



Q-FOG

Q-FOG Cyclic Corrosion Testers

www.q-lab.com

A More Realistic Salt Spray



Q-FOG

Cyclic Corrosion Testers

- *Improve correlation with outdoor results*
- *Perform sophisticated cyclic corrosion tests*
- *Perform Prohesion® or traditional salt spray exposures*
- *Conform to ISO, ASTM, BS, DIN, automotive and industrial specifications*

Cyclic Corrosion Tests

Cyclic corrosion testing provides the best possible laboratory simulation of natural corrosion. Current research indicates that test results are similar to outdoors in resulting structure, morphology, and relative corrosion rates. Prior to cyclic testing, conventional salt spray (a continuous salt spray at 35°C) was the standard way to simulate corrosion in a lab. Because conventional salt spray methods failed to mimic

the natural wet/dry cycles of the outdoors, test results frequently provided poor correlation to outdoors.

In a Q-FOG® Cyclic Corrosion Tester, specimens are exposed to a series of different environments in a repetitive cycle that mimics the outdoors. Simple cycles, such as Prohesion, may consist of cycling between salt fog and dry conditions.

More sophisticated automotive methods may call for multi-step cycles that incorporate humidity or condensation, along with salt spray and dry-off.

Within one Q-FOG chamber, it is possible to cycle through all of the most significant corrosion environments. Even the most complex test cycles can easily be programmed with the custom designed Q-FOG controller.

Q-FOG chambers are available in two types. Model SSP performs traditional salt spray and Prohesion tests. Model CCT performs salt spray, Prohesion, and most cyclic automotive tests. See the Q-FOG Specifications Bulletin (LF-8110) for a detailed list of test methods. Q-FOG chambers are available in two sizes to fulfill a range of testing requirements.

Features

Model Number:	SSP 600	SSP 1100	CCT 600	CCT 1100
Chamber Volume Liters	640	1103	640	1103
Sample Capacity: 4" x 12" Panels (100 x 300mm) 3" x 6" Panels (75 x 150mm)	128 160	200 240	128 160	200 240
Sample Space: Length Width Height (not including lid) Height (including lid)	42.9" (1090mm) 25.8" (655mm) 18.0" (457mm) 28.5" (655mm)	57.4" (1458mm) 32.1" (815mm) 18.0" (457mm) 30.5" (775mm)	42.9" (1090mm) 25.8" (655mm) 18.0" (457mm) 28.5" (655mm)	57.4" (1458mm) 32.1" (815mm) 18.0" (457mm) 30.5" (775mm)
Salt Fog Ambient to 60° C	•	•	•	•
Dry-Off (forced air) Ambient to 70° C	•	•	•	•
Dwell (no action) Ambient to 60° C	•	•	•	•
100% Humidity 45° C to 60° C			•	•
Visual Monitoring via Window & Light			•	•



Q-FOG chambers are available in two sizes to fulfill a wide range of testing requirements.

Model SSP for Prohesion or Conventional Salt Spray

Numerous accelerated corrosion tests may be performed in Q-FOG model SSP, including Prohesion, ASTM B117, ASTM G85, BS 3900 F4 & F9, DIN 50.021 and ISO 9227.

Prohesion. This test uses fast cycling, rapid temperature changes, a low humidity dry-off cycle and a different corrosive solution to provide a more realistic test. Many researchers have found this test useful for industrial maintenance coatings.

Conventional Salt Spray. Continuous salt spray exposures are widely specified for testing components and coatings for corrosion resistance. Applications include plated and painted finishes; aerospace and military components; electrical and electronic systems.

Most of these tests are performed to particular specifications such as ASTM B117 (Salt Spray), and BS 3900 F4. These tests are widely used for relative corrosion testing. They are typically run at an elevated temperature and do not incorporate a dry-off cycle. They require heated, humidified air for the spray.

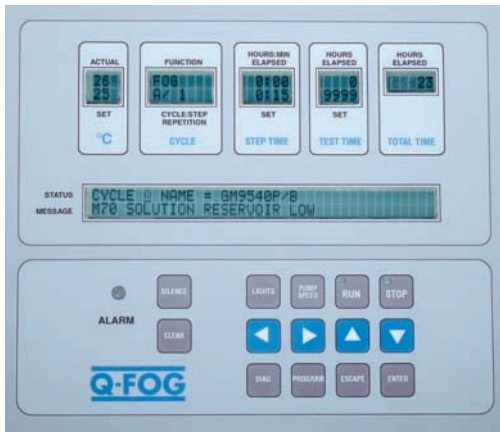
Model CCT for Corrosion Research and Cyclic Automotive Tests

The Q-FOG model CCT has all the advantages of the model SSP, but adds the flexibility of including 100% humidity, another critical exposure condition, to your cyclic corrosion test.

Cyclic Automotive Tests. Today's automotive corrosion test methods typically call for exposing specimens to a repetitive cycle of salt spray, high humidity, low humidity dry-off, and ambient conditions. These test methods were originally developed as labor intensive manual procedures. The multi-functional Q-FOG Model CCT is designed to perform these cyclic tests automatically in a single chamber. CCT advantages include:

- Eliminates manual moving of test specimens from one chamber to another
- Eliminates laborious spraying of test specimens
- Eliminates variability in results from excessive specimen handling

CCT units come equipped with a viewing window in the side of the lid and an internal light to allow easy monitoring of the test conditions.



Simple, straight forward operation; test status and diagnostics continuously displayed.

Q-FOG Chamber Design Benefits

Easy Programming. The Q-FOG model CCT is designed to cycle between four conditions: Fog, Dry-Off, 100% Humidity, and Dwell. The conditions, time and temperature are controlled by a user-friendly, built-in microprocessor. Interactive software allows easy user programming and operation. The operator can quickly create new cycles, or run any of the programmed cycles. A test timer can be set to sound an alarm or terminate a test. The controller continuously displays test conditions and the progress of the test.

The Q-FOG controller is designed to be both functional and easy to use; it includes complete self-diagnostic error checking.

The controller constantly monitors the status and performance of all systems. It also displays simple warning messages, routine service reminders or performance safety shutdown, as needed.

Every Q-FOG chamber allows the convenient storage of 10 pre-programmed test cycles. Built in comprised data logging ensures a quick and easy connection between your Q-FOG machine and a PC or LAN.

Automatic Data Logging:

- Simple data collection
- Direct transfer of data from the Q-FOG chamber to your computer.
- Automatically records exposure conditions
- Easily connects to your PC or LAN
- Conveniently records in either graphical or digital format

Easy Maintenance. Direct access to control components is possible with a removable side panel. All components in a Q-FOG tester are positioned to allow easy access for inspection and maintenance.



Hanging rods allow mounting of parts and odd shaped test specimens.

Easy Sample Mounting. The Q-FOG chamber has a low belt line and an easy opening lid for easy sample mounting.

Self-Diagnostics. The Q-FOG controller includes complete self-diagnostics, including warning messages, routine service reminders and safety shut down.



Removable side panel for easy access to bubble tower and other components.

Precise Control of Fog Dispersion. The Q-FOG tester has superior fog dispersion compared to conventional systems which cannot vary volume and distance independently. A variable speed peristaltic pump controls the amount of corrosive solution delivered to the spray atomizer, while the air pressure regulator controls the distance of the "throw."

Reinforced Plastic Construction. In a Q-FOG test chamber, there is nothing to corrode and nothing to contaminate your test specimen. Q-FOG testers are made of solid, fiber-reinforced plastic. The robust, heavy wall chamber and lid have low thermal conductivity for efficient, precise temperature control. The heat resistant resins allow testing at higher temperatures than competitive cabinets.

Internal Solution Reservoir. Space utilization is maximized and maintenance is minimized with the Q-FOG machine's internal solution reservoir. The 120 liter reservoir has enough capacity for running most tests for 7 days or more. The reservoir has an integral salt filter and a built-in alarm to alert the operator when the solution is low.

Fast Cycling. Q-FOG testers can change temperatures exceptionally fast because of their unique internal chamber heater and their high volume cooling/dry-off blower. An additional air heater allows very low humidity dry-off exposures. Conventional chambers with water jackets cannot cycle rapidly because of the thermal mass of the water, nor can they produce low humidity.



Components are easy to remove for periodic maintenance.



Q-FOG Bubble Tower

Safety. All electrical circuits have both conventional circuit breakers and a Ground Fault Interrupter (Residual Current Device). All heaters have both electronic and mechanical over-temperature protection. The cabinet is made of a fire-resistant resin.

Remarkably Low Price. The Q-FOG machine offers state of the art corrosion testing technology, reliability, ease of operation and easy maintenance – all at a remarkably affordable price.



During Fog Function, the spray air pressure controls the distance of the "throw" of the fog.

Flow meter shows the precise solution flow rate as regulated by the pump. This allows precise control of the amount of fog produced.



Cyclic Corrosion Testers:

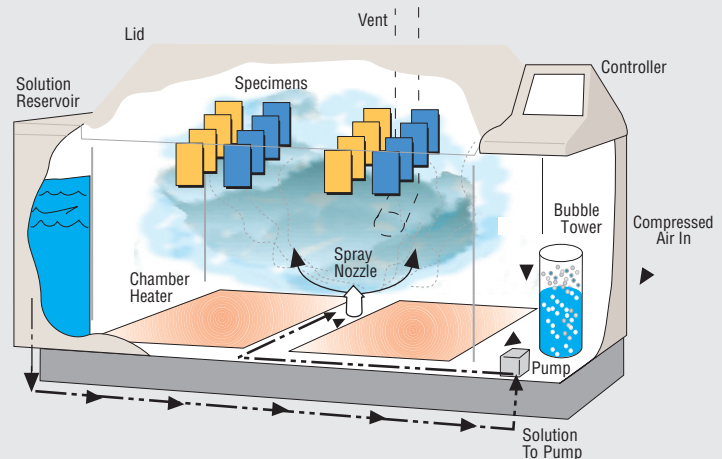
How They Work

Cyclic corrosion tests expose specimens to a series of different environments in a repetitive cycle. Simple tests may consist of cycling between two conditions: fog and dry. More sophisticated procedures, such as automotive, call for multi-step cycles incorporating humidity or condensation, along with salt fog and dry-off. With the Q-FOG Cyclic Corrosion Tester, you can cycle through all these environments in one chamber. And, with the custom controller, you can easily program complex test cycles or run any of the pre-programmed procedures.

Fog Function

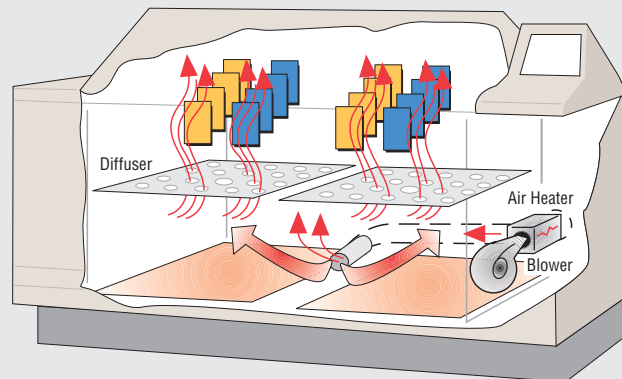
During the Fog Function, the corrosion tester typically operates as a conventional salt spray.

- Corrosive solution from the internal reservoir is pumped to the nozzle.
- Compressed air is humidified by passing through the bubble tower on its way to the nozzle (except for Prohesion tests).
- Nozzle atomizes solution air into a corrosive fog.
- Chamber heaters maintain the programmed chamber temperature.



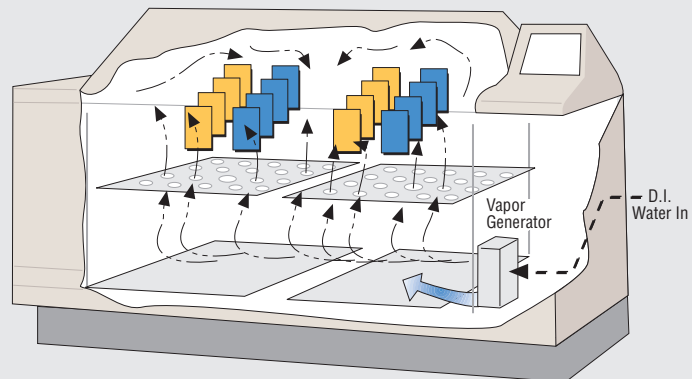
Dry-off Function

During the Dry-off Function, a purge blower forces room air over an air heater and into the chamber. This creates a low humidity condition inside the chamber. The chamber temperature is controlled by the chamber heaters and the air heater.



Humidity Function

During the Humidity Function, the chamber is maintained at 100% relative humidity by forcing hot water vapor into the chamber. The vapor generator heater maintains the programmed chamber temperature. The Humidity Function is available on model CCT only.





Cyclic Corrosion Testers

UV Exposure Improves Laboratory Corrosion Correlation

While both the QUV and the Q-FOG testers have outstanding advantages on their own, when used together they are revolutionizing corrosion testing. Ultraviolet light stability of a coating can be a major factor in its corrosion resistance. Degradation and corrosion that occurs in natural environments can be better simulated by incorporating UV/weathering factors into a wet/dry cyclic corrosion test.

Research indicates that a corrosion cycle alternating between 1 week (168 hours) in a QUV Accelerated Weathering Tester and 200 hours in a cyclic corrosion tester can give more realistic results than either CCT alone, or conventional salt spray.

The guidelines for combination Q-FOG/QUV machine testing can be found in ASTM D5894, "Standard Practice for Cyclic Salt Fog/UV Exposure of Painted Metals."



The QUV/se tester features SOLAR EYE® irradiance control for precise maintenance of UV light.

Improve correlation to outdoor results by using the Q-FOG and QUV testers as specified in ASTM D5894.



Q-FOG Benefits

- Improve correlation with outdoor results
- Perform sophisticated cyclic corrosion tests
- Perform Prohesion or traditional salt spray exposures
- Conform to ISO, ASTM, BS, DIN, automotive and industrial specifications
- Easy sample mounting
- Greater programming flexibility
- Rapid temperature cycling
- All-plastic construction for maximum corrosion resistance

Q-Lab Corporation

www.q-lab.com



Q-Lab Headquarters
Westlake, OH USA
Tel: +1-440-835-8700
info@q-lab.com

Q-Lab Florida
Homestead, FL USA
Tel: +1-305-245-5600
q-lab@q-lab.com

Q-Lab Europe, Ltd.
Bolton, England
Tel: +44-1204-861616
info.eu@q-lab.com

Q-Lab Arizona
Buckeye, AZ USA
Tel: +1-623-386-5140
q-lab@q-lab.com

Q-Lab Deutschland, GmbH
Saarbrücken, Germany
Tel: +49-681-857470
vertrieb@q-lab.com

Q-Lab China 中国代表处
Shanghai, China 中国上海
电话: +86-21-5879-7970
info.cn@q-lab.com

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