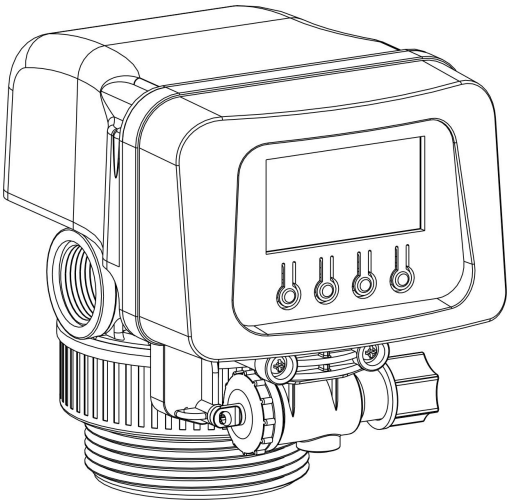
GR-2DLCD

Downflow Regenerate Control Valve

Installation, Use and Maintenance Manual

(GR2-2DLCD、GR4-2DLCD、GR10-2DLCD)

Scan Qr code for the latest

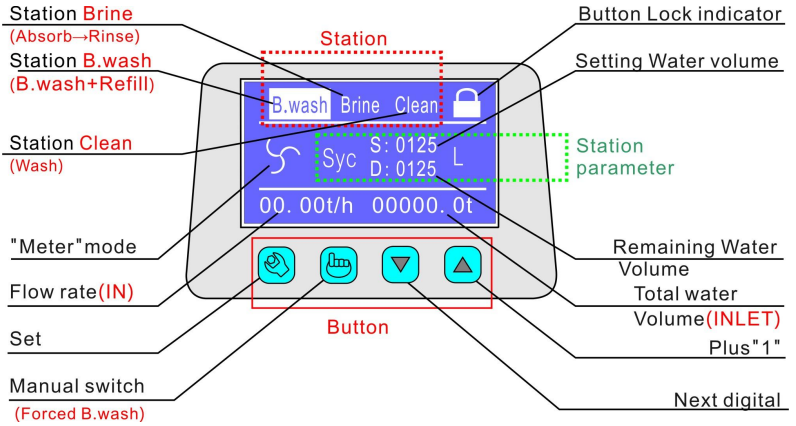


GR-2D valve shift animation

GR-2D install animation

Ⅰ.The Controller

(1)、Display and button



Pic1: GR-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.*

"Forced B.Wash" : lock "🔒"state,push "☝" 6 times,the valve switch to "B.Wash".

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

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

▲*:plus 1*

(2) 、Parameter setting

Pic2: GR2-2MLCD 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 1 is Meter mode and 0 is Time mode

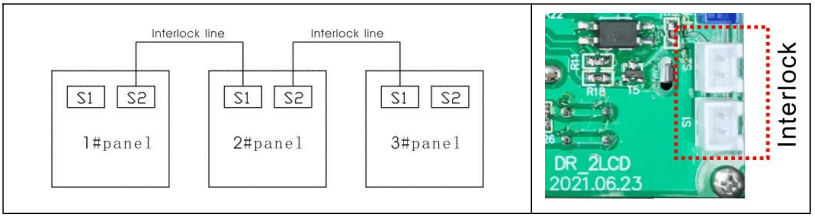
D、Out_Mode:（0-6）：Output relay setting（See 2. Relay output interface）

E、 Brine_Num:1： The default is 1, and multiple regeneration can be set as required. If it is set to 2, the cycle from **Brine** to **Clean** will be twice during each regeneration.

F、Address：01:Remote 485 communication address setting

(3)、Output control

1、Interlock line connection as below



Pic3: Interlock line Instruction

Explanation:

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

B. Any valve from **Soft** *to* **B.wash**、**Brine**、**Clean** *position, the program will read locking signal from interlock line. If there are locking signals (that*

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

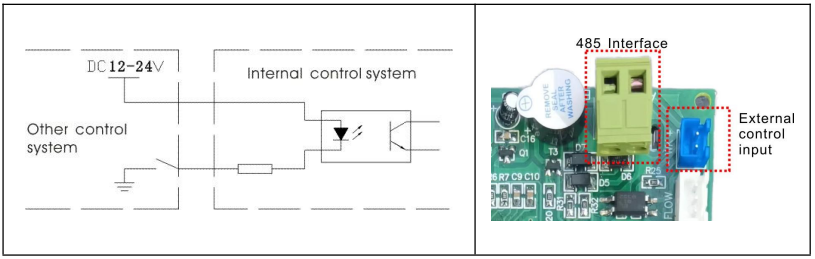
C. There is no sequence relationship for S1 and S2 on board. The interlock line can be inserted in S1 or S2 can play the role of interlock.

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** station



Pic4: External control Instruction

3. Relay (Normal Open) output interface

A、The contact capacity of the relay is 5A/250V.

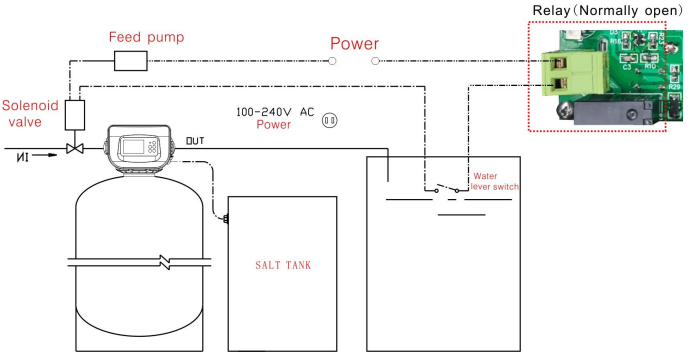
B、When connecting the output of the relay, the AC220V power supply input end shall be connected with the leakage circuit breaker.

Different mode, the relay output NO and COM Connected for "C", disconnect for "x"

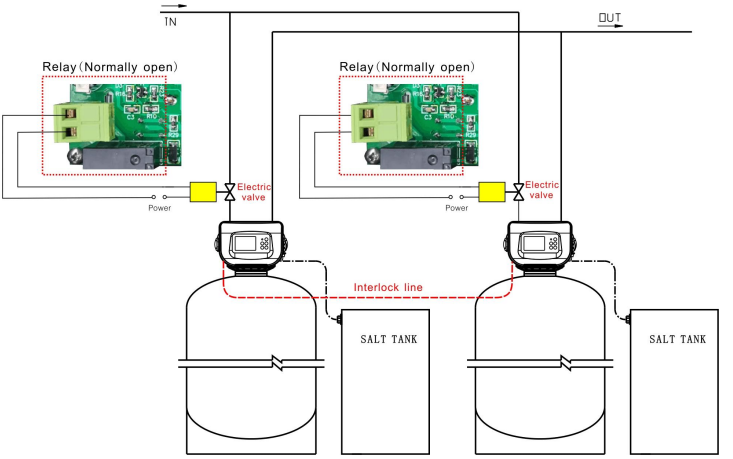
Mode	B.wash	Brine	Clean	soft	
0	C	C	C	C	×
1	C	C	C	×	×
2	×	×	×	C	×
3	C	C	C	×	×
4	C	C	C	×	×
5	×	×	×	C×	×
6	C	×	×	×	×
7	C	C	C	×	C
8	×	×	×	×	C

Mode	Applications
0	**Inlet Solenoid valve mode:** Pressure relief during transposition,lever switch and feed pump control. Pic 5
1	**Booster pump mode:** this function is used for filter valve, control backwash pump start-up.
2	**Rear pump starting mode:** For example, for subsequent RO high pressure pump start-stop control.
3	**Tow valve one RUN & one standby water inlet solenoid valve mode**:Interlock line connected. Pic 6.
4	**Inlet solenoid valve double valve parallel interlock respectively backwash mode**:Interlock line connection is required, this mode for filter valve use.

5	**CX(Mode2 additional conditions) :** When the inlet flow meter check the water flow signal in **Soft** station.the Relay is Connected.
6	**Backwash booster and compressed air mode**
7	**Only in service, "NO" is open**
8	**Only in the valve shifting,"NO" is closed**

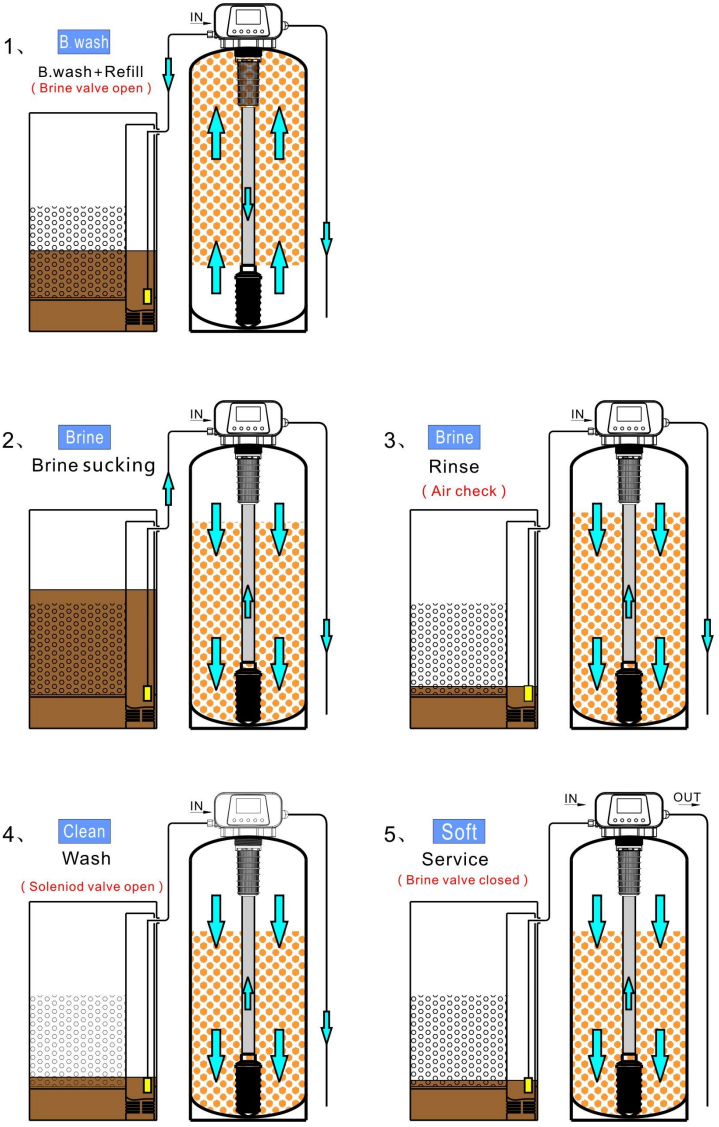


Pic5：Mode0: Solenoid valve liquid level switch and feed pump control.



Pic6：Mode3: Tow valve one RUN and the other one standby inflow water solenoid valve mode:

Ⅱ.Downflow Regenerate Process



Pic7：GR-2 Downflow regenerate flow process

Ⅲ.Installation

1，If the raw water contains mechanical impurities of gel or powder, it is necessary to install sand filter, cloth bag or disc type functional filter, factory valve inlet filter can only ensure the occasional large particles into the valve body.

2. The volume of the salt tank is not less than the volume of the exchange tank.

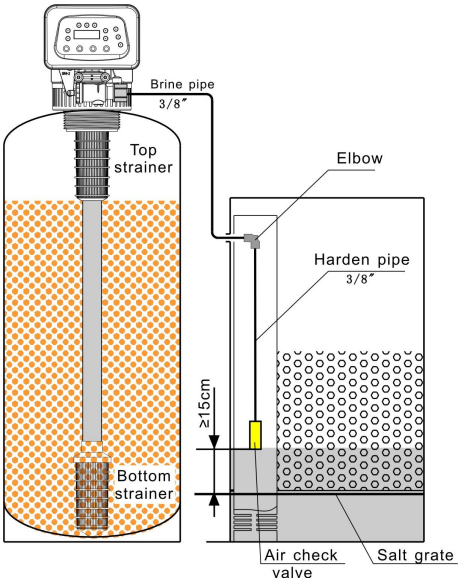
3 .The drainage pipe outlet is close to the ground level, too high or too low will affect the brine absorption of equipment.

4, Water static pressure is 0.1～0.6 MPa

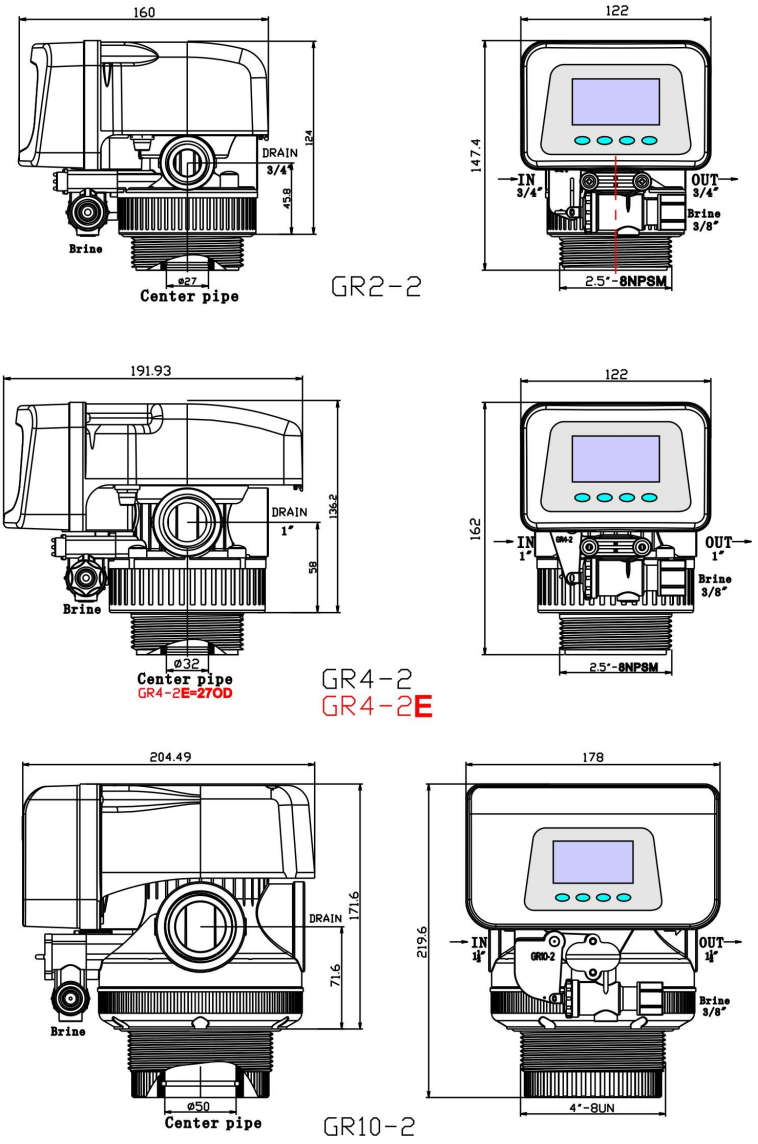
5,Water temperature is 0°C ～ 50°C

6, 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.

7，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.



Pic8：Configuration and install



Pic9：valve geometric parameter

Ⅳ.Recommended parameter setting

Station	Unit	Formula
B.wash(B.Wash+refill)	**Liter**	**Resin filling volume (L) x 250%(200%+50%)****
Brine(Absorb→Rinse)	**Liter**	**Resin filling volume (L) x 250%(50%+200%)***
Clean	**Liter**	**Resin filling volume (L) x 100%**
Soft	**Ton**	**[resin filling volume (L) x 90%] ÷ Raw water hardness(mmol/L)**

*1 *The setting water refers to the process of jet injection quantity sum, including Brine Absorption 50% and Rinse 200%.*

*2. **50% is the salt tank refill water and 200% is the B.wash water. This ratio is based on the valve body channel design and test. (50% means 1 liter of pure brine regenerate 2 liters of resin).*

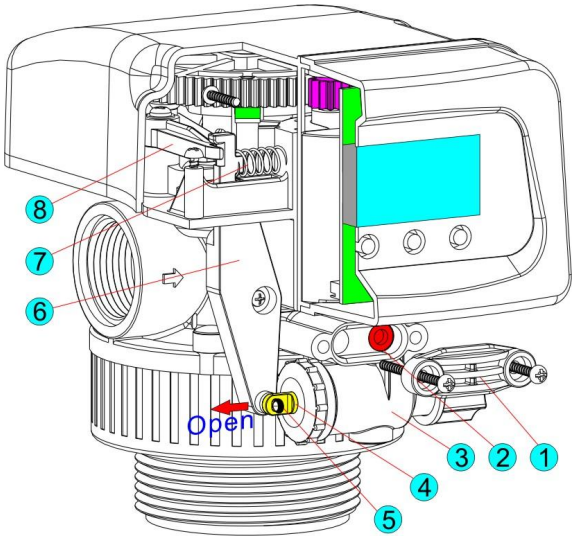
3, Water hardness unit is mmol/L

4, Resin work exchange capacity calculating is 1000 mol/m³;

5, Design and calculation of brine concentration is 16%(Dry salt tank dilution concentration）;

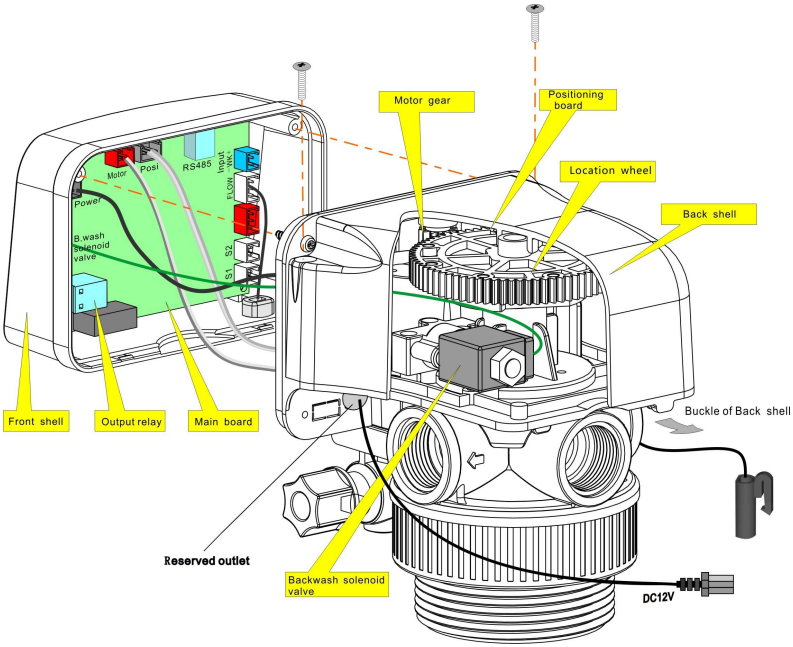
6、1Liter brine(16%)Molar value=1000g×16%/58.8g(NaCL)×1.4(Specific consumption) ≈160/80=2mol

V. The disassembly of the brine valve and injector

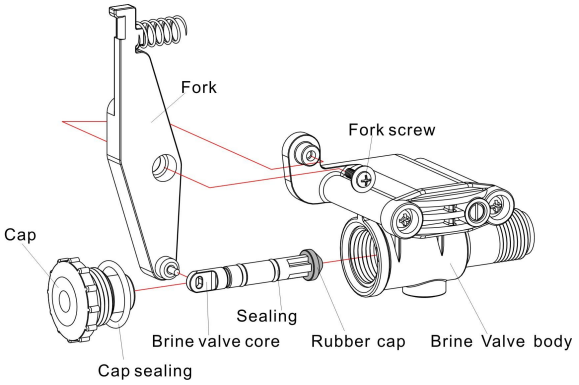


1. End cover; 2. Jet nozzle; 3. brine valve; 4 Brine valve core ; 5, Pin; 6, fork;7. Spring; 8, leverage

Pic10.The disassembly of the brine valve and injector

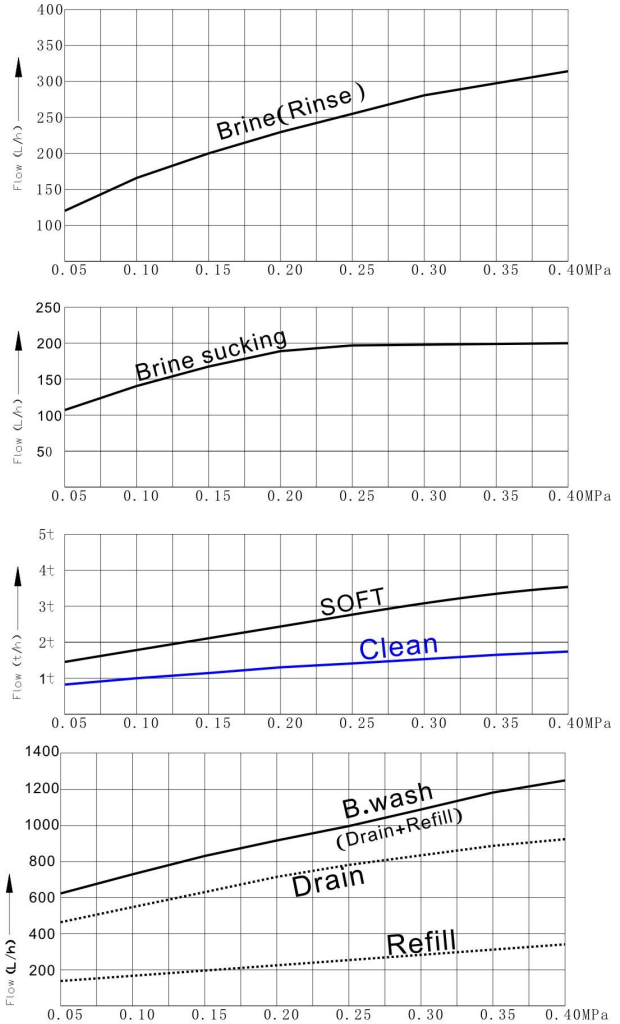


Pic11: Removal and connection of front shell of the controller

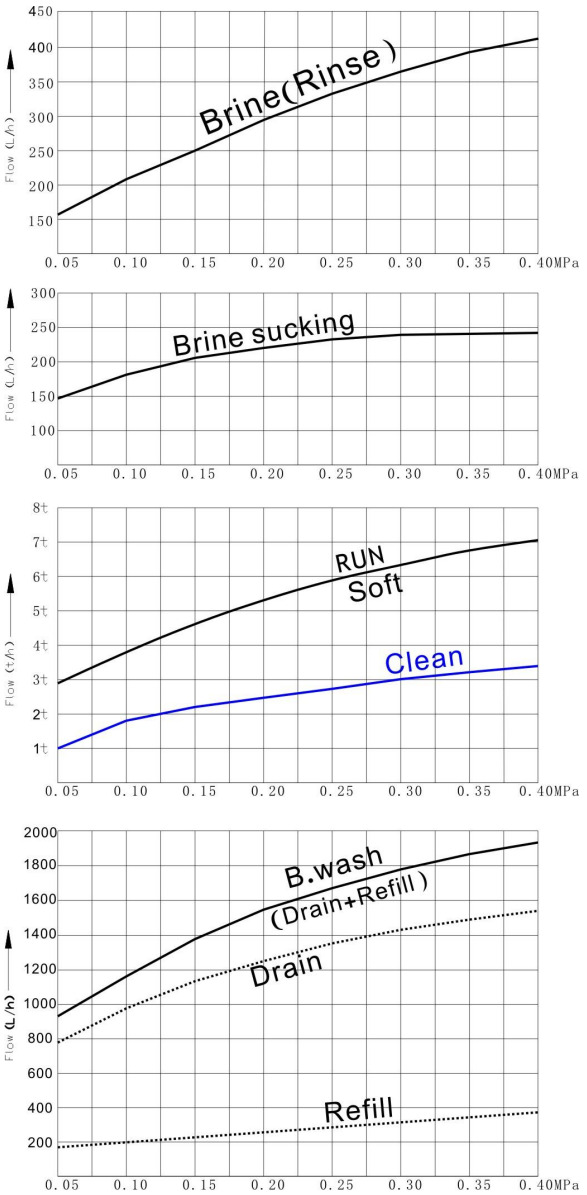


Pic12:Brine valve explode drawing

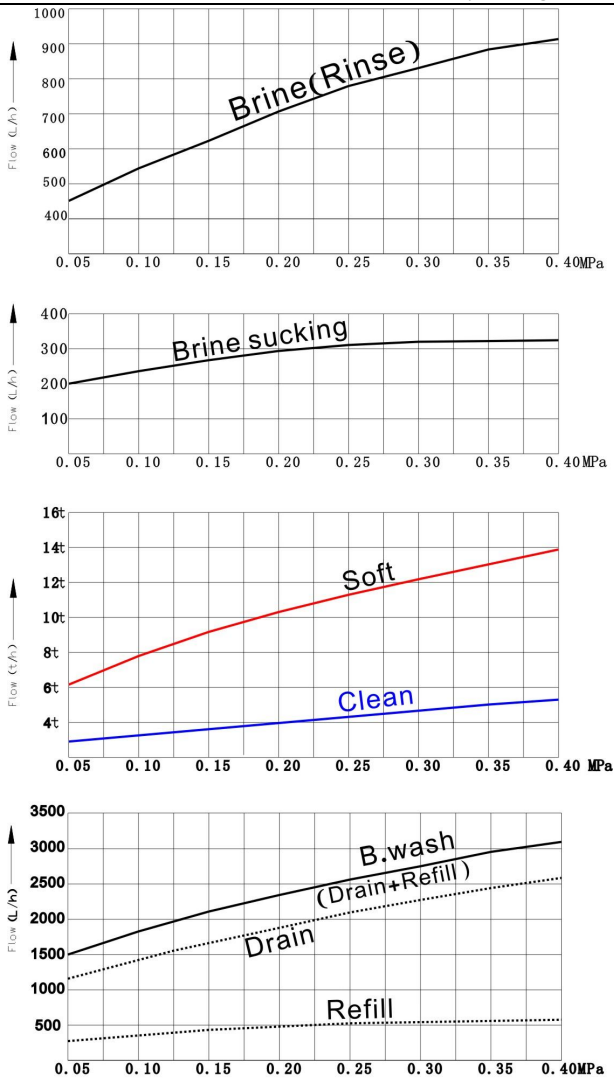
VI. Curve of Flow and Pressure for the Valve



Pic13：GR2-2DLCD Flow pressure curve



Pic14：GR4-2DLCD Flow pressure curve



Pic15：GR10-2DLCD Flow pressure curve

V、Regular failure and failure elimination

Produced water is not qualified

Phenomena/reasons	**Solution**
No salt particle in the brine tank	Add salt to the brine tank
No enough absorption of salt water	Increase refilling water amount of **B.wash** setting value
Flow rate is too large, running velocity is too high	Reduce the pressure difference between the inflow and outflow

Brine water leaking out to the water outlet

Phenomena/reasons	**Solution**
Insufficient amount of washing	Increase **Clean** value to extended wash 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	Forced backwash or Unload the valve and wash the resin both inside and outside the tank.
Strainer is blocked by broken resin	Unload the Strainer and clean it.
Out pipes system have closure phenomenon	Check and eliminate the problem

The salt tank overflowed

Phenomena/reasons	**Solutions**
B.wash Station set is too large or the salt tank is too small	Reduce the set value, or increase the salt tank

VI、Tips and Precautions of Equipment

1. **Add salt to salt tank**

The equipment should use large particles industrial salt. 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.

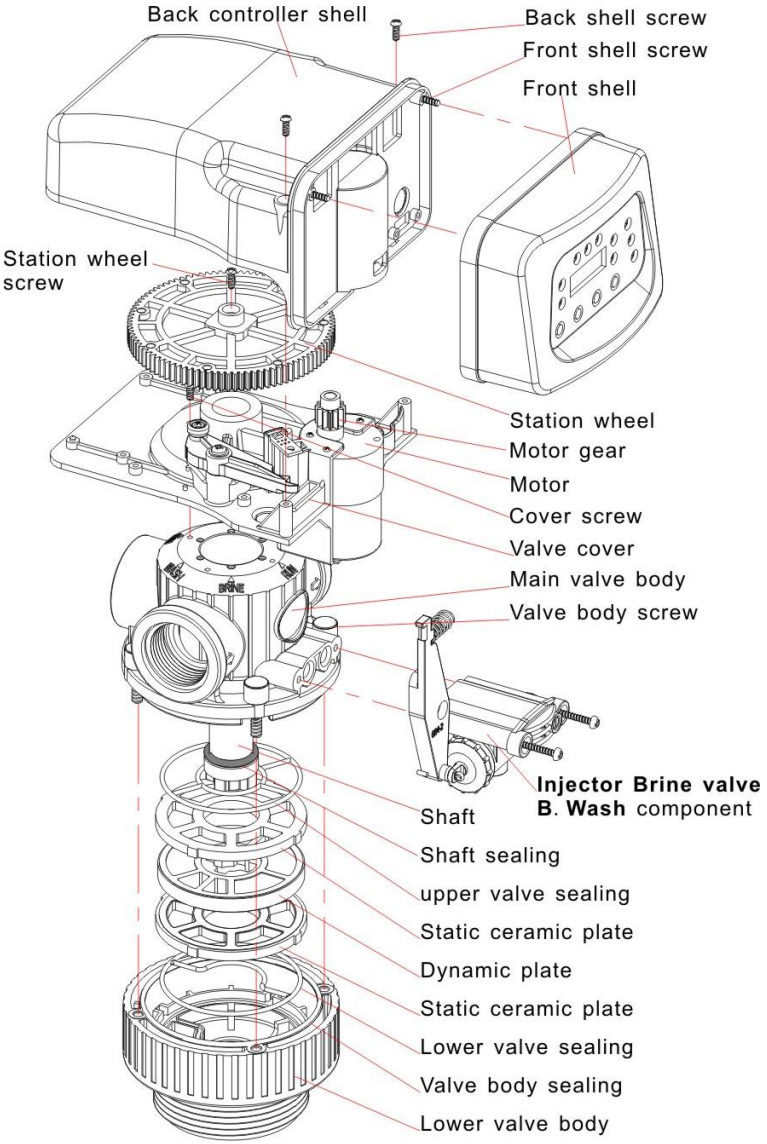
2. Clean salt tank

The bottom of the salt tank needs to be checked frequently; the deposit and sludge need to be cleared out.

3. Clean inflow filter

The filter of inflow needs to be cleaned periodically in case that the inflow clogs the tubes and leads to low efficiency of the equipment as well as the decrease of the outflow amount.

VII. GR-2 valve explode drawing（GR4-2 example）



Pic16：Explode drawing（GR4-2 example）