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润新 RUNXIN

Multi-functional Flow Control Valve for Water Treatment Systems

• TM.F77A1/ F77A2

User manual

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

Contents

Preface

Dear user, Thank you for using RUNXIN multi-functional flow control valve for water treatment systems. Please read this manual carefully before using, which will contribute to your machine offering perfect services for you normally for a long time.

RUNXIN brand multi - functional control valve is the developed patented product of our company (Patent No.: ZL200420062895.3 , ZL02220153. X)which specially allocate in all kinds of water treatment systems. There are two valve cores, one is water inlet valve core which controls water entering, the other is water outlet valve core which controls water flowing out. These two cores adapt high hardness and pottery of degree of high level ceramic moving slice. As relative and moving slice have different blind holes and put through holes respectively , with the change of the relative angle during slice rotate one course of circle definitely with it height laminating, the water inlet valve core realizes three states, namely raw water entering through top strainer, bottom strainer and injector, while water outlet valve core controls two states namely softened water and drain flowing out throug outlet and drain outlet. It realizes necessary functions, namely Service, Backwash, Brine & Slow Rinse, Fast Rinse and Brine Refill. As the core control part for water treatment systems, this valve changes traditional water treatment systems tedious operation mode of a lot of valves and many pieces of pipelines, integrating various kinds of functions in one valve , which is easier to install and operate.

- 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 water that is unsafe or of unknown quality.
- Test water periodically to verify that system is performing satisfactorily.
- Sodium used in the water softening process should be considered as part of 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 the clean water softening salts only, at least 99.5% pure, forbidding use the small salt.
- Do not put the valve near the hot resources, high humidity, corrosive, intense magnetic field or intense librations environment. And do not leave it outside.
- Forbidden to use the brine tube or other connectors as support to carry the system.
- Forbidden to carry the injector body. Avoid to use injector body as handle or support.
- Please use this product under the water temperature between 5℃ and 45℃, water pressure between 0.2MPa and 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.
- Do not let children touch or play. Because of carelessness operating may cause the procedure changed.
- When the attached cables of this product and transformer are damaged, they must be changed to the one that is from our factory.

Product Characteristics

- **More reliable way of opening and closing**
  It adopts the seal slice with high degree pottery, scuff resistance , corrosion proof and leak proof . It adapts two valve cores one controls water entering, the other controls water flowing out.
- **No water flow out while single tank type control valve regeneration.**
- **Brine refill controlled by electric ball valve**
  Brine refill is controlled by electric ball valve. Brine is refilled at the same time of running which could save regeneration time.
- **Variety kinds of installation methods**
  Valve either could be installed as top mounted or side mounted (connect with side connector). The screen panel either could be installed on top or side of valve and also seperated installed.
- **Suitable for filtration system**
  Maximal drain size is the same as water outlet. In case of block brine line connector, it could be used in filtration system.
- **Manual function**
  Realizing regeneration immediately by pushing manual button at any time.
- **Keyboard locked function**
  If the keyboard has not been operated within one minute, it will be locked automatically. Press the ▲ and ▼ two buttons for 5 seconds to unlock the keyboard before operating. This function can avoid the wrong operation by confusion effectively.
- **It adopts LED dynamic colourful screen.**
  The colourful screen welter continuously shows it is in service state, or else, it is in regeneration state.
- **Indication of power cut secularly.**
  If the power has been cut exceeds 3 days, the clock figure will flicker continuously

after power on. It reminds to reset the current time. The other set parameters do not need to reset. The process will continue to work after power on.

● **Two modes of regeneration controlled. (Signal output operation should be done by professional personnel)**

This valve has two modes: regenerating by day and regenerating by hour. By changing the locating position of switch on control panel in controller, it could realize exchange of the two status. It would be effective when you restart the valve. When the switch locates at 'ON' position, it would Regenerate by day; while at '1' position, regenerate by hour.

● **Having output signal connector (Signal output operation should be done by professional personnel)**

This valve has the output signal connector which could be connected with the equipment such as Booster Pump, Solenoid Valve etc. The signal is sent at the moment while the valve leaves from the position of running, and disappeared while it arrives at the running state. (The particular connect method please turn to page 7)

● **Interlock function**

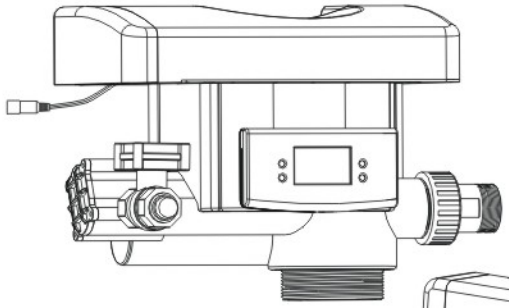
It has function of interlock to realize only one valve in regeneration but the other valves are in running while several valves parallel in system. In multi-setps treatment systems such as in RO pre-treatment, when several valves are in series, there is only one valve is in regeneration or washing to ensure outlet water all the times while different valves in regeneration or washing. It could also realize parallel outlet water in several multi-steps pre-treatment, which means several valves are in series and parallel. (Refer the detail connection method in page 8.)

● **Remote handling connector**

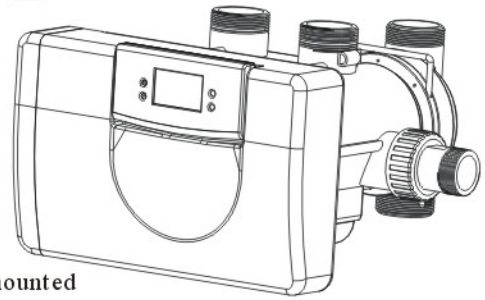
This valve has remote handing connector and could receive no power singla. In case of device check system water outlet is disqualified, the valve could recive signal to regenerate. (Refer the detail connection method in page 9.)

Appearance and Specification of the Product

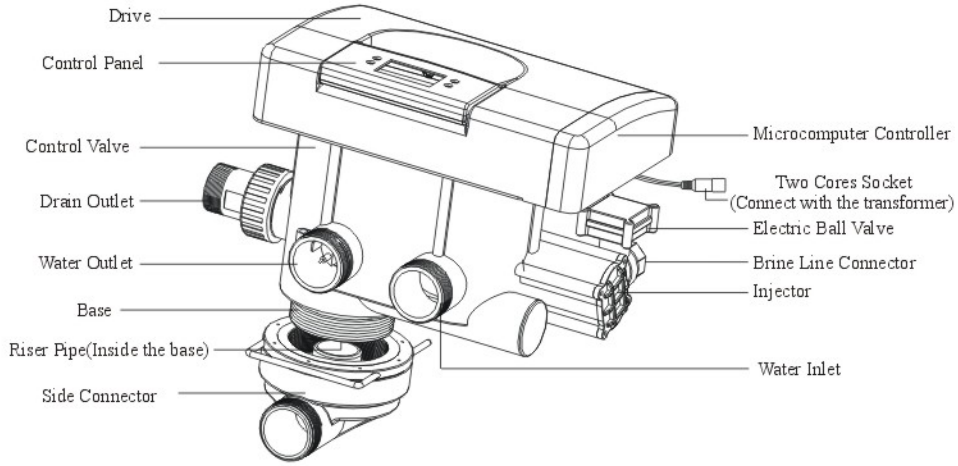
Product Appearance (Only for reference please subject to the real goods)



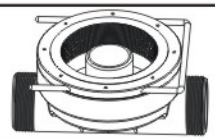
TM.F77A Top-mounted



TM.F77A Side-mounted



Product Accessories

TM.F77A Accessories		
Figure	**Description**	**Quantity**
	Nut (Drain Outlet)	1PC
	Drain Outlet Connector (with seal ring)	1PC
	Side Connector	1PC
	Transformer (EU plug, US plug or UK plug)	1PC
	Base Seal Ring (ϕ104.6×ϕ5.7)	1PC
	Interlock Cable	1PC

Product Specification

Technical Parameter

Controller		Working Condition	
Controller Model	Time Type	Suited Pressure	0.2～0.6MPa
Transformer Input	100～240V/50～60Hz	Suited Water Temperature	5～45℃

(Table One) **Control Valve**

Model	Connection Size					Maximum Water Capacity m^3/h	Regeneration Mode
	Inlet /Outlet	Drain Outlet	Brine Line Connector	Base	Riser Pipe		
TM.F77A	2″ M	2-1/2″ M	3/4″ F	4″ -8UN	1-1/2″ D-GB(50mm)	18	Down-flow

Remark: M —— Male Thread F ——Female Thread OD —— Outer Diameter

(Table Two) **Configuration for Standard Injector and Drain Line Flow Control**

Tank Dia mm	Injector Model	Injector Color	Total Outlet Flux of Injector	Slow Rinse Speed	Hole Quantity on Drain Outlet	Speed of Backwash and Fast Rinse
			L/min	L/min		m^3/h
700	7701	Coffee	32	20	0	7.5
750	7702	Pink	39.5	26.5	0	7.5
800	7702	Pink	39.5	26.5	1	9.2
850	7703	Yellow	51.2	33.3	1	9.2
900	7703	Yellow	51.2	33.3	2	10.2
1000	7704	Bule	64.9	42	3	11.2
1050	7705	White	72.4	48.7	4	13

Remark:

①The above data in table two are tested under inlet pressure of 0.3MPa

②Since the difference in the quality of raw inlet water, capability of resin, size of the tank and the pressure of inlet, the above data are only for reference.

③If the real goods are different in specification, configuration or appearance, please subject to the real goods.

④The holes digged on drain outlet is depending on the size of matched vessel in realy situation. The hole diamter is Φ6. Quantity digged is refer to the above data.

（Table Three） **Flow Rate of Running and Brine Refill**

Inlet Pressure（MPa）	0.2	0.25	0.3	0.35	0.4
Running Flow Rate（m^3/h）	14.3	16.3	18.0	19.7	21.2
Brine Refill Flow Rate（L/min）	47.6	53.6	59.4	64.5	69.0

Remark:

The above data are tested under no pressure on outlet.

The brine refill flow rate excepts the water resistance flow rate of air check valve.

Installation and Connection

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

Perform installation according to regulated Water Inlet, Water Outlet, Drain Outlet, Brine Line Connector and relative plumbing codes.

1、 Device location:

① The closer filter or softener to drain point, the better.

② Leave a certain space for operating and maintaining devices conveniently.

③Brine tank need to be close to softener.

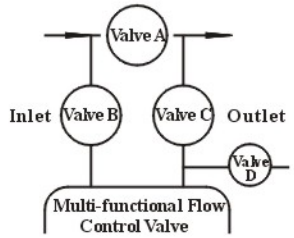
④Do not install the valve near hot resources or in direct sunlight, rain and other factors that may result in damage to the product. And do not leave it outside.

⑤Do not install the equipment in an acid or alkali environment or intense magnetic f ield , intense librations to avoid damaging the electronically control system.

⑥Do not install the device, drain outlet and other pipes under environment where the temperature may drop below 5℃, or above 45℃.

⑦ Please install the system in a place where water damage is least likely to occur if a leak develops.

2、 Pipeline connection



(Picture One)

In order to maintain conveniently, device is advised installation like drawing as follows:
Instruction: There are three ball valves being connected to the multi- functional flow control valve and inlet outlet pipe. Valve B is connected to the inlet pipe. Valve C is connected to the outlet pipe. When changing filter materials or maintaining tank, open valve A, close valve B, C. When using, open valve B, C, close valve A. Valve D is for taking water used to test.

① Connect inlet of system with inlet connector of multi-funcational flow control valve (Just like product apperance showing)

② Connect outlet of system with outlet connector of multi-funcational flow control valve.

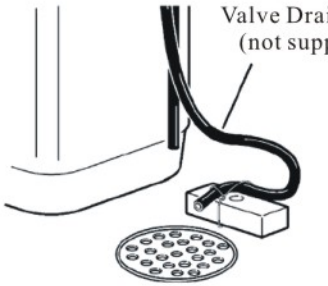
- If the water outlet or water tank is installed higher than control valve, the liquid level controller must be installed in brine tank. Or else, the water in water outlet or water tank will flow backwards into brine tank when backwash.
- If making a soldered copper installation, do all sweat soldering before connecting pipes to the valve. Torch heat will damage plastic parts.
- When turning threaded pipe fittings onto plastic fitting, use care not to cross thread or broken valve.
- Support inlet and outlet plumbing in some manner (use pipe hanger) to keep the weight off of the valve fittings.

3、Connect and route the valve drain hose

①Dig Φ 6 holes on drain hose connector. Holes quantity is depending on situation, refer to table two.

②Tighten nut to connect drain hose connector with drain outlet.

③Connect and fix drain hose with drain hose connector.



（Picture Two）

Correct Method for Drain

Control valve should be higher than drain outlet, and be better not far from the drain hose.

Be sure not connect drain with sewer definitely, and leave a certain space between them avoiding wastewater be absorbing to the water treatment equipment, such as showed in picture two. If wastewater is used for other purpose, please use another container for loading. And also keep a certain space between drain and container.

4、Connect brine tube

Connect and fix brine tube hose with electric ball valve. Ensure it is seal and reliable.

5、Electronic appliance connection

① Put the adapter of the transformer output with two cores socket of controller .

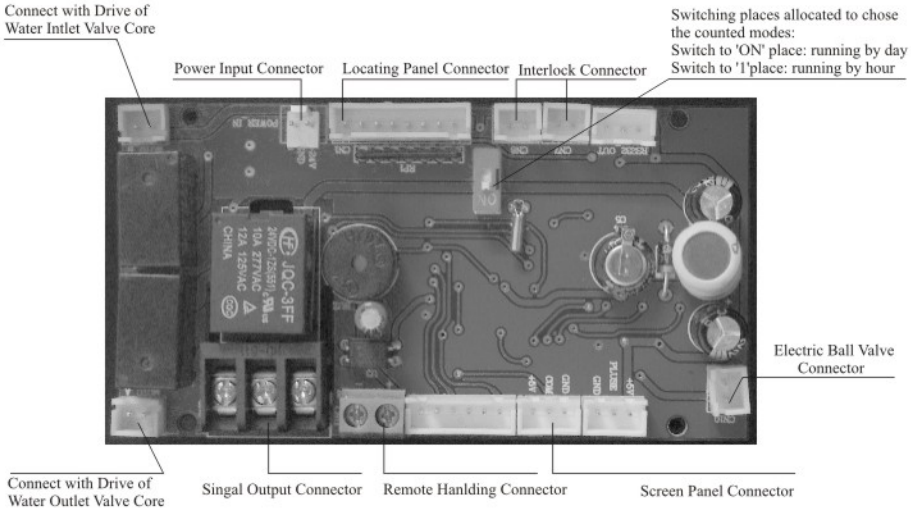
② Put the adapter of transformer with the socket of 100~240V/50-60HZ directly.

6、Connect output signal.

Installing the equipment, the pressure of raw water is low or the outlet need flow forcible water, I nstalling a booster pump at inlet or installing a solenoid valve at outlet, and make use the output signal connector export the signal to control.

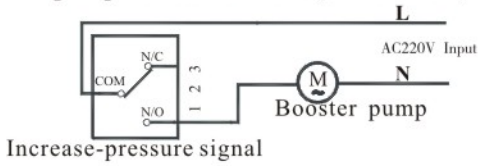
①Using the screwdriver or other tools to open the cover of control valve.

②At the output signal connector as follow(Picture Three),please connect wire as follow(Picture Four).

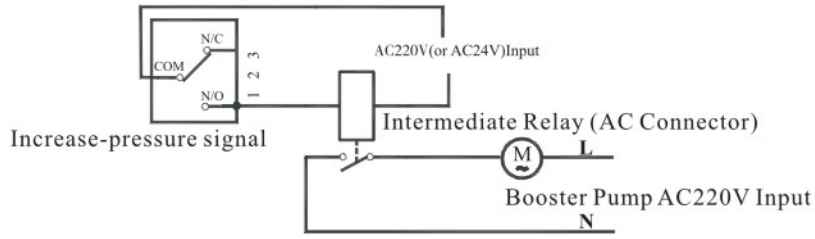


（Picture Three）

Direct control booster pump connection mode (current<5A)



AC Connector(Intermediate Relay) control booster pump connection mode (current>5A)



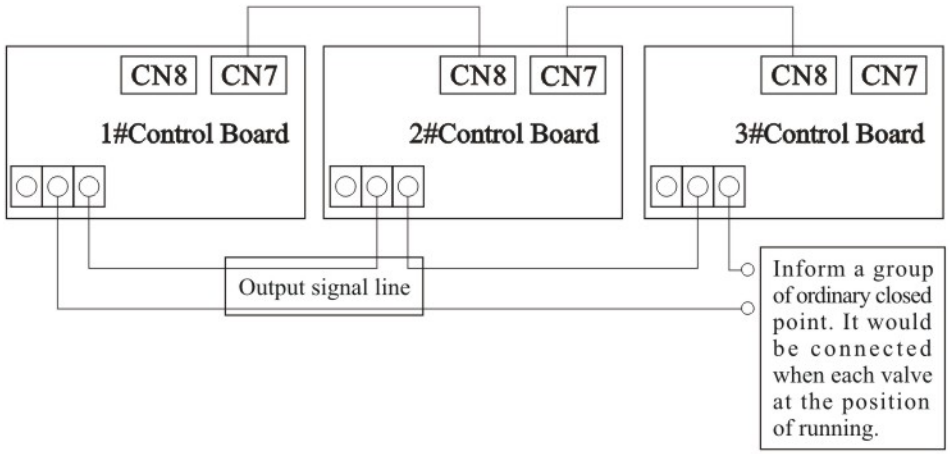
Request:AC220V electrical source input port need connect broken electrical leakage.

（Picture Four）

- The time of signal for opening and closing: the signal open while the valve leaves from the position of running, the signal close while the valve arrives at the running state.
- AC220V power supply need to be connected with creepage breaker when connect the output signal wire.
- Picture four shows the output signal connector. The common port at the middle station, marks N/C(right station) is normal close port, marks N/O(left station) is normal open port.

7、Interlock line connection

Connection method for interlock line and output signal line as following picture:



Notice:

A. Once the left treated volume reach to be zero, the valve starts to regenerate. If there is no other valve at regeneration or washing position, then the lock signal would be sent out. Meanwhile, it is in regeneration.

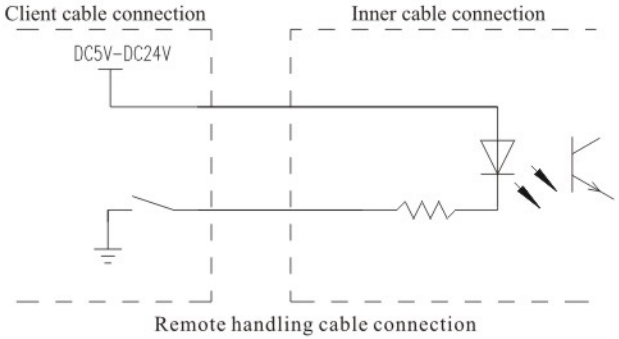
B.If there is other valve at regeneration or washing position (Viz. the system is locked). This valve would still stay at running position while "Service" figure flicking till other valve accomplishing regeneration or washing. Then this valve sends out the lock signal, and starts to regenerate.

C. Each valve would work independently as set parameters. Only when regenerate then it interlocks.

- CN7 is interlock input, CN8 is interlock output.
- It is not allowed to connect CN7 to CN7 when using.
- In several valves interlock system, if there is interlock line disconnected. Then this system would be divided to be two interlock systems automatically from the disconnected point.

8、Remote handling connector

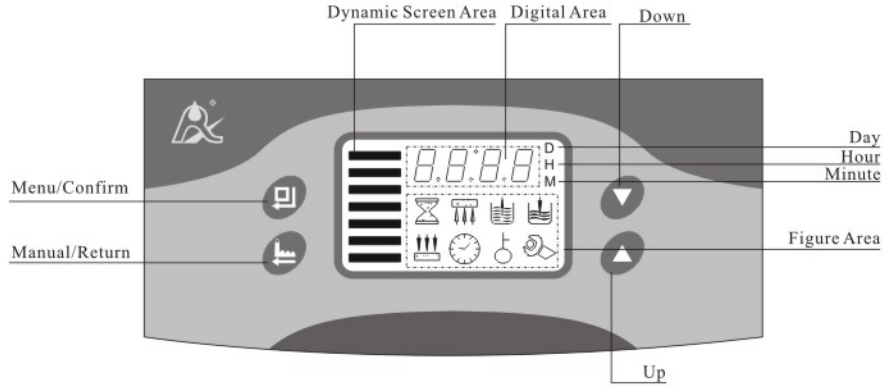
When this valve is used for making pure water or connected with on-line monitoring system or PC, electrical conductivity or other data reaches at the set value or PC sends signal, it needs regeneration, the signal could be transfered through signal cable to remote handling connector on main control board, then it starts to regenerate. Signal receiving is like pressing a manual button.



- Failure to install the multi-functional flow control valve correctly voids the warranty.
- If there are any of pipeline engineering and electric works, there must be finished by professional at the time of installation.
- Minimum inlet water pressure is 0.2MPa, maximum inlet water pressure is 0.6MPa. If the inlet pressure exceeds 0.6MPa, a pressure reducing valve must be installed before inlet pipeline.
- When installation, do not use brine tube or other connectors as support to carry.
- Handle all components of this valve with care. Do not drop, drag or turn components upside down. And please use the accessories we supplied.
- Forbidden over exerted when installation and connection pipelines to avoid thread broken. And no bearance of all stresses on all ports of the valve.
- It is suggested to use PPR pipe, Wave-thread pipe or UPVC pipe, and avoid using Aluminum Plastic pipe.
- The connection of all pipelines should be sealed enough, no leakage. Otherwise, flow capacity under some status may not reach to expected effect.
- It is suggested to use liquid level controller and brine valve with interdiction air in brine tank.

Controller Operation Instruction

Control Panel



1、Show Screen

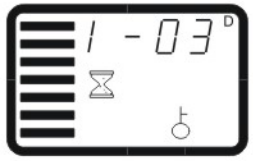
The time type controller of F77A1service by day. At the Service state, the screen will show the following figures every thirty seconds circularly:

① Current time is in working state (Digital symbol is matched with figure symbol),such as 1-03 D.

② Current time; such as 12:20.

③ Regeneration start time; such as 02:00.

For example:Time controller service by day,when it is in the service state,the screen will show the following three figures recurrently.



1、Digital 1, the sign ⧖ and the colourful strip of dynamic showing indicate the valve is in the service state; Running time left 3 days.

2、The colourful strip of dynamic showing indicate the valve is in the service state. Sign ⏲ indicate the current time is 12:20

3、(This item is not exist when running counted by hour) The colourful strip of dynamic showing indicate the valve is in the service state; Start-up regeneration time is 02:00.

The time type controller of F77A2 service by hour. At the Service state, the screen will show the following figures every thirty seconds circularly:

① Current time is in working state (Digit symbol is matched with figure symbol),such as1-18 H.

② Current time; such as 10:18.

⚠	●The colorful strips on the left of screen flicker dynamically show the system at the station of service. ●The colorful strips on the left of screen do not flicker show the system at the station of regeneration. ●The sign light shows the system at the station of inquiring; the sign flicker dynamically shows the system at the station of setting. ●When the figure light, the keyboard is at the locked state . ●When the flicking , indicate it has been cut of for a long time. Then the value should be reset.

●Digital area, figure area and paraphrase as follow:

Show		Paraphrase	Notice
Digital Area	Figure Area		
12:20		Current Time12：20	'：'Flicker
02:00		Regeneration Start-up Time 2：00	'：'Non-flicker
1–03D		At Service state, left 3 days.	Counted by day
1-20H		At Service state, left 20 hours.	Counted by hour
2-10M		At Backwash state, left 10 minutes	
3-50M		At Brine & Slow Rinse state, left 50 minutes	
4-05M		At Brine Refill state, left 5 minutes	
5-08M		At Fast Rinse state, left 8 minutes	

2、 Button

●Press this button to enter into menu,the setting sign light,it could inquiry every parameter value.

●After entered into menu, press this button , the showing numerical value and the setting sign will flicker. Indicate it has entered into the setting state of this parameter.

●After set the parameter press this button, there is a sound ' DI ' , indicate it confirm setting and back to up step state.

3、 Button

●Press this button when not in the menu state, it could finish the working state advance and go to the next working state immediately.

●Press this button when in the menu state and back to the up step menu.

●Press this button when in the setting state, the setting parameter has not preserved and back to the up step menu.

4、 ▲ and ▼ button

●Enter into the menu, press ▲or▼continuously it could show each parameter value press up or down.

●When setting the parameter , Press ▲ or ▼continuously it could adjust every parameter up or down.

●Press ▲ and ▼two buttons together for 5 seconds, it could unlock the locked keyboard.

⚠	●Setting or inquiring after unlock the keyboard.

Establishment of Each Parameter

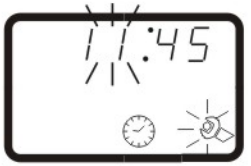
For example : The program is in the service state, if you want to set the current time 9:45 to 11:28, and the backwash time 10minutes to 15minutes, operate as the following steps:

1. If the screen shows , indicate the keyboard is in the locked state, Press ▲and▼two buttons together for 5 seconds ,unlock the keyboard. If the screen don't show ,indicate the keyboard has not locked , then enter into the secretary and step directly.

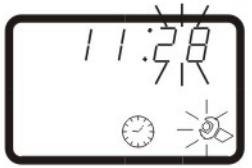
2. Press button to enter into menu, showing the current time of the first page of the menu, the setting sign and the current time light at meantime. Then ,the sign ' : ' flicker.

3. Press button to enter into the setting state ,time value and the setting sign start to flicker.

4. Press ▲ button continuously until the time value 09 change to 11.



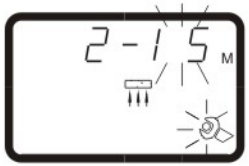
5. Press button, minute value and the setting sign flickering at meantime , then press ▼ button continuously until the minute value 45 to 28.



6. Press button , there is a sound 'DI' the figure stop flickering, the program back to the inquiring state.

7. Press ▲ or ▼ button ,until the backwash sign light, as the right figure shows.

8. Press button to enter into the setting state, numerical value 10 and the setting sign start to flicker. Then press ▲ button continuously until the numerical value 10 change to 15.



9. Press button , there is a sound ' DI ' , the figure stop flickering and the program back to the inquiring state.

10.Press button back to menu, the screen show the working state. If not operate keyboard in one minute, keyboard locked automatically ,then the locked sign light.

- When this multi-functional flow control valve is used for filter, blocked the brine tank connection by blind hole, and adjust the Brine & Slow Rinse Time and Brine Refill Time to be zero.
- Time type controller calculated by day has regeneration start-up time which is after current time besides that working positions. There is no word remind when this number shows in the screen. The difference to the current time is the depart figure ' : ' between the hour and the minute is not flicker The method of setting up regeneration time is the same as above.
- The time showed is based on twenty-four hours.

Settlement Forms of Parameter

Content	TM.F77A1		TM.F77A2		Minimum Added Number
	Number Debug Range	Default of Factory	Number Debug Range	Default of Factory	
Current Time	00:00 ~ 23:59	/	00:00 ~ 23:59	/	1
Regeneration start-up Time	00:00 ~ 23:59	02:00	/	/	1
Service Time(day/hour)	0~99day(s)	3day(s)	0 ~ 99 hour(s)	20hour(s)	1
Backwash Time(minute)	0 ~ 99	10	0 ~ 99	10	1
Brine & Slow Rinse Time (minute)	0 ~ 99	60	0 ~ 99	60	1
Brine Refill Time (minute)	0 ~ 99	5	0 ~ 99	5	1
Fast Rinse Time(minute)	0 ~ 99	10	0 ~ 99	10	1

Basis of the Parameter Settlement

This valve is automatic valve controlled by time. The time on each position is calculated as the following formulas or as the suggestions offered by whole system supplier

1、Regeneration Time: The regeneration cycle needs about two hours. According to the client's Need, it is much better to set up the regeneration on the time when the client doesn't use water.

2、Service Time=Output Q/ Water Using Per Hour (Suitable for control valve (F63B2/F65B2)

Service Time = Output Q/Water Using Per Hour(Suitable for control valve F63B1/F65B1)

Output $Q=V_R \times E/(Y_D \times k)$

On the above formula, Vr—— Cubage of Resin （m^3）

E —— Resin Working Exchanged Capability （mol/m^3）

Yd—— Rigidity of Inlet Water（mol/m^3）

k——Security Modulus, usually 1.2~2. It is related to the rigidity of inlet water. The k's choosing number is increasing with rise of modulus.

Water Using Per Hour —— For boiler, is the evaporation cubage per hour.

Water Using Per Day——For household, are averaged by the totally amount in a month.

——For boiler, Water Using Per Day= Evaporation Cubage Per Hour x Service Time(h/d).

3、Backwash Time: It is related to the consistency of inlet water. It is suggested to be set up 10~15 minutes. The consistency is higher, then the backwash time is longer. When the consistency of inlet water is more than 5, a filter is suggested to be installed before the control valve.

4、Brine & Slow Rinse =Brine Draw Time+ Slow Rinse Time(Slow Rinse times also called Replacement Time)

①Brine Draw Time $t=60V_z/(S \times v)$ (min)

$Vz=m_{cz}/(C \times \rho \times 10^3)$ （m^3）

On the above formula,

Vz—Cubage of Regenerated Liquid, m^3

S—Cut Acreage of Exchange Menstruum Layer(exchange equipment) m^2

v—Flow Velocity of Regenerated Liquid, m/h

m_{cz}—Regeneration Menstruum Dosage which is with 100% pure and regenerate once Kg.

C—Consistency of Regenerated Liquid, %

ρ —Consistency of Regenerated Liquid %

m_{cz}=VREkM/（ε ×1000） Kg

On the above formula, VR—Resin Loadage, m^3

E—Exchange Cubage of Exchange Menstruum, （mol/m^3）

k—Regeneration Menstruum Consumption. For downflow regeneration, k could be chosen 2~3.5;For upflow regeneration, k could be chosen 1.2~1.8.

M—Mol Quality of Regeneration Menstruum , NaCl is 58.5.

ε —Consistency of Regenerated Menstruum, in common salt, the NaCl represents 95%~98%.

②Slow Rinse Time= Slow Rinse Flow/ Slow Rinse Speed (minute). Water cubage of slow wash, in general, it is 0.5 ～1 times of resin loadage.

5、Brine Refill Time= Brine Refill Water Cubage / Pouring Water Speed (minute)
Water cubage refilled to tank equal to the totally consumed cubage of regenerated brine. Because of the differences inlet water pressure, the speed of pouring to tank is also different. It is suggested that actual time of pour water to tank is 1 ~2 minutes longer than the time which is calculated in theory as to make sure there is enough water in tank. (Notice: there is a liquid level Controller in the tank.)

6、Fast Rinse Time=Fast Rinse Water Cubage/Fast Rinse Speed (minute)
Water cubage is 3~6 times of resin loadage. In general, it choose 10~12 minutes, but subject to theoutlet water reaching to the requirement.

Note: On above, Slow Rinse speed, Pouring speed, Fast Rinse speed are according to the types of injector. Refer to the table two in instruction. The above formulas are only for reference.

Trial Running

1、Installation the multi-functional flow control valve on the resin tank according to the using state and pipes, close the by - pass valve (valve A, as picture one, following same as); then connecting with the power.

2、Opening inlet valve B to 1/4 position slowly, making water flow into the resin tank. When water stop flowing, open the outlet valve C. Until all the air are out of the pipe, then close the outlet valve; And check whether it is leakage. In case it is, please solve it immediately.

3、Open the inlet valve B completely now.

4、Pressing button to the ' Backwash ' position. Let water flow from drain lasting for 3 ~4 minutes.

5、Refilling water to brine tank by hose or measure until water goes to the top of air check valve. Then add required quantity of salt to tank, and dissolve the salt as much as possible.

⚠ The brine tank should add the clean water softening salts only, at least 99.5 % pure, forbidding use the small salt.

6、Pressing button to ' Brine & Slow Rinse ' position, making control valve suck brine-fromtank until the air check stop sucking brine. After the air check valve stop sucking brine, stick several minutes (viz. Slow Rinse).

7、Pressing button to ' Fast Rinse ' position, after Fast Rinse a certain time.

8、Taking out some water for analysis. After water quality is eligible, press button to ' Brine Refill ' position, making the water refilled to required level, viz .close the liquid level controller, stop refilling water.

9、Press botton make control valve return to ' Service ' State; It could be used.

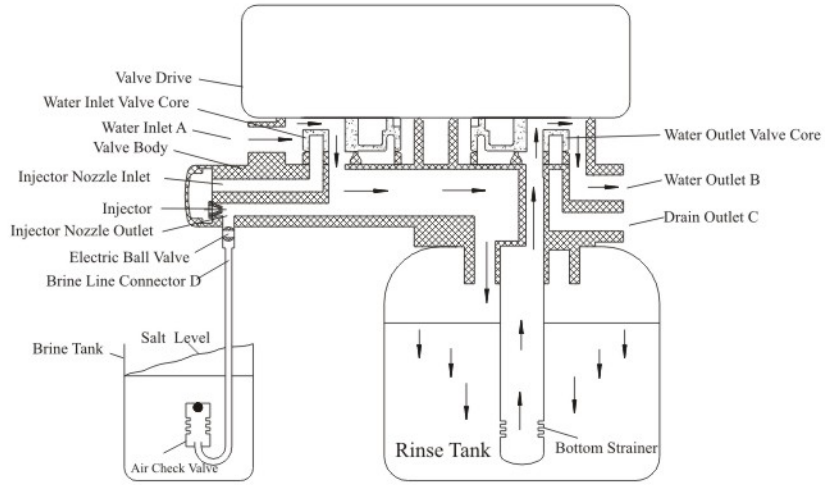
10、Setting up the time parameter according to operating instruction of controller.

⚠

- If the inlet water flow too quickly, material in resin tank will be damaged. The air sound from drain could be heard when water flow into tank slowly.
- The operating time in backwash, brine & slow rinse, brine refill and fast rinse status could according to the secundum for parameter setting count or according to the suggestions of set equipments suppliers.

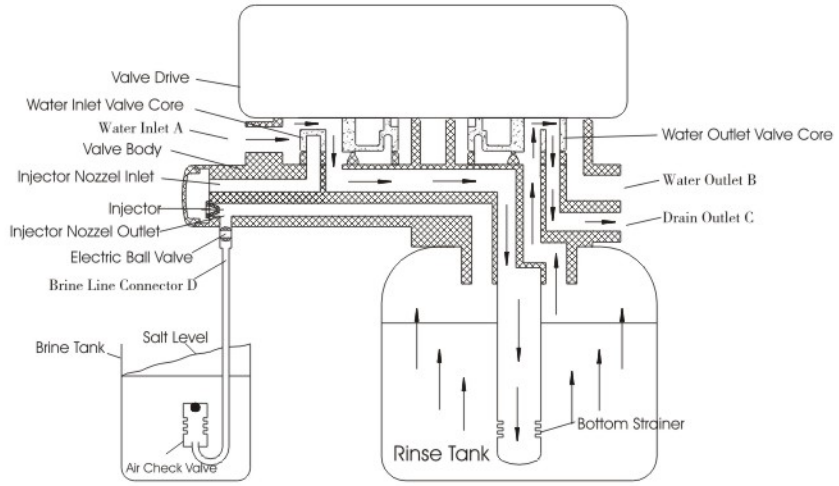
Working Principle and Flow Chart

Service Position



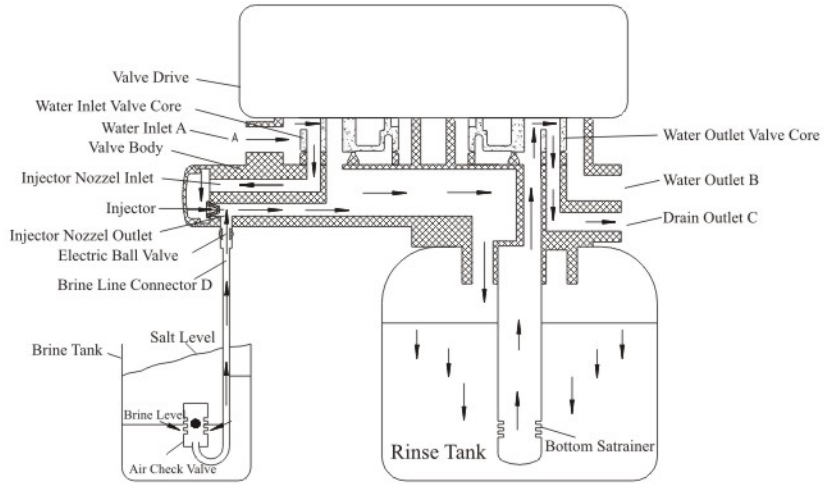
Raw water enter into control valve from inlet A, through water inlet valve core from valve body, and going into tank from top of resin tank (or riser pipe outside of resin tank, the same as below). Then, adown through resin layers(it is soften, and it will be carbon layer while purify, the same as below), to be softened water, then through bottom strainer to return to riser pipe, upward to valve body, pass through water outlet valve core, and finally flow out from outlet B.

Backwash Position



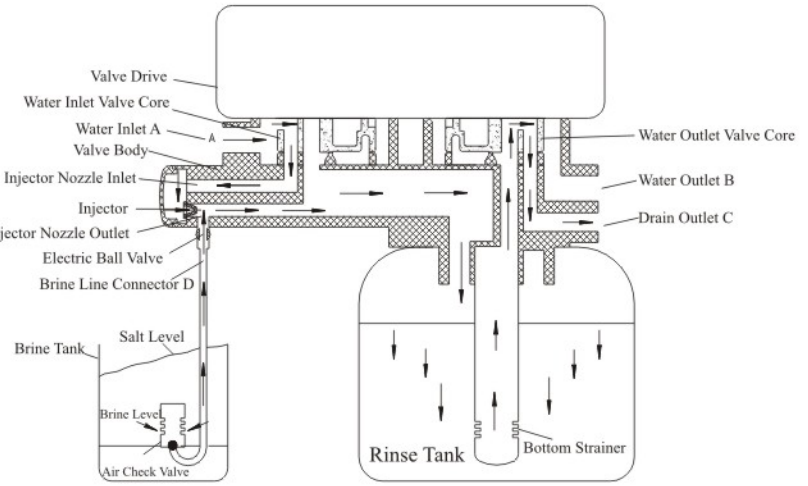
Raw water enter into control valve from inlet A, through water inlet valve core from valve body, then from the bottom of tank (or riser pipe, the same as below), bottom strainer into tank, upward through resin layers, valve body and water outlet valve core, finally flow out from drain C.

Brine Draw Position



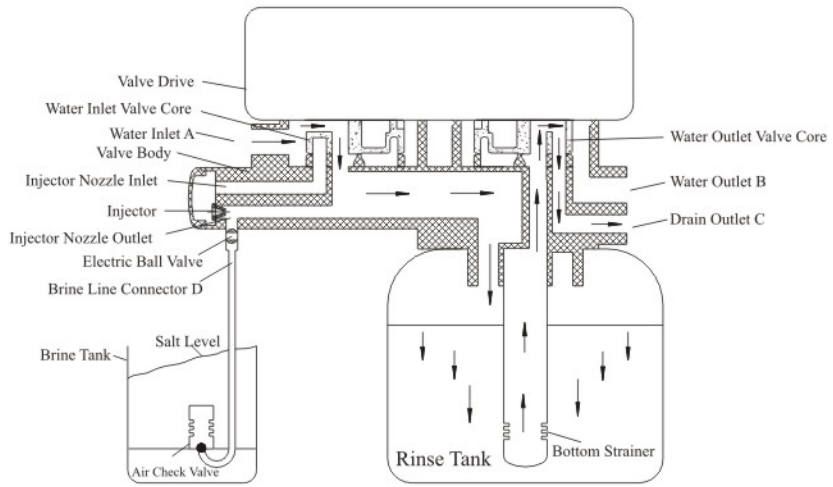
Raw water enter into control valve from inlet A, through water inlet valve core to injector nozzle inlet, and flow quickly to injector outlet, which produce minus pressure, at this moment, the electric ball valve is open, so the brine in brine tank is sucked through brine line connector D to valve body, then to the top of tank. Brine adown pass through resin layers, bottom strainer, upward along with riser pipe, then through valve body, water outlet valve core, finially flow out from drain C.

Slow Rinse Position



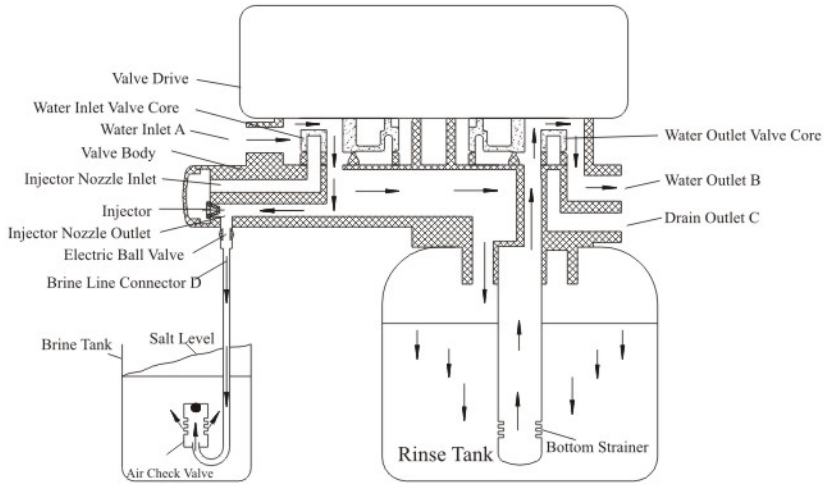
After sucking all brine, raw water enter into control valve continually from inlet A, through water inlet valve core to injector inlet, then pass injector, adown through resin layers, from bottom strainer, upward along with riser pipe to valve body, water outlet valve core, finally flow out from drain C.

Fast Rinse Position



Raw water enter into control valve from inlet A, through water inlet valve core from valve body, and going into tank from top of resin tank. Then adown through resin layers, bottom strainer, return to riser pipe, upward to valve body, water outlet valve core, finally flow out from drain C.

Brine Refill Position



Mostly part of raw water enter into valve from inlet A, through water inlet valve core from valve body, and going into tank from the top of resin tank. Then adown through resin layers (it is soften, and it will be carbon layer while purify, the same as below) to be softened water. Through bottom strainer, return to riser pipe, upward to valve body, water outlet valve core, finally flow out from outlet B. Small part of raw water pass through injector nozzle outlet, is sucked by electric ball valve through brine line connector D to brine tank. At this moment, electric ball valve is open.

Maintenance Guide

Part of Control Valve

Problem	Cause	Correction
1. Softener can not regenerate.	A. Device power off. B. Regeneration time set wrong. C. Controller damaged.	A. Check supply power whether normal or not (including fuse, plug, switch etc). B. Readjust time. C. Check or change controller.
2.Softener outputs hard water.	A. By pass ball valve opened. B. No salt in brine tank. C. Injector be blocked. D. No enough water refilled in brine tank. E. Leakage on riser pipe. F. Leakage in valve body inside.	A. Close the by pass ball valve. B. Make sure there is solid salt in tank. C. Change or clean the injector. D .Check time of refill water to brine tank. E. Check riser pipe not broken, and check seal O-ring. F. Check and repair or change valve body.
3. Can not suck salt.	A. Inlet pressure too low. B. Brine pipeline blocked. C. Leakage on brine pipeline. D. Injector damaged E. Leakage in valve body inside.	A. Heighten inlet pressure. B. Check pipeline. Take out the stem. C. Check pipeline. D. Change a new ejection. E. Check and repair or change valve body.
4.Too much water in brine tank.	A. Brine Refill time too long. B. Too much water in brine tank after sucking salt.	A. Readjusting Brine Refill Time. B .Check whether it is blocked or not in injector or brine pipeline.
5.Water pressure damage.	A. Pipeline leading to softener blocked by iron matter. B. Softener blocked by iron matter.	A. Clean up pipeline of softener. B. Clean up control valve. Add cleaning liquid to resin tank in order to increase the regeneration efficiency.
6.Resin flow out from drain pipe.	A. Air in system. B. The strainer is damaged.	A. Make sure exhaust normally in system. Check it whether dry or not. B. Change the strainer.
7.Control valve continuously circulate.	A. Signal line be cut off. B. Fault on controller. C. Wheel be locked by abnormal things.	A. Insert the signal line again. B. Change the controller. C. Take out the abnormal things.
8.Water flow out from the drain continuously.	A. Valve body inside leaking. B. Power off when backwash or fast rinse.	A. Check and repair or change valve body. B. Switch by hand to service position or close by-pass valve. Reopen when power normal.

Controller

1. All signs and figures light in screen.	A.The connect line between screen panel and control panel damaged. B.Main control panel damaged. C.Transformer get wet or damaged.	A.Change the connect line. B.Change the main control panel. C.Check or change the transformer.
2. No show in screen.	A.The connect line between screen panel and control panel damaged. B.Screen panel damaged. C.Main control panel damaged. D.Power cut off.	A.Change the connect line. B.Change the screen panel. C.Change the main control panel. D.Check the cables and main power.
3. Only E1 show in screen and flickering.	A.The connect line between locating panel and main control panel damaged. B.Locating panel damaged. C.Mechanical driving device damaged. D.Main control panel damaged. E.The connect line between driver and main control panel damaged. F.Driver damaged.	A.Change the connect line. B.Change the locating panel. C.Check the mechanical gearing. D.Change the main control panel. E.Change the connect line between driver and control panel. F.Change the driver.
4. Only E2 show in screen and flickering.	A.Hall components on locating panel damaged. B.The connect line between locating panel and main control panel damaged. C.Main control panel damaged.	A.Change the locating panel. B.Change the connect line. C.Change the main control panel.
5. Interlock disorder	A.Interlock cable disconnect or interlock connectors wrong connection. B. Main control panel damaged.	A.Connect cable in correct way. B. Change the main control panel.
6. Brine suck and refill out of control	A.Electric ball valve damaged. B.Cable between electric ball valve and main control panel damaged. C. Main control panel damaged.	A.Change the electric ball valve. B. Connect cable in correct way. C. Change the main control panel.

Guarantee Card

Dear Client:

This card is the guarantee credence of RUNXIN brand multi-functional flow control valve. It is kept by the client himself. You could get the after-sale 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:

(i) Guarantee repair Period expired.
(ii) Damage resulting from using, maintenance, and keeping that are not according to the instruction.
(iii) Damage resulting from repairing not by the appointed maintenance man.
(iv) No purchase credence and effectual invoice.
(v) Content in guarantee credence is unconfirmed with the label on the real good or be altered.
(vi) Damage resulting from force majeure.

Product Name	Multi-functional Flow Control Valve for Water Treatment Systems		
Brand	润新 RUNXIN		
Model	TM.F	Code Of Valve Body	
Guarantee Term	One year	Notice: Charge the fee over expiration date	
Purchase Company Name		Tel / Fax	
Problem		Date of Repairing	
Solution			

Date of Accomplishment		Signature by Maintenance Man	