



SALT SPRAY CORROSION TEST CHAMBER TTSS SERIES

The TTSS-Series salt spray corrosion test chamber reproduces corrosive environments to evaluate how materials, coatings, and finished parts resist rust and degradation. It differs from a basic salt spray chamber: as a cyclic corrosion chamber, it exposes samples to a repeating sequence of conditions that combine temperature, humidity, salt spray, and dry stages. The series offers five sizes, from the TTSS-60 at 108 L to the TTSS-200 at 1440 L, so labs can match chamber volume to sample size and throughput. Each chamber supports neutral salt spray (NSS), acetic acid salt spray (ACSS), and copper-accelerated acetic acid salt spray (CASS) methods.

Construction centers on corrosion-resistant materials throughout: a high-strength PVC inner chamber, a titanium-alloy heating element, and a seamless SUS304 stainless pressure barrel. A quartz-glass spray nozzle with a conical diffuser distributes mist evenly, and a water-sealed double-chamber design keeps salt fog from leaking into the lab. An optional 7-inch touch-screen controller runs both constant-value and programmable cyclic tests, while built-in protection devices guard against over-temperature, low water, and electrical faults.

APPLICATIONS

Applications

The TTSS-Series suits any program that measures corrosion resistance under controlled salt-fog exposure.

- Automotive Components: corrosion testing of body panels, fasteners, trim, and under-hood parts.
- Surface Coatings and Plating: evaluation of paints, electroplating, anodizing, and conversion coatings.
- Metals and Alloys: corrosion resistance of steel, aluminum, and protective surface treatments.
- Fasteners and Hardware: salt-fog endurance of screws, bolts, springs, and connectors.
- Electronics and Electrical: corrosion checks on enclosures, terminals, and assemblies.
- Marine and Outdoor Equipment: durability assessment of parts exposed to coastal and weathering conditions.
- Quality Control and R&D: comparative testing and product validation against salt spray standards.

Standards

The TTSS-Series meets the following product and testing standards.

- ASTM B117-2009 - Standard Practice for Operating Salt Spray (Fog) Apparatus
- ISO 9227-2006 - Corrosion Tests in Artificial Atmospheres, Salt Spray Tests
- IEC 60068-2-11-1981 - Environmental Testing, Test Ka: Salt Mist
- JIS H8502 - Methods of Corrosion Resistance Test for Metallic Coatings

THEORY & METHOD

Key Features

The TTSS-Series pairs corrosion-resistant construction with control, safety, and handling features built for long unattended test runs.

- Corrosion-Resistant Chamber: gray-white impact-resistant PVC board (5 mm on models up to TTSS-90, 8 mm above), rated to 85°C and highly corrosion-resistant.
- Titanium-Alloy Heater: titanium electric heating tube that outlasts standard stainless heaters by 3 to 5 years.
- Seamless SUS304 Pressure Barrel: 2.0 mm SUS304 stainless steel barrel with a seamless weld for durability.
- Quartz-Glass Spray Nozzle: resists crystallization beyond 4000 hours of use; a conical diffuser evens out mist distribution and adjusts spray volume.
- Optional 7-Inch Touch-Screen Controller: runs constant-value and programmable cyclic salt-spray tests, stores temperature data, and places all controls on one panel with hour-based timing.
- Automatic and Manual Water Filling: refills from a tap-water connection or manually, so tests keep running at low water levels.
- Liquid-Sealed Double Chamber: water-filled sealing grooves prevent salt-mist leakage during testing.

- Built-In Fog Collection Tube: the internal measuring cylinder is less prone to damage than an external type.
- Manual Demist Function: clears accumulated mist for a clear view of the test area (equipped on TTSS-90 and above).
- Comprehensive Protection: double over-temperature protection (Italy EGO technology), double low-water-level protection, overload and short-circuit protection, and a low-salt-level reminder.
- Adjustable Sample Frame: Ø10 mm glass-fiber rod with a V-shaped plastic-steel frame that holds samples at a 15 to 30 degree incline.

TECHNICAL SPECIFICATIONS

Model-Specific Specifications

Specification	TTSS-60	TTSS-90	TTSS-120	TTSS-160	TTSS-200
Internal Dimensions W×D×H (mm)	600×450×400	900×600×500	1200×850×500	1600×1000×550	2000×1200×600
External Dimensions W×D×H (mm)	1130×630×1070	1460×910×1280	2200×1200×1450	2600×1450×1550	3000×1650×1600
Test Chamber Volume (L)	108	270	480	800	1440
Brine Tank Capacity (L)	15	25	40	—	—
Max Current (A)	5	12	15	18	22
Max Power Consumption (kW)	1.5	2.5	3.5	5	7

Power Supply	AC220V, 50Hz	AC220V, 50Hz	AC380V, 50Hz	AC380V, 50Hz	AC380V, 50Hz
Demisting Device	No	Equipped			

Common Test Parameters

Parameter	Specification
Ambient Temperature and Humidity	Below 35°C, <85% RH
Test Area Temperature	NSS / ACSS: 35°C ±1°C; CASS: 50°C ±1°C
Pressure Barrel Temperature	NSS / ACSS: 47°C ±1°C; CASS: 63°C ±1°C
Salt Water Solubility	5% sodium chloride solution; for CASS add 0.26 g/L copper chloride (CuCl ₂ ·2H ₂ O)
pH Value	6.5–7.2 (neutral); 3.0–3.2 (acid)
Compressed Air Pressure	1.00 ± 0.01 kgf/cm ²
Spray Volume	1.0–2.0 ml/80 cm ² /h (collected for at least 16 hours and averaged)
Inner Chamber Material	Corrosion-resistant, aging-resistant, high-strength PVC board

Heater	Corrosion-resistant U-shaped titanium pipe
Temperature Controller	LED digital display controller; touch-screen controller
Spray Method	Continuous and intermittent spray
Safety Devices	Over-temperature protection switch, leakage protection, status warning light

Operating Parameters

Parameter	Specification
Laboratory Temperature Range	35°C to 50°C (freely settable)
Pressure Barrel Temperature Range	47°C to 63°C (freely settable)
Heating Rate (Laboratory)	Ambient to 35°C in about 35 minutes
Heating Rate (Pressure Barrel)	Ambient to 47°C in about 15 minutes
Temperature Control Accuracy	±0.3°C
Distribution Uniformity	≤2°C

Neutral Test pH	6.0–7.0
Acid Test pH	3.0–3.1
Spray Solution pH (Neutral)	6.5–7.2
Spray Solution pH (Acid)	3.1–3.3

Note on pH: carbon-dioxide loss during spraying can shift the solution pH. To minimize this, heat the solution above 35°C before placing it in the chamber, or prepare it with fresh boiling water. For acid or copper-accelerated salt spray tests, adjust and verify the spray solution pH to 2.8–3.0.

Power Supply Requirements

The chamber runs on AC220V single-phase two-wire plus protective grounding, or AC380V three-phase five-wire. Voltage fluctuation range is $\pm 10\%$ and frequency fluctuation is 50 ± 0.5 Hz. The installation site must provide an appropriately rated air or power switch that independently controls the equipment.

Air Source Requirements

An air compressor of at least 2.5P is required, with an air storage tank capacity of 60 L or above.

Control Panel Main Components

Component	Quantity
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Temperature controller	1 pc
Timing controller	1 pc
Timer	1 pc
Platinum resistance	2 pcs
Spray solenoid valve	1 pc
Solid state relay	2 pcs
Intermediate relay	3 sets
Heating tube	1 pc
Pressure regulating valve	1 pc
Air filter	1 pc

Standard Accessories

Accessory	Quantity	Accessory	Quantity
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V-shape sample holder	1 group	O-shape sample holder	1 group
Sodium chloride	2 bottles	5000 ml measuring bucket	1 pc
Hydrometer	1 pc	Operation manual	1 pc



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