# AI

Axial Inline | Product Guide |

LOREN COOK COMPANY

# **INTRO**DUCTION

With higher efficiency than other axial units with more performance selections at a lower price point. AI offers advantages over other traditional axial units.

**DESIGNED FOR**
supply, exhaust or return air movement applications

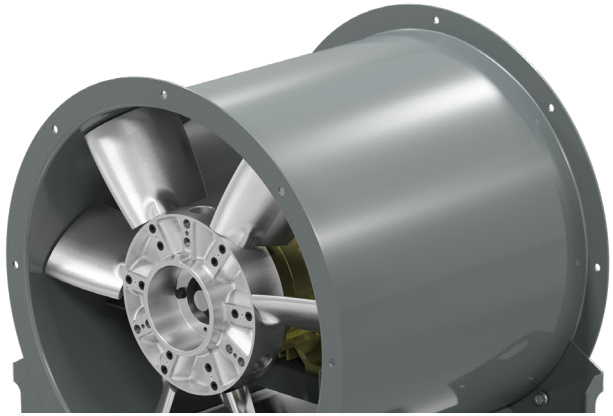
**DESIGNED WITH**
the latest Computational Fluid Dynamics (CFD) and Finite Element Analysis (FEA) softwares

**PERFORMANCE RANGE**
400-140,000 CFM

**EQUIPPED WITH**
Heavy-duty cast aluminum axial impeller

**OFFERED IN 14 SIZES**
ranging from 31 to 160 (12.25" - 63" diameter)

**STATIC PRESSURES**
up to 5.5 in. wg



## **EXTRA** BENEFITS

- UL/cUL 705 Listing is standard on all AI models.
- Lighter weight than other axial flow fans
- More impeller options than traditional adjustable pitch axial flow or vane axial fans at a lower initial cost

# **IMPELLER** DESIGN

The axial impeller provides efficient airflow in one of the most compact designs in the industry.

## PROP OFFERING

The combination of impeller sizes, number of blades, multiple hub sizes and pitch selection from 5° to 45° at single degree intervals, yields 2700 different impeller combinations. Allowing the ability to fine tune the fan to meet application demands.

| | Hub Size | 15 (6") | | 20 (8") | | 25 (10") | | 32 (12.5") | | 40 (16") | | 50 (20") | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | # of Blades | 4 | 6 | 4 | 6 | 6 | 9 | 6 | 9 | 6 | 9 | 8 | 12 |
| UNIT SIZE* | 31 (12") | ✓ | ✓ | | | | | | | | | | |
| | 36 (14") | ✓ | ✓ | | | | | | | | | | |
| | 41 (16") | ✓ | ✓ | ✓ | ✓ | | | | | | | | |
| | 47 (18.5") | ✓ | ✓ | ✓ | ✓ | | | | | | | | |
| | 54 (21") | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| | 63 (24.5") | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | | | |
| | 72 (28") | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | |
| | 80 (31.5") | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | | | |
| | 90 (35.5") | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| | 103 (40.5") | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
| | 113 (44.5") | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 123 (48.5") | | | | | | | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
| | 140 (55") | | | | | | | | | ✓ | ✓ | ✓ | ✓ |
| | 160 (63") | | | | | | | | | ✓ | ✓ | ✓ | ✓ |

*Nominal diameters in parentheses

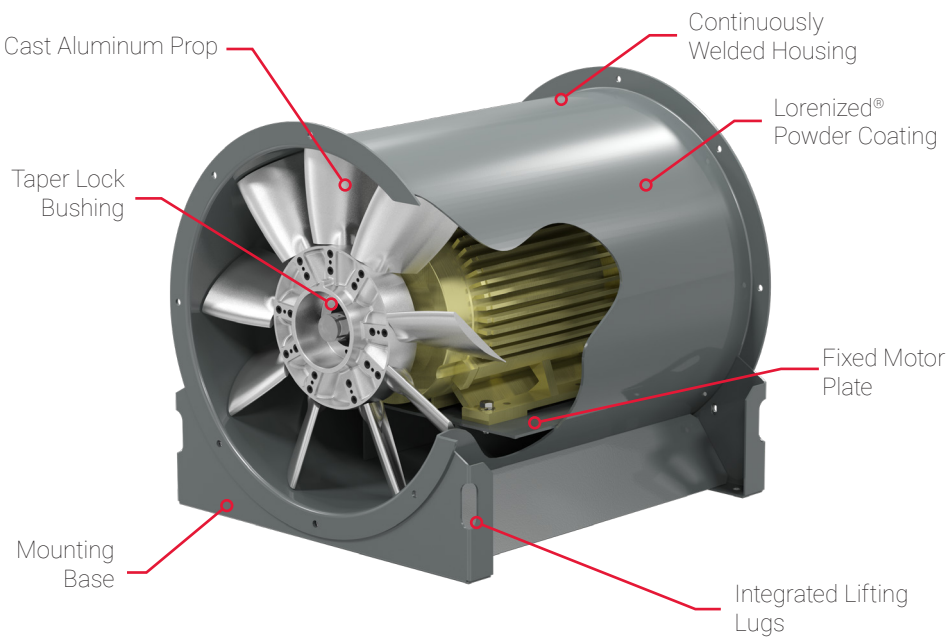
## PITCHES

- Range: 5° to 45°
- 1° increments
- Combined with multiple hubs to meet pressure demands
- Reversible flow only available on propellers with an even number of blades.

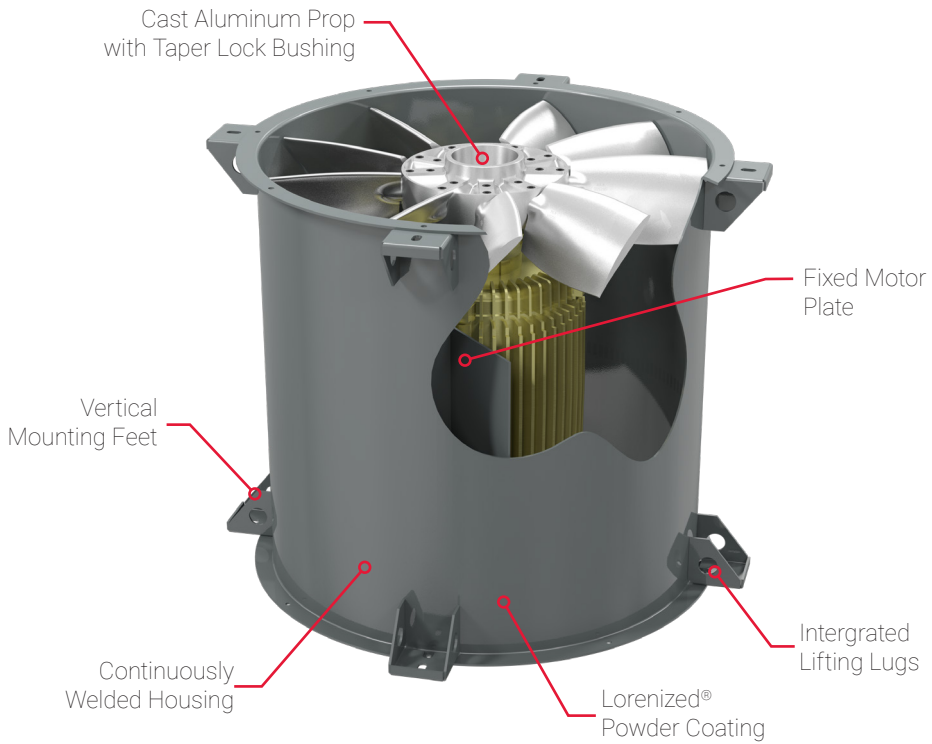
# **LEVEL ONE** FEATURES

The Level One standard construction features are shown below on the horizontal and vertical Arrangement 4.

## **HORIZONTAL** ARR 4



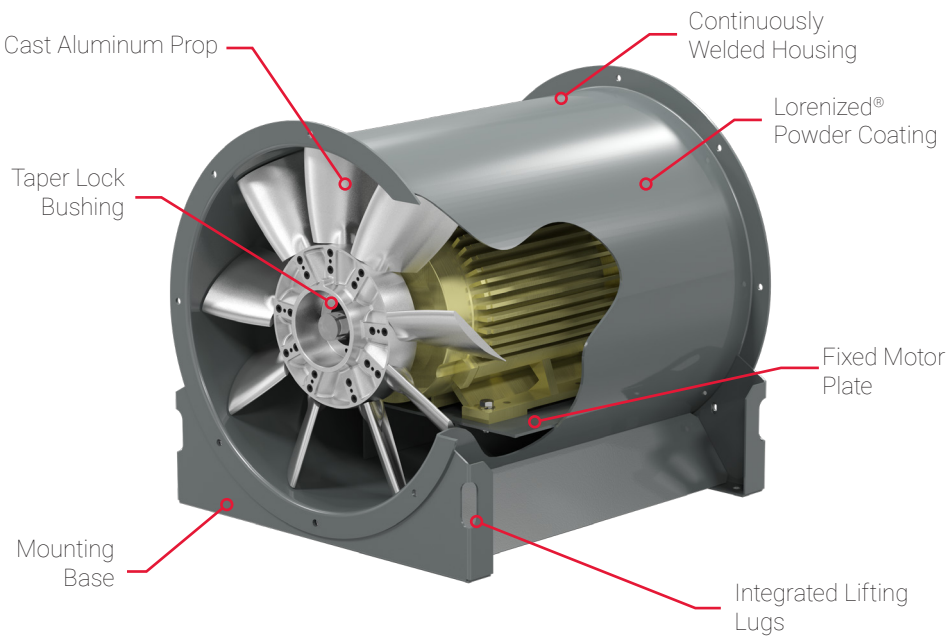

## **VERTICAL** ARR 4



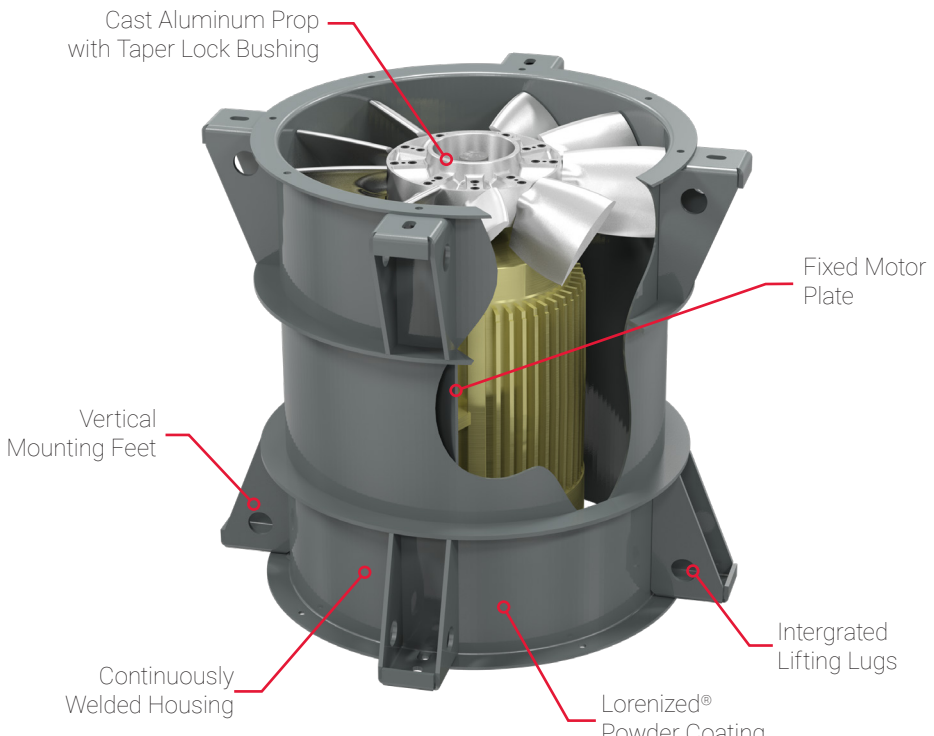
# **LEVEL TWO** FEATURES

The AI is available in two construction levels. Level 1 is designed for typical applications. Level 2 can accommodate larger motor applications. See below for key differences between levels.

## **HORIZONTAL** ARR 4




## **VERTICAL** ARR 4



# **AVAILABLE** CONFIGURATIONS

Cook offers multiple housing options to meet your application needs.

## STANDARD

- Available in horizontal floor, horizontal ceiling, vertical floor and vertical ceiling
- Vertical floor and ceiling can be configured in upblast or downblast

## VANE SECTION

- Available on all standard units as a bolt-on component containing vanes to straighten the airflow for greater efficiency and static pressure.

## ROOF MOUNT

- Vertical housing with integral roof curb cap for supply, exhaust or reversible application

## UPBLAST

- Complete exhaust fan package with integral curb cap and butterfly damper assembly.
- Provides protection against weather from entering the building when the fan is not in operation.
- Standard Butterfly dampers are galvanized. Dampers can be upgraded to aluminum

# AI ACCESSORIES

Beyond the AI standard construction features, Cook offers accessories to fit your custom air-movement requirements and/or preferences.

## ARRANGEMENT 4

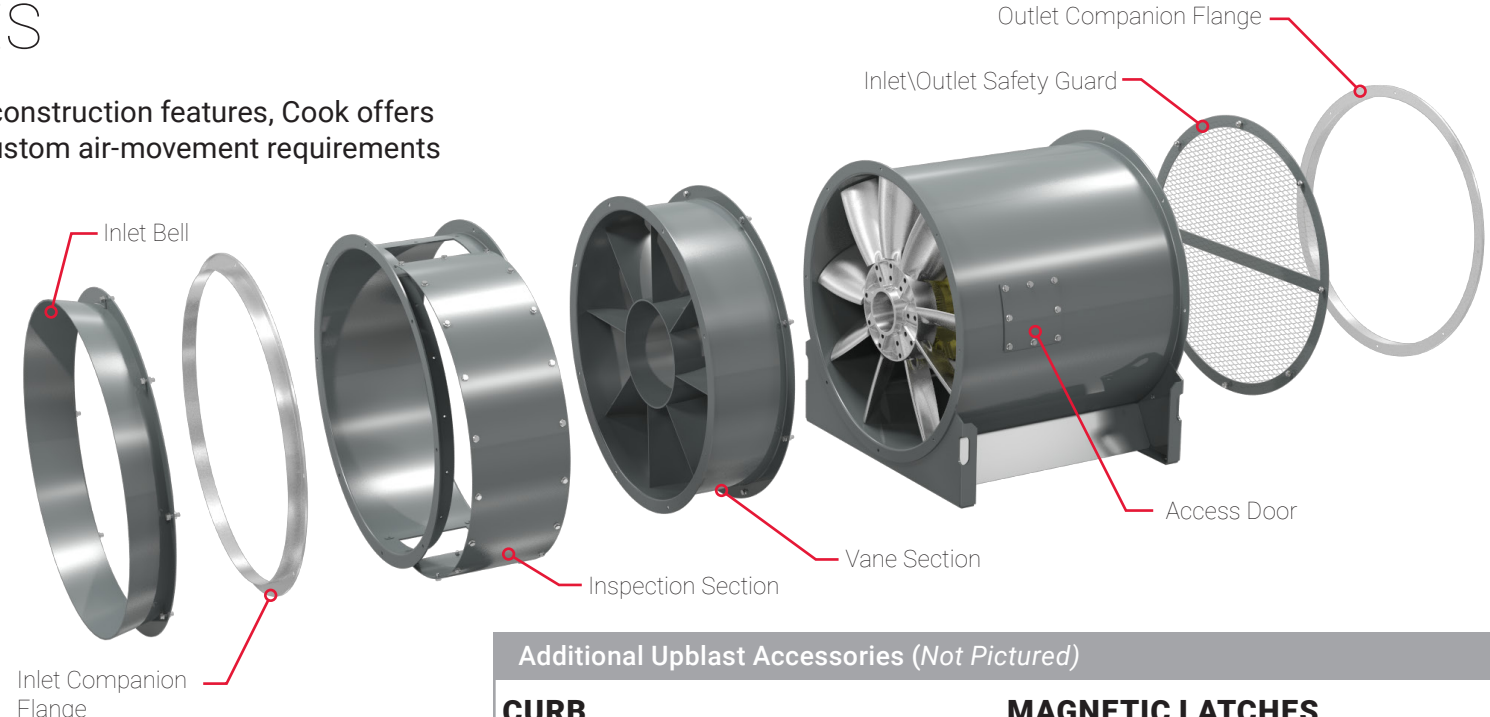
### ACCESS DOOR
- Available in bolted or hinged configuration.
- Provides access to the propeller for cleaning and inspection.

### INLET/OUTLET COMPANION FLANGE
- Attached to the adjacent ductwork to provide an exact mate to the flanged connection on the fan.

### INLET/OUTLET SAFETY GUARDS
- Protect personnel and prevent debris from entering the fan.
- Safety guards are constructed of expanded metal.

### VANE SECTION
- Bolt-on component containing vanes to straighten the airflow for greater efficiency and static pressure.

### INLET BELL
- In non-ducted inlet design systems provides reduced entrance loss.




### INSPECTION SECTION
- Bolt-on component containing a door that can be removed to inspect or remove the prop.

### FLEXIBLE DUCT CONNECTOR
- Provides a flexible connection between the fan and the attached ductwork.
- Constructed of reinforced neoprene fabric and aluminum bands.
- ***NOT to be used for smoke control units or temperatures in excess of 250˚F.***

## Additional Upblast Accessories (*Not Pictured*)

### CURB
- Roof curbs are used as roof support structures for fans and ventilators.
- They are available for flat, pitched and peaked roofs with or without insulation.

### INLET DRIP PAN
- Designed to collect condensation that may develop due to temperature and humidity variation.
- Prevents rain from entering the building during periods of severe weather.
- Field installed in curb below the fan.

### MAGNETIC LATCHES
- Available to minimize damper door flutter due to pressure changes within the building when fan is not in operation.
- Factory installed.

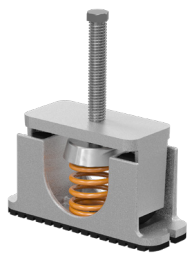
### INLET GUARD
- Protects personnel and prevent debris from entering the fan.

# **AI** ISOLATORS

Cook offers six types of isolators to reduce vibration transmission from equipment to building structure.

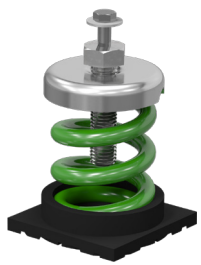
## **HOUSED** SPRING

Floor Mounted



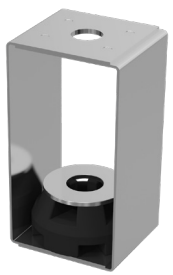
## **FREE STANDING** SPRING

Floor Mounted



## **RUBBER**-IN-SHEAR

Ceiling Mounted



## **RESTRAINED** SPRING

Floor Mounted

## **SPRING**

Ceiling Mounted

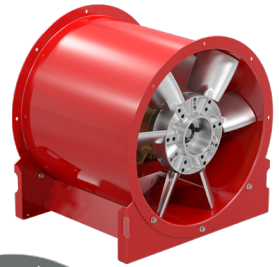
## **RUBBER**-IN-SHEAR

Floor Mounted

***See our Vibration Isolation Brochure for more information.***

# **STANDARD** COATING

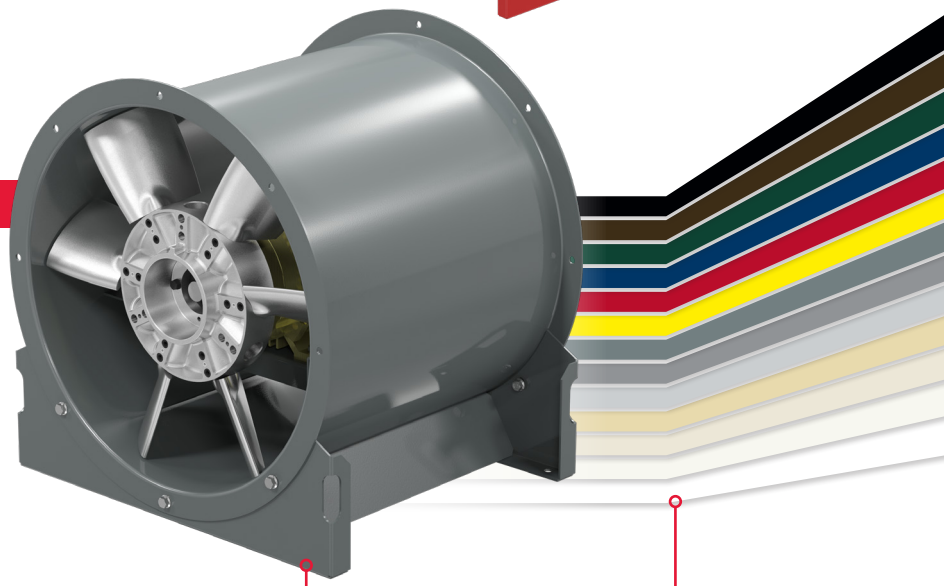
The AI is available with a variety of coatings to meet your needs . The Lorenized™ coating in gray is standard. Lorenized™ is also available in 12 other colors shown.



Shown in
Lorenized Cook Red

## **LORENIZED™** COATING

- Electrostatically applied, baked polyester powder coating
- Undergoes a five-stage environmentally friendly pretreatment/wash process before coating
- Baked and cured at 400°F; final coating thickness of 1.5–2.5 mil
- Coating is required to exceed 1,000 hour salt spray under ASTM B117 test method
- Offers strong chemical resistance, durable mechanical performance and tough protection from outdoor elements



Lorenized™ standard
coating on AI

all 13 available
Lorenized™ colors

# **OPTIONAL** COATINGS

Each type of coating offers unique qualities, benefits and color availability.

## **COOK** HIGH TEMP COATING

- Solvent based, heat resistant liquid coating which exhibits good corrosion resistance and color stability
- Final coating thickness is 0.8–1.5 mil
- Withstands service temperatures up to 1,000°F

Available in **BLACK**.

## **COOK** EPOXY POWDER

- Electrostatically applied, baked epoxy powder coating
- Final coating thickness is 2.5–3.5 mil
- For outdoor applications, an optional UV resistant topcoat is available to prevent coating deterioration

Available in **DARK GRAY**.

## **AIR DRY** PHENOLIC

HERESITE® VR-514

- Conventional spray applied phenolic resin coating
- Final coating thickness is 2.0–4.0 mil
- For outdoor applications, an optional UV resistant topcoat (Heresite® UC-5500) is required to prevent deterioration of the coating

Available in **BROWN**.

## **COOK** EASY-CLEAN POWDER

- Electrostatically applied, baked modified epoxy silicone powder coating
- High temperature "non-stick" coating
- Final coating thickness is 1.0–2.0 mil

Available in **BLACK**.

## **COOK** PHENOLIC EPOXY POWDER

- Electrostatically applied, baked phenolic epoxy powder coating
- Final coating thickness is 1.5–4.0 mil
- For outdoor applications, an optional UV resistant topcoat is required to prevent coating deterioration

Available in **LIGHT GRAY** and **BROWN**.

***See our Coatings Brochure for more information.***

# **AI** CERTIFICATIONS

Cook uses third part verification agencies for certification, qualification and listing of fan performance.

## **AMCA** AIR

***AMCA Certified Ratings Seal***

Cook products that bear the AMCA Certified Ratings Seal are licensed by AMCA International. These products meet the AMCA Standard and are within the product scope of AMCA International.

All Models

## **SMOKE** CONTROL

***Power Ventilator for Smoke Control Systems***

The UL Listing "Power Ventilator for Smoke Control Systems" is a test procedure and category initiated by Loren Cook Company and developed in a joint effort with UL in 1990. The products below are UL Smoke Control Listed.

All Models

Listed

UL Requirements

- Unit must be listed under UL 705
- Unit must withstand specified elevated air stream temperature for specified duration

## **UL 705** LISTED

***Power Ventilator***

The UL 705 Listing is the standard for electrical safety for permanently connected power ventilators.

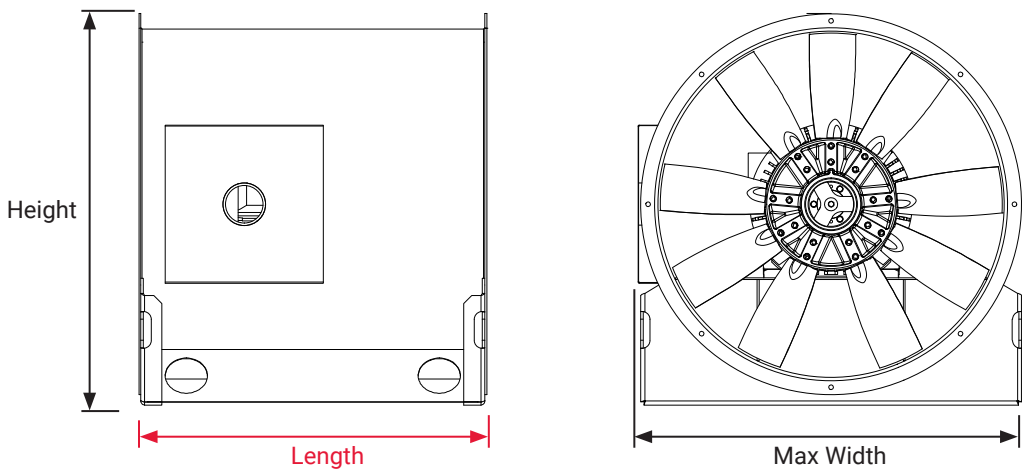
All Models

Listed

# **OVERALL** DIMENSIONS

Overall dimensions are in inches. For more detailed dimensions, see the product submittal.

## **HORIZONTAL** LEVEL 1




| Unit Size | 31 | 36 | 41 | 47 | 54 | 63 | 72 | 80 | 90 | 103 | 113 | 123 | 140 | 160 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Height** | 16 | 17 7/8 | 19 5/8 | 22 5/16 | 25 1/4 | 28 15/16 | 33 1/4 | 37 1/8 | 42 1/16 | 47 1/4 | 51 11/16 | 56 3/16 | 63 9/16 | 70 3/8 |
| **Length** | 19 | 19 | 22 | 22 | 22 | 22 | 26 | 33 | 39 | 39 | 39 | 41 | 41 | 41 |
| **Width** | 15 3/8 | 17 7/16 | 19 1/2 | 21 7/8 | 24 7/8 | 28 | 32 5/16 | 36 3/8 | 41 5/16 | 45 5/8 | 49 7/8 | 54 3/16 | 60 15/16 | 69 3/16 |

# **OVERALL** DIMENSIONS

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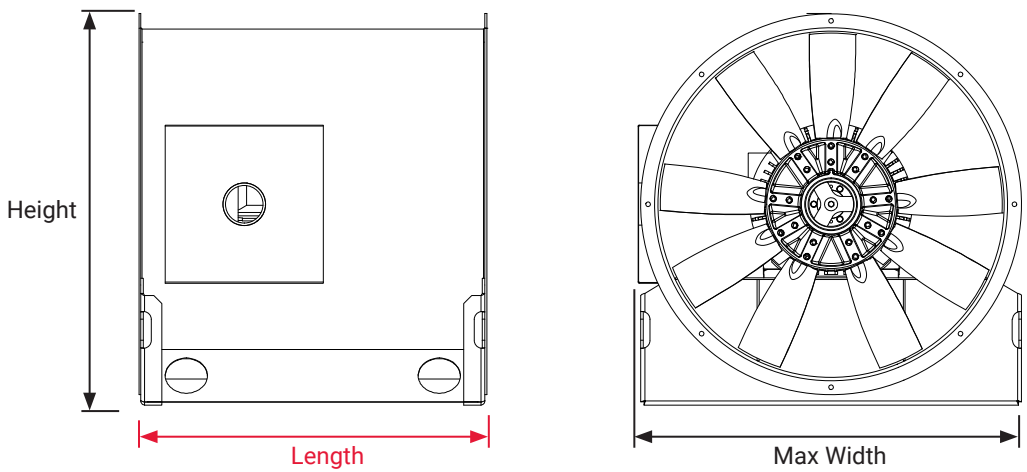
## **HORIZONTAL** LEVEL 2




| Unit Size | 41 | 47 | 54 | 63 | 72 | 80 | 90 | 103 | 113 | 123 | 140 | 160 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Height** | 19 5/8 | 22 5/16 | 25 1/4 | 28 15/16 | 33 1/4 | 37 1/8 | 42 1/16 | 47 1/4 | 51 11/16 | 56 5/16 | 63 11/16 | 70 3/4 |
| **Length** | 25 | 25 | 30 | 30 | 33 | 35 | 39 | 39 | 45 | 50 | 50 | 50 |
| **Width** | 19 1/2 | 21 7/8 | 24 7/8 | 28 | 32 5/16 | 36 3/8 | 41 5/16 | 45 5/8 | 49 7/8 | 54 3/16 | 61 | 69 1/4 |

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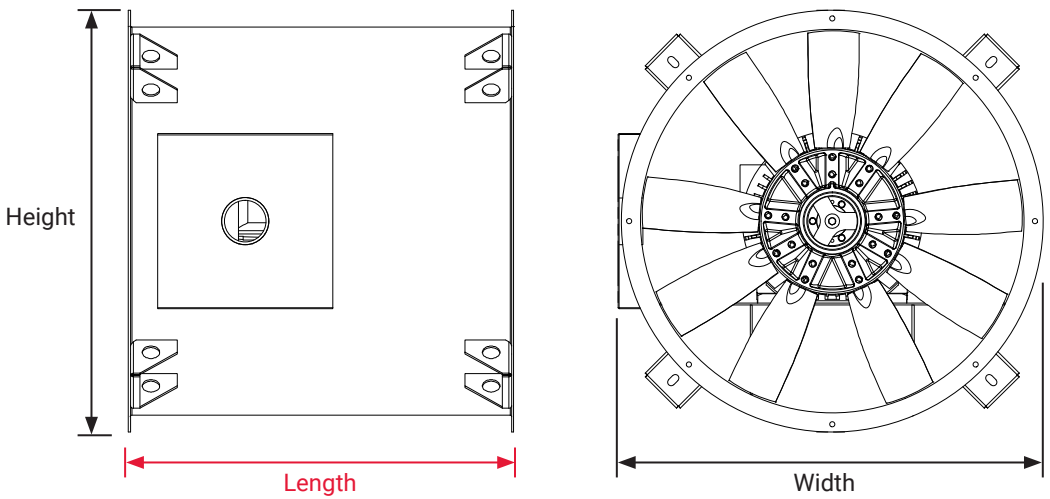
## **VERTICAL** LEVEL 1




| Unit Size | 31 | 36 | 41 | 47 | 54 | 63 | 72 | 80 | 90 | 103 | 113 | 123 | 140 | 160 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Height** | 17 3/8 | 18 13/16 | 20 5/16 | 21 7/8 | 24 3/4 | 27 7/8 | 32 1/8 | 36 1/8 | 41 1/4 | 45 3/8 | 49 1/2 | 53 3/4 | 60 3/8 | 68 1/2 |
| **Length** | 19 | 19 | 22 | 22 | 22 | 22 | 26 | 33 | 39 | 39 | 39 | 41 | 41 | 41 |
| **Width** | 17 3/8 | 18 13/16 | 20 5/16 | 21 7/8 | 24 7/8 | 28 | 32 5/16 | 36 3/8 | 41 5/16 | 45 5/8 | 49 7/8 | 54 3/16 | 60 15/16 | 69 3/16 |

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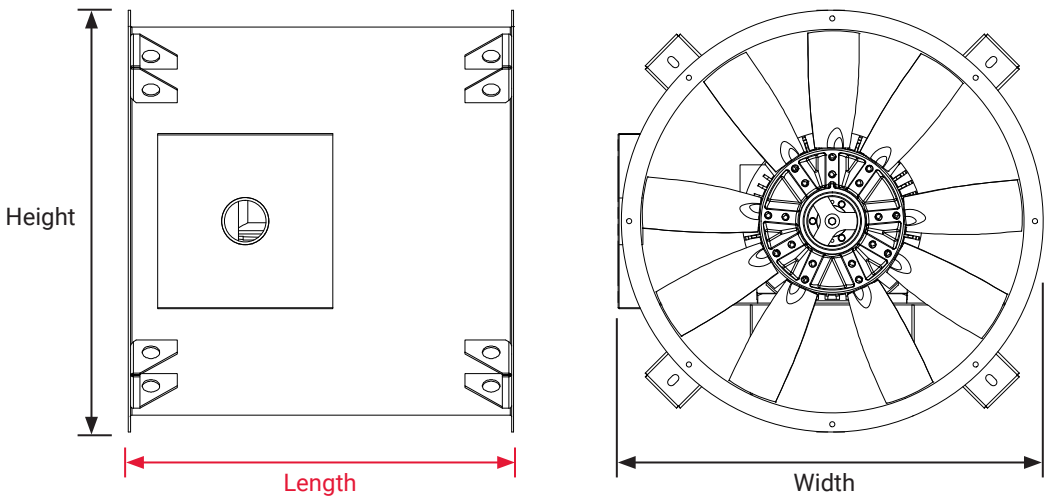
## **VERTICAL** LEVEL 2




| Unit Size | 41 | 47 | 54 | 63 | 72 | 80 | 90 | 103 | 113 | 123 | 140 | 160 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Height** | 20 1/2 | 22 1/16 | 24 3/4 | 27 7/8 | 32 1/8 | 36 1/2 | 41 1/4 | 45 3/8 | 49 13/16 | 53 15/16 | 60 9/16 | 69 3/16 |
| **Length** | 25 | 25 | 30 | 30 | 33 | 35 | 39 | 39 | 45 | 50 | 50 | 50 |
| **Width** | 20 1/2 | 22 1/16 | 24 7/8 | 28 | 32 5/16 | 36 3/8 | 41 5/16 | 45 5/8 | 49 7/8 | 54 3/16 | 61 | 69 1/4 |

# **OVERALL** DIMENSIONS

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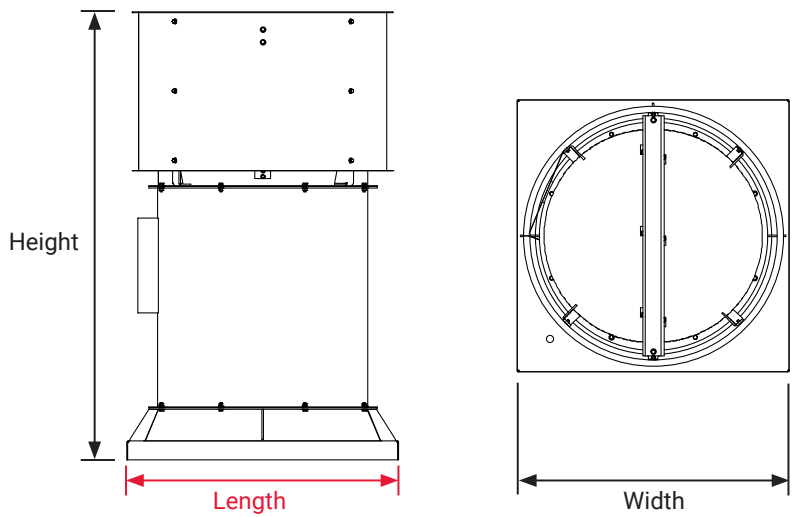
## **UPBLAST** LEVEL 1




| Unit Size | 31 | 36 | 41 | 47 | 54 | 63 | 72 | 80 | 90 | 103 | 113 | 123 | 140 | 160 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Height** | 41 1/2 | 42 7/8 | 47 3/16 | 48 5/8 | 50 9/16 | 52 5/8 | 59 3/8 | 68 7/8 | 77 3/4 | 80 11/16 | 83 3/8 | 88 1/16 | 92 7/16 | 97 13/16 |
| **Length** | 20 | 24 | 26 | 28 | 32 | 35 | 40 | 43 | 48 | 54 | 60 | 66 | 72 | 84 |
| **Width** | 20 | 24 | 26 | 28 | 32 | 35 | 40 | 43 | 48 | 54 | 60 | 66 | 72 | 84 |

# **OVERALL** DIMENSIONS

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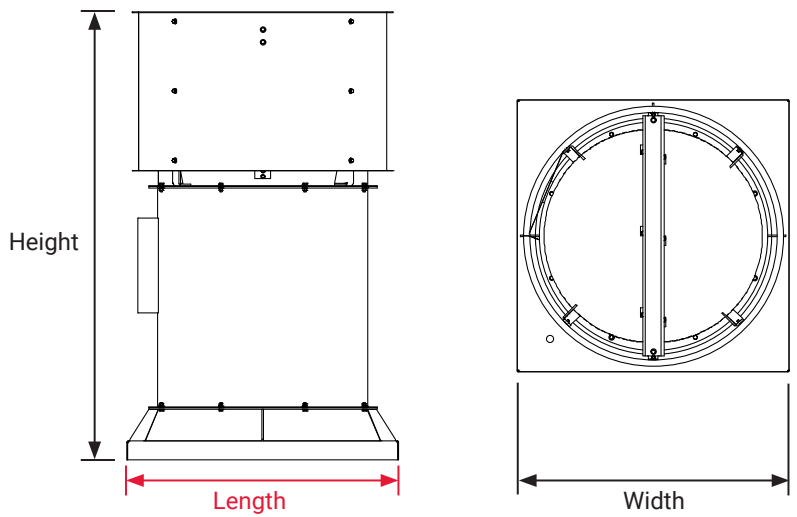
## **UPBLAST** LEVEL 2




| Unit Size | 41 | 47 | 54 | 63 | 72 | 80 | 90 | 103 | 113 | 123 | 140 | 160 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Height** | 50 3/16 | 51 5/8 | 58 9/16 | 60 5/8 | 66 3/8 | 70 7/8 | 77 3/4 | 80 11/16 | 89 3/8 | 97 1/16 | 101 7/16 | 106 13/16 |
| **Length** | 26 | 28 | 32 | 35 | 40 | 43 | 48 | 54 | 60 | 66 | 72 | 84 |
| **Width** | 26 | 28 | 32 | 35 | 40 | 43 | 48 | 54 | 60 | 66 | 72 | 84 |

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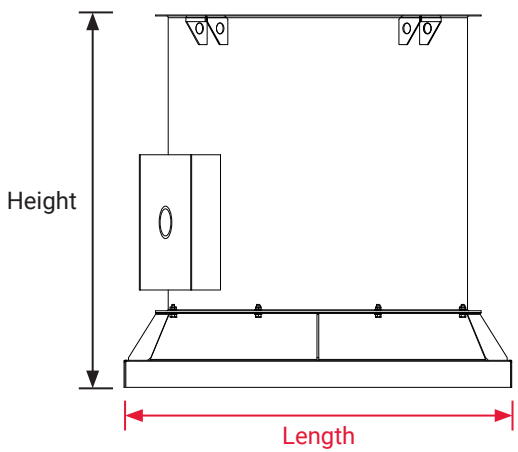
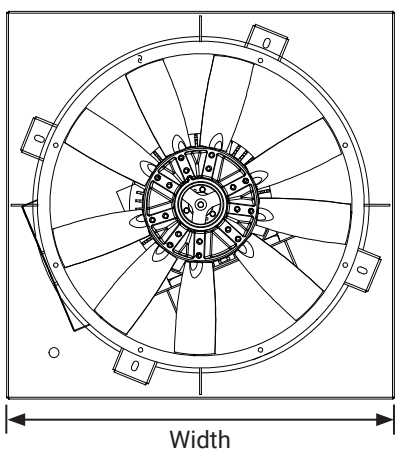
## **ROOF** MOUNT LEVEL 1




| Unit Size | 31 | 36 | 41 | 47 | 54 | 63 | 72 | 80 | 90 | 103 | 113 | 123 | 140 | 160 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Height** | 24 1/8 | 24 1/2 | 27 13/16 | 28 3/16 | 28 5/8 | 29 3/16 | 33 13/16 | 41 5/16 | 48 | 48 7/8 | 49 1/2 | 52 1/8 | 53 3/16 | 54 1/2 |
| **Length** | 20 | 24 | 26 | 28 | 32 | 35 | 40 | 43 | 48 | 54 | 60 | 66 | 72 | 84 |
| **Width** | 20 | 24 | 26 | 28 | 32 | 35 | 40 | 43 | 48 | 54 | 60 | 66 | 72 | 84 |

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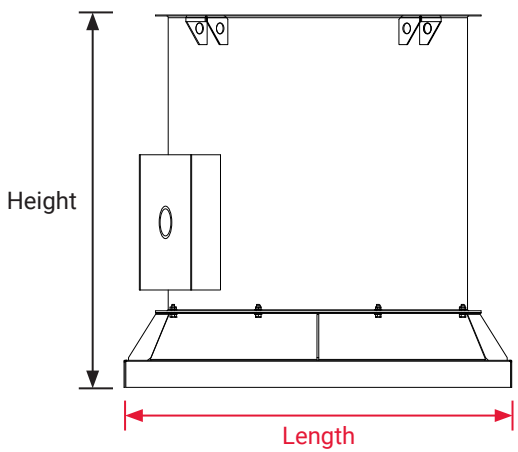


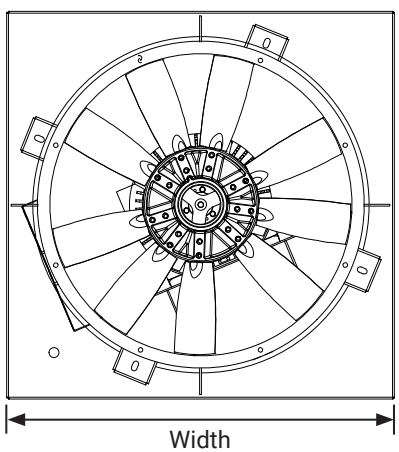


| Unit Size | 41 | 47 | 54 | 63 | 72 | 80 | 90 | 103 | 113 | 123 | 140 | 160 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Height** | 30 13/16 | 31 3/16 | 36 5/8 | 37 3/16 | 40 13/16 | 43 5/16 | 48 | 48 7/8 | 55 1/2 | 61 1/8 | 62 3/16 | 63 1/2 |
| **Length** | 26 | 28 | 32 | 35 | 40 | 43 | 48 | 54 | 60 | 66 | 72 | 84 |
| **Width** | 26 | 28 | 32 | 35 | 40 | 43 | 48 | 54 | 60 | 66 | 72 | 84 |

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