

⚠ Read this manual before operation



MICRO-MESH DRUM FILTER
INSTRUCTION MANUAL



YIXING TEIO INTERNATIONAL TRADE CO.,LTD.

SPECIALIZED IN WATER TREATMENT SOLUTIONS

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1. Safety Instructions

- (1) Read and understand this instruction manual before operation to ensure safety.
- (2) Please give this instruction manual to the operator on site.
- (3) Please keep this instruction manual properly for necessary reference.

2. Product Introduction

This equipment is designed and manufactured according to the dimensions required by the customer.

Micro-mesh drum filter is a filtering device for removing suspended solids. The device is composed of several filter meshes placed over a rotating drum, and the filter meshes can be easily disassembled and replaced. The size of the filter mesh is between 10 μ m and 200 μ m. Customers can choose different mesh sizes according to the water output requirements.



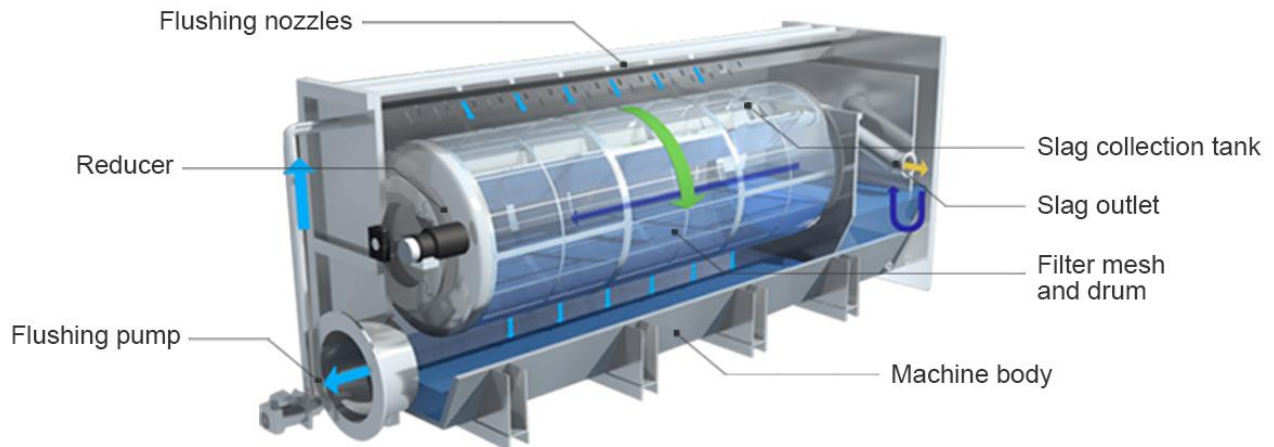
3. Working Principle

Micro-mesh drum filter is equipped with stainless steel filter meshes with a filtration accuracy of 10-200 μ m. The filter meshes are covered on the drum, which rotates slowly and continuously.

The sewage will flow into the drum by gravity. The lower half of the drum is effective filtration area, the clean water will flow out of the drum through the filter meshes, and the suspended solids will be intercepted. As the drum rotates, the suspended solids will be carried to the top of the drum.

The backwash device is set on the top of the drum, continuously flushing from the outside to the inside. After backwash, the slag will be collected by an independent slag collection tank set inside the drum and discharged by gravity.

The filtered water will be reused by the backwash device, the pressure of the flushing pump is high enough to ensure that the dirty filter meshes can be completely cleaned, and ensure that the filter meshes always maintain normal flux. The small flow and high head design of the flushing pump minimizes the backwash water consumption.



4. Equipment Features

- (1) Long service life of filter meshes, easy replacement, and thorough cleaning.
- (2) Fast filtering speed.
- (3) Simple construction and easy maintenance.
- (4) Small head loss.
- (5) Small footprint.
- (6) Low water consumption for backwashing.
- (7) Low operating energy consumption.



5. Equipment Structure

Micro-mesh drum filter operates continuously. When the suspension liquid is fed into the drum, the automatic control system will start to drive the drum to rotate and start the backwash pump at the same time.

The drum starts to rotate slowly, and the backwash pump extracts the filtered water to backwash the filter meshes. The slag will be collected by the backwash water collection tank inside the equipment and discharged through the slag outlet.

While backwashing, the filtering process is not affected and running normally. When there is no water passing through the equipment, the equipment will stop automatically.

5.1 Composition of Micro-mesh Drum Filter

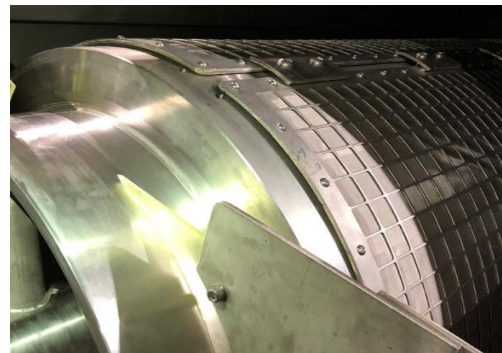
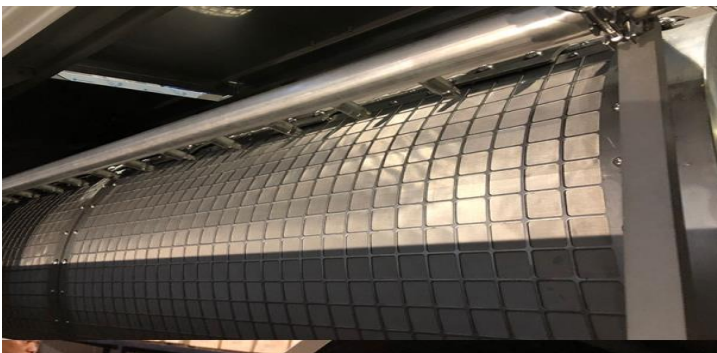
- Stainless steel machine body.
- Core filtration system.
- Drive system.
- Backwash system.
- Control system.

5.2 Machine Body

The housing of the micro-mesh drum filter is made of 304 stainless steel, including the central water inlet pipe, drum, transmission gear, bearings, sealing parts and other assembly components. A slag collection tank is set on the top of the drum. All parts are made of 304 stainless steel.

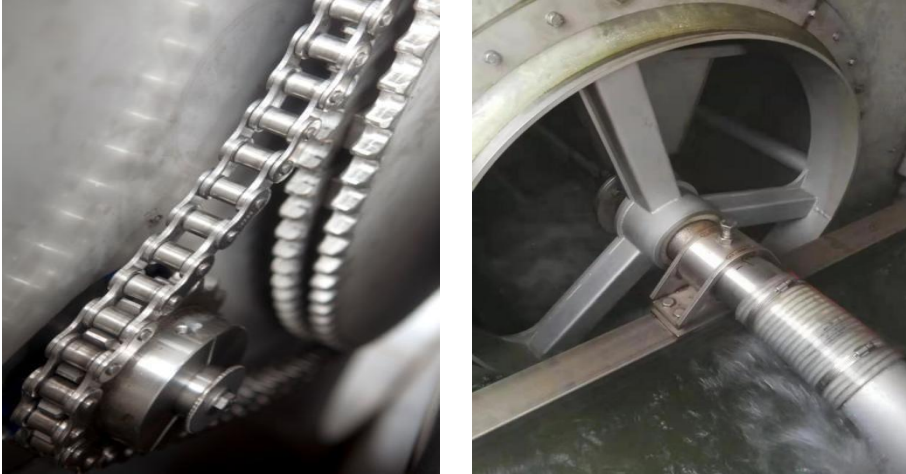
5.3 Filtration System

There are 4~12 independent filter meshes covered on the drum, the quantity of the meshes are determined according to different processing capacity. Each filter mesh can be easily disassembled and assembled. The main filter mesh is in the middle, made of 316L stainless steel, and the upper and lower meshes are made of 304 stainless steel. The outermost layer is the keel, which is used to increase the strength of the filter meshes. The filter meshes and the keel are formed at one time through a special sintering process.



5.4 Drive System

The drive system consists of a drive motor, a sprocket, and a drum support. The power supply of the drive motor is 380V (400V/415V/480V) /50Hz (60Hz)/three-phase AC.



5.5 Backwash System

The backwash system includes a backwash water pump, a flushing water pipe, a nozzle system, a dirt collection tank, and a sewage pipe. The function of the backwash system is to use a pump to extract filtered water and flush the filter cloth from the outside to the inside by spraying a high-pressure fan-shaped water column, so that the suspended matter accumulated on the inner surface of the filter cloth is flushed into the collection tank below and flows into other process equipment through the pipeline.



5.6 Control System

(1) The micro-mesh drum filter can be controlled by combining automatic control and manual control during filtration operation. The control system is manufactured in accordance with the standards of the International Electrical Manufacturers Association.

- (2) The housing of the control cabinet is made of 304 stainless steel.
- (3) The control box is equipped with an on-off button, an automatic-manual conversion switch, an emergency stop button, and an on-off-fault indicator. All control and protection circuits are separated, and the buttons and indicator lights are matched.
- (4) The main motor frequency conversion control can automatically adjust the frequency according to the water level, thereby adjusting the speed of the drum to achieve intelligent control.
- (5) The system is controlled by PLC.

6. Precautions

- (1) Regularly observe the water quality of the incoming water in each shift. If it is obviously unqualified, make emergency response at once.
- (2) During the trial operation of the drum, check that all connecting components are fixed.
- (3) The tightness of the chain drive is adjusted by the sprocket tension adjustment device.
- (4) The use and maintenance of the reducer should be carried out in accordance with the reducer operation manual.
- (5) The use and maintenance of the water pump should be carried out in accordance with the pump operation manual.
- (6) Regularly replace and add lubricating grease.
- (7) Open the corresponding valves before starting the pumps.
- (8) The parameters on the touch screen are not allowed to be adjusted at will. If any adjustment is made, please strengthen inspection to ensure that the equipment operates normally after the adjustment.
- (9) If the equipment needs to be shut down or maintenance for a long time, perform a backwash procedure to prevent dirt from sticking on the filter meshes, which will help to prolong the service life of the filter meshes.
- (10) Perform anti freezing and insulation treatment on the peripheral pipelines, valve bodies, and water pumps of the equipment before winter.
- (11) When the equipment is shut down in winter, the water in the machine body should be drained, and the water in the peripheral pipes, valve bodies, and water pumps should also be drained to prevent the valves, pipes, and water pumps from freezing and cracking.

7. Maintenance

7.1 Maintenance Methods

7.1.1 Regular Inspection

- (1) Filter mesh: Check whether the filter mesh needs to be replaced and whether there are signs of deformation or damage. The filter mesh is the core component of the drum filter, and its status directly affects the filter effect. When the impurities intercepted by the filter mesh cannot be washed away by the backwash pump, it need to be cleaned manually after a period of time. If the filter mesh is still not clean, it needs to be replaced.
- (2) Sealing parts: Check whether the sealing parts are in good condition and ensure there is no leakage. Aging or damage of the sealing parts will lead to reduced filtration efficiency and even affect the normal operation of the equipment.

7.1.2 Keep Clean

Regularly clean the entire equipment, such as cleaning the drum filter meshes with alkali every 4-6 months, and cleaning the mud in the slag collection tank every 6 months. During the cleaning process, ensure all parts are clean and in good condition.

7.1.3 Prevent Overload

Prevent over-water level and overload operation, so as to avoid damage to the filter element and transmission parts. Reasonably adjust the operating parameters to ensure that the drum filter operates within the rated range.

7.1.4 Keep Maintenance Records

Record the operation and maintenance of the drum filter, so as to find and solve problems in time. This will be helpful to formulate a more scientific and reasonable maintenance plan and improve the operating efficiency of the equipment.

7.2 Cleaning Methods

7.2.1 Mechanical Cleaning Method (not recommended)

Mechanical cleaning refers to using scrapers, brushes and other tools to remove dirt from the surface of the filter mesh. This method is suitable for filter media relatively hard and not easily damaged. The operation steps are as follows:

- (1) Turn off the power and empty the liquid in the drum filter.

- (2) Disassemble the filter mesh.
- (3) Use a scraper or brush to scrape or scrub along the surface of the filter mesh to remove attached particles and impurities.
- (4) After cleaning, rinse with high-pressure water.
- (5) Reinstall the drum filter, turn on the power and restart.

7.2.2 Backwashing Method (automatic backwashing system)

The backwashing system will automatically operate when the equipment is running, so as to ensure the long-term stable and autonomous operation of the equipment.

7.2.3 Chemical Cleaning Method (usually performed during shutdown maintenance)

When the dirt accumulated on the filter mesh is stubborn, chemical cleaning will be useful. Chemical cleaning refers to the use of a cleaning agents to react chemically with dirt to dissolve or separate it. The operation steps are as follows:

- (1) Select a suitable cleaning agent and prepare the cleaning liquid.
- (2) Manually start the drum to rotate and spray the cleaning liquid on the filter mesh.
- (3) After a period of time, manually start the flushing pump to rinse the filter mesh.
- (4) After flushing, thoroughly check the filter mesh to ensure that there is no damage or deformation.

It should be noted that the chemical cleaning method may cause certain corrosion or damage to the filter mesh, so it is necessary to select a suitable cleaning agent and strictly follow the instructions.

7.3 Lubrication

Regularly lubricate the bearings, gears and other components to reduce wear and noise. Ensure that the lubricating oil is sufficient and clean, so as to avoid fault caused by poor lubrication.

7.4 Electrical Components Maintenance

- (1) Check the wiring terminals in the electrical cabinet every three months to see if they are loose. If so, tighten the terminals.
- (2) When an electrical fault occurs, check whether the electrical circuit is normal, whether the circuit breaker has tripped, and whether the fuse has burned out. Only after the cause is found and solved can the power be restored.

8. Troubleshooting

No.	Faults	Reasons and solutions
1	The reducer is not running.	1. Check whether the power switch is on. 2. Check whether the fuse is blown. 3. Check whether the pump is started.
2	There is an abnormal sound when the chain is running.	The chain is not tight enough, adjust the tightness of the Chain.
3	The water pump does not pump water and makes noise	Check whether the pump is turning in the correct direction and whether the water outlet valve is open.
4	Small water output.	1. Poor inlet water quality. 2. Filter mesh blockage.
5	Nozzle blockage.	Remove the nozzle and clean it.
6	The output water is not clean.	1. Poor inlet water quality. 2. Check whether the filter meshes are damaged, if damaged, replace them in time. 3. Adjust the water level difference at the outlet. A small water level difference means good water quality, while a large water level difference means poor water quality.
7	The liquid level gauge does not send a signal.	There is dirt on the surface of the liquid level gauge, which affects the signal. Clean the liquid level gauge thoroughly.



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