

# HRG-200 Bit Grinder Manual

## 一. Pay attention when you receive the cargo

Please open the package for checking once you receive it.

(1) Is there any damage to the grinder?

(2) Is the quantity same to your order?

If you find damage of the machine or lack of quantity, please send the information to HardROC directly or through our agents.

## 二. Warranty

The warranty period of the bit grinder is 12 months after you receive it.

## 三. Technical parameters

HRG-200 Bit Grinder	
Spindle Speed	20000 RPM
Power Output	1.5 KW
Working Air Pressure	0.5-0.63MPa
Air Consumption	2.0m <sup>3</sup> /min
Max. Water Pressure	4bar
Air Hose Diameter	16mm
Water Hose Diameter	8mm
Button range for grinding	Φ7mm-25mm
Weight excl. packaging	3kg
Weight incl. packaging	5kg
Packing Size	340x335x150 mm
Sound Level	80 dB



#### 四. Warning

The operation pressure can't be more than 7 bar.

#### 五. Safety Cautions

WARNING: Recommends complying, with the instruction, procedures and recommendations of this manual, to adopt all precautions suggested by the technique and to comply with the accident prevention rules in force.

#### **Safety prescriptions**

The installation, maintenance, and utilization of the machine is reserved to specialized staff. Before making any cleaning or maintenance intervention verify having disconnected the power supply.

Do not remove the fixed protections of the machine protecting the mobile elements.

Do not put the hands in the parts where there is danger of crushing and/or trapping.

The operator should stay by the controls group in the most distant and protected position.

The make and control the working operations the operator has to position himself always behind the controls group.

The handling of the machine or part of it has to be made with the machine idle, the power supply disconnected, by specialized staff with the appropriate tools.

If it is necessary to replace the machine components, use original spare parts exclusively.

#### **RISKS HIGHLIGHTED BY THE ANALYSIS OF DAGERS AND DANGEROUS SITUATIONS DURING THE WORK**

Cuts and abrasions

Flying chips

#### **PREVENTION MEASURES AND INSTRUCTIONS FOR MACHINES OPERATORS**

##### BEFORE USE:

Check that the machine is stable and that the grinder is correctly and tightly fitted to the machine.

Check the integrity of the guards protecting parts in motion.

##### DURING USE:

Report immediately any inappropriate functioning or dangerous situations;

The operator's position needs to be such as not to be in contact with the parts in movement;

Do not remove or modify protection devices;

Do not intervene on mobile parts during the functioning of the machine;

Do not get distracted.

##### AFTER USE:

Correctly position the machine without leaving the tool suspended;

Carry out the review and maintenance operations needed to reuse the machine with the power supply disconnected;

In the maintenance operations comply with the indications of this manual;

Clean the machine.

#### **INDIVIDUAL PROTECTION DEVICES**

**The operator should wear:**

- Accident prevention shoes
- Protection helmet
- protection glasses
- gloves
- auricular earphones
- it is suggested to wear padded clothes

**WARNING: HardROC denies all responsibility for possible damage to persons or objects consequent on a failure to respect the safety regulations and the recommendations in the documentation supplied.**

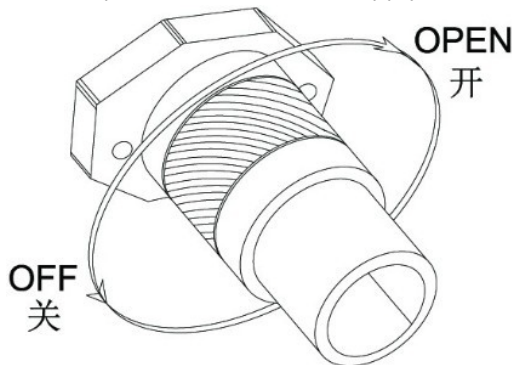
**六. How to use**

1. Open the packing box, take out the grinder and freeing shank; screw the freeing shank into the air outlet

2. Air hose connection

- A. Connect the air hose came from air compressor to the air inlet shank of the grinder (see figure)

The ball valve of the air supply hose from air compressor must be closed, to ensure there is no compressive air in the air supply hose.



If the air supply hose came from air compressor does not pass through the air filter and oil sprayer, you must connect the air supply hose to the air filter and oil sprayer. And then connect with the air inlet shank from the air filter and oil sprayer. In order to lubricate the rotor and blade, you must check the oil in the oil sprayer and make sure there is

enough lubricating oil in the oil sprayer.

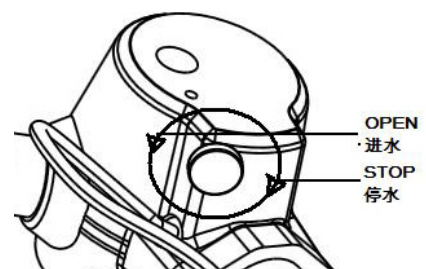
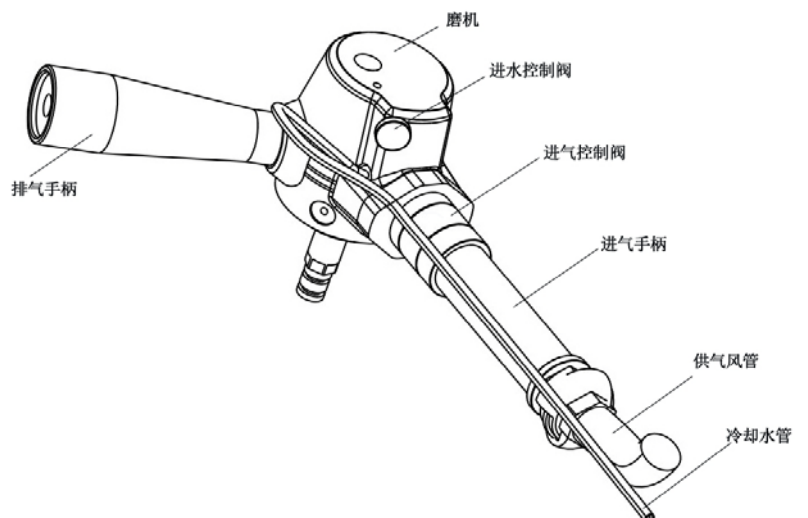
- B. Close the valve on the air inlet shank

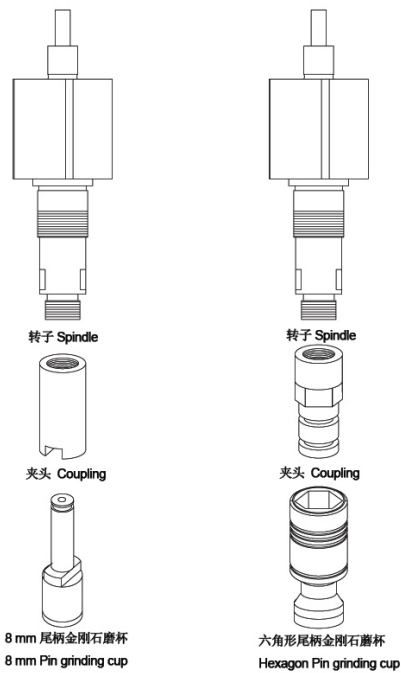
3. Cooling water connection

Attention: the water pressure of cooling water can't be more than 4 bar.

- A. Connect the cooling water hose to the cooling water hose on air inlet shank of grinder by adapter.
- B. Tighten the valve on grinder and close the cooling water hose.

4. Diamond pins assembling

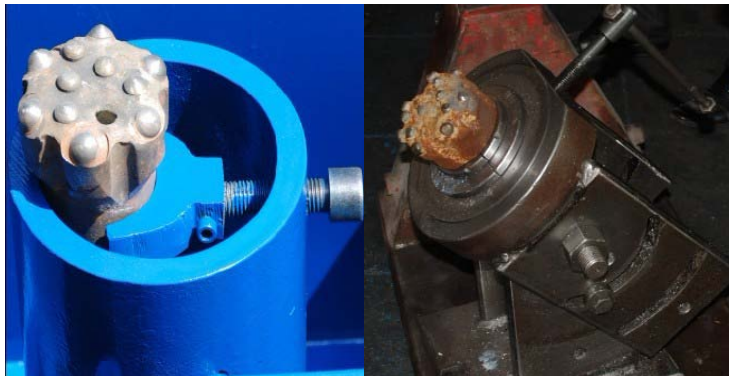




- A. Choose correct diamond pin according to the shape of the chuck on grinder.
- B. Choose correct diamond pin size according to the button size you want to grind.
- C. Check whether the "O" ring on diamond pin, chuck or output shaft have been assembled well, whether the size is correct and quality is good or not.



5. Fix the button bit well in right angle. The fixed button bit must be at the best height of grinding. Of course, you can also use our circulate pump.



6. Inspection before grinding
  - A. Check whether the grease fitting on the grinder and water hose adapter are a bit of flexible.
  - B. Check whether the air hose and water hose connection on the air inlet shank are solid.
  - C. Check whether the spring on air outlet of the shank is solid.
7. Cooling water supplying. Open the valve, cooling water run out from the center of diamond grinding pin.
 

Attention: cooling water must be supplied before the aeration to the grinder, or the "O" ring in the grinder will be damaged.
8. Compressive air supplying. Rotate the valve on air inlet shank slowly, the grinder shaft starts to rotate.
 

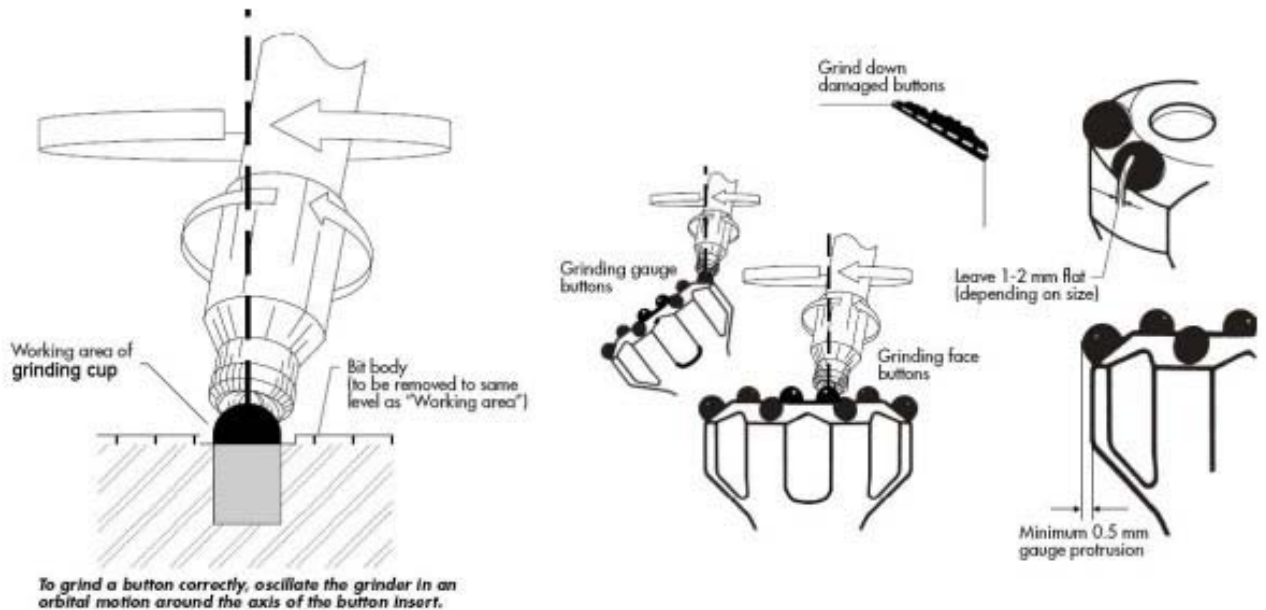
Attention: before the aeration to the grinder, take the grinder tightly to keep off dropping.
9. Put the grinding pin on the button needed to be grinded, start grinding adjust the valve and grinding speed.



Attention: when grinding, make an angle between the central line of grinder shaft and the central line of the buttons (see picture), in order to make the shape and angle are same as before. Remember don't make the central line of grinder shaft and the center on the same line, to keep off sharp point of the top of button contact with water bath on the grinding cup. After you finished grinding one button, adjust the angle of bit and buttons are grinded.



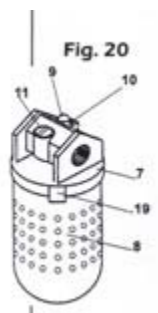
10. When you want to stop grind, close the air valve first, then close the cooling water.



## 七. LUBRICATION OIL REGULATION

Periodically and every time you want to use the grinding machine, make sure there's sufficient lubricating oil in the tank of the line oiling device (fig. 3), also called oil lubricator (pos. 3 Table 1).

Regulate the passage of the correct amount of oil using the adjustment screw (10 of fig.3) and looking into the visualizer (9 of fig.3), until you see one drop of oil fall every 3 seconds. This is the correct adjustment.



**NOTE: SCREWING UP THE REGULATION SCREW REDUCES THE PASSAGE OF OIL, UNSCREWING IT INCREASES IT.**

**Only use original spare parts**

### ADDING OIL

**ATTENTION: before performing the oil filling operations, stop the machine, close the air supply from the compressor and discharge the remaining air in the control group by opening the valve pos. 12 plate 3. This is important because it is dangerous to remove the plug from the lubricator group with the control group under pressure.**

To add oil to the tank with the machine at a standstill and not supplied, unscrew the plug pos.

11(Fig.20) and add oil or directly release the tank by pressing the button pos.19 (Fig.20) and rotate the lock ring.

If the long idle periods are foreseen, or if the machine is made to operate after being idle for a long time, pour oil directly into the supply inlets of the rotating head and the advance motor and rotate them slowly for a few turns to lubricate the mechanical parts well.

**Oil to use:** MOBIL ALMO 525 O SHELL TORCULA 100. If these are not available, use an equivalent oil, or anyway one which is rather fluid.

**Grease to use:** ROL-OIL ALCOPLEX 2 or equivalent

#### **PERIODICAL CONTROLS:**

**Daily:** check the oil level in the line lubricator.

#### **MAINTENANCE**

The rock sharpening machine has an incorporated pneumatic oiling device capable of guaranteeing constant motor lubrication (pos. 3 Plate 1).

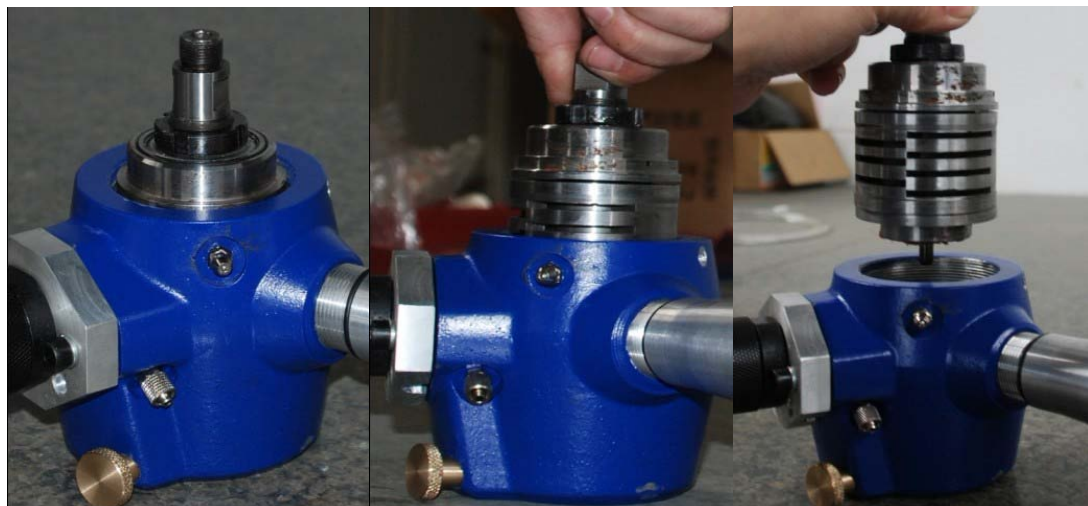
If lubrication is insufficient, the centrifuge limiting device of the motor may be damaged. For the machine to work safely, it is necessary to perform the maintenance operations correctly at regular intervals. When making repairs or overhauling the machine, it is necessary to check that the screws and threads are not worn or damaged.

#### **八. Assembling or disassembling**

Please use special tool to assemble or disassemble.

Disassembling:

1. Remove the air and water supplying hoses from grinder's shank.
2. Take out the screw (7)
3. Screw out front cover (19) clockwise from the grinder.



4. Clip the out shell (2) by tool and hold the front part of the shaft (14) .Take off the axis (14),front cover, cylinder, rear cover, bearings (9-18) from the out shell along the direction of axis slightly. If it's too tight to pull them out ,you can slightly shake the axis first and then tap them out slightly with equal strength along the direction of axis with tool . Avoid overexert,



or the intine of the out shell (2) will be damaged.

5. Use special tool take off the front bearing seat (16),bearing and back bearing seat(11) from the axis. Be sure not to tap the two sides of the axis in case of the damage of the external of the front bearing seat(16) , back bearing seat(11) and cylinder.

**Assembly:**

1. Load the top of axis into the back bearing seat (11).
2. Put the four blade into the trench of the rotator respectively.
3. Cover the cylinder(13) on the rotator ,then fix the cylinder(13) and the back bearing seat(11) by locating pin.(The air intake of them is aligned and connected).
4. Then put the front of the rotator into the front bearing seat(16),in order to make the bottom of the back bearing seat cling with the two sides of the cylinder.
5. Rock the fore bearing(17)in the front bearing seat with the lock nut(18).
6. Put the waterstop ring(9) into the osculum which is in the inner top of the out shell.
7. Put the "O" ring (8) into the inner top of the out shell, and brush some butter in the "O" ring.
8. Hold the fore of the rotator axis and slightly put the rotator(9-18) into the out shell along the inner centerline of the out shell. Notice that the air intake of the back bearing seat should be aligned with the inner venthole of the out shell ,or the machine wouldn't work.
9. Screw the front cover(19) into front-end of the out shell counterclockwise and fix all the core part including rotation axis in the out shell.
10. Screw the setscrew (7) and lock the front cover.

**Attentions:**

1. The grinding cup must be connected solidly, keep off looseness and drop. If the O ring is broken, change it in time.
2. Ensure the fluency of cooling water when grinding, be avoid of too high temperature, or the diamond and buttons will be damaged.
3. Don't be too hard when grinding, keep off the grinding cup drop from the bit and being hurt.
4. If you find it is not so stable when put the grinding cup on button or swing strongly, please stop grinding and check whether the center of cup, chuck and grinder shaft are on one line.
5. Keep the pressure between 0.5-0.6MPa, and compressive air must pass through the filter to keep the clean air. The air hose should not be too long ( no more than 8m, the inner diameter>12mm).  
Lubricate it before grinding, close the air and water inlet port after grinding to keep off dirt into the grinder.
6. Keep the integrity of the grinder; don't demolish these spare parts at will.

**Regular Failure and Failure Elimination**

Fault	reason	solution
Not working or work abnormally	<ol style="list-style-type: none"> <li>1. The cove is not opened</li> <li>2. Blade is too long, too thick or damaged</li> <li>3. The spare parts are not clean or lubricating oil</li> </ol>	<ol style="list-style-type: none"> <li>1. Adjust the gap between rotor and cove</li> <li>2. Grinding the blade or change it</li> <li>3. Clean the spare parts,</li> </ol>

	viscosity is too high	choose right lubricating oil
Performance declined	<ol style="list-style-type: none"> <li>1. lack of air pressure</li> <li>2. Air filter is obstructed by dirt</li> <li>3. Too big gap between 2 sides of rotor and shear point</li> <li>4. Not lubricated enough</li> </ol>	<ol style="list-style-type: none"> <li>1. Ensure air flow and air pressure</li> <li>2. Check and keep it clean</li> <li>3. Change spare parts, adjust the gap</li> <li>4. Lubricate periodically</li> </ol>
Too much air consumption	<ol style="list-style-type: none"> <li>1. Air leak</li> <li>2. Wrong size of blade or damaged</li> <li>3. Too big gap between 2 sides of rotor and front &amp; back cover</li> </ol>	<ol style="list-style-type: none"> <li>1. Check hose and connection</li> <li>2. Change blade</li> <li>3. Adjust the distance</li> </ol>
Grinding cup swings strongly	<ol style="list-style-type: none"> <li>1. Grinding cup is damaged</li> <li>2. Chuck out-of-centre</li> <li>3. Shaft is damaged and too big gap</li> </ol>	<ol style="list-style-type: none"> <li>1. Change grinding cup</li> <li>2. Change chuck</li> <li>3. Change shaft</li> </ol>
Cooling water flow into air chamber	<ol style="list-style-type: none"> <li>1. Water O ring is damaged</li> <li>2. Water outlet port of the inner top of out shell is damaged, inner diameter is too big</li> <li>3. The end part of rotor shaft is heavily damaged, or deformed</li> </ol>	<ol style="list-style-type: none"> <li>1. change water O ring</li> <li>2. change out shell</li> <li>3. change rotor</li> </ol>

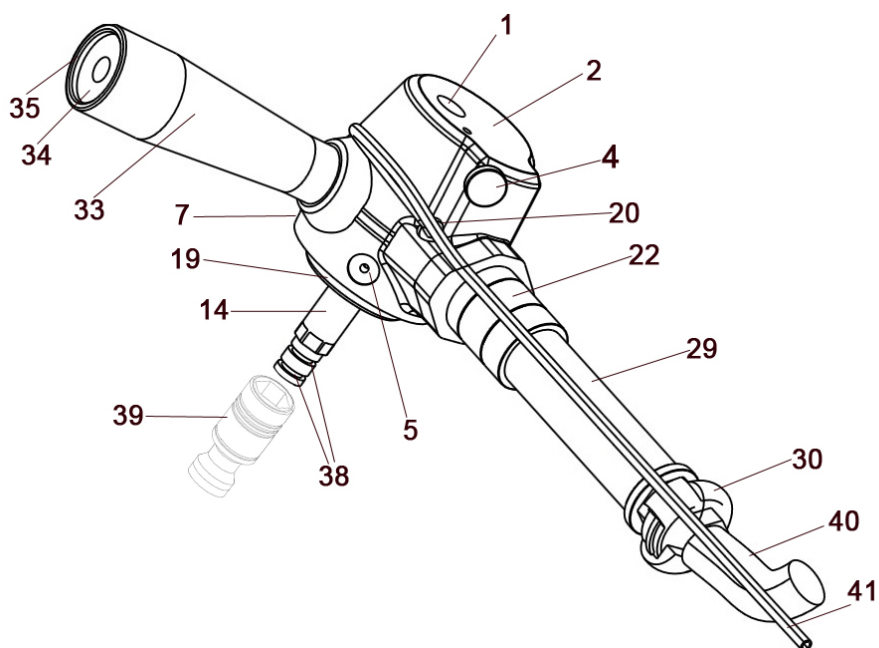


PLATE 1 BTON-200



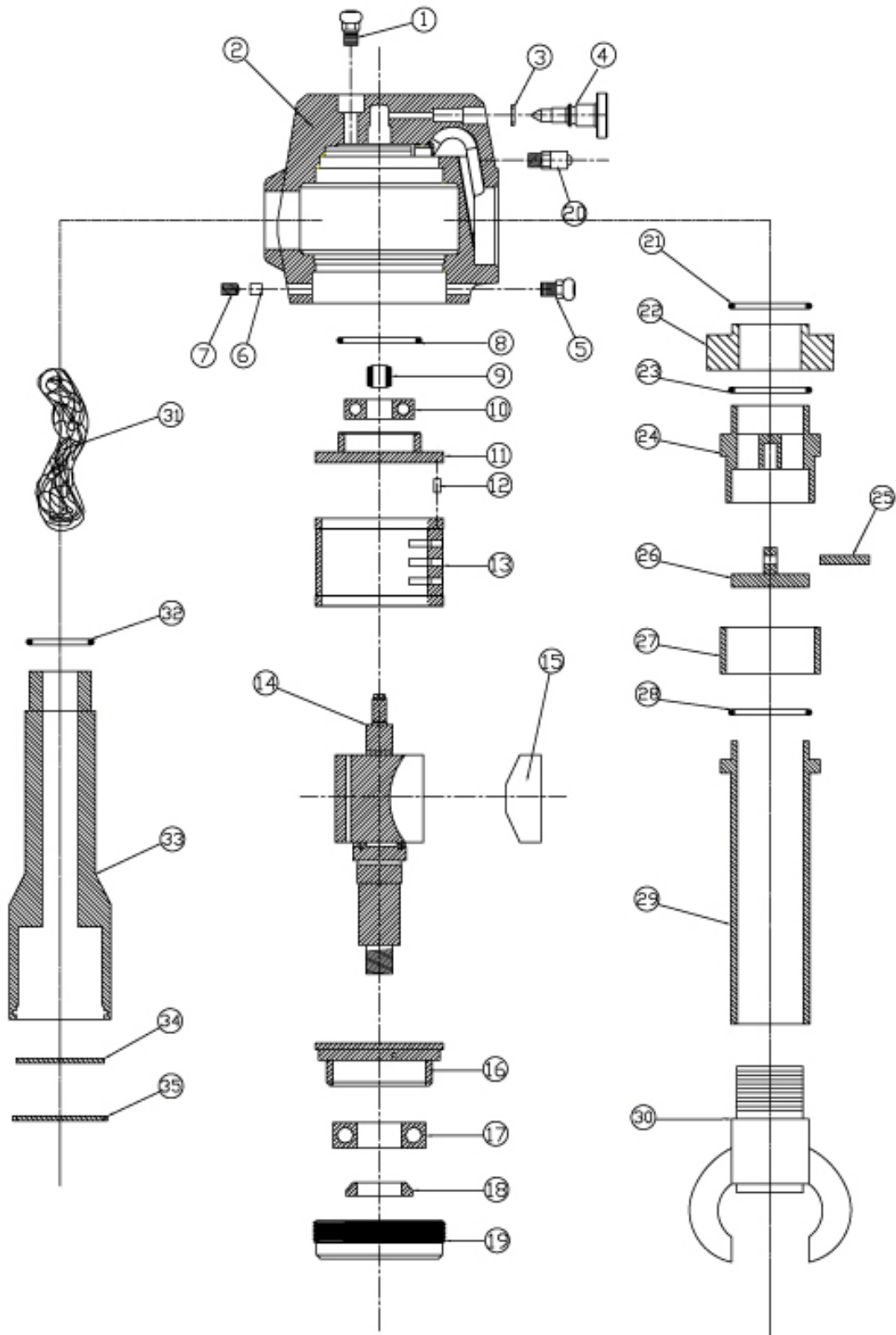


PLATE 2-Spare parts code

BTON-200 Spare part code:

Item No.	Part name		Quantity
1	黄油嘴	grease fitting	1
2	外壳	Outer Casing	1
3	O 形圈	O-Ring	1
4	水开关	Water Valve	1
5	黄油嘴	grease fitting	1
6	胶垫	Plastic Plug	1
7	止停螺丝	Stop Screw	1
8	O 形圈	O-Ring	1
9	水密封圈	Sealing Ring	1
10	轴承	Bearing	1
11	后轴承座	Rear End Plate	1
12	定位销	Spring Pin	1
13	气缸	Cylinder	1
14	转子	Rotor	1
15	叶片	Vane	4
16	前轴承座	Front End Plate	1
17	轴承	Bearing	1
18	锁紧螺母	Locking Nut	1
19	前盖	Bearing Cap	1
20	进水接头	Water Coupling	1
21	O 形圈	O-Ring	1
22	进气座	Joint Base	1
23	O 形圈	O-Ring	1
24	阀座	Valve Base	1
25	园销	Pin	1
26	阀杆	Valve Pole	1
27	阀套	Switch Sleeve	1
28	O 形圈	O-Ring	1
29	进气手柄	Handgrip	1
30	进气接头	Air Hose Coupling	1
31	消音丝	Silencer	1
32	O 形圈	O-Ring	1
33	出气手柄	Exhaust-handle	1
34	挡片	Silence Backstop	1
35	卡簧	Snap Ring	1
36	8mm 夹头	8mm Pin Coupling	1
37	CME 夹头	CME Pin Coupling	1