



**MANUAL – INSTALLATION + SERVICE**

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# **Room Air Purifier**

## RAP Series

**v001 – Issue Date: 11/08/22**

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**PRICE**<sup>®</sup>

# ROOM AIR PURIFIER

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# ROOM AIR PURIFIER

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## PRODUCT OVERVIEW

### Read and Save These Instructions

**Warning! To reduce the risk of fire, electrical shock, or injury to persons, observe the following:**

**WARNING:** Eye damage may result from directly viewing the light produced by these lamps. To reduce the risk of exposure to UV radiation, take UV-radiation protective measures for personnel during servicing.

A. Use this unit only in the manner intended by the manufacturer. If you have any questions, contact the manufacturer:

*RAP Product Support*

Canada, United States, International Export

Ph: 204-654-5613 ext. 2

B. Disconnect the unit from the electrical power source before attempting any service. Electrical service should be performed by a licensed electrician or authorized service technician.

C. When performing any type of maintenance on the RAP, be careful to reduce the entrainment of dirt, dust, and debris that may be present in the unit's external environment.

### Before You Start

#### Shipping Information

Inspect all cartons and boxes for flaws and shipping damages. If anything is discovered to be damaged, contact the shipping company and file a freight claim.

#### Filter Information

Ensure that any additional HEPA filters are stored in a clean, dry location in a vertical position, as labeled on the carton. Do not open any additional HEPA filters until they are ready to be installed in the RAP units. All construction in the space should be complete, the site should be clean so as not to unnecessarily load the filter.

**NOTE:** Extreme caution should be taken to avoid contact with filter media. Touching filter media may result in filter failure. Damage to filters can occur during installation or during leak qualification testing. The filters supplied by Price have been 100% tested and certified by the manufacturer to be free of defects and leaks. Price cannot accept responsibility for damage that occurs after shipment, whether through transit, handling or installation, and will not replace filters under Price standard warranty.

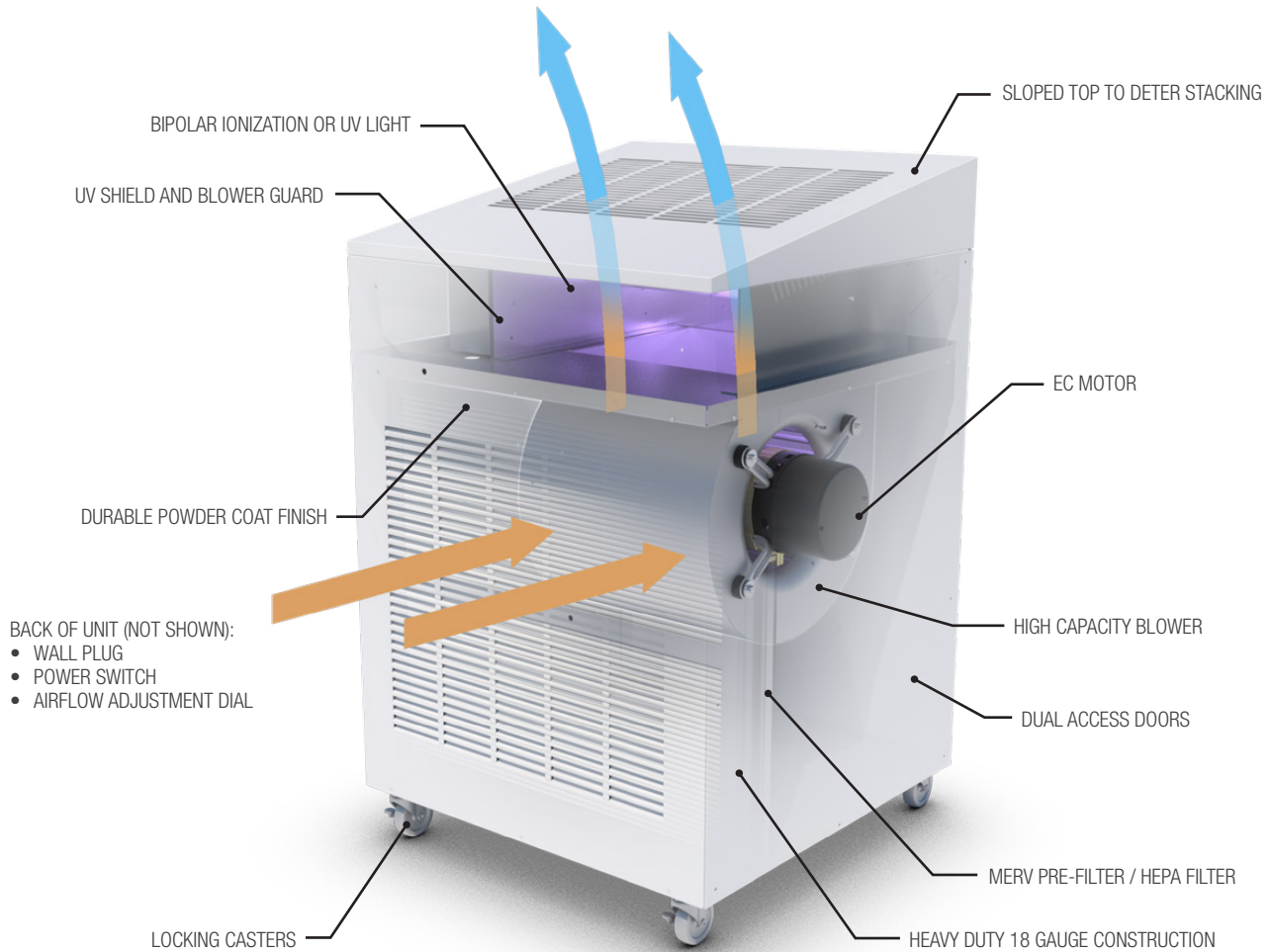
# ROOM AIR PURIFIER

## PRODUCT OVERVIEW

### Introduction

The Price Room Air Purifier improves indoor air quality with air filtration wherever and whenever you need it. The Room Air Purifier is designed to continuously cycle air through a HEPA filter, removing 99.97% of particulate matter.

The RAP uses an internal fan to draw air into the return, through a HEPA filter, and send the air back into the space through Louvers. With the fan continually running, the air in your space is consistently filtered to provide purified, clean air.



# ROOM AIR PURIFIER

## INSTALLATION INSTRUCTIONS

To install and utilize the RAP unit, it must be unboxed, the castor wheels must be installed, and it must be placed in its upright position. The unit can then be moved to its intended zone near a wall with the front return panel facing out towards the occupied space.

The RAP unit is furnished with a 120V plug for utilization in a standard wall outlet. Once plugged in, it can be turned on, and the balancing procedure can begin.

### Airflow Balancing

The RAP is furnished with an ECM motor, and an ECM speed controller. The ECM speed controller has a manual adjustment potentiometer that allows for modulation of airflow. This potentiometer can be accessed and modulated with a slotted control screwdriver.

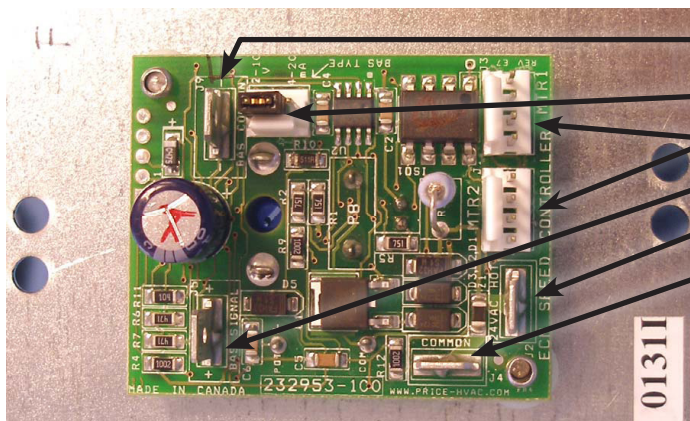
**NOTE:** This potentiometer has voltage output for multi-meter reading. This is not required for setting airflow, but can be utilized. The potentiometer's voltage range is equivalent to the following motor control range:

Measurement Tab Voltage	Motor Control
0 - 1 VDC	Off
1 - 4.5 VDC	0-100%
4.5 - 5 VDC	100%

The RAP is also furnished with an airflow adjustment sticker, which allows for field airflow set point adjustment.



### ECM STANDARD SPEED CONTROLLER ▼



- BAS Common (**NOTE:** Same as 24 VAC Common)
- BAS Input Type Voltage or Current - Shown set to voltage
- Control Cable Jacks
- BAS Positive Input (MAX +10 VDC)
- 24 VAC HOT Power
- 24 VAC Common (**NOTE:** Same as BAS Common)

**NOTE:** BAS Common is connected to 24 VAC Common. If 24 VAC is earth grounded then BAS Common will be earth ground as well. Polarity must be observed when connecting multiple speed controllers and transformers.

# ROOM AIR PURIFIER

## PRODUCT OVERVIEW

The airflow set point may be user defined, or could be specified by the project design engineer. Most typically, an air change per hour (ACH) recommendation would be provided. In 2020, the CDC and ASHRAE recommended the utilization of a portable HEPA filtered unit for the safe-reopening of schools to be applied at a 2ACH airflow set point. Airflows corresponding to different ACH and square footage (SF) requirements based on a 9' ceiling height can be seen below:

ACH	SF	CFM
2	500	150
	667	200
	1000	300
	1333	400
	1667	500
	2000	600
3	333	150
	444	200
	667	300
	889	400
	1111	500
	1333	600
4	250	150
	333	200
	500	300
	667	400
	833	500
	1000	600

The calculation equation for the above table utilizes the following equation:

$$CFM = SF \times \text{ceiling height} \times ACH \times ((1 \text{ hour}) / (60 \text{ min}))$$

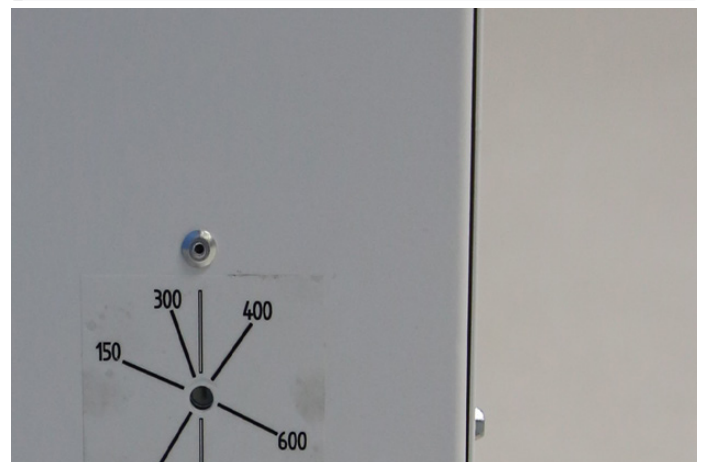
Where SF is the square footage of the zone, the ceiling height is the floor to ceiling measurement of the zone in feet, and ACH is the specified number of air changes.

**NOTE:** If required, the airflow could be further validated with a flow hood assembly.

THE ECM FAN SPEED CONTROLLER MOUNTED IN THE RAP ▼



THE RAP AIRFLOW ADJUSTMENT STICKER ▼



# ROOM AIR PURIFIER

## SERVICE INSTRUCTIONS

### Filter Replacement

**Step 1:** Gain access to the unit by removing one of the side access panels.

**Step 2:** Remove filter by pulling the filter to slide sliding it out from under the brackets.

**Step 3:** Replace with a new filter.

**NOTE:** Recommended filter life for the MERV8 Pre-Filter is 4,000 hours. Recommended filter life for the HEPA Filter is 20,000 hours. Filter life is variable based on airflow set point, and air quality.

### Motor/Blower Field Replacement

Tools you will need to replace the motor/blower assembly in the field:

- 3/8 inch nut driver bit.
- Wiring diagram (located inside the control panel).

Recommended, but not required:

- Right-angle attachment for drill.
- 12 inch extension.

#### Removal Instructions:

1. Disconnect all power to the unit.
2. Remove access panel on either side of the unit.
3. Remove the screw attaching the power and control cables to the side of the blower. Once that is complete, unplug the power and control wires from the motor (Figure 1).
4. Remove the 3/8" bolts connecting the blower to the discharge plate.



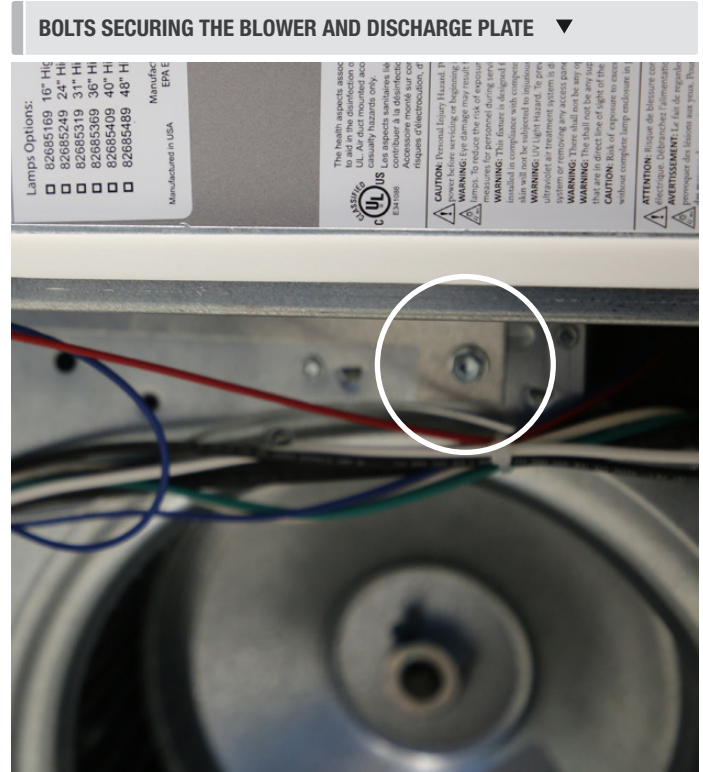
# ROOM AIR PURIFIER

## SERVICE INSTRUCTIONS

### Motor/Blower Field Replacement

#### Installation Instructions:

1. Lift the blower assembly up and tilt into place. Start with the bottom two bolts first and tighten them by hand.
2. Rotate the blower into position so the top two holes line up. Insert the bolts and hand-tighten them in place.
3. Use the 3/8 inch nut driver to tighten them.
4. Plug the control and power wires into the motor. The connectors are keyed and will only go in one way
5. Attach the screw holding the wires to the side of the blower assembly.
6. Install the access panel.





# ROOM AIR PURIFIER

## TROUBLESHOOTING

### Troubleshooting Tips

Low Air Velocity	1. Check pre-filter media (only with optional pre-filter); replace or clean as necessary
	2. Adjust variable speed control for higher blower output.
	3. Check power for proper voltage, amperage, and distribution frequency.
	4. Replace HEPA filter if the velocity remains low.
High Air Velocity	1. Adjust variable speed control for lower blower output.
Motor Will Not Run	1. Check that motor has power at correct voltage.
	2. Check that the speed controller has power.
	3. Check control mode on speed controller and ensure setpoint is not 0%.
	4. Check control harness between speed controller and motor

If experiencing further issues with unit, contact Price Industries help at:

**By Email:** [airmoving@priceindustries.com](mailto:airmoving@priceindustries.com)

**By Phone:** (204) 654-5613 option 2

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## REPLACEMENT PARTS

### RAP Unit Replacement Parts

Filters - Size (WxHxT)	Quantity	Description	Price Part Number
24x24	1	Filter, HEPA, 99%	042299-037
24x24	1	Filter, MERV 13	042317-003
24x24	1	Pre-Filter, MERV 8	042317-002

Parts	Quantity	Description	Price Part Number
ECM Standard Speed Controller	1	ECM - All voltages	232953-100
ECM Speed Controller Cable	1	Cable ECM Speed Control 2ft	019186-001
ECM Speed Controller Cable	1	Cable ECM Speed Control 6ft	019186-002
ECM Power Cable	1	Power Cable Harness – 115V	019187-001
Wall Power Cable	1	Power Cord 8ft, 115 TYPE SVT	019944-001

Transformer	Quantity	Description	Price Part Number
115V	1	Transformer 120/24 50VA FT-MT	019436-001

Blower Wheel	Quantity	Description	Price Part Number
RAP 600 Blower Wheel	1	RAP 600 Blower Wheel	100092-002

ECM Motors	Quantity	Description	Price Part Number
RAP 600	1	Motor ECM, 115V-240V, 1/3 HP	019178-002
RAP 600	1	Motor ECM, 115V-240V, 1/3 HP	019218-001

UV Light	Quantity	Description	Price Part Number
RAP UV Light	1	36W UV Bulb	019281-004



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This document contains the most current product information as of this printing.  
For the most up-to-date product information, please go to [priceindustries.com](http://priceindustries.com)

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