SALT SPRAY CHAMBER

OPERATING

MANUAL
Contents

1 Introduction ............................................................................................................................................. 3

1.1 Front View ........................................................................................................................................ 3

1.2 Back View ......................................................................................................................................... 4

1.3 Testing Chamber ............................................................................................................................... 5

1.4 Control Panel ................................................................................................................................... 7

2 Installation ............................................................................................................................................. 9

3 Operation ............................................................................................................................................. 11

4 Calibration .......................................................................................................................................... 13

5 Failure Indication ............................................................................................................................... 14

6 FAQ ....................................................................................................................................................... 15

7 Maintenance ....................................................................................................................................... 17

8 Warranty ............................................................................................................................................... 17

9 Remarks ............................................................................................................................................... 18
1 Introduction

1.1 Front View

1 Cover:
A roof-like transparent top with 100° angle which cover the testing chamber and unify it.

2 Wet and dry bulb thermometers:
Measure the temperature and humidity of testing chamber.

3 SS drain switch:
Switch on to drain the Water-sealed Trough (WST). This device is only available for SS120, SS160, SS200 and any other chambers have capacity more than 480L.

4 Second pressure regulator:
Subtly adjust the pressure of spraying. (Suggested pressure: 1kg/cm²).

5 Cover lifter control:
Lifters are driven by compressed air. Cover lifters are only available for SS120, SS160, SS200 and any other chambers have capacity more than 480L.

6 Control panel:
Control the test.

7 Brine Inlet:
Fill salt solution from here.
1.2 Back View

1 Bubble tower water inlet:
   Fill purified water into ‘Bubble Tower’ here manually.

   **IMPORTANT:** Please switch off this entrance during testing.

2 Compressed air inlet1:
   Air inlet for spraying, assembled with air filter and air pressure regulator (First air pressure regulator).

3 Compressed air inlet2:
   Air inlet for cover lifters, assembled with air filter and air pressure regulator.
   **This is only available for SS120, SS160, SS200 and any chambers have capacity larger than 480L.**

4 Power source.

5 Drain outlet for Bubble Tower:
   This outlet may located under the base for SS120, SS160, SS200 and any other chambers have capacity more than 480L.

6 Water supply:
   Fill water into ‘Bubble tower’ and ‘Water-heater tank’ from here automatically, a continuous Water Supply is required.

7 Overheat protector:
   Set high limit of temperature (Only for protective).

8 Vent:
   Salt fog exhaust vent.
9 Drain outlet:
Assembled with switch to drain all waste water produced by testing.

1.3 Testing Chamber

![Testing Chamber Diagram]

Figure 1.2.1

1 Adjustable baffle:
This device prevent direct impact of spray on the test specimens, and it is helpful in obtaining uniform distribution of the spray.

2 Dispersion tower:
Orient and help to obtain uniform distribution of salt fog. SS120, SS160, SS200 and any chambers have capacity larger than 480L may have more than one dispersion tower.

3 Atomizing nozzle.
SS120, SS160, SS200 and any chambers have capacity larger than 480L may have more than one atomizing nozzle.

Important:
Atomizing nozzle is high precision device, any displacement or misalignment may cause it could not spray. If displacement or misalignment happened, please adjust it with care and patience.

4 Salt solution reservoir.
Solution level is controlled by float ball automatically. Drain outlet for cleaning is stuck by silicone cork in the bottom. SS120, SS160, SS200 and any chambers have capacity larger than 480L may have more than one reservoir.

5 Water-sealed trough:
Avoid the spillage of salt fog.

6 Heater:
Heat the ‘water-heater tank’ to provide a constant temperature environment for
testing chamber. SS120, SS160, SS200 and any chambers have capacity larger than 480L may have more than one heater.

7 Fog quantity collecting kit:
   The funnel is built with 80cm² area, and been inserted into measuring cylinder directly.

8 Temperature sensor:
   Measuring the temperature of testing chamber continuously.

9 Water-heater tank:
   Located at the bottom of the testing chamber, the tank is used to keep a stable humidity and temperature by heating or preserving water. A water level controller is built, refilling function will be acted once the chamber lack of water.

Rack(Please see Accessories):
   The racks are made of plastic-steel. The maximum load shall be 2kg for single lading point or 10kg for scattered lading points. On both sides of the rack there are two rows of holes which enable the angle between the rack supporters and the vertical surface vary from 15° to 30°.

Special sample support:
   Some chambers may be delivered with special sample supports.
1.4 Control Panel

1 Over-heated indicator1:
The indicator illumine and the power being shut off once the temperature of water-heater tank is over 65°C (for protective purpose).

2 Lack-water indicator1:
The indicator illumine and the power being shut off once water-heater tank lack of sufficient water (for protective purpose).

3 Stop indicator:
The indicator illumine and the chamber stop automatically once test finished (you can preset testing period by timer).

4 Test indicator:
The indicator illumine when the chamber is running.

5 Lack-water indicator2:
The indicator illumine and the power being shut off automatically once the Bubble Tower lack of sufficient water (for protective purpose).

6 Over-heated indicator2:
The indicator illumine and the power being shut off once the temperature of Bubble Tower being over-heated (for protective purpose).
7 Testing chamber temperature controller:
   Control and preset the temperature of testing chamber. Please do not set temperature higher than 65°C.

8 Bubble tower temperature controller:
   Control and preset the temperature of bubble tower. Please do not set temperature higher than 75°C.

9 Pressure meter:
   Show the pressure of compressed air used for spraying, adjustable by pressure regulator.

10 Timer:
    Preset testing period from 0.1s to 9999h and stop this machine automatically when period expires.

11 Time accumulator:
    Show total worked period of this machine within the range of 0-9999.9h (Just for reference).

12 Power switch:
   Illuminated rocker switch. Control power supply of this machine.

13 Heating switch:
   Illuminated rocker switch. Switch on to heat the water-heater tank and bubble tower.

14 Spraying switch:
   Illuminated rocker switch. Switch on to start spraying.

15 Timing switch:
   Illuminated rocker switch. Switch on to start timing.

16 Defogging switch:
   Illuminated rocker switch. Switch on to purge this chamber.

**Tips:**

NSS and AASS tests:
Set temperature at 35°C of water-heater tank and at 47°C (40°C-50°C) of bubble tower.

CASS test:
Set temperature at 50°C of water-heater tank and at 65°C (60°C-70°C) of bubble tower.

Based on ASTM B 117.
2 Installation

1. Power source: Please check power source requirements referring the nameplate stuck behind the chamber.

2. For chambers have capacity larger than 480L, a junction box with circuit breaker is necessary, please refer Figure2.1.

   ![](image1)

   Figure2.1

3. This chamber shall be placed with at least 50cm space against walls to reserve enough space for maintenance. Please do not place this chamber together with other testing instruments in the same room to avoid corrosion.

4. Connect this chamber with air compressor. Adjust the first pressure of compressed air to 2kg/cm².

   For the chambers equipped with cover lifters, cover will be able to open only after the installation of power source and compressed air supply.

5. The vent pipe and drain pipe should be hard pipe PVC2¹/₂.

   Make sure the vent pipe is extending to outdoors.

   Make sure the drain pipe is downwards.

   ![](image2)
IMPORTANT NOTICES:

PLEASE extend vent pipe to outdoor, otherwise the exhausted salt fog may corrode other metallic stuff.

DO NOT install this machine under sunshine. Otherwise it may affect the testing conditions.

DO NOT install this machine near other electrical applicants, instruments and inflammable goods.

DO NOT hit this machine forcefully since it is made of PVC plastics. DO NOT overheat this machine or else it will be distorted.
3 Operation

1. Switch on power supply and compressed air supply. Adjust first compressed air pressure to 2kg/cm² (Normally the pressure is already preset by manufacturer).

2. Switch off Bubble Tower Water Inlet, connect this chamber to Water Supply so the automatic water refilling mode can function which the water-heater tank and bubble tower will be refilled automatically.

3. If automatically water supply is not available, please switch on Bubble Tower Water Inlet to fill water manually as Figure3.1 shown. Fill water into water-heater tank manually.

![Figure3.1](image)

Notes:
Please make sure the switch of Bubble Tower Water Inlet is shut down during testing.
Manually refilling mode is only recommended for testing which last less than 2 days.

4. Fill water into Water-sealed trough.
Note:
Please check the water level of this trough regularly, as the water will be evaporated by testing.

5. Make salt solution (Take NSS test as example):
   a) Prepare 9.5 liter purified distilled water and 500g sodium chloride (NaCl).
   b) Mix water and sodium chloride and stir well. Measure its PH value (6.5 to 7.2 is eligible).
   c) If PH value is higher than 7.2, add a little glacial acetic acid.
   d) If PH value is lower than 6.5, add a little sodium hydroxide.

6. Add salt solution into salt solution entrance, solution being led into solution reservoir automatically. The volume of solution reservoirs:

   15L SS60  SS60+
   25L SS90  SS90+
   40L SS120 SS160 SS200.
7. Place rods and racks or any other specimen support. Place specimens. The angle for placing can be determined by required standards. For instance, the standard testing specimens 130×70(mm) can be placed with an angle of 15º and 30º.

8. Switch on Power.

9. Set testing temperature. Set in accordance with relevant standard (Press “▼” button to decrease and press “▲” to increase value, press”◄” button to select digit).

10. Set testing period from 0.1S to 9999H. (H: hour, M: minute, S: second. Press “+” to increase and press “-” to decrease).

11. Switch on Heating.

12. Wait until the Water-heater tank and Bubble tower reach the required temperature.

13. Switch on spraying. Adjust the second pressure regulator on this chamber as 1kg/cm². It can be read through pressure meter (clockwise increasing, anti-clockwise decreasing).

14. Measure the average fall-out rate of sprayed solution by collectors. If the values don’t meet standards’ requirements, adjust compressed air pressure and measure fall-out rate again.

15. Put specimens into testing chamber and close cover with care.

16. Switch on timing.

17. After test, switch off by below sequence: Timing → Spraying → Heating.

18. Purge the chamber by Defogging.

19. Switch off Power.

20. After fog exhausted, open the cover with care and take out all specimens.

21. If there is any deregulation happens, check in accordance with the list of judging abnormal cases.
4 Calibration

Repeat the same procedures of Operation with below exceptions:

1. Do not place rods and racks.
2. Do not place specimens.
3. Set spraying period as 16 hours.
4. Empty Measuring Cylinder before Calibration.

After spraying, take Measuring Cylinder out and record the quantity of solution carefully. If the values don’t meet standards’ requirements, adjust compressed air pressure and measure fall-out rate again.

Figure 4.1 Fog Collecting Kit
5 Failure Indication

A. Overheat indicator keep flashing:

Check by below steps:

1. Check whether over-heat protector being set at a too low value, and correct it if so.

2. If the overheat indicators keep alarming continuously, contact manufacturer for further support.

![Figure 5.1 Over-heat Protector](image)

B. Low water level indicator keep flashing:

When these indicators flashing, power supply will be shut off automatically. Please refill purified water into testing chamber and bubble tower automatically or manually until the indicators stop alarming (Make sure the water supply is connected and turned on when using automatic refill function).
## 6 FAQ

<table>
<thead>
<tr>
<th>Situation</th>
<th>Reason</th>
<th>Solution</th>
</tr>
</thead>
</table>
| The testing chamber fails to reach required temperature | 1. Temperature controller of testing chamber being set too low.  
2. Temperature of overheated protector of testing chamber being set too low.  
3. Malfunction of heating system.  
5. Malfunction of controller. | 1. Reset the temperature controller.  
2. Reset the protector.  
3. Inform manufacturer.  
4. Inform manufacturer.  
5. Inform manufacturer. |
| Bubble tower fails to reach required temperature | 1. Temperature controller of bubble tower being set too low.  
2. Temperature of overheated protector of bubble tower being set too low.  
3. Malfunction of heating system.  
5. Malfunction of controller. | 1. Reset the temperature controller.  
2. Reset the protector.  
3. Inform manufacturer.  
4. Inform manufacturer.  
5. Inform manufacturer. |
| Insufficient spray | 1. Spray adjuster being placed too low.  
2. Filter being blocked in the solution reservoir.  
3. Air pressure being set too low. | 1. Raise the spray adjuster.  
2. Clean the filter.  
3. Adjust the valve to be 1kg/cm². Adjust the vent valve of air compressor to be 2kg/cm². |
<table>
<thead>
<tr>
<th>Situation</th>
<th>Reason</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unable to spray</td>
<td>1. Air compressor doesn’t work.</td>
<td>1. Turn on air compressor.</td>
</tr>
<tr>
<td></td>
<td>3. Malfunction of pressure gauge or the pressure is too low.</td>
<td>3. Inform manufacturer.</td>
</tr>
<tr>
<td></td>
<td>5. Nozzle blocked.</td>
<td>5. Take off the nozzle and clean it. (Nozzle is breakable, please pay much attention when taking it down or installing it)</td>
</tr>
<tr>
<td>Water level indicator</td>
<td>Water level is too low.</td>
<td>Check the water supply.</td>
</tr>
<tr>
<td>keep alarming.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply is turned on</td>
<td>Water level of the water heating tank is too low.</td>
<td>Refill water into water heating tank to normal level.</td>
</tr>
<tr>
<td>but this machine do not</td>
<td></td>
<td></td>
</tr>
<tr>
<td>work.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature controller</td>
<td>1. Malfunction of the controller.</td>
<td>1. Inform manufacturer</td>
</tr>
<tr>
<td>display EEE.</td>
<td>2. Malfunction of the temperature sensor.</td>
<td>2. Inform manufacturer</td>
</tr>
<tr>
<td>Too much spray.</td>
<td>1. Spray adjuster being placed too high.</td>
<td>1. Lower the adjuster.</td>
</tr>
<tr>
<td></td>
<td>2. Atomizing nozzle being enlarged after been used for long time.</td>
<td>2. Replace the nozzle with a new one.</td>
</tr>
</tbody>
</table>
7 Maintenance

7.1. Please change the water in the water-heater tank after each test.

7.2. If the salt solution has been used for over a week, vent and replace it. Otherwise the testing effect could be affected.

7.3. If the interval of each tests is quite long, after each tests clean this chamber and keep it dry.

   The drainage of water-heater tank: Open drain valve.

   The drainage of water-sealing tank: Unplug the silicon cork.

   The drainage of water-pre-heater tank: Unplug the silicon cork inside.

7.4. Change the atomizing nozzle periodically every 2000 hours to ensure the testing precision.

8 Warranty

1. Terms of Warranty
We offer one-year free warranty since the delivery date (consumables are not included in free warranty, travel cost of technical service personnel should be afforded by customers.)

2. In one of the following events, even though the product is still in warranty period, for the repairing and maintenance we will charge costs of technical support, materials and travel according to the circumstances.
   1. Any damage or destruction by natural disaster.
   2. Any fault caused by users’ error or improper operations.
   3. Any damage caused by improper voltage that user chose.
   4. Any fault occurring after unauthorized disassembly by user himself.
   5. Any fault occurring during the machine being lent to others.
   6. Any fault after any unauthorized refit.
   7. Any fault caused by self calibration.
   8. Any fault occurring during movement or transportation.
   9. Any service request from remote places.

3. Notice
For the customers who residing in anywhere outside of Guangdong Province, whether the product is in warranty period or not, the traffic and travel expenses of our customer service personnel will be afforded by the customer.
9 Remarks

Should this manual have any oversight, it must be amended or corrected, the amendment or correction; plus any innovation or renovation of machine, change of design, use of alternative parts or parts that customer defined, or any supplementary operating instructions must be recorded in this page below:

______________________________________________________________________________
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This Manual is provided to help you learn the operations and precautions of the device, please keep it well. The company will sustainable make renovations and innovations for this product. The figures and specifications are subject to the change for the updated model of the product.

Notes: the drawing is subject to change without prior notice!

Thanks very much for choosing INLAND TESTING EQUIPMENT!

For more customer support please contact with us at 1.630.293.3800

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