



Self-Regenerating Dehumidification System

Model 5478

Operating Manual

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I. Important Safety Information

SAFETY INSTRUCTIONS

The equipment described in this Manual is designed and manufactured to operate within defined design limits. Any misuse may result in electric shock, equipment damage, or fire. To avoid injury and damage, the following rules should be observed for installation, use and maintenance. Read the following safety instructions before operating the instrument.

POWER

POWER CORD: Use only the power cord specified for this equipment and certified for the country of use. If the power (mains) plug is replaced, follow the wiring connections specified for the country of use. When installing or removing the power plug, hold the plug, not the cord. The power cord provided is equipped with a 3-prong grounded plug (a plug with a third grounding pin). This is both a safety feature to avoid electrical shock and a requirement for correct equipment operation. If the outlet to be used does not accommodate the 3-prong plug, either change the outlet or use a grounding adapter.

FUSES: Replace fuses only with those having the required current rating, voltage and specified type such as normal blow, time delay, etc. **DO NOT** use makeshift fuses or short the fuse holder. This could cause a shock or fire hazard or severely damage the instrument.

OPERATION

CAUTION

DO NOT OPERATE WITH COVERS OR PANELS REMOVED. Voltages inside the equipment consist of line (mains) voltages that can be anywhere from 100 to 240VAC.

DO NOT OPERATE WITH SUSPECTED EQUIPMENT FAILURES. If any odor or smoke becomes apparent turn off the equipment and unplug it immediately. Failure to do so may result in electrical shock, fire or permanent damage to the equipment. Contact the factory for further instructions.

DO NOT IMPEDE THE DEVICE FROM VENTING. The dehumidification system is an open loop systems that pumps air into the chamber. If the air output is impeded or the chamber is not allowed to vent, pressure could build up and cause damage.

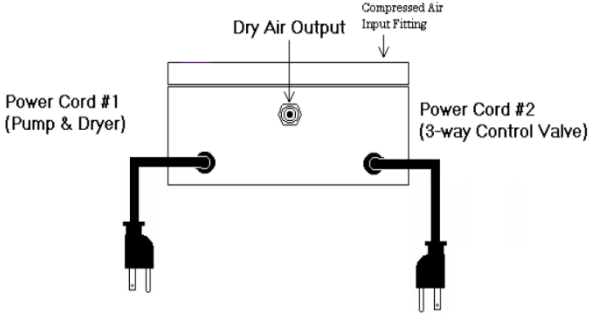

DO NOT USE IN ANY MANNER NOT SPECIFIED OR APPROVED BY THE MANUFACTURER: Unapproved use may result in damage to the equipment or present an electrical shock, injury, or fire hazard.

II. Description of Contents

The Model 5478 Self-Regenerating Dehumidification System is assembled in a 6" W x 9.5" L x 3.5" H (15.25 x 24.1 x 8.5 cm) plastic enclosure with vibration isolating feet. The power switch and indicator light are both located on the front panel of the enclosure.

Internally, the system consists of a dual tower compressed air dryer (molecular sieve) and a 3-way solenoid valve to direct the dried air and a flow regulator to control the output flow. The dryer and valve are installed inside the enclosure.

III. SET-UP GUIDE

 <p>The diagram shows a top-down view of the rectangular enclosure. On the left side, a power cord labeled 'Power Cord #1 (Pump & Dryer)' is plugged into the back. On the right side, a power cord labeled 'Power Cord #2 (3-way Control Valve)' is plugged into the back. In the center of the top edge, there is a circular fitting labeled 'Compressed Air Input Fitting'. In the center of the bottom edge, there is a circular fitting labeled 'Dry Air Output'.</p>	<p>Step 1 – Dry Air Output The dry air output is located on the rear, center of the unit (with 1/4" Quick Connect fitting and a flow regulator).</p>
 <p>The photograph shows the rear panel of the unit. A yellow flow regulator is attached to the 'Air Output' fitting. A red arrow points to the fitting. The text 'MODEL 5478' and 'SELF-REGENERATING DEHUMIDIFICATION SYSTEM' is visible on the top of the unit. The text 'VOLTS' and 'CONTROLLER' is visible on the bottom of the unit.</p>	<p>Step 2 – Attach Dry Air Tubing</p> <p>Use 1/4" OD tubing between this fitting and chamber. Insert the tubing firmly to ensure it is properly sealed and won't come loose.</p>



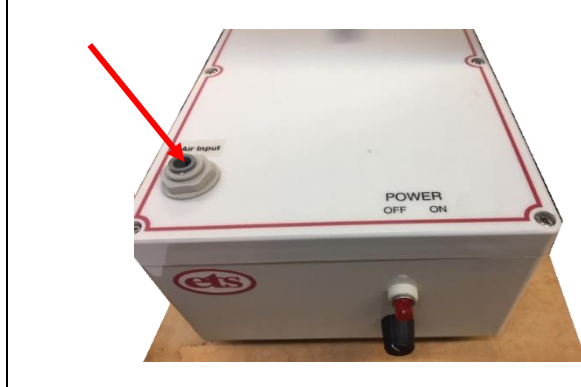
Step 3 – AC supply for circuitry
Power cord #1 is on the left. This power source stays energized at all times, Power is supplied to the air dryer, (100VAC to 240VAC, single phase, 50-60 Hz)



Step 4 – Controlled AC power input
Power cord #2 is on the right. The AC power (100VAC to 240VAC, single phase, 50-60 Hz), is to be connected to a controlled AC circuit (see below). When power is applied, dehumidification takes place.

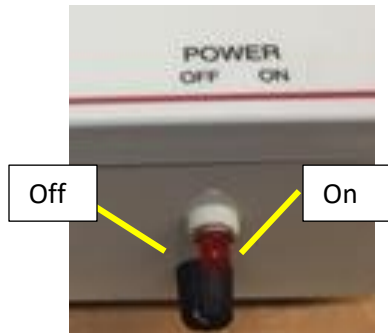


Step 5 – Controlled AC power source
 This AC line cord is normally plugged in to the **RH DECR** outlet of a controller to dry the chamber.



Step 6 – Connect Air Source. Connect a Compressed air source to the air input fitting on the top of the enclosure. Regulate compressed air to 50 to 100 PSI.

IV. Quick Start Guide



Step 1 -- Turn the Power ON. Turn the power switch on the front panel to the right, or “ON” position. The dryer will begin operating immediately to produce dry air. Some sounds will be made by the mechanism – this is normal.

V. Functionality

The Model 5478 Self- Regenerating Dehumidification System is designed to reduce the relative humidity in a chamber to less than 12% RH. When used with an Automatic Humidity Controller, the humidity inside the chamber can be controlled to within $\pm 0.5\%$ RH of the setpoint. Using the ETS Model 5100 or Model 5200 Microprocessor Humidity Controllers, the chamber may be maintained to within $\pm 0.1\%$ RH of the set-point.

Operation of the Model 5478 can be controlled manually or by a controller, such as in a chamber. The system consists of a dual tower compressed air dryer (molecular sieve) and a 3-way solenoid valve to direct the dried air and a flow regulator to control the output flow. The dryer and valve are installed inside the enclosure. Desiccant is automatically renewed while the System is running. The System never has to be shut down to renew or replace desiccant. All moisture-laden air is evacuated through a muffler inside of the enclosure. When energized, the solenoid valve allows dried air to flow to the output. The power light on the front panel indicates when dried air is flowing to the output. The Model 5478 is an open-loop system.

1. The Power switch controls power from both power cords. When the unit is turned on, the valve and dryer (inside the box) begin to operate immediately.
2. In a controlled system, The Dehumidify Controller activates the 3-way valve. A. When "OFF", the dry air being produced is vented inside the box. B. When "ON", the dry air is directed to the air output on the rear of the unit.
3. The indicator light (on the front of the unit) indicates when the 3-way valve is "ON".
4. The 5478 is a Positive Pressure System. The unit will cause a slight positive pressure in an enclosure if not adequately ventilated.
5. The dryer operates using a house air system at 50 to 100 psi. At 100 psi, twice as much dry air is produced, reducing drying time.
6. Air is dried to a -40°F pressure dewpoint with 85° to 90°F saturated inlet.
7. The Model 5478 can be used to dry any inert gas @ pressure.

V. Specifications

1. The average flow rate from the unit is 0.30 cfm (7.3 lpm) at 50 psi, 0.83 cfm at 100 psi.
2. The air will be dried to a minimum dewpoint of -40°F with a saturated input at 90°F.
3. Power – 115 VAC/60 Hz @ 4.30Amps or less, or 230 VAC/50 Hz @ 2.15Amps or less
4. Working Pressure is 50-100 psig. Dryer unit may be used with compressed air systems up to 120 psig.
5. Dual column dryer uses a molecular sieve desiccant. 6. Output fitting is for ¼" OD tubing.

VI. Maintenance/ Troubleshooting

VII. Warranty

Limited Warranties. Seller warrants that all goods manufactured and delivered hereunder shall (a) conform to any samples, drawings, specifications or other written documents provided to Seller by Buyer, or approved by Buyer to Seller and (b) be free from all defects in workmanship and material. Buyer's sole remedy against Seller for breach of either of the specifically mentioned warranty shall be the repair or replacement, at Seller's sole option, of the defective workmanship or material. Seller expressly disclaims all other warranties, express and/or implied, including but not limited to those of merchantability and fitness for a particular purpose. In no event shall Seller be liable, under either warranty or otherwise, to Buyer in excess of the purchase price of the products paid to Seller by Buyer. In no event shall Seller be liable for any loss or damage arising directly or indirectly from the use of the product or for consequential or incidental damages. Seller's specified warranties will expire and lapse (i) for renewable items (such as gloves, iris ports and desiccants), sixty (60) days from date of shipment and (ii) all standard equipment and otherwise nonrenewable items, one year from date of shipment.