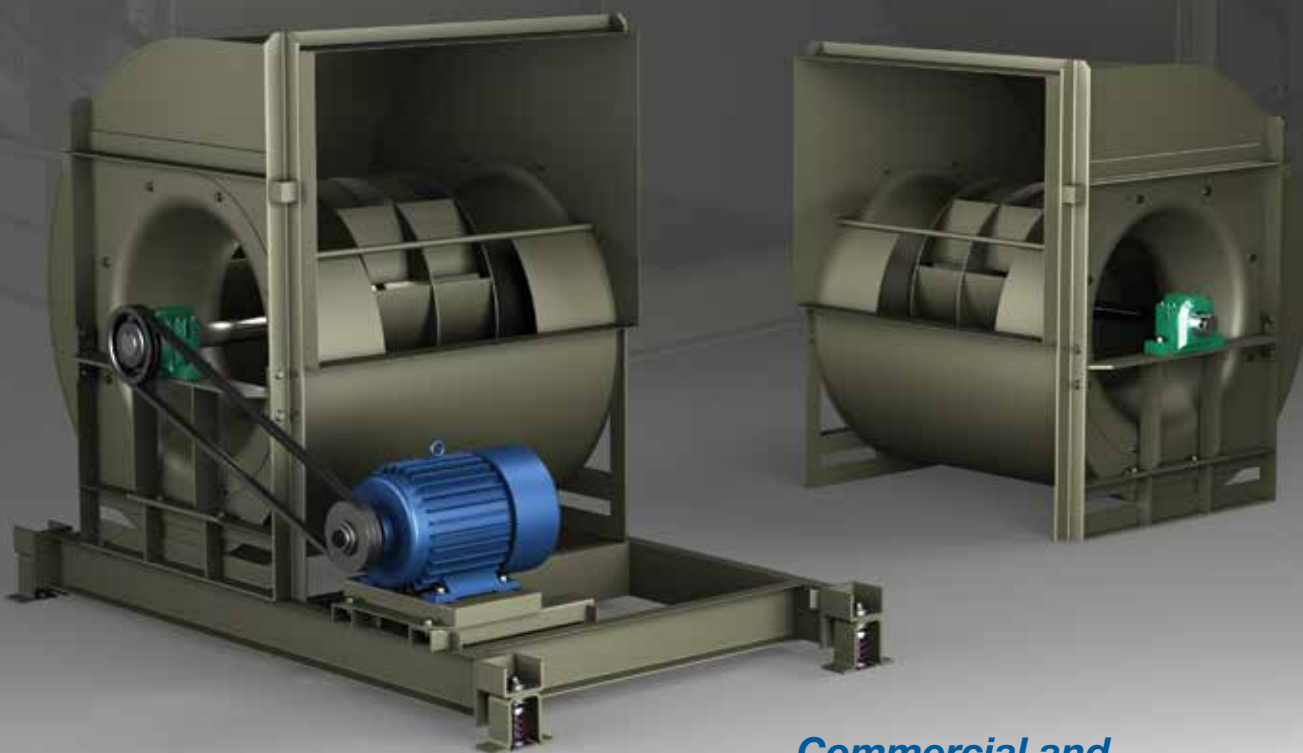


Centrifugal Fans Models BIDW and AFDW

- Backward-Inclined and Airfoil Wheels
- Double-Width



*Commercial and
Industrial Applications*




BUILDING VALUE IN AIR.

June
2020

Greenheck's airfoil and backward-inclined centrifugal fans are designed to provide efficient and reliable operation for commercial and industrial applications. Our products are manufactured with state-of-the-art laser, forming, spinning and welding equipment, and endure our quality control testing to ensure trouble-free start-up.

Greenheck double-width centrifugal products include:

- AMCA Licensed for Sound and Air Performance
- All welded designs or Permalock™ construction
- Concentric mount bearings with industry's highest cataloged bearing life
- Corrosion-resistant, electrostatically applied and baked powder coatings
- Three-plane, six-channel vibration analysis on all manufactured double-width models



Greenheck Fan Corporation certifies that the backward-inclined and airfoil centrifugal fans 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 Publication 311 and comply with the requirements of the AMCA Certified Ratings Program. AMCA Licensed Sound and Air Performance can be found in Greenheck's Computer Aided Product Selection program (CAPS).

Applications

- Indoor use only with unducted inlets
- Excellent for built-up plenums or custom air handlers

BIDW Size 12-73
 up to 379,000 cfm (643,900 m³/hr)
 up to 15 in. wg (3.74 kPa)

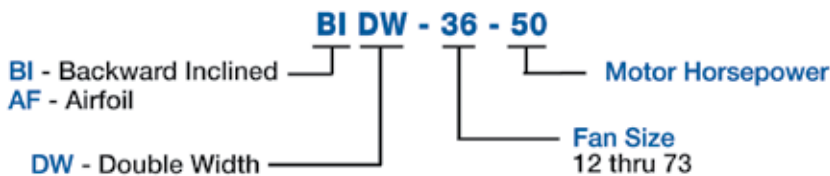
AFDW 18-73
 up to 379,000 cfm (643,900 m³/hr)
 up to 15 in. wg (3.74 kPa)

Greenheck's double-width centrifugal products are specifically designed for supply or return fans in built-up or custom air handlers or retrofit (replacement) applications.

Our expertise in air movement technology can assist you in improving the operational efficiency of your system.



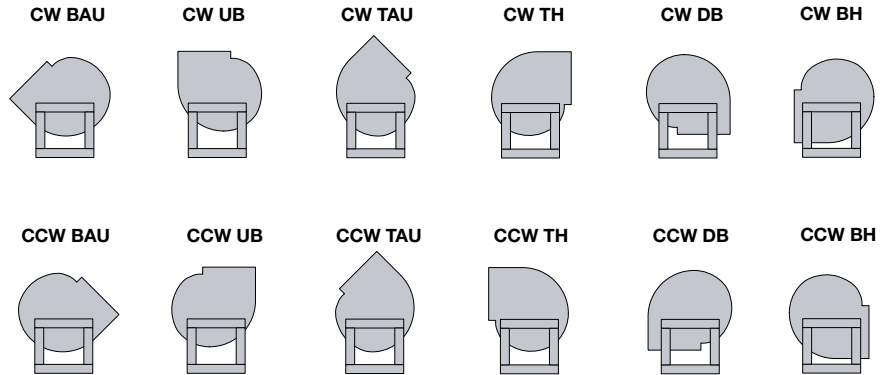
Centrifugal Fan Model Number Code:



Discharge Positions and Rotatable Housings

All double-width centrifugal fans are available with clockwise (CW) or counterclockwise (CCW) rotation in all standard discharge positions. **Rotation and discharge is always determined from the drive side of the fan.**

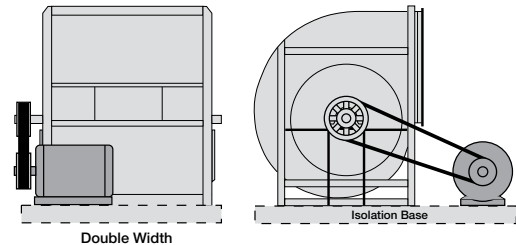
Top Angular Down (TAD) and Bottom Angular Down (BAD) discharge positions are only available with special construction to prevent interference between the drive frame and fan discharge.



Arrangement 3 – Belt Drive

Double-Width Backward-Inclined or Airfoil Wheel

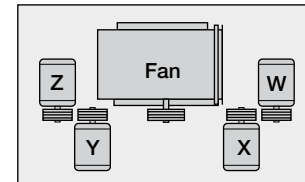
- Bearings are mounted in the airstream.
- Unlimited motor size.
- Requires an isolation base (by factory) or structural pad to mount the fan and motor.
- Choice of motor positions W, X, Y, or Z.
- Weatherhood is not available on this arrangement. Recommend belt guard and shaft guard.
- Recommended for clean air at ambient temperatures.



Class I, II, III

Motor Positions

Fan arrangement 3 requires an isolation base or structural platform to support the fan and motor. The motor can be located in any of four positions around the fan shaft to ensure proper alignment. Motor positions W and Z tend to make a longer footprint from end to end. Positions X and Y tend to make a shorter but wider footprint.



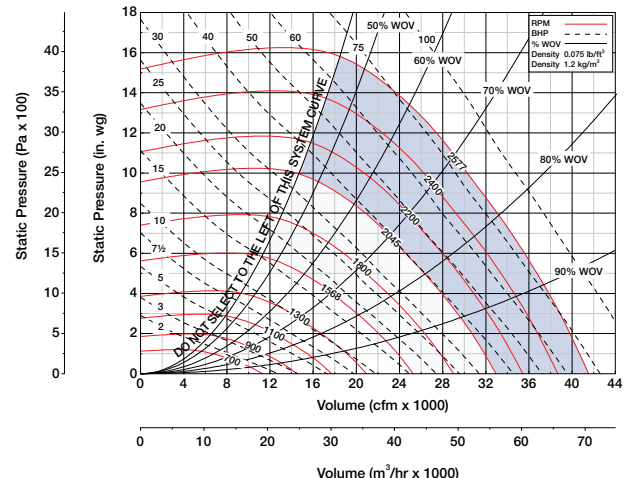
Motor position and fan rotation are determined from drive side

Class of Construction

Fan class refers to a construction level designed to handle a given fan outlet velocity and pressure. As the fan performance requirements increase, the fan construction (material gauge, shaft diameter, motor size) must also increase to physically handle the new workload.

Double-width centrifugal products are available in Class I, II, or III, with Class I being the lightest construction and Class III having the heaviest construction and performance capacity.

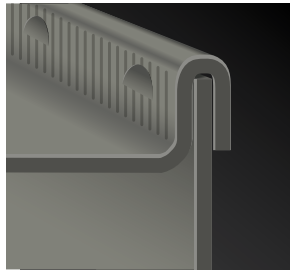
A typical fan curve is shown with shaded class limits. Complete AFDW and BIDW fan performance can be found within our computer aided product selection (CAPS®) program, or at ecaps.greenheck.com in eCAPS®, our online product selection program designed for HVAC engineers.



Class I	Class II	Class III
---------	----------	-----------

Permalock™ Housing

Permalock™ housings use a mechanically fastened seam instead of welding. This airtight and watertight housing construction uses the same structural support as the all-welded housings. Permalock construction is an excellent value engineering option for applications up to 8.5 in. wg (2.1 kPa).



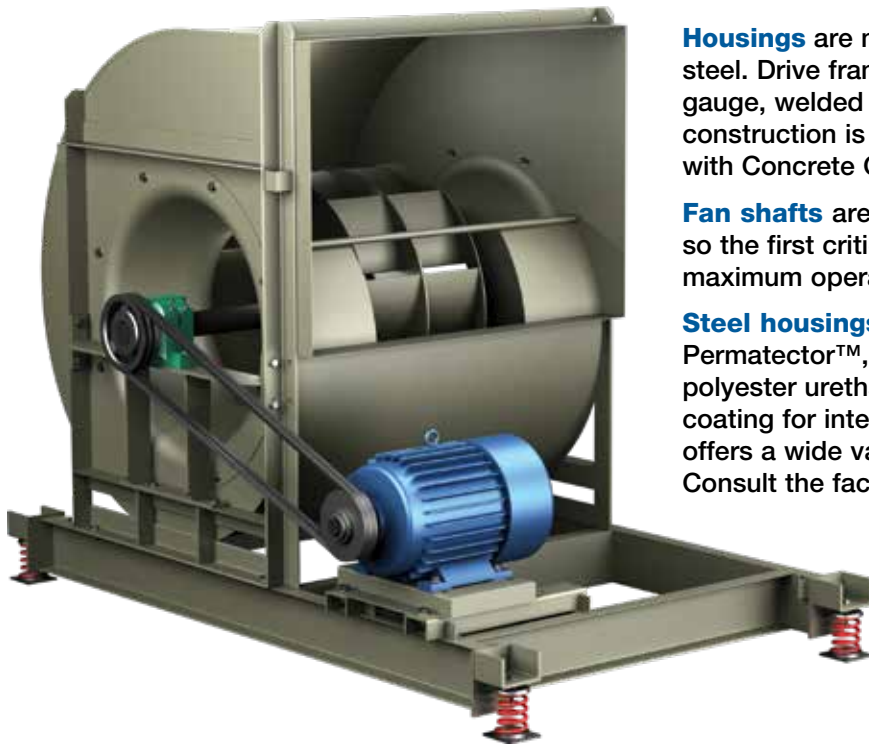
Welded Housing

Greenheck centrifugal fans are manufactured with heavy gauge, edge-to-edge welded housing construction. All-welded construction is common for industrial applications and is suitable for pressures up to 15 in. wg (3.74 kPa).



Housing	Size	Class	Housing Material	Wheel Type
Permalock™	18–49	I, II	Steel	Backward-Inclined or Airfoil
Welded	18–73	I, II, III	Steel	

Standard Construction Features



Housings are manufactured of laser cut and formed steel. Drive frames are manufactured with heavy-gauge, welded steel. Aluminum or stainless steel construction is optional. All steel surfaces are coated with Concrete Grey RAL-7023 Permator™.

Fan shafts are turned and polished steel that is sized so the first critical speed is at least 25% over the maximum operating speed for each pressure class.

Steel housings and **wheels** are coated with Permator™, an electrostatically applied and baked polyester urethane. Permator is an excellent coating for interior or exterior applications. Greenheck offers a wide variety of additional protective coatings. Consult the factory for more information.

Wheels

Greenheck’s double-width centrifugal fans have non-overloading backward-inclined blades. Both our backward-inclined (BI) and airfoil (AF) designs operate efficiently and quietly. All wheels are statically and dynamically balanced to grade G6.3 per ANSI S2.19.

	BIDW	AFDW
Wheel Type		
Application	Clean air	
Temperature	Up to 180°F (82°C)	
Construction	Steel <i>Consult factory for alternate materials</i>	

Premium Bearings

Double-width centrifugal products are manufactured with “air handling quality” self-aligning ball or roller pillow block bearings. Our standard bearings use concentric lock collars (no set screws) which ensure smooth operation and provide superior grip force between the bearing collar and fan shaft. All bearings are selected for a basic rating fatigue life of L₁₀ in excess of 80,000 hours (L₅₀ at 400,000 hrs.) at the maximum RPM for the selected pressure class. For more critical applications, Greenheck offers bearings with a minimum L₁₀ life in excess of 200,000 hours (L₅₀ at 1,000,000 hrs.). Our bearings include zerk fittings for relubrication.



	L ₁₀ Life	Equal to L ₅₀ or Average Life
Industry Standard	40,000 hrs.	200,000 hrs.
Greenheck Standard	80,000 hrs.	400,000 hrs.
Greenheck Upgrade	200,000 hrs.	1,000,000 hrs.

L₁₀ life implies 90% reliability or 10% failure rate after the stated hours.
 L₅₀ life implies 50% reliability or 50% failure rate after the stated hours.

Vibration Analysis

All Greenheck double-width products endure a complete mechanical vibration test after assembly. Our custom data acquisition system uses tri-axial accelerometers to measure the vibration in three planes at the design operating speed. A permanent record for each fan’s performance is kept on file and is available upon request.

The standard “filter-in” vibration levels attained meet the requirements of Fan Application BV-3 as defined in AMCA Standard 204-05 “Balance Quality and Vibration Levels for Fans”. Consult the factory if more stringent vibration levels are necessary.

Model	Drive Type	Filter-In Vibration Limit (Rigidly Mounted)
BIDW, AFDW	Belt, Arrg. 3	0.15 in/sec-pk



Sure-Aire™

The Sure-Aire™ airflow monitoring station measures fan airflow within an accuracy of 3%. Sure-Aire does not interfere with airflow and will not impact the fan's air or sound performance, unlike traditional flow probes mounted in the fan venturi that create a system effect. This option is available on all double-width centrifugal products and ships completely assembled from our factory. An electronics package with pressure transmitter and digital readout is available with the Sure-Aire system. The electronic kits are available for 50 or 60 Hz power supplies and provide a 4-20 mA output that can be tied into the building's automation system.



Motor Starters

The fundamental function of a motor starter is to protect the motor from damage that can occur from overheating. With a Greenheck motor starter, you will be provided with the best motor protection available.

Specific model components may include a physical interface, overload protection, disconnect, magnetic contactor, NEMA-1 or NEMA-3R steel enclosures, and pre-engineered easy system integration. For complete information on specific Greenheck Motor Starter models refer to greenheck.com, Motor Starter web page.



Volume Control

VFD Rated Motors

Variable frequency drives (VFDs) change the frequency of the input power to the motor, which results in changing the motor's speed. Changing the speed of the fan provides the greatest potential for energy savings at partial loads.

Volume Control Dampers

Control dampers are available in painted steel, aluminum or stainless steel. Actuator options include manual quadrants (manual operation), electric actuators, or pneumatic actuators.



Vibration Isolators and Isolation Bases

Greenheck offers a complete package of steel isolation bases, inertia bases and vibration isolators to simplify field assembly and reduce transmitted vibrations. Arrangement 3 isolation bases include a motor adjustment (vertical adjustment on X/Y) base for belt adjustments. Additionally, bases are available with height saving brackets to keep the base and fan center of gravity lower to the mounting surface.

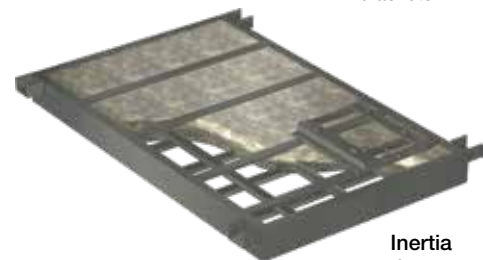
Steel bases consist of laser formed steel members welded into a rigid one-piece base. Bases are available without isolators or with rubber or spring mount isolators.

Inertia bases may be desirable when steel bases do not provide sufficient mass or where discharge velocities cause greater reaction forces. Concrete is provided by others.

For more information, refer to the Mounting Bases and Vibration Isolation catalog found on the catalog tab of the Centrifugal Industrial Blowers page on greenheck.com.



Isolation base with height saving brackets



Inertia base



Neoprene



Free Standing



Restrained

Belt Guard

Belt guards are designed to allow easy access to the belts and pulleys for service. All belt guards include tachometer openings to monitor the fan speed as well as an access panel for testing belt tension. Belt guards meet OSHA guidelines.

Inlet and Outlet Guards

Removable inlet and outlet guards provide protection for personnel and equipment in non-ducted installations. Inlet and outlet guards meet OSHA guidelines.

Access Doors

Bolted or hinged (quick-opening) access doors provide access for cleaning or inspection. Access doors are standard on downblast discharge fans. Raised bolted access doors are also available to allow up to 4 in. (102 mm) of field-applied insulation on the fan housing.

Protective Coatings

Greenheck offers a wide variety of protective coatings suitable for corrosive applications. All coatings are electrostatically-applied baked powders that offer a durable, long-lasting finish.



Disconnect Switches

Greenheck offers a wide selection of NEMA rated fusible or non-fusible disconnect switches. Switches can be factory-mounted or shipped loose for field installation.

Drain Connection

A one-inch (25 mm) threaded drain connection is located at the bottom of the fan housing to drain water that may accumulate.

Extended Life Bearings

Extended life bearings are selected for a basic rating fatigue life L_{10} per ABMA standards in excess of 200,000 hours at the maximum RPM for the selected pressure class. L_{10} is the life associated with 90% reliability of a bearing.

Extended Lubrication Lines

Fans can be provided with lube line kits containing 25 ft (7.6 m) of nylon tubing and grease fittings for field installation.

Split Housings

Split housings can solve many space limitation problems in both retrofit and new construction situations. The standard split is horizontal, through the centerline of the fan shaft. Split housings are available on double-width fans sizes 33 and larger. Vertical splits are available upon request.



Design and Selection Support

Enjoy Greenheck's extraordinary service, before, during and after the sale.

Greenheck offers added value to our wide selection of top performing, energy-efficient products by providing several unique service programs.



- Our Quick Delivery program ensures shipment of in-stock products within 24 hours of placing your order. Our Quick Build made-to-order products are manufactured in 1-3-5-10-15-20 or 25-day production cycles, depending upon its complexity.



- eCAPS® online selection guides you to choose the best value product for your building projects. It includes fan, louver, make-up air and dedicated outdoor air systems (DOAS) selection, as well as a damper guide, and toolbox.

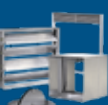


- Greenheck's free computer aided product selection program CAPS®, rated by many as the best in the industry, helps you conveniently and efficiently select the right products for the challenge at hand.



- Our 3D service allows you to download, at no charge, easy-to-use AutoDesk® Revit® 3D drawings for many of our ventilation products.

Find out more about these special services at greenheck.com



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.

