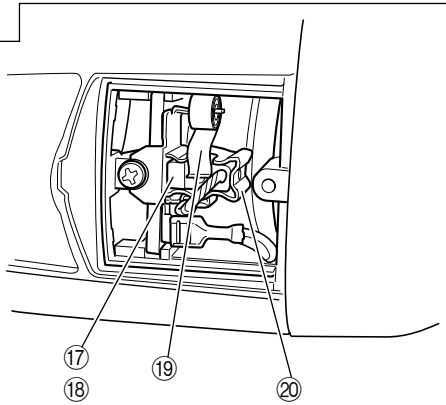
	⑯	a
⑰	61	6.5 mm
⑱	89	8.5 mm

G18SR · G23SR



	⑯	a
⑰	44	6 mm
⑱	74	7 mm

4



①	碳刷盖	Brush cover
②	侧柄插座	Socket for side handle
③	按钮（主轴锁）	Push button (Spindle lock)
④	主轴	Spindle
⑤	螺丝钉	Screw
⑥	砂轮保护装置	Wheel guard
⑦	砂轮垫圈	Wheel washer
⑧	砂轮	Depressed center wheel
⑨	砂轮螺帽	Wheel nut
⑩	扳手	Wrench
⑪	金刚石轮	Diamond wheel
⑫	侧柄	Side handle
⑬	开关锁	Lock button
⑭	开关	Switch
⑮	磨损极限	Wear limit
⑯	碳刷号	No. of carbon brush
⑰	通常碳刷	Usual carbon brush
⑱	自动停止碳刷	Auto-stop carbon brush
⑲	弹簧	Spring
⑳	刷握	Brush holder
G18SR・G23SR		
①	刷盖	Brush cap

一般安全规则

警告!

请仔细阅读本说明书

若不遵守下列注意事项，可能会导致电击、火灾及/或严重伤害。
下述警告中的术语「电动工具」，指插电 (有线) 电动工具或电池 (无线) 电动工具。

请妥善保管本说明书

1) **工作场所**
   a) **工作场所应打扫干净，并保持充分的亮度。**
   杂乱无章及光线昏暗容易导致事故。
   b) **请勿在易爆炸的环境中操作电动工具，如存在易燃液体、气体或粉尘的环境中。**
   电动工具产生的火花可能会点燃烟尘。
   c) **操作电动工具时，儿童与旁观者勿靠近工作场所。**
   工作时分神可能会造成工具失控。

2) **电气安全**
   a) **电动工具插头必须与插座相配。**
   不得以任何形式改装插头。
   不得对接地的电动工具使用任何转接插头。
   原装插头及相配插座将会减少电击的危险。
   b) **应避免身体与大地或接地表面，如管道、散热器、炉灶、冰箱等的接触。**
   若身体接触大地或接地表面，更会增加电击的危险。
   c) **电动工具不可任其风吹雨打，或置于潮湿的环境中。**
   水进入电动工具也会增加电击的危险。
   d) **要小心使用电线。不要用电线提拉电动工具，或拉扯电线来拔下工具的插头。**
   电线应远离热源、油液，并避免接触到锐利边缘或转动部分。
   电线损坏或缠绕在一起会增加电击的危险。
   e) **在室外操作电动工具时，请使用专用延伸线缆。**
   使用专用延伸线缆可降低电击的危险。

3) **人身安全**
   a) **保持高度警觉，充分掌握情况，以正常的判断力从事作业。**
   疲劳状态或服药、饮酒后，请勿使用电动工具。
   操作电动工具时，一时的疏忽都可能造成严重的人身伤害。
   b) **使用安全设备。始终配戴安全眼镜。**
   在适当条件下，使用防尘面罩、防滑胶鞋、安全帽或听觉保护装置等安全设备，都会减少人身伤害。
   c) **谨防误开动。插接电源前，请先确认开关是否已切断。**
   搬移电动工具时手指接触开关，或接通开关状态下插上电源插座，都容易导致事故。
   d) **开动前务必把调整用键和扳手类拆除下来。**
   扳手或键留在转动部分上，可能会造成人身伤害。
   e) **要在力所能及的范围内进行作业。作业时脚步要站稳，身体姿势要保持平衡。**
   这样在意外情况下可以更好地控制工具。
   f) **工作时衣服穿戴要合适。不要穿过于宽松的衣服或佩带首饰。头发、衣角和手套等应远离转动部分。**
   松散的衣角、首饰或长发都可能会卷入转动部分。
   g) **如果提供连接除尘和集尘的设备，请确认是否已经连接好并且使用正常。**
   使用这些设备可降低粉尘引起的危险。

4) **电动工具的使用和维护**
   a) **不要使劲用力推压。应正确使用电动工具。**
   正确使用才能让工具按设计条件有效而安全地工作。
   b) **如果电动工具不能正常开关，切勿使用。**
   无法控制开关的电动工具非常危险，必须进行修理。
   c) **进行调整，更换附件或存放工具前，请拔下电源插头。**
   此类预防安全措施可减少误开动工具的危险。
   d) **闲置不用的工具，应存放在儿童接触不到的地方；不熟悉电动工具或本说明书的人员，不允许操作本工具。**
   未经培训的人员使用电动工具非常危险。
   e) **妥善维护工具。检查转动部分的对准，连接，各零件有无异常，及其它足以给工作带来不良影响的情况。**
   如有损坏，必须修理后才能使用。
   许多事故都是因工具维护不良引起的。
   f) **保持工具锋利、清洁。**
   正确维护工具，使其保持锋利，作业顺畅，便于控制。
   g) **请根据本说明书，按照特殊类型电动工具的方式，使用本工具、附件及钻头，并考虑作业条件及具体的作业情况。**
   电动工具用于规定外的作业，可能会导致危险状况。

5) **维修**
   a) **本电动工具的维修必须由专业人员使用原配零件进行。**
   这样才能确保电动工具的安全性。

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。

使用角磨机时的注意事项

1. 没有砂轮防护装置时千万不要使用本角磨机。
2. 确认砂轮上所标示的转速等于或大于角磨机的额定转速。只能使用额定转速为80 m/s以上的砂轮。
3. 确保砂轮尺寸与角磨机相符、砂轮与主轴相配。
4. 须按照厂家的使用说明书小心存放和使用磨轮。
5. 使用前检查砂轮，不要使用破损、有裂缝的或有其他缺陷的产品。
6. 使用角磨机时，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。
7. 请勿使用切断砂轮进行侧面研磨。
8. 请勿将独立的减速轴衬或接头用于大孔砂轮。
9. 在切断本电动工具的电源之后，砂轮仍会继续旋转一段时间。

规格

型式		G18SH2 • G18SR	G23SF2 • G23SR
电压（按地区）*1		(110V, 220V, 230V, 240V) ∿	
输入功率*1		2000 W	
空载转速		8500／分	6500／分
砂轮	外径	180 mm	230 mm
	穴径	22 mm	
	圆周速度	80 m／秒	
重量*2		4.3 kg	

*1 当须改变地区时应检查产品上的铭牌 。
*2 重量: 仅为主机的重量

标准附件

(1) 扳手 1
(2) 侧柄 1
砂轮不作为标准附件附送
标准附件可能不预先通告而径予更改。

用途

○ 用于去除铸品毛刺，飞边等物及抛光各种型号的钢、青铜、铝及铸造品。
○ 研磨焊接部分或研磨用焊开的部分。
○ 合成树脂、石板、砖、大理石等的研磨。
○ 混凝土、石头、砖、大理石等的切削。

作业之前

1. **电源**：
   确认所使用的电源与工具铭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. **安装并调整轮罩**
   轮罩是一种保护装置用来防止作业中因砂轮破裂而受伤。开始研磨作业之前，请确认轮罩是否安装得紧固妥善。稍微拧松固定螺丝后，即可转动轮罩并将其固定在所需角度，以得到最大工作效率。调整好轮罩后，必须确认固定螺丝是否完全拧紧。

5. 确保要使用的砂轮属于正确类型、没有裂纹或表面缺陷。同时也要确认砂轮装好，轮螺母紧固。参照“砂轮的装与分解”一节。
6. **试行运转**
   在使用前确保已正确安装并拧紧研磨产品，并在安全场所在空载状态下运转 30 秒钟，若有较大的振动或察觉到其他缺陷，则应立即停止试运转。遇此情况时，检查电动工具以究明原因。
7. **检查主轴锁的装置**
   在打开电源开关之前，揿两、三下锁定销检查锁定销是否被释放。（**图 1**）
8. **固定侧柄**
   把侧柄旋进齿轮罩。

实用角磨机的应用

1. **压力**
   本机不可施加过大压力使其过载，这样才能延长机器的使用寿命并确保加工质量。在大部分的用法中，机器本身的重量即够研磨。加压过大将导致转速降低、表面加工不良以及过载，从而使机器寿命缩短。
2. **研磨角度**
   切勿将砂轮的全表面施加于要研磨的材料上。如**图 2** 所示，机器应保持 15°-30°，使砂轮的外缘以最佳角度与工件相接触。
3. 用新砂轮首次进行研磨时，应将角磨机由对面横过工件往操作人员这边拉，以免挖入工件（**图 2 的 B 方向**）。等砂轮的前缘适当磨损后，就可往任何方向进行研磨。
4. **角磨机的开关**
   接通： 将开关锁往前推，接着按开关的手柄开关就被接通。
   * 长时间使用时，只须再度将开关径前推，开关将上锁。（* 依地区而异）
   断开： 按紧开关的手柄，然后释放，开关就会断开。
5. **收工后的注意事项**
   关掉机器之后，需等角磨机完全停止才能将其放下，以免造成严重事故，而且还可以减少吸入机器的尘埃及切屑量。

注意：
- ○ 检查工件已被正确固定。
- ○ 在多尘的条件下工作时，确保通风口畅通无堵塞现象。
  如果需要清除灰尘，首先使电动工具断开电源（使用非金属物品）并避免损坏内部零件。
- ○ 确保使用时产生的火花不会引起危险：例如，不要溅在身体上或点燃易燃物。
- ○ 始终使用安全眼镜和听力保护器，有必要时使用其他个人保护装置，如手套、围裙和头盔等。
- ○ 始终采用视力和听力保护。
  必要时应使用其他个人保护装置，如口罩、手套、头盔和围裙等。
  拿不准时，请使用保护装置。
- ○ 未使用本电动工具时，请断开电源。

砂轮的组装与分解

注意：
为了防备发生严重事故，必须关掉电源并将电源插头从插座中拔出。

1. **组装（图 1）**
(1) 将机器翻过去，使主轴朝上。
(2) 将砂轮垫圈装于主轴上。
(3) 将砂轮或金刚轮的突出部装入砂轮垫圈。
(4) 将砂轮螺帽旋入主轴。
   （使用金刚轮时，请把砂轮螺帽的凸面装到金刚轮的相反方向上，并且把螺帽拧到主轴上）
(5) 按下锁定销以防止主轴转动，并如**图 1** 所示用附送的扳手拧紧砂轮螺帽。
2. **分解**
   分解顺序与安装顺序相反。

注意：
- ○ 请确认砂轮是否安装紧固。
- ○ 请在打开电源开关之前，按两三下按钮，以确认按钮是否已被释放。

维护和检查

1. **检查砂轮**
   检查砂轮确无破裂和表面缺陷。
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. **检查碳刷（图 3）**
   电动机里的碳刷是一种消耗品。碳刷一旦使用到磨损极限，电动机就会出现各种障碍；如果所使用的碳刷是“自停式”，电动机将自动地停止转动。遇到上述情况，应立即换上与图上代号一致的新碳刷。
   此外，碳刷应经常保持干净状态，以保证能在刷握里自由滑动。
4. **更换碳刷**

G18SH2 • G23SF2（图 4）

〈拆卸〉

(1) 拧松固定碳刷盖的 D4 自攻螺丝钉，拆下碳刷盖。
(2) 使用六角形扳手或小螺丝刀拔起固定碳刷的弹簧边缘。朝刷握的外侧方拆下弹簧边缘。
(3) 从刷握的端部取下碳刷上的引出端，然后从刷握里拆下碳刷。

〈安装〉

(1) 将碳刷的引线端插入刷握的端部。
(2) 将碳刷装入刷握。
(3) 使用六角形扳手或小螺丝刀使弹簧边缘回到碳刷头处。
(4) 安上尾部盖并拧紧 D4 自攻螺丝钉。

G18SR • G23SR

用一字形头螺丝刀拆卸刷盖、碳刷就可简单地取下。

5. **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。
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知而径予更改。

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.
  Many accidents are caused by poorly maintained power tools.
- **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 ON USING DISC GRINDER

1. Never operate these power tools without Wheel Guards.
2. Check that speed marked on the wheel is equal to or greater than the rated speed of the grinder. Use only depressed center wheels rated at 80 m/s or more.
3. Ensure that the wheel dimensions are compatible with the grinder and that the wheel fits the spindle.
4. Abrasive wheels shall be stored and handled with care in accordance with manufacturer's instructions.
5. Inspect the depressed center wheel before use, do not use chipped, cracked or otherwise defective products.
6. 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.
7. Do not use cutting-off wheels for side grinding.
8. Do not use of separate reducing bushings or adapters to adapt large hole abrasive wheels.
9. The wheel continues to rotate after the tool is switched off.

SPECIFICATIONS

Model		G18SH2 · G18SR	G23SF2 · G23SR
Voltage (by areas)*1		(110V, 220V, 230V, 240V) ∿	
Input*1		2000 W	
No-load speed		8500/min	6600/min
Wheel	Outer dia.	180 mm	230 mm
	Inner dia.	22 mm	
	Peripheral speed	80 m/s	
Weight*2		4.3 kg	

*1 Be sure to check the nameplate on product as it is subject to change by areas.
*2 Weight: Only main body

STANDARD ACCESSORIES

(1) Wrench 1
(2) Side handle 1
Depressed center wheels are not provided as standard accessories.
Standard accessories are subject to change without notice.

APPLICATIONS

- ○ Removal of casting fin and finishing of various types of steel, bronze and aluminum materials and castings.
- ○ Grinding of welded sections or sections cut by means of a cutting torch.
- ○ Grinding of synthetic resins, slate, brick, marble, etc.
- ○ Cutting of synthetic concrete, stone, brick, marble and similar materials.

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. **Fitting and adjusting the wheel guard**
   The wheel guard is a protective device to prevent injury should the depressed center wheel shatter during operation. Ensure that the guard is properly fitted and fastened before commencing grinding operation. By slightly loosening the setting screw, the wheel guard can be turned and set at any desired angle for maximum operational effectiveness. Ensure that the setting screw is thoroughly tightened after adjusting the wheel guard.
5. Ensure that the depressed center wheel to be utilized is the correct type and free of cracks or surface defects. Also ensure that the depressed center wheel is properly mounted and the wheel nut is securely tightened, Refer to the section on "Depressed Center Wheel Assembly"
6. **Conducting a trial run**
   Ensure that the abrasive products is correctly mounted and tightened before use and run the tool at no-load for 30 seconds in a safe position, stop immediately if there is considerable vibration or if other defects are detected.
   If this condition occurs, check the machine to determine the cause.
7. **Confirm the spindle lock mechanism**
   Confirm that the spindle lock is disengaged by pushing push button two or three times before switching the power tool on (See **Fig. 1**).
8. **Fixing the side handle**
   Screw the side handle into the gear cover.

PRACTICAL GRINDER APPLICATION

1. **Pressure**
   To prolong the life of the machine and ensure a first class finish, it is important that the machine should not be overloaded by applying too much pressure. In most applications, the weight of the machine alone is sufficient for effective grinding. Too much pressure will result in reduced rotational speed, inferior surface finish, and overloading which could reduce the life of the machine.
2. **Grinding angle**
   Do not apply the entire surface of the depressed center wheel to the material to be ground. As shown in **Fig. 2**, the machine should be held at an angle of 15° – 30° so that the external edge of the depressed center wheel contacts the material at an optimum angle.
3. To prevent a new depressed center wheel from digging into the workpiece, initial grinding should be performed by drawing the grinder across the workpiece toward the operator (**Fig. 2 direction B**). Once the leading edge of the depressed center wheel is properly abraded, grinding may be conducted in either direction.
4. **Switch operation**
   Switch ON: Push the locking button forward and then press the switch lever.
   * For continuous use, press the switch lever. The switch lever is locked by pushing the locking button forward once again.
   (*Subject to change depending on area.)
   Switch OFF: Press and release the switch lever.
5. **Precautions immediately after finishing operation**
   After switching off the machine, do not put it down until the depressed center wheel has come to a complete stop. Apart from avoiding serious accidents, this precaution will reduce the amount of dust and swarf sucked into the machine.

CAUTIONS

- ○ Check that the work piece is properly supported.
- ○ Ensure that ventilation openings are kept clear when working in dusty conditions.
  If it should become necessary to clear dust, first disconnect the tool from the mains supply (use non-metallic objects) and avoid damaging internal parts.
- ○ Ensure that sparks resulting from use do not create a hazard e.g. do not hit persons, or ignite flammable substances.
- ○ Always use protective safety glasses and hearing protectors, use other personal protective equipment such as gloves, apron and helmet when necessary.
- ○ Always use eye and ear protection.
  Other personal protective equipment such as dust mask, gloves, helmet and apron should be worn when necessary.
  If in doubt, wear the protective equipment.
- ○ When the machine is not use, the power source should be disconnected.

ASSEMBLING AND DISASSEMBLING THE DEPRESSED CENTER WHEEL

CAUTION Be sure to switch OFF and disconnect the attachment plug from the receptacle to avoid a serious accident.

1. **Assembling (Fig. 1)**

(1) Turn the machine upside down so that the spindle is facing upward.
(2) Mount the wheel washer onto the spindle.
(3) Fit the protruding part of the depressed center wheel or diamond wheel onto the wheel washer.
(4) Screw the wheel nut onto the spindle.
(For diamond wheel assembling, use the wheel nut with the convex side against the diamond wheel.)
(5) Insert the push button to prevent rotation of the spindle, and tighten the wheel nut with the accessory wrench, as shown in **Fig.1**.

2. **Disassembling**
   Follow the above procedures in reverse.

CAUTIONS

- ○ Comfirm that the depressed center wheel is mounted firmly.
- ○ Confirm that the push button is disengaged by pushing push button two or three times before switching the power tool on.

MAINTENANCE AND INSPECTION

1. **Inspecting the depressed center wheel**
   Ensure that the depressed center wheel is free of cracks and surface defects.
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. **Inspecting the carbon brushes (Fig. 3)**
   The motor employs carbon brushes which are consumable parts.
   When they become worn to or near the "wear limit", it could result in motor trouble. When an auto-stop carbon brush is equipped, the motor will stop automatically.
   At that time, replace both carbon brushes with new ones which have the same carbon brush numbers shown in the figure. In addition, always keep carbon brushes clean and ensure that they slide freely within the brush holders.
4. **Replacing carbon brushes**

G18SH2 · G23SF2 (Fig. 4)

<Disassembly>
(1) Loosen the D4 tapping screw retaining the brush cover and remove the brush cover.
(2) Use the auxiliary hexagonal wrench or small screwdriver to pull up the edge of the spring that is holding down the carbon brush. Remove the edge of the spring toward the outside of the brush holder.
(3) Remove the end of the pig-tail on the carbon brush from the terminal section of brush holder and then remove the carbon brush form the brush holder.
<Assembly>
(1) Insert the end of the pig-tail of the carbon brush in the terminal section of brush holder.

(2) Insert the carbon brush in the brush holder.
(3) Use the auxiliary hexagonal wrench or small screwdriver to return the edge of the spring to the head of the carbon brush.
(4) Mount the tail cover and tighten the D4 tapping screw.

G18SR · G23SR

Disassemble the brush caps with a slotted-head screwdriver. The carbon brushes can then be easily removed.

5. 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.

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 an 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.

MODIFICATIONS

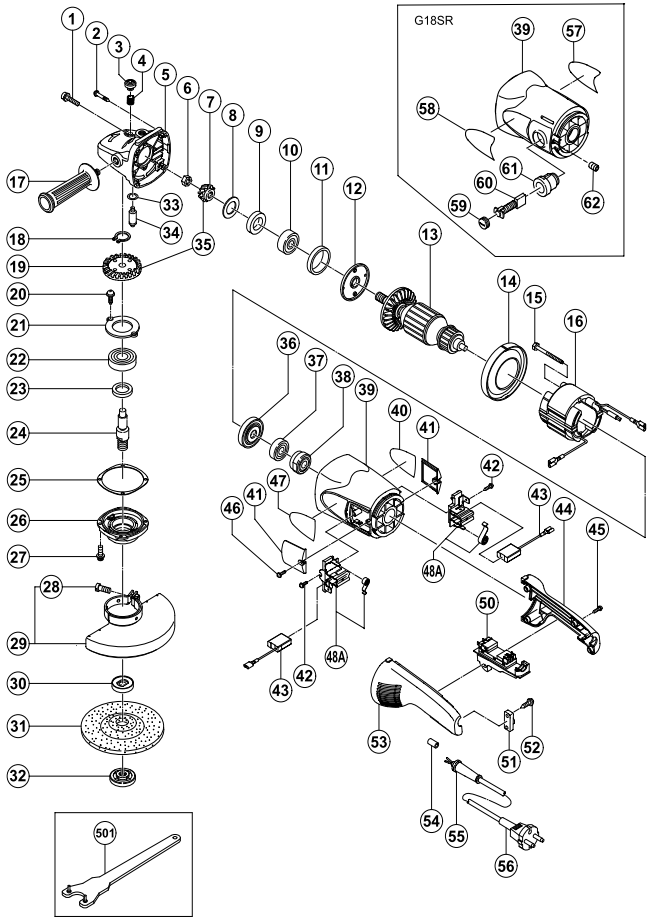
Hitachi Power Tools are constantly being improved and modified to incorporate the latest technological advancements.

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.

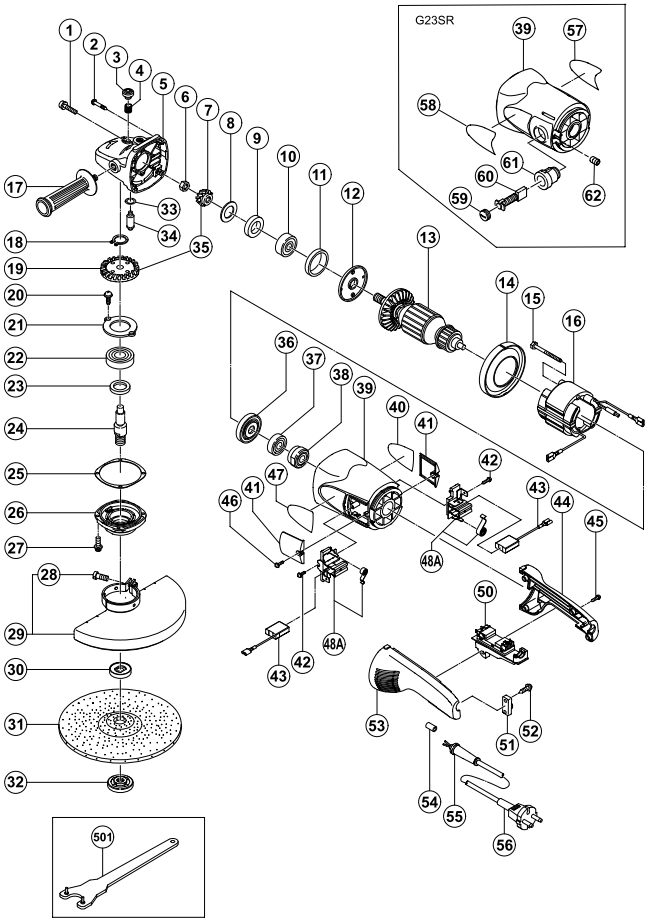
G18SH2 • G18SR



A	B	C	D
1	315-636	2	M5×14
2	301-654	4	D5×35
3	306-888	1	
4	320-219	1	
5	320-217	1	”3, 4, 33, 34”
6	320-226	1	M10
7	320-243	1	
8	320-221	1	
9	320-222	1	
10	630-1DD	1	6301DDUCMPS2S
11	994-208	1	
12	320-220	1	
13-1	360-558E	1	220V-240V “G18SH2”
13-2	360-762E	1	220V-240V “G18SR”
14	320-215	1	
15	961-501	2	D5×60
16-1	340-501E	1	220V-230V “G18SH2”
16-2	340-664E	1	220V-230V “G18SR”
17	937-981	1	
18	939-542	1	
19	320-242	1	
20	949-236	2	M5×10
21	320-229	1	
22	630-2DD	1	6302DDUCMPS2S
23	990-852	1	
24	320-234	1	
25	320-228	1	
26	320-227	1	
27	994-192	4	M5×16
28	306-887	1	M8×22
29	306-124	1	”28”
30	937-907Z	1	
31	316-824	1	180MM A24R

A	B	C	D
32	937-909Z	1	M14×2
33	320-218	1	
34	306-890	1	
35	320-241	1	”7, 19”
36	320-216	1	
37	600-0VV	1	6000VVCMPS2L
38	320-244	1	
39-1	320-214	1	”38”
39-2	325-640	1	”38, 61, 62”
40	————	1	
41	320-232	2	
42	305-812	2	D4×16
43-1	999-089	1	
43-2	999-061	1	
44-1	320-231	1	
44-2	325-641	1	“G18SR”
45	305-812	4	D4×16
46	305-812	2	D4×16
47	————	1	
48A	322-323	2	
49	320-245	2	
50	320-239	1	
51	960-266	1	
52	984-750	2	D4×16
53-1	320-230	1	
53-2	325-642	1	“G18SR”
54	981-373	2	
55-1	958-049	1	D8.2
55-2	940-778	1	D10.7
56	————	1	
57	————	1	
58	————	1	
59	940-540	2	
60-1	999-044	1	
60-2	999-074	1	AUTO STOP
61	980-487	2	
62	938-477	2	M5×8
501	937-913Z	1	

G23SF2 • G23SR



A	B	C	D
1	315-636	2	M5×14
2	301-654	4	D5×35
3	306-888	1	
4	320-219	1	
5	320-217	1	”3, 4, 33, 34”
6	320-226	1	M10
7	320-225	1	
8	320-221	1	
9	320-222	1	
10	630-1DD	1	6301DDUCMPS2S
11	994-208	1	
12	320-220	1	
13-1	360-558E	1	220V-240V “G23SF2”
13-2	360-762E	1	220V-240V “G23SR”
14	320-215	1	
15	961-501	2	D5×60
16-1	340-501E	1	220V-230V “G23SF2”
16-2	340-501F	1	240V “G23SF2”
16-3	340-664E	1	220V-230V “G23SR”
16-4	340-664F	1	240V “G23SR”
17	937-981	1	
18	939-542	1	
19	320-224	1	
20	949-236	2	M5×10
21	320-229	1	
22	630-2DD	1	6302DDUCMPS2S
23	990-852	1	
24	320-234	1	
25	320-228	1	
26	320-227	1	
27	994-192	4	M5×16
28	306-887	1	M8×22
29	306-120	1	”28”
30-1	937-907Z	1	
30-2	937-908Z	1	”AUS”
31	316-825	1	230MM A24R
32	937-909Z	1	M14×2

A	B	C	D
33	320-218	1	
34	306-890	1	
35	320-223	1	”7, 19”
36	320-216	1	
37	600-0VV	1	6000VVCMPS2L
38	320-244	1	
39-1	320-214	1	”38”
39-2	325-640	1	”38, 61, 62”
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41	320-232	2	
42	305-812	2	D4×16
43-1	999-061	1	
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50-1	320-239	1	
50-2	320-238	1	”AUS”
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57	————	1	
58	————	1	
59	940-540	2	
60-1	999-044	1	
60-2	999-074	1	AUTO STOP
61	980-487	2	
62	938-477	2	M5×8
501	937-913Z	1	

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