

Cyclic Corrosion Chamber C.C.T – AUTO Series



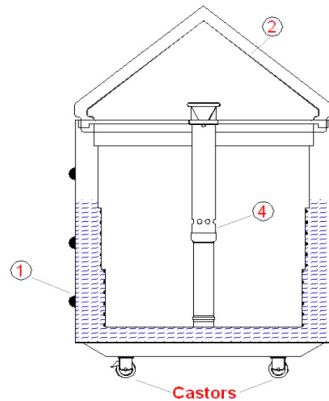
CCT 5000 AUTO image merely illustrative



Cooling system image merely illustrative

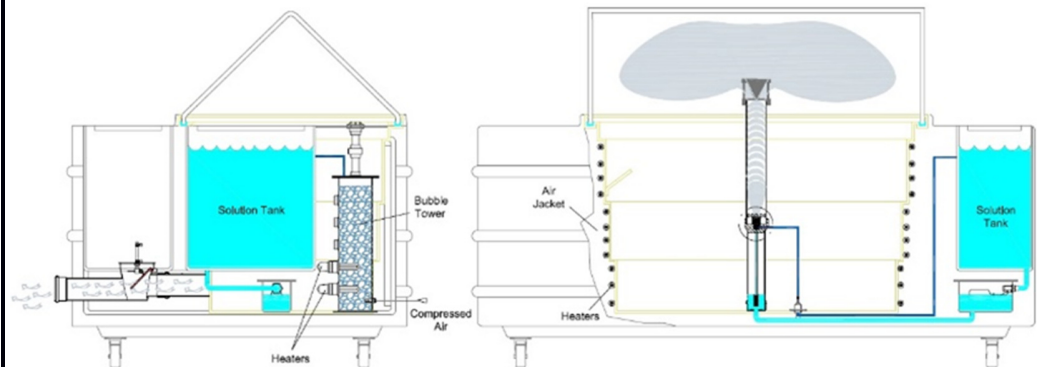
| Specifications/ Models | CCT 1300 AUTO | CCT 3000 AUTO | CCT 5000 AUTO |
|--|---|---------------|---------------|
| <p>Allows 7 different programable cycle modes, (5 standard, and 2 optional added modes)</p> | <ul style="list-style-type: none"> - Mode: SALT SPRAY (FOG) - Mode: CONDENSATION HUMIDITY - Mode: CLIMATIZATION - Mode: CLIMATIZATION WET - Mode: LOW TEMPERATURE (-20°C) or (ULTRA LOW -40°C *) - Mode: IMMERSION * - Mode: SPRAY or STRESS * <p>* Optionals – Please, consult us.</p> <p>The standard equipment offers the following modes: Salt Spray (Fog), Condensation Humidity, Climatization (temperature x relative humidity with ramps and thresholds), Climatization Wet, and Low temperature (-20°C with ramps and thresholds).</p> <p>Strictly designed to do test materials in accordance with the corrosion standards of Japanese and Korean automotive industry.</p> | | |

- 1- Air Jacket** on all sides of equipment providing indirect heating of internal cabinet, ensuring homogeneity of temperature in accordance to ASTM B 117, ABNT NBR 8094 and ISO 9227.
- 2 – Lid** with smooth surface, without seams for prevention of contamination from solution dripping in accordance to ASTM B 117. It minimizes thermal loss due to the ambient temperature and ensures a better performance.
- 3 – Uni-body construction** incorporating solution tank, bubble tower, panel in one cabinet.
- 4 – Central Atomization Nozzle** - ensures the uniformity of fog distribution, providing more realistic test results. Centralized Atomization System according to ASTM B 117 (Fig 1 pg. 4 and Fig X1.1 pg. 7) – ISO 9227 – JIS Z 2371.



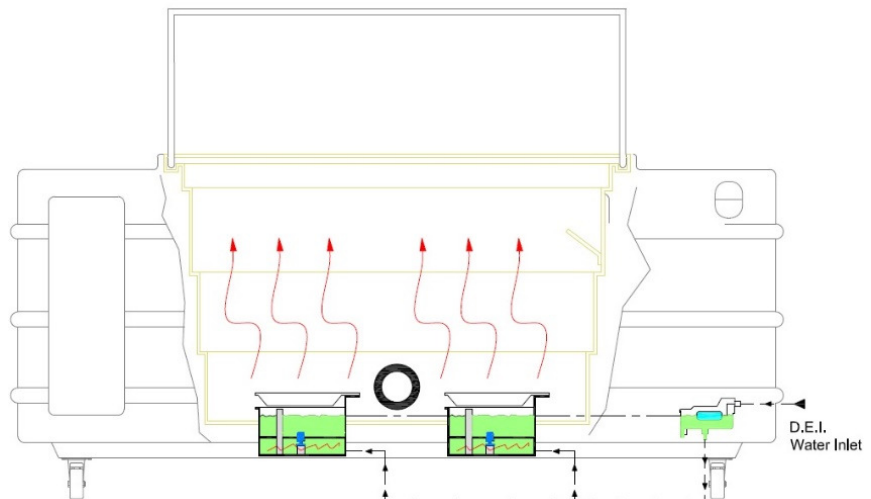
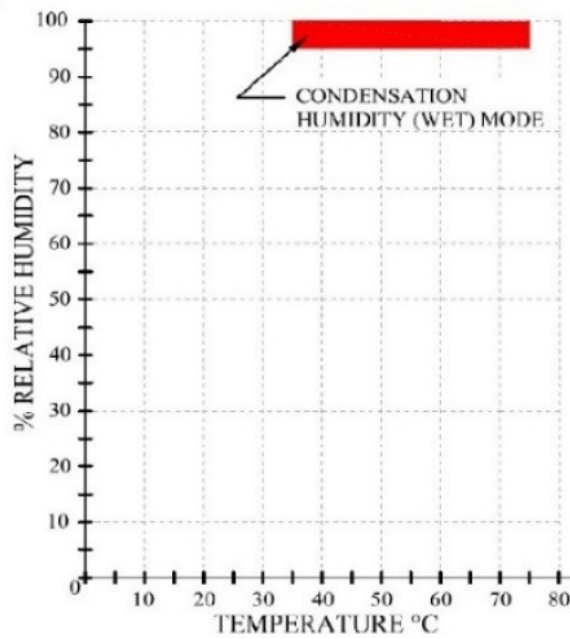
SALT SPRAY (FOG) MODE

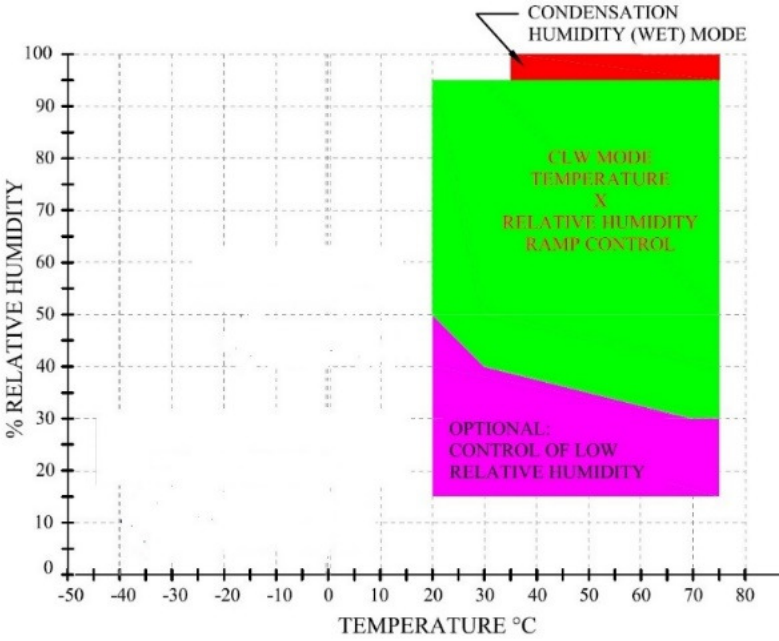
- Chamber Temperature Range: Ambient 9°F (5°C) to 122°F (50°C).
- Bubble Tower Temperature Range: Ambient 9°F (5°C) to 165°F (74°C).
- Resolution of chamber and bubble tower temperature controller: 0.1°C.
- PT100 temperature sensors – 3 wires.
- Homogeneity of chamber and bubble tower temperature: ± 0.5°C.
- Bubble Tower Pressure Range: 29 kPa min. to 196 kPa max. (4.2 psi min. to 28 psi max).
- Fog collection range in any position: ASTM B117 / ISO 9227: 1.5 ±0,5 ml/hour, continuous 16 hours of test, consult us for other specifications (VDA 233-102 A,B,C 3 ml/hour +/- 1ml/hour).



**CONDENSATION
HUMIDITY MODE**

- Chamber Temperature Range: 95°F to 167°F (35°C to 75°C), resolution $\pm 0,1^{\circ}\text{C}$, according to red area in graph shown below.
- Relative Humidity: 97% \pm 3%.
- Homogeneity of chamber temperature: $\pm 1.8^{\circ}\text{F}$ ($\pm 1.0^{\circ}\text{C}$).
- In accordance with ASTM D 2247.

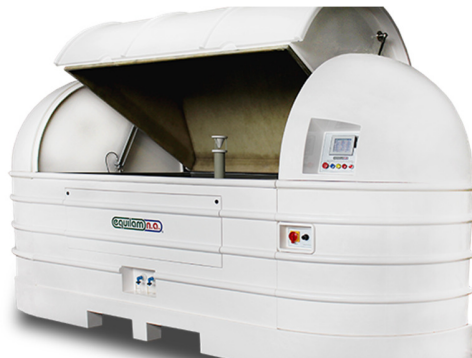
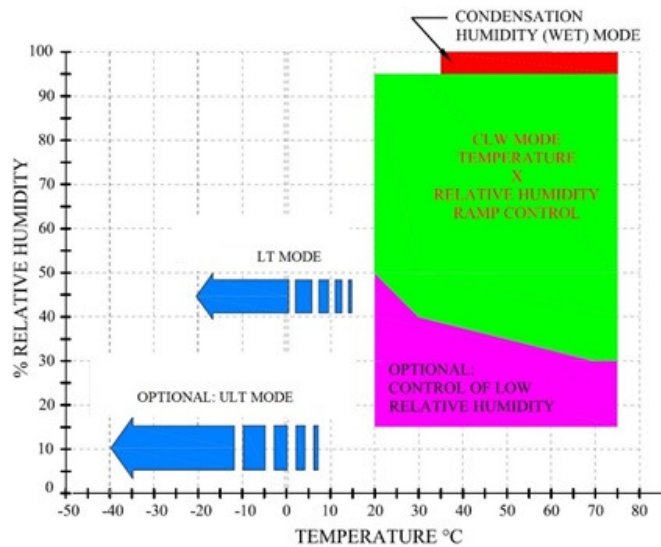


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| <p>CLIMATIZATION MODE (TEMP. x HUMIDITY)</p> | <ul style="list-style-type: none"> - The user can program the temperature and relative humidity inside the chamber according to the green area of graph shown below. - Temperature range: 68° to 167°F (20°C to 75°C) – heating and 167°F to 68°F (75°C to 20°C) with control of ramps and thresholds. - Horizontal air movement within the chamber. - Cooling system, compressor, coil, air control valves, and software. - Relative Humidity: Green area of graph $\pm 3\%$. <div data-bbox="555 672 1337 1310" data-label="Figure">  </div> |
| <p>CLIMATIZATION WET MODE</p> | <ul style="list-style-type: none"> - Chamber Temperature: 68°F to 167°F (20°C to 75°C), resolution $\pm 0,1^\circ\text{C}$, according to the red area of graph. - Relative Humidity: 97% $\pm 3\%$. - Homogeneity of chamber temperature: $\pm 1.8^\circ\text{F}$ ($\pm 1.0^\circ\text{C}$). |

- Chamber Temperature: -4°F to 68°F (-20°C to 20°C), resolution $\pm 0.1^\circ\text{C}$, according to the blue arrow area of LT graph shown below, with control of ramps and thresholds.
- Chamber Temperature: -40°F to 68°F (-40°C to 20°C), Ultra Low Temperature (ULT) option, with control of ramps and thresholds.

LOW TEMPERATURE MODE OR ULTRA LOW TEMPERATURE MODE (ULT*)

- Option ULT:
 * Option – EQOP.0134-1300
 * Option – EQOP.0135-3000
 * Option – EQOP.0136-5000



CCT 5000 AUTO image merely illustrative

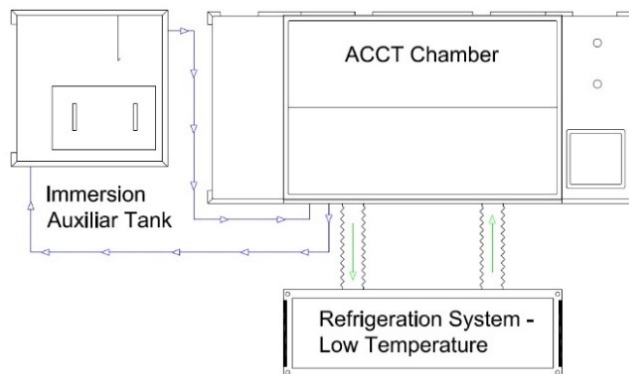
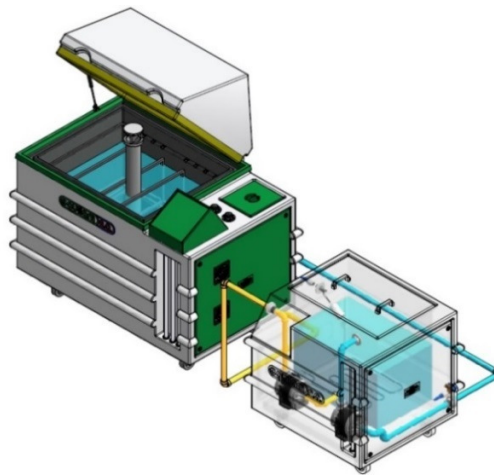


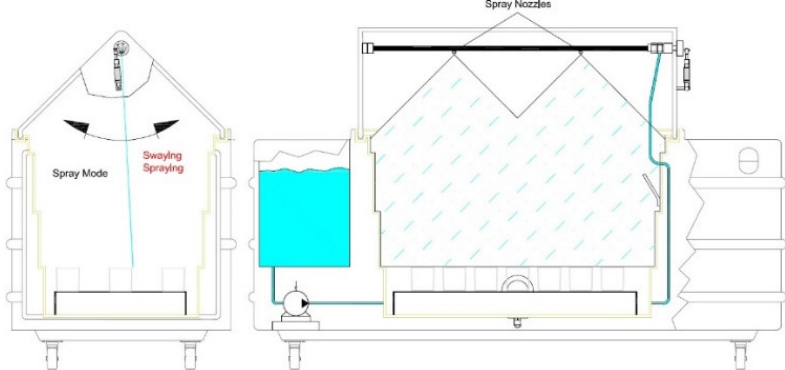

Cooling system image merely illustrative

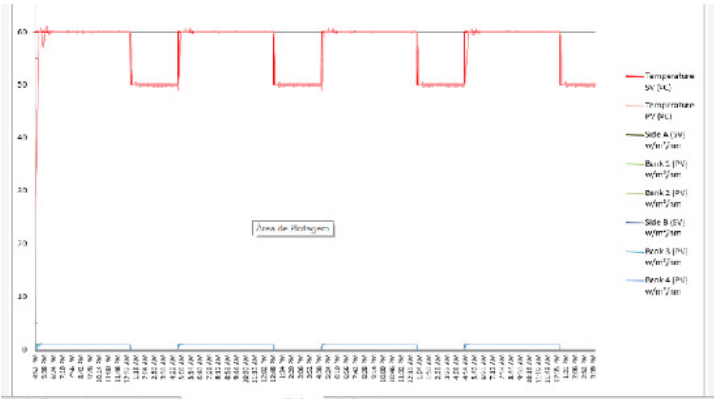
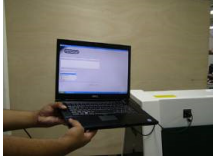

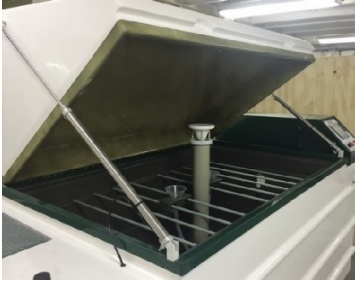
- Solution tank built of fiberglass with thermal insulation, lid, pump, and temperature sensor
- PT 100 – 3 Wires, heater, level sensors, temperature control. All functions and commands are controlled by IHM (touch screen).
- Totally automatic shaking system of solution between test chamber and the tank.
- Solution pre-heating system.
- Automatic tank filling.
- Automatic and manual shaking.
- Temperature Range: Room temperature 41°F to 140°F (5°C to 60°C).
- Temperature Resolution: 0.1°C




IMMERSION MODE*

- * Option – EQOP.0137-1300
- * Option – EQOP.0138-3000
- * Option – EQOP.0139-5000



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| <p>SPRAY OR STRESS MODE*</p> <p>* Option – EQOP 0128 – 1300 * Option – EQOP 0129 – 3000 * Option – EQOP 0130 – 5000</p> | <ul style="list-style-type: none"> - Spray system with spray nozzles – oscillating pendulum movement. - The spray system provides a finely distributed and uniform spray of saline solution onto specimen. - Our system does not re-use sprayed solution (the solution that had contact with specimen) - Plastic spray nozzles. - After the Spray Mode it is possible to set up Fog Purge to avoid contamination of the next mode. - Spraying solution tank with capacity of 100 liters.  |
| <p>User Interface Platform – Touch screen full color</p> |  <p style="text-align: center;">Touch Screen Full Color</p> |
| <p>Trend Plot of Test Parameters on touch screen</p> | <p style="text-align: center;">Included</p> |
| <p>Lid Safety System</p> | <p style="text-align: center;">Included</p> |
| <p>UL508a Compliance</p> | <p style="text-align: center;">Included</p> |
| <p>Alarm message for preventive maintenance, shows date and hour</p> | <p style="text-align: center;">Included</p> |
| <p>Critical test parameters displayed on single screen</p> | <p style="text-align: center;">Included</p> |
| <p>Open program to set up the corrosion cycles</p> | <p style="text-align: center;">Included</p> |
| <p>Error message display, indicating</p> | <p style="text-align: center;">Included</p> |











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| <p>description of alarm triggered, saving the hour and date of alarm.</p> | |
| <p>Buzzer alarm and Visual safety system on screen</p> | <p>Included</p> |
| <p>Data Acquisition Software 2 types: -By SD Card (on touch screen) -By PC (RS 232 or USB). Optional Software</p> | <div style="text-align: center;">  <p>PC - Software Optional USB.</p>  </div> |
| <p>Centralized Atomization Nozzle with distribution tower and cone according request of ASTM B117, pg. 4, Annex A ISO 9227, JIS Z 2371.</p> |  |
| <p>Automatic opening lid.</p> |  |

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| <p>02 external fog collectors</p> |  | | |
| <p>Bubble Tower with constant level, automatic supplying of DEI water, no auxiliary tank necessary for long duration test.</p> |  | <ul style="list-style-type: none"> - Stainless steel construction, fully removable for easy cleaning. - Aeration system | |
| <p>Solution tank for continuous testing up to 5 days. System automatic and manual shaking of solution tank. Automatic supplying of DEI water facilitating solution preparation.</p> |  | <ul style="list-style-type: none"> - Totally open for easy cleaning. - Indication of maximum and minimum level. - Filter system for solution. | |
| <p>External Dimensions W x D x H (mm) – Closed Lid</p> | <p>2,480 x 1,250 x 1,645</p> | <p>3,400 x 1,600 x 1,800</p> | <p>3,800 x 1,800 x 2,100</p> |
| <p>Internal Dimensions W x D x H (mm)</p> | <p>1,300 x 780 x 900</p> | <p>2,080 x 1,080 x 1,000</p> | <p>2,000 x 1,500 x 950</p> |
| <p>Approximate crate dimensions W x D x H (mm)</p> | <p>2,600 x 1,300 x 1,850</p> | <p>3,602 x 1,700 x 2,196</p> | <p>–</p> |
| <p>Approximate equipment weight (kg)</p> | <p>262</p> | <p>630</p> | <p>720</p> |
| <p>Approximate shipping weight – crated (kg)</p> | <p>500</p> | <p>1,100</p> | <p>–</p> |



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| Internal Volume (Liters) | 1,300 | 3,000 | 5,000 |
| Recommendation of temperature for installation site | 17°C to 25°C | | |
| Recommendation of relative humidity for installation site | Max. 85% with no condensation | | |
| Electrical Supply | 208 ~ 220 V - 50-60Hz – 3 phase (other consult factory) | | |
| FLA (230V) | 45 | 56 | 63 |
| DEI Water Requeriment | ASTM D 1193 Type IV | | |
| DEI water pressure | 0.5 to 1.0 kgf/cm ² | | |
| DEI water inlet | ½ NPT" | | |
| Compressed Air | Free of oil and water – flow rate and constant pressure – 6 Kgf/cm ² - 3 ~ 4 m ³ /hour | | |
| Chamber Exhaustion | PVC 5" tube, without siphon | | |
| Laboratory Exhaustion | Fume Hood + Motor if necessary | | |
| Service Area | Minimum clearance of 23.6" (60 cm) for an easier cleaning, assembling and maintenance | | |
| <p>Each piece of equipment was carefully designed to meet a specific standard. We highly recommend that you don't use the same chamber for different solutions, e.g. don't use a Salt Spray chamber for CASS; Kesternich (SO₂) test or CASS chamber for humidity test due the chemical contamination that may distort the results. See item 4.6 of Standard ISO 9227.</p> | | | |
| <p>1 (One) Year Parts Warranty against manufacturing defects from date of delivery at customer's site. This assumes equipment is used under normal operating conditions in accordance to the instruction manual. This warranty does not apply to glassware (lamps). In case of non-warranty issues during warranty period, actual expenses shall apply.</p> | | | |
| <p>Note 1: All our equipment is delivered with Installation, Maintenance and User Manuals. We believe this material is enough for the correct use of the equipment. We are available for further questions and clarifications. If necessary, we provide the service of assembling and staff training at client's site (Cost for this service available upon request).</p> | | | |
| <p>Note 2: Appearance and specifications of equipment are subject to <i>change without prior notice</i>.</p> | | | |

OPTIONALS

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| <ul style="list-style-type: none"> • Specimen rack grille type, capacity 120 kg with distributed load. * Optional – EQOP 0119 – 1300 * Optional – EQOP 0120 – 3000 / 5000 |  |
| <ul style="list-style-type: none"> • Lateral viewing window, avoids dripping onto the specimen. * Optional – EQOP 0007 – Not compatible with 5000 |  |
| <ul style="list-style-type: none"> • Fiberglass Fume Hood (hood only), Smooth finish on both sides, for easy cleaning, exhaust capacity 1940 CFM. * Optional – EQOP 0011 |  |
| <ul style="list-style-type: none"> • Fiberglass axial fan assembly, capacity 1940 CFM. Net weight: 88 lbs. (40 kg). * Optional – EQOP 0012 |  |
| <ul style="list-style-type: none"> • DEI Water assembly includes: activated carbon water filter, DI column, LED water quality indicator. * Optional – EQOP 0013 |  |
| <ul style="list-style-type: none"> • Spare DI water column. * Optional – EQOP 0014 |  |
| <ul style="list-style-type: none"> • Spare activated carbon water filter. * Optional – EQOP 0015 |  |
| <ul style="list-style-type: none"> • Density meter to measure concentration of saline solution in accordance to ASTM B 117. * Optional – EQOP 0018 |  |
| <ul style="list-style-type: none"> • Cable port $\varnothing = 2''$ * Optional – EQOP 0034 |  |
| <ul style="list-style-type: none"> • Data Acquisition Software: <ul style="list-style-type: none"> - Via USB – PC * Optional – EQOP 0037 |  |
| <ul style="list-style-type: none"> • SO₂ Injection * Optional – EQOP 0045 | <p style="text-align: center;">ASTM G 85 Appendix. 4</p> |



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| <ul style="list-style-type: none"> • Prohesion * Optional – EQOP 0131 | ASTM G 85 Appendix 5 |
| <ul style="list-style-type: none"> • Saturated Humidity by Atomization. * Optional – EQOP 0098 | ASTM D 1735 |
| <ul style="list-style-type: none"> • SWAAT TEST * Optional – EQOP 0044 | ASTM G 85 Appendix 3 |
| <ul style="list-style-type: none"> • Device for wall washing Scania STD 4319 and Renault ECC1 * Option – EQOP 0132 | Hot DI water ** |
| <ul style="list-style-type: none"> • Spray Nozzles to accord with standard RENAULT – ECC1 Incompatible with nozzles: ISO 9227 – ASTM B 117 – ABNT NBR 8094. * Optional – EQOP 0133 | Atomization system with increasing fog collection to satisfy ECC1 ** |
| Further options shall be considered upon request | |

| Summary of reference standards in accelerated tests | | | | | |
|---|---------------|-------------------------------|-------------------------------|-----------------|--------------------------|
| Salt spray | CASS/ASS | Kesternich (SO ₂) | C.C.T (Cyclic Corrosion Test) | Humidity by fog | Humidity by condensation |
| ASTM B117 | ISO 9227 ASS | ASTM G 87 | ASTM G 85 | GM 4465P | ASTM D 2247 |
| ISO 9227 | ASTM B 368 | DIN 50018 | PV 1210 – VW | ASTMD 1735 | DIN 50017 |
| JIS Z 2371 | ISO 9227 CASS | ISO 6988-2 | GM 9540 P | | ISO 6270 |
| BSI 7479 | ASTM G 85 * | | VDA 621-415 | | |
| ASTM D 5894 | BS 7479 AASS | | Prohesion | | |
| ANFOR A05 101 | | | CCT 1 – HONDA – NISSAN | | |
| BMW AA 1029 | | | CCT 4 – HONDA- NISSAN | | |
| BMW AA -P184 | | | CCT – HONDA | | |
| BMW AA -0324 | | | GMW 14 872 | | |
| GM 4298P | | | FORD CETP: 00.00-L-467 | | |
| IEC 60068-2-11 | | | VOLVO STD 423,0014 | | |
| ASTM G 85 * | | | VOLVO STD 1027, 14 | | |
| MIL STD 202 G | | | ISO 11997-1 | | |
| MIL STD 810 G | | | SCANIA STD 4233 | | |
| MIL STD 1344, 1001.1 | | | SCANIA STD 4314 | | |
| BS 7479 | | | FORD BI 123-3 | | |
| SWAAT TEST | | | VDA 233-102 A,B,C | | |

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