EXTRACTION CENTRIFUGES
Operating Manual

For questions, comments, or concerns

Please call Hardware Factory Store Inc.

Call: 626.332.7744
Mon-Fri: 10:00AM - 6PM
1029 N Todd Ave, Azusa CA 91702

WARNING: To reduce the risk of injury, do not attempt to use or maintain this unit until you read and understand these instructions. Do not permit untrained persons to use or maintain

We appreciate you for choosing HFS' EXTRACTION CENTRIFUGES. Visit us online to see our full line of products available for your Business.

Content

Preface

Thank you for using our CF30 series centrifuges. This manual describes the installation, use, maintenance, maintenance and inspection of CF30 series centrifuges. Please read this manual carefully, understand the contents and the safety precautions of this product before using!

This manual should be stored with the machine for a long time.

In order to use the CF30 series centrifuge safely, please note:

Danger

Do not touch the part of the machine during operation.

Warning

Always turn off the power to the main unit during maintenance, maintenance, and inspection.

Warning

The inspection must be performed with the main unit turned off and the machine stopped.

Warning

It is forbidden to operate close to the centrifuge and set up a no-entry area.

Warning

Only personnel who are familiar with the structure, principle and operation of the centrifuge and have an operating permit can operate it.

Notice:

1. In order to prevent accidents, please post warning labels or warning notice cards.

2. The daily report, regular maintenance, etc. must be recorded in order to grasp the general status information.

3. If the operation, inspection, maintenance, etc. are unclear, please contact our company in time.

Important Attention:

1. Before using the machine, you need to remove the protection frame under the skid, details refer to the latter chapter 5 Machine installation, adjustment and commissioning.

2. You need to prepare the nitrogen to feed during the operation,the pressure is 100 - 200mbar, hour consumption is 3m3/h, and from oil nozzle, you need to add butter to do the lubrication to protect the bearing.

3. You also need to feed nitrogen from the top of the cover during the spin stage, the pressure is 30-40mbar, and hour consumption is 2-3m3/h. The air source is 0.1-0.2MPa, you have to relief the pressure to the appointment pressure above mentioned.

I. Outline

1. Type and use

The CF30 type centrifuge is a flat-plate closed centrifuge designed on the basis of the CF30 type centrifuge and immersed according to the requirements of the majority of users.

2. Main features of the machine

The centrifuge has the advantages of simple structure, novel design, convenient operation, fast and labor-saving, fully enclosed structure design, improved operating environment and avoiding cross-contamination of separated materials. The cover is equipped with a mechanical balance to assist the switch cover. This model is equipped with a special ruCF30er damper, and the basic installation type meets GMP requirements.

3. Machine selection

Stainless steel 304 is used for the contact between the model and the material. For CF30 type centrifuges, the drum diameter (mm) is divided into 30, 100, 150, 200 and other specifications. Users should select specific specifications according to the production output.

II. Technical Parameters

Item	CF30
Basket diameter (mm)	500
Volume (L)	98
Speed (r/min)	1600
Maximum separation factor	715
Loading limit (KG)	15
Motor Power(KW)	3.7
Machine weight (KG)	722
Dimensions: L×W×H (mm)	1360x860x1300
Withstand voltage (MPa)	≤0.4

III. Structure and principle

The structure of the machine is mainly composed of a V-belt, a base, a motor fixing device, a main shaft, a rotating basket, a bearing housing, a casing, a motor, a balancing device, a cover, a frame and the like. The drum is vertically installed in a closed cavity composed of a bottom plate and a casing, and the entire portion is mounted on the platform.

1. Triangle belt

Driven by a motor, the spindle rotates through a V-belt.

2. Control system

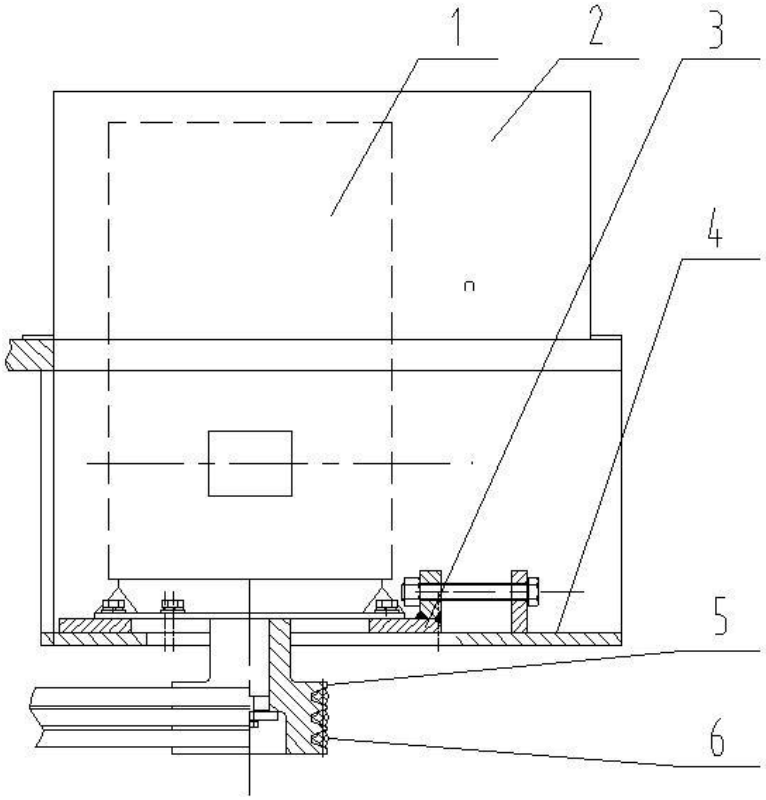
Supporting frequency conversion control system, stable start-up, program setting (completely automatic process of soaking, spinning, etc.), energy consumption braking, no friction dust pollution, and safe operation without friction heating.

3. Base part

At the six corners of the rectangular base, six rubber dampers are fixed to withstand the axial dynamic load and buffer. The drain pipe is provided on the side of the casing, and the separated liquid phase flows out therefrom.

4. Motor fixture

The motor fixing device is mounted at one end of the base and an electric motor is mounted. It consists of motor seat plate, adjusting nut and adjusting bolt.



1. Motor
2. Motor protection cover
3. Motor seat plate
4. Motor base
5. Motor pulley
6. Transmission belt

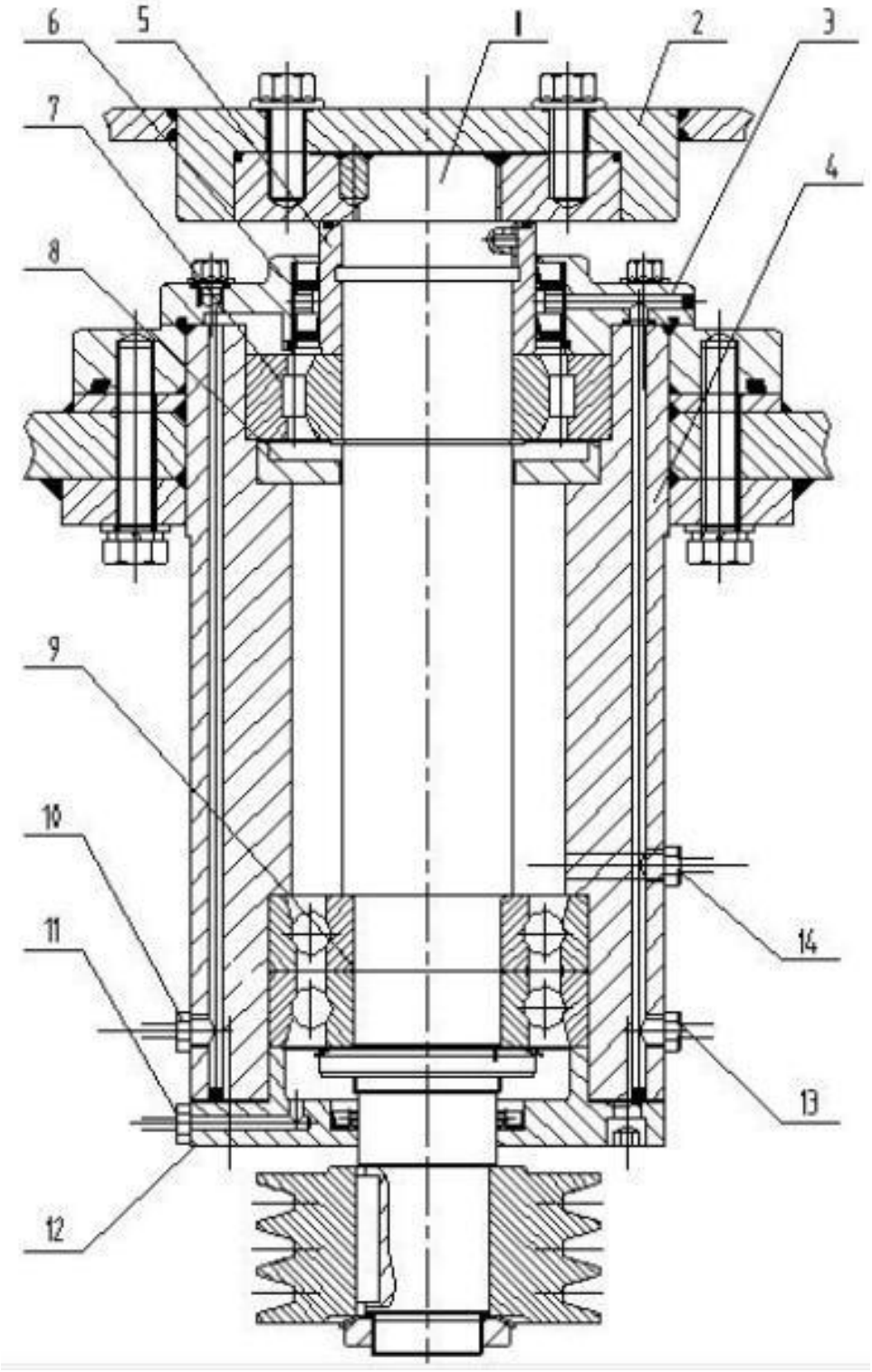
5. Basket

The basket of the centrifuge consists of the main parts such as the bottom of the basket and the backboard, and is fixed to the main shaft on the bearing seat through the mounting flange hole on the bottom of the basket, and the filter hole is densely packed on the cylinder body, and the separated liquid phase is thereby bored. Out. 100% of the axial welds of the backboard are tested by X-ray equipment, and the standard is strictly tested according to ZBJ 77002. The drum is subjected to the dynamic balance test, and the balance accuracy is checked according to the 6.3 level in the JB/T10769.2-2007 standard.

6. Bearing housing

The upper and lower ends of the main shaft are mounted with bearings, which are supported by the bearing housing and fixed by upper and lower bearing end caps and

bolts. The lower shaft end of the main shaft is fixed to the driven pulley, and the bearing seat is fixed on the base.



Schematic diagram of bearing block

1. Spindle 2. Basket bottom 3. Upper gland 4. Bearing block 5. Spindle sheath 6. Air ring 7. Cylindrical roller bearing 8. Oil retaining ring 9. Thrust ball bearing 10. Upper bearing oil filling pipe 11. Back Tubing 12. Lower gland 13. Gas seal inlet 14. Lower bearing oil pipe

7. Cabinet

The casing is composed of a flange and a casing barrel, and is welded on the platform of the machine base. The flange on the upper part of the frame is machined with a sealing groove and a sealing ring is installed.

8. Motor

The motor adopts three-phase asynchronous motor, which is divided into ordinary, explosion-proof, high-efficiency energy-saving, etc., and the user selects it according to needs.

9. Balance cylinder

Installed on the platform of the base, it has been adjusted before leaving the factory, and the unit needs no adjustment.

10. Cover

The cover is provided with a sight glass, a feeding tube, a nitrogen filling tube, a pressure detecting port, etc., and a plurality of quick opening locking buckles are arranged on the flange of the cover.

This type of centrifuge is a type of filter centrifuge that locks all mechanical locks of the cover and the housing before starting. The separation of the feed can be observed from the sight glass. The centrifuge works by using the centrifugal force generated by the high- speed operation of the rotating drum (centrifugal basket), the filtrate is separated by the filter bag lining the drum, the filter residue is left in the drum, and the filtrate flows to the collector through the liquid outlet, and the separation ends. Then cut off the power. The brakes of the machine are braked by energy (by the user). When unloading, manually open all locking buckles and open the cover.

IV. Transportation and storage of machines

1. Do not tilt and invert when lifting and transporting the machine.

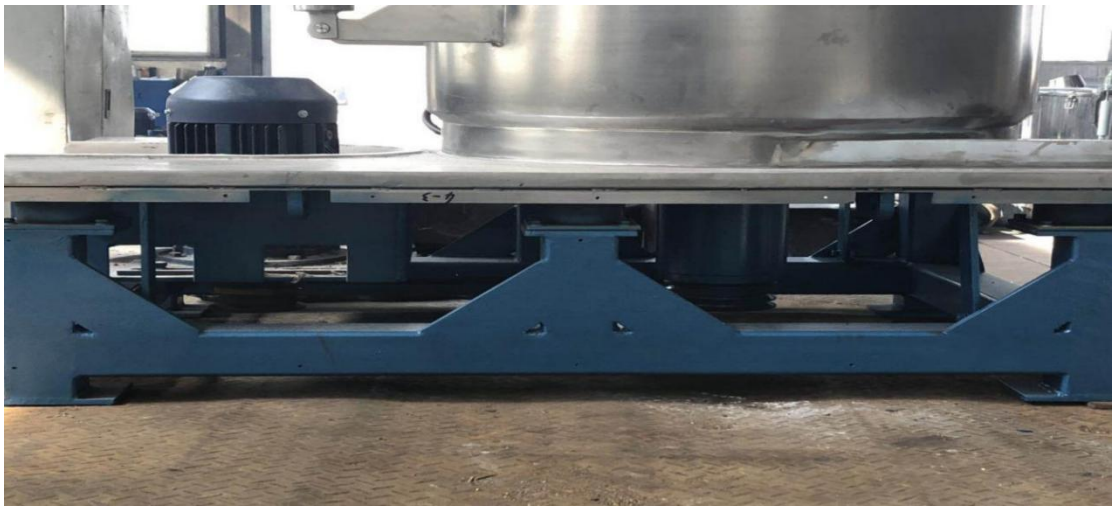
2. The machine transport uses custom packaging.

3. This machine should be stored in a place where the relative humidity is not more than 60-70%, the temperature is not higher than 40 °C, and there is no corrosive medium. It should not be stored in the open air. The electrical components such as control cabinet and operation box should be protected.

4. The warehouse is kept for more than one year, the unpainted and exposed parts should be buttered

V.Machine installation, adjustment and commissioning

1. This type of centrifuge is delivered by the whole machine and installed in the whole machine. The machine should be installed on the ground with suitable carrying capacity. The ground should be level, and the level requirement should not exceed 3 mm per square meter. Note that the four connecting plates inside the lower sealing plate are removed to make the shock absorber work: first remove the bottom sealing plate to expose the blue frame shown in Pic 1, and then connect the bottom plate and the four blocks in the frame in Pic 2. The connecting plate is removed and stored.



Pic 1

Pic 2

2. To prevent the machine from moving during operation, the four bottom plates and the bottom plate at the bottom of the rack can be fixed.

3. After the machine is installed, the following items should be noted before the test run:

(1) Check the correctness of the installation of each part and whether the fasteners are loose.
(2) Check for foreign matter in the basket and whether the filter bag is damaged.
(3) Rotating the drum by hand to rotate freely, without abnormal scratching.
(4) All the fastening handles should be locked under the cover when it is closed.

VI. Machine operation and maintenance

1. Empty load operation

After the centrifuge is checked before starting the work, start the motor to check whether the direction of rotation of the drum is the same as the direction of the arrow on the fuselage. Start the motor. After the machine reaches the rated speed, check for abnormal noise. No special situation, no operation. After 3 hours, stop the machine and check if the spindle nut and other fasteners are loose. The temperature rise is normal at 55℃ outside the ambient temperature.

2. At work

Before working, turn on the air seal of the shaft seat and pass 100~200 mbar of nitrogen gas. Fill the cover with nitrogen gas to not exceed 50 mbar. Put the material to be separated into the special filter bag and put it into the drum (note the loading amount)

Do not exceed the weight of the nameplate calibration, add appropriate amount of solvent, rotate at a low speed of 3HZ~5HZ, and after a certain time, rotate at the rated speed and completely dehydrate.

Pressure reducing valve

Centrifuge intake port

3. Unloading

The discharge of the centrifuge should be carried out after the separation is completed or the washing separation is completed. After the machine has completely stopped rotating, open the upper cover and all the locking devices to discharge.

4. Abnormal situation processing

When the machine has abnormal noise or severe vibration, stop immediately, find and try to solve the problem for the following reasons, otherwise it will reduce the life of the machine and even cause an accident.

(1) Uneven material in the drum causes abnormal vibration, and the vibration can be eliminated by evenly placing it again.

(2) Is the water outlet blocked by the crystal of the filtrate? If it is blocked, the fuselage will be filled with filtrate, and the basket will rotate in the water. The resistance will increase and vibration will occur. If this happens, the water outlet should be used. Crystallization is removed.

(3) The filter bag should be cleaned in time. The filter bag separates the fine particles for a long time, which will block the filter hole of the filter bag, so that the filtration performance is reduced, and the material flows in the basket, causing vibration.

(4) The filter bag is damaged, and the liquid passes through the damage, causing filtering vibration. Therefore, it is necessary to check frequently and replace the filter bag in time.

(5) In addition to the above reasons, the bearing housing and the chassis fastening screws are loose, and machine vibration is also generated. The deformation of the drum during use will also create imbalance. If it is not checked and eliminated, the spindle and other parts will be easily broken, resulting in an accident. After long-term use of the drum, the basket wall will be corroded and the strength will be reduced. , pay attention to check.

5. Periodic inspection

When the machine is used to separate corrosive materials, the user should formulate a regular replacement system according to the corrosion degree of the materials. Generally, the centrifuge is inspected once a month, and the drum is inspected once per shift. If drum or drum welding is found. When the seam corrosion is serious, the drum should be replaced immediately to avoid the drum explosion accident!

6. Maintenance

(1) Maintenance of bearings

Lubrication of the bearing can be carried out without disassembling the machine. There is an oil filling pipe on the bearing seat of the machine. The main bearing is injected with an appropriate amount of grease for 1000 hours. It is recommended to use low temperature butter grease for temperature -80 °C~ 200 ° C.

(2) Disassembly of the basket

Remove the bolts on the shaft end of the spindle, loosen the basket with 2 bolts, screw the two eye bolts into the process screw holes on the bottom of the basket, and thread the wire into the ring (the wire rope must ensure that the drum is balanced) Tilt) and lift the drum.

(3) Bearing replacement

After the basket is disassembled, remove the centrifuge belt, loosen and unload the bolts of the bearing housing, screw into the screw holes on the spindle with the self-made special lifting ring, and lift the spindle and the spindle seat out of the machine with the sling. Well, remove the pulley fixing device, unload the spindle pulley with the belt tweezers, remove the lower cover of the shaft seat, remove the round nut of the lower bearing, loosen the bolt of the gland on the shaft seat, and gently shake the end of the spindle with a hammer. Until the main shaft is separated from the bearing housing, the main shaft is lifted from the upper part of the shaft base, and then the tool is used to remove the lower bearing from the inner space of the shaft seat. Remove the circlip on the lower part of the upper bearing and loosen the upper bearing to remove it in the direction of the small end of the shaft. (Reference: III. Schematic diagram of the shaft seat set in the structure and diagram)

VII. Accessories: centrifuge maintenance and repair procedures

This procedure is applicable to the maintenance and overhaul of the centrifuge for the upper discharge. The maintenance and repair of other centrifuges can also be carried out.

1. Maintenance interval

1. 1 maintenance category

The maintenance categories are divided into minor repairs, intermediate repairs and overhauls.

1. 2 maintenance intervals

According to different materials and different use conditions, the maintenance interval can be selected according to Table 1 or Table 2, respectively.

Table 1

Maintenance category	Small	Medium	Large
Maintenance Interval (h)	1940---2380	7780---9500	15500--- 19000

Table 2

Maintenance category	Small	Medium	Large
Maintenance Interval (h)	1940---2380	3890---4750	7780---9500

2. Overhaul contents

2.1 Minor repair

2.1.1 Check and tighten all fasteners

2.1.2 Check and replace triangular tape

2.1.3 Check rubber shock absorbs for wear

2.1.4 Check drum balance

2.1.5 Check the bearing noise of centrifuge and motor

2.1.6 Measure centrifuge vibration intensity

2.2 Medium repair

2.2.1 Including minor repairs

2.2.2 Disassemble and clean the parts

2.2.3 Inspect and repair bearing housing and platform linings

2.2.4 Check the appearance of drum: weld; Corrosion of drum wall

2.2.5 Check the roundness of the drum

2.2.6 Check and repair the bearing hole dimensional accuracy of the bearing housing

2.2.7 Check and replace bearings

2.2.8 Check and replace rubber shock absorbers

2.2.9 Check and replace wearing parts

2.2.10 Replace grease

2.2.11 Check and repair the motor

2.2.12 The surface of the machine is anti-corrosive and painted

2.3 Overhaul

2.3.1 Including intermediate repair

2.3.2 Check and replace spindle and bolts

2.3.3 Check drum weld, repair welding and flaw detection if necessary

2.3.4 Check the drum advance balance

2.3.5 Check, repair and replace the housing if necessary

3. Maintenance quality standards

3.1 Basket

3.1. 1 Basket weld should be flat, no crack

3.1.2 After repair welding must be through the X-ray inspection, according to GB3323 "steel melting welding joint radiography and quality classification" evaluation, reach three levels is qualified.

3.1.3 Stainless steel drum surface and weld shall not have inter crystalline corrosion

3.1.4 Rotating drum hole and shaft should be in uniform contact

3.1.5 Dynamic balance test should be carried out on the drum after repair. The dynamic balance accuracy is G6.3, and the total weight shall not exceed 1/400 of the total weight of the drum

3.1.6 The drum should be kept horizontal after assembly, with radial runout no more than 0.002d (D is the inner diameter of the drum, mm)

3.2 Principal axes

3.2.1 Spindle materials, heat treatment should meet the requirements of the drawing, must be inspected by flaw detection, there is no impact on the strength of defects, if there is a defect cannot be repaired

3.2.2 Spindle bearing position, the outer circle coaxiality GB1184 "shape and position tolerance, not noted tolerance provisions" 6 accuracy

3.2.3 Axial coaxiality of outer circle of upper and lower bearing positions GB1184 intermediate 6 accuracy

3.2.4 The dimensional tolerance of the outer circle of the upper and lower bearing positions of the spindle shall conform to the drawing requirements

3.2.5 The outer roundness of the upper and lower bearing positions of the spindle GB1184 medium 6 accuracy3, 2, 6. The Ra value of the outer circle surface roughness of the upper and lower spindle bearing positions shall not be greater than 0.8um

3. 3 Bearing seat

3.3.1 The material of the replacement bearing seat is in accordance with the drawing

3.3.2 Upper and lower bearing position inner hole dimensional tolerance according to the drawing or H7

3.3.3 Upper and lower bearing positions inner hole roundness according to GB1184 level

7 accuracy, surface roughness Ra value is not more than 1.6um

3.3.4 Upper and lower bearing positions of the same degree of bearing according to

GB1184 grade 6 accuracy

3.3.5 Bearing seat and chassis with dimensional tolerance according to the chart or H7

3.3.6 Bearing housing cylindrical tolerance dimensions according to real sample preparation processing

3.4 Shock absorbers

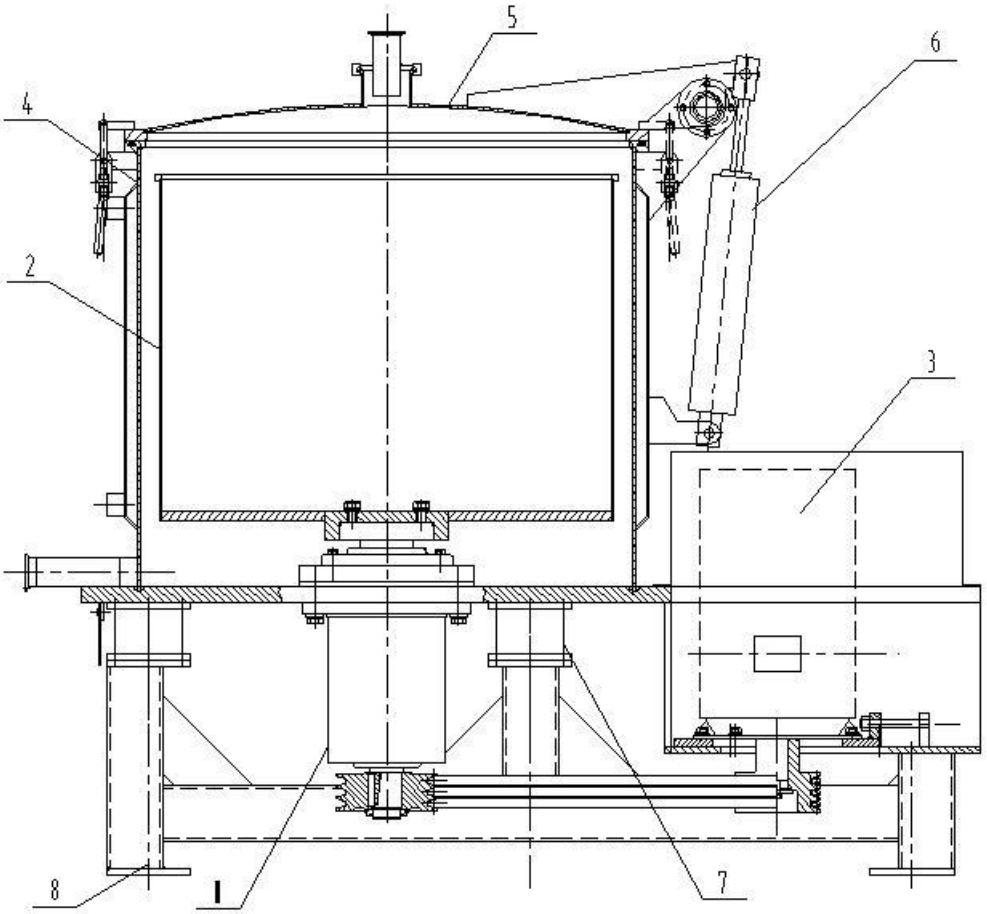
3.4.1 Shock absorber is normal or replaced

VIII. Wearing parts list

NO.	Seal Name	Material	Specifications	Single Quantity	Application Area	Remark
1	Tetrafluoride frame seal ring	PTFE	80X100X10	2	Upper gland	
2	Skeleton ring	Fluorine rubber	45X70X8	1	Lower gland	
3	O-rings	Silicone coated with tetrafluoron	Φ12X2.65	6	Spindle and process hole	
4	O-rings	Silicone coated with tetrafluoron	Φ122X3.55	1	Spindle	

5	O-rings	Silicone coated with tetrafluoron	Φ67X3.55	1	Spindle seal	
6	O-rings	Silicone coated with tetrafluoron	Φ8X2.65	6	Upper gland	
7	O-rings	Silicone coated with tetrafluoron	Φ236X7	1	Bearing housing	
8	O-rings	Silicone coated with tetrafluoron	Φ8X2.65	1	Upper gland	
9	O-rings	Silicone coated with tetrafluoron	Φ590X10	1	Flange on the outer casing	
10	Flat mat	Tetrafluoro		2	Glass	As shown in the drawings
11	V belt		A1582	3		Anti-static
12	Great Wall 7014-1 high temperature grease			1		
13	Grease feeding gun			1		
14	O-rings	Silicone coated with tetrafluoron	Φ166X3.55	1		Upper gland

IX.Diagram of CF30 centrifuge



(1)Shaft seat (2) rotary drum (3) motor (4) Case (5) Cover (6)Open power unit (7) Shock absorber (8) Frame