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Nano Particle Technology

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CleanRoom Fogger™, Model CRF-2



- Compliant to USP 797 Pharmaceutical & Semiconductor Clean Room Guidelines
 - Polypropylene Enclosure: No Fingerprints as with Stainless Steel, Easy to Clean
 - Create Pure Fog produced with DI Water or Pharmaceutical WFI Water
 - Video the Airflow Patterns, pressure differences, Air Migration and Turbulence
 - Use in Pharmaceutical Barrier Isolators, Glove Boxes & ISO 3-9 suites
 - Startup of the Fogger is < 1 minute, Refill at 60 Minutes and Restart As Needed
 - ≈9 CFM of Fog for 60 Minutes & 7-8 feet Airflow Visibility with On/Off Fog Control
 - Smoke Generator provides Fill Level Indicator, Water Drain & Top Hold Handle
 - * Rolling Carry / Storage Case with Extending Handle
 - * Fog Curtain Wand to reduce output fog pressure & provide a wide visual fog wall
 - * 5M, Power On/Off, Cable & Switch for Remote Control Behind Walls
 - Corrugated, White Fog Hose, 30" ~ 72" extended, 2.35" ID, 2.6" OD
 - Low Water Sensors for Transducer Protection
 - Operating Instructions on Side Label, No Paperwork in Cleanroom
- * Optional Accessory

The **Clean Room Fogger (CRF-2)**, often referred to as a smoke generator, consumes 3.3 Liters of DI Water or WFI water (a pharmaceutical water called water for injection) during a typical 60 minute fog cycle. Water is converted to fog at a high rate of about 55 ml/minute, producing ≈9 CFM of fog for 60 minutes. The CRF-2 fogger is designed for low cost, and ease of use to visualize airflow, patterns and turbulence with on/off fog

control. It is used in Pharmaceutical ISO 1-9 suites, in barrier isolators, Semiconductor Clean Rooms and around equipment. Fog visibility distance is typically 7-8 feet, based on airflow velocity and humidity in the clean room. The fog output is about 68 degree F, providing a visible vapor composed of microscopic DI water droplets (fog) at a nominal 8µm droplet size. The fog is as clean as the DI Water or WFI Water used. 16 Meg Ohm, DI water is the typical water used to produce ultrapure fog or you can use Distilled WFI Pharma water. The fogger cost is kept low for budget requirements. The CRF-2 fogger uses ultrasonic transducers to convert ≈ 55ml/minute of pure water directly to fog vapor, one of the two highest fog densities available. 'Low Water' sensors protect the transducers during operation. Also provided is a visible fill level indicator, so the operator fills water to the proper level during fog operation. The CRF fogger enclosure is produced with a polypropylene material to provide quick, easy wipe down of the fogger after use, and prevents fingerprints, as encountered with SS DI Water foggers, which produce less fog volume. A Hold Handle is provided on top to provide easy carry of the fogger.

A standard power supply is provided at 110VAC or 220VAC is available. A flexible, corrugated, white fog hose can be oriented in any direction for fog directional output as a fog stream. The Optional **Fog Curtain Wand** can be plugged into the Fog hose to create a fog wall or fog curtain while reducing output pressure and fog velocity. The Optional **5 Meter Remote On/Off Power Cable** is used to place the fogger in a closed clean room or barrier isolator and operate the fogger remotely from the other side of the wall. The **Rolling Carry/Storage Case** is useful for parts storage as well as transport. For operator convenience the Operating Instructions, Application Notes and Specs are labeled on the side of the fogger enclosure for paperless operation. [Video Link of the Fogger](#) for **Semiconductor or Pharmaceutical** use.



Clean Room Fogger with Optional **5M Remote Power On/Off, Cable/Switch** 110/220VAC, Bench Top/Cart Operation



Optional **Fog Curtain Wand** to reduce pressure out & create wide Fog Curtain to Visualize Airflow



Optional **Rolling Carry/Storage Case** to protect fogger parts during storage and transport.



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Instruction Label Attached to the Side of Fogger Enclosure

CleanRoom Fogger™, Model CRF-2 Operation

- 1) Place Cleanroom Fogger on a flat, level bench, table or rolling cart.
- 2) Fill about 3.5 L of DIH₂O Water or WFI Water to the **FILL LEVEL** on the left hand panel of this fogger.
- 3) Connect the Power Supply to wall outlet 115VAC, or optional 220VAC.
- 4) Connect the Power Supply to the fogger POWER IN plug.
- 5) Attach the white Fogger Hose to the fog outlet on top of fogger, remove and store black end cap.
- 6) Turn power on for steady fog output of about 60 minutes constant use to visualize airflow, patterns, turbulence.
- 7) Plug **Optional Fog Curtain Wand** into white hose to convert the fog stream to a wide fog wall pattern.
When using the Fog Curtain Wand, the fog velocity decreases, while maintaining the same fog volume output.
- 8) Direct output of Fog Hose in the direction of airflow for best visualization.
- 9) Turn the Fog Curtain Wand 90 degrees to the airflow, pointing the fog output in the direction of the airflow.
- 10) Use **Optional Remote On/Off Power Cable to fog** "Behind Closed Wall" or inside a Barrier Isolator.
To use the Remote On/Off Power, **turn Main Fogger Power Switch Off, Plug Remote Cable in, turn Remote Power On.**
Turn Remote Power Off and remove fogger from "Behind Closed Wall".
- 11) **Power can be turned ON/OFF as desired** for continuous operation or intermittent operation.
- 12) Low water level is detected automatically to protect / shut off the transducers.
- 13) Refill water to continue fogging. Turn Power Off after fog completion.
- 14) When fog operation completed, drain water by opening the drain plug on front panel, lower right.
NEVER TIP FOGGER OVER TO DRAIN WATER FROM TOP FOG OUTPUT, as this will void warranty.
- 15) Drain Fogger by opening Drain plug, bottom right. Leave fan on to dry water chamber; then turn power off.
- 16) **Be careful not to unscrew the drain plug** as water may leak past a loose drain plug.
- 17) Store parts (fogger, hose and power supply) in **Optional Rolling Carry/Storage Case** or store fogger and parts on shelf.

CleanRoom Fogger™, Model CRF-2 Applications

- A) The CRF-2 produces microscopic droplets (~ nominal 8µm) using DI water or WFI water, converting about 55ml water/minute to fog. **AVOID USING IN IMMEDIATE VICINITY OF ELECTRIC APPLIANCES, WATER SENSITIVE PRODUCTS AND EQUIPMENT.**
- B) To drain the fogger, lift the drain plug lever and remove the plug. Do not tip fogger. Do not drain water through the top fog outlet.
- C) The fan will operate with no water in the reservoir with the power switch in the ON position. This will aid in evaporating water in chamber.
- D) Should the drain plug leak, increase the plug tension by rotating the front latch CW (clockwise) while holding the rear disk. A total of one or two turns should be sufficient.
- E) The fogger is intended to be used on a flat surface, on its rubber feet. **Tipping the fogger with water in the reservoir will cause water to pour over the top of the inner water chamber and may damage the fogger. DO NOT OVERFILL OR TIP FOGGER.**
- F) When draining the fogger, open the drain plug latch at bottom right of front panel; close when all water has been drained. Do not unscrew the drain plug or leave it loose during operation, as water could leak past the drain plug, if left loose during operation.
- G) Water is converted to fog at a rate of 55ml per minute to produce the highest volume of fog of all DI Water Foggers today. The fog will visually describe turbulence, airflow, patterns and airflow balance. As room humidity increases above 40%, visible fog distance increases. As room humidity decreases below 40%, visible fog distance decreases.