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## **Multi-functional Flow Control Valve for Water Treatment Systems**

53502 (Old Model No.:TM. F71B1)

53502B (Old Model No.:TM. F71G1)

53504S/53506S (Old Model No.:TM. F67B1/F67B1-A)

53504 (Old Model No.:TM. F67C1)

53504B (Old Model No.:TM. F67G1)

53510 (Old Model No.:TM. F75A1)

53510B (Old Model No.:TM. F75B1)

## **Instruction Manual**



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

0WRX.466.508

## MODEL: F71B/F71G/F67B/F67C/F67G/F75A/F75B

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

### **Filter System Configuration**

Tank size: Dia. \_\_\_\_\_ mm; Height \_\_\_\_\_ mm;  
Refilled filter materials \_\_\_\_\_ Kg; Granularity of filter materials \_\_\_\_\_ mm;  
Control valve model \_\_\_\_\_ ; Number \_\_\_\_\_ ;  
Pressure of inlet water \_\_\_\_\_ MPa; Turbidity of inlet water \_\_\_\_\_ FTU.  
Water source: Ground-water ; Filtered ground-water   
Tap water ; Other \_\_\_\_\_.

### **Parameter Set**

Parameter	Unit	Factory Default	Actual Value
Time of Day	h:m	Random	
Service Days (Time clock type, by days)	D.	03	
Service Hours (Time clock type, by hours)	H.	20	
Rinsing Time	/	02:00	
Rinsing Frequency	/	F-00	
Backwash Time	min:sec	10:00	
Fast Rinse Time	min:sec	10:00	
Output Mode b-01(02)	/	b-01	

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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 filter should be adjusted accordingly.
- Test water periodically to verify that system is performing satisfactorily.
- Do not put the valve near the hot resource or surroundings with high humidity, corrosive, intense magnetic field or intense librations environment. And do not leave it outside.
- Forbidden to use the drain pipeline or other connectors as support to carry the system.
- Please use this product under the water temperature between 5~50°C, 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 in front of the water inlet. While, if the water pressure is under 0.15MPa, a booster pump must be installed in front of the water inlet.
- Do not let children touch or play, because careless operation may cause the procedure changed.
- When the attached cables or transformer of this product are broken, they must be changed to the one that is from our factory.
- For 53510 (F75A1) and 53510B (F75B1) product, in order to disassemble easily, it is suggested to install the strainer with M88×2 male thread.
- At the end of the product lifetime, parts and components of the product are sorted and properly disposed in accordance with local laws and regulations.

## 1. Product Overview

### 1.1. Main Application & Applicability

Used for filtering water treatment systems

Be suitable for residential filtering system

Swimming pool filtering equipment (F75A1/53510, F75B1/53510B)

Carbon filter or sand filter in RO pretreatment filtering system

### 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, Backwash, and Fast Rinse.

#### ● No water passes the valve in rinsing in single tank type

#### ● Manual function

Realize rinsing immediately by pressing  at any time.

#### ● 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.

#### ● LED dynamic screen display

The stripe on dynamic screen flash, it indicates the control valve is in service; otherwise, it is in rinsing cycle.

#### ● Buttons lock

No operations to buttons on the controller within 1 minute, button lock indicator lights 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.

#### ● Rinsing frequency

It could set up multiple rinsing times, which means several times of backwash and fast rinse but one time of service (Can be adjusted). It is much better for cleaning the filter materials (Refer to P25 for detailed setting method).

#### ● There are two kinds of time clock types

Time clock type valve can be chosen to be service by hours, by dialing the red switch on main control board to "1" (Refer to the Figure 3-1). Pointing to "ON" mean the time clock type service by days; "1" means the time clock type service by hours.

(Attention: after dialing the switch, please restart the power)

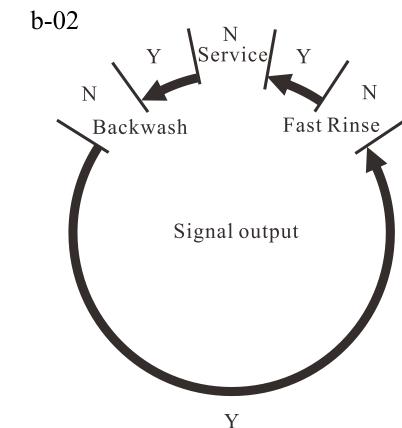
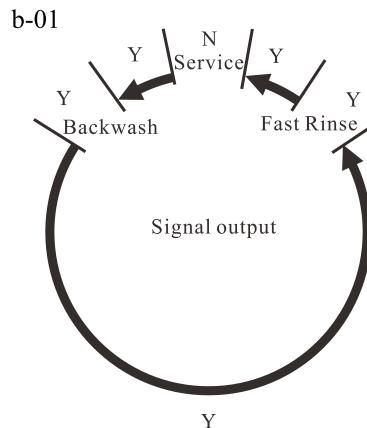
#### ● Interlock function

It has a function of interlock to realize only one valve in regeneration or rinsing, but the other valves are in service while there are several valves parallel in system. In multi-steps treatment systems such as RO pre-treatment, when several valves are in series, there is only one valve in rinsing to ensure pass water all the times while different valves in rinsing. (Application refer to Figure 3-10)

#### ● Signal output

There is a signal output connector on main control board. It is applied for controlling external wiring (Refer to Figure from Figure 3-2 to Figure 3-9).

There are two kinds of output modes. b-01 Mode: Turn on when start regeneration and shut off end of regeneration; b-02 Mode: Signal is available only at intervals of each status. Refer to below figures:



#### ● Remote handling connector

This connector can receive external signal, used together with PLC, and computer etc. to control the valve remotely. (Application refer to Figure 3-12)

#### ● Pressure relief connector

The valve will cut off feeding water to drain line when it switches in rinsing cycles (Same as signal output b-02). Thus in some water treatment system, e.g. Deep Well, one booster pump was installed on the inlet to increase the system water feeding pressure, this cut-off will cause pressure on inlet rising too fast to damage the valve. Pressure Relief Output can be used to avoid this problem. (Application refers to Figure 3-11).

#### ● All parameters can be modified

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

## MODEL: F71B/F71G/F67B/F67C/F67G/F75A/F75B

### 1.3. Service Condition

Filter Valve should be used under the below conditions:

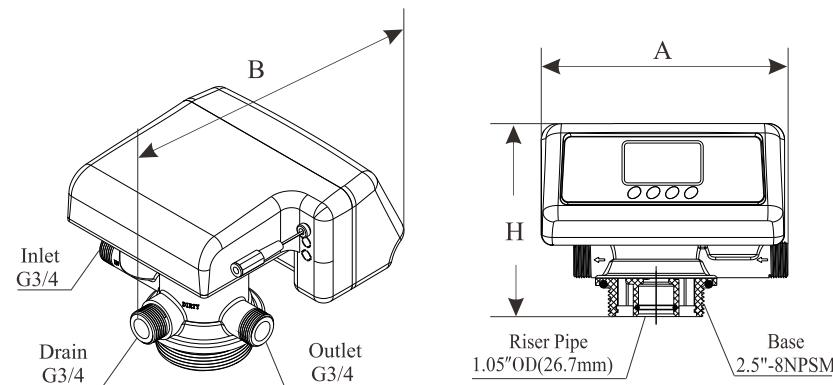
Items		Requirement
Working Conditions	Water Pressure	0.15MPa ~ 0.6MPa
	Water Temperature	5°C ~ 50°C
Working Environment	Environment Temperature	5°C ~ 50°C
	Relative Humidity	≤95% (25°C)
	Electrical Facility	AC100 ~ 240V/50 ~ 60Hz
Inlet Water Quality	Water Turbidity	< 20FTU

Note:

● When the water turbidity exceeds the conditions, the impurity in the inlet water should be coagulated and precipitated firstly.

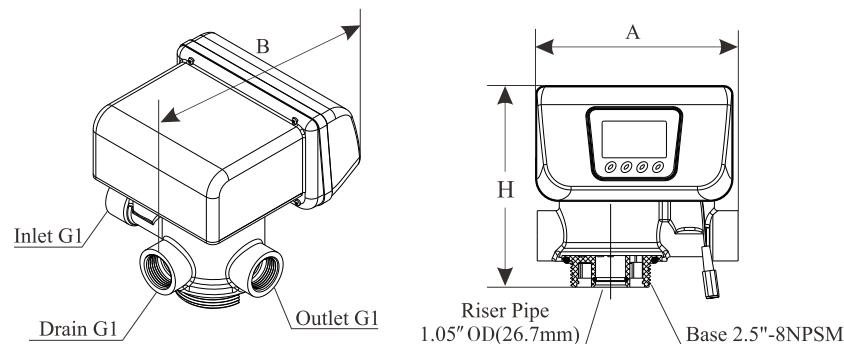
### 1.4. Product Structure and Technical Parameters

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



Model	A(mm) max	B(mm) max	H(mm) max	Transformer Output	Flow Rate m³/h @0.3MPa
F71B1(53502)	182.5	195.5	143	DC12V, 1.5A	2.0
F71G1(53502B)	199	180	167		

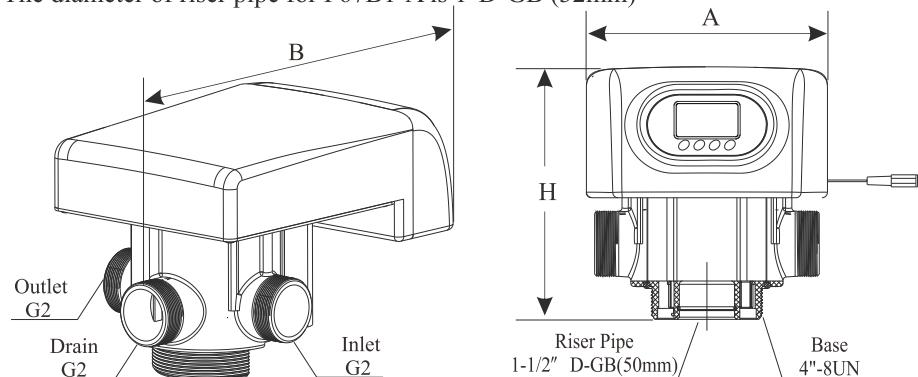
## MODEL: F71B/F71G/F67B/F67C/F67G/F75A/F75B



Model	A(mm) max	B(mm) max	H(mm) max	Transformer Output	Flow Rate m³/h @0.3MPa
F67B1-A(53506S)	180	194	190	DC12V, 1.5A	6.0
F67B1(53504S)			181		4.0
F67C1(53504)			198		
F67G1(53504B)	242	204			

The diameter of riser pipe for F67B1, F67C1, F67G1 is 1.05"OD (26.7mm)

The diameter of riser pipe for F67B1-A is 1"D-GB (32mm)



Model	A(mm) max	B(mm) max	H(mm) max	Transformer Output	Flow Rate m³/h @0.3MPa
F75A1(53510)	220	346.5	230.5	DC24V, 1.5A	10.0
F75B1(53510B)	216.5	346.5	247		

## 1.5. Installation

### A. Installation 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 specifications of Water Inlet, Water Outlet, and Drain Outlet.

### B. Device location

① The filter should be located closely to drain.

② Ensure the unit is installed in enough space for operating and maintenance.

③ The unit should be kept away from the heater, and not be exposed to outdoor. Sunshine or rain will cause the system damage.

④ Please avoid to installing the system in one acid/alkaline, magnetic or strong vibration circumstance, because above factors will cause the system disorder.

⑤ Do not install the filter, drain pipeline in circumstance which temperature may drop below 5°C, or above 50°C.

⑥ Install the system in the place where with minimum loss in case of water leaking.

### C. Pipeline installation (Taking F71B for example)

#### ① Install control valve

a. As the Figure 1-1 shows, select the relevant riser pipe, glue the riser pipe to the bottom strainer and put it into the mineral tank, cut off the exceeding tube out of tank top opening and round it. Plug the riser pipe in case of mineral entering.

b. Fill the filter materials to the tank, and the height is accordance with the design code.

c. Insert the top strainer to the valve.

d. Install the top strainer to the valve and insert the riser pipe into control valve and screw tight control valve.

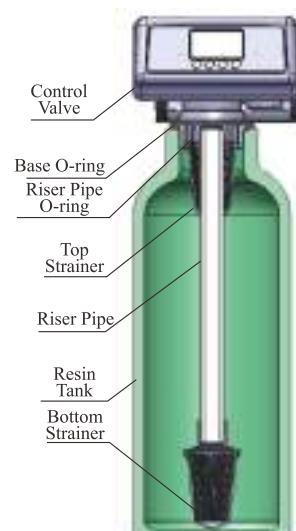


Figure 1-1

### Note:

● The length of riser pipe should be neither higher 1mm nor lower 5mm than tank top opening height, and its top end should be rounded to avoid damage of O-ring inside the valve.

● Avoid filling floccules substance together with filter materials to the tank.

● Avoid O-ring inside control valve falling out while rotating it on the tank.

### ② Pipeline connection

a. As Figure 1-2 shows, install a pressure gauge in water inlet.

b. Install valve A, valve B, valve C and valve D in the inlet and outlet pipeline. The valve D is sampling valve.

c. Install the check valve in the outlet pipeline.

d. Inlet pipeline should be in parallel with outlet pipeline. Support inlet and outlet pipeline with fixed holder.

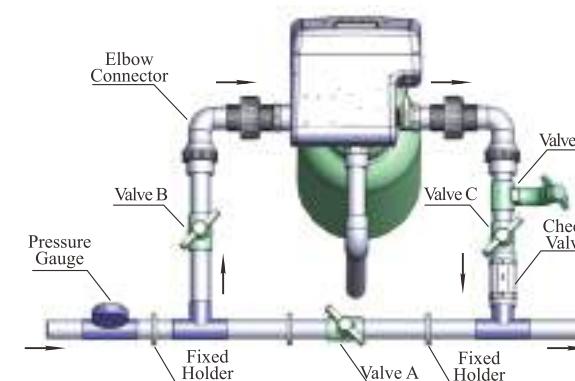


Figure 1-2

### Note:

● 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.

③ Install drain pipeline

Directly connect the drain with the rigid pipeline, such as UPVC, etc.



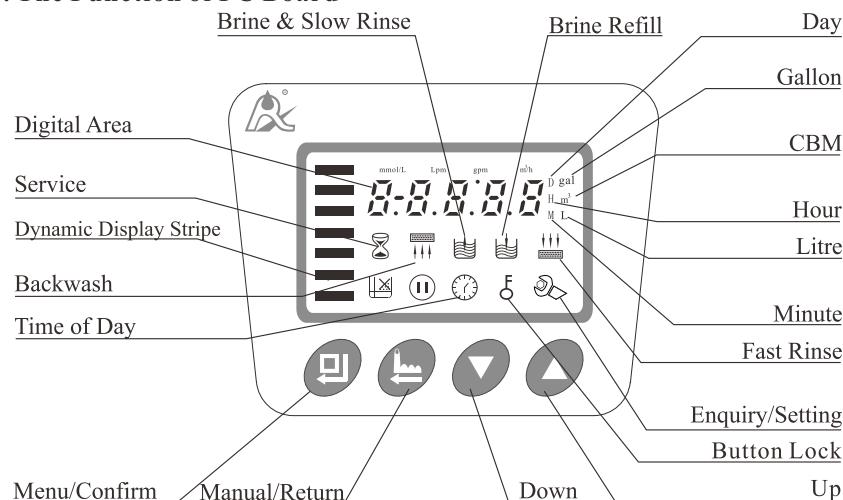
Figure 1-3

**Note:**

- Control valve should be higher than drain outlet, and be better not far from the drain hose.
- Be sure not connect drain with sewer directly, and leave a certain space between them (As the Figure 1-3 shows), avoid waste water being absorbed to the water treatment equipment.
- If waste water is used for other purpose, please use another container for loading. And also keep a certain space between drain and container.

## 2. Basic Setting & Usage

### 2.1. The Function of PC Board



**A. Time of Day indicator**

- Lights on, indicate the time of day.

**B. Button lock indicator**

- Lights on, indicate the buttons are locked. At this moment, press any single button will not work (No operation in one minute, will light on and lock the buttons.)
- Solution: Press and hold both and for 5 seconds until the lights off.

**C. Program mode indicator**

- Lights on, enter program display mode. Use or to view all values.
- Flashes and enter program set mode. Press or to adjust values.

**D. Menu/Confirm button**

- Press , lights on, enter program display mode and use or to view all values.
- In program display mode, press , flashes, enter program set mode, press or to adjust values.
- Press after all program are set, and then the voice "Di" means all setting are success and return program display mode.

**E. Manual/Return button**

- Press in working conditions, it can proceed to next step. (Example: if the outlet water is unqualified, you can press to end the service and start an immediate rinsing. During the process of rinsing, pressing the button can end one step in advance and proceed to the next step.)

- Press in program display mode, and it will return to Service. Press in program set mode, and it will return to program display mode.

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

**F. 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 Button Lock status.

## 2.2. Basic Setting & Usage (Take F67, F71 for example)

### A. Parameter specification

Function	Indicator	Factory Default	Parameter Set Range	Instruction
Time of Day		Random	00:00~23:59	Set the time of day when use, ":" flashes
Service Days		1-03D.	0~99 Days	Only for Time Clock Type, by days
Service Hours		1-20H.	0~99 Hours	Only for Time Clock Type, by hours
Rinsing Time	02:00	02:00	00:00~23:59	Rinsing time; ":" lights on
Rinsing Frequency	F-00	00	0~20	Rinsing frequency. For example, F-01: indicate service 1 time, backwash and fast rinse 2 times;
Backwash Time		10:00	0~99:59	Backwash time (Minute), correct to second;
Fast Rinse Time		10:00	0~99:59	Fast Rinse Time (Minute), correct to second;
Output Control Mode	b-01	01	01 or 02	b-01: Signal turns on when start of rinsing and shut off at end of rinsing. (Connection refers to the Figure P5) b-02: Signal is only available at intervals of rinsing cycles and in service. (Connection refers to the Figure P5)

### B. Process Display (Time Clock Type, by days)

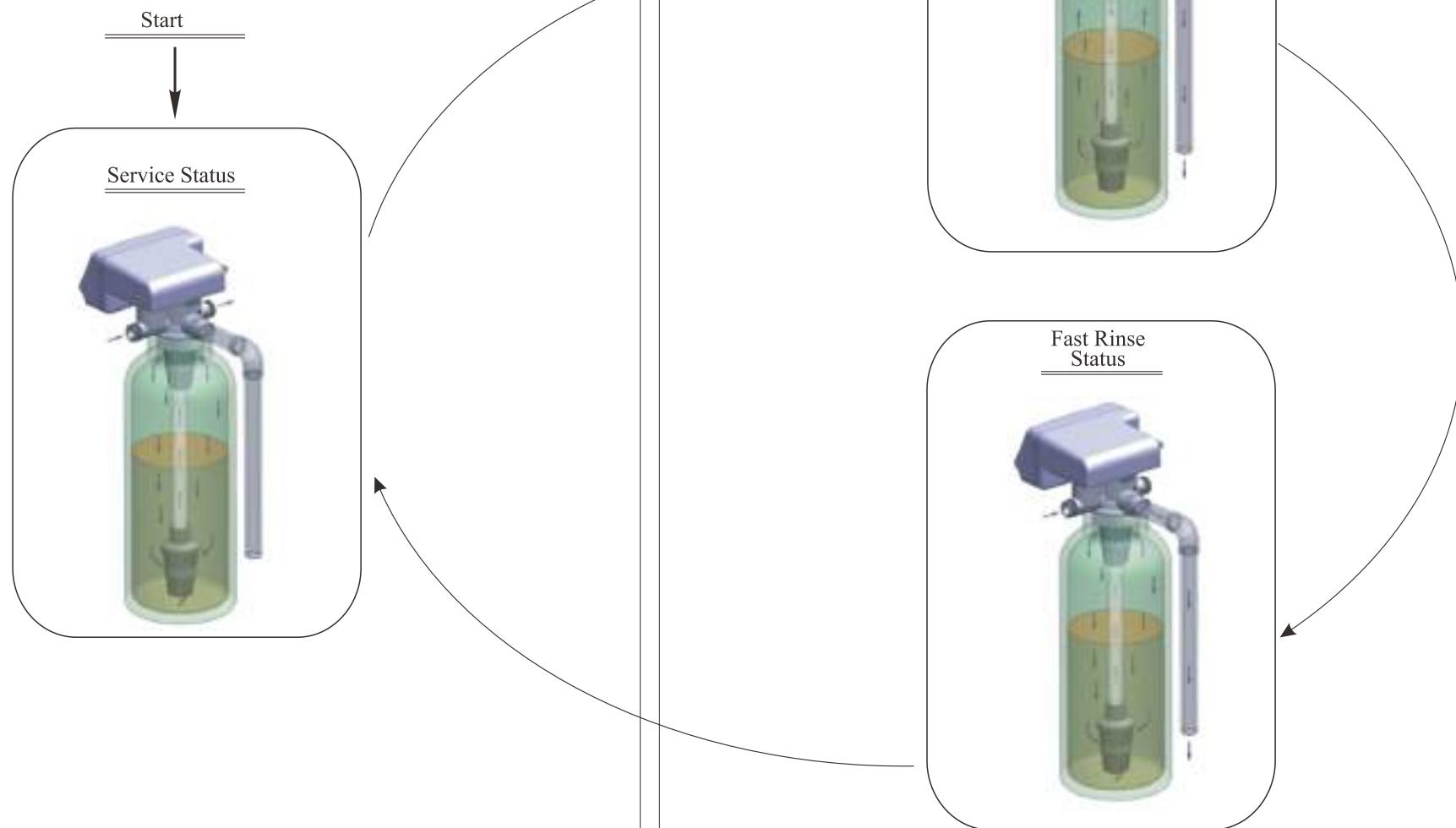
Working status	The circular interface displays in turn		
Service			
Backwash			
Fast Rinse			

#### Illustration:

- The display screen will only show "-00-" when the electrical motor is running.
- The time of day figure flashes continuously, such as "12:12" flashes, indicates long outage of power. It reminds to reset the time of day.
- The display will show the error code, such as "-E1-" when the system is in error.
- Working process: Service → Backwash → Fast Rinse

### 3. Applications

#### 3.1. Filter Flow Chart



### 3.2. The Function and Connection of PC Board

Opening the front cover of control valve, you will see the main control board and connectors as Figure 3-1A shows (For F71, F67).

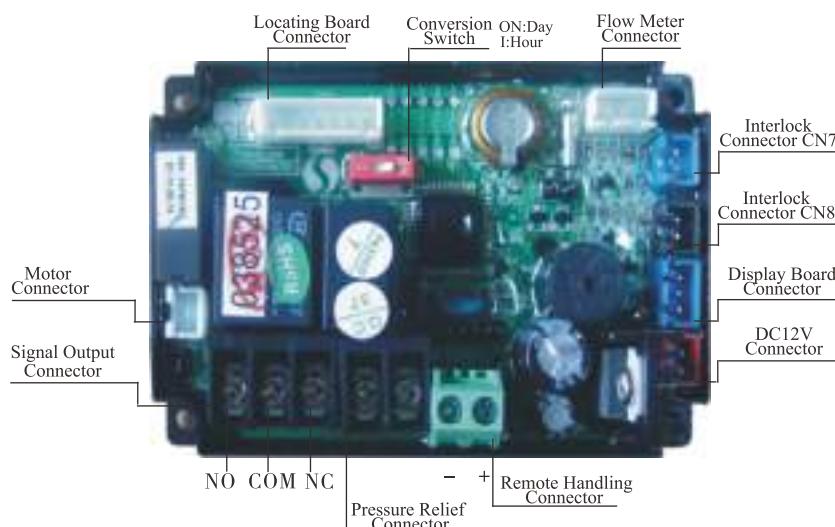


Figure 3-1A

The main control board and connection port for F75 as Figure 3-1B shows:

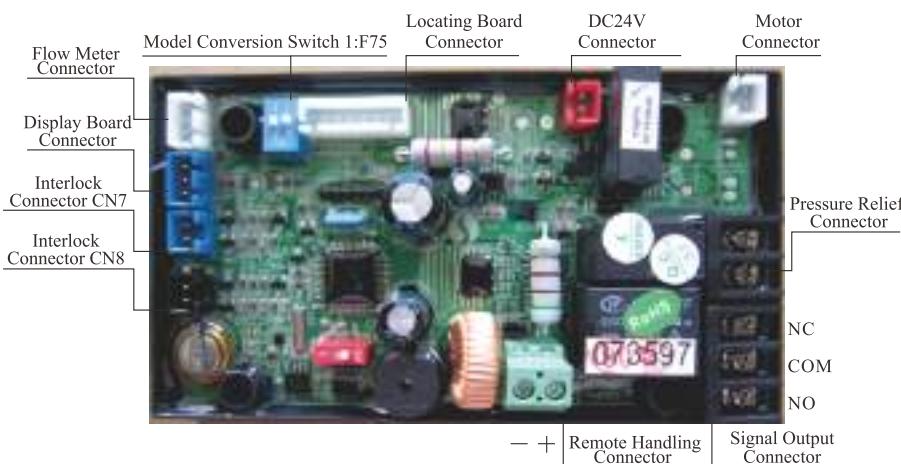


Figure 3-1B

The main functions on main control board:

Function	Application	Explanation
Signal output connector b-01	Outlet solenoid valve	Used in strict requirements regarding no hard water flows from outlet or controlling the liquid level in water tank.
	Inlet pump	Increase pressure for regeneration or rinsing. Use the liquid level controller to control inlet pump to ensure there is water in tank.
Signal output connector b-02	Inlet solenoid valve or inlet pump	When inlet pressure is high, it needs to close water inlet when valve is rotating prevent motor can't rotate.
Pressure relief connector	Control the inlet bypass to release pressure	Used for pump water supply. When valve is rotating, pressure relief connector opened to prevent pressure increasing rapidly.
Interlock connector	To ensure only one control valve rinsing in system.	Use in RO Pre-treatment, water supply together but rinsing in turn. Second grade ion exchange equipment, etc.
Remote handling connector	Receive signal to make the control valve rotate to next status.	It is used for on-line inspection system, connected with PC to realize automatically or remote controlling valve.

#### A. Signal Output Connector

##### 1) Control Outlet Solenoid Valve (Set b-01)

①Solenoid Valve on Outlet Controls Water Level in Water Tank.

Instruction: If system strictly requires no unfiltered water flowing from outlet in rinsing cycle (Mainly for no unfiltered water flows out when valve is switching. When valve in backwash positions, there is no unfiltered water flows from outlet), a solenoid valve could be installed on outlet, the wiring refers to Figure 3-2.

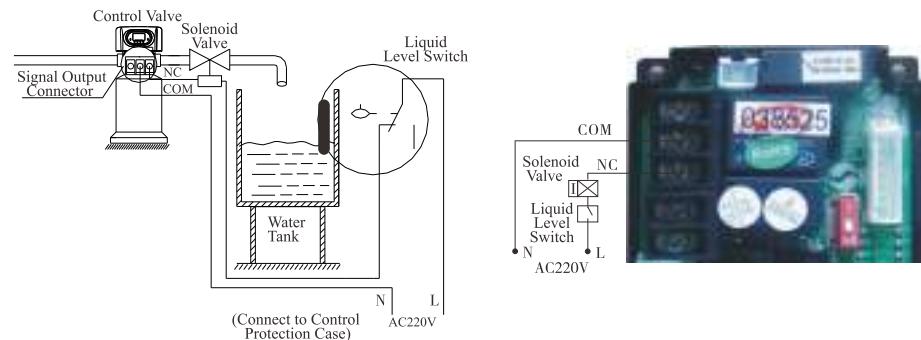


Figure 3-2 Wiring of Solenoid Valve on Outlet