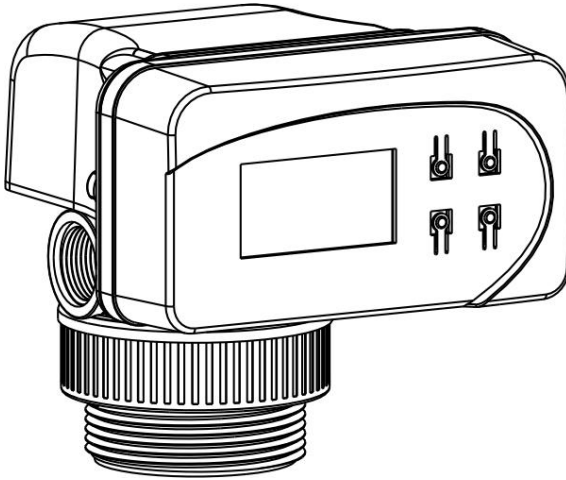


## KLGR-2LMCD、KLGL-2LMCD

# Economical control valve Installation, Use and Maintenance Manual



Scan Qr code for the latest



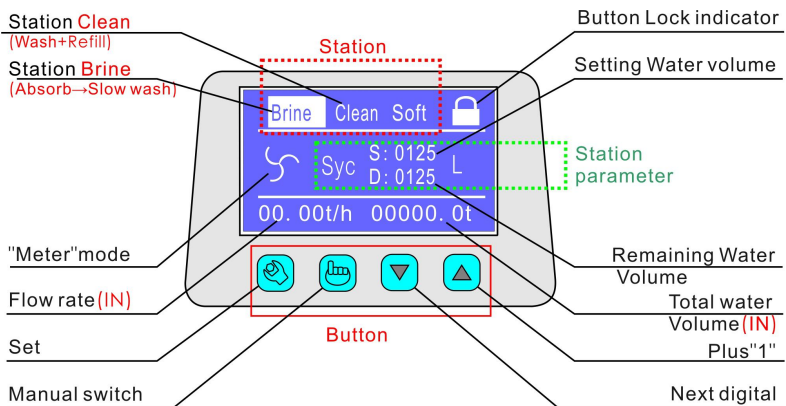
GR-2 valve shift animation



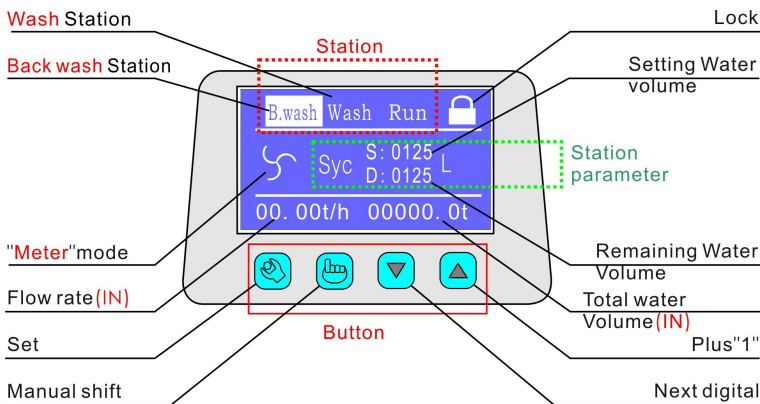
GR-2 install animation

# I .The Controller

## (1)、Display and button



Pic1: GR2-2MLCD Control panel



Pic2: GL2-2MLCD Control panel

## Explanation

- : Unlock state. push the button to parameter setting.push again back.
- : Unlock state. push the button the valve rotate to next station.

**Unlock::**Push “▼” and “▲” same time.

**Lock:**three minute late Automatic lock without any operation

▼ :Push the button the cursor to next digital when parameter setting

▲:plus 1

## (2)、Parameter setting

## Meter mode setting

Push "▼&▲" To unlock

Brine Clean Soft

---

Syc S: 0020 L  
D: 0020

---

0. 00t/h 00000000t



Push to Setting interface

Set parameter

Brine: 0025L

Clean: 0020L

Soft: 0031.0T



Push " "To next page

Time: 11H:05M:33S

Set : 99H-00M-01D

WorkMode(0-1): 0

Out\_Mode(0-4): 2



Push " "To next page

Brine\_Num: 1

Address: 01



Push " "To conform and exit

Brine Clean Soft

---

Syc S: 0020 L  
D: 0020

---

0. 00t/h 00000000t

## Time mode setting

In Meter mode push " "and into line  
Workmode(0-1): 0 change 0 to 1

Time: 11H:05M:33S

Set : 99H-00M-01D

WorkMode(0-1): 1

Out\_Mode(0-4): 2



Push " "To conform to Time mode

Brine Clean Soft

---

Set: 036 Min

Dec: 036 Min



Push to Setting interface

Set parameter

Brine: 036Min

Clean: 005Min

Soft: 0200hour



Push " "To next page

Time: 11H:05M:33S

Set : 99H-00M-01D

WorkMode(0-1): 1

Out\_Mode(0-4): 2



Push " "To next page

Brine\_Num: 1

Address: 01

Push " "To conform and exit

**Pic3: GR2-2MLCD Parameter setting**

## Meter mode setting

Push "▼&▲" To unlock

|                    |      |                    |   |
|--------------------|------|--------------------|---|
| B.wash             | Wash | Run                |   |
|                    | Syc  | S: 0020<br>D: 0020 | L |
| 0. 00t/h 00000000t |      |                    |   |



Push to Setting interface

|         |               |
|---------|---------------|
|         | Set parameter |
| B.wash: | 0025L         |
| Wash:   | 0020L         |
| Run:    | 0031.0T       |



Push "To next page

|                |             |
|----------------|-------------|
| Time:          | 11H:05M:33S |
| Set :          | 99H-00M-01D |
| WorkMode(0-1): | 0           |
| Out_Mode(0-4): | 2           |



Push "To next page

|             |    |
|-------------|----|
| B.Wash_Num: | 1  |
| Address:    | 01 |



Push "To conform and exit

|                    |      |                    |   |
|--------------------|------|--------------------|---|
| B.wash             | Wash | Run                |   |
|                    | Syc  | S: 0020<br>D: 0020 | L |
| 0. 00t/h 00000000t |      |                    |   |

## Time mode setting

In Meter mode push and into line  
Workmode(0-1): 0 change 0 to 1

|                |             |
|----------------|-------------|
| Time:          | 11H:05M:33S |
| Set :          | 99H-00M-01D |
| WorkMode(0-1): | 1           |
| Out_Mode(0-4): | 2           |



Push "To conform to Time mode

|        |              |     |  |
|--------|--------------|-----|--|
| B.wash | Wash         | Run |  |
|        | Set: 036 Min |     |  |
|        | Dec: 036 Min |     |  |



Push to Setting interface

|         |               |
|---------|---------------|
|         | Set parameter |
| B.wash: | 036Min        |
| Wash:   | 005Min        |
| Run:    | 0200hour      |



Push "To next page

|                |             |
|----------------|-------------|
| Time:          | 11H:05M:33S |
| Set :          | 99H-00M-01D |
| WorkMode(0-1): | 1           |
| Out_Mode(0-4): | 2           |



Push "To next page

|             |    |
|-------------|----|
| B.Wash_Num: | 1  |
| Address:    | 01 |

Push "To conform and exit

**Pic4: GL-2MLCD Parameter setting**

**\*Explanation for parameter setting**

**A、Time:11H:05M:33S**, H/Hour;M/Minute;S/Second。

**B、Set: 99H-00M-01D**,delay regenerate setting, default 99 is not delay, For example, when the softening station parameter decreases to 0, regeneration is needed and the equipment cannot stop the water supply, It can be delayed until midnight 2:30, Set **02H-30M-01D** is okay.

**C、WorkMode:(0-1)**:Default, 0 is Meter mode and 1 is Time mode

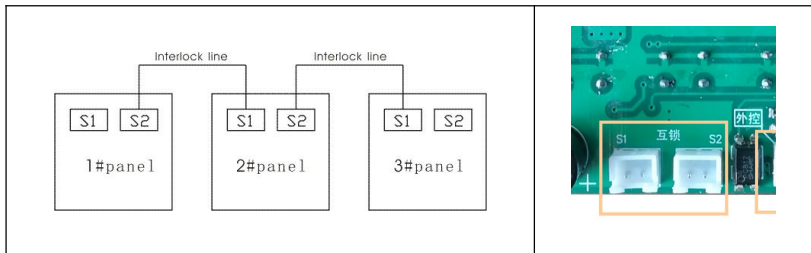
**D、Out\_Mode: (0-4)** : Output relay setting ( See 2. Relay output interface )

**E、B.wash\_Num:1**: The default is 1, and multiple regeneration can be set as required. If it is set to 2, the cycle from **B.wash** to **Wash** will be twice during each regeneration.

**F、Address: 01**:Remote 485 communication address setting

**(3)、Output control**

**1、Interlock line connection as below**



**Pic5: Interlock line Instruction**

**Explanation:**

A. Any valve at **Brine(B.wash)**、**Clean(Wash)** position, the valve can send lock signal.

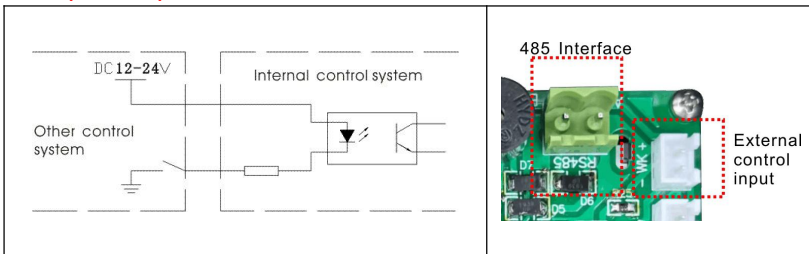
B. Any valve from **Soft(Run)** to **Brine(B.wash)**、**Clean(Wash)** position, the program will read locking signal from interlock line. If there are locking signals (that means there are other valves is in

**Brine(B.wash)**、**Clean(Wash)**, the valve will continue service in **Soft(Run)** until the locking signals disappear. At that time,. Until other valves finish in **Brine(B.wash)**、**Clean(Wash)** (locking signal disappear), this valve start **Brine(B.wash)**、**Clean(Wash)** and send a lock signal.

- C. There is no sequence relationship for S1 and S2 on board. The interlock line can be inserted in S1 or S2 can play the role of interlock.
- D. If only one valve works, the interlock line can be ignored.
- E. If there are many valves work and don't need interlock, don't insert the interlock line. Each valve can work independently.

## 2. External control interface

The valve can be controlled by external system to control into **Brine(B.wash)** station



**Pic6: External control Instruction**


## 3. Relay Output Interface (CC)

- A. The contact capacity of the relay is 5A/250V.
- B. Relay output port:  
**NO**= normally open, **NC**=normally closed, **COM** = common
- C. When connecting the output of the relay, the AC220V power supply input end shall be connected with the leakage circuit breaker.
- A. The contact capacity of the relay is 5A/250V.
- B. When connecting the output of the relay, the AC220V power

supply input end shall be connected with the leakage circuit breaker.

**Different mode, the relay output**

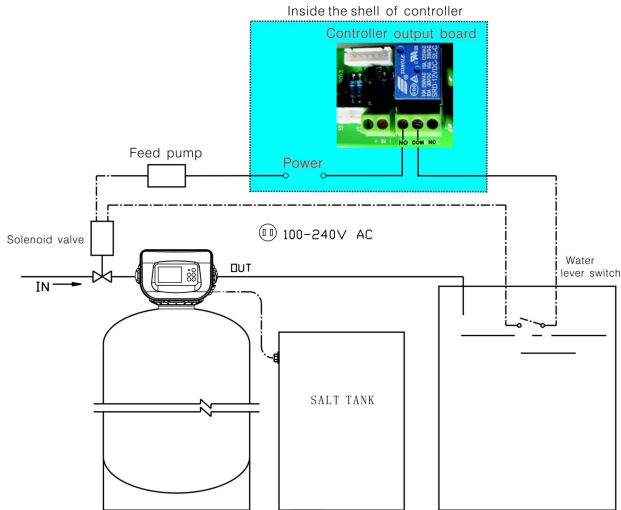
**Connected for "C", disconnect for "x", Conditional disconnect for "Cx"**

| Mode | Brine(B.Wash) | Clean(Wash) | Soft(Run) |  |
|------|---------------|-------------|-----------|-----------------------------------------------------------------------------------|
| 0    | C             | C           | C         | x                                                                                 |
| 1    | C             | C           | x         | x                                                                                 |
| 2    | x             | x           | C         | x                                                                                 |
| 3    | C             | Cx          | C         | x                                                                                 |
| 4    | C             | C           | Cx        | x                                                                                 |

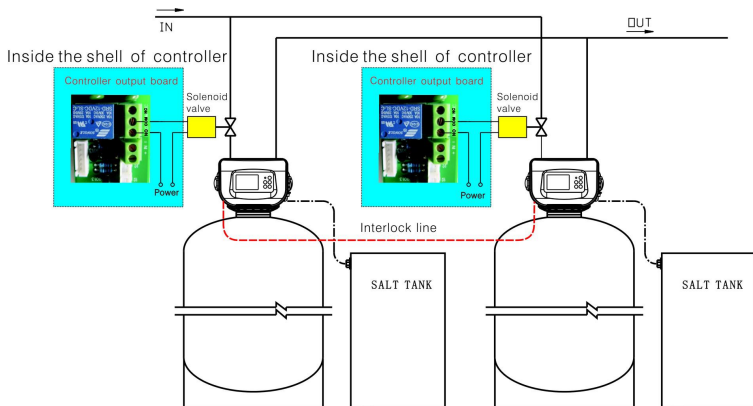
| Mode | Applications                                                                                                                                   |
|------|------------------------------------------------------------------------------------------------------------------------------------------------|
| 0    | <b>Water electromagnetic valve (dynamic) mode:</b> Softener inlet valve and pressure relief when valve shifting. PIC7                          |
| 1    | <b>Backwashing pump mode:</b> this function is used for filter valve, control backwashing pump start-up                                        |
| 2    | <b>Out of the water pump start-up mode:</b> For subsequent reverse osmosis high pressure pump startup.It is default setting(Factory Settings). |
| 3    | <b>Tow valve one RUN &amp; the other one standby inflow water solenoid valve mode:</b> This mode is using for soften valve As shown in PIC 8.  |
| 4    | <b>Tow valve RUN Backwashing mode respectively:</b> this mode for filter valve use .PIC 9.                                                     |

*Note;"Cx "in the mode 03, at the end of the station"Clean(Wash)" if another valve is RUN disconnect itself solenoid valve;*

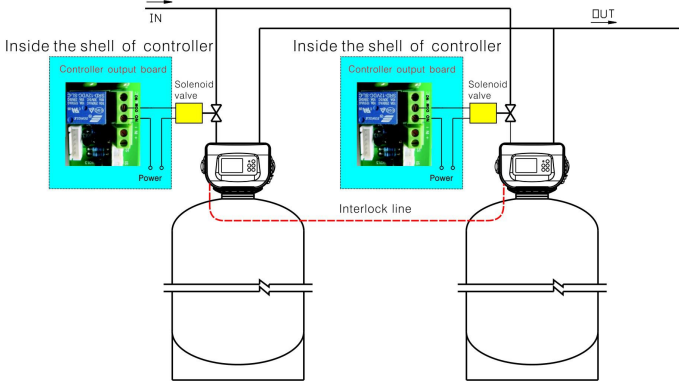




**Pic7: Mode0: Solenoid valve liquid level switch and feed pump. water pressure relief when the multi-way valve is shifting and solenoid valve cut off**

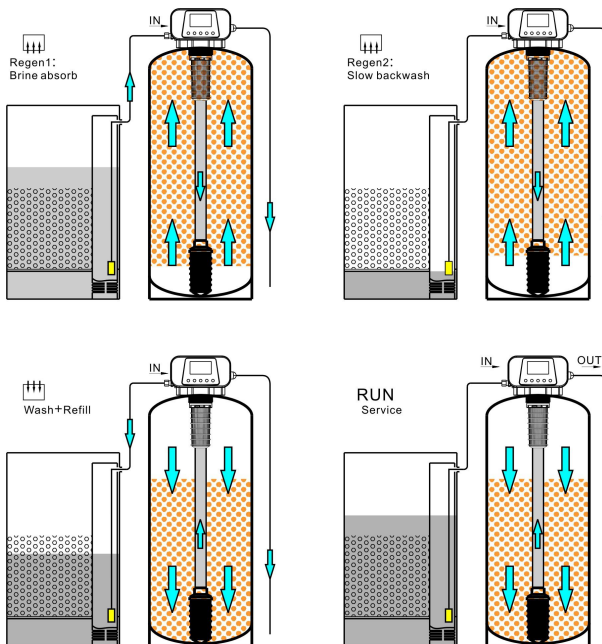


**Pic8: Mode8: Tow valve one RUN and the other one standby inflow water solenoid valve mode(For GR)**



**Pic9: Mode4: Same time RUN backwash Respectively(For GL)**

## II、GR soften valve Process

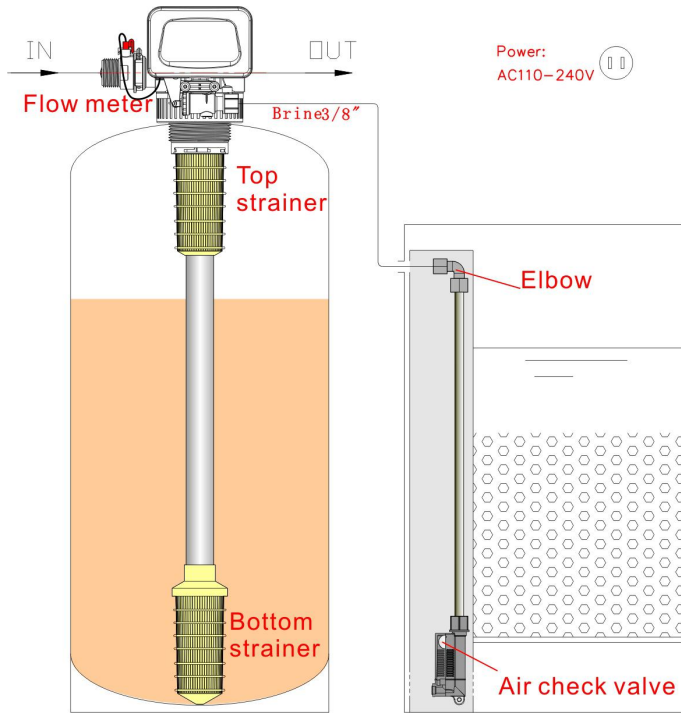


**Pic10: Fixed bed back flow regenerate flow process(For GR)**

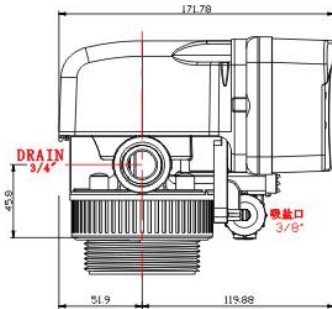
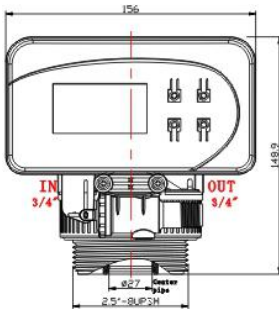
**Note:** : **Brine**; : **Clean**; **RUN:Soft**

### **III、Installation**

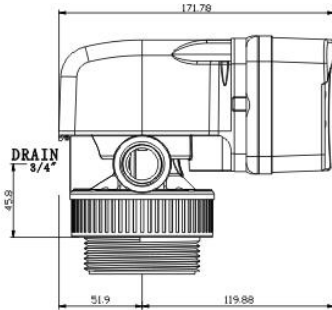
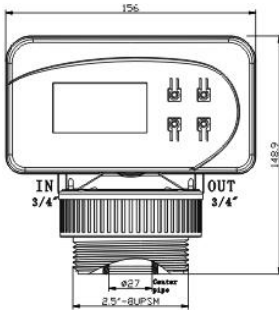
- 1, For GR, If the raw water contains mechanical impurities of gel or powder, it is necessary to install sand rate, cloth bag or disc type functional filter, factory valve inlet filter can only ensure the occasional large particles into the valve body.*
- 2. The diameter of the exchange tank should meet the flow rate requirements of ion exchange*
- 3. For GR, The volume of the salt tank is not less than the volume of the exchange tank.*
- 4. For GR, The fixed bed resin filling rate ensures 30% backwash space on the top of the exchange tank.*
- 5 .For GR, The discharge pipe outlet is close to the ground level, too high or too low will affect the brine absorption of equipment.*
- 6, The specification of pipe is not less than the inlet and outlet of control valve.*
- 7, Water static pressure is not higher than 0.6 MPa*
- 8, water temperature is 0°C ~ 50°C*
- 9, the equipment is installed in the room, the humidity should not be too high, there should be no corrosive chemical gas around, to avoid strong electromagnetic interference to affect the power supply of the control valve.*
- 10. Floor drain or trench drainage shall be set around the equipment to avoid accidental water leakage causing the floor and other indoor items to be flooded.*



Pic11: Configuration and install(For GR)



Pic12: KLGR2-2MLCD geometric parameter



Pic13: KLGL2-2MLCD geometric parameter

#### IV Recommended parameter setting for KLGR2-2MLCD

| Station             | describe                       | Formula                                                                                 |
|---------------------|--------------------------------|-----------------------------------------------------------------------------------------|
| <b>Soft</b> :Ton    | Service                        | $[\text{resin filling volume (L)} \times 90\%] \div \text{Raw water hardness (mmol/L)}$ |
| <b>Brine</b> :Liter | Brine absorb<br>→Slow backwash | Resin filling volume (L) x 250%*                                                        |
| <b>Clean</b> :Liter | Wash and Refill                | Resin filling volume (L) x 200%**                                                       |

1 \*The setting water refers to the process of jet injection quantity sum, including Brine Absorption and back slow washing quantity.

2. *\*\*1/5 of the set water amount is the salt tank refill water and 4/5 is the positive washing water. This ratio is based on the valve body channel design and test. The total water quantity shall be based on 200% resin filling quantity, and the principle shall meet the requirements of  $1/5 \times 200\% = 40\%$  resin filling quantity (1 liter of pure brine regenerate 2.5 liters of resin). If the brine valve is equipped, the set water quantity shall be increased or adjusted on site. The only way to increase the salt absorption is to increase the value of this parameter.*

3, *water hardness unit is mmol/L*

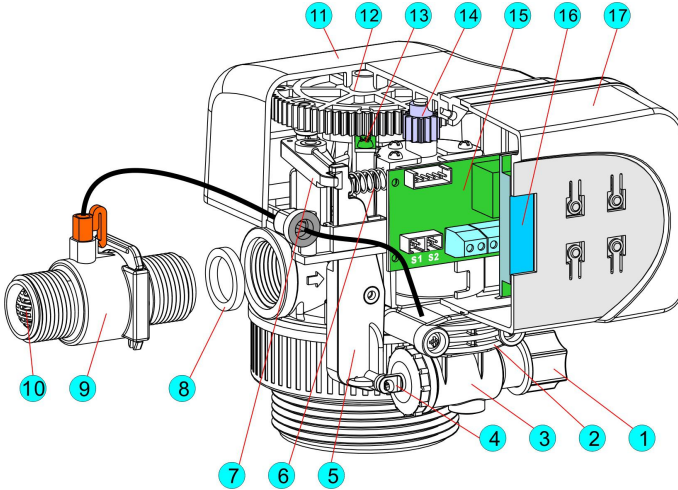
4, *Resin work exchange capacity calculating is 1000 mol/m<sup>3</sup>;*

5, *Design and calculation of brine concentration is 20%;*

## **V Steps for initial water supply**

1. Make sure that the external pipeline and sealing are strong and the brine pipeline is connected in good condition, and turn on the power.
2. Unlock the controller , manually shift to "RUN"station, fully open the outlet valve or the sampling nozzle, slowly open the inlet valve, fill the exchange tank with water, and fully open the inlet valve when the equipment is drained of air.
3. Manually transfer to the "**Clean**" station, clean the resin and fill the salt tank with water. Check and calculate salt tank fill (40% resin fill), Check sewage pipes and drains.
4. Manually transfer to "**Brine**" to check whether the salt absorption is normal.

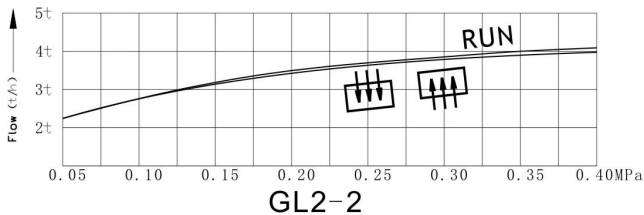
## **VI. The disassembly of the brine valve and injector**(For GR,)



1, Brine mouth;2. Nozzle end cover;3. salt water valve;4. spool;5. fork;6. spring;7. Leverage;8. end seal ring;9. Flow meter;10. filter cap;11. Controller rear shell;12. Station wheel;13. positioning board;14. Motor gear;15. Output board;16. Main board;17. Front shell of controller.

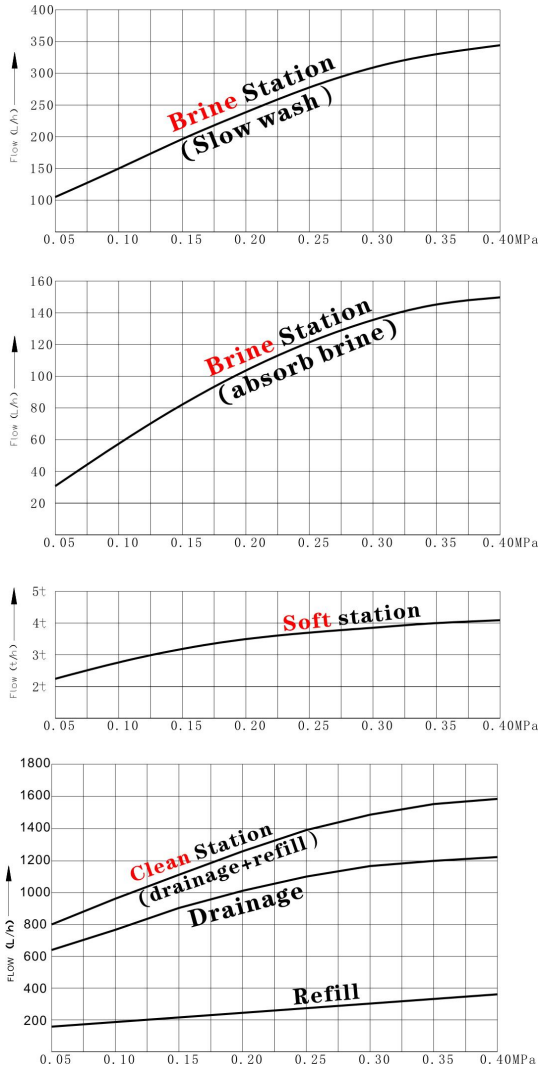
Pic14.The disassembly of the brine valve and injector

## VII. Curve of Flow and Pressure for the Valve



Pic15: GL2-2 Flow pressure curve

**Note:** : **B.wash**; : **Wash**



Pic16: GR2-2 Flow pressure curve



**VIII、Regular failure and failure elimination (for GR)****Produced water is not qualified**

| Phenomena/reasons                                               | Solution                                                      |
|-----------------------------------------------------------------|---------------------------------------------------------------|
| No salt in the brine tank                                       | Add salt to the brine tank                                    |
| No enough absorption of salt water                              | Increase <b>Clean</b> setting value                           |
| flow rate is too large, running velocity is too high            | Reduce the pressure difference between the inflow and outflow |
| The sealing problem of the center pipe or the pipe is too short | Check the center pipe and the sealing ring                    |

**Brine water leaking out to the water outlet**

| Phenomena/reasons                                              | Solution                                                   |
|----------------------------------------------------------------|------------------------------------------------------------|
| Insufficient amount of cleaning                                | Increase <b>Brine</b> value to extended slow backwash time |
| No enough resin and too much space at the top of the swap tank | Add more resin or other to reduce the space                |

**The inlet pressure of the equipment increases and the water output decreases**

| Phenomena/reasons                              | Solution                                                             |
|------------------------------------------------|----------------------------------------------------------------------|
| Resin's being polluted by the suspended matter | Unload the valve and wash the resin both inside and outside the tank |
| water distributor is broken resin block        | Unload the water distributor and clean it                            |
| Out pipes have closure phenomenon              | Check and eliminate the problem                                      |

**The salt tank overflowed**

| Phenomena/reasons                                            | Solutions                                                                  |
|--------------------------------------------------------------|----------------------------------------------------------------------------|
| Brine valve close is not good                                | Push the brine valve core (pic8) and check it                              |
| Poor sealing condition for the connection of the brine valve | Take out the brine valve, connect the pipe and check the sealing condition |

|                                                                        |                                                  |
|------------------------------------------------------------------------|--------------------------------------------------|
|                                                                        | of the valve outside.                            |
| <b>Clean</b> station setting is too large or the salt box is too small | Reduce the set amount, or increase the salt tank |

**No brine absorption**

| Phenomena                                                                                      | Reasons and Solution                                                                                                                                                        |
|------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Drainage pipe have water out, but no brine absorption, instead of refilling water to salt tank | It is the problem at the back end of the jet. First check whether the drain pipe is blocked, and then check the upper and lower water distributor inside the exchange tank. |
| No water out from drain pipe, also no brine absorption.                                        | Mainly is the jet nozzle blocked, inflow must be installed filter(pic:8).                                                                                                   |

**IX. Tips and Precautions of Equipments(For GR)**

1. The equipment should use industrial salt with the size of more than 4mm to guarantee the smooth passage of water filling and salt absorbing. If some fine salt is used, please keep it at small amount. Otherwise, it will get agglomerated, leak to the salt filter and clog the tube.
2. The bottom of the salt tank needs to be checked frequently; the deposit and sludge need to be cleared out.
3. The filter of inlet needs to be cleaned periodically in case that the inlet clogs the tubes and leads to low efficiency of the equipment as well as the decrease of the outflow amount.