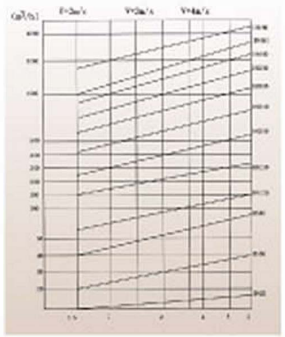
ZLSG-GII全自动滤水器

MODEL ZGSG-G□□AUTOMATIC WATER STRAINER

过滤性能曲线
Filter Performance Curve



压力降(m水柱)
Drop (m water column)

过滤介质：水
测量标准：3mm
Filter Medium: water
Measuring standard: 3m

滤水器内部结构图
Internal Construction of Strainer

ZLSG-G II全自动滤水器为单排污型，其余结构、功能、特点与ZLSG-G型复合排污全自动滤水器完全相同。

The structure, function and properties of Model ZLSG-G II are same as that of Model ZLSG-G Automatic Water Strainer with exception of single discharge.

主要特点

- 本滤水器是我厂在研究国外如美国、以色列、意大利等技术及国内各种技术的基础上，针对国内各种工况及不同要求进行设计制造的。
- 本滤水器几乎克服了目前国内外技术的所有不足之处。
- 直立安装，进出水方向采用上进下出。
- 防污物卡阻技术。
- 小转筒过滤技术。
- 新颖不拆卸维修技术，设置检修手孔，精过滤筒采用特殊结构，采用固定排污孔架与主轴垂直连接的略大于排污管道的排污转筒，经填充四氟作为导向轴瓦的结构。
- 自动化控制监测技术。

MAIN FEATURES

- This machine is developed by our factory on the basis of studying techniques of foreign countries, such as the United States of America, Israel and Italy as well as domestic practical conditions.
- The water strainer has advantages over that both at home and abroad.
- Vertical installation, Water comes in from upper part and comes out from lower part.
- No pollutant blockage.
- Small drum filtering technique used.
- Combined coarse screen is adapted. Water comes in from upper part and comes out from lower part. Service hole is provided. Fine cartridge is of special construction. Stationary discharge support is connected with shaft vertically.
- Automatic control/monitoring

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Welcome to using the ZLSG series Full-Automatic Water Strainers produced by the company. Before using, please read the instruction carefully. It will help you well know the structure, performance and operating procedure, as well as the notice of our products. The company remains the right to final interpretation for this manual.

Ⅰ. Introduction

We have a history of over 30 years in designing and producing separation machine. Just at the time of establishment, we had concentrated on the design concept and developing tendency of other foreign manufacturers. We decidedly introduced advanced foreign technology, digesting and absorbing their core parts. Combining with end-users' specified requirement at home and abroad, through actively exploring and innovating, the design and production model on the basis of independent research and development was formed. Series products concerning oil purification, water treatment and air drying were developed, which has won many national technology patent. We will become the top enterprise in this circle at home, and take the lead on the technology tendency of separation machine's manufacturing. Water Strainer is indispensable equipment in electric power generation, which is very important for the regular operation of electric power generation units. We strongly recognized the necessity of thorough technology innovation on original fully automatic Water Strainers, and a new type Water Strainer must be developed to replace the old ones. After the visits and inspection in dozens domestic thermal power plants and hydropower plants, combining with the advanced technology of US, Israel, Italy and so forth, and thanks to the years' hard working of our researchers, we developed the ZLSG series fully automatic Water Strainer, which has not only been widely accepted in national electric power industry, but has been sold overseas.

Ⅱ. Structural Features of Water Strainer

The ZLSG series full-automatic water strainer is mainly divided into two types: ZLSG-G (GII) and ZLSG-B. The ZLSG-G (GII) Water Strainer has a structure with inlet up and outlet down, while the ZLSG-B Water Strainers is outlet up and inlet down, which is improved from the basic ZLSG in the ZLSG. The reason for this design is to meet the requirement of power station's different pipe arrangement.

ZLSG-G (GII), the ZLSG-B (ZLSG) series full-automatic water strainer are composed of the following parts: Water Strainer main body (composed of shell, cover-end-piece flange, rotation mechanism, filtration mechanism, filth discharge mechanism), electric cyclonical pin wheel reducer, electric filth discharge ball valve, water chiller controller, pressure gauge and PLC electronic control cabinet.

Although ZLSG-G(GII), ZLSG-B(ZLSG) full-automatic water strainer are quite different in mechanical structure and adaptable performance, they both feature the function of automatic filtration, automatic counter-flushing filth discharge and so on, and will not influence the normal amount of water pipe's water supply. PLC control technology has been adopted in electronic control, which can make time filth discharge, differential pressure filth discharge, manual filth discharge and reducer's failure alarm, differential pressure overload alarm, over force moment failure alarm function. Running without people taking charge can also be achieved. In addition, ZLSG-G (GII), ZLSG-B was both set opening manhole on upper tank, so that the repair will be quite convenient without disassembling the whole. The following will mainly introduce the performance and features of ZLSG-G (GII) and ZLSG-B (ZLSG).

1. The Technology Features of ZLSG-G (GII) Fully Automatic Water Strainer

The ZLSG-G series full-automatic water strainer is equipped with international leading technology. It is especially suitable for the power plant in bad water quality environment, for it can effectively filter deserted floater like foam, sawdust, plastic bag, and weave bags, as well as deposit like bed load.

The ZLSG-G series are divided into G compound filth discharge and GII single filth discharge. In the condition of having large amount floater in water, the G compound filth discharge should be adopted, while the common water quality condition can be well addressed by the GII single filth discharge.

◆ G compound filth discharge technology

Taking advantage of the gravity separation principle, the Water Strainer's main body is designed with upper tank and low tank. The upper one is turbid water tank, which is set water inlet, upper filth discharge hole and manhole. And the low one is purified water tank, which set filth discharge shelf, filtration cylinder, low filth discharge hole. When the water entered the turbid water tank with a great number of dedlock and floater, bedlock and floater will be separated firstly, meanwhile, the deposits enter the filter and deposited on the bottom of filtration cylinder. During the time of filth discharge, they will be discharged through the low filth discharge hole, and the floater which has entered the upper tank will float in the tank under the isotonic effect. When the upper pollutant wash water valve is open, floater will be discharged through the upper discharge hole under hydraulic pressure. This will effectively protect the equipment from being blocked or twined by the floater or deposits which are discharged through single discharge hole. The ability to resist being blocked is strengthened. This technology has attained a national patent. Other domestic manufacturers can still not reach this level.

◆Innovation of the Form of Inlet and Outlet

The ZLSG-G series Water Strainer adopts an inlet/outlet form of inlet from above while outlet from below, which can be recognized as a highlight on the structure of ZLSG-G series Water Strainer. Its main effect is being convenient for floater and deposits to be separated, filtered and discharged. And the function of compound filth discharge is achieved on the features of this structure as well.

◆Large Filtration Area

Under the ZLSG-G Water Strainer, there are several skillful filters. Through the processing of modern laser hole punching, every filter hole can be arranged as tight as possible, maximizing the filtration area. Even during the time of discharge, the filter's total filtration area can be guaranteed 2 times more than inlet-outlet pipes' sectional area, which guaranteed the water supply from inlet-outlet pipes.

◆Double Scissors Design

When Water Strainer is working, especially during the flood season, a great number of branches or other long object frequently enter Water Strainers and block them. If this problem can not be solved effectively, filters can be damaged or blocked easily. And this will bring many hidden troubles for the normal work. For this problem, we subtly designed two scissors devices up and down separately. Once long projects block in filters, electronic reducer will rotate this device together during clearing and discharging. And the projects going through filters will be cut into several sects, and discharged through filters gradually.

◆Filter fast examination and repair device

While repairing the filter of common Water Strainer, disassembling the whole is a must (crane is needed sometimes as well). But the entire ZLSG-G (GII) series Water Strainer produced by the company have special manhole for filters, through which, the filter can be taken out and fixed easily, saving time and manual effort.

2. Technology Features of ZLSG-B (ZLSG) Series Full-automatic water strainer

The ZLSG-B (ZLSG) series full-automatic water strainer is series Water Strainer improved from our ZLSG fully automatic Water Strainer.

In good water quality environment, the ZLSG-B (ZLSG) series full-automatic water strainer can perform perfectly, effectively filter varies of suspender and deposits. But the effect is not very obvious while processing impurity like floater. Besides the features such as large filtration area, low pressure loss and water loss during discharging and advanced PLC control technology, the differences of ZLSG-B(ZLSG) series full-automatic water strainer from ZLSG series full-automatic water strainer is that, symmetric manhole is set on upper tank, through which, the repair and change on filter will be convenient.

Ⅲ. Operating Principle

1. Mechanical Operating Principle

1）ZLSG-G（GⅡ）Series Fully Automatic Water Strainer

During normal filtration, the electronic reducer doesn’t work. The wash water valve is close.

When the state of discharge is reached, nether row of wash water valve (deposits wash water valve) will open, and reducer will be initiated, rotating the rotation mechanism in filters, which can make rotating cylinder orderly connect to every discharge hole on filters. Meanwhile, filter's inlet will be closed by rotating board, forming a relatively sealed environment. At that time, part of the suspender and deposits in the sealed filter will be backwashed by the clear water partly from other filters' filtering, and be discharged through the nether row of open wash water valve.

When the upper row of wash water valve is open, reducer will not be initiated. The floater and part suspender floating in filter's main body will be discharged through the upper row of wash water valve.

2）ZLSG-B(ZLSG) Series Fully Automatic Water Strainer

In normal filtration condition, electronic reducer will not be initiated, and wash water valve will be closed.

In clearing condition, wash water valve will open, and reducer will be initiated, rotating the discharge mechanism in filters, making discharge mechanism orderly connect to the washed filters. The filth attached to filter will be backwashed by the clear water partly from other filters' filtering, and be discharged through the discharge pipe of open wash water valve.

2. Electronic Control Principle and Features

◆Clearing Condition

Timely Initiate:

Through the time relay in PLC programmable controller, timely initiate reducer and wash water valve. Namely reducer is initiated and wash water valve is immediately started.

Initiated by differential Pressure Control

The initiation by set inlet/outlet differential pressure controller automatically controlling reducer and wash water valve, and clear and discharge automatically.

Initiated by Manual Control

Pressing the button on electronic control cabinet control, manually control the initiation of reducer and wash water valve.

◆Failure Protect Function

Protective measure and failure alarm, as well as relative indication will be launched when reducer

failure or over force moment, wash water valve over force moment, overhigh differential pressure occurs.

◆Monitoring Function

Using special cable, tie-in and computer cable connect PLC programmable controller and computer, namely monitoring with computer.

If monitoring the differential pressure value at inlet/outlet is needed when filter is working, a pressure gauge of differential pressure transmitter who can output 4-20mA DC simulating signal can be installed on Water Strainer. And then, computer can be connected.

Ⅳ. Major Technical Parameter

Nominal pressure: 0.6MPa; 1.0MPa; 1.6MPa; 2.5MPa

Working pressure: 0.25-1.0MPa; 0.25-1.6MPa; 0.25-2.5MPa

Pressure loss: 0.01-0.03MPa

Water loss during discharge: ＜5%

Power supply: AC 380V, 50Hz (or other voltage grade)

Filtration accuracy: 0.05 ~ 6mm

Differential pressure set value scope: 0.02-0.1MPa（adjustable）

Automatic wash hours: 5min or according to working condition

Timing set value scope:

Attached List 1: ZLSG-G（GⅡ）Parameter Table

Parameter / Type	Designed flux m^3/h	In/out caliber mm	Discharge caliber mm	Reducer		Reducer output rev rpm	Wash water valve power kW
				Power kW	Type		
ZLSG-50G	21	50	20	0.37	XLED-32	3	0.05
ZLSG-65G	36	65	20	0.37	XLED-32	3	0.05
ZLSG-80G	54	80	25	0.37	XLED-32	3	0.05
ZLSG-100G	100	100	50	0.37	XLED-32	3	0.05
ZLSG-125G	113	125	50	0.55	XLED-42	2	0.09
ZLSG-150G	191	150	50	0.55	XLED-42	2	0.09
ZLSG-200G	340	200	65	0.75	XLED-53	1.5	0.09
ZLSG-250G	530	250	65	0.75	XLED-53	1.5	0.09

ZLSG-300G	750	300	100	0.75	XLED-53	1.5	0.09
ZLSG-350G	1039	350	100	0.75	XLED-63	1.5	0.18
ZLSG-400G	1200	400	100	1.1	XLED-63	1.5	0.18
ZLSG-450G	1500	450	100	1.1	XLED-63	1.5	0.18
ZLSG-500G	2120	500	125	1.1	XLED-63	1.0	0.25
ZLSG-600G	3055	600	150	1.5	XLED-74	1.0	0.37
ZLSG-700G	3890	700	150	1.5	XLED-74	1.0	0.37

Note:

1. The above parameter is designed normal value of our ZLSG-G Water Strainer.

2. The designed flux is a minimum value, the highest appropriate value can be as much as 15% more than the value in this table;

3. The wash water valve power refers to the power of single wash water valve;

4. The value in above table can not be applied to the product with special requirement.

Attached List 2: ZLSG-B（ZLSG）Parameter Table

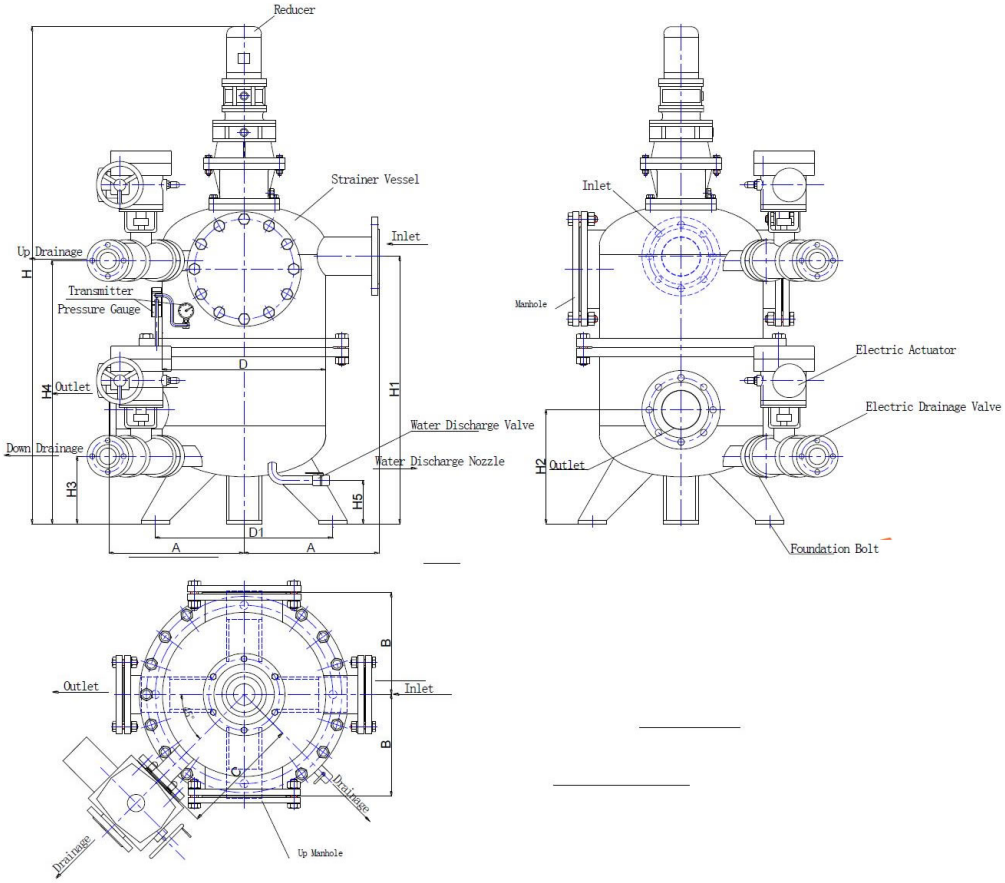
Parameter / Type	Designed flux m^3/h	In/out caliber mm	Discharge caliber mm	Reducer		Reducer output revr pm	Wash water valve power kW
				Power kW	Type		
ZLSG-50B	21	50	20	0.37	XLED-32	3	0.05
ZLSG-80B	54	80	25	0.55	XLED-42	2	0.05
ZLSG-100B	100	100	40	0.55	XLED-42	2	0.05
ZLSG-125B	113	125	50	0.75	XLED-53	1.5	0.09
ZLSG-150B	191	150	50	0.75	XLED-53	1.5	0.09
ZLSG-200B	339	200	65	0.75	XLED-63	1.5	0.09
ZLSG-250B	530	250	80	0.75	XLED-63	1.5	0.18
ZLSG-300B	750	300	100	1.1	XLED-63	1.5	0.18
ZLSG-400B	1200	400	100	1.5	XLED-74	1.0	0.25
ZLSG-500B	2120	500	125	1.5	XLED-74	1.0	0.25

Note:

1. The above parameter is designed normal value of our ZLSG-G Water Strainer;
2. The designed flux is a minimum value, and the highest appropriate value can be as much as 15% more than the value in this table;

3. The wash water valve power refers to the power of single wash water valve;
4. The value in above table can not be applied to the product with special requirement.

Attached figure 1: ZLSG-G（GⅡ）azimuth map

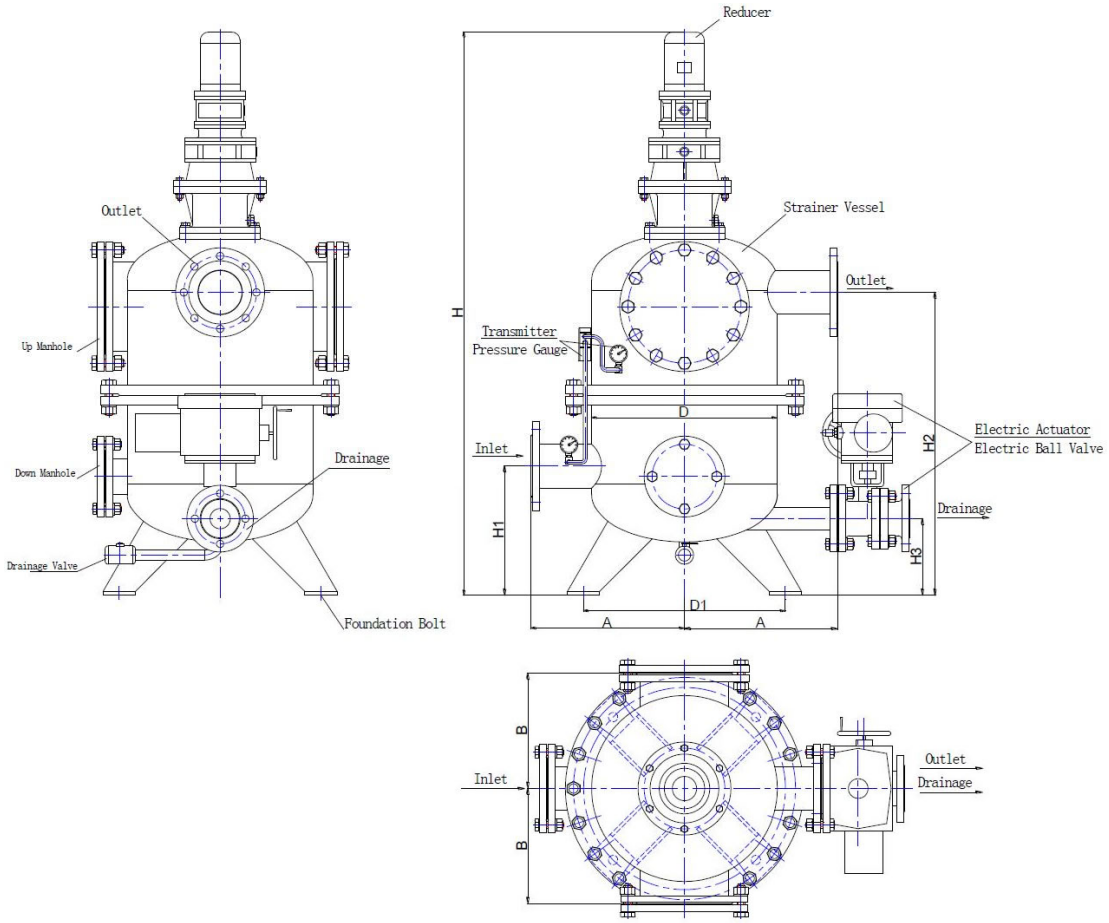


Attached List 3 ZLSG-G（GⅡ）Fully Automatic Filter External Dimension Map

Size / Type	H	H1	H2	H3	H4	H5	D	D1	A	B	C
ZLSG-50G	1100	568	250	148	600	100	ϕ 350	ϕ 390	264	230	314
ZLSG-65G	1100	568	250	148	600	100	ϕ 350	ϕ 390	264	230	314
ZLSG-80G	1420	750	320	190	780	120	ϕ 450	ϕ 500	340	285	400
ZLSG-100G	1420	750	320	190	780	110	ϕ 450	ϕ 500	340	285	400
ZLSG-125G	1650	760	320	200	820	110	ϕ 500	ϕ 550	400	320	450
ZLSG-150G	1650	760	320	200	820	110	ϕ 500	ϕ 550	400	320	450
ZLSG-200G	1970	950	450	240	1050	120	ϕ 600	ϕ 640	450	350	450
ZLSG-250G	2115	1030	510	260	1120	120	ϕ 700	ϕ 680	510	420	510
ZLSG-300G	2115	1080	550	300	1195	120	ϕ 700	ϕ 680	510	420	510
ZLSG-350G	2210	1160	550	300	1270	150	ϕ 800	ϕ 900	570	450	570
ZLSG-400G	2310	1280	610	340	1350	150	ϕ 800	ϕ 900	570	450	570
ZLSG-500G	2900	1540	700	400	1680	200	ϕ 1100	ϕ 1150	750	650	750
ZLSG-600G	3650	1950	850	450	2150	250	ϕ 1300	ϕ 1300	850	750	850
ZLSG-700G	3650	1950	850	450	2150	250	ϕ 1300	ϕ 1300	850	750	850

(Note: the above figures and tables is normal product dimension and azimuth map for all types of ZLSG-G Water Strainer produced by us. Specified dimension and azimuth can be adjusted according to customer's practical requirement. If it is ZLSG-GⅡ, the parameter of H4 will not be available.)

Attached figure 2: ZLSG-B（ZLSG）azimuth map



Size / Type	H	H1	H2	H3	H4	D	D1	A	B
ZLSG-50B	1190	250	550	170	100	ϕ350	ϕ400	250	240
ZLSG-80B	1250	260	600	170	100	ϕ400	ϕ450	300	260
ZLSG-100B	1320	270	700	190	100	ϕ450	ϕ500	340	285
ZLSG-125B	1580	320	760	200	110	ϕ500	ϕ550	360	320
ZLSG-150B	1580	320	760	200	110	ϕ500	ϕ550	360	320
ZLSG-200B	1850	385	880	265	120	ϕ600	ϕ640	420	380
ZLSG-250B	1950	400	980	290	120	ϕ700	ϕ680	460	420
ZLSG-300B	1950	400	980	290	120	ϕ700	ϕ680	460	420
ZLSG-400B	2475	560	1200	340	150	ϕ900	ϕ900	620	530
ZLSG-500B	2985	700	1500	450	150	ϕ1100	ϕ1150	750	650

(Note: the above figures and tables is normal product dimension and azimuth map for all types of

ZLSG-B Water Strainer produced by us. Specified dimension and azimuth can be adjusted according to customer's practical requirement. If it is ZLSG, the parameter of B will not be available.)

Ⅴ. Instruction of Operation and Maintenance, and Notices

The entire Water Strainers produced by the company are equipped with stationary rings, which can make hoisting and installation very convenient. While installing, please steadily lift and carry the Water Strainer to arranged installation site, fixing Water Strainer with foundation bolt on basic platform. Then you can connect inlet/outlet pipes to wash water pipes.

After the Water Strainer is fixed, install the electronic control cabinet on the wall close to the Water Strainer (it is not necessary if electronic cabinet is installed on Water Strainer's main body), and connect all the control cable and power line according to the diagram of electronic principle provided by us.

Set Water Strainer's working condition of clearing and discharge:

1. Timely clearing, discharge: The frequency of clearing and discharge can be fixed according to the water quality. The required time can be adjusted in PLC.

2. Clearing and discharge controlled by differential pressure: According to the water quality, the frequency of Water Strainer's differential pressure clearing and discharge can be controlled through adjusting the active value of differential pressure controller.

3. Manually clearing and discharge at site: You may press the electronic reducer's start button, which is on the electronic cabinet, to control Water Strainer to start clearing and discharging. This operation can be decided by customers.

4. In addition, while Water Strainer is connected to water supply pipe, it is necessary to install the branch pipeline and switch valve, in order to isolate and address timely when failure emerges. If there is no special situation in the pipeline connected to Water Strainer's wash water valve, all these should have a bevel with the direction of downward water flow, keeping discharge fluent and avoiding being blocked by filth in pipeline.

5. Please notice that the direction of water flow in water supply pipeline should keep consistent

with the mark on Water Strainer, so that the Water Strainer can work normally, avoiding the emergence of failure.

6. Before the equipment is started, all the buttons on electronic control cabinet should be set as automatic; through manually filth discharge, check if the engineer rotating of electronic reducer and wash water ball valve's driving device is correct.

7. After the above preparation is completed, open the water inlet valve slowly, twists off the air discharge valve, and exhausts all the air in the Water Strainer. Examine whether there is leakage in the connection between Water Strainer's main body and water supply system, and then close the air discharge valve and open water outlet valve. Thus the Water Strainer can start working normally.