

Microplate Washer

Operation Manual



BIOBASE

Biobase Bioindustry(Shandong) Co., Ltd.

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1. Introduction

1.1 Summary

1.1.1 Profile

Full-automatic Micro-plate Washer BIOBASE-MW9622 (hereby called washer) was developed by our R&D department, basing on our professional experiments and the latest technology trend in the micro-plate washer's field. The manual includes detailed description for installation, operation and maintenance for our washer. Please read the manual carefully before use it.

- a) Product Name: Full-automatic Microplate Washer (hereby called washer)
- b) Product Code: BIOBASE-MW9622
- c) Safety class: Anti-electric shock Class I, overvoltage protection Class II, contamination Class I
- d) Management class: IVD 6840, Management class II
- e) Standard related to our device: YZB/006-2012 Microplate Washer
- f) Manufacturer: Biobase Bioindustry(Shandong)Co.,Ltd
- g) Add: No.51 South Gongye Road, Jinan, China 250101
- h) Tel: +86-531-81219801/03 Fax: +86-531-81219804
- i) Web: www.biobase.cc E-mail: service_ivd@biobase.cc

After-sale service should be done by Our company or our authorized agent.

1.2 Specification and main technical features

1.2.1 Physical features

- a) Fuse: 1A/250AV, $\Phi 5 \times 20$
- b) Power supply: : AC220V $\pm 10\%$,
50Hz ± 1 Hz Input power: 50VA
Environment temperature: 10 \sim 40 $^{\circ}$ C
Relative Humidity: < 80%
Atmospheric pressure: 86 Kpa \sim 106 Kpa
Working mode: continuous working, intermittent

loading c) Device Size and Weight

Device size: 446 \times 368 \times 164 mm (17.60 \times 14.50 \times 6.50 inch)

Device net weight: 9 kg

1.2.2 Product Features

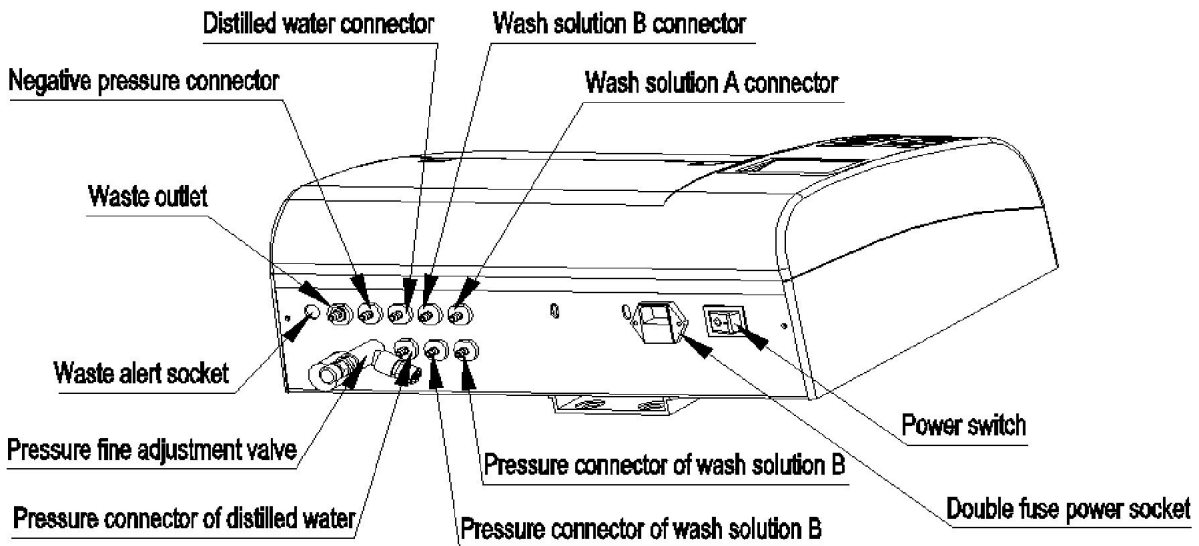
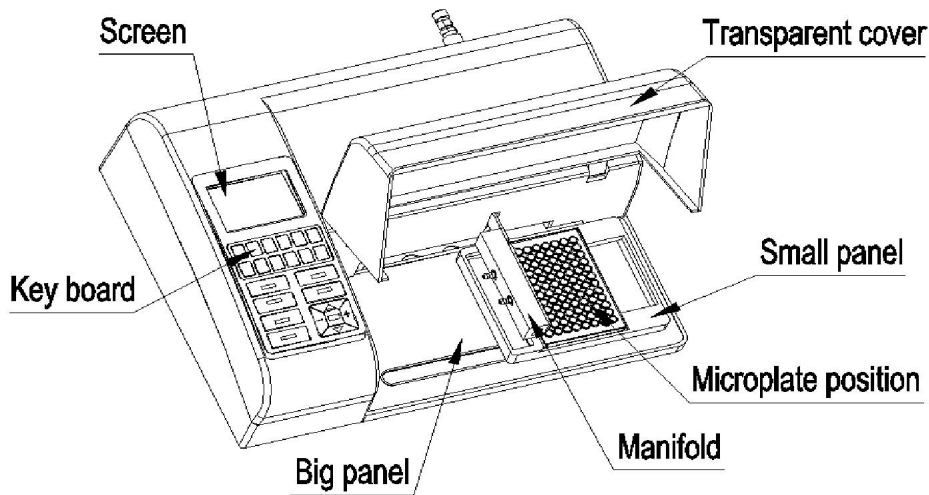
- a) 3.5 inch LCD screen with back light, which makes easy to operate it.
- b) High reliability, good washing result, suitable to various Micro-plates (flat-, round -, U-, V-plate 96-well and 48-well plate).
- c) 100 washing programs can be saved independently.
- d) Two alternative solutions bottle (A and B) for choose, which can be selected either by default settings or manual operation.
- e) Manifold types: 8- and 12- channel.
- f) Washing times: 1~99 times adjustable,
Soaking or shaking, or soaking plus shaking.
- g) Rinse pipeline time: 1~ 240 s adjustable, Bottom washing, two point aspirating function.
- h) Dispensing time can be adjusted by program settings; Dispensing volume can be adjusted by air pressure adjustable valve.
- i) The time for soaking or Shaking can be chosen to be seconds or minutes, whose number can be set from 1 to 999.
- j) Wash lines: 1-12 lines selectable.
- k) Residual volume: <0.7 µl /well
- l) Dispensing uniformity: CV < 1.5%.
- m) Every position parameters of different micro-plate can be saved in different washing programmes.
- n) Batch modification function for washing programmes, especially for position parameters.
- o) Alarm function by Waste water sensor when waste water bottle is full, which will makes washing paused automatically. Device will restart after you empty the waste water bottle.
- p) PW-912 Plus with senior function
 - waste liquid AUTO discharge function.
 - Device of water proof and fog proof, To make vacuum pump.

1.2.3 Comparison sheet about different product code

Item	Features	BIOBASE-MW9622N	BIOBASE-MW9622	BIOBASE-MW9622Plus
1	Wash manifolds	8- and 12- channel.		
2	Micro-plates	96-well and 48-well plate (including 12*8 and 8*12)		
3	Wash lines:	1~12 line adjustable		
4	Washing times:	1~99 times adjustable		
5	Soaking or shaking	Soaking: 0~999s adjustable; shaking: 999s adjustable		
6	Solution channel	2 pcs	3 pcs	3 pcs
7	Water mist catching device	No	No	Yes
8	Auto discharge for waste liquid	No	No	Yes
9	washing programs	100 washing programs		

1.3 Structure of the washer

Washer is made up by Device, Solution bottle, Buffer bottle, Distilled water bottle, waste water bottle. Its shape as following:







1.4 Scope

It is controlled by computer to wash 48 well and 96 well microplate in experiments of Enzyme Linked Immunosorbent Assay (ELISA), Time-Resolved Immunofluorometric Assay (TRFIA) and Chemiluminescence, which are widely used in clinical diagnostic laboratories, centers for disease control and prevention, animal and plant quarantine, animal husbandry and veterinary epidemic prevention stations, biotechnological industries, food industries, environmental science, agricultural scientific research and other academic organizations.

2. Sign, screen printing, labeling, and pictures




2.1 Sign

Please note following listed signs suitable for the manual.

Sign	Note
	Attention! It may damage the device or affect the test result.
	It may lead to biological contamination
	High temperature may harm you.
	It may harm you.

2.2 Screen Printing and labeling

The following screen printing and labeling suitable for the manual.

Label	Note
	Product Serial Number
	Manufacturing Date
	Products for in vitro diagnostic device
AC110 - 240V	Power input port
USB	USB Interface
ON	Turn on it
OFF	Turn off it

2.3 Pictures

All pictures in the manual can be only used as description or demonstration, instead of other purposes.

2.4 Warranty and service

Free repair service since installation can be enjoyed for a year. However, free repair service will be not available for the following conditions:

- 1) Working environment does not meet requirements in the specification;

- 2) Damage caused by unspecified power supply or abnormal power;
- 3) Artificial damage;
- 4) Damage caused by unauthorized man's repair work.
- 5) Other irresistible natural factors, such as earthquakes, fires, war damage.

If you have any questions and problems about usage , please feel free to contact with us via following ways:

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Tel: +86-531-81219801/03 Fax: +86-531-81219804

Web: www.biobase.cc E-mail: service_ivd@biobase.cc

2.5 Train

To get a good performance for our washer,free train course will be available for you in our factory.For training details and schedule,please contact with us.

2.6 Safety and Precaution

2.6.1 Safety Classification

- a. Full-automatic Microplate Washer BIOBASE-MW9622 is class I for anti-electric shock, class II for overvoltage, class I for ordinary desktop contaminated equipment;
- b. It belongs to 6840 type in class II according to China FDA law.

2.6.2 Safety

- a. Biological contamination: Since all test samples, control materials, calibration materials, etc., should be regarded as contagious, you should wear gloves;Any componetnts contacting with sample before shall be be regarded as contagious, you should wear gloves;
- b. High Temperature: Please change the vacuum pump after you turn off it more than 20 minutes ,to let pump become normal temperature;
- c. Physical Injury: Don't put hands to the washer manifolds when BIOBASE-MW9622 is working.

2.6.3 Notes

- a. If the device does not work in the way specified by the manufacturer, it may damage the protective function in device itself;
- b. Do not place the device where it is difficult to turn it off.

3.Installation

3.1 Installer

The Installation of Full-automatic Microplate Washer BIOBASE-MW9622 can be only installed by Biobase Biodustry(Shandong)Co.,Ltd or authorized distributors. Appropriate environment and space should be provided during installation by customers.

3.2 Damage Check

It was strictly checked by our QC Team before shipping. When you open the packing, please check carefully. Please note if there is following damage or not :

- (1) There is deformation for outside carton;
- (2) There is obvious flood damage for outside carton;
- (3) There is obvious hit damage for outside carton;
- (4) Cartons seems to be opened by authorized person before.

If you find any damage as above listed, please immediately notify the local agents.

If the packaging is intact, please open the box and check all the parts together with distributor

- (1) Check all parts according to packing list,;
- (2) Check carefully if there are broken, bruises or deformation damage for device shell appearances or not;

3.3 Packing List

Read instrument of the box : List of BIOBASE-MW9622 Full-automatic Microplate Washer Certificate

3.4 Installation Requirements

- (1) Place: Dry, clean, stable working desk, with clean air and enough space around device to ensure air circulation, without dust, shock, strong magnetic fields, the impact of interference voltage, and direct sunlight.
- (2) Temperature: 5 °C ~ 40 °C;
- (3) Humidity: ≤ 85%;
- (4) Atmospheric pressure: 86 Kpa ~ 106Kpa;
- (5) Ventilation: Exchange air with the outside world, and you can flow air smoothly;

3.5 Installation Process

a) Opening the box

Open the box and take out the accessories box, bottles box and the document bag, then take out the device. Take out the power cord and connect pipe from accessories box.

Take out the wash solution bottles, waste solution bottle, and buffer bottle and distilled water bottle from the package of bottles. Take out the device and put it on a flat and stable table carefully.

b) Take apart the TWO screws fixing the vacuum pump in the base plate's outside. Open the document bag and take out the operating manual and service manual.

Make sure everything is in existence and intact according to the packing list in the operating manual. If damage or shortage is found, please contact us immediately.

C) Pipeline connection

Firstly, There are 10 pieces pipes in the parts box. Please connect every pipe with the right hole in device and bottle by the same color mark of pipe end, For example, please the pipe with red mark to the hole with red color in device. So do the same for other color pipe.

Secondly, connect the waste alarm wire to the hole in the waste solution bottle and the waste solution sensor port on the back of the washer.

Finally check according to Fig. 2-1 if all pipe is right or not

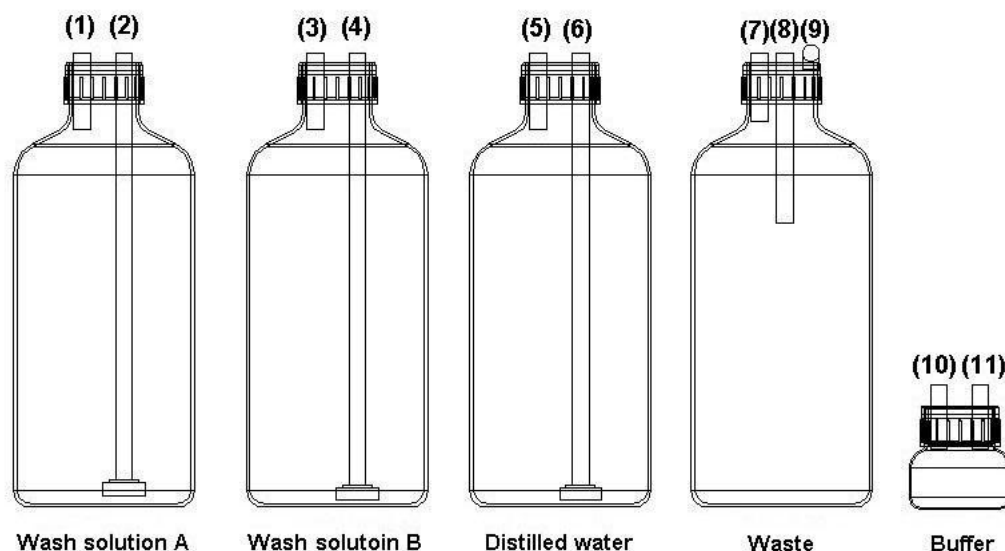


Fig. 2-2 Bottle connector

- | | |
|---|---|
| (1) Air inlet of wash solution A bottle | (2) Solution outlet of wash solution A bottle |
| (3) Air inlet of wash solution B bottle | (4) Solution outlet of wash solution B bottle |
| (5) Air inlet of distilled water bottle | (6) Solution outlet of distilled water bottle |
| (7) Air suction of waster bottle | (8) Solution inlet of waste bottle |
| (9) Waste alert connector of waste bottle | (10) Air inlet of buffer bottle |
| (11) Air suction of buffer bottle | |

Pipeline connection with the bottle is as follows:

(1) Air inlet of wash solution A bottle → Pressure connector of wash solution A of the Washer
(2) Solution outlet of wash solution A bottle → Wash solution A connector of the Washer
(3) Air inlet of wash solution B bottle → Pressure connector of wash solution B of the Washer
(4) Solution outlet of wash solution B bottle → Wash solution B connector of the Washer
(5) Air inlet of distilled water bottle → Pressure connector of distilled water of the Washer
(6) Solution outlet of distilled water bottle → Distilled water connector of the Washer
(7) Air suction of waster bottle → (10) Air inlet of buffer bottle
(8) Solution inlet of waste bottle → waste outlet of the Washer
(9) Waste alert connector of waste bottle → Waste alert socket of the Washer
(11) Air suction of buffer bottle → Negative pressure connector of the Washer

d) connect washer head

Take the wash head and 2 short silicone tube out from the accessories box. Connect washer head to the tap of input and output. Finally put fixed washer head into the brack.

Note: Don't connect washer head when you put wash head in the bracket or dismantle the silicone tube.

e) Power connection

Connect one end of the power cord to the socket on the back of the washer, and connect another end of the power cord to the outlet of AC 220V, 50/HZ.

4. Operation

4.1 Self-check

After you turn on the device, screen displays manufactor's logo, and says "starting...".

And then device's process of rinsing pipeline will be automatically done. A few seconds later, screen will be as follows:

Com	Wash Mode	::Double
P	Wash Times	: 5
R	Volume	: 350 uL
R	Asp. Time	: 0.8 s
O	Clean Mode	: Soak
G	Soak Time	:: 25 s
	Hole Type	: Flat
01	Solution	: Manual

If program code 01 twinkling, it means that washer is in good condition.

4.2 Keyboard

Keyboard includes number key, function key and also include Composite function keys (number key + special key).

4.2.1 Number key

1A, **2B**, **3C**, **4D**, **5E**, **6F**, **7G**, **8H**, **9**, **10**, **11**, **12** A-H eight letter keys means that you want the vertical strip A, B, C, D, E, F, G, H in the micro-plate to be

working, and 1-12 twelve number keys mean that you want horizontal strip in the micro-plate to be working. Behind every letter key there is a yellow indicator light. If the light is on, it means that the corresponding strip is being selected now. If light is off, it means that strip is NOT selected. If you press one key more than 3 seconds, all the strips, whose number key is bigger than that key number, will be NOT activated, but strips ,whose key number is smaller than that key number and including that key, will be activated.

4.2.2 Function keys

Rinse, **Position Adjust**, **solution A**, **solution B**, **Shut down**, **Return**, **+**, **-**, **▲**, **▼** and **Run/ Pause**

a) **Rinse** key

When the device is working during main menu status, if you press the Rinse key, washer will use current wash solution (indicator lamp is on) to wash the whole pipe.

b) **Position Adjust** key

You can use it to adjust 5 position parameters of washing program, For Details please read item

4.3. c) **Solution A** key and **Solution B** key

When in main menu status, it can select to use wash solution A or wash solution B before washing.

Once the washing process start, you can not change the wash solution.

d) **Shut down** key

Press this key to turn off the device. After press it, the Rinse process to the whole pipe with the distilled water will be automatically done . And then screen says “Turn off the power”, or you can press RETURN key to menu.

e) **Return** key

This key can stop washing process or pipe rinsing process, or return to main menu from other operation interface. When in the main menu or return to the main menu from other branch menu, The parameters can be stored when press this key. It will be invalid when you double click the Return key during main menu status.

f) **+** key and **-** key

This key can increase or decrease program parameters in circle. In position adjust interface, operation will be executed only one time by one time, which means that washer head position can be adjust by 1 press every time. but successful operate will be execute in other interface when long pressing these keys.

g) **▲** key and **▼** key

These keys can go up arrow “▲” and down arrow “▼”. When you press it, the arrow can move. The move can be done from the end to the beginning in the screen.

h) **Run/ Pause** key

In the main menu, if press it, washer will start washing program; if you press it during the washing process, the washing program will be paused at once. When you Press it again, the washing head will reposition first, and then go on washing.

4.2.3 Composite function keys

Composite function key is made of **Return** key add other key forms. Operate method is that firstly click **Return** key and press other key till you enter the relative menu. Composite function keys include as follow: (1) **Return+1A**

Enter “after-sale service” interface via it. The screen will display after-sale service telephone number, fax, hotline,e-mail.

(2) **Return+2B**

Enter “recover factory setting” interface, and operate it as program direct. It can reset the confusion parameters back to factory original setting status. “Factory setting” was set during production adjustment by QC adjustor, whose parameters can be invoked and reset. This function is advised to be done by factory engineer, installment engineer, after-sale service engineer and excellent operators

(3) **Return+3C**

Enter “Recover factory original setting” interface. Operate it as program direct. “Recover factory original setting” controls pre-set original washing program, which can be used but can’t be modified. This function suits to factory adjustment engineer.

(4) Return+4D

Enter “advanced settings”. This function is advised to be done by factory engineer, installment engineer, after-sale service engineer and excellent operators.

Advance setup	Wash position	65
	AP setup time	5 s
	Pre –rinse time	5 s
	Water Input parameter	2.0
	Screen saver	15 m
	Max program No.	50

Wash position: adjust the position by factory, unnecessary for customer to change it

AP Setup Time: Time required building up the stable air pressure. 1-9 seconds selectable.

Pre-Rinse Time: Time for rinsing the pipeline by distilled water when device turn on or turn off. 10-99 seconds selectable.

Screen Saver: Time to enter screensaver when there is no operation. 0-15 minutes select. 0 means not enter into screensaver.

Program Number: The instrument can store MAX 99 preset programs. 1-99 select.

Display Mode: Forward and reverse display. 0 means white background and blue letter. 1 means blue background and white letter.

(5) Return+5E

Enter “Setting” interface. This function is advised to be done by factory engineer, installment engineer, after-sale service engineer and excellent operators.

(6) Return+6F

Enter “Setting” interface. This function is advised to be done by factory engineer, installment engineer, after-sale service engineer and excellent operators.

Horizontal motor circle: The bigger of the parameter, the slower of the horizontal movement’s speed. 30~60 seconds selectable.

Vertical motor circle: The bigger of the parameter, the slower of the vertical movement’s speed. 40~80 seconds selectable selectable.

(7) Return+7G

Enter “Detect” interface. Press the number key to turn on and shut down the according electromagnetic valve. This function suits to production adjustment, installment adjustment and after-sale service. (8) Return+9

PW-960plus’s composite function: Enter “Manual Drain” interface, and continue the operation follow the prompts. Only for Plus

(9) Return+11

Enter “Version” interface. This function applies for production adjustment, installment adjustment and after-sale service.

PCB: it define the circuit modified version by manufactory’s research department.

FW: it define of software modified version by manufactory’s research department.

FWD: it define the date of formal software. (10) Return+12

Enter “factory setting” interface. It will store current program as factory setting. It’s the reverse operation of Return+2B.

(11) Return +Position adjust

Enter “Update all programs” interface. Copy all parameters of current programs including position parameters to the whole 50 programs, Except original setting and factory setting. This function is advised to be done by factory engineer, installment engineer, after-sale service engineer and excellent operators.

(Warning: this operation can not be recovery, please use it carefully!)

4.3 Position parameters setting

Press “ Position Adjust ” key in main menu, and the screen display as right shows. During production, the washer head position had been adjusted very well with the standard 96-well micro-plate. However, when you start washing after installation for the first time or use different micro- plate, you should use the micro-plate to calibrate the washing head position, because there might be difference among

Com	Position Adjust Menu	
P	Top	2.0mm
R	Left	0.0mm
O	Center	1.5mm
G	Right	3.5mm
	Bottom	12.6mm
01	Distance	107.8mm

Microplate manufacturers. The stepping accuracy of Vertical movements is 0.2 mm, and the step accuracy of horizontal movement is 0.1 mm. The position parameters will be saved in the relative program code. The same program can be activated when you use the same size microplate next time.

Notice: To protect the motor, it will automatically return to main menu when there is no operating within 3 minutes.

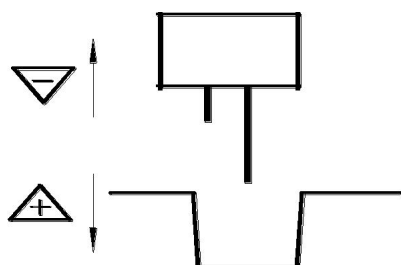
4.3.1 Adjust the first position-Top

This position refers to the highest position of the hole’s solution. If solution is higher than the position, solution above this point can be aspirated.

Move the cursor by “▲” or “▼” key to “Position Adjust” → “top”. The washer will move the micro-plate holder to current default top position automatically. When Press “+” one time, the washing head go down by 0.20mm, When Press “-” one time, the washing head go down by 0.20mm. Please set the end of long pin Parallel with microplate’s circle or 1-2 mm higher than microplate.

The according position parameters will be adjusted basing on new Top position ,for example bottom position will be adjusted basing on new Position Top.

Then press “Return” key to save the setting parameters and return to the main menu.



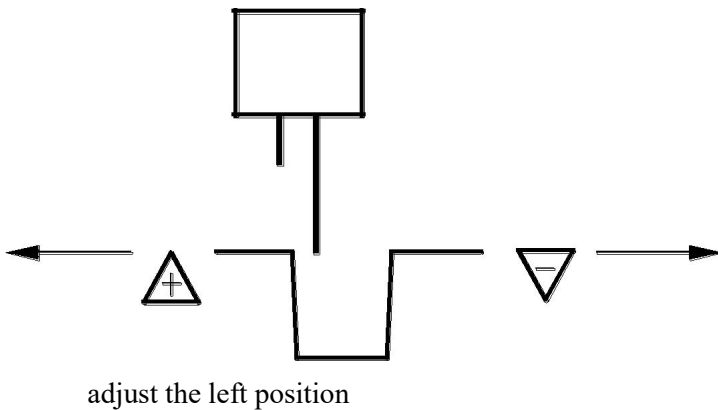
adjust the top position

4.3.2 Adjust the second position-Left

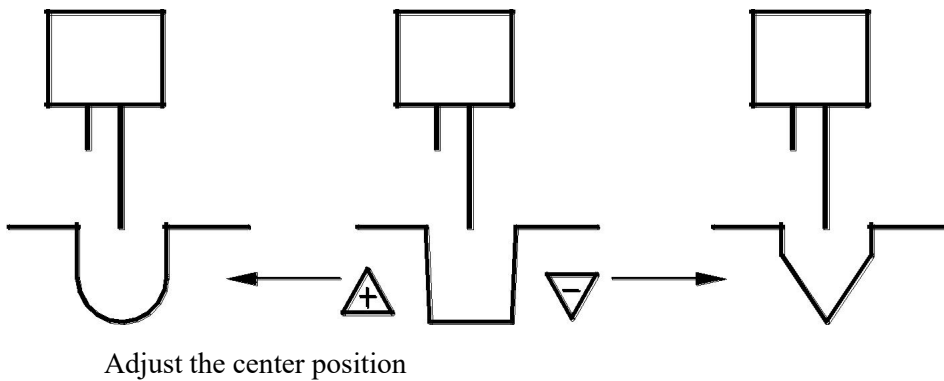
It refers to the position that long pin’s position and short pin’s position during first washing process.

Please check if first line long pin faces the position 1-2mm away from the hole's left interior side. When press "+" key,it will move towards left about 0.1mm. When pressing "-" key, it will move towards right about 0.1mm.Please do the adjustment till the Long pin in the position as photo shows. After this, you can select ▼ to the position adjustment 3.Or press "Return" key to the main menu.

The center position, right , will change to keep the

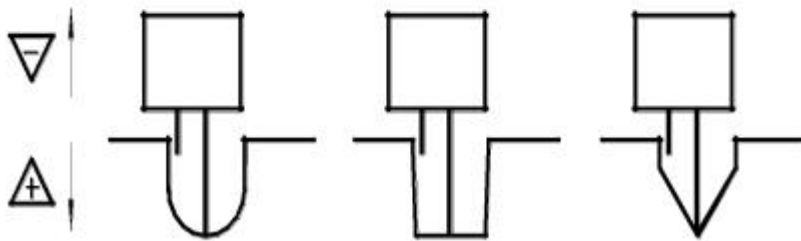
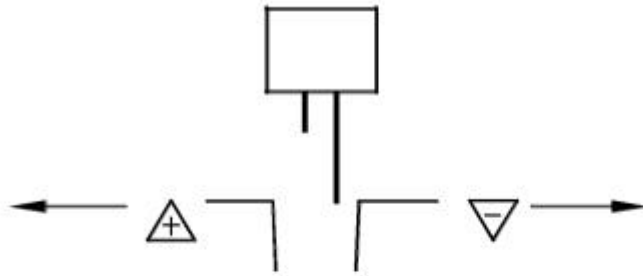


position.
4 position adjust.



4.3.4 Adjust the fourth position-Right

It refers to the position that long pin's position and short pin's position during second washing process. Press "+" or "-" till long pin face towards the position 1-2 mm away from the hole's right side. Press "▼" key to position 5. Then press Return key to save parameters and return to the main menu.



Adjust the bottom position

4.4 Wash parameters illustrating

Press key + or - to choose the program code and read the user written programs. The user can set their own programs and save up to 99 programs. Press key ▲ or ▼ to adjust parameters. The screen displays as follow:

Com	Wash Mode	: Double
P	Wash Times	: 5
R	Volume	: 350 uL
O	Asp. Time	: 0.8 s
G	Clean Mode	: Soak
	Soak Time	: : 25 s
	Hole Type	: Flat
01	Solution	: Manual

Washing program: 1-99 selectable

Washing mode: strip, plate

Washing times: 1-99 selectable

Dispensing volume: can be set as 50-950 μ L in 50 μ L increments.

Aspirating time: can be set as 0.1-9.9 seconds in 0.1 second increments. Clean

type: Soaking, shaking, soaking plus shaking, three types

Hole Type: Flat bottom, round bottom, U shape and V shape 4 types.

Solution type: Manual, A and B.

Manual: press solution A or solution B key to choose solution;

Default A solution: will use solution A to wash, indicate lamp of solution A light, and it will return to manual state after washing;

Default B solution: will use solution B to wash, indicate lamp of solution B light, and it will return to manual state after washing.

Washing items: common, HAV, HBV, HCV, HIV, TP, AFP, CEA, T3, FSH.

Notice: This instrument has two point aspirating and bottom rinsing function.

Two positions aspirating is only executed during bottom rinsing and the last time washing. The residual volume won't affect the result during the washing process. The residual volume of last time washing is very small so that following steps get good result.

Bottom rinsing only be executed at the first and the second time washing. The function is to eliminate interference of adsorption and reduce the possibility of cross-contamination. First time bottom rinsing can lower down dramatically the concentration of reaction mixture so that following washing speed can be greatly enhanced and ensure good result.

4.5 Micro-adjustment for Dispense volume

There is a air pressure adjustable valve at the rear of instrument through which you can adjust the dispense volume. During production, the device had been adjusted very well. If user has special demand of dispense volume, they can do the adjustment with a little range according to requirement.

The method is: Firstly, loosen the screw on the valve tube.

Secondly, please observe the flow volume dispensing from the short pin. At the same time, rotates the valve till you satisfy with the dispensing volume.

Thirdly, Fasten the screw on the valve tube. Air pressure adjustable valve can only small adjust to dispense volume (i.e. dispense speed).

4.6 Washing procedure

1). Before turn on it, check whether the pipe system is well connected or not, whether waste bottle is empty or not, whether there is enough water in distilled water bottle and solution bottle or not. And put the micro-plate on the holder of A position.

2). After Turn on it, instrument starts to initialing and washing the tubing with distilled water. And then, screen displays the main menu.

3). The cursor's default position is program code. Choose the program code via key + or - . Choose the parameter by key ▼ or ▲, and adjust the parameter via key + or - .

4). Press Position Adjust key to check 6 position parameters, then press Return key to go back to the main menu.

5). Choose washing strips according to actual sample quantity. 1A、2B、3C、4D、5E、6F、7G、8H、9、10、11、12

correspond to each strip. If indicator lamp is on, it means that the strip will be washed.

Press the key again to switch to not wash this strip. pressing one key more than 3 seconds will select all strips in front of this key, and all strips behind this key will not be washed.

- 6). Press solution A or solution B to choose wash solution by manual or use it by program.
- 7). Please place the micro-plate in the micro-plate holder, press Run/ Pause key to start or pause .Press Return key during washing will stop washing. Washing screen displays as follows:

Com	Head location	A
P	Wash times №	1
R	Times remain	4
O	Time remain(s)	8
G		
01	Pause key to pause RETURN key to cancel	

- 8). Rinse pipeline: After washer process completed, press the button Rinse pipe, to prevent the cleaning head and the pipe plug or crystallization. When you press Rinse the pipeline key,it will display:

Rinse pipe time: 5 seconds
Automatic Rinse interval: 5 plates

Rinse pipe time:1~240s adjustable by keys +, -;

Automatic Rinse interval: 0~20 plates, 0 means stop rinse, set by keys +, - ;

When The rinse time and automatic rinse interval adjustment is completed, press the button Rinse to wash the pipeline. When the washer plate's quantity is bigger enough as setup required,Rinse process will be done.And then it will drain the distilled water in the big plate's tank,and finally into the standby status.

- 9). Shut down procedures: press shut down key to execute shut down procedure.And then it will rinse the tubing with distilled water. When finish, it reminds “Please turn power off”, then switch off the washer by Switch button at left rear of the instrument.

Notice: It is recommended to rinse tubing , in order to prevent jamming or crystallizing.

4. 7 Maintenance

Maintenance includes the maintenance of piping, Washer head and plate holder.

a) Pipe maintenance:

There are mainly washing pipe by solution and rinsing pipe by distilled water. After press turn off device, it will switch to distilled water bottle washing pipe. After you turn off, please restart device again to repeat the turn off process. After several times like this, pipe will be completely cleaned.

Every month a complete washing should be done at least one time. Firstly, you put 350mL1% sodium hypochlorite to the solution bottle and distilled water. Secondly, start the device and automatically rinse the pipe. Finally, after 5 minutes soaking, please clean the distilled water, solution bottle and wasted bottle. put normal water and solution to each bottle again.

b) Washing head maintenance:

Take down the washing head; remove the sealing screws from the both sides, disinfecting the washing head in 75% ethyl-nitrite. Use attached long tube to clean the possible jammed and use syringe with ethyl-nitrite to rinse the inner space of the washing head or clean with soft brush.

c) Micro-plate holder maintenance:

There is a pipe in the micro-plate holder that automatically collects overflow fluid. It can drain promptly water at any time. We can add some distilled water to the holder after daily use. But the user should prevent paper scraps or other impurity etc from entering inside the pipe, which might cause jamming.

5. Notices

- 1). Users should carefully read it before using the instruments.
- 2). Prevent water from vacuum Pump. The waste bottle should be checked before starting to see if it is full or not. Please make sure that the waste bottle should be emptied every time. Water in waste bottle should be promptly drained if there is a warning of drained waste.
- 3). It is recommended to rinse pipe everyday, in order to prevent jamming or crystallizing.. 4). Do not put objects on a large tray, so as not to affect the movement of small plate.
- 5). For different plates, please adjust the washer's location parameter via position adjustment key.
- 6). Firstly, put the washer head away from the holder, and then you put the pipe connecting the washer head away, to protect the cleaning head bracket.
- 7). When Dumping the liquid or touch the plug sensing line, please be sure to turn off the power, to avoid the liquid into the device.
- 8). Replace the fuse, remember to first turn off the equipment and unplug the power cable, to avoid electrical shock.
- 9). Daily with a towel in the diluted disinfectant clean the surface of the instrument and tray rails.

6. After-sales service

- 1). Quality guarantee period for Our PW Series automatic ELISA plate washer is one year since the date of installation. After 1 year, spare parts costs charged if it needs repair.
- 2). During The warranty period, when damage is caused by improper operation, spare parts cost of maintenance should be charged.
- 3). When there is Serious damage in the equipment, please promptly contact with our service team. We try our best to solve the problem as soon as possible together with our agent technical team in your countries.
- 4). do not disassemble the instrument by yourself. If it result in damage to the instrument, users bear the maintenance costs.
- 5). We authorized licensed users who have their own maintenance service, to service. We also provide electrical schematics and parts lists to you.

7. Transport equipment

Extraction and handling lift up with both hands when handling. Prohibit wrestling touch drop.

8. Signs

- 8.1 There are a piece of plate in device which has the following information:
- a) product name, model;
 - b) Name of manufacturer;
 - c) Rated using power source type, voltage, power;

- d) serial number or date of manufacture; d) a registered product standard;
- f) production license number.

8.2 Product certificate has the following information:

- a) Name of manufacturing unit;
- b) the product name, model and equipment serial number;
- c) the date of QC;
- d) QC man's code.

9. Transport and storage conditions

9.1 The packing box shows the following information:

- a) product name and model;
- b) Name and address of manufacturer;
- c) product standard number and product registration number, the production license number;
- d) Size and Weight;
- e) storage of environmental requirements;
- f) The words in compliance with GB/T191-2000 and YY0466-2003 that "handle with care", "temperature extremes", "No roll", "Up," "fear of wet," "stacking weight limit" is printed in the box.

9.2 PW-960 Micro-plate washer is packed with waterproof, moisture proof and shock resistant materials. It will cause no natural destruction under normal transportation and storing condition.

9.3 The following random file in the Box

- a) Packing list;
- b) QC inspection certificate;
- c) manual;
- d) warranty.

9.4 Transport: washer transport regulations done by your confirmed contract.

9.5 Storage: The storage of packaged washer ambient temperature is 40°C ~ +55 °C, relative humidity should be less than 93%, well-ventilated, non-corrosive gases indoors.

10. Life of device and parts

10.1 The life of device under normal conditions (at 5 °C ~ 40 °C, AC220V ±20%) is 5 years.

10.2 The life of wash head, bottles, silicone tube and other accessories is 2 year

