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|-------------------------|-------------------|
| 说明书材质要求：105g 有光铜版纸      | 说明书成品尺寸：105*143mm |
| <div>Black (单色印刷)</div> |                   |
| 折叠方式：风琴折 (20P 以下用风琴折)   | 备注：               |
| 特别注意：此页内容不印刷            |                   |

|                                                                                                                                                                                                                                                                                    |    |    |    |    |    |    |    |    |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                                           |    |    |    |    |    |    |    |    |    |    |   |   |   |   |   |   |   |   |   |    |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|----|----|----|----|----|---|---|---|---|---|---|---|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----|----|----|----|----|----|----|----|----|----|---|---|---|---|---|---|---|---|---|----|
| <p>风琴折 + 对折 页面顺序</p> <p>16P 页面顺序</p> <table><tr><td>9</td><td>10</td><td>11</td><td>封面</td></tr><tr><td>12</td><td>13</td><td>14</td><td>封底</td></tr></table><br><table><tr><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>5</td><td>6</td><td>7</td><td>8</td></tr></table> | 9  | 10 | 11 | 封面 | 12 | 13 | 14 | 封底 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | <p>20P 页面顺序</p> <table><tr><td>11</td><td>12</td><td>13</td><td>14</td><td>封面</td></tr><tr><td>15</td><td>16</td><td>17</td><td>18</td><td>封底</td></tr></table><br><table><tr><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td></tr><tr><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr></table> | 11 | 12 | 13 | 14 | 封面 | 15 | 16 | 17 | 18 | 封底 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 9                                                                                                                                                                                                                                                                                  | 10 | 11 | 封面 |    |    |    |    |    |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                                           |    |    |    |    |    |    |    |    |    |    |   |   |   |   |   |   |   |   |   |    |
| 12                                                                                                                                                                                                                                                                                 | 13 | 14 | 封底 |    |    |    |    |    |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                                           |    |    |    |    |    |    |    |    |    |    |   |   |   |   |   |   |   |   |   |    |
| 1                                                                                                                                                                                                                                                                                  | 2  | 3  | 4  |    |    |    |    |    |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                                           |    |    |    |    |    |    |    |    |    |    |   |   |   |   |   |   |   |   |   |    |
| 5                                                                                                                                                                                                                                                                                  | 6  | 7  | 8  |    |    |    |    |    |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                                           |    |    |    |    |    |    |    |    |    |    |   |   |   |   |   |   |   |   |   |    |
| 11                                                                                                                                                                                                                                                                                 | 12 | 13 | 14 | 封面 |    |    |    |    |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                                           |    |    |    |    |    |    |    |    |    |    |   |   |   |   |   |   |   |   |   |    |
| 15                                                                                                                                                                                                                                                                                 | 16 | 17 | 18 | 封底 |    |    |    |    |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                                           |    |    |    |    |    |    |    |    |    |    |   |   |   |   |   |   |   |   |   |    |
| 1                                                                                                                                                                                                                                                                                  | 2  | 3  | 4  | 5  |    |    |    |    |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                                           |    |    |    |    |    |    |    |    |    |    |   |   |   |   |   |   |   |   |   |    |
| 6                                                                                                                                                                                                                                                                                  | 7  | 8  | 9  | 10 |    |    |    |    |   |   |   |   |   |   |   |   |                                                                                                                                                                                                                                                                                                           |    |    |    |    |    |    |    |    |    |    |   |   |   |   |   |   |   |   |   |    |

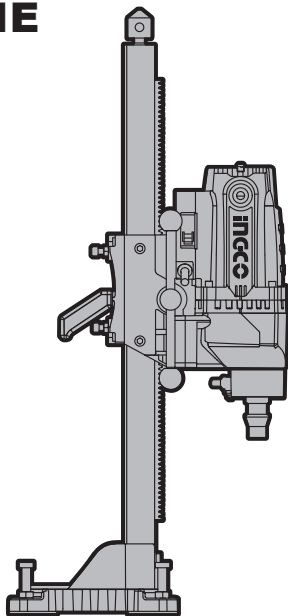
|      |          |            |     |  |  |
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| 更改记录 | 1. 非自制工厂 |            |     |  |  |
|      | 1223.V03 | 2023.12.21 | YJJ |  |  |
|      | 版本号      | 日期         | 设计师 |  |  |

# INGCO

[www.ingco.com](http://www.ingco.com)

**PRODUCT  
MANUAL**

## DIAMOND DRILLING MACHINE



**DDM28001 DDM28001xy**  
**x (blank, 1,2,3,4,5,6,7,8,9,E,S,A,M)**  
**y (blank, -1,-2,-3,-4,-5,-6,-7,-8,-9,E,S,A,M)**



**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.*

**1) Work area safety**

- a) **Keep work area clean and well lit.** *Cluttered or 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 or 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.*
- f) **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.*

### 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 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.*
- c) **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.*
- 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 and clothing 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 dust collection can reduce dust-related hazards.*
- h) **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.*

### 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 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.*
- 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 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.*
- 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, 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.**
- h) **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.*

## 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.*

## THE SYMBOLS IN INSTRUCTION MANUAL

|                                                                                    |                                                                                                                                                                                       |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|   | Double insulated for additional protection                                                                                                                                            |
|    | Read the instruction manual before using.                                                                                                                                             |
|    | CE conformity.                                                                                                                                                                        |
|    | Safety alert.<br>Please only use the accessories supported by the manufacturer.                                                                                                       |
|    | Wear safety glasses, hearing protection and dust mask.                                                                                                                                |
|    | Wear safety gloves                                                                                                                                                                    |
|    | Wear safety boots                                                                                                                                                                     |
|  | Waste electrical products should not be disposed of with household waste.<br>Please recycle where facilities exist. Check with your Local Authority or retailer for recycling advice. |
|  | Recycle waste material                                                                                                                                                                |

## ADDITIONAL SAFETY WARNING

### WARNING

- a) **The drive unit must always be mounted on the drill stand when in use** and the drill stand secured adequately by means of an anchor, vacuum base plate or quick-release brace.
- b) **Manipulation or modification of the drive unit, drill stand or accessories is not permissible.** To avoid the risk of injury, use only original accessories and insert tools.
- c) **Observe the information printed in the operating instructions** concerning operation, care and maintenance.
- d) **Observe the safety precautions and operating instructions for the accessories used.**
- e) **Do not use a hammer or other heavy object when making adjustments to the baseplate.**
- f) **The drive unit, drill stand, accessories and insert tools may present hazards** when used incorrectly by untrained personnel or not as directed.
- g) **The machine may be operated only when connected to an adequately rated electric supply** equipped with an earth / ground conductor.

## RESIDUAL RISKS

Even when the power tool is used as prescribed it is not possible to eliminate all residual risk factors. The following hazards may arise in connection with the power tool's construction and design:

- a) Health defects resulting from vibration emission if the power tool is being used over longer period of time or not adequately managed and properly maintained.
- b) Injuries and damage to property due to broken accessories that are suddenly dashed.

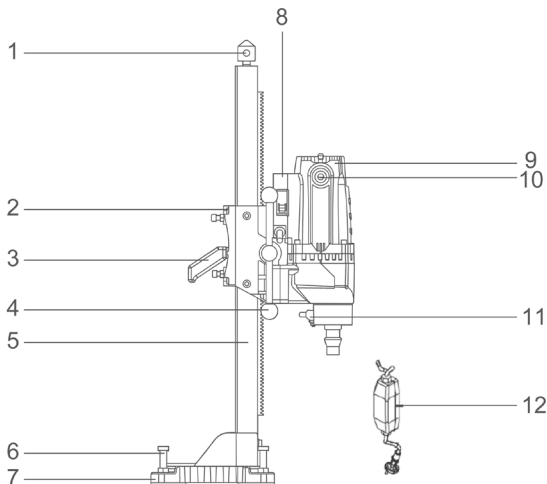
### WARNING

**This power tool produces an electromagnetic field during operation. This field may under some circumstances interfere with active or passive medical implants. To reduce the risk of serious or fatal injury, we recommend persons with medical implants to consult their physician and the medical.**

## INTENDED USE

The power tool designed for wet core drilling in mineral materials using diamond core bits (hand-held use is not permissible).

## SPECIFICATIONS



### Components

- |                       |                          |
|-----------------------|--------------------------|
| 1. Adjust crew device | 7. Base                  |
| 2. Moving block       | 8. Switch ON/OFF         |
| 3. Auxiliary handle   | 9. Motor housing         |
| 4. Rotate handle      | 10. Carbon brush cover   |
| 5. Column             | 11. RCD                  |
| 6. leveling screw     | 12. Water shut-off valve |

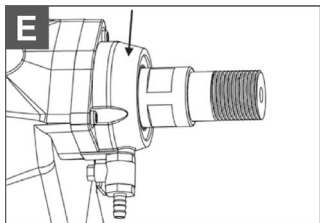
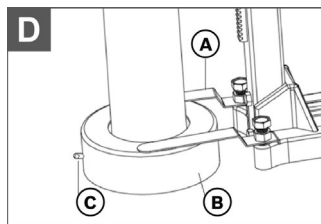
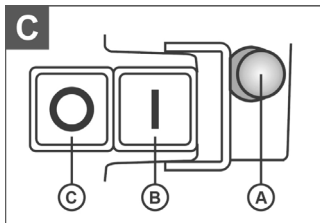
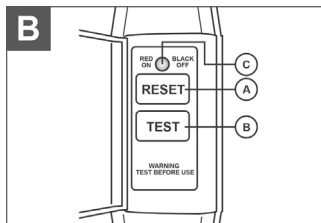
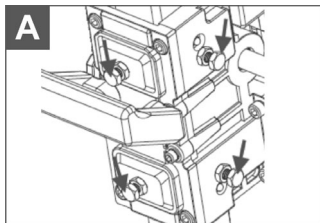
## Technical specifications

|                               |                            |
|-------------------------------|----------------------------|
| <b>Model No.</b>              | <b>DDM28001 DDM28001xy</b> |
| <b>Rated voltage</b>          | 220-240V~50/60Hz           |
| <b>Rated input power</b>      | 2800W                      |
| <b>No-load speed</b>          | 800rpm                     |
| <b>Max. drilling diameter</b> | 200mm                      |

**Model No. Note:** x (blank, 1,2,3,4,5,6,7,8,9,E,S,A,M); y (blank, -1,-2,-3,-4,-5,-6,-7,-8,-9,E,S,A,M)

- Due to our continuing program of research and development, the specifications herein are subject to change without notice.
- Accessories shown or described are not part of the standard delivery scope of the product. A complete overview of accessories can be found in our accessories program.

# OPERATION PICTURE



## OPERATION

### Assembly

#### Adjusting gib screws (see Figure A)

Make sure the cradle and motor are rigid against the column to prevent the motor or bit from wobbling during operation. Before operation, try to wiggle the cradle with your hands. If the cradle is secure, it should move slowly. If it does move easily, tighten the 4 gib screws.

#### Residual current device (RCD) (see Figure B)

A reset, B test, C Indicator light

- 1) Plug in power supply socket
- 2) Press "RESET" key
- 3) Indicator light is on
- 4) Press "TEST", if light is off, RCD is functional; if light is on, RCD is losing function, please send tool to nearest authorized service center to replace RCD.

#### ON/OFF switch (see Figure C)

- A. Overload indicator
- B. ON
- C. OFF

### Operation

#### Install drill bit

- To install a bit, grease the spindle and bit threads in order to prevent corrosion and to help prevent the bit from seizing on the threaded spindle.
- Thread the bit securely onto the thread spindle.
- Let the tool run for some minutes so that drill bit is fixed firmly

### Water

Water provides two main benefits during coring:

- Water acts as a coolant, eliminating the heat caused by the friction of the coring action. This preserves the integrity of the diamonds, the bond matrix, the segment solder, and core tube. Without a coolant, the heat buildup during coring can cause all of these components to fail.

- Water flushes loose, abrasive particles created during coring. These particles consist of aggregate, sand, diamond particles and various metals from embedded steel and the core bit matrix. The hole must be free of debris to allow the core bit to work. If loose particles are not properly flushed from the hole, an unnecessary drag will occur along the side of the core barrel. This can contribute to bit glazing through lack of power as well as motor damage through amperage increases due to bit resistance. In addition, loose particles tend to wear the bit tube, which can eventually result in the loss of segments.
- Monitor water flow. Water volume should be adjusted until water return is a muddy, solid color. Clear water or clear streaks indicate too much water volume. Excess water is a leading cause of bit glazing and failure. Other factors contribute to glazing, but water adjustment is one of the most easily controlled by the operator. Excessive water prevents adequate segment/material contact. When the bit segments do not properly contact the work surface, the desired “controlled erosion” effect which maintains bit sharpness does not occur and the bit begins to glaze. This happens especially with smaller diameter bits. Adequate water volume varies according to the bit diameter. Use only enough water during coring to flush the cuttings from the work surface.

### **Supply an adequate water flow**

An adequate supply of water must flow freely and constantly during the entire cut. Output shaft has hole to allow water to flow down the inside and up around the outside of the bit. This acts to cool the bit and flush cuttings from the hole.

### **Equipment**

- Make sure tool is in good operating condition. The column (E), motor connection and base (G) should all be firmly connected and should not vibrate during coring.
- Always make sure the tool's base is firmly mounted with an anchor, any movement or vibration will shorten the life of the core bit.

### **Diamond core bit**

- For the first 2 or 3 holes, use light feed pressure, so the new diamond gradually breaks in.
- Lower the bit very slowly onto the work surface. Use light feed pressure until the bit crown has penetrated or “seated” into the material.

- If the core bit encounters embedded steel, slow down the feed pressure and let the bit core at its own pace. Don't force the bit. Typically, the water around the bit will clear when embedded steel is encountered. Do not allow any vibration whatsoever or severe diamond breakage or pullout will occur.
- Keep bits sharp.

## Method for securing equipment to work surface

### WARNING

- **To reduce the risk of injury always secure the tool to the work surface to help prevent personal injury and to protect the tool.** An unsecured tool could rotate during coring and possibly cause injury.
- **This diamond drill shall not be used for overhead-drilling.**
- **Use no smaller than 15 mm expansion-type anchor and threaded rod when drilling hole in vertical wall.**
- **An adequate supply of water must flow freely and constantly during the entire cut.** Output shaft has hole to allow water to flow down the inside and up around the outside of the bit. This acts to cool the bit and flush cuttings from the hole.
- **Use no smaller than 15 mm expansion-type anchor and threaded rod when drilling hole in vertical wall.**

### NOTE

**Some building materials contain steel reinforcements. Diamond drill bit can cut through embedded steel, but are not recommended for coring solid steel plates.**

- 1) Install an expansion-type anchor in work surface firmly.
- 2) Install a threaded rod into expansion-type anchor.
- 3) Mounting the tool and let's threaded rod through the slot located in the tool's base.
- 4) Install washer and nut, tighten nut firmly.
- 5) Level the tool with the four leveling screws (F).
- 6) Make sure tool is fixed on work surface firmly.

**Start tool**

- 1) Plug in
- 2) Switch "RESET" key, the light of RCD is lighting
- 3) Turn switch on

**Operation procedure (see Figure B-C)**

- 1) Select and install a bit according to demand.
- 2) Secure the tool to the work surface using the method described in "Methods for Securing Equipment to Work Surface".
- 3) Connect the water hose to the water shut-off valve (L) and the water supply. Make sure the seal is watertight. Use a standard garden hose if you require additional length. Set up a water collection system.
- 4) Switch on the tool; turn the water on so it flows freely through the water shut-off valve (L). Adjust to an appropriate water flow.
- 5) While holding the auxiliary handle (C), slightly loosen Star Knob Screw and slowly rotate the rotate handle (D) to lower the bit into the work piece, applying steady, even pressure. To help reduce bit wandering, always use a light load to start the hole and wait for the tip of the bit to penetrate the work surface completely before increasing the load.
- 6) Use sufficient pressure so the bit cuts constantly. Pay attention to over-load indicator (refer to the position of ON/FF switch), if indicator lighting, it means the load is heavy, please light load.

**⚠ NOTE**

**If the tool shifts during coring, stop the motor, reposition the tool and resume coring.**

- 7) Monitor the water flow. Generally, water should flow at a rate of approximately one to two gallons per minute. If the water flow is too heavy, the three holes in the water swivel housing will leak. If that happens, reduce water flow. Water flow is adequate when the water and cuttings are flushed in a circular pattern about 1/2" around the bit. Keep the work area dry.
- 8) When the cut is complete, keep the drill motor ON and rotate the rotate handle (D) to remove the bit. The bit may become stuck in the hole if you turn the motor OFF before the bit is completely removed. Once the bit is removed from the work surface, turn the motor OFF. Tighten Star Knob Screw.

## Operator technique

- Core with consistent, firm feed pressure. Do not subject the bits to sudden impacts. Uneven feed rate cracks diamonds. Low feed pressure polishes diamonds, slows penetration and contributes to bit glazing.
- High feed pressure can overload the drill motor or can cause diamonds to pull out prematurely, particularly when coring embedded steel.
- Make the bit work, but do not try to jam the bit through the material.
- If vibration occurs:
  - Stop drilling.
  - Turn motor off.
  - Check for loose bolts, nuts and gib screws. Tighten if required.
  - Check for bit run out. Replace if required
- If vibration continues to occur, remove the core and loose material.
- If vibration continues to occur after attempting these measures, return the tool to the nearest authorized service center.

## Carbon brushes

- The carbon brushes are a normal wearing part and must be replaced when the tool could not run or too much sparkle.
- Carbon brushes which are worn out (burned, broken or shorter than limited length) have to be replaced by new ones.

## WARNING

**Always replace the brushes as a pair and use the brush by original manufacturer.**

## To replace

- 1) Loose the carbon brush cover (J)
- 2) Take the worn brushes out of the holder and remove possible dust deposit with compressed air.
- 3) Place the new carbon brushes in the reverse order.
- 4) The brushes have to fall in the holders easily.
- 5) After placing the new carbon brushes, let the tool run for some minutes so that the brushes fit better.

## **Shaft seal**

The shaft seal is a normal wearing part and must be replaced when water leaked between output shaft and seal cell cover.

### **To replace**

Screw loose 3 bolts in seal cell cover

Take the worm seal out of cell cover

Replace 2 new seal into cell cover

Install cell cover.

## MAINTENANCE&MALFUNCTIONS

### Possible malfunctions and methods of their eliminations

| Malfunction                                                                                   | Probable causes                                                                                                                                                                                                                  | Actions                                                                                                                |
|-----------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| When the machine is turned on, the electric motor does not work.                              | <ul style="list-style-type: none"> <li>• Switch failure</li> <li>• The power cord or wiring is broken, power cord plug malfunction;</li> <li>• No brush contact with the collector;</li> <li>• Wear/damage of brushes</li> </ul> | Disconnect the machine from the mains and contact a qualified specialist.                                              |
| Formation of a circular fire on the collector                                                 | <ul style="list-style-type: none"> <li>• Brush wear/damage of the brush holder;</li> <li>• Malfunction in the armature coil</li> </ul>                                                                                           | Disconnect the machine from the mains and contact a qualified specialist. Please don't repair the machine by your own. |
| When working, smoke or the smell of burning insulation appears from the ventilation openings. | <ul style="list-style-type: none"> <li>• Malfunction in the electric motor coil;</li> <li>• Malfunction of the electrical part of the tool.</li> </ul>                                                                           |                                                                                                                        |
| Increased noise in the gearbox                                                                | <ul style="list-style-type: none"> <li>• Wear/breakage of gears or bearings</li> </ul>                                                                                                                                           |                                                                                                                        |
| When the machine is turned on, the spindle does not rotate                                    | <ul style="list-style-type: none"> <li>• Gearbox failure.</li> </ul>                                                                                                                                                             |                                                                                                                        |

### Critical state criteria

| Critical state criteria                                                                | Probable causes              | Actions                                                                                                                |
|----------------------------------------------------------------------------------------|------------------------------|------------------------------------------------------------------------------------------------------------------------|
| Cracks on the surfaces of bearing and housing parts                                    | Fatigue deformation of metal | Disconnect the machine from the mains and contact a qualified specialist. Please don't repair the machine by your own. |
| The power cord or plug is damaged                                                      | Overload or breakage         |                                                                                                                        |
| Excessive wear or damage to the motor or reductor mechanism, or a combination of signs | Fatigue deformation of metal |                                                                                                                        |

### Critical state criteria

| List of critical failures                                                                                                           | Actions                                           |
|-------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| Electric motor sparking                                                                                                             | It is necessary to contact a qualified specialist |
| The appearance of extraneous noise                                                                                                  | It is necessary to contact a qualified specialist |
| If the above malfunctions are detected, it is necessary to disconnect the machine from the mains and contact a qualified specialist |                                                   |



