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US Patent No.: 7549446
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Russia Patent No.: 2349819
South Korea Patent No.: 10-0914137
Mexico Patent No.: 268581
Australia Patent No.: 2005263257
Philippine Patent No.: 1-2006-502553
Taiwan Patent No.: M287896

Multi-functional Flow Control Valve for Water Treatment Systems

82602EH(Old Model No.:F105AD)

82602FH(Old Model No.:F105BD)

82602ED(Old Model No.:F105AH)

82602FD(Old Model No.:F105BH)

86602ED(Old Model No.:F105AHW)

86602FD(Old Model No.:F105BHW)

User Manual

Please read this manual in details before using the valve and
keep it properly in order to consult in the future.

OWRX.466.598

Before the valve put into use, please fill in the below content so as to help us to refer in the future.

Note: The following partial functions need to be configured with the WIFI control board. Please consult your local dealer before selecting the model. This product is equipped with a water leakage protection function. When setting relevant parameters, it should be set according to the actual situation of the household water, so as to avoid unnecessary loss.

Softener System Configuration

Tank Size: Dia. _____ mm, Height _____ mm;

Resin Volume _____ L; Brine Tank Capacity _____ L;

Hardness of Raw Water _____ mmol/L;

Pressure of Inlet Water _____ MPa;

Control Valve Model _____; Number _____;

The Specification of Drain Line Flow Control _____;

The Specification of Brine Line Flow Control _____;

Injector No. _____.

Water Source: Ground-water Filtered Ground-water Tap Water Other _____.

Parameter Set

Parameter	Unit	Factory Default	Actual Value
Time of Day	h:m	Time of Day	
Regeneration Time	h:m	02 : 00	
Hardness of Raw Water	mg/L	150	
Continuous Water Time	min	00	
Peak Flow Rate for Close	m ³ /h	00	
Language	/	English	
Unit	/	m ³	
Resin Volume	L	08	
Brine & Slow Rinse Mode	/	Up-flow	
Backwash Time	min	02	
Brine & Slow Rinse Time	min	30	
Brine Refill Time	min:sec	03:00	
Fast Rinse Time	min	3	
Interval Backwash Times	/	F-00	
Maximum Interval Regeneration Days	day	30	
Regeneration Times Alarm	time	300	
Salt Adding Volume	kg	00	

● If there is no special requirement when product purchase, we choose 8468043 drain line flow control, 8468075 brine line flow control, and coffee nozzle/throat of injector.

Catalogue

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Notice

- To ensure normal operation of the valve, please consult with professional installation or repairing personnel before use it.
- If there are any of pipeline engineering and electric works, there must be finished by professional at the time of installation.
- Do not use the control valve with the water that is unsafe or unknown quality.
- Depending on the changing of working environment and water requirement, each parameter of softener should be adjusted accordingly.
- When the water treatment capacity is too low, please check the resin. If the reason is shortage of resin, please add; if the resin turns reddish brown or broken, please replace.
- Test water periodically to verify that system is performing satisfactorily.
- Sodium used in the water softening process should be considered as part your overall dietary salt intake. Contact doctor if you are on a low sodium diet.
- Ensure that there is solid salt all the time in the brine tank in the course of using, when this valve is used for softening. The brine tank should be added crystalline coarse salt only, at least 99.5% pure, forbidding use the small salt.
- Do not put the valve near the hot resource, high humidity, corrosive, intense magnetic field or intense vibrations environment. And do not leave it outside.
- Forbidden to carry the injector body. Avoid using injector body as support to carry the system.
- Forbidden to use the brine tube or other connectors as support to carry the system.
- Please use this product under the water temperature between 5~50℃, water pressure 0.15~0.6MPa. Failure to use this product under such conditions voids the warranty.
- If the water pressure exceeds 0.6Mpa, a pressure reducing valve must be installed before the water inlet. While, if the water pressure is under 0.15MPa, a booster pump must be installed before the water inlet.
- PPR pipes, corrugated pipes, or UPVC pipes are recommended for pipe installation and aluminum-plastic pipes should be avoided.
- Do not let children touch or play, because carelessness operating may cause the procedure changed.
- When the attached cables or transformer of this product is broken, they must be changed to the one that is from our factory.

1. Product Overview

1.1. Main Application & Applicability

Used for softening or demineralization water treatment systems.

- Be suitable for Residential softening system
- Ion exchange equipment
- RO pretreatment softening system, etc.

1.2. Product Characteristics

- Simple structure and reliable sealing

It adopts hermetic head faces with high degree pottery and corrosion resistance for opening and closing. It combines with Service, Brine Refill, Brine Dissolve, Backwash, Brine & Slow Rinse, and Fast Rinse.

- Raw water flows out from outlet or not when in regeneration process

Changing the fixed disk can make raw water flow out from outlet or not when in regeneration process.

- Down-flow or up-flow regeneration

Can choose down-flow or up-flow regeneration (For 82602EA valve, in up-flow regeneration mode, raw water flows out from outlet when in Brine & Slow Rinse status).

- Brine refill with soft water

Brine refill with soft water, which is beneficial to increasing efficiency of regeneration; When in brine refill and dissolve status, it is in service (Soft water flows out from outlet), which can save regeneration time and raise working efficiency.

- Adjust bolt to mix up a part of raw water with soft water.



When the soft water is too soft, the hardness can be adjusted by adjusting bolt.

- Long outage indicator

If outage overrides 3 days, the time of day indicator “12:12” will flash to remind people to reset new time of day. The other set parameters do not need to reset. The process will continue to work after power on.

- Buttons lock

No operations to buttons on the controller within 1 minute, button lock indicator light on which represent buttons are locked. Before operation press

and hold the “” and “” buttons for 5 seconds to unlock. This function can avoid incorrect operation.

- LCD screen display

Adopt LCD display, clear and briefly.

- Maximum interval regeneration days

Under the situation of service reaching the setting days and the volume not yet, it could enter into regeneration process forcibly when current time is the same as regeneration time.

- All parameters can be modified

According to the water quality and usage, the parameters in the process can be adjusted.

1.3. Service Condition

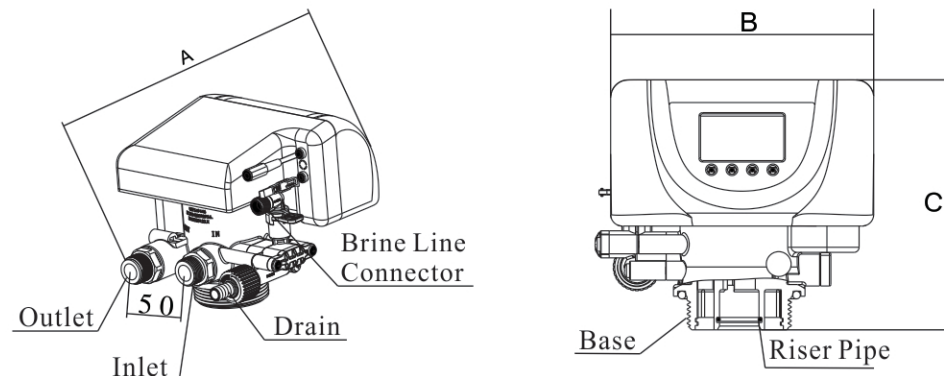
Runxin Valve should be used under the below conditions:

Items		Requirement
Working conditions	Water pressure	0.15MPa~0.6MPa
	Water temperature	5℃~50℃
Working environment	Environment temperature	5℃~50℃
	Relative humidity	≤95% (25℃)
	Electrical facility	Ac100~240V/50~60Hz
Inlet water quality	Water turbidity	UP-flow regeneration<2FTU ; Down-flow regeneration<5FTU
	Water hardness	First Grade Na ⁺ <6.5mmol/L ; Second Grade Na ⁺ <10mmol/L
	Free chlorine	<0.1mg/L
	Iron ²⁺	<0.3mg/L
	CODMn	<2mg/L (O ₂)

In the above table, First Grade Na⁺ represents First Grade Na⁺ Exchanger. Second Grade Na⁺ represents Second Grade Na⁺ Exchanger.

- When the water turbidity exceeds the conditions, a filter should be installed on the inlet of control valve.

1.4. Product Structure and Technical Parameters



The appearance is just for reference. It is subjected to the real product.

Product dimension

Model	A	B	C
82602EA	244mm	180mm	171mm
82602EB	235mm	180mm	161mm

Connector Size

Model	Inlet	Outlet	Drain	Brine Line Connector	Base	Riser Pipe	Hard Water Bypass	Regeneration Mode
82602EA							No	Down-flow
82603EB	G3/4	G3/4	NPT3/4	G3/8	2.5" -8NPSM	1.05" OD (Ø26.7)	Yes	Down-flow /up-flow

Main Technical Parameter

Water Treatment Capacity	2m ³ /h (0.1MPa Pressure drop) ; 3.0m ³ /h (0.3MPa Pressure drop)
Transformer Input	AC100~240V/50~60Hz
Transformer Output	DC12V, 1.5A
Work Cycle	Normal Work Cycle : Service→Brine Refill→240min. Brine Dissolve→Backwash →Brine & Slow Rinse→Fast Rinse Under vacation mode: Brine Refill→240min. Brine Dissolve

Remark: Choose up-flow regeneration for 82602EA, raw water flows out from the outlet when in Brine & Slow Rinse status.

1.5. Product Installation

A. Install notice

Before installation, read all those instructions completely. Then obtain all materials and tools needed for installation.

The installation of product, pipes and circuits, should be accomplished by professional to ensure the product can operate normally.

Perform installation according to the relative pipeline regulations and the specification of Inlet, Outlet, Drain and Brine Line Connector.

B. Device location

- ①The filter or softener should be located close to drain.
- ②Ensure the unit is installed in enough space for operating and maintenance.
- ③Brine tank need to be close to softener.
- ④The unit should be kept away the heater, and not be exposed outdoor. Sunshine or rain will cause the system damage.
- ⑤Avoid to install the system in circumstance of Acid/Alkaline, magnetic or strong vibration, because above factors will cause the system disorder.
- ⑥Do not install the filter or softener, drain pipeline in circumstance which temperature may drop below 5℃, or above 50℃.
- ⑦One place is recommended to install the system which cause the minimum loss in case of water leaking.

C. Pipeline installation

①Install control valve

- As the Figure 1 shows, select the riser pipe with 26.7 mm OD, glue the riser pipe to the bottom strainer and put it into the resin tank, cut off the exceeding tube out of tank top opening. Plug the riser tube in case of mineral entering.
- Fill the resin to the tank, and the height is accordance with the design code.
- Install the top distributor to the valve.
- Insert the riser tube into control valve and screw tight control valve.

Note:

- The length of riser tube should be neither higher nor lower 5 mm tank top opening

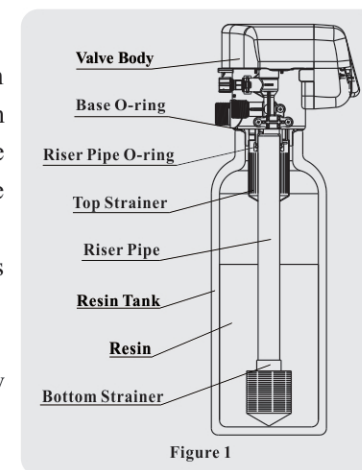


Figure 1

height, and its top end should be rounded to avoid damage of O-ring inside the valve.

- Avoid floccules substance together with resin to fill in the resin tank.
- Avoid O-ring inside control valve falling out while rotating it on the tank.

② Install drain pipeline

- As the Figure 2 shows, slide the drain hose connector into drain outlet.
- Insert O-ring to the O-ring groove of the drain connector
- Insert drain hose into drain connector.
- Screw drain hose connector into drain outlet, and lock it.
- Locate the drain hose well as the Figure 2 shows.

Note:

- Drain outlet should be lower than control valve, it allows being 2meters higher than control valve to arrange drain lines, and be better not longer than 3meters, or will have effect on Brine & Slow Rinse.
- Be sure not connect drain with sewer, and leave a certain space between them (Such as showed in the Figure 2.), avoid wastewater be absorbed to the water treatment equipment.

③ Connect brine tube

- As Figure 3 shows, insert brine line flow control into connector, and then put into the O-ring.
- Slide G3/8 brine tube hose connector over end of brine tube.
- Put filter net into the tube and insert tube bushing into the end of brine tube.
- Tighten brine draw hose connector onto valve connector, then insert connector into brine line connector, finally, insert the clip.
- Connect the other end of brine tube with the brine tank. (The liquid level controller and air-blocker should be installed in the brine tank.)

Remark: The brine tube and drain pipeline should not be bended or plugged.

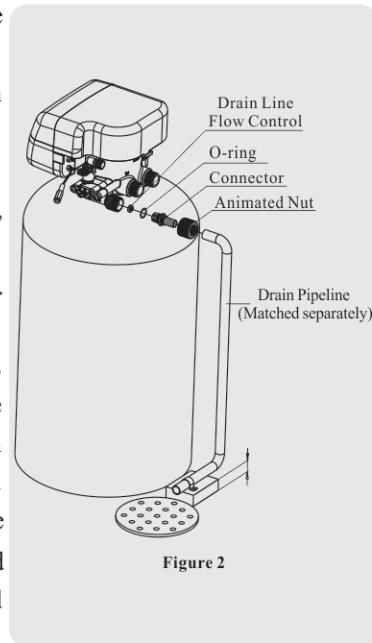


Figure 2

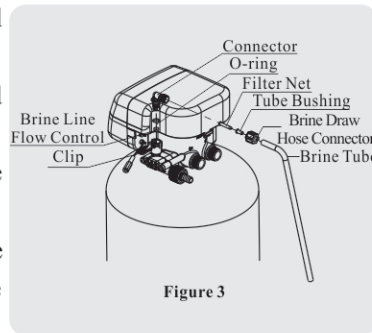
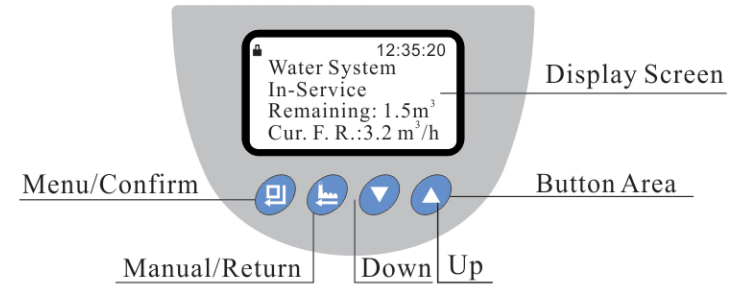


Figure 3

2. Basic Setting & Usage

2.1. The Function of PC Board



A. Button lock indicator

● Light on, indicate the buttons are locked. At this moment, press any single button will not work (Under any status, no operation in one minute, will light on and lock the buttons.)

● Solution : Press and hold both “” and “” for 5 seconds, the light off.

B. “” Manu/Confirm button

● In service mode, press “” to enter program display mode, viewing all values.

● In program display mode, press “” to enter program set mode, adjusting all values.

● Press “” after all program are set, and then the voice “Di” means all setting are success and return program display mode.

C. “” Manual/Return button

● Press “” in any status, it can proceed to next step. (Example: Press “” in Service status, it will start regeneration cycles instantly; Press “” while it is in Backwash status, it will end backwash and go to Brine & Slow Rinse at once.)

● Press “” in program display mode, and it will return in Service; press “” in program set mode, and it will return program display mode.

● Press “” while adjusting the value, then it will return program display mode directly without saving value.

D. Down “” and Up “”

● In program display mode, press “” or “” to view all values.

● In program set mode, press “” or “” to adjust values

● Press and hold both “” and “” for 5 seconds to unlock the buttons.

2.2. Basic Setting & Usage

A. In unlocked status, press “” to enter parameter set mode:

Item	Parameter Set Range	Default Setting	Remark
Time of Day	00:00~23:59	Current value	/
Regeneration Time	00:00~23:59	02:00	/
Water Hardness	50~999mg/L	150mg/L	Only for Meter Type

B. When connected with power, press and hold both “” and “” for 2 seconds to enter the technician’s and manufacturer’s enquiry and setting.

Item	Parameter Set Range	Default Setting	Remark
Language	Chinese/English	Chinese	/
Control Mode	Meter Type/ Time Clock Type	Meter Type	/
Flow Rate Unit	m ³ , L, gal	m ³	Only for Meter Type
Resin Volume	1~75L	08L	Only for Meter Type
Brine Draw Type	Up-Flow Brine Draw/ Down-Flow Brine Draw	Up-Flow Brine Draw	
Backwash Time	00~99min.	2min.	
Brine & Slow Rinse Time	00~99min.	30min.	
Brine Refill Time	00:00~99:59m:s	03:00m:s	
Fast Rinse Time	00~99min.	3min.	
Interval Backwash Times	0~20	00	Only for Up-flow Brine Draw
Maximum Interval Regeneration Days	0~40	30	Only for Meter Type


C. Process Display (Meter Type & Down-Flow Brine Draw as example)


12:30:45 Water System In-Service Remaining: 1.50 m ³ Cur. F. R.: 2.20 m ³ /h G1	12:30:45 Water System In-Service Remaining: 1.50 m ³ Regen. Time: 02:00 G2	12:50:32 Water System Brine Refilling... Remaining: 03:00 m:s G3
12:53:32 Water System Softening... Remaining: 240min. Cur. F. R.: 2.20 m ³ /h G4	16:54:32 Water System Back Washing... Remaining: 2min. G5	16:58:32 Water System Brine & Slow Rinse... Down-Flow Remaining: 30min. G6
17:04:32 Water System Fast Rinsing... Remaining: 3min. G7	12:50:32 Motor Running... G8	**Error** G9

Illustration:




























- In Service status, the figure shows G1 and G2; In Brine Refill status, it shows figure G3;
- In Brine Dissolve status, the figure shows G4; In Backwash status, it shows figure G5;
- In Brine & Slow Rinse status, it shows figure G6; In Fast Rinse status, it shows figure G7;
- When the electrical motor is running, it shows figure G8;
- The display will show figure G9 when the system is in error. X of EX stands for number 1 to 4.
- In vacation mode, it shows “VAC. MODE”;

D. Enter/ exit vacation mode

In service mode of unlocked status, press and hold “” for 6 seconds to enter vacation mode with buzzer sounding and electrical motor running. Firstly, it enters Brine Refill status. Secondly, it turns to Pause 1 status for 240 minutes Brine Dissolve status after Brine Refill. Thirdly, it is in Brine & Slow Rinse status after Brine Dissolve (Time of Brine drawing is 25% of the normal setting).


After Brine & Slow Rinse, it turns to Pause 2 status. Press and hold “” for 6 seconds to exit vacation mode with buzzer sounding and electrical motor running.

E. Parameter Setting for Users

Set	Set-Method	Display
Time of Day	When  lights on, press and hold “  ” and “  ” for 5 seconds until  lights off; 1. Press “  ” to enter into “Set Softener Para.” as figure LR1. The option of “Set Time of Day” will be selected by system automatically; 2. Then press “  ”, the setting interface will display as figure LR2; Hour value 12 flash, through “  ” or “  ” to adjust the hour value; 3. Press “  ” again, then minute value 30 flash, through “  ” or “  ” to adjust the minute value; 4. Press “  ” and hear a sound “Di”, then finish adjustment;	Set Softener Para. » Set Time of Day Set Regen. Time Set Water Hardness LR1 Set Time of Day 12:30 LR2
Regeneration Time	1. Press “  ” to enter into “Set Softener Para.” as figure LR1. 2. Then press “  ” to select “Set Regen. Time”; Press “  ”, regeneration time setting shows as figure LR3; When hour value 02 flash, press “  ” or “  ” to adjust the hour value. 3. Press “  ” again, then minute value 00 flash, through “  ” or “  ” to adjust the minute value. 4. Press “  ” and hear a sound “Di”, then finish adjustment.	Set Regen. Time 02:00 LR3
Water Hardness	1. Press “  ” to enter into “Set Softener Para.” as figure LR1. 2. Press “  ” to select “Set Water Hardness”; Then press “  ” to show the figure LR4; hardness value 150 flash, and press “  ” or “  ” to adjust the hardness value. 3. Press “  ” and hear a sound “Di”, then finish adjustment.	Set Water Hardness 150mg/L LR4

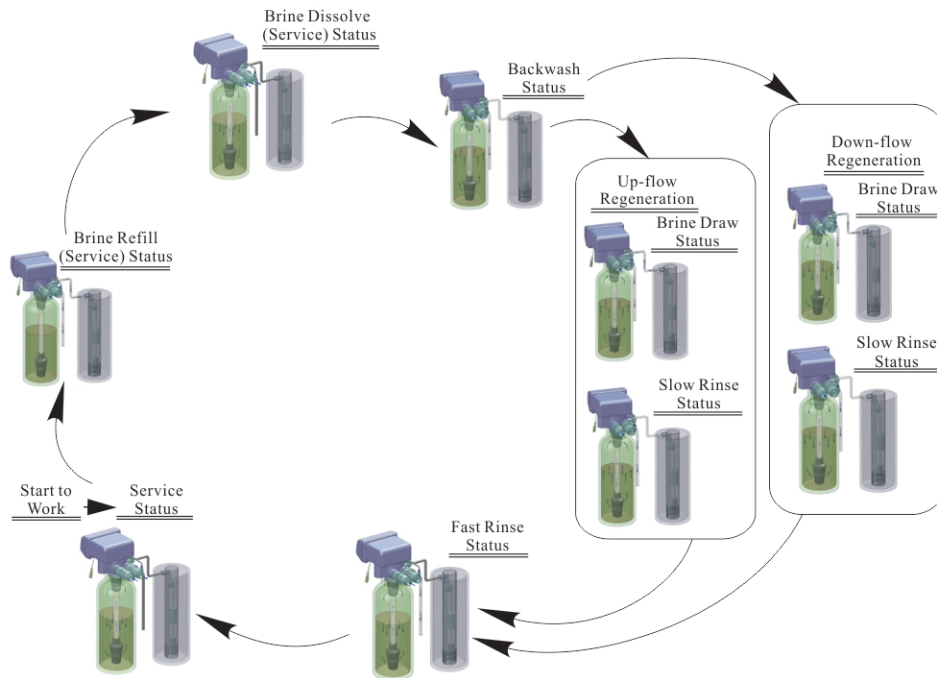
F. Usage

After being accomplished installation, parameter setting and trial running by professional, the valve could be put into use. In order to ensure the quality of outlet water can reach the requirement, the user should complete the below works:

- ① Ensure that there is solid salt all the time in the brine tank in the course of using when this valve is used for softening. The brine tank should be added the clean water softening salts only, at least 99.5% pure, forbidding use the small salt and iodized salt.
- ② When the outlet water hardness is unqualified, please press “” and the valve will temporarily regenerate again (It will not affect the original set operation cycle.)
- ③ When the feed water hardness changes a lot, you can adjust the water treatment capacity as the 3rd item of Parameter Setting for Users.

3.Applications

3.1.Softener Flow Chart(82602EB as example)



3.2.The Function and Connection of PC Board

Open the front cover of control valve, you will see the main control board and connection port as Figure 6:

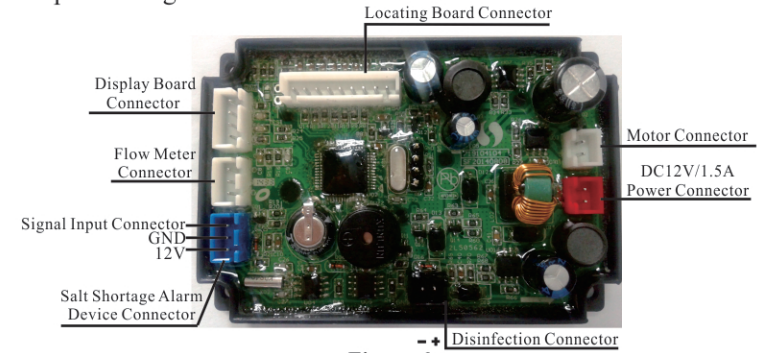



Figure 6

Function	Application	Explanation
Disinfection connector	It is used for disinfecting resin when softener in regeneration.	Under the Brine & Slow Rinse status, it can make a part of brine water electrolyzed, producing hypochlorous acid to sterilize and disinfect the resin.
Connector of salt shortage alarm	It is used for checking whether the salt is enough in the brine tank.	When the brine tank is shortage of salt, the system will give the alarm and remind user to add the salt in time.

A. Disinfection device connector

If it needs to connect with disinfection device, please connect to the interface as Figure 6 shows.

B. Salt shortage alarm device

If it needs to connect with salt shortage alarm device, please connect to the interface as Figure 6 shows. If it shows salt shortage alarm, can press and hold “” for 6 seconds to cancel it when in brine dissolve or service status unlocked.

3.3.System Configuration and Flow Rate Curve

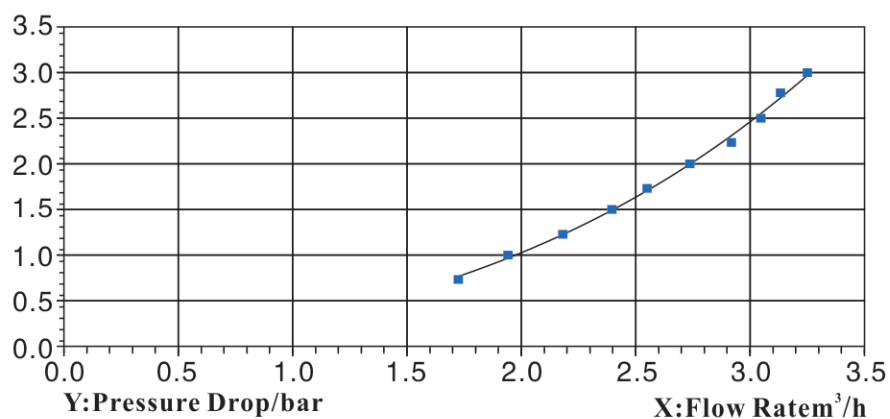
A. Product configuration with tank, resin volume, brine tank and injector

Tank Size (mm)	Resin Volume (L)	Flow Rate (m ³ /h)	Brine Tank Size (mm)	The Minimum Salt Consumption for Regeneration(Kg)	Injector Nozzle / Throat
Φ180×1130	16	0.5	Φ200×500	2.4	Coffee/Coffee
Φ205×1300	25	0.7	Φ250×520	4	Yellow/Pink
Φ255×1390	40	1.2	Φ250×520	6	White/Blue
Φ300×1650	60	1.8	Φ400×800	9	Black/White

Attention: The flow rate calculation is based on linear velocity 25m/hr; the minimum salt consumption for regeneration calculation is based on salt consumption 150g/L (Resin).

B.Flow rate characteristic

1).Pressure-flow rate curve



2). Injector parameter table

Inlet Pressure MPa	Draw Rate(L/M)				
	Nozzle / Throat of 630x series (Color)				
	Coffee/Coffee	Yellow/Pink	Blue/Yellow	White/Blue	Black/White
0.15	0.84	1.48	1.85	2.0	2.46
0.20	0.97	1.79	2.2	2.34	2.83
0.25	1.1	2.0	2.46	2.64	3.23
0.30	1.26	2.2	2.71	2.93	3.45
0.35	1.4	2.38	2.92	3.13	3.78
0.40	1.51	2.53	3.17	3.38	4.0
0.45	1.6	2.7	3.35	3.58	4.27
0.50	1.7	2.9	3.55	3.82	4.52

3).Brine line flow control parameter table

Number	8468076	8468075	8468057	8468056	8468052
Flow rate (L/m)	0.30	0.44	0.63	0.98	1.52

4).Drain line flow control parameter table

Number	8468043	8468042	8468061	8468045
Flow rate (L/m)	3.94	6.96	11.94	21.8

5).Configuration for Standard Injector, Brine Line Flow Control and Drain Line Flow Control

Tank Dia. (mm)	Regeneration Type	Nozzle/Throat Color	Draw Rate (L/m)	Slow Rinse (L/m)	Brine Line Flow Control	Drain Line Flow Control
175	Up-flow	Coffee/Coffee	1.26	0.73	8468076, 8468075	8468043
	Down-flow		1.71	1.0		
200	Up-flow	Yellow/Pink	2.2	1.45	8468076, 8468075, 8468057	8468042
	Down-flow		2.96	1.9		
225	Up-flow	Blue/Yellow	2.71	1.92	8468076, 8468075, 8468057, 8468056	8468061
	Down-flow		3.79	2.62		
250	Up-flow	White/Blue	2.93	2.0	468076, 8468075, 8468057, 8468056, 8468052	8468061
	Down-flow		4.07	2.68		
300	Up-flow	Black/White	3.45	2.41	8468076, 8468075, 8468057, 8468056, 8468052	8468045
	Down-flow		4.89	3.33		

Remark: Above data for the product configuration and relevant characteristics are only for reference.

3.4.Parameter Settlement

①Service TimeT1

Water Treatment Capacity:

$$Q = V_R \times K \div Y_D (\text{m}^3)$$

Hardness of inlet water, mmol/L.

Exchange factor, mmol/L, 400~1000. Down-flow regeneration 400~750; Up-flow regeneration, take 450~1000. If the inlet water hardness is higher, the factor is smaller.

Resin volume, m³.

By hours:

$$T1 = Q \div Q_h (\text{Hour})$$

Water treatment capacity per hour(m³/h)

Water treatment capacity(m³)

By days:

$$T1=Q \div Q_d(\text{Day})$$

Water treatment capacity per day (m^3/d)

Water treatment capacity (m^3)

② Backwash time T2

It is subject to the turbidity of inlet water. Generally, it is suggested to be set 10~15 minutes. The higher the turbidity is, the longer backwash time shall be set. However, if the turbidity is more than 5FTU, it is better to install a filter in front of the exchanger.

③ Brine & slow rinse time T3

$$T3=(40\sim50)\times H_R(\text{min})$$

Generally, $T3=45H_R(\text{min.})$

In this formula, H_R —The height of resin in exchange tank (m.)

④ Brine refill time T4

$$T4=0.34\times V_R \div \text{Brine refill speed}(\text{min.})$$

In this formula, V_R —Resin volume (m^3)

⑤ Fast rinse time T5

$$T5=12\times H_R(\text{min.})$$

Generally, the water for fast rinse is 3~6 times of resin volume. It is suggested to be set 10~16 minutes, but subject to the outlet water reaching the requirement.

⑥ Exchange factor

$$\text{Exchange factor} = E / (k \times 1000)$$

In this formula, E —Resin working exchange capability (mol/m^3), it is related to the quality of resin. Down-flow regeneration, take 800~900. Up-flow regeneration, take 900~1200.

K —Security factor, always take 1.2~2. it is related to the hardness of inlet water: the higher the hardness is, the bigger the K is.



⑦ Regeneration time: The whole cycle for generation is about two hours. Please try to set up the regeneration time when you don't need water according to the actual situation.

The calculation of parameters for each step is only for reference, the actual proper time will be determined after adjusting by water exchanger supplier. This calculation






procedure of softener is only for industrial application; it is not suitable for small softener in residential application.






The above calculation of parameters is only for reference






Technician's and manufacturer's parameters setting






When connected with power, press and hold both “” and “” for 2 seconds to enter into manufacturer's parameters setting as figure H1 (Included H1-1, H1-2, H1-3). (Meter type as example)






H1-1		H1-2		H1-3	
» Set Language Set Type Set Flow Rate Unit Set Resin Volume ↓		» Set Brine D. Type Set Backwash Time Set B.S.R.T. Set B.F. Time ↓		» Set F.R. Time Interval B.W. Times Interval Regen. D. ↓	
Set Language 中文 ○English	Set Type ○Time Clock Type Meter Type	Set Flow Rate Unit ○gal ○L m ³	Set Resin Volume 08L		
A1	A2	A3	A4		
Set Brine D. Type Up-flow ○Down-flow	Set Backwash Time 02 min.	Set B.S.R.T. 30 min.	Set B.F. Time 03:00 min:sec		
A5	A6	A7	A8		
Set F.R. Time 03 min.	Interval B.W. Times F-00	Interval Regen. D. 30 days			
A9	A10	A11			





① When the display screen shows Figure H1, the option of “Set Language” will be selected by system automatically, and then press “”, the display screen will show Figure A1. Can press “” or “” to choose what language needed. Press “”, it will save and return to H1; Press “”, it will return to H1 without saving the value.






② When the display screen shows Figure H1, select “Set Type”, and press “”, the display screen will show Figure A2. Can press “” or “” to choose control mode. Press “”, it will save and return to H1; Press “”, it will return to H1 without saving the value.






③ When the display screen shows Figure H1, select “Set Flow Rate Unit”, and press “”, the display screen will show Figure A3. Can press “” or “” to choose unit. Press “”, it will save and return to H1; Press “”, it will return to H1 without saving the value.






④ When the display screen shows Figure H1, select “Set Resin Volume”, and press “”, the display screen will show Figure A4. Can press “” or “” to choose resin volume. Press “”, it will save and return to H1; Press “”, it will return to H1 without saving the value.





⑤ When the display screen shows Figure H1, select “Set Brine D. Type”, and press “”, the display screen will show Figure A5. Can press “” or “” to choose brine & slow rinse mode. Press “”, it will save and return to H1; Press “”, it will return to H1 without saving the value.

⑥ When the display screen shows Figure H1, select “Set Backwash Time”, the display screen will show Figure A6. Can press “” or “” to choose backwash time. Press “”, it will save and return to H1; Press “”, it will return to H1 without saving the value.



⑦ When the display screen shows Figure H1, select “Set B.S.R.T.”, and press “”, the display screen will show Figure A7. Can press “” or “” to choose brine & slow rinse time. Press “”, it will save and return to H1; Press “”, it will return to H1 without saving the value.

⑧ When the display screen shows Figure H1, select “Set B.R. Time”, and press “”, the display screen will show Figure A8. Can press “” or “” to choose brine refill time. Press “”, it will save and return to H1; Press “”, it will return to H1 without saving the value.

⑨ When the display screen shows Figure H1, select “Set F.R. Time”, and press “”, the display screen will show Figure A9. Can press “” or “” to choose fast rinse time. Press “”, it will save and return to H1; Press “”, it will return to H1 without saving the value.

⑩ When the display screen shows Figure H1, select “Interval B.W. Times”, and press “”, the display screen will show Figure A10. Can press “” or “” to choose interval backwash times. Press “”, it will save and return to H1; Press “”, it will return to H1 without saving the value.


⑪ When the display screen shows Figure H1, select “Interval Regen. D.”, and press “”, the display screen will show Figure A11. Can press “” or “” to


choose interval regeneration days. Press “”, it will save and return to H1; Press “”, it will return to H1 without saving the value.


3.5.Trial Running

After installing the multi-functional flow control valve on the resin tank with the connected pipes, as well as setting up the relevant parameter, please conduct the trial running as follows:

A. Adding calculated water to the brine tank and adjust the height of safety brine valve. Adding solid particle salt to the brine tank then dissolve the salt as far as possible.


B. Switch on power. Press “” and go in the Backwash position, making the water flow into the resin tank; You can hear the sound of air-out from the drain pipeline and clean the foreign materials in the resin tank until the outlet water is clean. It will take 8 minutes to finish the whole process.

C. Press “”, turning the position from Backwash to Brine& Slow Rinse. Enter in the process of Brine & Slow Rinse. The air check valve close when control valve finished sucking brine, then slow rinse start to work. It is about 50 ~ 60 minutes for whole process.


D. Press “”, turning the position from Brine& Slow Rinse to Fast Rinse. And take out some outlet water for testing, if the water hardness reach the requirement, and the chloridion in water is almost the same compared with the inlet water, then go to the next step. It is about 4 minutes.

E. Press “”, and control valve returns to Service Status and start to running.

F. Press to Brine Refill position, record the time and adjust it as required.

G. Press “”, and control valve returns to Service Status and start to brine dissolve. It will take 240 minutes. .

Note:

- When the control valve enter into the regeneration status, all program can be finished automatically according to the setting time; if you want one of steps terminated early, you can press “” .

- If water inflow too fast, the media in tank will be damaged. When water inflow slowly, there is a sound of air emptying from drain pipeline.

- After changing resin, please empty air in the resin according to the above Step B.

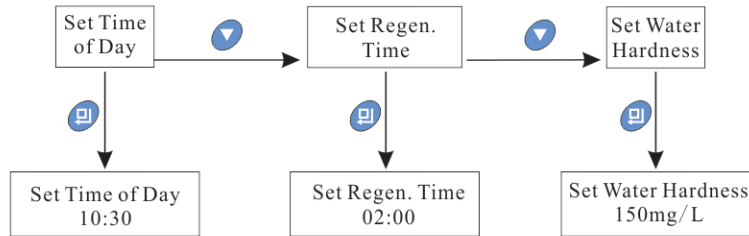
- In the process of trial running, please check the water situation in all position, ensuring there is no resin leakage.

- The time for Backwash, Brine& Slow Rinse, Brine Refill and Fast Rinse position can be set and executed according to the situation of trial running.

3.6.Parameter Enquiry and Setting

(1)Parameter Enquiry for End-user

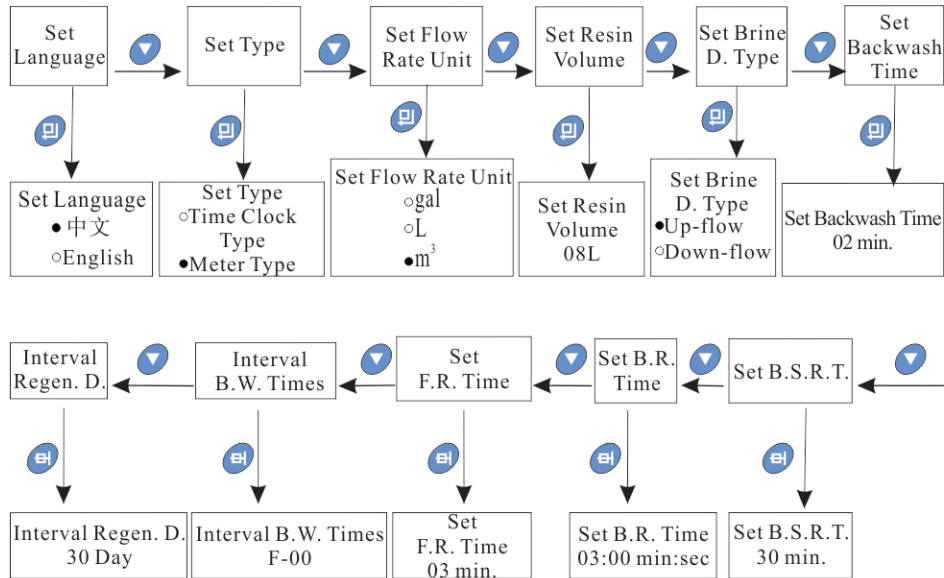
When light on, press and hold both “▲” and “▼” for 5 seconds and hear a sound “Di” to unlock the button; then press “☐” to enter the program display mode; press “▲” or “▼” to view each value according to below process.(Press “☐” back to service status.)The contents are as follows:



82602E(Take meter type valve as example)

(2)Parameter Enquiry for Technician and Manufacturer

When connected with power, press and hold “☐” and “▼” for 2 seconds to enter into Parameter Enquiry for Technician and Manufacturer. Press “▲” or “▼” to view each value according to below process.(Press “☐” back to service status.) The contents are as follows:



82602E(Take meter type valve as example)

3.7.Trouble-Shooting

A.Control Valve Fault

Problem	Cause	Correction
1. Softener fails to regenerate.	A. Electrical service to unit has been interrupted. B. Regeneration cycles set incorrect. C. Controller is defective. D. Motor fails to work.	A. Assure permanent electrical service (Check fuse, plug, pull chain or switch). B. Reset regeneration cycles. C. Replace controller. D. Replace motor.
2. Regeneration time is not correct.	A. Time of Day not set correctly. B. Power failure more than 3 days.	Check program and reset time of day.
3. Softener supply hard water.	A. Bypass valve is open or leaking. B. No salt in brine tank. C. Injector plugged. D. Insufficient water flowing into brine tank. E. Leak at O-ring on riser pipe. F. Internal valve leak. G. Regeneration cycles not correct. H. Shortage of resin. I. Bad quality of feed water or turbine blocked.	A. Close or repair bypass valve. B. Add salt to brine tank and maintain salt level above water level. C. Change or clean injector. D. Check brine tank refill time. E. Make sure riser pipe is not cracked. Check o-ring and tube pilot. F. Change valve body. G. Set correct regeneration cycles in the program. H. Add resin to mineral tank and check whether resin leaks. I. Reduce the inlet turbidity, clean or replace turbine.
4. Softener fails to draw brine.	A. Line pressure is too low. B. Brine line is plugged. C. Brine line is leaking. D. Injector is plugged. E. Internal valve leak. F. Drain line is plugged. G. Brine valve is faulted H. Sizes of injector and DLFC not match with tank.	A. Increase line pressure. B. Clean brine line. C. Replace brine line. D. Clean or replace injector. E. Replace valve body. F. Clean drain line flow control. G. Check the motor of brine valve H. Select correct injector size and DLFC according to the P26 requirements.
5. Unit used too much salt.	A. Improper salt setting. B. Excessive water in brine tank.	A. Check salt usage and salt setting. B. See problem No.6.
6. Excessive water in brine tank.	A. Overlong refilling time. B. Remain too much water after brine. C. Foreign material in brine valve and plug drain line flow control. D. Not install safety brine valve but power failure whiling salting. E. Safety brine valve breakdown.	A. Reset correct refilling time. B. Check the injector and make sure no stuff in the brine pipe. C. Clean brine valve and brine line. D. Stop water supplying and restart pr install safety brine valve in salt tank. E. Repair or replace safety brine valve.

Control Valve Fault(Continued)

7. Pressure lost or rust in pipe line	A. Iron in the water supply pipe. B. Iron mass in the softener. C. Fouled resin bed. D. Too much iron in the raw water.	A. Clean the water supply pipe. B. Clean valve and add resin cleaning chemical, increase frequency of regeneration. C. Check backwash, brine draw and brine tank refill. Increase frequency of regeneration and backwash time. D. Iron removal equipment is required to install before softening.
8. Loss of resin through drain line.	A. Air in water system. B. Bottom strainer broken. C. Improperly sized drain line control.	A. Assure that well system has proper air eliminator control. B. Replace new strainer. C. Check for proper drain rate.
9. Control cycle continuously.	A. Locating signal wiring breakdown. B. Controller is faulty. C. Foreign material stuck the driving gear. D. Time of regeneration steps were set to zero.	A. Check and connect locating signal wiring. B. Replace controller. C. Take out foreign material. D. Check program setting and reset.
10. Drain flows continuously.	A. Internal valve leak. B. Power off when in back wash or fast rinse.	A. Check and repair valve body or replace it. B. Adjust valve to service position or turn off bypass valve and restart when electricity supply.
11. Interrupted or irregular brine.	A. Water pressure too low or not stable. B. Injector is plugged or faulty. C. Air in resin tank. D. Floccules in resin tank during up-flow regeneration.	A. Increase water pressure. B. Clean or replace injector. C. Check and find the reason. D. Clean the floccules in resin tank.
12. Water flow out from drain or brine pipe after regeneration.	A. Foreign material in valve which makes valve can't be closed completely. B. Hard water mixed in valve body. C. Water pressure is too high which result in valve doesn't get the right position. D. Control valve is in Backwash status, and outlet port is connected with brine draw port.	A. Clean foreign material in valve body. B. Change valve core or sealing ring. C. Reduce water pressure or use pressure release function. D. Add the check valve, solenoid valve or safety brine valve on outlet pipeline.

Control Valve Fault(Continued)

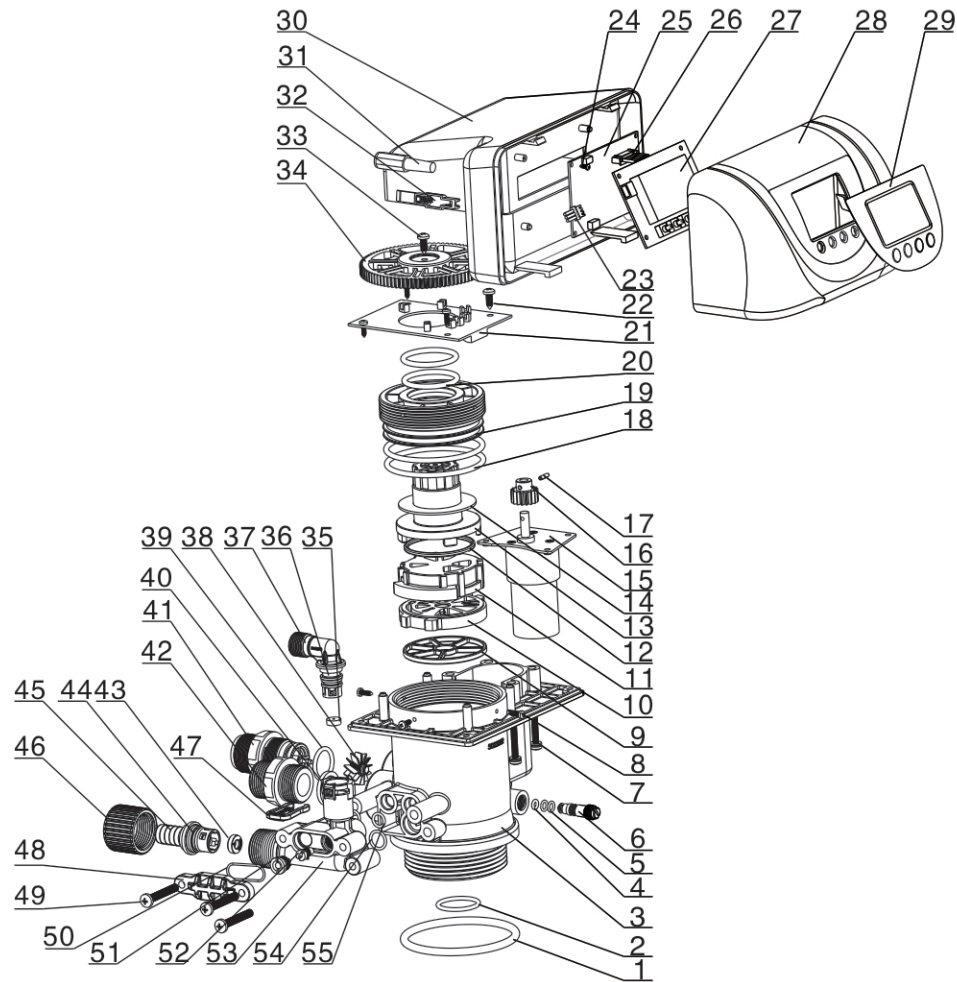
13. Salt water in soften water	A. Foreign material in injector or injector fails to work. B. Brine valve cannot be shut-off. C. Time of fast rinse too short.	A. Clean and repair injector. B. Repair brine valve and clean it. C. Extend fast rinse time.
14. Circle capacity decreases.	A. Regenerate not properly. B. Fouled resin bed. C. Softener setting not proper. D. Raw water quality deterioration. E. Turbin has already been stucked.	A. Regenerate according to right way. B. Increase backwash flow rate and time, clean or change resin. C. According to the test of outlet water, recount and reset. D. Regenerate unit by manual temporary then reset regeneration cycle. E. Disassemble flow meter and clean it or replace a new turbine.

B.Controller Fault

Problem	Cause	Correction
1. All indicators display on front panel.	A. Wiring of front panel with controller fails to work. B. Control board is faulty. C. Transformer damaged. D. Electrical service not stable.	A. Check and replace the wiring. B. Replace control board. C. Check and replace transformer. D. Check and adjust electrical service
2. No display on front panel	A. Wiring of front panel with controller fails to work. B. Front panel damaged. C. Control board damaged. D. Electricity is interrupted.	A. Check and replace wiring. B. Replace front panel. C. Replace control board. D. Check electricity.
3. E1 Flash	A. Wiring of locating board with controller fails to work. B. Locating board damaged. C. Mechanical driven failure. D. Faulty control board. E. Wiring of motor with controller is fault. F. Motor damaged.	A. Replace wiring. B. Replace locating board. C. Check and repair mechanical part. D. Replace control board. E. Replace wiring. F. Replace motor.
4. E2 Flash	A. Optocoupler on locating board damaged. B. Wiring of locating board with controller fails to work. C. Control board is faulty	A. Replace locating board. B. Replace wiring. C. Replace control board.
5. E3 or E4 Flash	A. Control board is faulty.	A. Replace control board.

3.8.Assembly & Parts

1).Construction figure of 82602EA, 82602EB



Part No.:

Item No	Description	Part No	Quantity
1	O-ring	8378143	1
2	O-ring	8378078	1
3	Valve Body	5022087	1
4	O-ring	8378183	1
5	O-ring	8378174	2
6	Adjust Screw	8906002	1
7	Screw Assembly, Cross Hd.	8902008	1
8	Screw, Cross	8909008	3
9	Seal Ring	8370098	1
10	Fixed Disk 82602EA	8469062	1
	Fixed Disk 82602EB	8469069	1
11	Moving Disk	8459062	1
12	Moving Seal Ring	8370064	1
13	Shaft	8258013	1
14	Anti-friction Washer	8216011	1
15	Motor	6158078	1
16	Small Gear	8241015	1
17	Pin	8993003	1
18	O-ring	8378111	2
19	Fitting Nut	8092011	1
20	O-ring	8378195	2
21	Locating Board	6380039	1
22	Screw, Cross	8909008	4
23	Wire for Display Board	5512002	1
24	Screw, Cross	8909004	2
25	Control Board	6382081	1
26	Wire for Locating Board	5511014	1
27	Display Board	6381006	1
28	Front Cover 82602EA	8300014	1
	Front Cover 82602EB	8300004	1
29	Label 82602EA	8865008	1
	Label 82602EB	8865013	1

30	Dust Cover 82602EA	8005008	1
	Dust Cover 82602EB	8005005	1
31	Wire for Power	5513003	1
32	Wire for Probe	6386001	1
33	Screw, Cross	8909013	1
34	Gear	8241039	1
35	Brine Line Flow Control	8468075	1
36	O-ring	8378169	1
37	Connector	8458073	1
38	Impeller	5436007	1
39	O-ring	8378074	1
40	Seal Sasher	8371019	1
41	Impeller Supporter	5115005	1
42	Connector	8458011	1
43	Drain Line Flow Control	8468043	1
44	O-ring	8378179	1
45	Connector	8458064	1
46	Animated Nut	8945025	1
47	Clip	8270010	1
48	Cover of Injector	8315039	1
49	Screw, Cross	8902017	3
50	O-ring	8378209	1
51	Nozzle, Injector	8454001	1
52	Throat, Injector	8467001	1
53	Injector Body	8008012	1
54	O-ring	8378012	1
55	O-ring	8378016	2

4. Warranty Card

Dear client:

This warranty card is the guarantee proof of RUNXIN brand multi-functional flow control valve. It is kept by client self. You could get the after-sales services from the supplier which is appointed by RUNXIN manufacturer. Please keep it properly. It couldn't be retrieved if lost. It couldn't be repaired free of charge under the below conditions:

1. Guarantee period expired. (One year)
2. Damage resulting from using, maintenance, and keeping that are not in accordance with the instruction.
3. Damage resulting from repairing not by the appointed maintenance personnel.
4. Content in guarantee proof is unconfirmed with the label on the real good or be altered.
5. Damage resulting from force majeure.

Product Name	Multi-functional Flow Control Valve for Water Treatment Systems			
Model		Code of Valve Body		
Purchase Company Name		Tel/Cel.		
Problem				
Solution				
Date of Repairing		Date of Examination		Maintenance Man Signature

When product need warranty service, please fill in the below content and sent this card together with the product to the appointed suppliers or Runxin company.

End-user Company Name		Tel/Cel.	
Purchase Company Name		Tel/Cel.	
Model	Code of Valve Body		
Tank Size $\phi \times$	Resin Tank Size L	Raw Water Hardness mmol/L	
Water Source: Ground-water <input type="checkbox"/> Tap Water <input type="checkbox"/>	Water Treatment Capacity m³	Backwash Time min	
Brine & Slow Rinse Time min	Brine Refill Time min:s	Fast Rinse Time min	
Problem Description			