# Sidewall Propeller Fans Models AER and BAER

**Efficient and Reliable Supply and Exhaust Fans** 



Building Value in Air.

February 2025

# **Models AER and BAER**





For efficient air movement, look no further than Greenheck's AER direct drive and BAER belt drive sidewall fan offering! With up to 30% higher maximum airflow compared to existing options, the two models serve all of your clean air application needs. Constructed from corrosion-resistant galvanized steel and incorporating high efficiency fabricated steel and cast aluminum airfoil propellers, the AER and BAER outclass the competition. Package with any of our standard sidewall options or accessories for all of your wall-mounted fan needs!

#### SIZES

- Direct drive sizes from 20 - 60
- Belt drive sizes from 24 - 48

#### PERFORMANCE

- Direct drive up to 78,600 cfm
- Direct drive up to 3.4 in. wg of static pressure
- Belt drive up to 54,000 cfm
- Belt drive up to 3.7 in. wg of static pressure



- Horizontal or vertical
- Wall housing

#### Wall collar

Factories

APPLICATIONS

Clean air applications

Industrial environments

- Warehouses
- Data centers/data management
- Mission critical

# **Standard Construction**

## GREENHECK Building Value in Air.

#### **AER DIRECT DRIVE**



#### **BAER BELT DRIVE**







### **Drive Frame**

- Galvanized steel with bolted construction
- Prepunched mounting holes
- Formed flanges

### Propeller

- Heavy-duty cast aluminum propeller (AER direct drive 20 to 60 inch diameters, BAER belt drive 24 to 48 inch diameters)
- Fabricated steel propeller (AER direct drive 20 to 48 inch diameters, BAER belt drive 24 to 48 inch diameters)
- All propellers are statically and dynamically balanced

#### Motor

- Heavy-duty, permanently lubricated, ball bearing type
- Greenheck's Vari-Green<sup>®</sup> electronically commutated (EC) motor up to 10 horsepower (AER only)
- AC up to 20 horsepower

### Belt Tensioner (BAER only)

• Standard automatic belt-tensioning drive setup for simplified maintenance and drive loss reduction to increase fan efficiencies

## **PRODUCT CERTIFICATIONS**

Greenheck takes pride in offering a high-quality, reliable product. We invest our resources into designing, testing and manufacturing products to ensure customer satisfaction.



Model AER and BAER are listed for electrical (UL/cUL 705) File no. E40001

#### Greenheck's AER Seismic Certification

Greenheck's tests incorporate the most severe seismic conditions anywhere in the United States including the most severe spectral response accelerations (SDS = 2.28), an Importance Factor of 1.5, all Site Classes (F being the most severe), all Occupancy Categories (IV- essential facilities), and all Seismic Design Categories (F being the most severe).

Testing equipment for the worst case scenarios allows Greenheck to supply a seismic certified fan to a job anywhere in the United States regardless of location. For projects presided over by HCAI, reference #OSP-0356 for a listing of Greenheck AER equipment that meets Special Seismic Certification Preapproval.



Greenheck Fan Corporation certifies that the model AER and BAER shown herein are licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 211 and AMCA Publication 311 and comply with the requirements of the AMCA Certified Ratings Program.



# **Dimensions**



#### **AER DIRECT DRIVE**





#### **BAER BELT DRIVE**



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Exhaust

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All dimensions in inches and weight is shown in pounds, does not include accessories. \*Varies with motor selection.

# Performance AER Direct Drive







Curves represent a maximum coverage area of multiple prop configurations Configurations include two prop types with all available blade and pitch configurations Represents data at standard air ( $70^\circ$ F, 0 ft)







GREENHECK Building Value in Air.

Curves represent a maximum coverage area of multiple prop configurations Configurations include two prop types with all available blade and pitch configurations Represents data at standard air ( $0^{\circ}$ F, 0 ft)



Curves represent a maximum coverage area of multiple prop configurations Configurations include two prop types with all available blade and pitch configurations Represents data at standard air (70°r, 0 ft)



Curves represent a maximum coverage area of multiple prop configurations Configurations include two prop types with all available blade and pitch configurations Represents data at standard air (70°F, 0 ft)

Performance certified is for installation type A: free inlet, free outlet. Power rating (BHP) does not include transmission losses. Performance ratings do not include the effects of appurtenances (accessories).

# Performance AER Direct Drive







Fan Size	Motor HP Max.	Fan RPM Max.	CFM Max.	Max. Static Pressure in. wg
Fabricat	ed Steel Pro	opeller		
20	2	1750	7,100	2.5
24	5	1750	11,200	3.4
30	5	1160	14,500	1.2
36	7.5	1160	18,800	1.2
42	10	860	31,200	1.9
48	10	860	33,700	2.2
Cast Alu	uminum Airfo	oil Propeller		
20	2	1750	7,600	2.6
24	5	1750	14,000	2.7
30	5	1750	20,500	3.3
36	7.5	1750	27,700	2.9
42	10	1160	40,200	2.1
48	10	1160	47,300	1.8
54	20	860	64,900	2.0
60	20	860	78,600	2.0



Curves represent a maximum coverage area of multiple prop configurations Configurations include 3 and 6 blades with all available pitch configurations Represents data at standard air ( $70^\circ$ F, 0 ft)

Performance certified is for installation type A: free inlet, free outlet. Power rating (BHP) does not include transmission losses. Performance ratings do not include the effects of appurtenances (accessories).

# Performance BAER Belt Drive







Curves represent a maximum coverage area of multiple prop configurations Configurations include two prop types with all available blade and pitch configurations Represents data at standard air (70°F, 0 ft)







GREENHECK Building Value in Air.

Curves represent a maximum coverage area of multiple prop configurations Configurations include two prop types with all available blade and pitch configurations Represents data at standard air ( $70^\circ$ F, 0 ft)



Curves represent a maximum coverage area of multiple prop configurations Configurations include two prop types with all available blade and pitch configurations Represents data at standard air (70°+7, 0 th)

Fan Size	Motor HP Max.	Fan RPM Max.	CFM Max.	Max. Static Pressure in. wg
Fabricat	ed Steel Pro	peller		
24	2	1750	10,200	3.7
30	5	1160	14,600	1.2
36	10	1160	18,800	1.5
42	15	860	31,100	1.9
48	15	860	33,400	2.4
Cast Alı	uminum Airfo	oil Propeller		
24	2	1750	10,860	2.6
30	5	1750	20,700	3.3
36	10	1750	33,100	3.2
42	15	1160	39,900	1.9
48	15	1160	54,100	2.2

Performance certified is for installation type A: free inlet, free outlet. Power rating (BHP) does not include transmission losses. Performance ratings do not include the effects of appurtenances (accessories).

# **Options and Accessories**







Toggle-type and heavy-duty disconnect switches are available for positive electrical shutoff and safety in servicing fans.

### **Extended Wiring Pigtail**

Liquid-tight wiring pigtails allow direct hook-up to the power supply which eliminates field wiring at the fan. Available only in conjunction with factory-mounted disconnect switches. Internal or external power supply can be specified.

### **End Switches**

Factory-mounted end switches allow the damper to open completely before the fan is energized and help reduce the back pressure and brake horsepower load on the fan motor at start-up. (Field-supplied motor starter with a relay is required to complete the wiring on a system using an end switch.)

### **One-Point Wiring**

Available when common voltages are on the motor and the actuator, the disconnect is factory mounted and wired, and a wall housing accessory is selected. The wires are pulled from the motor and the actuator on the damper to the disconnect box. (Hardwiring of the components to the disconnect switch is by others.)

### **Motors**

Greenheck offers a wide variety of alternating current (AC) as well as electronically commutated (EC) Vari-Green<sup>®</sup> motors (AER only) to best suit your application and installation needs. The Greenheck motor offering allows you to configure motor electrical characteristics and motor protections to pair up with your project needs.

## Vari-Green<sup>®</sup> Drive (AER only)

The Vari-Green Drive (VGD) is a factory mounted and wired variable frequency drive. It is programmed at the factory to match the characteristics of the fan and motor on which it is installed.

### Vari-Green<sup>®</sup> Controls (AER only)

Vari-Green controls allow for maximized ventilation system efficiency with manual and automated on demand-controlled operation.

### **Motor Starters**

Can be used to coordinate dampers, end switches and motor starting. They protect the motor, offer control options, and provide Lockout/Tagout features as well.

### Coatings

A variety of special coatings ranging from enamels to phenolics are available for decorative or protective purposes. When a special coating is selected for the fan, all accompanying accessory items are also coated unless specified. Consult your local representative for more details.

# **Options and Accessories**



### **Propeller Guard**

The zinc-coated wire propeller guard is an easy way to provide OSHA-rated protection to the



propeller-side of your sidewall fan. Guard can be used in conjunction with wall housing or OSHA motor side guards.

### Weatherhood Kit

Weatherhoods shield wall openings and dampers from rain and snow. Constructed of galvanized steel with wire mesh birdscreen. Mounting flanges have prepunched mounting holes. 45° turndown is for exhaust and 90° turndown is for exhaust and supply. Options include aluminum construction, insect screen and painted finish. Shipped unassembled in kit form for field assembly. Cannot be used with the damper guard option. (More details on page 10.)

### Wall Collar with Guard Combo

Wall collar with guard combo offers a method for mounting sidewall propeller fans while leaving the motor and fan protected. Standard construction is of galvanized steel (painted steel is optional) with heavygauge mounting flanges and prepunched mounting holes. (More details on page 11.)

### **OSHA Motor Side Guard**

Protective guards are of wire mesh in a steel frame (fan sizes 20 - 48) or expanded metal screen in structural steel frames (fan sizes 54 and 60). Guards are available to completely enclose the motor and drive side of the fan. (More details on page 12).

### Wall Collar

Wall collars offer a method for mounting sidewall propeller fans while leaving the motor and fan frame exposed for easier access to the motor and fan propeller. Standard construction is of galvanized steel (painted steel is optional) with heavy-gauge mounting flanges and prepunched mounting holes. (More details on page 13.)

### Wall Housing

Wall housings are the safest, most efficient, and sturdiest platform for mounting sidewall propeller fans and their optional accessories. Constructed of galvanized steel with heavy-gauge mounting flanges and prepunched mounting holes. The wall housing is designed to reduce installation time and provide maximum installation flexibility. Attached accessories such as dampers, guards and weatherhoods may mount to either end. As a result, a wide variety of configurations are available to accommodate the needs of the system designer. (More details on page 13.)

### **Closure Angles**



An extra set of mounting flanges are available for field installation to close off the interior wall opening for a finished appearance. Shipped in crate unattached.

### **Filtered Housing**

Filtered wall housings allow for a wide range of mounting arrangements to meet specific applications. Constructed of galvanized steel with heavy-gauge mounting flanges and prepunched mounting holes. Fan filters are permanent 2-inch washable aluminum filters which can be accessed through a bolted panel for easy removal and cleaning. (More details on page 14.)

### **Damper Guard**

Meets the OSHA requirements to completely enclose the damper or wall openings on the discharge side of the fan. Constructed of expanded galvanized steel screen in galvanized steel frames. Mounting flanges have prepunched mounting holes. Options include aluminum construction and painted finish. The damper guard cannot be used with the weatherhood option. (More details on page 15.)

### **Dampers**

Used in a stand-alone manner or in conjunction with the wall housing or wall collar, a complete line of dampers are available for exhaust or supply configurations. (More details on page 16.)

# Weatherhood Kit



Weatherhoods shield wall openings and dampers from rain and snow. Construction is of galvanized steel or optional aluminum. Standard with wire mesh birdscreen and optional insect screen. Available in 45 or 90 degree turndown. Shipped knocked-down and loose from the factory. Available with decorative or protective coatings.

#### 45° KIT





90° KIT









Fan Size	A Sq.	В	С	D	E	F	G	Gauge
20	25.000	23.625	25.000	24.375	30.875	25.125	25.625	18
24	32.000	30.500	27.250	31.125	36.750	31.875	32.500	18
30	37.875	36.500	29.375	37.375	41.000	37.875	38.750	18
36	43.875	42.500	33.375	43.375	46.375	43.875	44.625	18
42	49.875	48.500	36.000	49.250	50.250	49.875	50.625	18
48	56.125	54.750	40.750	55.500	56.750	56.000	57.000	18
54	62.250	61.000	44.875	62.000	62.625	62.250	63.375	16
60	68.375	67.000	48.000	68.500	68.000	68.375	69.875	16



Wall collar with guard combo offers a method for mounting sidewall propeller fans while leaving the motor and fan protected. Removable screens allow easier maintenance access to the fan without having to remove the entire guard. Standard construction is of galvanized steel (painted steel is optional) with heavy-gauge mounting flanges and prepunched mounting holes. Factory installed to fan.

#### **SIZES 20-48**





#### SIZES 54





Fan Asa Bo		P Sa	(	С		<b>)</b>	Recommended	Gauge	
Size	A Sq.	в Sq.	Supply	Exhaust	Supply	Exhaust	Wall Opening Sq.	Gauge	
20	26.375	30.250	42.875	42.875	43.500	43.500	27.375	18	
24	32.500	38.250	43.750	43.750	44.375	44.375	33.500	18	
30	38.500	44.250	46.750	46.750	47.375	47.375	39.500	18	
36	44.500	50.250	52.000	52.000	52.625	52.625	45.500	18	
42	50.500	56.250	54.000	54.000	54.625	54.625	51.500	18	
48	56.500	62.250	55.500	55.500	56.125	56.125	57.500	18	
54	62.375	68.375	62.250	57.125	63.750	58.625	63.375	16	

# **OSHA Motor Side Guard**



Protective guards are for use in commercial and industrial applications with belt drive and direct drive propeller fans. Protective guards provide safety for workers when propeller fans are installed at working level. OSHA-compliant screen completely encloses the motor and drive side of the fan. Features galvanized steel construction to resist corrosion in demanding environments. Factory installed to fan. Available with decorative or protective coatings.



#### **SIZE 54**



F	Fan		i	В	(	С		
S	Size	A Sy.	Supply	Exhaust	Supply	Exhaust	Gauge	
2	20	26.375	22.750	22.750	23.375	23.375	18	
	24	32.500	23.750	23.750	24.375	24.375	18	
(	30	38.500	26.750	26.750	27.375	27.375	18	
(	36	44.500	32.500	32.500	33.125	33.125	18	
4	12	50.500	34.500	34.500	35.125	35.125	18	
2	18	56.500	36.000	36.000	36.625	36.625	18	
Ę	54	62.375	39.000	34.000	40.500	35.500	16	



# Wall Collar and Wall Housing



#### WALL COLLAR

The wall collar provides an easy way to mount the sidewall propeller fan and its accessories. Standard construction is of galvanized steel (painted steel is optional) with heavy-gauge mounting flanges and prepunched mounting holes. Factory installed to fan. Available with decorative or protective coatings.

Fan Size	A Sq.	В	С	Recommended Wall Opening Sq.	Gauge
20	26.375	30.250	21.250	27.375	18
24	32.500	38.250	21.375	33.500	18
30	38.500	44.250	21.375	39.500	18
36	44.500	50.250	21.750	45.500	18
42	50.500	56.250	21.750	51.500	18
48	56.500	62.250	22.000	57.500	18
54	62.375	68.375	22.875	63.375	16





#### All dimensions in inches.

#### WALL HOUSING

A wall housing allows for a wide range of mounting arrangements to meet specific applications. It is constructed of galvanized steel (painted steel optional) with heavy-gauge mounting flanges and prepunched mounting holes. Protective guards completely protect the drive side of the wall housing. Factory installed to fan, reference pages 18 and 19 for installation options offered. Available with decorative or protective coatings. Wall housing guards that meet OSHA requirements are also available.







#### **SHORT HOUSING**



Fan Size	A Sq.	В	С	D	Е	F	Recommended Wall Opening Sq.	Gauge
20	26.375	30.250	32.125	38.125	38.750	32.750	27.375	18
24	32.500	38.250	37.000	43.000	43.625	37.625	33.500	18
30	38.500	44.250	38.000	44.000	44.625	38.625	39.500	18
36	44.500	50.250	39.000	44.750	45.375	39.625	45.500	18
42	50.500	56.250	44.000	48.000	48.625	44.625	51.500	18
48	56.500	62.250	44.000	50.000	50.625	44.625	57.500	18
54	62.375	68.375	52.125	58.000	58.625	52.750	63.375	18
60	68.375	74.375	54.125	60.125	60.750	54.750	69.375	18



# **Filtered Housing**



The filtered supply wall housing is a flexible and easy way to mount the fan for installations where filtering is required. It is designed with the drawthrough concept to achieve the highest filter and fan efficiencies. Standard construction is galvanized steel (painted steel optional). Mounting flanges are factory installed for either flush exterior or flush interior mounting. Permanent 2-inch washable filters are accessed through a bolted panel and can be easily removed for cleaning. All accessory items available with the standard wall housing can be used with the filtered supply wall housing. Factory installed to fan.





Fan Size	A Sq.	В	С	D	Recommended Wall Opening Sq.	Gauge
24	32.625	38.500	61.875	62.500	33.500	18
30	38.625	44.500	63.250	63.875	39.500	18
36	44.625	50.500	65.250	65.875	45.500	18
42	50.625	56.500	68.250	68.875	51.500	18
48	56.625	62.500	74.500	75.125	57.500	18

All dimensions in inches.



Replacement 2-inch washable filter

# **Damper Guard**



Meets the OSHA requirements to completely enclose the damper or wall openings on the discharge side of the fan. Constructed of expanded galvanized steel screen in galvanized steel frames. Mounting flanges have prepunched mounting holes. Options include aluminum construction and painted finish. Factory installed to fan with wall housing and wall collar. Shipped in crate unattached with stand-alone fan. The damper guard cannot be used with the weatherhood option.

#### **SIZES 20-36**







#### SIZES 42 AND 48



#### SIZES 54 AND 60



Fan Size	A Sq.	В	С	Gauge
20	25.000	6.625	22.375	18
24	29.000	6.375	26.375	18
30	34.875	6.625	32.375	18
36	40.875	6.875	38.375	18
42	46.875	10.000	44.375	18
48	52.875	9.125	50.375	18
54	58.875	7.625	56.375	18
60	64.875	7.375	62.375	18

# **Damper Options**



#### **BACKDRAFT DAMPERS**

Used as a stand-alone accessory or in conjunction with a wall housing or wall collar accessory, backdraft dampers are available for exhaust or supply configurations. Backdraft dampers are constructed with aluminum or galvanized frames and blades and vinyl blade seals. Actuators are available in 24, 115, 208, 230, or 460 volts. Actuators for 50-cycle voltages are also available.

Backdraft damper model availability will be limited if fan velocity exceeds maximum damper catalog velocity.

#### **COMMERCIAL CONTROL DAMPERS**

Used as a stand-alone accessory or in conjunction with a wall housing or wall collar accessory, commercial control dampers are available for exhaust or supply configurations. Commercial control dampers are constructed with galvanized or aluminum frames and galvanized or stainless steel blades and stainless steel blade seals. Actuators are available in 24, 115, 208, 230, or 460 volts. Actuators for 50-cycle voltages are also available.

WD-320/430 Series



EM-31 Series



VCD-20/30/40 Series

Damper Availability	EM-31	VCD-20	VCD-23	VCD-33	VCD-34	VCD-42	VCD-43	WD-320	WD-430
Exhaust	0	•	•	0	0	0	0	•	
Supply		•	٠	0	0	0	0		•
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#### **TYPICAL INSTALLATION**

Fan Size	Damper Size	Minimum Distance	Recommended Wall Opening Sq.
20	22 x 22	12	23.250
24	26 x 26	13	26.125
30	32 x 32	13	32.125
36	38 x 38	14	38.125
42	44 x 44	15	44.125
48	50 x 50	16	50.125
54	56 x 56	17	56.000
60	62 x 62	19	62.000

Damper size is nominal. All dimensions in inches.

Wall housing length increases by 6 inches when an actuated damper or heavy-duty backdraft damper is selected.

Backdraft damper availability will be limited by maximum catalog velocity and maximum fan motor power rating of 5 hp.



# Vari-Green<sup>®</sup> Options



Model AER (direct drive) is available with Greenheck's Vari-Green® technology. Greenheck's Vari-Green products are designed for efficiency, controllability and low maintenance.

### MOTORS

The Greenheck Vari-Green motor is an electronically commutated (EC) motor that operates on single or three phase AC power input and internally converts it to DC power providing better speed control capabilities (up to an 80% turndown) and higher efficiencies than standard motors. The Vari-Green motor blends technology, controllability and energy efficiency in a low maintenance package that has changed the way the industry designs, specifies and operates air movement equipment. Depending on power rating, Vari-Green motors are available in both single and three phase with either a dial-mounted potentiometer (speed control) or wired to accept a 0-10 VDC control signal from an external source.

#### CONTROLS

For expanded controllability, Greenheck offers many different solutions to fit any need. Controls are designed specifically for Vari-Green motors. These controls are available for applications requiring manual operation or demand-controlled ventilation (DCV). Applications utilizing DCV controls provide only the desired amount of ventilation, delivering building owners savings on their energy bills.

### Manual Controls

- Dial-on Motor
- Remote Dial
- Touch Remote

### **Demand Controlled Ventilation**

- Hand/Off/Auto (HOA)
- Constant Airflow
- Constant Pressure
- Air Quality Volatile Organic Compound (VOC)
- Air Quality Temperature/Humidity
- 0-10 VDC Signal from Building Management System (BMS)







# **Mounting Options**



Sidewall propeller housings can be oriented in eight horizontal and eight vertical configurations. The two main considerations for determining which orientation the project requires are:

- 1. Will the fan and housing be placed inside the building or outside of the building?
- 2. How will the motor and drives be most easily accessed, from inside of the building or from outside of the building?

# **INSIDE OF BUILDING - DAMPER OUTSIDE OUTSIDE OF BUILDING - DAMPER INSIDE Exhaust - Flush Exterior Exhaust - Flush Exterior** MOTOR ACCESSED MOTOR ACCESSED FROM FROM **BUILDING INTERIOR** BUILDING EXTERIOR Supply - Flush Exterior Supply - Flush Exterior MOTOR ACCESSED MOTOR ACCESSED FROM FROM **BUILDING INTERIOR** BUILDING EXTERIOR Wall housing or wall collar should be tipped slightly to the outside for water drainage.

## **FLUSH EXTERIOR - MOTOR AND DRIVE ACCESSED FROM**

# **Mounting Options**



Flush Interior: The fan and housing will be outside the building and the end of the housing will be flush with the interior wall.

Flush Exterior: The fan and housing will be inside the building and the end of the housing will be flush with the exterior wall. Motor Access: The motor and drives can be placed on either side of the propeller for access to grease bearings, check or change belts and inspect the motor/wiring connections. Failure to assess the best access point can place maintenance personnel in extreme danger if they must reach through the propeller.



# **Model Nomenclature**



# **Quick Delivery and Quick Build**



Greenheck's Quick Delivery (QD) and Quick Build (QB) programs have the industry's most comprehensive offering of commonly requested ventilation equipment.

The QD program has more than 1000 of the most in-demand products in stock, ready to ship. Some products require specific customization to meet the demands of a project. The QB program offers an even larger assortment of configure-to-order products built just for you, in the time frame you need!

Greenheck's Quick Build (QB) program ensures these products can be manufactured as needed in 1, 3, 5, 10, 15, and 25-day manufacturing cycles.

## **Our Commitment**

As a result of our commitment to continuous improvement, Greenheck reserves the right to change specifications without notice.

Product warranties can be found online at Greenheck.com, either on the specific product page or in the literature section of the website at Greenheck.com/Resources/Library/Literature.



P.O. Box 410 • Schofield, WI 54476-0410 • Phone (715) 359-6171 • greenheck.com