Medical ELISA Washer
User’s Manual

SAGA

VERSION: 1.0e

CONTENTS

Symbols description

Symbols in the manual

NOTE!

Notes contain additional information or tips when using the instrument.

ATTENTION! Cautions

Cautions should be followed carefully to ensure your instrument work correctly and to avoid unnecessary personal injury.

Symbols on the instrument

This means that the labeled item could lead to personal injury and/or damage to the analyzer.

The symbol is labeled beside the power outlet and some external interface.

The symbols for "SERIAL NUMBER", The serial number shall be after or below the symbol, adjacent to it

The symbol means the product is in vitro diagnostic medical device.

Safety Precautions and Potential Hazards

General

Before you start installing and working with the washer, you should read the safety precautions and regulations shown in this chapter.

Operator Qualification

Please note that the operation with microplate washer should be carried out only by the doctor or clinical inspector who have undergone necessary training provided by the sales agent.

Service Technician Qualification

To install, maintain and repair the instrument, a service technician has to be trained on the instrument by the manufacturer or their representative. A service technician is also expected to be familiar with the normal operation of the instrument as described in the User's manual and the special operations as described in the service manual.

Electrical

To use washer safely, pay attention to the following items:

To prevent the risk of electrical shock and/or damage to the instrument **Operator** should not open the cover of the instrument. Only authorized personnel, for example, **service technicians**, may open the instrument to perform maintenance or repair.

Touching the main board when the power is on may cause severe injury or death. Any problem, please ask for helps from your supplier.

Mechanical

There is no risk presented by the mechanical parts of the instrument when the instrument is closed. If the covers of the instruments are removed, mechanical parts could cause personal injury or the instrument may be damaged if the following advice is not being considered:
DO NOT wear loose garments or jewellery that could catch in mechanisms.
DO NOT put your fingers/hands into the pathway or any part while the instrument is in operation.
DO NOT attempt mechanical repair unless the instrument is not in operation or OFF.

Waste bottle

There is infectious risk of to touch the waste bottle when the instrument is washing microplate.
User must be equipped with glove to touch waste bottle at time of disposing of waste liquid.
Pay attention to guard against the bottle waste liquid leakage.

Chemical

The operator is responsible for taking all necessary precautions against hazards associated with the use of clinical laboratory chemicals. Wipe up any reagent spillage on the instrument immediately.

Biohazardous Materials

As sample container, microplate should be treated as the potentially biohasardous. All materials and mechanical components associated with the sampling and waste system should be handled according to your facility's biohazard procedure. Use the personal protective equipment recommended by your facility when handling any of these components. Detailed recommendations:

- **Waste solutions and solid wastes**

Avoid direct contact with waste solution and/or solid waste. Both should be handled as potentially biohazardous.

Dispose of waste solution and/or solid waste according to the relevant governmental regulations.

Additional Precautions

- **Flammables**

Avoid using dangerous flammable material around the instrument.

- **Accuracy/Precision of the Measured Results**

For proper use of the instrument, measure control samples and monitor the instrument during the operation.

- **Operation and Maintenance**

During operation and maintenance of the instrument, proceed according to the instructors and do not touch any parts of the instrument other than those specified.

Verify the front covers closed while the instrument in operation.

Avoid touching the mechanism, such as the 2-axis motion platform inside the instrument, while the instrument is operating. This may cause serious personal injury or damage the instrument.

Chapter 1 Introduction

The WASHER is a microprocessor-controlled microplate washing system that performs wash protocols that are defined by the user. It is designed to wash all of the wells in one column or one row of a 96-well plate at once. The washing protocol can be programmed so that all of the columns(or rows) are washed in the same manner .or different wash cycles can be applied to specified columns(or rows) on the plate

Specifications

Operation

Dispense Range	50~2000μL
Dispense Precision	5%CV (with 350 distilled water)
Residual Aspirate Volumes	< 1μL for U and V bottom plates
	< 5μL for flate bottom plates
Power	< 150W

Note! *Environmental requirements*

Ambient temperature (operating): 15-32 C
Relative humidity: 20% - 85%
Transport and Storage Environment:

Temperature: -25℃~55℃

Humidity: <93 %

Atmospheric Pressure: 86Kpa ~106Kpa

Computer Interface	Serial RS-232 port
	19200 ,Odd, 1 Stop bit

Chapter 2 Installation

Unpacking

- Carefully unpack the instrument and remove it from the plastic bag.
- Report any visible damage to your shipper or freight carrier at once.
- Place the Washer on a flat working surface.
- Place the wash bottle and waste bottle behind the Washer.
- Remove the power cable and other items from the packing carton. Please retain the packing material for future use in..

Hardware Components

Hardware components of the Washer are shown in Figure 1.

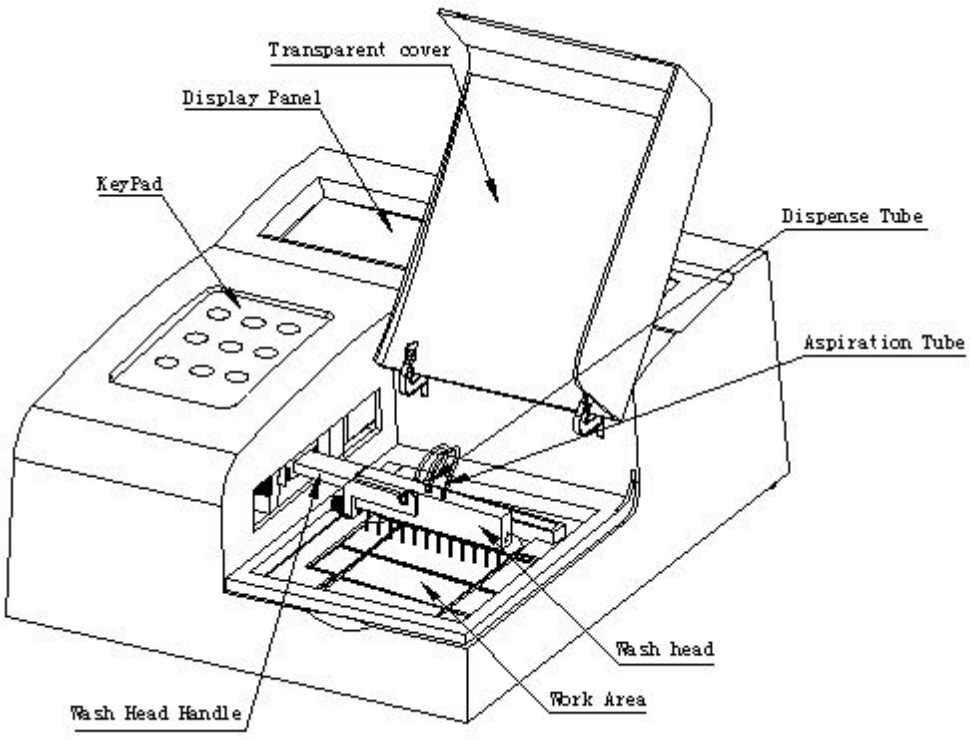

Figure 1. The Washer system

Wash Head. The wash head contains a set (1 x 8 or 1 x 12) of dual Wash pins. Each set of wash pins includes a dispense pin and an aspirate pin, closely spaced so that fluid can be aspirated from a well while

fluid is dispensed into the same well .The wash head moves back and forth to wash each row(or column , depending on the wash head used)of the plate by lowering the wash pins into the corresponding wells.

Display Panel. The system communicates with the user by display. All system information and wash parameters entered by the user are displayed.

Keypad. The keypad is used to select commands and input wash parameters.

RS232 Interface The system includes an RS232 interface so that an external computer can be connected for technical service purposes in the future, the RS232 interface may be used for updating new version software.

Wash Bottle. The wash bottle contains the wash fluid used for Dispensing, Filling and Purging with a dispense pump inside.

Waste Bottle. The waster bottle contains the fluid aspirated from the wells with a level sensor inside.

Attention! Cautions

There is infectious risk of to touch the waste bottle when the instrument is washing microplate!
User must be equipped with glove to touch waste bottle at the time of disposing of waste liquid.
Pay attention to guard against the bottle waste liquid leakage

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Connectors at the rear of the Washer system are shown in Figure 2.
Connections for the power cord, the dispense pump power connector, the waste bottle level sensor, the waste bottle vacuum line and the external computer are shown at the rear of the panel.

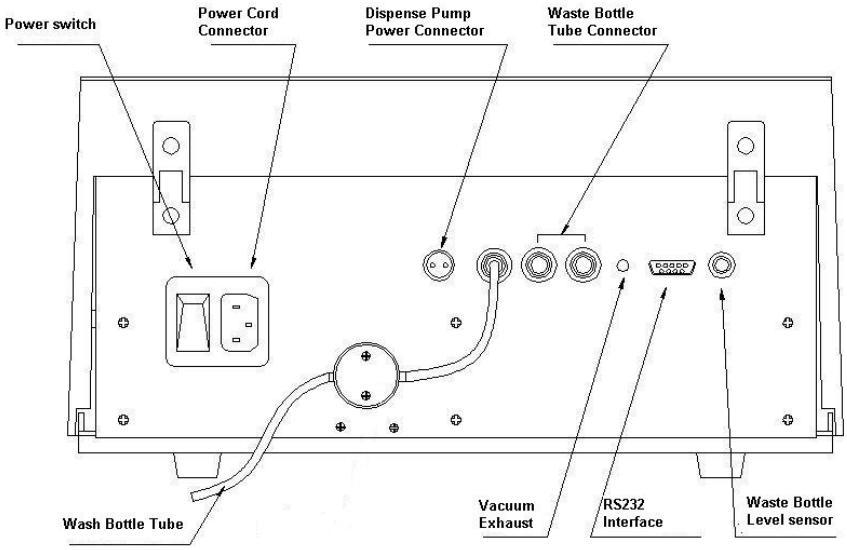


Figure 2.Rear View of the Washer system

Installing the Wash Bottle

This dispense pump must be located inside the Wash Bottle and the dispense tube and dispense pump power cable must be connected

To install the Wash Bottle:

1. Insert the white head into pump tube(Figure 3).
2. Let the pump line and the tube go through the hole on the wash bottle cover,then put the pump into the wash bottle (Figure 4).
3. Fill the Wash Bottle with the wash solution.
4. Connect the end of the wash tube to the Wash Bottle Tube connector at the rear of the instrument(Figure 2).
5. Connect the dispense pump power cable to the dispense pump power connector at the rear of the instrument(Figure 2).

Turn on the System

Connect the Washer to the laboratory electrical supply outlet
Press the instrument power switch (at the rear)
After a series of self-test, the software version interface will display.

Attention! Cautions

Safety first! Please note the safety precautions and potential hazards mentioned above chapter,
Before operate the instrument. You should also consider the common safety regulations of your laboratory.

Check the instrument's connection — *Make sure that the power cord is connected to the power supply and to the instrument.*

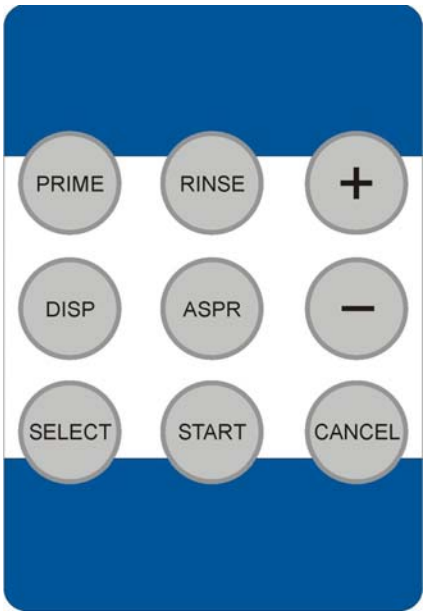
Handle the waste correctly — *Make sure that the waste tubing on the instrument is connected to the waste bottle.*
Avoiding contaminating yourself, your environment and the instrument with biohazardous material.

Figure 3.

Figure 4

Chapter 3 Operation procedure

Key pad



Description	
PRIME	Start Prime procedure
RINSE	Start Rinse procedure
DISP	Start Dispensing procedure
ASPR	Start Aspiration procedure
SELECT	Change edit item
START	Start wash procedure ; Go to next operation
CANCEL	Cancel current operation ; ; Double click to enter system setting
+	Change parameter
-	Change parameter

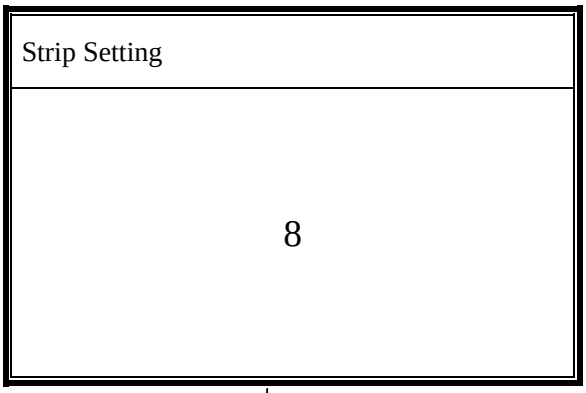
Start the programmer

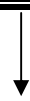
Double click "START" key

No. 1	
Wash Mode	**Plate**
Wash Times	**1**
Aspiration	**Single**
Fluid Volume	**350μL**
Soak Time	**0h00m00s**

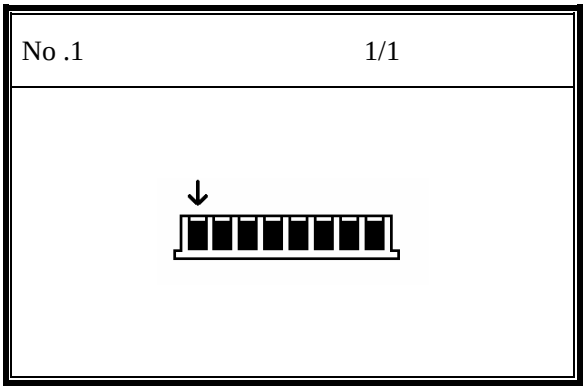
Click "SELECT " Change parameter item ,
"+"/"-" edit parameter

Click "START"





Click "START" to start wash procedure



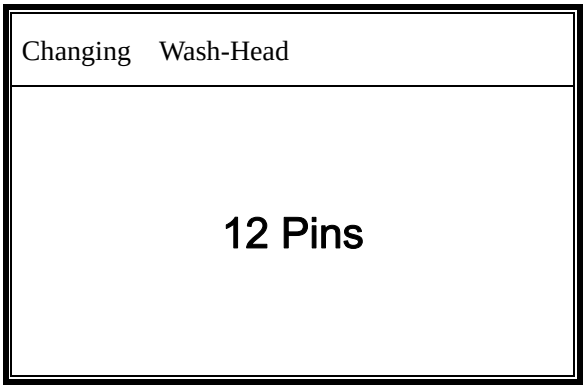
Your can double "CANCEL " to abort during washing procedure.

System Setting

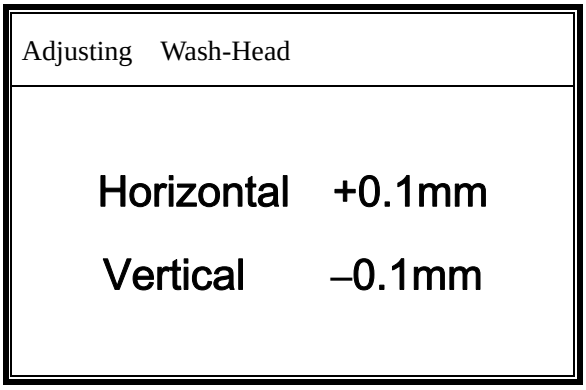
Double the cancel to set system parameters.
Click "SELECT" to change edit item:

Specify the Wash Head

Select "Changing Wash-Head", It allows to change the 12 pin or 8 pin plate,"+"/"-" change plate type ,Click"START" to save and "Cancel " to ignore change.:



Specify the Wash Head position
Select "Adjusting Wash-Head",It allows to change the Horizontal or Vertical position of Wash Head, Click"START" to save and "Cancel " to ignore change.:



Specify the Top-Aspiration position.

The Top-Aspr setting allows change to Top-Aspiration position, you can adjust the Top-Aspiration height during +2mm ~ -2mm. ,Click"START" to save and "Cancel " to ignore change.: