



## > SSP/SSC Series Standard Design Salt Spray Test Chambers and Corrosion/Climate Cycling Test Chambers



### Salt Spray Test Chambers Corrosion/Climate Cycling Test Chambers

Envirotronics SSP Salt Spray and SSC Corrosion Climate Cycling Test Chambers combine technical function, ergonomics and innovative design to provide the user with the very best possible test system.

To substantiate this claim, we have given great consideration to both capital and operating costs. So the proof is not only in the great variety of technical and practical details, but also in the price/performance ratio.

The series is characterized by its environmentally friendly overall design; it is absolutely corrosion-proof, has low energy requirements and is almost entirely built from recyclable materials.

The SSP and SSC series of salt spray test chambers and cycling climate test equipment allows selective and reproducible accelerated corrosion testing that complies with the requirements of national and international standards such as DIN, ISO, ASTM, DEF, MIL-STD, etc.

The wide-angle test chamber hood allows for loading heavy or bulky test specimens from the top. Two standard sizes are available. A flat workspace is provided between test space and control panel for placing small specimens before or after a test cycle. The removable machine compartment hood provides easy access for the operator and service personnel carrying out maintenance and service work.

### Design Advantages

- Corrosion resistant housing made from recyclable polyethylene
- Acrylic glass nozzle in spraying duct for optimum spray fog distribution
- Robust construction
- Good thermal insulation; the choice of materials guarantees long service life
- User-friendly variable positioning for test specimens
- External heating of test chamber using safe 42 volt system
- Test specimens may also be lifted into the test chamber thanks to the lightweight test chamber hood which opens to 75 °
- Hydrostatic hood seal
- Ergonomic arrangement of the operating panel and display instruments
- Operation, program and set value selection via color touch panel
- Digital set and actual value displays
- Digital fill level display on the operating panel
- Long-term tests are no problem thanks to the 180 liter capacity brine reservoir
- Easily filled with brine through a front-mounted, 125 mm Ø filler opening
- Ready to plug-in, modular construction so there is no need for assembly or commissioning on site
- Test chamber designed for ease of service; all parts are easily accessible through the light-weight, removable machine compartment hood





## >SSP & SSC

### Salt Spray and Corrosion/Climate Cycling Test Chambers

#### Design Features •

- The corrosion-resistant, self-supporting polyethylene casing is in two colors: the body is white, the test chamber hood is blue.
- Adequate floor clearance (approx. 100 mm) for transportation and cleaning is provided by five adjustable feet.
- The depth of the equipment, at 800 mm, allows it to pass through standard doors with no difficulty.
- The high quality test chamber is made from special fiberglass reinforced plastic laminate and is fitted with all supply and drainage connections and housings for test specimen support rods.
- The hood and test chamber are hydrostatically sealed using a "U" profile groove.
- The connection for the condensation drain is located at the bottom left of the rear wall of the test chamber. The exhaust air connection is flush with the machine compartment rear wall.
- The brine container is an integral part of the machine compartment.
- The machinery compartment hood incorporates the operating and display panel and a work bench which can withstand a distributed load of up to 10 kg.
- The level of the supply water for the pressurized humidifier is automatically regulated.
- Safety devices switch the test chamber off in the event of faults such as excess temperature.

#### Applied Corrosion Testing Test Descriptions

##### 1. Salt fog test

as specified in DIN 50 021

A salt solution is sprayed into the test chamber using the venturi principle through a nozzle located at the top of the test space. The compressed air required is heated in a pressurized humidifier and saturated with moisture before it enters the test space.

The brine solution in the venturi nozzle feeder vessel is kept at a constant level by a re-circulating supply.

The heating in the test chamber ensures uniform temperature conditioning to the required set temperature.

The generated condensation is removed through a floor drain, and the corrosive test chamber atmosphere is vented through an exhaust vent. This test is possible with the standard SSP series chamber.

##### 2. Condensed water test

as specified in DIN 50 017 and EN ISO 6988 [DIN 50 018]

The test space drain is closed and the test space filled with distilled or de-mineralized water according to the standard. The specified temperature is achieved by temperature-conditioning the water in the bottom of the test space. Condensation water forms on the surface of the test specimen through thermal radiation from the test specimen onto the ceiling of the test chamber and walls.

The test specified in DIN 50 017 is possible with the standard SSP series chamber.

EN ISO 6988 [DIN 50 018] describes a method of testing with an atmosphere containing SO<sub>2</sub> in a condensation water-alternating climate.

This test is possible with the standard SSP series chamber plus a SO<sub>2</sub> gas-dosing device.

#### Control and Programming •

The Salt Spray Test Chambers are equipped with the self-monitoring, digital 32-bit measuring and control system SIMCON/32\*-NET

This system coordinates all control functions. Integration of the test unit into your computer network is possible via an optional Ethernet interface (RJ 45).

Input functions and display of the operating parameters are actuated via the graphic color touch panel.

##### Additional features:

- High-resolution color display
- Operating and error display in clear text
- Operation by simply touching the function symbols
- Program editor and program storage for up to 100 programs
- Password protection
- Menu-driven

#### Determination and Display of Precipitation Quantities •

The SSP and SSC models can be fitted with a fully automatic precipitation gauge and display device. This device allows the most important variable in a salt spray test to be determined precisely. The corrosive precipitation can be measured at up to eight measuring points in the test chamber.

The constantly updated average value of precipitation, test time and number of droplets is displayed during the course of the test.

##### 3. Standard climates

as specified in DIN 50 014, clause 5 ambient temperature

The corrosive atmosphere in the test space is automatically vented from the test space through the exhaust air vent and the test space purged with compressed air.

This test is possible with the standard SSP series chamber plus a venting device.

##### Corrosion/Climate Cycling test equipment

Through the addition of certain accessories, the standard salt-spray test chambers become SSC series alternating climate test chambers that can run cyclically through test conditions (e. g. those specified in 1, 2 and 3). The user may determine and program the sequence, duration and number of cycles of the test procedure.

VDA test 621-415 "Paint testing, testing or road vehicle finishes under exposure to cyclically alternating climates" may be used here as an illustration of the procedure for a typical alternating climate test.

A test cycle lasts seven days and consists of:

1 day = 24 h SS DIN 50 021 salt spray fog testing

4 days = 4 cycles KFW DIN 50 017 condensation water alternating climate

2 days = 48 h at ambient temperature 18 to 28 °C as specified in DIN 50 014, clause 5 ambient temperature

The test period is as agreed; it preferably lasts for 4 to 6 cycles.





## >SSP & SSC

### Salt Spray and Corrosion/Climate Cycling Test Chambers

#### SSP Series Standard Features

- Programmable SIMCON/32\*-NET control unit
- Color touch panel
- Serial interface RS 232 C
- Precision two-component nozzle in spray duct
- Compressed air regulation unit
- Heated compressed air humidifier with water level control
- Flow metering and dosing device for brine
- Brine reservoir, 180 l
- Test specimen bracket
- Corrosion-resistant, stable support rods to hold the test specimen at bench height
- Floor grid
- Extended depth "U" profile groove on right-hand side for measuring and supply lines
- Calibration in salt spray test (+35 °C test space temperature/+49 °C humidifier temperature)
- Calibration in condensed water test (+40 °C test space temperature)

#### SSC Series Unique Features

- Ventilation device complying with DIN 50 014, clause 5 ambient temperature
- Automatic water reservoir for DIN 50 017/EN ISO 6988 [DIN 50 018]
- Test chamber floor drain with diaphragm valve for DIN 50 017/ EN ISO 6988 [DIN 50 018]

#### Options

- Ventilation device for DIN 50 014, clause 5 ambient temperature (standard on SSC equipment)
- Demineralization cartridge
- Air compressor
- Precipitation collector
- Precipitation measurement and display
- Measuring cable ports, each 50 mm in diameter, locations available on left, front or rear wall of the test chamber
- Triangular window
- SO<sub>2</sub> gas dosing device for EN ISO 6988 (DIN 50 018) manually, (automatic dosing only possible in combination with SSC equipment)
- Hood locking, safety lock switch prevents opening of hood, e. g. in case of SO<sub>2</sub>-atmosphere
- Additional brine reservoir, 500 l
- Interface RS 422/485 network card
- Ethernet/LAN interface (100/10 MBit) in combination with SIMPATI for networking
- Centronics printer interface
- Software package SIMPATI for Windows 2000, Windows 2000/3000 Server and Windows XP Prof.
- Air conditioning unit
- Other sizes, e. g. 2000 l, or customized accessories are available upon request.

#### Technical Data

SSP series SSC series	Type Type	SSP 450 SSC 450	SSP 1000 SSC 1000
Test space volume		approx. 480 l	950 l
Test space dimensions			
with hood	Height	approx. 1,190 mm	1,190 mm
without hood	Height	approx. 740 mm	740 mm
to spray duct	Width	approx. 750 mm	1,560 mm
	Depth	approx. 570 mm	570 mm
Overall dimensions			
with hood	Height	approx. 1,370 mm	1,370 mm
without hood	Height	approx. 920 mm	920 mm
	Width	approx. 1,930 mm	2,730 mm
	Depth	approx. 800 mm	800 mm
Brine reservoir		approx. 180 l	
Color		White / Blue	
Temperature range			
– Salt spray test		5 K above ambient temperature to +50 °C	
– Condensed water test		5 K above ambient temperature to +45 °C	
Humidity range in SSC		ambient humidity to saturation	
Temperature constancy in time		±1 K	
Air throughput in salt spray test		1.5 m <sup>3</sup> /h (at 0 °C and 1 bar)	
Air throughput in standard climates (only SSC)		4.5 m <sup>3</sup> /h (at 0 °C and 1 bar)	
Compressed air		min. 4 bar / max. 10 bar, connection 1/4"	
Water pressure for humidifier		demineralized or distilled water min. 3 bar / max. 5 bar, 3/4" connector	
Electrical supply		208 / 220 / 230 / 240 / 254 V 1 Ph / 50 Hz and 60 Hz	
Connected load	approx.	2.0 kVA	2.6 kVA
Weight excluding brine contents (empty)	approx.	180 kg	220 kg





## >SSP & SSC Salt Spray and Corrosion/Climate Cycling Test Chambers

### Corrosion/Climate Cycling Unit with Controlled Climate

In addition to the performance of salt fog and condensed water tests, the SSC 1000 with climate extension allows for cycles with controlled humidity and drying/ventilation, as well as combined/alternating tests with the above-mentioned cycles.

During climate tests or drying, air-conditioned or heated ambient air is supplied into the test space via the air-cooled refrigeration unit arranged at the backside.

A psychrometric measuring system is installed in the exhaust air for closed loop controlled humidity.

### Technical Data

The test space and overall dimensions correspond to those of the SSC 1000, except for the overall depth, which is 1,400 mm.

The following performance data can be obtained as single or combined test:

Salt spray fog test:	RT +5 K ... +50 °C / ±1 K (in time)
Condensed water test:	RT +5 K ... +45 °C / ±1 K (in time)
Climate tests:	
– Temperature	+23 °C ... +60 °C / ≤ ±2 K (in time)
– Humidity	20 ... 95 % r. h. / ≤ ±6 % r. h. (in time)
– Dew point	+10 ... +59 °C*

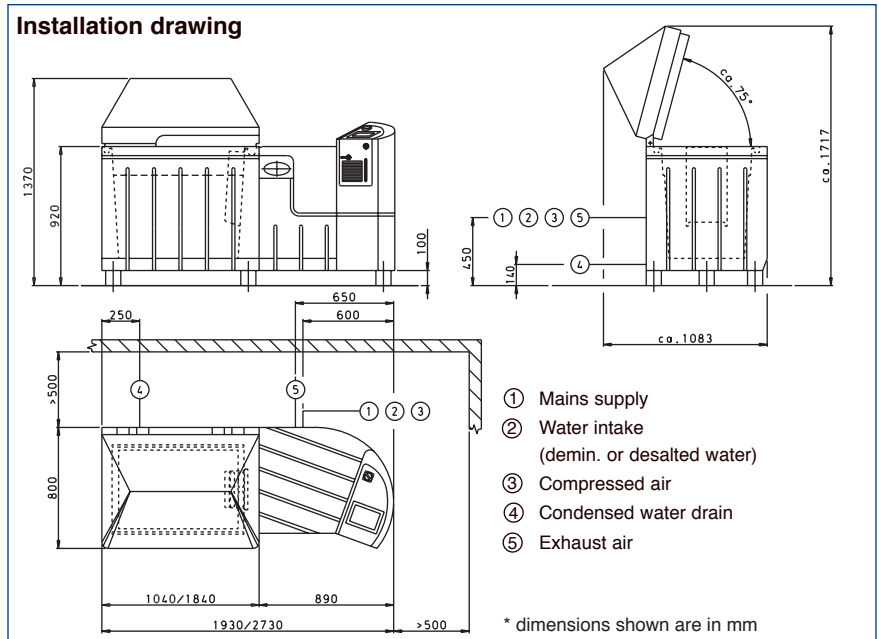
Drying/ventilation:	
– Temperature	RT +5 K ... +60 °C* / ≤ ±2 K (in time)
– Humidity	≤ 30 % r. h. (controlled)

\* Temperatures > + 50 °C or dew point temperatures > + 49 °C require the optional hood insulation

### Standards

- PVW 1210
- Nissan NES M0158 + M0007
- CCT I, II, IV
- Volvo STD 1027, 1375\*
- Volvo STD 1027, 14\*
- GM 9540 P
- Toyota TSH 1555 G
- JASO M610-92
- SAE J 2334
- KWT-DC (without frosting)
- Bosch N42AP 108
- IEC 68-2-52
- Renault D 172028/\_ \_B; ECC1\*

\*additional options required



ENV 1008 SSP

