DNX-9620 Microplate Washer

User Manual

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Please read the manual before installation and operation

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Directories

Biohazards and Safety Instruction

DNX-9620 microplate washer is the laboratory equipment. For safe use, please pay attention to the following precautionary measures.

1. Materials of some items maybe have biological dangers, so before you turn on the instrument you should defend yourself well, for example: wearing defending clothes and gloves.
2. When operating, disassembly, assembly parts don't touch the following material: patient samples, quality control solution, standard samples, waste liquid.
3. When dispose waste liquid or replace the tube, be sure to wear rubber gloves. Please do not contact with the waste liquid directly, because they might be contagious. If you already contact with the waste liquid, use disinfectant wash first, then wash thoroughly with soap.
4. Be careful when handling samples, there may be infected by the virus risk, be sure to wear rubber gloves. If polluted by blood or waste liquid, such as contact with eyes or wounds. Please immediately clean with detergent then wash by plenty of water wash, and then follow the guidance of a doctor.
5. If the sample or waste liquid overflow and pollute the instruments, wipes it clean with fungicide or disinfectant immediately.
6. When dealing with waste liquid or instrument life terminated scrap, shall fulfill state or local rules and regulations regarding waste disposal.
7. To avoid electric shock, the instrument should be through the power grounding line. Line wire should be connected to the earth.
8. Have a stable ac power supply. When necessary, it is recommended that the user use UPS power supply. Ban share power with power on and off frequently appliances, avoid larger electromagnetic interference.
9. Only the professionals can use the instrument.As stipulated in the laboratory safety operation specification and instruction manual operation
10. If you want to unplug the power cord, please hold and pull the plug, do not pull the power cord.
11. If there is an exception you should cut off the power immediately.
12. When the tasting is over, please cut off the power and cover the dust cover.
13. Please wearing the rubber gloves when you checkout facility. If need to open the enclosure for repair or other reasons, should turn off the device and cut off power supply.
14. This equipment should be avoided in a mixture of flammable and explosive gas environment.
15. The fuse burned patrol, please replace a fuse of the same specification. The type of the fuse please reference instruction manual before operation.
16. Caution please! Before the maintenance equipment manufacturers and authorized unit, users shall not remove the parts!
17. Clinical test equipment, work does not produce toxic or harmful gases.
18. This instrument adopts the following tag and symbols:

Symbol	Meaning
	Disconnect AC power supply
	Switch on AC power supply
	Warning: Waste liquid has potential biohazards.
	Protetive ground
	CE is the symbol under protection of European Union. The products comply with 98/79/EC command.
	Note: Read carefuly.

1. OVERVIEW

DNX—9620A Computerized Microplate Washer is an accessory for clinical lab device. The electric shock protection of this instrument is Class I and the management is 6840- Class II.

Main features: Equipped with screen and displayed fully in English, users can perfectly complete all microplate washing work just according to the prompts on the screen step by step. It not only enables the users to program, but also can automatically save the microplate washing program in its memory so that the users can use them conveniently later.

Adopts double-pump non-positive-negative pressure system, the fresh washing liquid can be directly pumped into the microplate washer from the liquid bottle and injected into the holes of the plate; the waste liquid will be directly drained out of the microplate washer and entered into the collecting bottles through silicone rubber tube without cross contamination.

1.1 Work Conditions

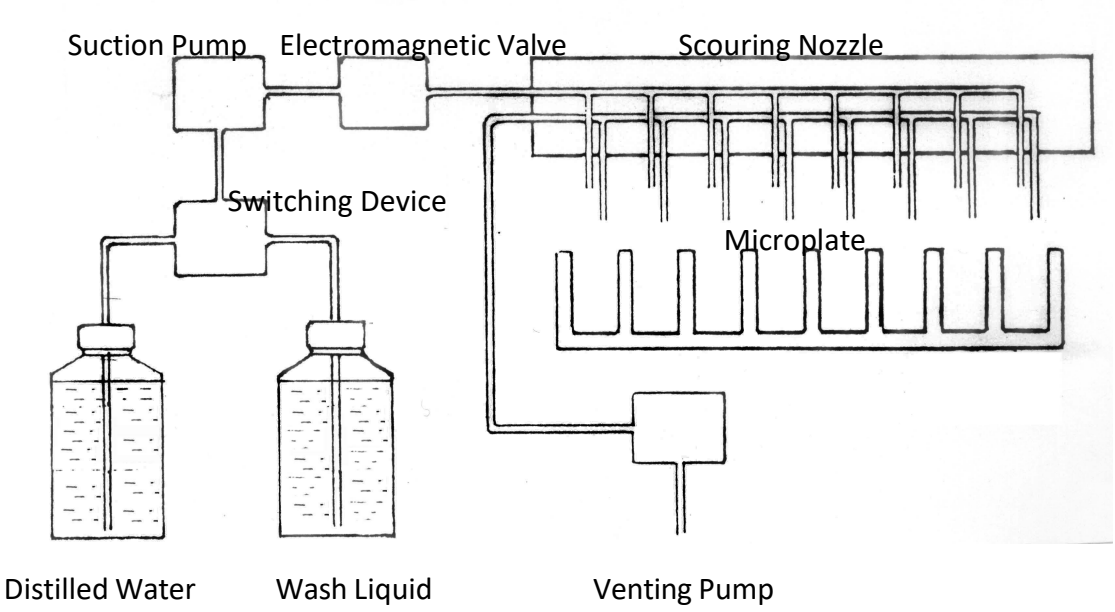
(1) Environmental temperature: 5℃— 40℃;
(2) Relative humidity: ≤80%;
(3) Be away form dust, shake and caustic gas;
(4) AC Power Supply: 220v; 50Hz; input power: 60VA;
(5) With protective grounding.
(6) Fuse: ϕ5×20 F2A/250V;

1.2 Storage and Transportation Conditions

(1) Environmental temperature: -20℃~+55℃
(2) Relative humidity: ≤93%;
(3) Atmospheric pressure: 500hPa - 1060hPa;
(4) No corrosive gas and with good ventilation.

2. WORK PRINCIPLE

Work principle and arrangement features are shown as Pic. 1. There are 8 or 12 pairs of stainless steel injection/suction needle tubes on the scouring nozzle. Each pair of needle tubes is perfectly set to match the holes of the micro plate. Suction pump sucks wash liquid from the washing-liquid bottle to the instrument. The washing liquid will pass through electromagnetism valve, scouring nozzle and injection/suction needle tubes before being injected to holes of micro plate, then wait for washing. After washing, waste liquid will pass through injection/suction needle tubes, scouring nozzle and then be drawn out by another pump. During the process of washing, you can program to control a lot of parameters such as displacement of micro plate, rise or fall of the scouring nozzle, injecting volume of washing liquid, time of steeping and times of scouring etc. The instrument has two bottles: one for washing liquid and another for distilled water. They are connected to suction pump through a switching device.



Pic. 1: System Schematics

3.SPECIFICATIONS

3.1Technical index
3.1.1 LCD:122×32;
3.1.2 Suitable microplate type: Flat bottom, V bottom, U bottom, 48 or 96 wells
3.1.3 Dimension: 480 mm×360 mm×164 mm
3.1.4 Weight: 10kg.

3.2 Technical requirements
a) Rows: the washing rows of the instrument can be arbitrarily set between 1 – 12 rows;
b) Soak time: the soak time can be arbitrarily set between 1s -3600s (24 hours); stepping time: 1s
c) Uniformity of injection: the uniformity of the washing liquid injection between each well of the microplate ≤±3%;
d) Liquid residual volume: the average residual volume of the liquid in each well of the microplate after washing the microplate ≤1ul/hole;
e) Repeatability of injection: the coefficient of variation of each row of micro plate ≤1%;
f) Cycle index of microplate washing: the cycle index of the instrument can be arbitrarily set between 1-20 times;
g) Injection volume per well: the injection volume per hole is consecutively adjustable with the

scope of 10ul-3000ul, stepping 10ul;
h) Continuous working hours: the continuous working hours of the instrument ⩾ 8 hours.

3.3 Main function

a) Washing method: wash 96-needle (or 48-needle, 32-needle) microplate according to the method of washing 8 holes or 12 holes in each row;

b) Stored program: the instrument has the function of storing the microplate washing programs in advance, and it can store maximum 100 microplate washing programs;

c) Pipeline washing function: the instrument can be used to wash the pipelines, and the washing time can be arbitrarily set between 0s -600s (10 min); stepping time: 1s

d) Vibration function: the instrument has vibration function, and the vibrating time can be arbitrarily set between 0s -600s (10 min); stepping time: 1s

e) Overflow-prevention: the instrument has the Overflow -prevention function, and the excess washing liquid will be automatically adsorbed when injecting too much;

f) Two-point imbibition: the instrument has the two-point imbibition function, and the distance of the two points can be arbitrarily set between 0-89; stepping: 1;

g) Hole bottom rinsing: the instrument has the hole bottom rinsing function, and the rinsing time is adjustable between 0s -99s; stepping: 1s;

h) Plate pattern selection: the instrument is used to wash the flat-base, V-base and U-base micro plates.

i) Liquid replacement (per-washing) function: the instrument has Liquid replacement (per-washing) function, and the time can be arbitrarily set between 0s -600s (10 min);

4.INSTALLATION

1) Unpack the instrument and remove the materials for transportation. Keep the packing box and materials for the convenience of repacking the instrument later.

2)Check the contents of the packing box, and confirm those are in conformity to the packing list.

Note: Contact the retailer in case of defects or losses of any part.

4.2 Environmental requirements

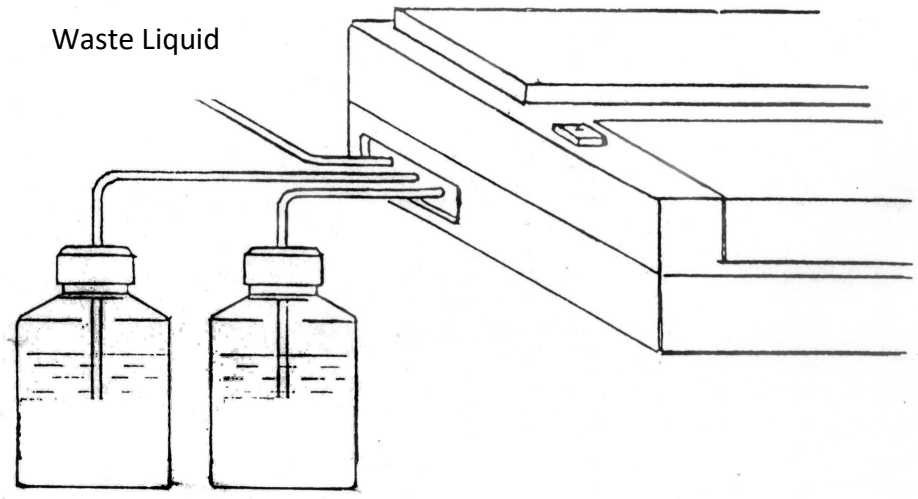
Do not put it directly under the sunshine. Choose operating platform, which will be flat and large enough for placing the host instrument. The place should easy for the operator to cut off the

power supply. Avoid larger vibration of the workbench (for example, centrifugal machine is

installed on the workbench). We suggest users use smoothing voltage-stabilized power supply if necessary.

4.3 Installation

Connect distilled water and wash liquid bottles to the corresponding nozzles via silicon-rubber duct according to the instruction labels on the nozzles at the left side of the instrument. (note that the silicon-rubber duct must be led to the bottom of the bottles) Finally, lead the silicon-rubber duct connected with waste liquid nozzle to the utensil, which is used for collecting waste liquid.



Pic 2: Installation Schematics

4.4 Power line connection

Plug the connector of the power line assemblies in the appliance inlet of the instrument, and plug the attaching plug of the power line in the AC power socket.

5. PANEL

The panel is composed of one LCD screen and six keys below the screen. The followings are the six keys on the panel.

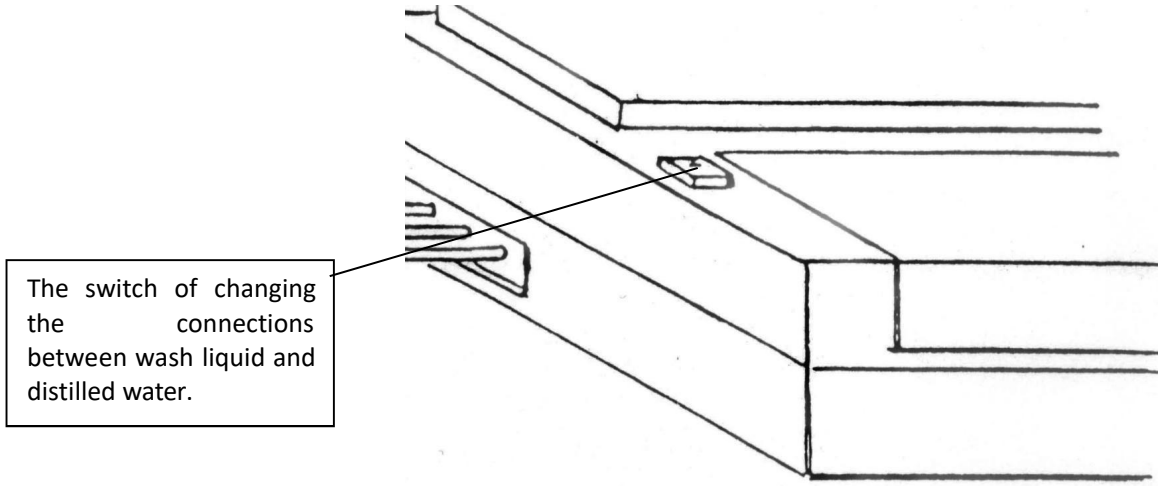
▷ Right	+ Increase	◁ Left
□ Pause	- Decrease	↵ Enter

The function of **Pause** key is to stop operation temporarily. If you press **Right** key after

pressing **Pause**, the instrument will continue to operate. But if you press **Left** key after pressing **Pause**, it will cease operation completely and then initialize itself. The LCD screen will display the initial interface.

Usage of other keys will be introduced in succession.

The switch at the left side of the instrument is for changing the connections between wash liquid and distilled water. As soon as you turn on the switch, the indicator lamp will light on, which shows that the instrument has been connected with the distilled water used for scouring pipeline. After the pipeline has been scoured, you should turn off the switch immediately according to the instruction on the LCD screen to make the instrument return to the state of being connected with wash liquid.



Pic 3

Caution: Be sure not to touch the switch during the process of washing plate.

6. ADJUSTMENT

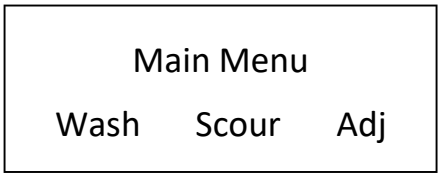
The instrument has been precisely adjusted and strictly tested before send to our client. But microplates from different factories or of different types have some discrepancies in specification or dimensions, you may need another adjustment. After adjustment, the adjusting results are saved. Adjusting steps as below.

6.1Enter the Adjusting Menu

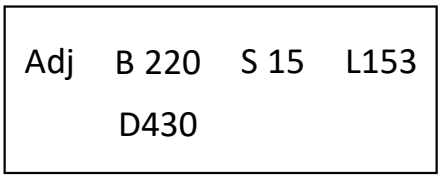
DNX-9620

Microplate Washer

At first, the instrument initializes itself. Then the LCD screen will display the main menu.



At this time the cursor will glint on **Wash**, you should press **Right** key to move the cursor on **Adj**. Then press **Enter** key. The screen will display the adjusting menu.



The cursor will glint on number **15**. The figures in above interface are just for illustration, and may not be the right numbers. The following introduction is about the adjusting menu.

On that menu, **S** means SPACE FOR ADJUSTMENT.

B means START POSITION;

L means LOWER POSITION.

D means INJECTED VOLUME.

The figure **15** following **S** is set at the time when the instrument leaves factory. You can adjust the space of suction needle tubes between two sucking operations by increasing or decreasing the value. The figure **220** following

B is set at the time when the instrument leaves factory. You can adjust the space between holes of micro plate at the first row and suction needle tubes by increasing or decreasing the value. You can increase or decrease the figure following

L to adjust the lowest position of suction needle tubes. The figure following

D shows the volume of wash liquid being injected to micro plate.

6.2 Adjustment Method

a. Adjust the start position

When the cursor glints on the figure following **B**, press **Enter** key. Then both the figure

+ -

following **B** and the figure following **Adj** will glint on the screen. The micro plate will move to below the scouring nozzle and aim its first row holes at needle tubes on the scouring nozzle. Press or to increase or decrease the figure, and then the micro plate will move accordingly. Please select the best position to place the micro plate. In order to completely eliminate the waste liquid, we suggest that the longer suction needle tubes should be placed as close as possible to the right side of the holes of the micro plate.

If you are satisfied with the position, please press **Enter** key to confirm. Only the figure following **B** glints and the figure following **Adj** do not glint. The micro plate will return to the start position automatically.

b. Adjust the space

First press **Right** key after you complete the adjustment of the start position to make the cursor glint on the figure following **S** and press **Enter** key. Then both the figure following **S** and the figure following **Adj** will glint on the screen. The micro plate will move to under the scouring nozzle and aim its first row holes at needle tubes on the scouring nozzle.

Press + or - to increase or decrease the figure, and then the micro plate will move accordingly. Please select the best position to place the micro plate. In order to completely eliminate the waste liquid, we suggest that the longer suction needle tubes should be as close as possible to the left side of the holes of the micro plate.

If you are satisfied with the position, please press **Enter** to confirm. Only the figure following **S** glints and the figure following **Adj** do not glint. The micro plate will return to the start position automatically.

We suggest that you should adjust more than one time and observe reposition of the micro plate till you get the best position according to the scouring needle tubes.

c. Adjust the lower position

Firstly, press **Right** key, and then the figures following **L** will glint. Secondly, press **Enter** key to confirm, and then both the figure following **L** and the figure following **Adj** will glint on the screen. The plate connected with scouring nozzle will descend to make the suction needle tubes enter the holes of the micro plate at the first row.

Press **Increase** key or **Decrease** key to increase or decrease the figure following **L** accordingly and then the position of scouring nozzle will ascend or descend. The best position is that the suction needle tubes on the scouring nozzle can touch the bottom of holes of the micro plate at the first row.

If the number has reached the maximum or the minimum, but you are still not satisfied with it, please first delete the figure following the imoverflow position and then adjust the figure following L.

If you are satisfied with the position, press **Enter** key to confirm. Then only the figure following **L** glints on the LCD screen. The connecting plate will automatically lead the scouring nozzle to the highest original position.

d. Adjust the overflow position

After above adjustment, press **Right** key. The following menu will appear on the display.

NEXT B 220 S 15 L153 D 500

Press **Enter** key on the panel. The following message will appear on the display. If you press **Enter** again, both **Adj** and the figure 131 will glint.

Adj Overflow 131 Oscillating plate 15s

Press **Increase** key or **Decrease** key to increased or decreased the figure 131 and then the position of scouring nozzle will ascend or descend. You will have to adjust more than one time till you find the best position.

After you adjust the overflow,press"left" or "right" to let the number after oscillating plate highlight,then press"Enter" to let the "Adj" highlight,then enter the oscillating plate,press"left" or "right" to adjust time(0s-60s).After that press"Enter" and "Adj" to over the adjust.

If you do not need to adjust the quantity of wash liquid for the moment (you can adjust it if you think it is not appropriate later on), please return to the main menu by pressing **Right** key or

Left key to turn **Adj** to **Back** After you press **Enter** to confirm, it will return to the main menu.

NOTE:1.The number of L must bigger than the number of overflow.

2.If the number of L must smaller than the number of overflow,you should adjust the number of L first.

e.Adjustment of injection volume

Please don't adjust the injection volume right now,when you begin to wash ,you can adjust it as you want.

f.Adjustment of the washing time

Press"left" or "right" to let the "Adj" become "NEXT",then press"Enter"

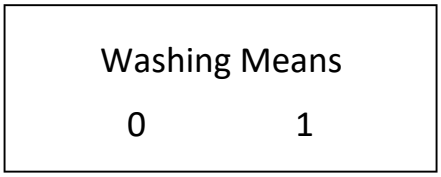
Press **Increase** key or **Decrease** key to change the washing time(0s-99s).If you want to back to the main menu,press"left"or"right"to let the "NEXT"become"Adj",then press"Enter".

7. WASHING

7.1 Select Washing Mode

After it comes to the main menu, the cursor will move to **Wash**. Press **Enter** key to confirm. Then it will go into washing modes selecting menu.

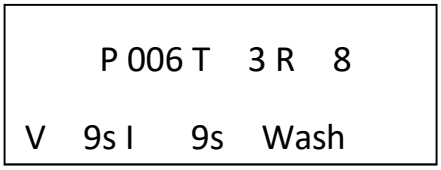
Press **Enter** key to confirm, and then it will go into washing means selecting menu:



Here, the cursor will stay on **0**. If there is any liquid in the holes of the micro plate, waiting for scouring, please select **0**. Then the instrument will take the liquid out before wash liquid is injected.

If there is not any liquid in the holes of the micro plate waiting for scouring, please select **1**. Then the instrument will directly inject wash liquid to the micro plate.

Please press **Left** key or **Right** key to make the cursor stay on the corresponding number and press **Enter** key. Subsequently, it will display the following menu.



Here, the cursor will stay on **Wash**. In above menu, **P** means PROGRAM; **T** means TIMES; **R** means ROW; **V** means VIBRATE; **I** means IMMERSE;. The program displayed in the menu is the one that the instrument has executed last time. When the “Wash”is highlight,that means the arguments is the last time you use the program,if the arguments on the LCD is what you need,you can press”Enter”to begin washing.

7.2 Select Washing Program

If the parameters displayed on the menu do not suit your needs, please press **Right** key to make the cursor stay on the figure following **P**. Press **Increase** key or **Decrease** key to alter the program number. The washing parameters on the LCD screen will change with the program number. Please select the most suitable washing program.

7.3 Create Washing Program

If all the 100 programs saved in the instrument can not suit your needs, then you can create washing program yourselves. The work is divided into four steps. We will introduce them one by one.

7.3.1 Set the program number

Select an inapplicable program from the 100 programs saved in the instrument and use its number as the program number, which is under programming. After that, please carefully read the program to ensure that the program does not cover other programs, which will be used in the future.

7.3.2 Set washing times

After you set the program number, please press **Right** key to make the cursor stay on the figure following **T**. Press **Increase** key or **Decrease** key to change the figure to set washing times

of the micro plate. You can set any between one time and twenty times.

7.3.3 Set washing rows

Sometimes you do not need to wash all the 8 or 12 rows of the micro plate. Press **Right** key to make the cursor stay on the figure before **R** on the screen and press **Increase** key or **Decrease** key to change the figure in order to set washing rows of the micro plate. You must notice that the rows which you set are the closest to the scouring nozzle from row 1 to row 12 and you can't set alternate rows to wash.

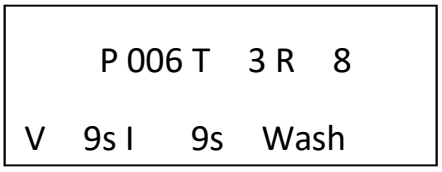
7.3.4 Set immersing time

Press **Right** key to make the cursor stay on the figure following **I** on the screen. Then press **Increase** key or **Decrease** key to set the time that wash liquid will immerse in the holes of the micro plate. The range of immersing time is from 0 to 3600 seconds.

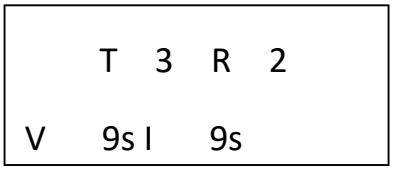
Thus a new program is finished. And the instrument will save it automatically. During the process of programming, if you do not want to change some parameters, you can skip them and set other parameters.

7.4 Wash Plate

Make the micro plate wait for washing on the tray. Then adjust the LCD screen according to above methods to display the following menu.



Here the cursor stays on **Wash** and all the figures on above menu are just for illustration. Confirm that all parameters are ok (Otherwise you should select another appropriate program or create a new program.). Then press **Enter** key to confirm when the cursor stays on **Wash**. After that, the instrument will wash the micro plate based on the selected program. During the process of washing, the remaining work will appear on the screen.



Attention: Should an accident happen to the instrument during the process of washing,

please press **Pause** key to stop the operation for a while. If you press **Right** key after pressing **Pause** key, the instrument will continue to operate. But if you press **Left** key after pressing **Pause** key, it will cease operation completely and then initialize itself.

After washing is completed, the micro plate will return to the original position automatically. The following menu will appear on the screen.

End
Continue Back

Here, the cursor stays on **Continue**. If you want to continue washing micro plate, please put another micro plate on the tray and then it will wash the new plate by using the same program.

If you want to finish washing, please press **Right** key to make the cursor stay on **Back** on the menu. After you press **Enter** key to confirm, it will return to the main menu. At the same time, the instrument will memorize the number of program being carried out just now for the convenience of other usages.

Note：In order to ensure the quality，when you finished washing, you should sop up water on the micro plate with a paper towel.

8. ADJUST THE WASHING LIQUID

If you feel the liquid injection rate is too big or too small，you can adjust it.First，you should enter the Adjust Menu：

Adj B 220 S 15 L153
D430

Press the left key to make the “ 430 ” highlight and press “Enter”.At this time “430””Adj”become highlight,you can press Increase key or Decrease key to adjust the washing liquid,until you are satisfied,press “Enter”.

Note:1Weather the washing liquid adjust suitable or not，is performing a washing board

procedures to test， We suggest you note down the numbers that you set which can be a reference in future.

2After you replaced the nozzle（8/12）， you must adjust the washing liquid.

9. SCOURING

It is very important to scour pipeline. As everyone knows, during the process of evaporation, wash liquid for the microplate will separate out some small crystals. The aggradations of small crystals may block pipeline of the instrument, especially the finespun needle tubes on the scouring nozzle. If the blockage happens, it can not be recovered. So you must pay attention to the following operations.

You must use distilled water to scour pipeline and replace the old wash liquid in pipeline every time before shutting down the instrument. If the instrument continues working for long time, crystals also continue to separate out from vaporizing. You must stop to do scouring if you feel that the pipeline is blocked.

Moreover, you should replace distilled water with wash liquid after you switch on the instrument or in the process of continuing to work after the pipeline is scoured. Thus the instrument can work normally.

On the main menu, press **Left** key or **Right** key to make the cursor stay on **Scour** and then press **Enter** key. The screen will display Scour Pipeline menu.

Scour Pipeline
Scour Change Back

Here, the cursor stays on **Scour**.

8.1 Scour Pipeline

on above menu, press **Left** key or **Right** key to make the cursor stay on **Scour** and then press **Enter** key. The following menu will appear.

Scour
5s

Press **Left** key or **Right** key to make the cursor stay on the figure before **S** and then press **Increase** key or **Decrease** key to change the figure to set scouring time, within the range from 1 second to 600 seconds.

Check Switch Press any key

According to the message of the screen, press square shaped switch at the left side of the panel, which is set for changing the wash liquid. Indicator light will be on to show that the instrument connects well with the distilled water bottle. Press **Enter** key to confirm and then the scouring nozzle placed above the scouring groove, which is located at the left side of the micro plate holding tray, will automatically descend to scour the pipeline. The following menu will appear on the screen.

Wait ...s Scouring Now

After scouring is completed, scouring nozzle will return to the original position. Then press the square shaped switch to turn off the indicator light. After that, it will return to scouring pipeline menu.

8.2 Change wash liquid

On the scouring pipeline menu, press **Left** key or **Right** key to make the cursor stay on **Change** and press **Enter** key to confirm. The following message will appear on the screen.

Change time 05s

Press **Increase** key or **Decrease** to change the time of change liquid time(0-600s),after you finished set the change time,press”Enter”, The following message will appear on the screen.

Checking scouring Switch Press any key to continue

Confirm the square shaped switch for changing wash liquid is turned off. After you press **Enter** key, the scouring nozzle placed above the scouring groove, which is located at the left side of the micro plate holding tray, will automatically descend to replace distilled water with wash liquid. The following page will appear on the screen.

Wait ...S
Changing Now

After changing is over, it will return to the scouring pipeline menu.

8.3 Return to the Main Menu

On the scouring pipeline menu, press **Right** key to make the cursor stay on **Back** and then press **Enter** key to confirm. It will return to the main menu.

10. MAINTENANCE

The quality of DNX-9620 Elisa Washer is stable and reliable. And it has no stringent requirements on ambient conditions. However, in order to prolong its working life and avoid malfunctions, you should pay attention to the maintenance of the instrument.

(1) You can't turn the instrument on or off frequently and should wait at least 20 seconds for next turning on.

(2) You should pay high regards to the work of scouring pipeline. Distilled water must be used to scour pipeline every time before you shut down the instrument. Please note: serious blockage of the scouring nozzle can't be recovered and it isn't within the scope of repair. Another thing to be remembered right after you switch on the instrument is to replace distilled water in pipeline with wash liquid.

(3) Strictly avoid collision with the scouring nozzle from any direction.

(4) Strictly avoid spilling wash liquid or other liquids inside the instrument.

(5) This instrument can't be placed in the location, where it will be irradiated from sun or near

heat sources. By all means to ensure good ventilation. Strictly avoid damp in order to keep the instrument from rust.

(6) If you do not use the instrument for a long time, please carefully pack it by using original packaging box. Suitable temperature for storage is from -20℃ to 55 ℃. Relative humidity should be less than 93%. There must be no caustic gases present in room and good ventilation shall be maintained.

(7) Be careful to avoid severe shaking, inversion, rolling and soaking by rain during the process of transportation of the instrument.

(8) If the fuse is burned out, you should cut off power first and then replace it with the new fuse （Φ5×20 F2A/250V） of the same standard under the guidance of specialist.

(9) If the instrument is polluted by blood or waste liquid， please use detergent to clean immediately and then rinse off with clear water.

11. TROUBLESHOOTING

Trouble Descriptions	Possible Causes	Correction	Note
The screen does not display.	Power is not switched on.	Check if the power is perfectly connected. Check if the fuse need to be change	
There is no reaction when the square shaped switch is pressed.	Electromagnetism disturbs.	Turn the instrument off and restart it after at least 20 seconds.	

The screen does not display normally.	Electromagnetism disturbs.	Turn the instrument off and restart it after at least 20 seconds.	

Blocked, when trying to inject or suck wash liquid	Aging of duct or crystals present in wash liquid.	Change out the old silica gel duct, which is used for scouring pipeline.	Avoid splashing inside the instrument.
Some ducts are blocked.	Needle tubes are blocked.	Use medical injection pinhead to dredge ducts.	
The scouring nozzle inclines.	The connecting plate bends or fixing bolts become loose.	Adjust the connecting plate and scouring nozzle. Check whether the bolt becomes loose or not.	After fixing the malfunction, you must re-adjust the position of the scouring nozzle.
Frictional noises can be noticed when the instrument is running	Lack of lubrication in the orbit.	Smear some medical Vaseline.	

12.NOTE

12.1 Every time you turn off the instrument,you must wash the channel with distilled water.

12.2 Nozzle position need to adjust before the first use..

13.PACKING LIST

DNX—9620 Microplate Washer	1
Micro plate scouring nozzles with 8 or 12 pairs needle tubes	1
Bottle for distilled water	1
Bottle for wash liquid	1
Bottle for waste liquid	1
Silicon-rubber duct	3 m

Pinhead for dredging needle tubes	2
Fuse ϕ5*20 2A	2
User's manual	1
Product certificate	1
User inspection and acceptance sheet	2
Operating rules	1

14. QUALITY GUARANTEE

We will repair or replace the instrument or accessories free of charge if there is any problem with the instrument, provided that you have complied with the instructions of this user's manual, and it is within one year from the date of purchase. You will be charged if you have not followed this user's manual or you have disassembled the instrument without authorization. Our company will answer maintenance related questions for the instrument even after the one-year warranty period.

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