

Please read the instructions carefully before use

D600 AIR tight leak detector

Make
With
Said
Ming
Book

First of all, thank you for purchasing our products. While welcoming you to use our products, we remind you to pay attention to the following matters:

- ★ The manual summarizes the instructions for correct use of the instrument, such as the setup and operation method of the instrument. Please be sure to read it carefully before use.
- ★ In order to be able to refer to this book in time in case of problems, please keep it safe.
- ★ Please pay attention to the instrument daily maintenance, maintenance and regular calibration to ensure the accuracy of the instrument.

The use of safety requires knowledge

Please read the "Instructions for Safe Use" carefully before use.

- In order to prevent the user and others from harm or damage to property, this manual has marked with words or symbols where attention is needed.

Warning

- About Usage

Use the correct supply voltage and air pressure

Please do not use the specified supply voltage. Failure to do so may result in fire, electric shock or machine failure.

Please do not supply air pressure outside the specified range.

Please do not use pressure outside the range of use.

Do not remove the instrument housing

The instrument has high voltage part, high temperature part, high pressure part, may cause electric shock, scald accident.

If the enclosure must be opened (for routine maintenance or repair), it must be operated by a professional.

Be sure to cut off the main power supply and air compressor during operation, and ensure safety.

Prevent entry into foreign bodies

Prevent metal and flammable material from vents or other gaps, otherwise it may cause fire or electric shock accident.

It is forbidden to squeeze

Do not step on the instrument or sit on the instrument to prevent the instrument from tipping over and causing damage.

Do not place other items on the instrument to prevent damage to the instrument when it falls.

Please do not unplug the pipe at will

Under pressure, do not remove the joint or pipe between the instrument and the pressure reducing valve. Otherwise a large amount of compressed air blown out, may cause injury to people

and even blindness.

Please confirm whether there is pressure when disassembling piping and joints.



Attention

- **It is prohibited to use under abnormal condition**
- **For the sake of safety, be sure to cut off the main power supply and air pressure source when not used for a long time.**
- other



Warning

Damaged power cable, wiring and piping

Cut off the main power supply and air compressor immediately and replace with new spare parts.

If continued use may cause fire, electric shock accident, or damage to the instrument.

When the interior enters water, oil or other foreign matter

Cut off the main power supply and air compressor immediately.

If continued use may cause fire, electric shock accident.

For handling matters, please contact our company.

In case of breakage

When the leak detector falls, please cut off the main power supply and air pressure source immediately.

If continued use may cause fire, electric shock accident.

For repair, please contact our company.

Continue to use under abnormal circumstances

In the case of smoke, bad smell, noise, if still continue to use, may cause fire, electric shock accident.

Cut off the main power supply and air compressor immediately. Verify that the smoke clears. Confirm that there will be no fire. If necessary, have someone monitor the situation and inform those around you.

For repair, please contact our company.



Attention

Check regularly!

Periodic inspection or split maintenance.

This is not only to ensure accuracy, the dust accumulated inside the machine may cause machine failure, fire or leakage phenomenon.

In addition, sockets, connectors and terminals should not have oil or dust accumulation.

Therefore, it needs regular maintenance and cleaning.

Be aware of your surroundings!

Please use and keep the product within the environment as determined by the parameters.

Do not use the product in places with flammable, explosive gas or water vapor.

Please confirm whether the model and accessories of the product are complete before switching on the power.

The welding current of the near welding machine may cause damage to the product. Please pay attention when using it.

The touch screen for control is made of glass, and cannot be operated with pointed objects or other hard objects. Do not use thinner or other organic solvents when wiping the screen.

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1. Instrument overview

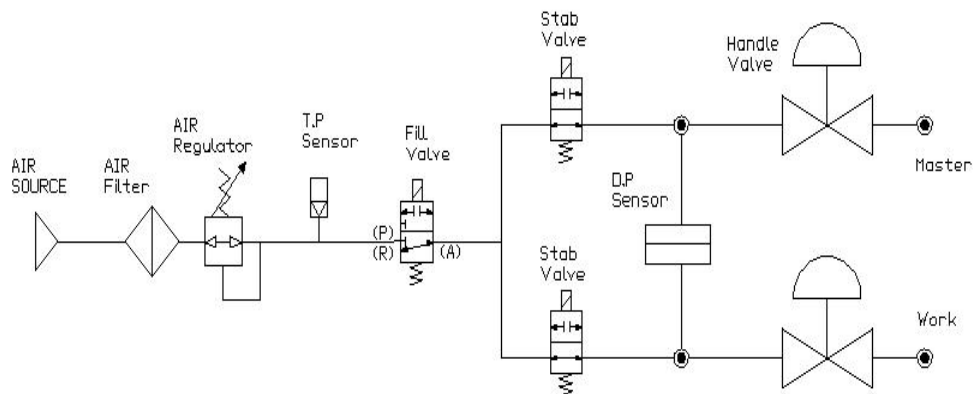
1.1 Overall shape:



Figure 1.1

1.2 Operation principle

As shown in the figure, there is a reference volume (also called the standard volume) provided in the system, and the measured object is another volume, and a controlled valve is used to connect the two volumes. When testing, they are inflated at the same time, their pressure is the same, and then close the connecting valve, after a while, because the standard volume is fully closed is not leakage, so its pressure is the inflation pressure, and if there is leakage of the measured part will appear pressure drop, differential pressure type pressure sensor is used to measure the pressure difference between the two volumes. The more leaks, the more they fall.



1.3 Technical parameters

- (1) Power supply: 220V AC \pm 20%, 45 ~ 65Hz, 2A;
- (2) Gas source: 100 ~ 1000KPa, dry air/nitrogen, flow >20L/min;
- (3) Gauge pressure range: 0-0.5bar(custom)
- (4) Differential pressure range: -2490 Pa ~ 2490 Pa;
- (5) Environmental requirements: temperature -10° C ~ 50° C, humidity 0 ~ 95%;

2. Hardware structure:

2.1 installation

2.1.1 Body size: 230*300*340

Instrument weight: 14.5Kg

2.1.2 Installation method

Gas installation diagram is as follows:

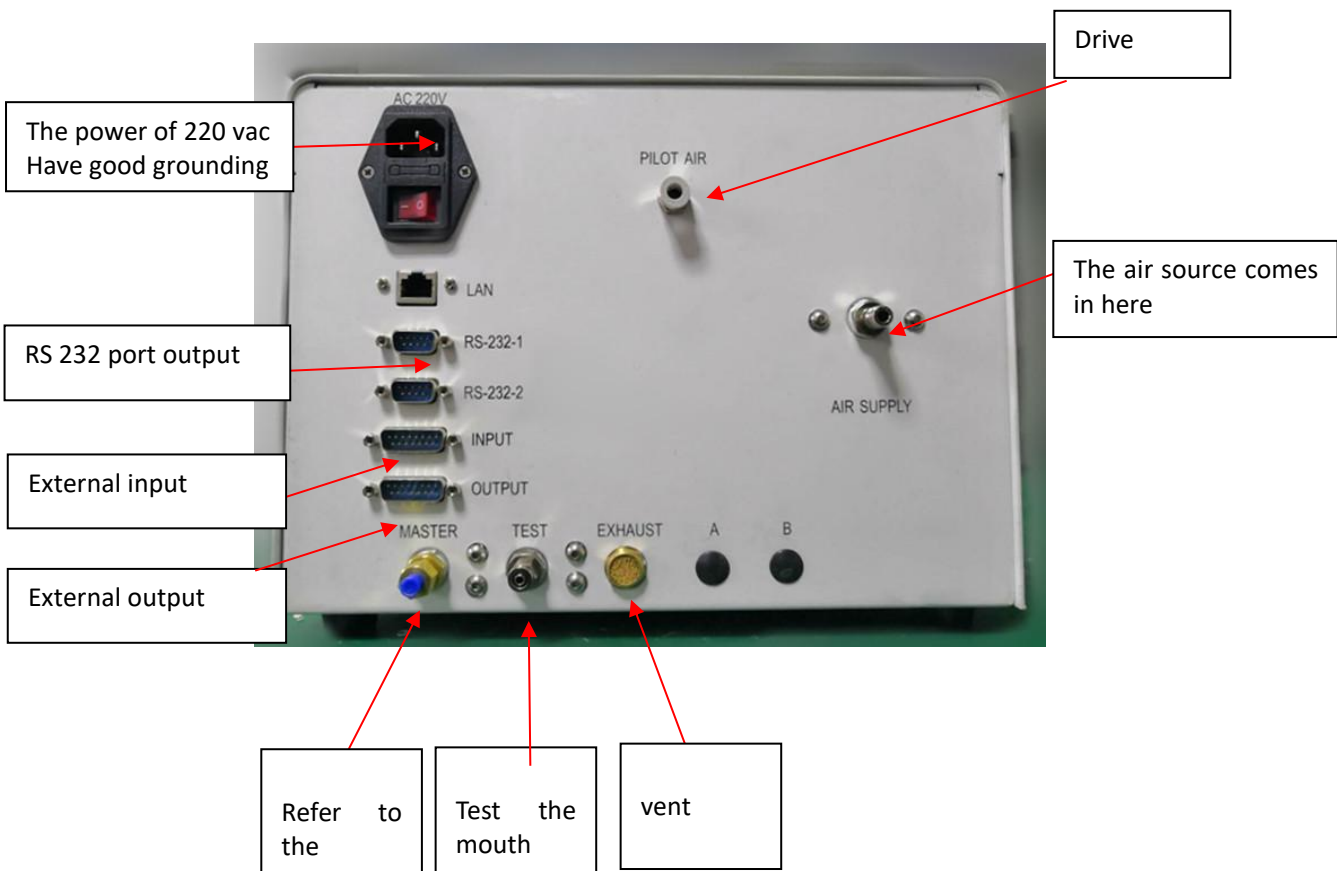
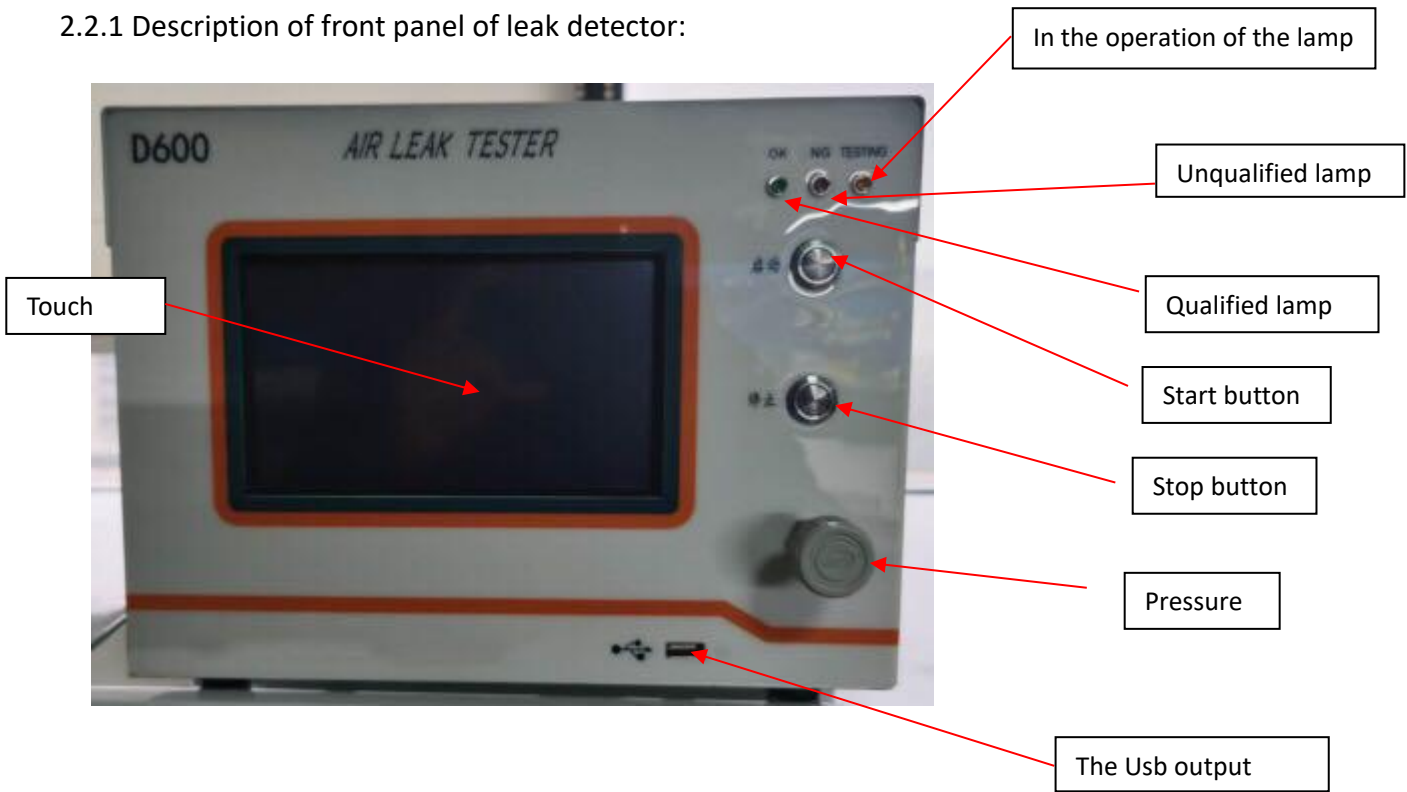


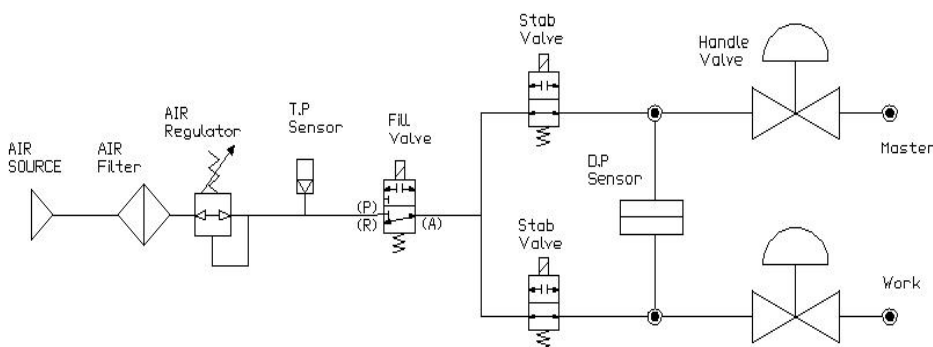
Fig. 2.1.2 Connection between external air source and D600

2.2 Indicator and button introduction

2.2.1 Description of front panel of leak detector:



2.3 Air path structure

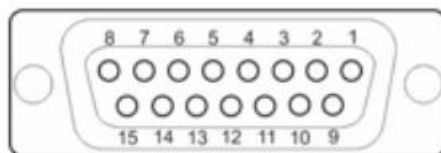


Elements in the figure:

- 1, Air SOURCE: AIR SOURCE;
- 2, Air Filter: gas Filter;
- 3, AIR Regulator: Pressure Regulator;
- 4, T.Senor: pressure sensor;
- 5, FILL Valve: air filling Valve;
- 6, Stab Valve: balance Valve;

- 7, Sensor: Differential pressure sensor;
- 8, Handle Valve: manual ball Valve;
- 9, Master: standard component interface;
- 10, Work: test port;

2.4 External control operation



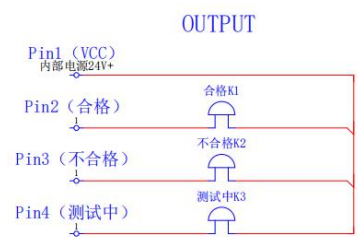
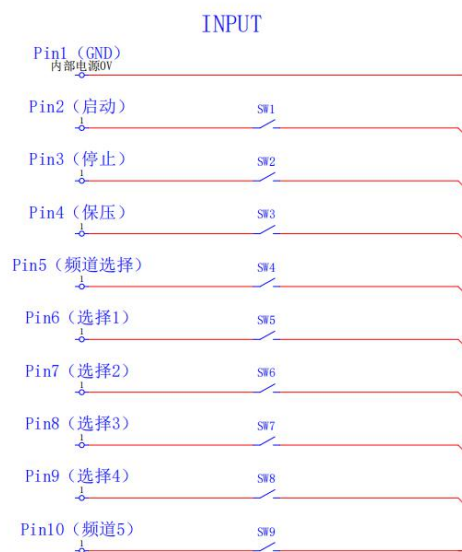
SUB – D plug socket XS1 / 15-pin

Input terminal:

- 1 Com
- 2 Start the
- 3 stop
- 4 The
- 5 External
- 6 control to
- 7 choose
- 8 Option 1
- 9 Option 2
- 10 Option 3
- 11 Select 4
- 12 Select 5
- 13
- 14

Output terminal:

1 Vcc
 2 qualified
 3 unqualified
 4 ed
 In the
 test



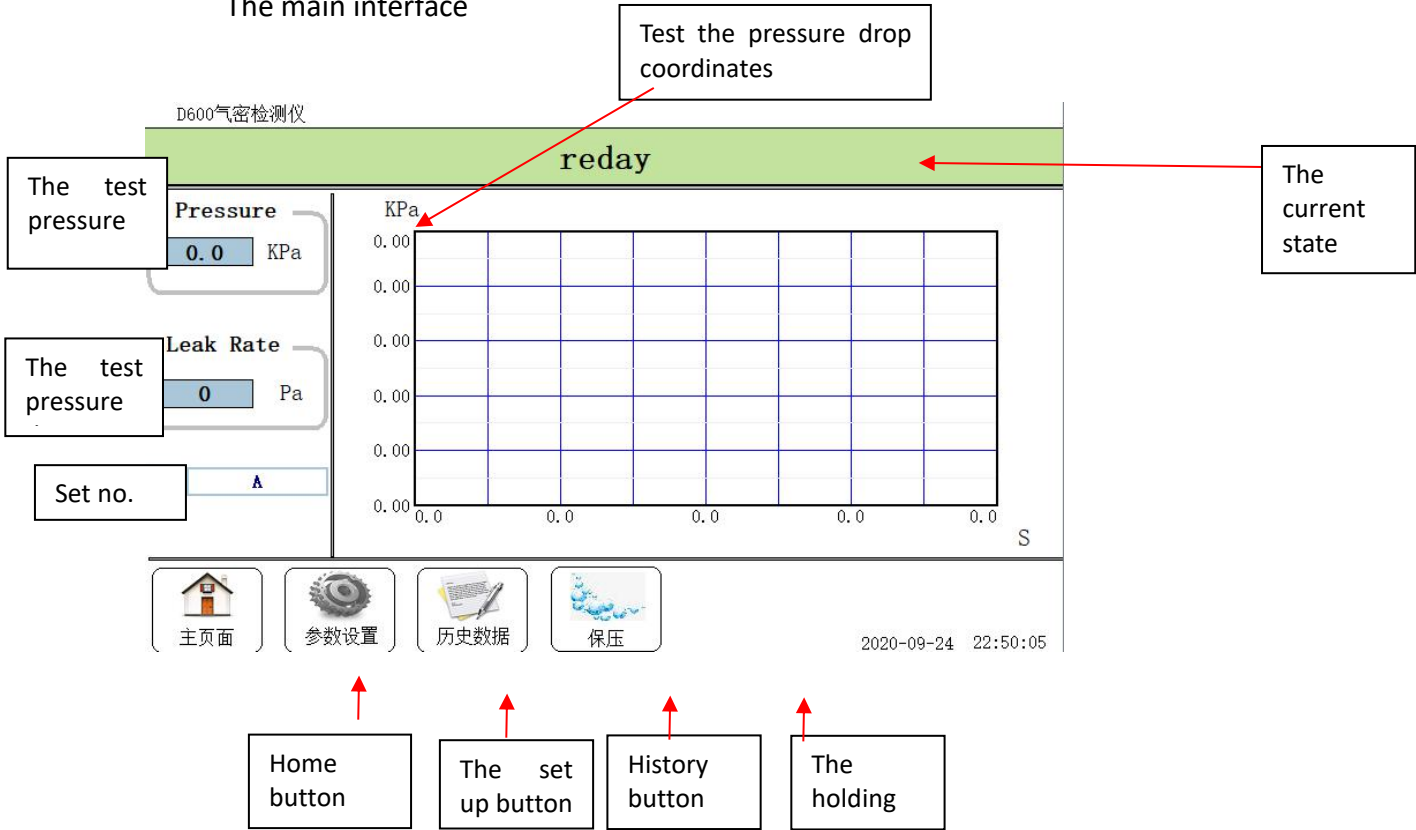
！ 注意

1: GND与VCC不得与外部电源并联
 2: SW1-SW9为按钮或继电器触点
 3: K1-K3可接继电器线圈或者指示灯
 4: 单个端子最大输出电流: 0.2A 24VDC

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3. Set parameters

The main interface



3.1 Setting of group number:

For a variety of devices and workpieces to be tested, they often have different detection parameters. Users can set a set of parameters for each test, and the different parameters of each group can be distinguished by the group number.

The machine can set four groups of detection parameters independently. To operate on different groups, first select the group number of the group. The operation for selecting the group number is as follows:

- Press the "Group Number" key under "Preparing Screen" to enter the following picture.
- Use left or right to change the group number. The maximum group number is D.
- After modification, press "OK" to save the group number set and exit "Group Number Setting".

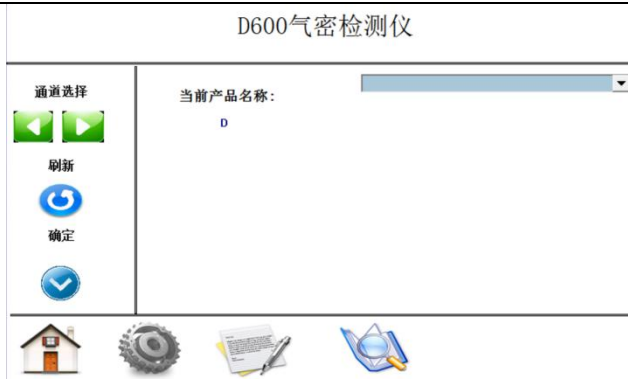


Fig. 3.31 Group number setting

3.2 Description of test parameters

The parameter setting of the detection link includes, charging time, balance time, balance time, detection time, exhaust time), upper and lower limits of leakage, volume, lower limit of pressure, upper limit of pressure, password,

Inflating time: The duration of filling pressurized gas into the test device depends on the volume of the object to be measured, etc. It is recommended to extend the charging time as far as possible (to eliminate the influence of temperature rise in the cylinder and stable transition of gas state during charging). It can be set freely from 1 to 999s.

Adjustment principle of charging time: due to pressure testing refers to the test after the tested part is filled with gas.Therefore, under certain conditions of the test pressure and system, the larger the volume of the measured part, the longer the whole charging time is. If other conditions are certain, the higher the test pressure is, the longer the charging time is.

Balance time 1: The time of gas stabilization after inflating. It can be set freely from 1 to 999s. Differential pressure is a normal phenomenon during gas stabilization. It is recommended to extend the balance time as much as possible.

Balance time adjustment principle: balance time refers to the time to open the communication device between the standard part and the part under test.Theoretically, if one connector is inflated at the same time (similar to water), the pressure should be the same at all times. In fact, any object has flow resistance, air is no exception, and the flow resistance is also affected by the shape of the cavity;In addition, when a sealed volume is inflated, the gas will oscillate in the volume, and the strength of the oscillation is also affected by the shape and material of the cavity. Under the same conditions, the higher the charging pressure, the higher the amplitude of oscillation; The material and shape of the measured parts are different, the heat dissipation capacity is not the same, the amount of inflatable deformation is not the same; If the volume size of the standard part and the measured part is different, the heat dissipation ability of the material and the amount of inflatable deformation will be quite different. In order to improve the measurement accuracy (or to compensate for the inconsistency of pressure on both sides caused by the above conditions), the balancing time must be increased. Similarly, if the content product of the part under test has a good shape or small deformation, the balance time will be shortened accordingly.)

Balance time 2: The internal valve group is re-balanced twice, which can be set freely from 1 to 999s.

Test time: Test time. It can be set freely from 1 to 999s. Set according to the air tightness requirement of the device under test.

Exhaust time: exhaust the remaining gas in the gas path of the leak detector. It can be set freely from 1 to 999s. The exhaust time can also be used as the time to set up the release action of the automatic fixture.

(Tip: To improve test repeatability, first lengthen the test beat. Includes: precharge, charge, balance, test, exhaust time. Due to production needs, the test tempo has its upper limit. In general, the longer the test tempo, the better the test performance. Extend the test beat to the maximum limit according to production requirements.

Leakage threshold: a pass or fail judgment for the air tightness of the subject under test.

Volume: The volume of the device under test. This is in milliliters. It can be set freely from 0 to 9999ml. (Pressure drop test does not need this)

Lower limit of pressure: in the stable stage, the lower limit of the minimum pressure, that is, at the end of charging, if the test pressure is less than this set value, it will jump to the exhaust stage, and the "unqualified" indicator light is on.

Pressure upper limit: in the stable stage, the upper limit of the maximum pressure, that is, at the end of charging, if the test pressure is greater than this set value, it will skip to the exhaust stage, and the "Reject" indicator light will be on.

Target pressure: the test pressure set when electronic pressure regulation, that is, set how much pressure instrument test will automatically reach this pressure. The positive and negative pressure of mechanical pressure regulation must also be set, and the single pressure of mechanical pressure regulation can not be set.

Password: Password setting to protect the set parameters from being changed by field operators. The password is global, that is, all parameter groups use the same password. It can be set freely from 0 to 9999.

3.3 Parameter setting operation

Parameter setting is only valid for the current group and will not affect other parameter groups. Please arrange the parameters of each group to avoid parameter confusion.

→ Press the "Parameter Setting" button under the "Main Screen", and the password confirmation interface (as shown in Figure 3.3.2) will appear, and the password area will be displayed in white. (Press the "Back" key to return to the previous step.)



Figure 3.3.2 Enter the password

→Initial password 1516

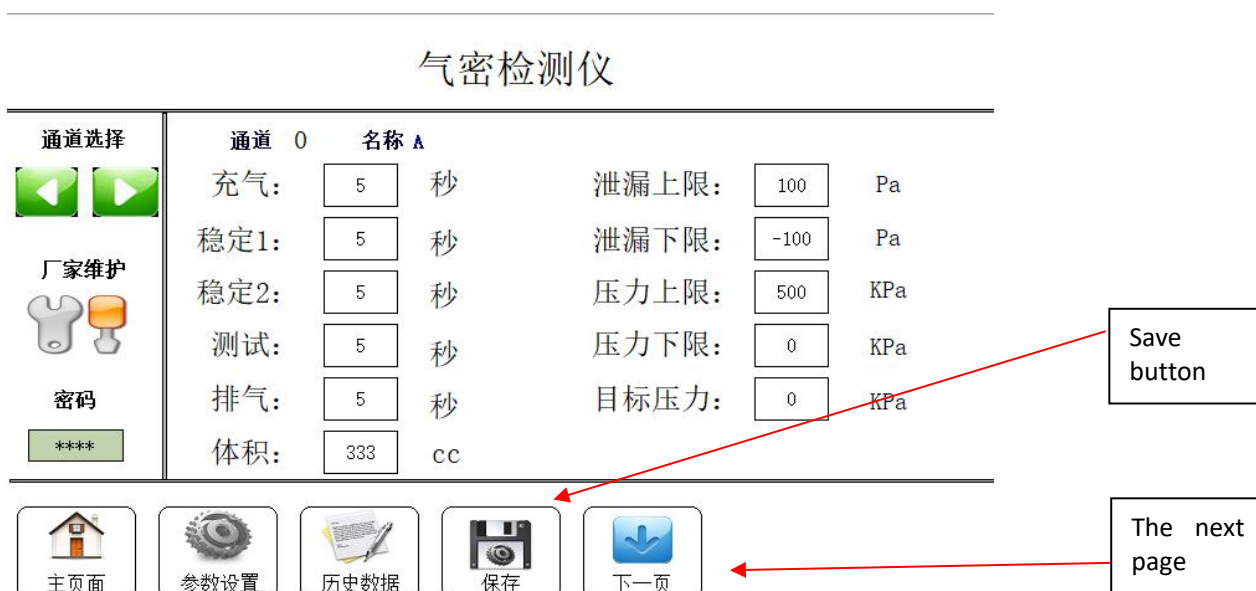


Figure 3.3.3 Modify parameters



→After setting the parameters, press the "Save" key to return to the "Main Screen".

The leakage tester adopts the principle of differential pressure to detect leakage, and the inflating time plays a key role in the detection process. Please meet the requirements of the shortest inflating time in general use.

The shortest inflating time can be obtained by referring to the following methods:

→Obtained the true pressure of the differential pressure gas path: after entering the "preparation screen", press the "pressure holding" button to enter the continuous blowing screen. At this time, the pressure value displayed in the screen is the true pressure of the differential pressure gas path. (See next section)

→Obtained the shortest inflation time: set the inflation time sufficiently long, such as 100s, and the test pressure "inflation" displayed on the observation screen after entering the inflation stage. When the value reaches the "true pressure of the differential pressure gas path", the corresponding time is the minimum inflation time.

4, the operation process

4.1 System check

Rotate the pressure regulating valve (to the left) to the minimum position, connect the air source to the instrument air supply port correctly, and close the test port and calibration port (MASTER) at the back of

the chassis;Connect the power supply (220V AC).

4.2 Power on the system

Turn on the power switch

4.3 Preparation screen:

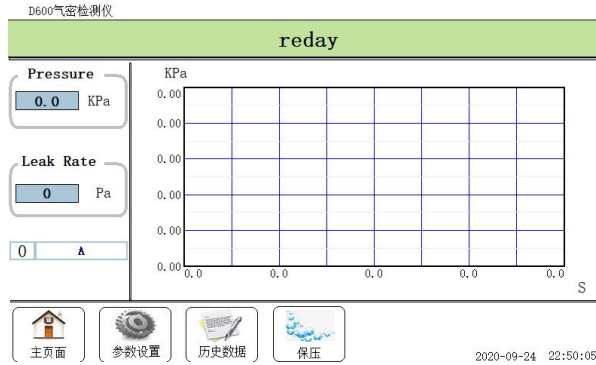


Figure 4.1

By default, after the boot screen, the system will enter this screen directly. At this time, the green "Ready" on the control panel means that the system can enter the test after loading. This screen allows you to view the current group number. At this time, press "Start" to enter the testing link, press "Parameter Setting" to set the parameters of the testing link, press "Combination Setting" to enter the group number setting, and press "Pressure Holding" to continuously blow air and adjust the testing pressure.

- Step 1: Check to see if the instrument is ready. For example, whether the instrument is opened and entered the "preparation screen", whether the set value is correct; Press the "pressure holding" button to check whether the test pressure is correct; Whether the test port (test port) is connected to the test object.
- Step 2: Place the work piece. Place the work piece under test on the fixture correctly.
- Step 3: Test. Press the "start button" (green) on the panel, the equipment will automatically detect the air tightness and make corresponding judgment and alarm for products beyond the scope of leakage.
- Step 4: Remove the measured object, separate qualified and unqualified products, continue to clamp the work piece, press the "Start" button for the next product detection.

4.4 Blow continuously

Continuous blowing means that the air inlet and the test port are straight through. As long as the test port is opened, the gas can be discharged continuously. This function can be used for gas path purification and providing convenience for the water to find the workpiece leakage point.

→ Press the "pressure holding" button to enter the continuous blowing screen, and press the "stop" button to return to the "preparation screen".

In the case of no exhaust, the pressure seen in this screen is the true pressure borne by the differential pressure air path. If the pressure is discrepant with the pressure shown in the "preparation screen", it indicates that there is a slight leakage of the internal direct pressure air path, but it will not affect the use.

The return of the screen may be a little delayed, please do not worry, press the "stop" button and hear a "pop" sound, the return can be performed normally.

4.5 Test link

→ Press the "Start" button under "Preparing screen", and the system will enter the detection link, which will be operated automatically without any intervention. After entering the operation link, if you find any problems and want to stop the detection work, you can press the "Stop" button, and the system will immediately jump to the exhaust stage. If you press the "Stop" button twice, it will immediately jump back to the "Preparing screen".

Each sequential stage of the detection link is shown as follows, and the indication of each stage is the corresponding one-word reverse white display on the interface (see Figure 4.4.1) :

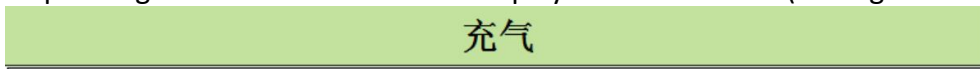


Figure 4.4.1

1. Inflating stage
2. Balance Stage 1
3. Balance stage 2
3. Detection stage
- 4, exhaust phase, at the same time output test results (qualified, alarm, abnormal), display test results, until the "stop" or "start" button is pressed. When the test results are displayed, if the next workpiece to be tested has been installed, then directly press the "Start" button to enter the same test link as just now.

5, system maintenance

5.1 Use precautions

5.1.1 During use, the system power supply must be well grounded

5.1.2 Regular maintenance of the instrument:

- 1) Before each work, use standard parts to test to ensure the normal operation of the instrument;
- 2) Regular visual inspection of air pipe cleaning and dust at the inlet and outlet;
- 3) Replace the air filter element (0.3 micron) every quarter;
- 4) Calibrate standard leaks every six months or one year;
- 5) Do not use solvents when cleaning the panel;

5.2 Maintain accuracy

Differential pressure sensor is one of the core components of the test system, the maximum range of 2500Pa, use must not exceed its maximum range, otherwise it will lead to permanent damage or zero shift of the sensor.

To maintain the best accuracy of the differential pressure sensor, two things should be noted when using it

A. Do not exceed the range, although the system has over-range protection.

B. Too high common mode pressure will damage the sensor, and the test pressure should be controlled within 700kPa (customized).

5.3 Fault treatment

5.3.1 The touch screen displays garbled code

- (1) This fault is usually caused by unstable power supply of the system or poor grounding of the chassis. Generally, the fault disappears after restarting the system;
- (2) If none of the above methods can eliminate the fault, please contact our technical engineers for further solutions.

5.3.2 Abnormal alarms always appear during instrument testing

- (1) Check whether there is a large leak in the test workpiece;
- (2) Check whether there is leakage of the valve plate (method: close the test port and conduct stand-alone test);
- (3) check whether the sensor is damaged;(Method: In the state of no load pressure, check the zero point of direct pressure,

Differential pressure zero value is normal).

5.3.3 The instrument cannot be switched on

- (1) Check whether the power cord of the instrument is properly connected;
- (2) Check whether the fuse at the power input of the chassis is intact;
- (3) Open the case and check whether the secondary fuse on the internal circuit board is intact;

5.4 Device parameters

The following are the main devices used in this system and their general operating parameters.

5.4.1 pressure regulating valve

Pressure supply: 0 ~ 1.0MPa, air;

Voltage regulation range: 0.003 ~ 0.05MPa;

5.4.2 filter

Pressure supply: 0 ~ 1.0MPa, dry air;

Filtration precision: 0.3 micron;

6. Warranty

Thank you for purchasing our products. In order to ensure your rights and interests and enjoy perfect after-sales service, please pay attention to the following matters:

1. The after-sale service will take effect only after the warranty card is stamped with our company's official seal.
2. Please keep this warranty card properly, and do not lose or pollute it. Without the warranty card, we cannot enjoy after-sale service.
3. Within one year from the purchase, free maintenance can be provided if the fault occurs under normal use, except for consumable materials and consumable parts.
4. During the warranty period, if there are any of the following conditions, the warranty is not free:
 - A. Fail to produce the warranty card;
 - B. Improper use, resulting in damage;
 - C. Failure of the machine due to natural disaster, abnormal voltage, or bad environment;
 - D. The warranty card does not indicate the date of purchase and the name of the customer, or is altered or inconsistent with the product.
5. This warranty card is only for the machine itself. Additional services or transportation fees will be charged according to the regulations.

Product Warranty Card

Usual

The product name	Leak tester		
Equipment model		Equipment serial number	
The user name		contact	
Address of the user			
bao repair period limit	The free maintenance service will be implemented within 1 year from the date of purchase in 202. However, even within the warranty period, consumables are not subject to the warranty and are not subject to free maintenance services.		
The manufacturer		contact	
Factory address			

Maker,

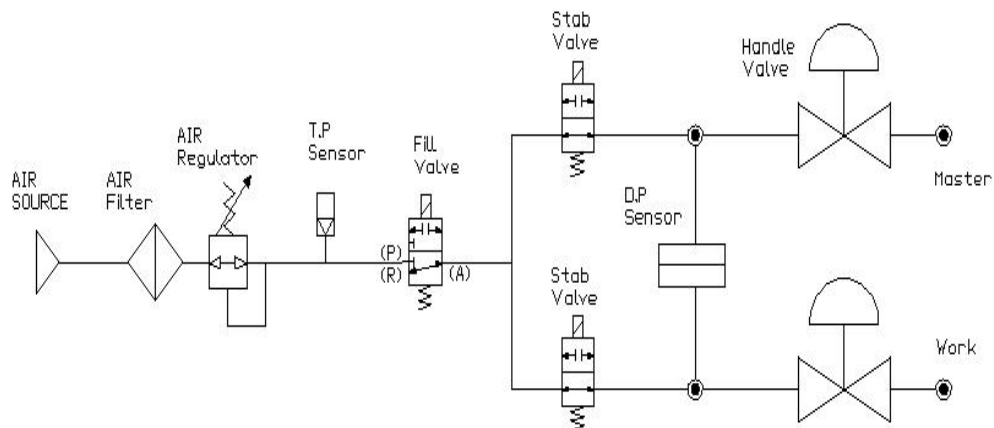
The product name	Leak tester		
Equipment model		Equipment serial number	
The user name		contact	
Address of the user			
bao repair period limit	Since the date of purchase in 201, the implementation of free maintenance services within 1 year.However, even within the warranty period, consumables are not subject to the warranty and are not subject to free maintenance services.		
The manufacturer		contact	
Factory address			

6.Maintenance record

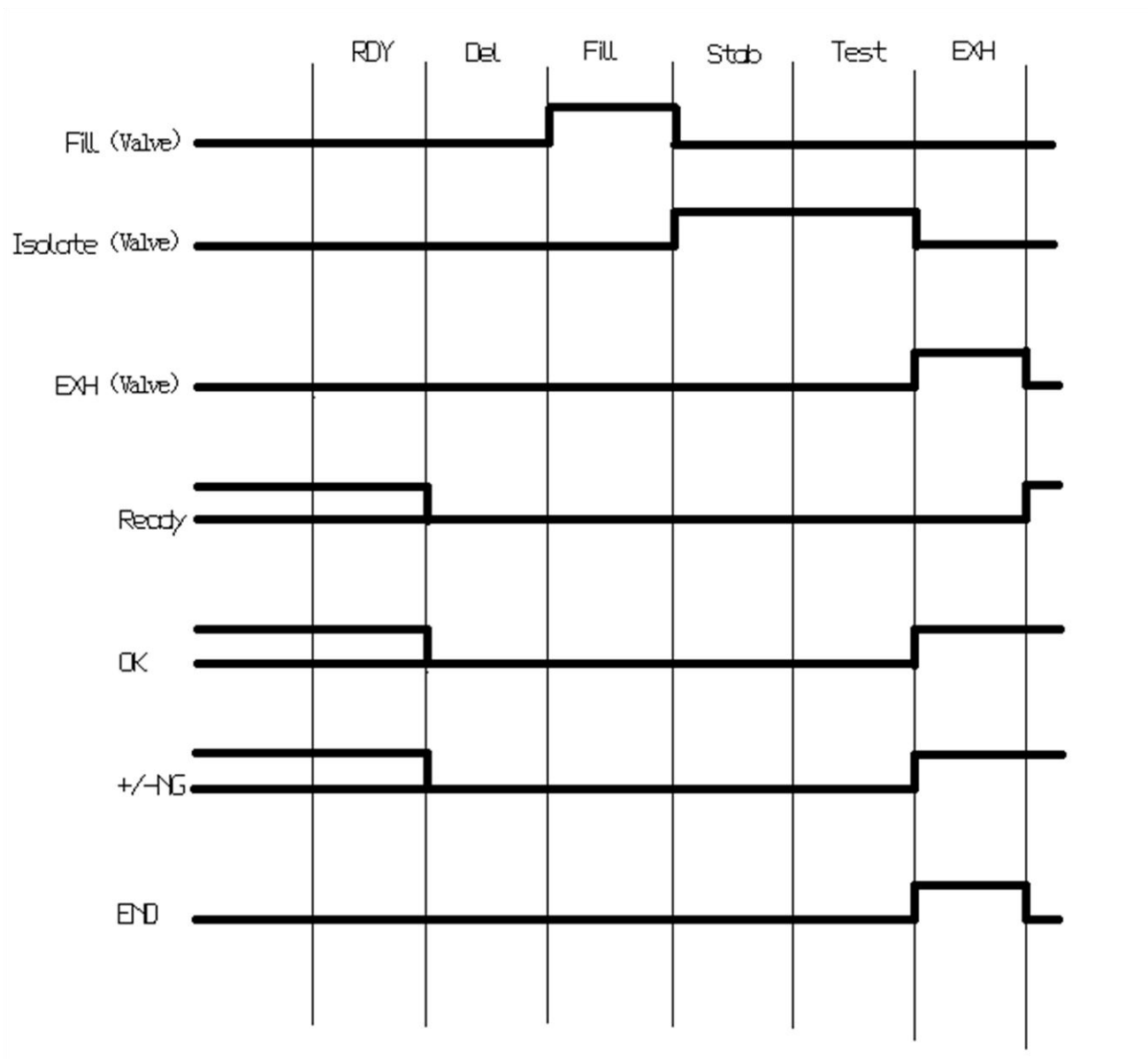
The date of	Maintenance record	Maintenance man

7, the appendix

7.1 Gas circuit schematic diagram



7.2 Test signal sequence diagram



7.3 Accessories to Buy

1. Standard tank: 30ml, 100ml, 500ml, customized.

2. External control box:

Standard line length is 1.5 meters, customers can customize;

3. Standard leakage hole:

Customized according to customer requirements.