TECHNICAL MANUAL SUPPLEMENT LX-5084-TM

Q-SUN

Xenon Test Chamber with Dual Spray

For Serial Numbers:

XX-XXXX-46 through 76-X3HDS

XX-XXXX-46 through 76-X3HDSC

XX-XXXX-46 through 76-X3HDSBS

XX-XXXX-46 through 76-X3HDSBSC

Revised: 26 Mar 2019

Q-LAB

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Section

Note: This manual is not intended to provide complete information about the Q-SUN Xe-3 Xenon Test Chamber. This manual is a supplement covering only the Dual Spray system. It is to be used in combination with the primary tester document: *LX-5080-TM, Q-SUN Xe-3 Technical Manual*.

1. Safety Information

1.1 Electrical Shock Hazards

- Read and follow all safety instructions in the primary tester document: *LX-5080-TM, Q-SUN Xe-3 Technical Manual*.
- Because the Dual Spray system is electrically operated, care should always be exercised when working on or around the equipment, particularly if the floor is wet. The compartment below the reservoir houses the system pump and other components, and should only be opened by trained service technicians.

1.2 Other Hazards

- The fluid being introduced into the Q-SUN by the Dual Spray system is determined by the customer's application and is beyond the scope of this manual.
- However, fluids which may be corrosive, acidic and/or toxic are sometimes used.
- The utmost care should be taken when mixing, refilling and disposing of these fluids, and the Dual Spray reservoir, and all containers used in conjunction with the Q-SUN should be properly labeled.
- Some fluids which may be used in the reservoir of the Dual Spray system can become contaminated with fungus, bacteria or other organisms.
- Depending on the fluid used, frequent checks and cleanings may be required, as some of these can cause serious illnesses.
- Consideration should be given to mixing small batches of liquid frequently rather than large amounts that could become contaminated before it is used.

2. General Description

- A Q-SUN Xe-3 equipped with the Dual Spray system can spray a second liquid onto the top (front) of the specimens during an AUXILIARY step, in addition to the standard top (front) water spray.
- This allows considerable flexibility in the development of tests for materials which are subjected to multiple liquids in their end use.
- Just two examples are:
  - Automotive paints and exterior plastics, to determine the combined effects of acid and "neutral" rain, or acid rain and dew.
  - Fingernail polish, with soapy water and pure water.

3. Set Up

3.1 Uncrating

- Cut the metal straps that hold the fiberboard carton to the skid. Lift off the carton.
- Cut the metal straps that hold the Dual Spray cart to the skid.
- Remove the four side panels and hardware from inside the reservoir.
- At least two people are needed to remove the Dual Spray system from the skid.
- DO NOT attempt to lift the reservoir alone. Instead, while holding the aluminum frame, lift the entire cart and reservoir assembly straight up so that the cart wheels clear the skid. Then move the assembly off the skid onto the floor.
- Refer to the *LX-5080-TM, Q-SUN Xe-3 Technical Manual* for Xe-3 tester uncrating instructions.

3.2 Assembly

1. Carefully unwrap the aluminum panels.
2. The two longer ones mount on the longer sides of the cart; install them by hooking the long flange under the bottom edge of the lower shelf on the cart, then pulling up until the short flange hooks over the top edge of the upper shelf
3. The short panel with the cut-outs mounts to the end with the electrical plug and fluid connection.
4. Install the short panel like the longer panels.
5. Install the remaining panel in the same way.
6. Make sure the Q-SUN is in **STOP** mode and the power is turned off.
7. The electrical cord plugs into the cart and the rear of the Q-SUN, into the outlet labeled “Dual Spray”.
8. If this is being fitted to an existing Q-SUN tester, see Installation Instructions *X-10050-L, Q-SUN Dual Spray Retrofit*.
9. Plug the tubing into the quick-disconnect fitting of the cart, and the other end into the similar fitting on the lower left rear of the Q-SUN, labeled “Dual Spray System Fluid Inlet”.
10. If this is being fitted to an existing Q-SUN tester, see Installation Instructions *X-10050-L, Q-SUN Dual Spray Retrofit*.

3.3 Utilities

There are no separate utilities needed by the Dual Spray system, since it draws its power from the Q-SUN tester. See *LX-5080-TM, Q-SUN Xe-3 Technical Manual* for details on the Q-SUN Xe-3 utilities.

3.4 Electrical Connections

- Be sure to supply your Q-SUN and Dual Spray Unit with voltage within 10% of its voltage rating.
- The voltage and current rating are marked on the serial number plate affixed to the rear of the Q-SUN tester.
- Each Dual Spray unit comes with a 1.8m (6ft) power cord that plugs into the outlet labeled “Dual Spray” on the rear of the Q-SUN tester (see Figure 3.4).
- **NOTE:** The location of the Dual Spray cart or of the Q-SUN tester must not block access to the receptacle (in case of emergency).

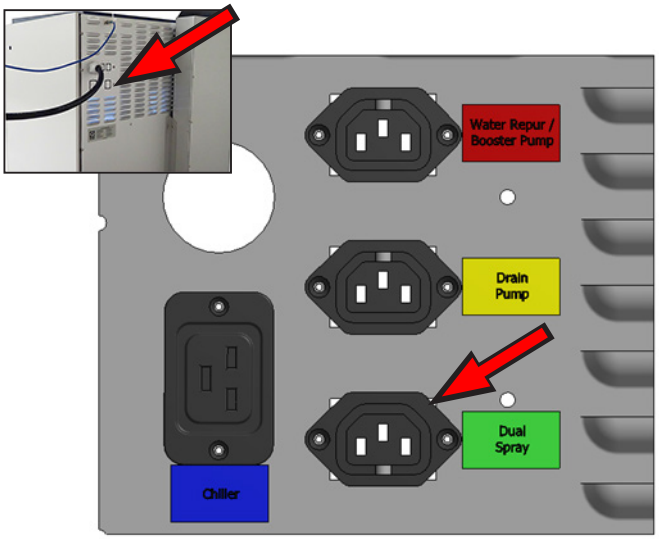

Figure 3.4: Power Outlet for Dual Spray on Rear of Xe-3 Tester

IMPORTANT: The Q-SUN and Dual Spray unit must be properly grounded. Be sure to supply the Q-SUN with a known-good earth ground to prevent any possible shocks.

4. Dual Spray System - How It Works

- The Dual Spray system includes:
  - Fluid reservoir
  - Pump
  - Filter
  - Two (2) additional spray nozzles
  - Connecting hardware and tubing
- Whenever the Q-SUN test program includes an AUXILIARY step, fluid is pumped from the reservoir through the filter to the nozzles.
- The flow rate is approximately 1 liter per minute, but is somewhat influenced by the viscosity and density of the liquid.
- The Dual Spray system can pump a range of liquids, but they must be compatible with the materials used in the construction of the Dual Spray system:
  - Polypropylene
  - Stainless steel, type 316
  - Viton seals
- Additionally, the liquid must be compatible with the materials used in the construction of the Q-SUN tester:
  - Anodized aluminum
  - Stainless steel, type 316.
  - Silicone seals
  - Polypropylene and PVC drain tubing

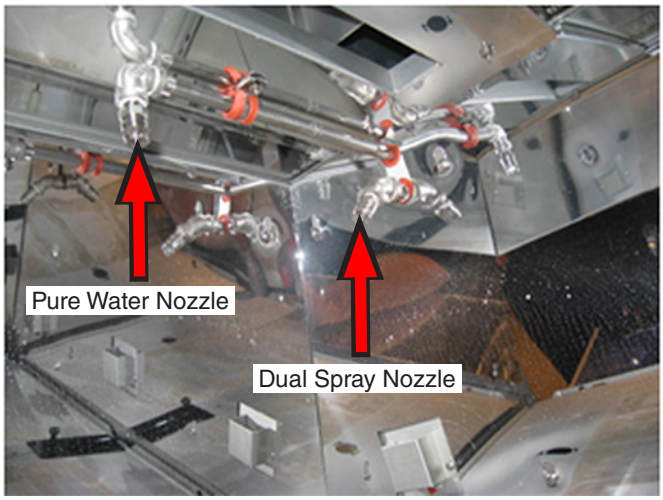

Figure 4: Dual Spray Nozzle - View Inside Test Chamber, Looking Upward Toward Top

	**IMPORTANT:** Attempting to pump fluids incompatible with these materials could severely damage the equipment, voiding the warranty, and could cause bodily harm.

5. Running a Test

- The Dual Spray system operates only during AUXILIARY steps.
- If the spray is desired for a specific test:
  1. Add the desired liquid to the reservoir (the cart may be rolled to another area easily by first disconnecting the power cord and the plumbing via the quick-connect fitting).
  2. Verify the Dual Spray cart's power cord is plugged into both the cart and the Q-SUN outlet marked "Dual Spray".
  3. Verify the tubing connecting the Dual Spray cart to the Q-SUN tester is fully inserted at both ends.
  4. Program an AUXILIARY step at the desired sequence, for the desired length of time.
- During the AUXILIARY step, the pump on the Dual Spray cart will operate, spraying the liquid onto the top (front) of the specimens.
- All other functions of the machine will cease (there will be no light, no temperature or humidity control, etc.).
- A horizontal specimen tray insert (part number X-10080-X) has been provided so the liquid can pool on the specimens without running off, if desired (Figure 5.a).
- The open mesh sample tray assembly (part number X-7035-X) must be placed under the horizontal specimen tray insert (Figure 5.b).

Figure 5.a: Horizontal Specimen Tray Insert - Install on Top of Open Mesh Tray so Liquid Will Pool and Not Run Off the Specimens

Figure 5.b: Open Mesh Sample Tray - Install Under Horizontal Specimen Tray Insert

NOTE: Use a leveling instrument to verify that the specimen tray is actually level. If it is not level, the entire Xe-3 can be raised / lowered to the desired height by adjusting the four leveling pads that support the machine.

- The rate of drying can have an effect on some materials.
- To speed drying, choose a low humidity in the following step or to slow the drying, choose a high humidity.
- Similarly, low temperature set-points will slow drying and high ones will speed drying.
- Some experimentation may be needed to establish set-points that are appropriate for the materials being tested and also within the functional limits of the Q-SUN tester. See *LX-5080-TM, Q-SUN Xe-3 Technical Manual, Section 10,* for more information on Q-SUN Xe-3 operational ranges.

IMPORTANT: When running the ASTM D7356 acid etch test method:

- As described in the main technical manual, *LX-5080-TM, Q-SUN Xe-3 Technical Manual, Section 6*, the normal spray (not the dual spray) is pulsed 10 seconds on 50 seconds off to conserve water.
- When running an acid etch test method the spray during the one minute DARK+SPRAY steps should be continuous (not pulsed).
- To change from pulsed to continuous press and hold the PROGRAM and ? buttons at the same.
- Scroll to X54 and change the spray off time from 50 to 0.
- For testers running software version 2.018 and higher use the P10 program to change the spray off time from 50 to 0.

6. Maintenance

- Only those items particular to the Dual Spray system are presented here.
- See *LX-5080-TM, Q-SUN Xe-3 Technical Manual, Section 14*, for additional Q-SUN Xe-3 maintenance instructions.

6.1 Daily

Every day:

- Verify that there is enough liquid in the reservoir to supply the test being performed (as there are no low flow or low fluid level alarms to alert the operator of problems).

6.2 Weekly

Every week:

- Inspect the liquid to insure that bacteria, fungus or other biohazards are not growing in the reservoir.
- If there is any visible contamination in the liquid:
  - Open the reservoir drain valve (Item 8 on the *Xe-3-HDS Supplemental Plumbing Diagram*) to drain all liquid.
  - Properly dispose of the liquid.
  - Clean the reservoir and piping with an appropriate agent.
  - The dual spray system filter element (part number V-2288) may also need to be changed.
  - Refill the reservoir.
  - Consider mixing only enough liquid for a short time, to reduce the opportunity for bacteria growth.

6.3 Monthly

Every month:

- Inspect the dual spray system filter element for evidence of fouling. Replace as necessary.
- Check that the flow through the lower (rear) nozzles is adequate by verifying the specimens are covered immediately after an AUXILIARY step.

7. Replacement Parts List

- When ordering parts, specify the Q-SUN Xe-3 model, serial number and part number (See **Section 8: Support** for Q-Lab contact information.)
- Refer to *LX-5080-TM, Q-SUN Xe-3 Technical Manual, Section 16,* for more part number information.

Part Number	Description	Where Pictured
U-6431	Fuse, 3.15A, 5mm x 20mm	No Picture
X-10055	Ball Valve, ½ FNPT (at pump inlet)	Fig. 7.a
X-10270	Drain Valve, ¼ FNPT-MNPT	Fig. 7.a
V-2288	Filter Element	Fig. 7.a
X-10087-X	Pump Assembly	Fig. 7.a
X-10061	Quick Disconnect Body (at filter)	Fig. 7.a
X-10066	Quick Disconnect Body (at rear of Q-SUN)	Fig. 7.b
X-10062	Quick Disconnect Insert (on tubing)	Fig. 7.b
X-10053-X	Reservoir Dual Spray System	Fig. 7.c
X-10304-K	Spray Nozzles (Set of 2)	Fig. 4
X-10080-X	Horizontal Specimen Tray Insert	Fig. 5.a
X-7035-X	Open Mesh Sample Tray	Fig.5.b

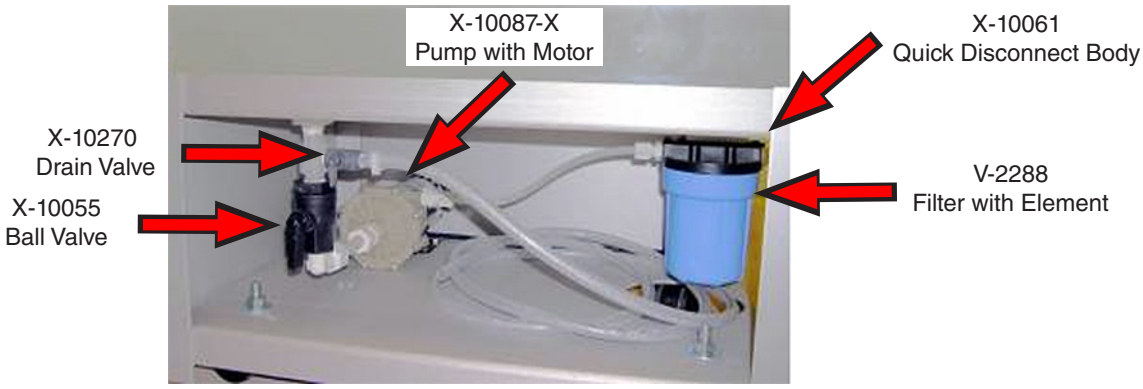

Figure 7.a: View of Cart Under Reservoir

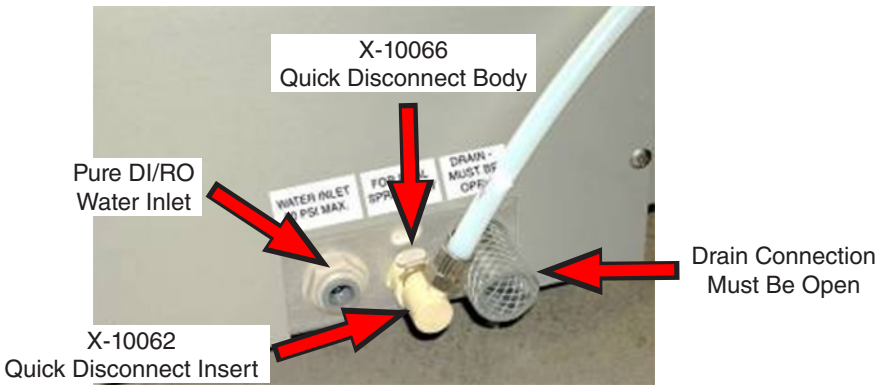

Figure 7.b: View of Q-SUN Xe-3 Left Rear Corner

Figure 7.c: Reservoir Dual Spray System

8. Repair and Tester Support

Repair and Tester Support is available over the telephone Monday through Friday from 8:30 AM to 5 PM. Please contact the nearest international branch office by phone or email for technical support. You can also visit our website at www.q-lab.com to register your tester to access additional useful troubleshooting guides, operating manuals, and technical information.

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9. Xe-3-HDS Supplemental Wiring Diagram X-10281

Insert: Xe-3-HDS Supplemental Wiring Diagram (X-10281)

Section 9: Xe-3-HDS Supplemental Wiring Diagram (X-10281)

10. Xe-3-HDS Supplemental Plumbing Diagram X-10282

Insert: Xe-3-HDS Supplemental Plumbing Diagram (X-10282)