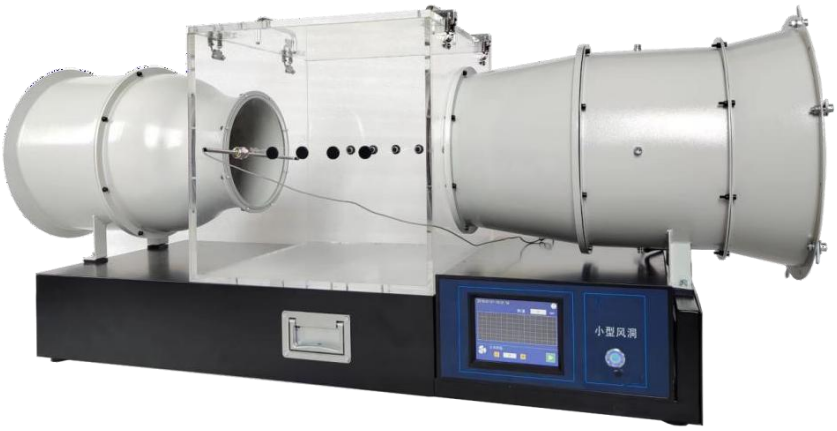
T621A
Small Wind Tunnel
Manual



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Please read and understand this instruction manual carefully before using the product.
Please keep this instruction manual in a safe place for future reference.

Notes:

The information in this chapter is critical for the safe and reliable operation of the T621A Small Wind Tunnel. You must carefully read this chapter and understand the relevant information contained before starting operation.

1. Special Declaration

This product does not have special functions such as fire-proof, explosion-proof, water-proof, anti-corrosion and impact-proof; The equipment must be safely grounded to ensure that there will be no danger of electric shock when personnel touch the surface of the equipment.

The repair and maintenance of equipment must be carried out by professionals.

2. General Considerations

(1) Users must operate the equipment according to the performance specifications and usage methods described in this manual, and do not perform any operations not described in this manual.

(2) Do not disassemble any components when the equipment is powered on. Doing so extremely likely result in the operator to suffer electric shock, mechanical injury and equipment failure.

(3) The rated power supply voltage of the equipment must be used. Incorrect voltage may burn the device or cause malfunction.

(4) Within the warranty period, no electrical and mechanical components shall be disassembled, repaired or modified without the permission of the manufacturer. Improper operation may result in equipment damage, malfunction or electric shock.

3. Environmental Requirements

It is strictly forbidden to install the equipment in the following places:

- Places exposed to direct sunlight for a long time.
- A place where condensation occurs due to sharp changes in temperature.
- Places with corrosive or flammable gases.
- Places with heavy dust, powder or salt spray.

- Places with impact vibration.
- Places close to strong power sources.
- Places with strong electromagnetic fields.
- Locations with strong air convection.

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I. Overview

1.1 Introduction

A wind tunnel is a piece of basic equipment for aerodynamic experiments. The so-called wind tunnel refers to the equipment that is driven by a power device in a pipeline system designed according to certain requirements to form a controllable airflow, and various aerodynamic experiments are carried out according to the principle of relativity and similarity of motion.

1.2 Features

1. The airflow speed in the wind tunnel can be controlled with high precision and can be changed at any time.

2. Wind tunnel experiments are carried out indoors and are not affected by changes in the atmospheric environment. Experiments can be carried out continuously, and the equipment utilization rate is very high.

3. During the wind tunnel experiment, the test model is in a static state, which ensures the accuracy and safety of the measurement.

1.3 Packing List

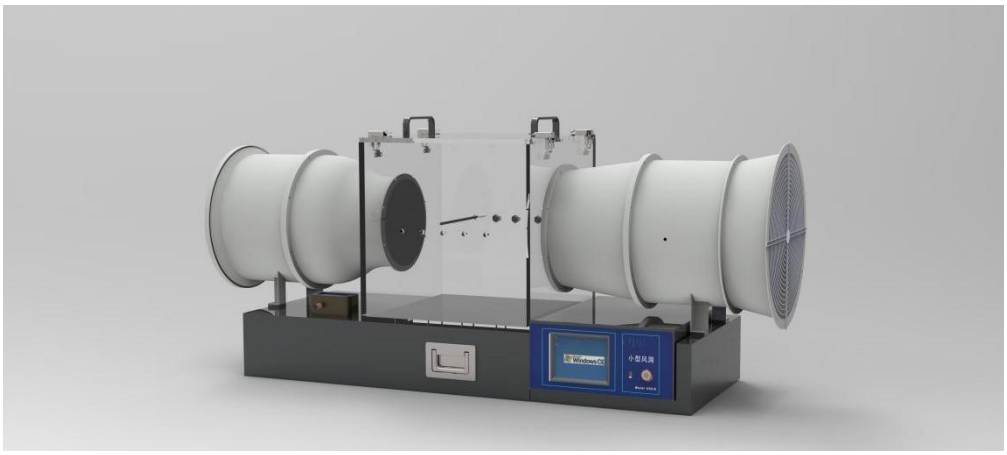
When unpacking, please check the equipment and accessories according to the packing list. If there is any shortage or damage, please contact our company immediately.

Items	Quantity
Body	1
Power Cord	1
T-shaped Hollow Rubber Stopper （φ6, φ12, φ14, φ16, φ21）	2
T-type Blind Plug	2
Verification Report	1
Certificate of Conformity	1
Instructions Manual	1
Packing List	1

Test Accessories (Provided with the company-matched anemometer)

Items	Quantity
Pitot Tube	1
Pitot Tube Support Assembly	1
Differential Pressure Transmitter	1
Pressure Tubes	2

II. Specifications



Model	T621A
Form	Direct-flow suction type
Range	1～30 (m/s)
Test Dimensions	Φ 200 (inner diameter)
Plenum chamber dimensions (inner dimension)	380mm×380mm×380 mm (L x W x H)
Overall dimensions (reference)	1350mm×400mm×600 mm (L x W x H)
Power	AC220V, 50Hz, 2kW
Touch screen control	Control fan start and stop, adjust fan speed, display wind speed
Bottom footprint	1055×405mm (L x W)
Weight	54.5kgs

III. Use Conditions

3.1 Power

220VAC±10%, 50±1Hz, 2kW

3.2 Plant Environment

- There is no strong wind interference, no vibration interference and no strong light irradiation near the equipment.
- High-power electrical appliances without frequent on-off, no strong magnetic field.
- The room should be kept clean, and there should be no dust, smoke and other phenomena in the air.
- Ambient temperature 0~40 ℃ without fluctuations.
- Relative humidity 5~85% RH.

IV. Composition

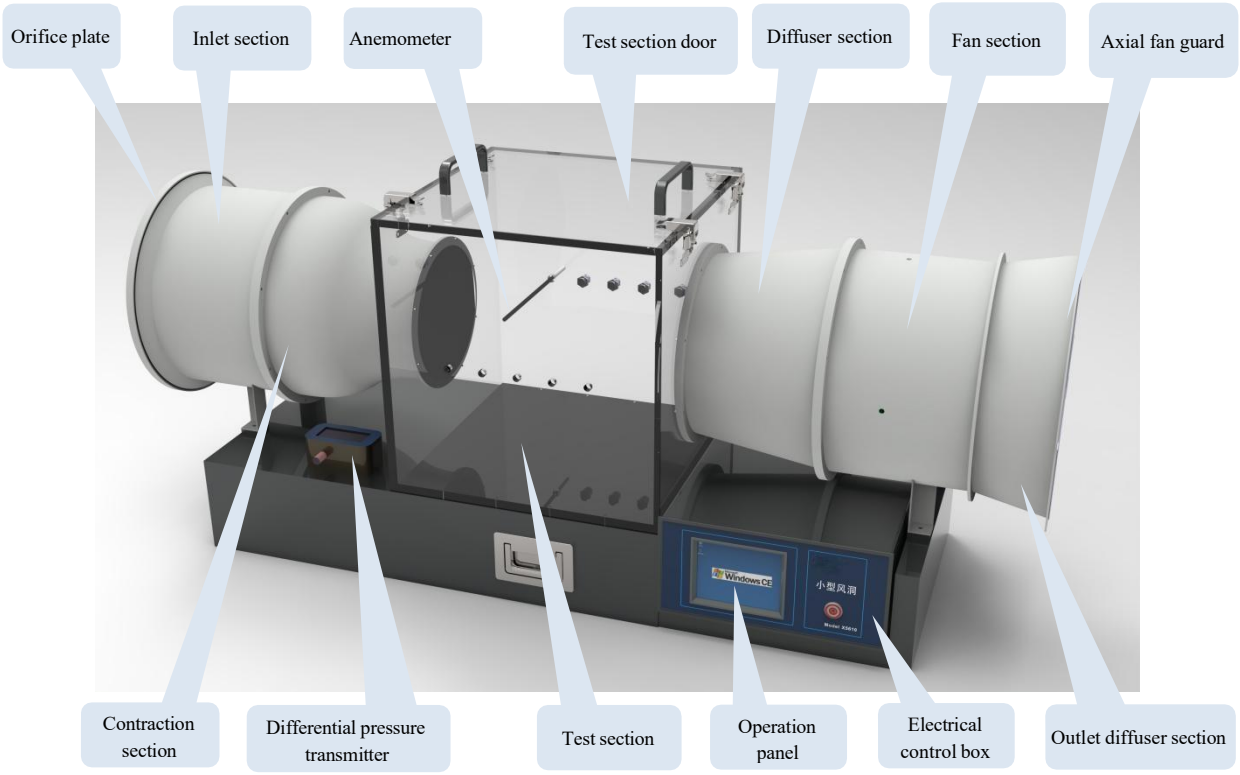


Figure 1: T621A Small Wind Tunnel Assembly Drawing

(1) Orifice plate: When the measured wind speed is ≤ 4 m/s, an orifice plate needs to be installed for the test.

(2) Inlet section: the inlet through which external air enters the cavity. The embedded honeycomb straightens the incoming airflow.

(3) Contraction section: Accelerate the airflow velocity to the wind speed value required for the test section.

(4) Test section: The area where the wind field quality meets the test requirements is also the area where the test operation is carried out.

(5) Diffuser section: part of the kinetic energy of the airflow is converted into pressure energy, with low pressure loss and wind field noise, so that the energy consumption and noise indicators of the wind tunnel meet the use requirements. The diffuser section also plays a role in the transition between the test section and the fan section.

(6) Fan section: Provides power for the operation of the wind tunnel. It has a built-in axial flow fan to provide a power source for the wind tunnel by controlling the speed of the fan.

(7) Outlet diffuser section: further convert part of the kinetic energy of the airflow into pressure energy, reduce pressure loss and wind field noise, and make the energy consumption and noise indicators of the wind tunnel meet the use requirements.

(8) Axial fan guard: blocks large foreign objects and ensures safety.

(9) Electrical control box: The electrical components of the wind tunnel are installed in the electrical control box to ensure safe use and beautiful appearance.

(10) Operation panel: control the start and stop of the fan and adjust the fan speed. The speed of the fan can be monitored on the screen, and the equipment is equipped with an anemometer to monitor the wind speed value.

V. Operating Instructions

5.1 Preparation

Anemometer installation:

(1) Before operation, confirm that all parts are assembled and connected in good condition. Ensure that there are no obstacles blocking the inlet and outlet air within 500mm of the air inlet and 1000mm of the outlet diffuser section of the equipment to avoid affecting the test wind field.

Note: If the user brings his own wind speed measuring instrument for testing, plug rubber plugs of corresponding sizes into the installation holes on both sides of the test section, and then plug the self-provided measuring instrument into the rubber hole. Finally extend it into the test section for testing.

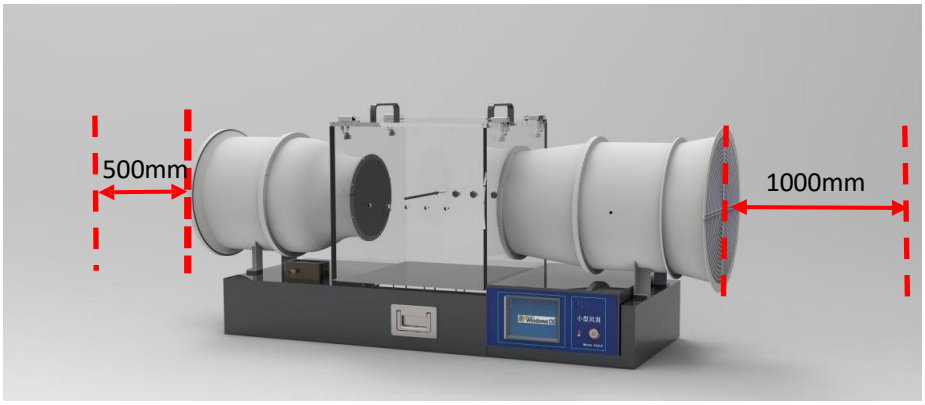


Figure 2: Dimension Diagram

(2) Remove the rubber blind plug of the mounting hole and open the test section door. Install the

φ6 hollow rubber plug into the mounting hole, and the anemometer penetrates the hollow rubber plug and extends into the test section (the anemometer probe position extends into the center of the Φ200 test area). Loosen the hand-tightened screws of the anemometer support assembly and adjust the height of the support assembly to fix the anemometer support. Use black and white pressure tubes to connect the ports of the anemometer and the differential pressure transmitter. Pay attention to the correct connection of the interfaces (as shown in the figure below). After installation, reset the test section door and prepare for testing.



Figure 3: Loading Hollow Rubber Stopper

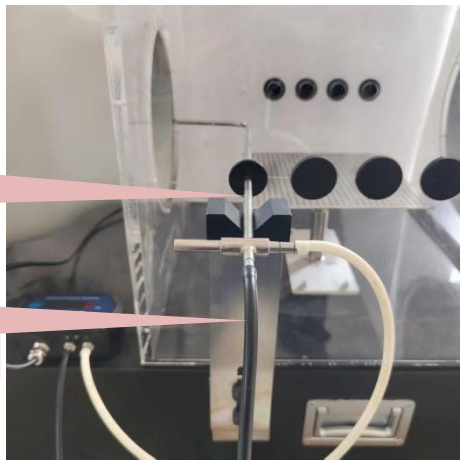


Figure 4: Installing an Anemometer

(3) Check whether there are foreign objects everywhere in the air duct. If there are foreign objects, clean them up to ensure the safety of fans and personnel.

(4) Confirm that the Anemometer is connected correctly with the differential pressure transmitter, the motor and the electric control box, and the power cord is inserted into the socket of the electric control box.



Figure 5: Pressure tubes are connected according to color



Figure 6: External cable connection of electric control box

5.2 Start-Up

(1) Press the power on/off button of the electric control box to start the power supply of the

equipment, and the operation panel will light up.



Figure 7: Device Startup Interface

(2) The wind speed of the wind tunnel can be entered manually. The current wind speed is displayed in the upper right corner of the screen. Press the green Run button to start the equipment. During operation, you can directly enter a new value to adjust the wind speed without turning off the fan.

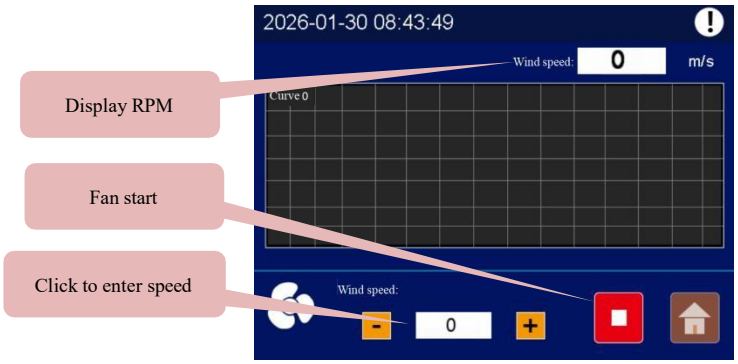


Figure 8: Mode Selection Interface

(3) In the upper right corner of the screen, you can enter the setting system interface, and you can choose manual and automatic PID adjustment modes. It also has the functions of switching wind speed units, clock adjustment, anemometer K coefficient setting, and input temperature and atmospheric pressure setting values. Automatic PID adjustment can directly input the wind speed value, and the system automatically adjusts the fan speed to reach the set wind speed value.

Note: Be sure to manually enter the temperature and atmospheric pressure values before operating in probe mode.



Figure 9: Setup System Interface

5.3 Shutdown

(1) After the test is completed, click the fan stop button, then click the start/off power button to turn off the equipment, and unplug the power cord connected to the back end of the electric control box (as shown in Figure 5).

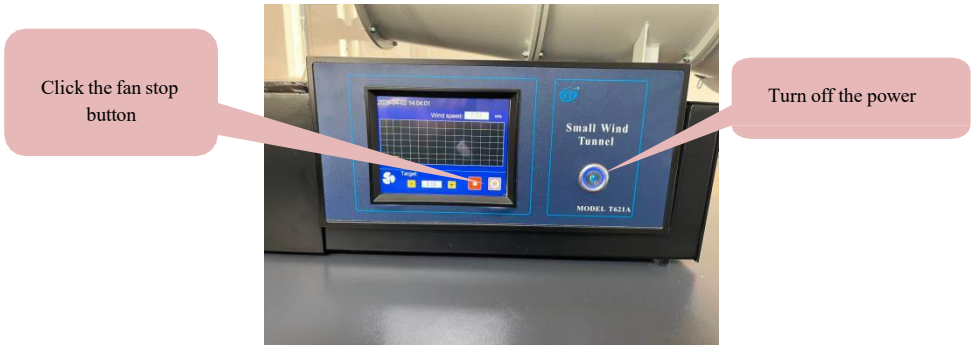


Figure 10: Device Stopped Running

VI. Packaging and Transportation

The shell of the equipment is made of Q235A steel, and the base feet design ensures the safe placement of the equipment. Avoid bumps during daily use and transportation.

(1) Open the packaging carton. The upper sponge groove contains paper documents such as the factory-provided verification report, certificate of conformity, instruction manual, packing list, etc. of the equipment.

(2) Remove the upper cover of the sponge packaging, and place the equipment body and accessories in the sponge packaging box to effectively avoid bumps during transportation.

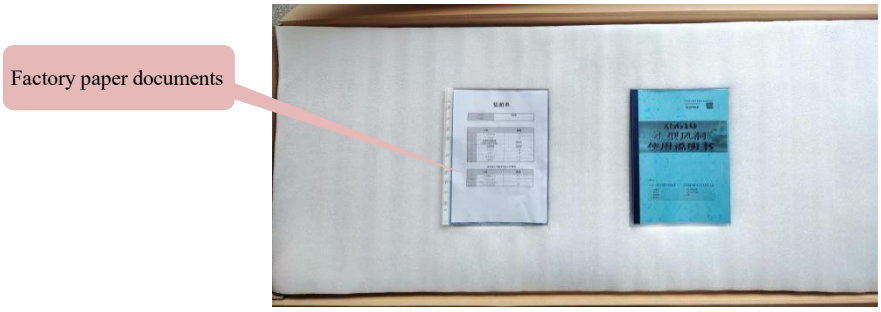


Figure 11: Packaging Picture

VII. Warranty and Service

7.1 Warranty

- On the premise of carefully reading the product instruction manual and operating normally

according to its instructions, if any quality-related problem occurs, the product will be guaranteed for one year from the date of equipment purchase.

7.2 After-Sales Service

- When the equipment fails, please contact the after-sales service department designated by our company (please ask the dealer for contact information).
- Repairs under warranty. Failures due to product manufacturing reasons will be repaired free of charge.
- Out-of-warranty repairs. Paid repairs are provided beyond the warranty period.
- Regarding the retention period of the repaired parts. After production ceases, spare parts will be available for at least 5 years after production ends.

When technical support is required, please provide the following

* Product Name	----------
* Product Model	----------
* Product Serial Number	----------
* Fault Phenomenon	As detailed as possible
* Purchase Date	MM. DD, YYYY

Office: No. 56-39 (0910), North Huanghe Avenue, Huanggu District, Shenyang, Liaoning Province, P.R. China 110034.

Warehouse: 58# Zhengliang 4 Rd., the New District of North Shenyang, Shenyang, Liaoning Province, P.R.China 110136 (Delivery Location).

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