

# Installation & Operating Instructions



Model  
**UVD1**  
Residential Whole Home UVC Air Sanitizer

|               |                  |                 |
|---------------|------------------|-----------------|
| Installed By: | Installer Phone: | Date Installed: |
|---------------|------------------|-----------------|



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**⚠ NEVER EXPOSE EYES OR SKIN TO AN OPERATING UV LAMP**

**READ AND SAVE THESE INSTRUCTIONS BEFORE USING THIS PRODUCT**

## Safety Instructions

### ⚠ WARNING

- **ATTENTION INSTALLER:** Read this manual before installing. Improper installation or maintenance may cause property damage or injury. It is recommended that installation, service, and maintenance be performed by a trained service technician. This product must be installed in compliance with all local, state, and federal codes.
- **ELECTRIC SHOCK HAZARD:** 120 volts may cause serious injury from electric shock. Disconnect electrical power to the HVAC system before starting installation or servicing. Leave power disconnected until installation/service is completed.
- Never expose eyes or skin to an operating UV lamp.

### ⚠ CAUTION

- **SHARP EDGES MAY CAUSE INJURY FROM CUTS.** Use care when cutting and handling ductwork. Always wear glasses/goggles and gloves when installing the unit.
- Dropping may cause personal injury or equipment damage. Handle with care and follow installation instructions.
- This unit is not intended for use by persons (including children) with reduced physical, sensory, or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the unit by a person responsible for their safety.
- Be sure to supervise children to ensure that they do not play with the unit.
- Just like conventional fluorescent lamps, UV lamps contain a small quantity of mercury: if a lamp breaks, clean and dispose of with care. UV lamps can be disposed of/recycled after use in the same way as any other fluorescent lamps. Contact and follow the specific instructions of your local and national authorities.

### NOTICE

When installing or performing maintenance on the UV unit or system, it is recommended to wear safety gloves. In order to avoid reduced performance of lamp, do not touch the lamp glass without gloves.

#### **UV LIGHT CAN CAUSE COLOR CHANGES OR STRUCTURAL DEGRADATION OF PLASTICS, RUBBER, AND OTHER NON-METALLIC MATERIALS USED IN THE HVAC SYSTEM.**

- Install the lamp in a location that prevents exposure to these materials or shield them with aluminum tape or sheet metal.
- Do not install within 6 feet of flex duct.
- Do not install within line of sight of the HVAC filter.

### NOTICE

#### **EQUIPMENT DAMAGE MAY OCCUR IF INSTALLATION INSTRUCTIONS ARE NOT FOLLOWED.**

- Tighten all fasteners by hand, taking care not to leave loose or overtighten.
- Confirm you have access to the necessary power source for the product requirements (see unit or system label).
- Use only specified AprilAire branded replacement UVC Lamps with your unit or system. Use of any other lamps can result in damage to the unit, system, and/or lamp. To avoid damaging equipment, ensure adequately clear space exists behind the mounting points, selected lamp location, screws, and potential overshooting of drill bits when puncturing sheet metal.
- Ensure all light is contained within the system. Use UV-resistant sealing methods to block any potential light leakage points around cords or seams in the ductwork.
- This AprilAire UV unit is not waterproof. **DO NOT INSTALL OUTDOORS OR IN A WET LOCATION.**
- The use of a UV unit or system is a supplement to and not a substitute for standard infection control practices; users must continue to follow all current infection control practices, including those related to the cleaning and disinfection of environmental surfaces.
- Check for existing holes in duct and repair prior to installation.
- Ensure ANY drilled holes and fasteners do not damage the AC Evaporator Coil, Lines, or any other components in the area.

## About the Product

Installed into the return or supply plenum of a residential HVAC system, the AprilAire lamp design maximizes dwell (contact) time between the air and UVC energy, rapidly purifying the air within the home. Please call AprilAire at 888-334-6011 for any installation or application questions.

## How it Works

Foul air is exposed to the UVC 'J' lamp of the UVD1 that is positioned parallel to the airflow, thus maximizing exposure time to UV light. The reflective mirror surface bounces additional UV energy into the plenum. The UV lamp helps reduce the biological contaminants. Finally, the treated air circulates through the home. The unit automatically turns on when the duct frame's safety pin engages the limit switch.

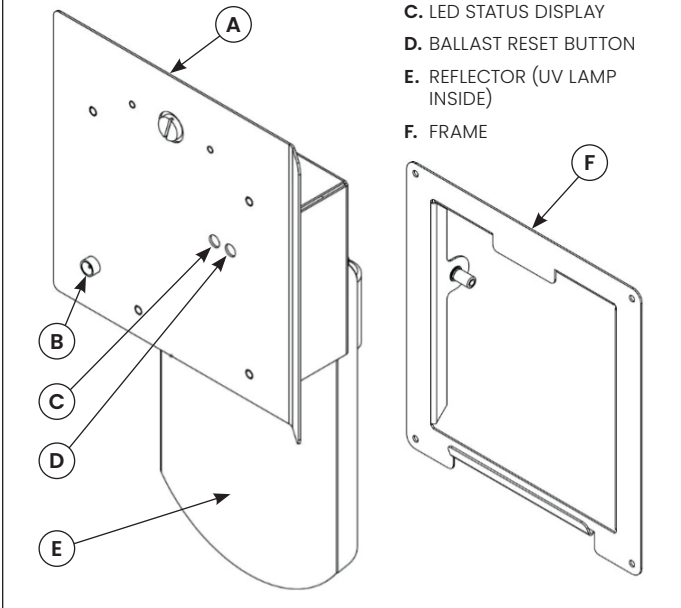
## Optional Accessory

The following optional accessory is available for flexible power options (sold separately).

|  |  |
|--|--|
| <b>8029 Step-Down Transformer (AC)</b> | A transformer to convert a regular outlet (120 VAC) to 24 VAC. |
|--|--|

## Components

**FIGURE 1: COMPONENTS**



- A. COVER
- B. POWER INLET
- C. LED STATUS DISPLAY
- D. BALLAST RESET BUTTON
- E. REFLECTOR (UV LAMP INSIDE)
- F. FRAME

## ⚠ CAUTION

Handle your product with care to avoid breaking parts. Make sure you have a free and safe space to unpack, install and setup your product. Confirm you have access to the necessary power source for the product requirements (see unit or system label).

### LOCATING THE UNIT

- Preferred installation is in the return duct, with supply duct as an option.
- For optimal performance, install the unit on the short side of the rectangular duct whenever possible.
- Installation should be in the middle of the duct wall, offsetting to either side will reduce performance.
- Do not install in flexible duct. Suitable for use with metal duct or duct board.
- Install the unit at least 24 inches away from filters and plastic components (humidifier, air cleaner, etc.). Exposure to direct UVC light may cause these materials to degrade over time.

### STEP-BY-STEP SETUP & INSTALLATION

## Setup & Installation

### ⚠ WARNING

#### WHAT'S INCLUDED

- UVD1 unit
- Reflector
- Duct mount
- UV lamp
- 6 foot 24 VAC power cord
- Basic installation kit includes:
  - Cotton gloves
  - Sheet metal screws (4)
  - 6-32 nuts (3).

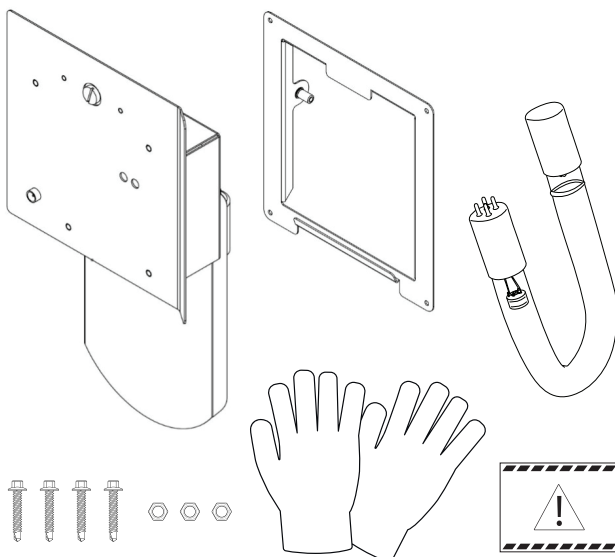
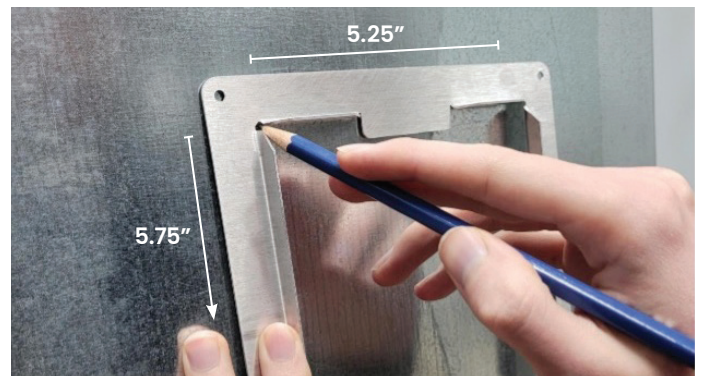
#### WHAT YOU WILL NEED

- Utility knife to unpack the components
- Flat screwdriver
- Phillips screwdriver
- 1/4" nutdriver
- Marker
- Metal saw or sheet scissors

#### PRIOR TO BEGINNING INSTALLATION:

- Never look at UVC lamp while energized.
- Disconnect and turn off power to all HVAC equipment prior to installation.
- Ensure adequate clear space exists behind mounting points, selected lamp location, screws, and potential overshooting of drill bits when puncturing sheet metal.
- Do not overtighten screws as they may lose their holding power and lead to improper installation.

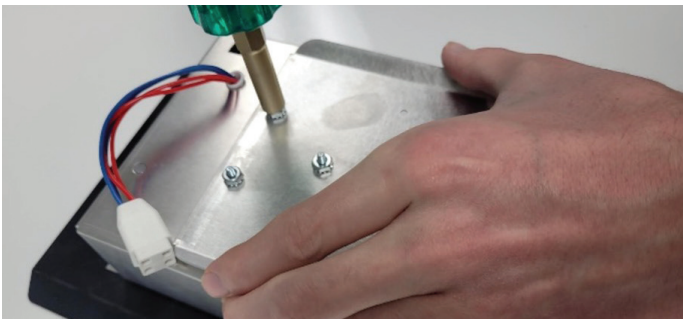
1. Unpack the duct frame and its 4 sheet metal screws.
2. Place the duct frame on the duct at the desired location and trace the outline to be cut (5.25" horizontal x 5.75" vertical).



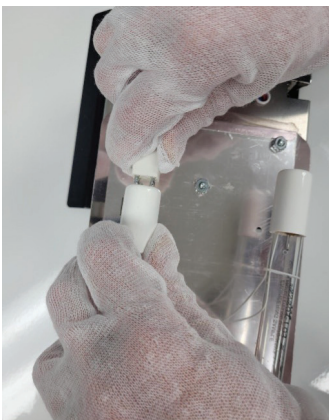
3. Using a metal saw or sheet scissors, cut the outline.
4. Secure the duct frame to the duct using the 4 sheet metal screws provided.



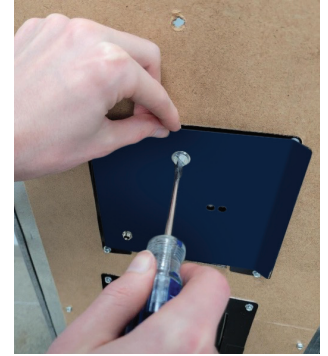
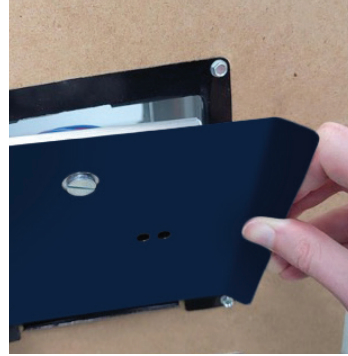
5. Unpack the UVDI unit and reflector.
6. Fasten the reflector to the UVDI unit using the 3 provided nuts and a 1/4" nutdriver.



7. Remove the lamp from its packaging.  
**NOTE:** Wear the provided cotton gloves for the following steps. Fingerprints on the lamp will negatively impact lamp performance.
8. Carefully plug the lamp to the lamp connector. The plug is designed so that it can only be installed one way. You may have to rotate the socket 90° to line up the pins with the holes. The connector will fit into position.
9. Place the lamp on the clamp.



10. Slide the UVDI unit into the duct frame ledge and swing it closed. Fasten the safety lock at the top using a flat screwdriver.



11. Wire 24 VAC power to the ballast.

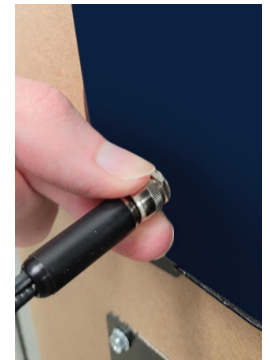
**If using 24 V from furnace control board:**

- a. Make sure that the HVAC equipment can supply a minimum of 20 VA.
- b. Connect the two black wires to the R and C terminals on HVAC Equipment.

**If using a separate 24 V transformer:**

- a. Install transformer per manufacturers specifications.
- b. Connect 24 V to the two black wires at the transformers output terminals.

12. Plug the barrel connector of the power cord to the unit and secure the connector by tightening its cap. The UVDI will automatically begin purifying.



13. Restore power to all HVAC equipment and allow 30 seconds for equipment to reach steady state before checking LED indicator and view port for equipment status.

**If UVC light can be seen escaping duct work,** immediately turn off power and seal discovered light paths with UV resistant sealer.

**If LED indicator is solid and view port is illuminated,** equipment is functioning properly.

**If LED indicator is flashing,** proceed to the **TROUBLESHOOTING** section for error code reference.

## Operation

### HOW TO OPERATE YOUR PRODUCT

The UVD1 is an automatic unit: once it's installed and plugged in, it immediately turns ON on its own.

### ⚠ CAUTION

The suggested operating temperature range is 10 to 66°C (50 to 150°F). Operating the UVD1 outside this range will result in decreased performance.

### HOW TO READ THE STATUS DISPLAY

Once the power has been reconnected the Status LED will illuminate as will the UV Lamp. In the event the LED status light is OFF this signals that there is either no power going to the lamp or the lamp has failed. Flashing LED (once every second) is a reminder that lamp has been running for 2 years of continuous usage. Use provided sticker with lamp to identify lamp change date.

### NORMAL OPERATION

- **SOLID RED:** In operation, system OK.
- 🔴 **FLASHING RED (once every second):** Lamp has been running for 2 years.
- 🔴 **FLASHING RED (twice every second):** Lamp failure.
- 🔴 **FLASHING RED (three times every second):** Ballast failure.
- 🔴 **FLASHING RED (four times every second):** Low voltage (under 18V).\*
- 🔴 **FLASHING RED (five times every second):** High voltage (over 30V).\*

\*Connects to a Step Down Transformer (sold separately).

### HOW TO RESET YOUR PRODUCT AND ITS LAMP TIMER



After installing a new lamp, make sure the timer function is reset.

On the ballast, press and hold the reset button for 3 seconds until the LED blinks. The timer has now been reset.

## Maintenance

### HOW TO REPLACE LAMP

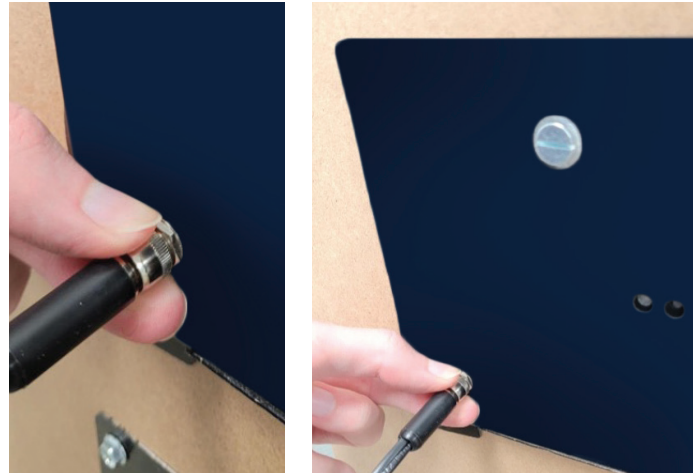
Replacing the lamp on the UVD1 is quick and easy. Simply turn off the power source, remove unit from duct, remove and dispose of old lamp, replace with new AprilAire UV lamp, replace unit in duct and turn power source back on. See below for detailed step by step instructions.

### ⚠ CAUTION

In order to avoid reduced performance of lamp, do not touch lamp glass without gloves.

### STEP-BY-STEP LAMP REPLACEMENT

1. To replace a lamp, loosen the power cord cap and unplug it.



2. Turn the safety lock open using a flat screwdriver and swing the unit out of the frame.



3. Unplug the lamp and safely dispose of it.



4. Remove the replacement lamp from its packaging.

**NOTE:** Wear the provided cotton gloves for the following steps. Fingerprints on the lamp will negatively impact lamp performance.

5. Carefully plug the lamp to the lamp connector inside. The plug is designed so that it can only be installed one way. You may have to rotate the socket 90 degrees to line up the pins with the holes. The connector will fit into position.

6. Place the lamp on the clamp.

7. Place the unit back on its duct frame and swing it closed. Secure the lamp by turning the safety lock closed.

#### HOW TO CLEAN YOUR PRODUCT

For optimal performance, the lamp should be kept free of dust and residue deposit: clean every two to three months with a soft tissue and mild soap or alcohol based solution. Always spot test the cleaner to make sure it does not damage the surface.

#### ⚠ CAUTION

Under no circumstance should water be sprayed or splashed onto the product.

## Storage

The UVDI is an in-duct unit working continuously and automatically and therefore, requires no specific storage.

## Ultraviolet

Ultraviolet wavelengths (UV) emitted by the AprilAire UVDI are identical to ultraviolet produced by the sun. UVC damages nucleic acids (DNA/RNA) of microorganisms, which inactivates them for clean, healthy air.

### ⚠ CAUTION

Never expose eyes or skin to an operating UV lamp.

## Electrical Ratings, Power Consumption & Available Voltage

The product is rated at 24 VAC, 50/60 Hz, 17W.

See product label to confirm power consumption of your specific unit or system.

### NOTE

If you experience a problem, please contact your contractor first, or see your warranty. Do not return the product to the original place of purchase. Do not attempt to open the product or tamper with its components without contacting your contractor first. Doing so may void your warranty and cause personal injury or damage to the product.

## Replacement Parts

|               |   |
|---------------|---|
| <b>UVD1LA</b> | 2 Year Replacement UVC Lamp                     |
| <b>8029</b>   | Step-down transformer 120 VAC to 24 VAC / 20 VA |

### ⚠ WARNING

Use only genuine AprilAire replacement UVC Lamps. Use of any other lamps will void your warranty and can result in damage to the unit, system and/or lamp.

# Troubleshooting

If your product is not working properly, refer to the following.

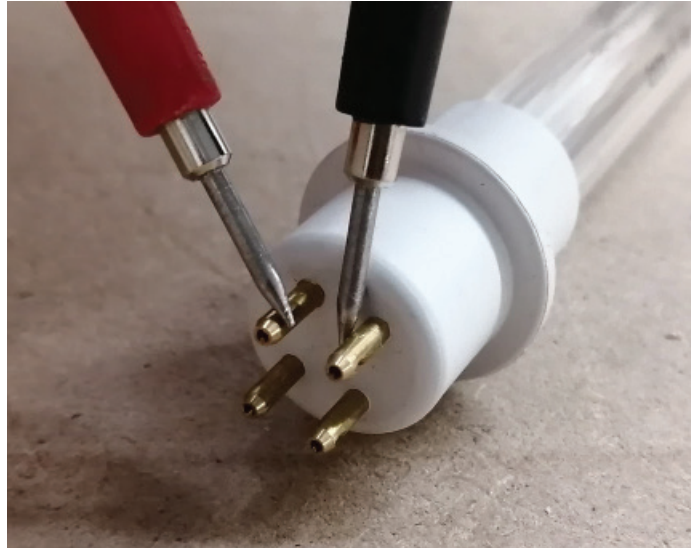
## WHAT YOU WILL NEED

- Flat head screwdriver
- Ohmmeter

## UV LAMP CONTINUITY TEST

1. Take the lamp out of the duct. First remove the unit from its frame. Then disconnect the lamp from its connector and remove it from its clip.
2. Using an ohmmeter, place 1 probe on 1 of the 4 pins, and by sensing the 3 remaining pins, 1 should have continuity (see photo). Make sure the 2 remaining pins also have continuity.

The 4 pins are in a rectangle pattern. The 2 pins that form the 2 short sides of the rectangle are the pins that have continuity through the lamp element.



**NOTE:** The UVD1 error code is determined by the LED flashing pattern on the ballast. The flashing pattern on the ballast is determined by the number of LED blinks (1 to 5) followed by a 1 second pause. This pattern will repeat over and over until the error code is cleared.

| Problem                   | Possible Cause  | Solution  |
|---------------------------|---|---|
| <b>Error Code 1 (EC1)</b> | <ul style="list-style-type: none"> <li>• Lamp has reached 2 years of operation.</li> </ul>  | <ul style="list-style-type: none"> <li>• Change lamp. See <b>HOW TO RESET YOUR PRODUCT AND ITS LAMP TIMER</b> section on page 5.</li> </ul>   |
| <b>Error Code 2 (EC2)</b> | <ul style="list-style-type: none"> <li>• Lamp has failed.</li> </ul>  | <ul style="list-style-type: none"> <li>• Press the reset button once to attempt to restart the lamp.</li> <li>• Shut the power to the ballast (hard reset), wait 10 seconds and turn the power back ON.</li> <li>• Check lamp continuity. See <b>UV LAMP CONTINUITY TEST</b> section above.</li> <li>• Get a genuine replacement lamp and reset lamp timer. See <b>HOW TO RESET YOUR PRODUCT AND ITS LAMP TIMER</b> section on page 5.</li> </ul> |
| <b>Error Code 3 (EC3)</b> | <ul style="list-style-type: none"> <li>• Ballast has failed.</li> </ul>   | <ul style="list-style-type: none"> <li>• Press the reset button once to attempt to restart the ballast.</li> <li>• Shut the power to the ballast (hard reset), wait 10 seconds and turn the power back ON.</li> <li>• Check power source to confirm that it is within specifications on product label.</li> <li>• Get a replacement ballast.</li> </ul>   |
| <b>Error Code 4 (EC4)</b> | <ul style="list-style-type: none"> <li>• Voltage to the ballast is less than 18 VAC.</li> <li>• Power source (furnace control panel or transformer) does not provide sufficient power output (measured in VA).</li> </ul> | <ul style="list-style-type: none"> <li>• Measure the voltage being provided to the ballast.</li> <li>• Install a dedicated transformer (8029 or equivalent) that provides a minimum output of 20 VA at 24 VAC.</li> </ul>   |
| <b>Error Code 5 (EC5)</b> | <ul style="list-style-type: none"> <li>• Voltage to the ballast is over 30 VAC.</li> <li>• Power surge.</li> </ul>  | <ul style="list-style-type: none"> <li>• Measure the voltage being provided to the ballast.</li> <li>• Install a dedicated transformer (8029 or equivalent) that provides a minimum output of 20 VA at 24 VAC.</li> </ul>   |

# Limited Warranty

## Terms of Coverage

Your AprilAire® UVC Air Sanitizer is expressly warranted to be free from defects in materials or workmanship for the following:

|                                    |                               |
|------------------------------------|-------------------------------|
| <b>UV Lamp</b>                     | 2 years from date of purchase |
| <b>Ballast</b>                     | 2 years from date of purchase |
| <b>Electronics and Other Parts</b> | 5 years from date of purchase |

## What is Covered

The exclusive obligation of AprilAire under this Limited Warranty shall be, at the sole discretion of AprilAire, to supply, without charge, a replacement for any component or product which is found to be defective. A defective part will be replaced pursuant to this Limited Warranty with a genuine AprilAire part. A defective product will be replaced pursuant to this Limited Warranty with a new AprilAire product of equal or similar features and functionality if the original product has been discontinued or is no longer available.

## Not Covered by the Limited Warranty

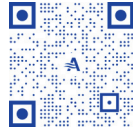
- Consumable or maintenance products, such as, but not limited to: Air Filters, Evaporative Humidifier Water Panels, Steam Canisters, or Steam Humidifier Electrode Wires.
- Products purchased from third parties that were previously used, such as previously-used products purchased from eBay, similar third party/auction sites, or individuals selling used products.
- Labor charges, shipping costs, removal fees, service fees, or reinstallation costs.
- Materials furnished by the installer.
- Damage caused by misuse, abuse, improper installation, or failing to install, use, or maintain the product in accordance with the instructions provided.
- Damage to HVAC equipment caused by improper installation(s) or misapplication installation(s).
- Modifications, changes, repurposing, or alterations to the AprilAire product.
- Extended warranties or satisfaction guarantees offered by third parties.
- Cosmetic damage or normal wear and tear, including, but not limited to: scratches, peeling finish, or dents that do not impede the mechanical functionality of the product.
- Damage caused by acts of nature, including but not limited to: fire, collision, flood, wind, power surge, lighting strike, or mold.
- Damage caused during transit.
- Damage caused during installation due to failure to follow local, state, or federal laws, statutes, codes, or ordinances.
- Damage caused by defects in materials furnished by the installer.

## Limit of Liability

IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE SHALL BE LIMITED IN DURATION TO THE AFOREMENTIONED EXPRESS WARRANTY PERIOD. APRILAIRE LIABILITY FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES, OTHER THAN DAMAGES FOR PERSONAL INJURIES, RESULTING FROM ANY BREACH OF THE AFOREMENTIONED IMPLIED WARRANTIES OR THE ABOVE LIMITED WARRANTY IS EXPRESSLY EXCLUDED. THIS LIMITED WARRANTY IS VOID IF DEFECT(S) RESULT(S) FROM FAILURE TO INSTALL THE PRODUCT ACCORDING TO THE APRILAIRE INSTALLATION INSTRUCTIONS. IF THE LIMITED WARRANTY IS VOID DUE TO MISAPPLICATION OR IMPROPER INSTALLATION, ALL DISCLAIMERS OF IMPLIED WARRANTIES SHALL BE EFFECTIVE UPON INSTALLATION.

Some states do not allow limitations on how long an implied warranty lasts or the exclusion or limitation of incidental or consequential damages, so the above limitation(s) may not apply to your situation. This Limited Warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

## Register Your AprilAire® Product



Thank you for choosing AprilAire. Register your product at [aprilaire.com/warranty](https://aprilaire.com/warranty) to receive important updates and notifications, and to streamline the process in the unlikely event you file a claim.

Your warranty registration information will not be sold or shared outside of this company.

## Make a Warranty Claim

For questions regarding the Limited Warranty or to initiate a claim, contact AprilAire Customer Service at 1.800.334.6011 Monday through Friday, 7:00 a.m. to 5:00 p.m. Central Time.

At the sole discretion of AprilAire, you may be required to: return the product not later than thirty (30) days after the warranty period to the place of purchase or (if directed) to AprilAire, contact a professional contractor to provide warranty service, submit a product for testing related to a warranty claim, and/or send pictures of the original product with the serial number (if applicable) to AprilAire Technical Support for inspection as a condition to reviewing a claim and/or receiving a replacement product under this Limited Warranty.

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