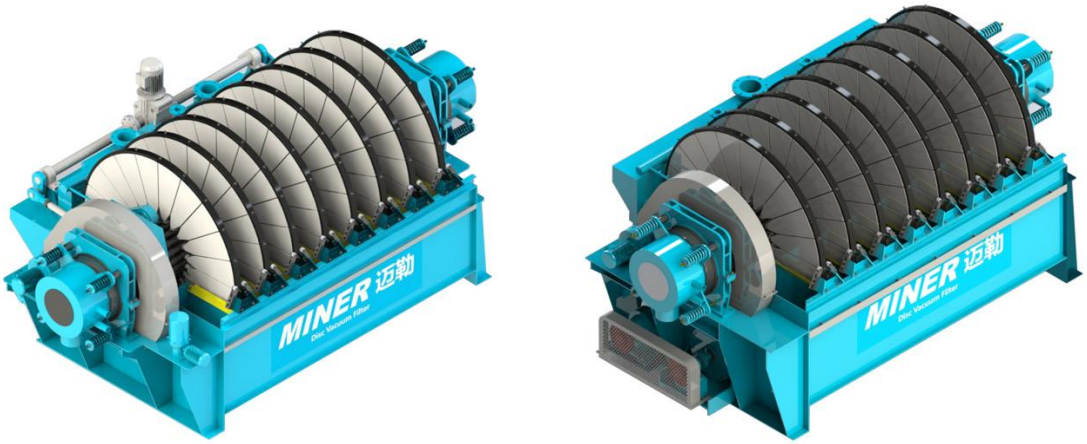
MINER 迈勒
Disc Vacuum Filter

盘式真空过滤机使用说明书
Disc Vacuum Filter Machine
Instruction Manual



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一、 概述

I. Overview

PG 型盘式真空过滤机是利用真空作为过滤动力，使浆液进行固液分离的设备。主要适用于煤炭、矿山、环保、建材、化工、电力等行业的细粒物料的过滤作业。

PG type disc vacuum filter is a device that uses vacuum as the filtering power to separate the solid-liquid of the slurry. Mainly suitable for filtering and dehydrating fine-grained materials in industries such as coal, mining, environmental protection, building materials, chemical, and power.

PG 系列盘式真空过滤机充分借鉴了国外同类产品的优点，针对物料密度大，沉降快、含固体颗粒的滤液对过滤管冲击力强的特点，对设备各部件进行了优化设计，具有结构坚固、滤盘运转平稳、自动变速强力搅拌、轴端密封可靠、陶瓷过滤管耐磨久用，滤扇强度高、孔率大，高强度滤布表面光滑、卸饼率高、使用寿命长，保证了物料在固液分离中获得优良的脱水指标。

The PG series disc vacuum filter fully draws on the advantages of similar foreign products. In response to the characteristics of high material density, fast settling, and strong impact of filtrate containing solid particles on the filter tube, the various components of the equipment have been optimized and designed. It has a sturdy structure, smooth operation of the filter disc, automatic transmission and strong stirring, reliable shaft end sealing, ceramic filter tube wear resistance and

long-term use, high strength of the filter fan, large porosity, smooth surface of high-strength filter cloth, high cake discharge rate, and long service life, ensuring excellent dehydration indicators for materials in solid-liquid separation.

型号及含义

Model and meaning

主要用于物料粒度为 100～400 目，物料浓度为 30%～60%、温度为 5℃～50℃的浆液产品脱水。

Mainly used for dewatering slurry products with material particle size of 100-400 mesh, material concentration of 30% ～60%, and temperature of 5 ℃ ～50 ℃.

二、 工作原理

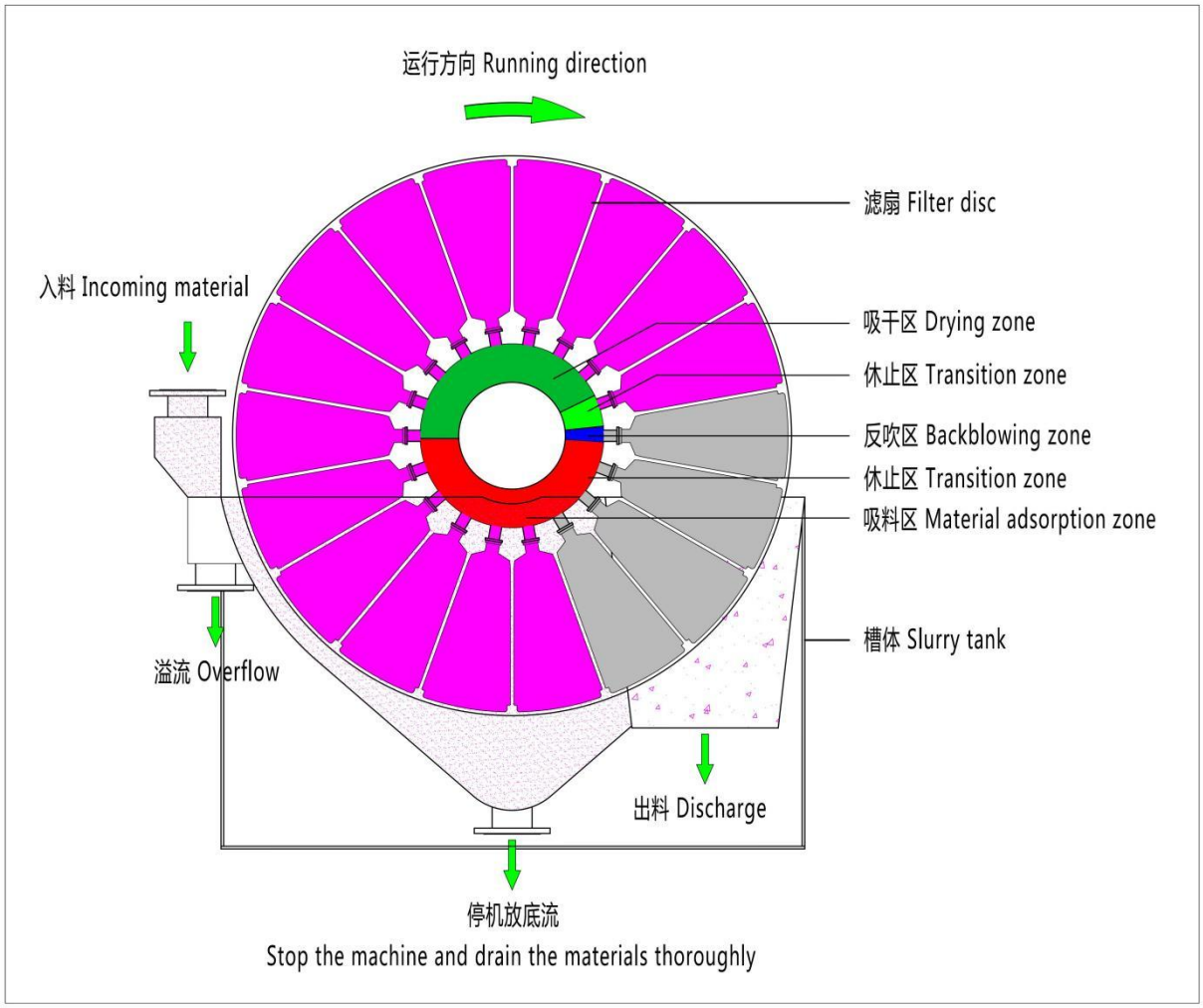
II. Operating principle

盘式真空过滤机是一种固液分离设备，过滤盘由电机通过减速机来驱动，使之在装满料浆的槽体中以一定的转速转动，在吸附区借助于真空泵在过滤介质（滤布）两侧形成的压力差，使固体物料吸附在过滤介质上形成滤饼。当过滤圆盘的这一部分从料浆中脱离而进入脱水区后，滤饼在真空的抽吸力作用下，水份

不断与滤饼分离，经滤液管及分配头排出。经卸料区后，滤饼由反吹风吹落卸下，由皮带输送机运走。整个作业过程连续不断地进行。工作原理见图 1。

图 1　　工作原理图

Figure 1　　Working principle diagram



The disc vacuum filter is a solid-liquid separation equipment. The filter disc is driven by a motor through a reducer to rotate at a certain speed in a tank filled with slurry. In the adsorption zone, the solid material is adsorbed on the filter medium (filter cloth) by the pressure difference formed on both sides of the filter medium (filter cloth) with

the help of a vacuum pump, forming a filter cake. When this part of the filter disc separates from the slurry and enters the dehydration zone, the filter cake is continuously separated from the water by the vacuum suction force, and is discharged through the filtrate tube and distribution head. After passing through the unloading area, the filter cake is blown down and unloaded by a reverse air blower, and then transported away by a belt conveyor. The entire homework process is carried out continuously.The working principle is shown in Figure 1.

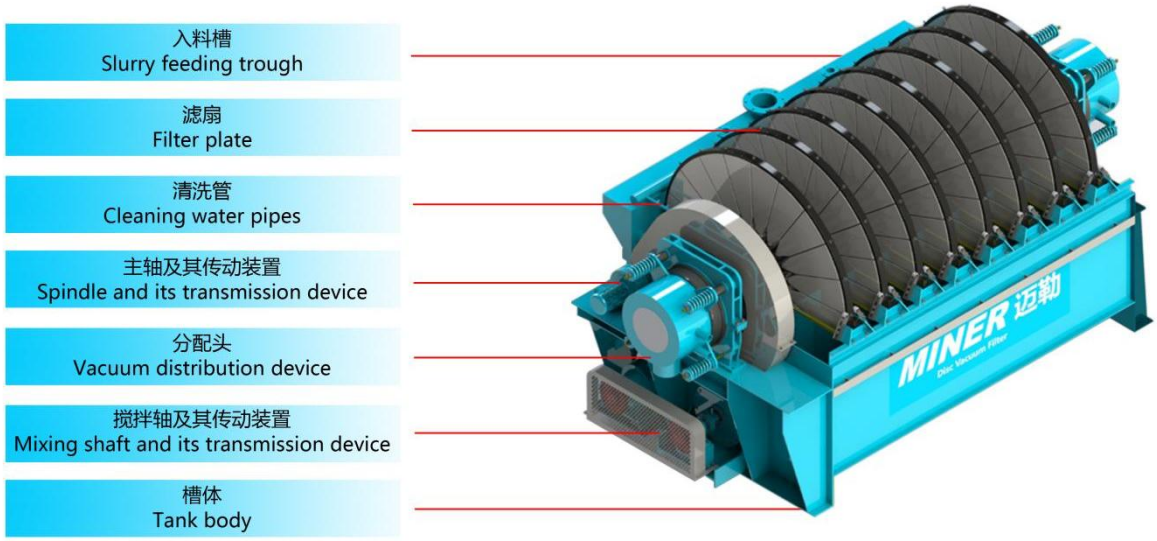
三、 主要部件结构介绍

III. Introduction to structure of main components

盘式真空过滤机结构外形如图 2 和图 3，它主要有过滤盘，导向及卸料装置，主轴，主转传动装置，左右分配头，搅拌装置，滤布清洗装置，集中润滑装置，槽体，给矿系统等主要部件组成。各主要部件分述如下：

图 2 盘式真空过滤机结构

Figure 2 Structure outline of disc vacuum filter



Structure outline of disc vacuum filter is shown as Figure 1 and Figure 2. The disc vacuum filter is mainly composed of filter disc, guiding-discharge mechanism, spindle, main drive unit, left and right distribution heads, stirring unit, filter cloth washing unit, centralized lubrication unit, trough, mineral-feeding system etc. main components. Each main component is described respectively as follows:

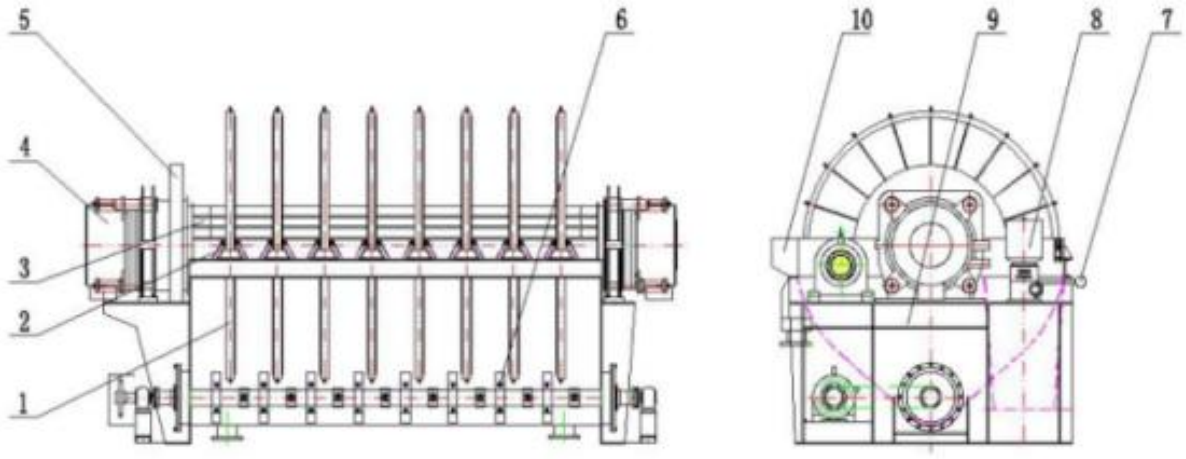


图 3 盘式真空过滤机结构

Figure 3 Structure outline of disc vacuum filter

① 滤盘 ② 卸料装置

③ 主轴 ④ 左右分配头

⑤ 主轴传动装置 ⑥ 搅拌装置

⑦ 滤布清洗装置 ⑧ 集中润滑装置

⑨ 槽体 ⑩ 给料系统

① Filter disc ② Discharge mechanism

③ Spindle ④ Left and right distribution heads

⑤ Main drive unit ⑥ Stirring unit

⑦ Filter cloth washing unit ⑧ Centralized lubrication unit

⑨ Trough ⑩ Mineral-feeding system

1、过滤盘

1.Filter disc

PG 盘式真空过滤机配有多个过滤盘，每个过滤盘上又安装又多个滤板。其结构简述如图 4：滤板上套有滤布袋，利用固定装置将扇形滤板固定在主轴的的滤液管上，同时借助圆弧压板组成一个圆环，将滤板夹紧，使整个过滤盘呈一个平面。

The PG disc vacuum filter is equipped with multiple filter discs, and multiple filter plates are installed on each filter disc. The structural description is shown in Figure 4: The filter plate is covered with a filter bag, and the fan-shaped filter plate is fixed to the filtrate tube of the spindle using a fixing device. At the same time, a circular ring is formed by using a circular arc pressure plate to clamp the filter plate, making the entire filter disc flat.

滤板由高强度工程塑料制成，表面平整，滤液通过能力大，制作滤布袋的过滤介质的材质及规格是影响过滤效果的主要因素，应根据过滤物质的性质加以选择。

The filter plate is made of high-strength engineering plastic, with a smooth surface and a large capacity for filtrate to pass through. The material and specifications of the filter medium used to make the filter cloth bag are the main factors affecting the filtration effect, and should be selected according to the properties of the filter material.

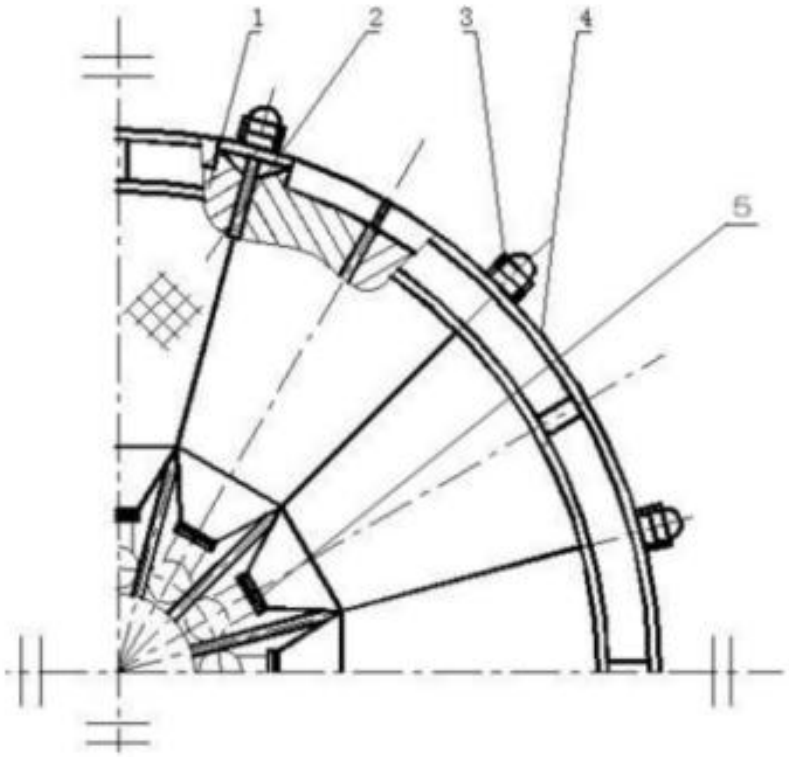


图 4　过滤盘 Figure

Figure 4　Filter disc

① 滤扇　② 滤布袋
③ 固定装置　④ 压板
⑤ O 型密封圈

① Filter disc　② Filter cloth-bag
③ Fixing device　④ Pressing plate
⑤ O seal ring

2、导向及卸料装置

2. Guiding-discharge mechanism

为了保证过滤盘在同一平面内运转平稳，本机安装了导向装置，使过滤盘的偏摆量不超过 3mm，这有利于卸料装置的可靠工作。

In order to ensure the smooth operation of the filter disc in the same plane, a guiding device is installed on this machine to prevent the

deviation of the filter disc from exceeding 3mm, which is beneficial for the reliable operation of the unloading device.

导向装置由导向板，支架及过滤盘上的导向架组成，并将之固定在槽体上。

Guiding mechanism is composed of guiding plate, bracket and guide frame on filter disc, and fixed on the trough.

本机用反吹风卸料。反吹风风压应为0.03～0.05Mpa。

This machine uses reverse blowing for unloading. The reverse wind pressure should be 0.03-0.05Mpa.

3、主轴

3. Spindle

主轴是过滤机的主要部件之一(如图)，它主要有中心轴，滤液管，滤板插座，摩擦盘等组成。中心轴由一厚壁钢管制成，它有足够的钢性和强度，因此能承受扭矩的弯曲。滤液管形成环状均布在中心轴的圆周上，滤板的头部插入滤液管上的滤板插座中，滤液在真空泵的抽吸作用下，经滤液管从分配头排出机外。

The spindle is one of the main components of the filter machine (as shown in Figure 5), which mainly consists of a central shaft, a filtrate pipe, a filter plate socket, a friction disc, etc. The central axis is made of a thick walled steel pipe, which has sufficient rigidity and strength to withstand bending under torque. The filtrate tube forms a circular distribution on the circumference of the central axis, and the head of the filter plate is inserted into the filter plate socket on the filtrate tube. Under the suction effect of the vacuum pump, the filtrate

is discharged from the distribution head outside the machine through the filtrate tube.

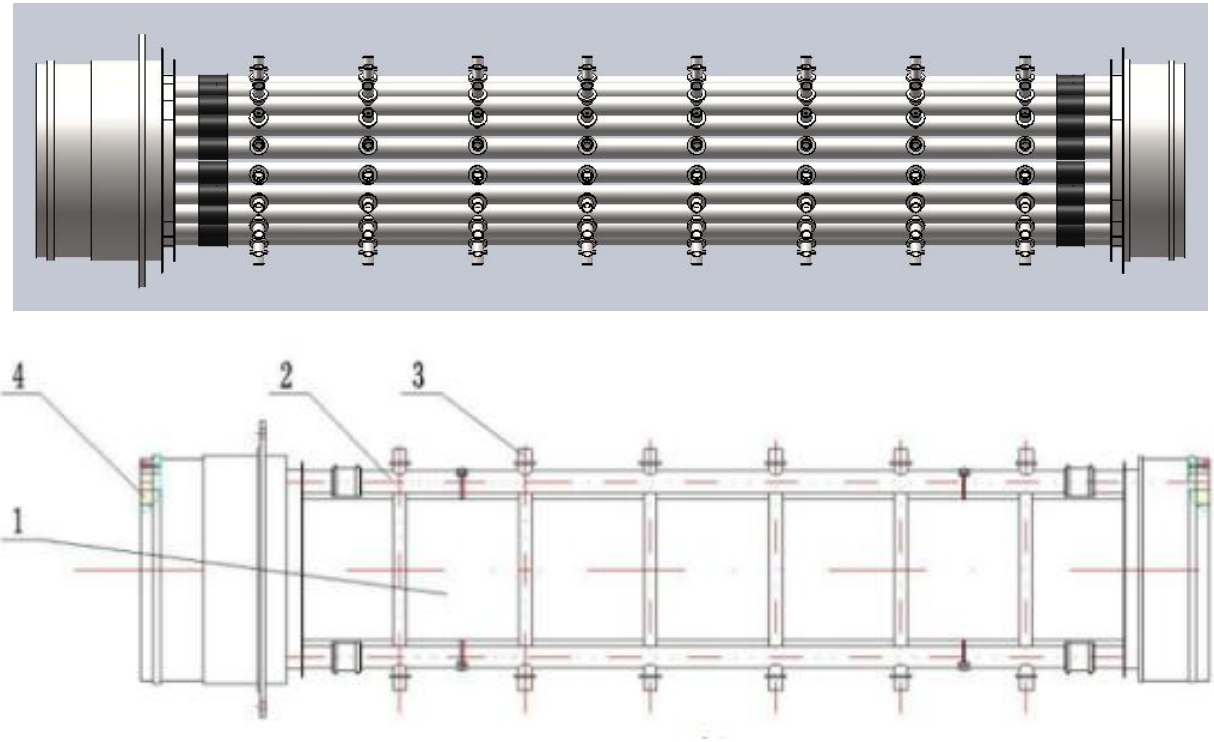


图 5 主轴

Figure 5 Spindle

① 中心轴 ② 过滤管

③ 滤扇插座 ④ 摩擦片

① Center shaft ② Filtratepipe

③ Filter fan socket ④ Friction disc

4、主轴传动装置

4. Spindle actuator

主轴传动装置由调速电机，减速器，小齿轮，大齿轮等组成（如图 6），由于使用了调速电机，主轴的转速可以进行无极变速，以满足不同的工况要求。为了布置方便，减速机传动比为 87，开式齿轮的传动比为 1：8.9，经过减速，主轴的转速范围为 0.5~1.0 转/分。

Spindle actuator is composed of adjustable-speed motor, reducer, pinion,bull gear etc（Figure 6）. By adopting adjustable-speed motor, continuous speed varying can be realized for rotation speed of spindle to satisfy different requirements of work conditions. To arrange conveniently, transmission ratio of reducer is 87, and open gear’s transmission ratio is 1：8.9. After speed reducing, rotation speed range of spindle is 0.5~1.0 turn/min.

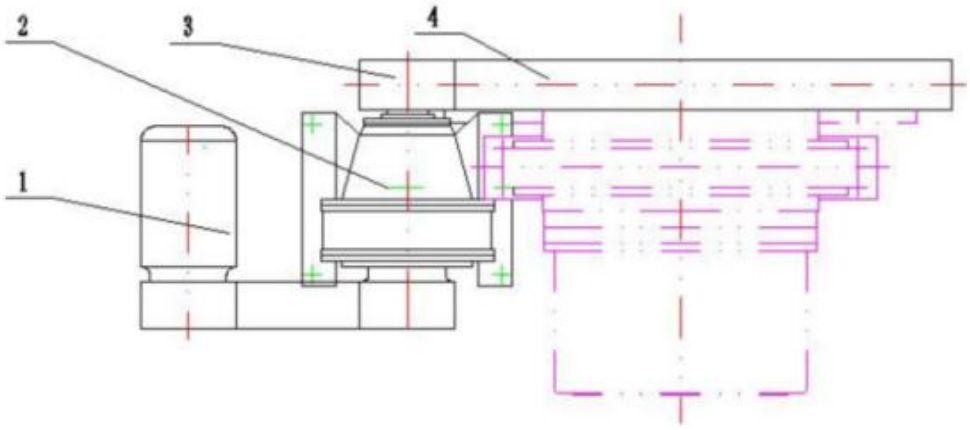


图 6 主轴传动装置

Figure 6 Spindle actuator

① 电机 ② 减速机

③ 小齿轮 ④ 大齿轮

① Motor ② Reducer

③ Pinion ④Bull gear

5、左右分配头

5. Left and right distributing heads

分配头是控制过滤机作业过程的关键部件，它由钢板焊接而成，左右各一个，结构基本相同。分配头下部设有滤液出口与真空管路相连，顶部装有真空表，以

便观察真空度的大小。

Distributing heads are critical components for controlling operation process of filter, made of steel plates by welding. One on left side and one on right side, and structure of two ones are same basically. Filter liquor outlet is set at bottom of distributing heads to connect with vacuum pipes; and vacuum gauge is set on top of distributing heads to observe vacuum degree conveniently.

控制盘（静盘）和摩擦盘（动盘）是主要控制元件，控制盘与装在主轴上的摩擦盘依靠弹簧压紧在一起，保证了密封。摩擦盘（动盘）上的孔，与对应的滤液管和滤板相通。控制盘（定盘）上的气道分为抽吸区、干燥区、（液面上）、卸饼区和清洗区，从而周而复始的完成脱水作业。

The control disc (static disc) and friction disc (dynamic disc) are the main control components, and the control disc and the friction disc installed on the spindle are pressed together by springs to ensure sealing. The holes on the friction disc (moving disc) are connected to the corresponding filtrate tubes and filter plates. The air ducts on the control panel (fixed panel) are divided into suction zone, drying zone, (above the liquid level), cake unloading zone, and cleaning zone, thus completing the dehydration operation repeatedly.

控制盘和摩擦盘均采用耐磨性能优异的特种铸铁制造，使用寿命长，密封性好，左右控制盘的气道略有不同。

Both control disc and friction disc adopt special cast iron with

excellent wear-resisting property, possessing long service life and favorable sealing. And left and right air-passages are slightly different.

6、搅拌装置

6. Stirring unit

为了防止料浆沉淀，在槽体下部设有浆叶式搅拌装置（如图 7）。搅拌轴与主轴平行，搅拌轴上装有浆叶，在滤盘之间不断搅动料浆。搅拌轴的驱动由调速电机、摆线针轮速器，链传动组成。本机的搅拌采用自动变速搅拌，由变频器控制。为了适应某些沉降速度快的物料，本机配备的搅拌电机功率较大，在一般情况下有富余。搅拌轴的两端装有水封式的密封装置，工作时连续注入有一定压力的清水，以保证密封。

In order to prevent sedimentation of the slurry, a blade type mixing device is installed at the bottom of the tank (as shown in Figure 7). The mixing shaft is parallel to the main shaft, and is equipped with blades that continuously stir the slurry between the filter discs. The drive of the mixing shaft consists of a speed regulating motor, a cycloidal pinwheel reducer, and a chain drive. The mixing of this machine adopts automatic variable speed mixing, controlled by a frequency converter. In order to adapt to certain materials with fast settling rates, the mixing motor equipped on this machine has a higher power. The two ends of the mixing shaft are equipped with water sealed sealing devices, which continuously inject water with a certain pressure during operation to ensure sealing.

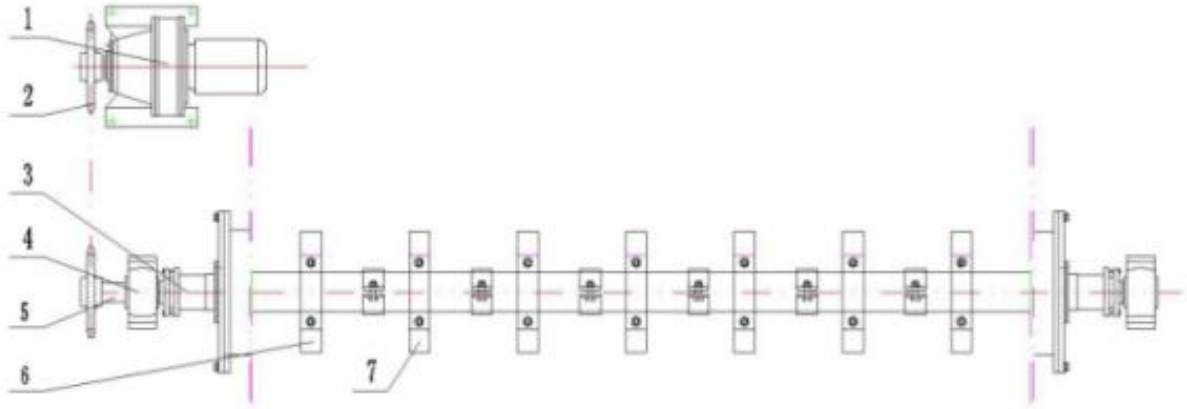


图 7 搅拌装置

Figure 7 Stirring unit

① 减速机 ② 链轮

③ 密封室 ④ 轴承

⑤ 搅拌轴（左右） ⑥ 搅拌叶片

⑦ 搅拌中间轴

① Reducer ② Sprocket wheel

③ Sealing chamber ④ Bearing

⑤ The stirring shaft (left and right)

⑥ Mixing blade ⑦ The stirring shaft

7、滤布清洗装置

7. Filter cloth washing unit

为了防止滤布堵塞，本机安装了滤布清洗装置，它主要有进水总管，分管，喷嘴等组成，当管路中通入压力清水时，水流沿管路经喷嘴高速喷淋滤布，达到清洗目的。

To avoid blocking of filter cloth, filter cloth washing unit is installed on the filter, mainly composed of water inlet manifold, branch pipes and nozzle etc.. When fresh water with pressure enters into the pipe,

water flow will pass the pipe and spray on filter cloth with high-speed to realize washing of filter cloth.

8、自动集中润滑装置

8.Automatically centralized lubrication unit

润滑装置由 DDB-8 型多点干油泵、油管、油嘴等组成（如图 8）。利用这个装置可以对本机的所有润滑点定时进行润滑，润滑的时间及间隔由可编程序控制器进行控制，因而实现了自动集中润滑，保证各个工作部位正常运转。个别部位仍采用人工加油方式进行润滑。各润滑点的要求见“日常维护及注意事项”部分。

Lubrication unit is composed of DDB-18 multi-point grease pump, oil pipe and oil nozzle etc.(Figure 8). By utilizing this unit, timed lubrication can be done for all lubricating points of the filter. Lubricating time and interval is controlled by PLC; therefore, automatically centralized lubrication is realized, ensuring that each operating part runs normally. Exceptional parts still need to be lubricated by the way of filling oil manually. Requirement of each lubricating point refers to “Routine maintenance and precautions” section.

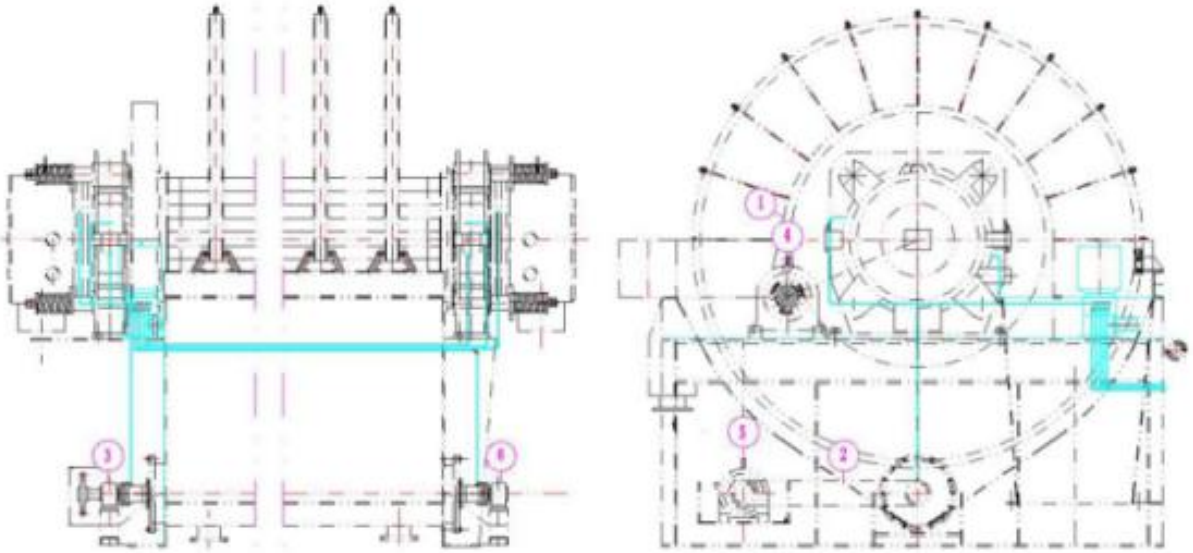


图 8 自动集中润滑装置

Figure 8 Automatically centralized lubrication unit

注：图示位置①、②、③、④、⑤、⑥、⑦为人工加油方式进行润滑，其余为系统自动给油。

Note: This position①、②、③、④、⑤、⑥、⑦for the artificial gas lubrication, the rest system。

9、电器控制

9. Electric appliance control

该装置的说明详见“操作与控制说明”部分。本机的电气原理图。

Description of the unit refers to “Description of operation and control”section for details. Electrical schematic diagram of the filter

10、槽体

10. Trough

槽体为本机的支承件及料浆的容器，它由钢板焊接而成。槽体上设有料浆溢流口，料浆排放口，滤饼排出口等。

The tank is the supporting component of the machine and the container

for the slurry, which is welded from steel plates. There are slurry overflow ports, slurry discharge ports, filter cake discharge ports, etc. on the tank body.

11、给矿系统

11. Mineral-feeding system

给矿系统由给料槽和给料管构成，本机的过滤盘两侧设给料口，使

给料均匀。

Mineral-feeding system is composed of feeding trough and feeding pipes.

Material inlets are set at both sides of the filter, making uniform feeding.

四、 操作与控制说明

IV. Description of operation and control

本机的电控系统采用主轴调速控制和搅拌调速控制，润滑自动运行。

Electronic control system of the filter adopts spindle speed control, stirring speed control and automatic running of lubrication.

1、启动程序及要求

1. Start-up procedure and requirements

(1)启动前除对过滤机本身各处进行必要的检查外，变频器调到最小数值。检查后依次开动润滑—搅拌—主轴—给料—真空泵—皮带运输机。

(1) Before start-up, except for doing necessary inspection on each position of the filter itself, the transducer shall be turned to the

minimum figure. After inspection, lubrication - stirring - spindle - material feeding - vacuum pump - belt conveyor shall be started successively.

(2)搅拌电机启动后，将变频器调到合适的数值即可。

(2) After starting up stirring motor, it will be ok to adjust transducer to the proper figure.

(3)主轴电机启动后，将变频器调到合适的数值即可。一般是刚开机时，主轴应高速运行，形成滤饼后再将其调到正常运转速度。

(3) After starting up spindle motor, it will be ok to adjust transducer to the proper figure. Generally, when the spindle motor is started only after a moment, the spindle shall operate in high speed, and it shall be adjusted to the normal operating speed after filter cake is formed.

2、停车程序

2. Shut-down procedure

首先应停止给料，关闭阀们—停止真空泵—打开槽底放料闸门—搅拌转速调慢—主轴转速调慢—皮带运输机停车—润滑停，然后再关掉总开关。

Material feeding shall be stopped firstly, close valve - stop vacuum pump - open emptying valve at bottom of trough - adjust stirring speed to be lower - adjust spindle speed to be lower - stop belt conveyor - stop lubrication, and then shut-down the main switch.

3、润滑自动运行

3. Automatic lubrication

按下润滑启动按钮后，润滑干油泵每次运转 6-7 分钟自动停止，间隔 2 小时后再次自动运转 6-7 分钟……，如此循环自动运行。任何时候，如想停止润滑干油泵或取消其自动运行状态，只要按下“润滑停止”按钮，润滑指示灯灭即可。

After pressing down lubrication start button, grease pump works for 6-7 minutes each time and stop automatically; after 2h interval, the grease pump will work for 6-7 minutes automatically again … … , and it works automatically and circularly. At any time, if it’s required to stop grease pump or cancel its automatic working state, it will be realized as long as pressing down “lubrication stop” button and lubrication indication lamp is OFF.

五、日常维护及注意事项

V. Routine maintenance and precautions

1、操作者不应离开岗位，并注意控制盘和模拟屏上的讯号，如发现异常现象应及时采取措施。

1. Operators shall not leave working post and shall pay attention to signal shown on control panel and imitation screen, taking measures if any abnormal phenomenon is found.

2、经常检查各部件的紧固情况，不允许有松动现象。

2. Check fastening condition of each component frequently, and no loosening phenomenon is allowed.

3、经常检查真空管路有无漏气现象，真空表指示是否正常。

3. Check whether vacuum pipe is air-leaked and whether indication of

vacuum gauge is normal.

4、经常检查各电机、各轴承温度是否正常。

4. Check whether temperature of each motor and each bearing is normal.

5、经常检查滤盘运转是否平稳，滤布是否完好无损，刮刀工作是否正常。

5. Frequently check whether filter disc is running stably, whether filter cloth is intact, and whether scraper works normally.

6、检查主轴运转是否平稳，开式齿轮付接触面是否均匀，并保持齿面有油脂。

6. Frequently check whether spindle is running stably, whether contact surface of open gear is uniform. And grease shall be kept on surface of gear teeth.

7、观察槽内液面，判断搅拌效果，并经常检查盘根处密封状态，并保证水封供水正常。如果盘根泄漏严重应及时压紧盘根。

7. Observe liquid level inside trough to judge stirring result. And check sealing status at disc-root frequently and ensure that water-supply of water-sealing is normal. Disc-root shall be compacted tightly if there is serious leakage.

8、经常检查液位是否处于预定位置，必要时应加以调整。

8. Check whether liquid level is on preset location, and adjust it if necessary.

9、观察入料、排料是否正常，滤饼的厚度和水份有无异常现象。

9. Observe whether feeding and discharging are normal and whether

there is abnormal phenomenon about thickness and moisture of filter cake.

10、分配盘上的四个弹簧必须均匀压紧。两个调节空气进入阀开口适当。

10. Four springs on distribution disc must be compacted evenly. Opening degree of two air-regulating inlet-valves shall be proper.

11、经常检查各润滑点的润滑情况，并及时向干油桶补充干油。个别部位（搅拌轴承座、减速器）要采用人工加油。各润滑及要求见表。

11. Check lubrication conditions of each lubrication point frequently and complement grease into grease barrel in time. Manual oiling shall be adopted for some exceptional parts (stirring bearing seat, reducer). Each lubrication and requirements are shown as follows.

各部位润滑要求

Lubrication requirements for various parts

序号 No.	润滑点 Lubricating point	润滑方式 Lubrication way	油类 Oil
1.	开式齿轮 Open gear	人工加油 Manual oiling	钙基润滑脂 Calcium base grease
2.	主轴轴承（左、右）Spindle bearing (left, right)	干油泵加油 Oiled by grease pump	钙基润滑脂 Calcium base grease
3.	动盘与静盘（左、右） Dynamic disc and static disc (left, right)	干油泵加油 Oiled by grease pump	钙基润滑脂 Calcium base grease
4.	搅拌轴承与油环（左、右） Stirring bearing and oil-ring (left, right)	干油泵加油 Oiled by grease pump	钙基润滑脂 Calcium base grease
5.	链轮、链条 Chain wheel, chain	人工加油 Manual oiling	钙基润滑脂 Calcium base grease
6.	搅拌轴承 Stirring bearing	人工加油 Manual oiling	钙基润滑脂 Calcium base grease

7.	主轴减速器 Spindle reducer	人工加油 Manual oiling	40 号机械油 40# machinery oil
8.	搅拌减速器 Stirring reducer	人工加油 Manual oiling	40 号机械油 40# machinery oil

六、常见故障分析及处理

VI. Analysis and treatment of common fault

序号 No.	故障 Fault	原因 Reason	排除方法 Troubleshooting
1.	刮刀损坏滤布 Scraper damages filter cloth	滤布袋不平衡 滤扇安装不平直 刮刀与滤布间隙小 Filter cloth-bag is imbalance. Filter fan is not installe straightly. Clearance between scraper and filter cloth is small.	重新装滤布袋 调整压紧螺杆 调整间隙 Install filte cloth-bag again. Adjust compactin screw. Adjust clearance.
2.	滤饼脱落率降低 Falling rate of filter cake is lowered.	滤饼太薄 反吹风压力太低 Filter cake is too thin. Pressure from reverse blowing air is too low.	调整主轴转速 检查反吹风系统 Adjust rotation speed of spindle. Check reverse-blowin
3.	动盘与静盘之间漏气 There is air-leakage between dynamic disc and static disc	两盘没有贴紧 配合面磨损 配合面润滑不良 Two discs does not contact closely. Matching surface is worn. Lubrication of matching surface is poor.	调整紧弹簧 更换动静盘 加足润滑油 Adjust pressure spring. Replace dynamic and static discs. Add enough lubrication oil.
4.	滤布袋局部破损 Part of filter cloth-bag is broken.	滤布袋局部破损 滤扇与插座处密封不严 槽体液面太低 Part of filter cloth-bag is broken. Sealing between filter fan	修补或更换 调整或更换 O 型密封圈 提高液面 Repair or replace. Adjust or replace O-ring.

序号 No.	故障 Fault	原因 Reason	排除方法 Troubleshooting
		and socket is not good. Liquid level in trough is too low.	Raise liquid level up.
5.	真空度太低 Vacuum degree is too low.	真空泵工作不正常 真空管路漏气或堵塞 过滤机漏气 料浆液位太低 Vacuum pump works abnormally. Vacuum pipe is air-leaked or blocked. Filter is air leaked. The slurry level is too low.	检修 修补管路 检修 提高矿浆液面 Overhaul. Repair pipe. Overhaul. Raise liquid level of mineral slurry up.
6.	搅拌轴盘根密封处漏水、漏料 Leakage of water and material at the sealing point of the mixing shaft disc root	盘根没有压紧 盘根损坏 水密封失效 Disc-root is not compacted tightly. Discroot is broken. Water sealing is invalid.	压紧盘根 更换盘根 检修 Compact the disc-root tightly. Replace disc-root. Overhaul.
7.	不能形成滤饼、滤饼太薄 It’s not able to form filter cake or filter cake is too thin.	主轴转速不合适 过滤机漏气 真空度太低 Concentration of mineral slurry is too low. Rotation speed of spindle is not proper. There is air leakage at filter. Vacuum degree is too low.	增加浓度 调整转速 检修 检修 Increase concentration. Adjust rotation speed. Overhaul. Overhaul.
8.	润滑点供油不足 Oil feeding at lubrication points is not enough.	喷嘴堵塞 干油泵工作不正常管接头连接不当 Nozzle is blocked. Grease pump works abnormally.	清除堵塞物 检修 紧固 Clear away obstructions. Overhaul. Fasten.

序号 No.	故障 Fault	原因 Reason	排除方法 Troubleshooting
		Pipes joints are not connected properly.	
9.	给料不正常 Material feeding is not normal.	给矿管堵塞 Material feeding pipe is blocked	检修管路并清洗 Overhaul pipe and clean it.
10.	控制不正常 Control is not normal.	电路失灵，元件损坏 Electric circuit is out of order, and element is broken.	按电路原理图检修 Overhaul according to schematic circuit diagram.

七、安全注意事项

VII. Safety precautions

有关操作人员除遵守工作现场的有关安全规定外，还要遵守以下补充规定：

Except to follow relevant safety regulations in working site, relevant operators shall following supplementary regulations shown as follows as well:

1、工作室内设有操作控制台，非本机工作人员不能随便操作控制开关，以免发生意外。

1. There is operating console set inside work room. To avoid the unexpected, personnel not working for the machine can not operate the control switch casually.

2、进行设备检修时，应该切断电源并且挂出“有人工作，严禁送电”的警示牌。

2. In process of equipment overhaul, it shall be done to power off and hang out a warning sign “No poweron, overhaul work is ongoing”.

3、严禁从操作台中引出电源线。若要对线路进行维修，必须在技术人员的

指导下进行。

3. It’s forbidden to lead out powercable from operating console. Maintenance of cables must be done under instruction of technicians.

4、检修平台及栏杆必须牢固，平台上不能随意堆放杂物，以免杂物掉入运转部件之中。

4. Overhaul platform and handrail must be firm. To avoid any sundry falling into the running components, sundries shall not be stacked on the platform casually.

5、清洗时，要注意保护电机等元件，不能向它们喷淋水，以免引起短路或烧坏电器元件。

5. In cleaning, please pay attention to protect motor etc. element. It shall not be done to spay water on them to avoid short-circuit or burning-out of electric elements.

八、易损件目录表

VIII. List of wearing components

序号 No.	名称 Name	数量 Quantity	重量（kg） Weight	备注 Remark
1.	动盘 Dynamic disc	2		耐磨材料 Wear-resistant material
2.	静盘Ⅰ Static disc I	1		耐磨材料 Wear-resistant material
3.	静盘Ⅱ Static disc II	1		耐磨材料 Wear-resistant material
4.	搅拌叶片 Mixing blade			耐磨材料 Wear-resistant material
5.	轴瓦 bearing bush	2		耐磨材料 Wear-resistant material

6.	石墨盘根 Graphite Packing	6		柔性石墨盘根 Flexible Graphite Packing
7.	滤扇 Filter plate			工程塑料 ABS
8.	滤扇压板 Filter plate pressure plate			工程塑料 ABS
9.	导向轮 Guiding wheel			工程塑料 ABS
10.	滤布 Filter cloth			锦纶 8210 Nylon
11.	油嘴 Oil nozzle			成品 Finished product
12.	轴承 Bearing			成品 Finished product

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