

windmason  
BREATHE THE FINEST

TAKNIYA AL-BINA FACTORY  
FOR AIR CONDITIONER



ISO 9001:2015 Certified



## CENTRIFUGAL FANS

Innovative Green Air Conditioning  
HVAC & Power Solutions

Windmason single-width 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 undergo quality control testing to ensure a trouble-free start-up.

## Benefits of Windmason Centrifugal Products

- Ease of selection using Windmason
- Tiered product portfolio offering the best value fan for any given application
- Quick Build and Fast Pass expedited shipping programs
- Factory tested prior to shipment



## Forward and Backward Curved Fans

Centrifugal fans are the most common type of supply fans used in the HVAC industry. The most common types of centrifugal fan impellers are the forward curved impeller and the backward curved impeller. Backward curved, backward inclined and airfoil impellers have similar performance curves and thus the following backward curved fan information applies to backward inclined and airfoil fans, as well.

## Manufactured in the KSA

Model WCB fans are built in one of two manufacturing locations, Schofield, WI and **Shelby, NC**. Multiple manufacturing locations enables us to build fans and get them to you, our customer, faster.

### Quick Build Availability

Select model WCB fan configurations are available in as little as 3 days on our Quick Build program.





## Efficiency – Controllability – Simplicity

The WCB direct drive model (100 series only) is an arrangement 4 utility set fan with a backward-inclined or forward-curved centrifugal wheel. The housing is constructed from galvanized steel with a bolted frame. High performance powder coating is optional. Fans are provided with an integral speed control for easy system balancing. Simplified wiring and preprogrammed variable frequency drive (3-phase) make installation quick and easy.

### Standard Construction and Configuration

- Volume up to 6,500 cfm
- Static pressure up to 3 in. wg
- Galvanized or coated steel
- Greenheck's Permalock™ lock seam scroll
- Aluminum wheel
- NEMA-3R, toggle switch, mounted and wired
- Bolted access door
- Weatherhood
- Drain



### Accessories

- Inlet guard
- Outlet flange
- Outlet guard
- Backdraft gravity damper
- Neoprene isolators
- Equipment supports
- Extended warranty

### Simplified Wiring

Easy to install – featuring a terminal strip, disconnect and speed control mounted and wired by the factory.



### Direct Drive Motor

Low maintenance – no belts, bearings or pulleys to service.



### Integrated Speed Control

Speed control is mounted, wired and programmed at the factory. Adjust fan speed with the push of a button.

Single-phase applications use Windmason electronically commutated.

Motor with a control dial for adjustment.

Efficient motor with variable frequency drive (VFD).

1- and 3-phase options can be controlled via 0-10 vDC signals.

### Motor Benefits

WBC electronically commutated motor combines motor technology, controllability and energy-efficiency into a single low-maintenance unit and is the industry's first fully-controllable motor.

- Motor can attain up to 85% efficiency, reducing energy consumption.
- 80% usable RPM turndown vs. 30% on AC single-phase direct drive, allowing for a broader speed adjustment covering more fan performance ranges.



### 3-Phase Motor with Micro Drive (VFD)

Electronically commutated (EC) motors are great for single-phase applications. However, once a fan performance approaches 1 hp, motors move to 3-phase applications.

Using a 3-phase induction motor with a micro drive (VFD) On demand is a good way to get the same functionality as an motor.

- 3-phase induction motors are just as or more efficient than single-phase EC motors.
- Micro Drive (VFD) allows motor to speed up or slow down to achieve desired RPM.







## Windmason centrifugal products are designed to handle a variety of commercial and industrial applications:

- General supply, return or exhaust systems
- Emergency smoke exhaust (buildings, car parks, etc.)
- Restaurant grease exhaust
- Stairwell pressurization
- Process heat exhaust
- Filter houses and dust collectors
- Built-up or custom air handlers
- Spark-resistant fume exhaust
- Corrosive fume exhaust
- Grain drying

### Emergency Smoke

Atriums, libraries, multi-story buildings

Select WCB centrifugal fans are Listed for Power Ventilators for Smoke Control Systems. Fans can be installed for dual application use or as a dedicated emergency system, with the primary function of the fan being general air movement, but built to withstand operation seen in emergency smoke situations.

The emergency high temperature option is suitable for the following temperatures:



Operating Temperature	Time Duration
600°F	4 hours
700°F	2 hours
800°F	1.5 hours
1000°F	40 minutes

### High Temperature Process Exhaust:

Designed for applications involving elevated temperatures above 250°F continuously for extended periods of time. Material and arrangement choices are limited to components suitable for this application and located to minimize effects. Fans manufactured with a high temperature process package include high temperature shaft seal, heat slinger, high temperature fan bearing grease, and high temperature coating on steel fans. Heat slinger dissipates heat being transferred down the fan shaft preventing bearing grease evaporation. Applications up to 1000°F can be handled with the use of stainless steel materials.

### Restaurant Exhaust

The centrifugal scroll fans are designed for high pressure restaurant exhaust. The welded housing is suitable for indoor or outdoor mounting locations, whereas the housing is suitable for outdoor kitchen ventilation installations. Listing tests exceed duct temperatures of 400°F continuous operation. selections require a drain connection and access door for cleaning.



## Wheels

WCB centrifugal fans have multiple wheel options. All wheels are statically and dynamically balanced to grade.

	Backward-Inclined (BI)	Airfoil (AF)	Forward-Curved (FC)
Wheel Type			
Application	General purpose, clean air or severe environments	Clean air or fume exhaust	Clean air
Temperature	Up to 1000°F	Up to 500°F	Up to 180°F
Construction	Steel Aluminum 316 Stainless Steel	Steel Aluminum	Steel Aluminum

## Welded Housings

Optional on Class 0, I, II and standard on larger fan sizes, centrifugal fans are manufactured with heavy gauge, welded housing construction. All welded construction is common for industrial applications and is suitable for pressures up to.



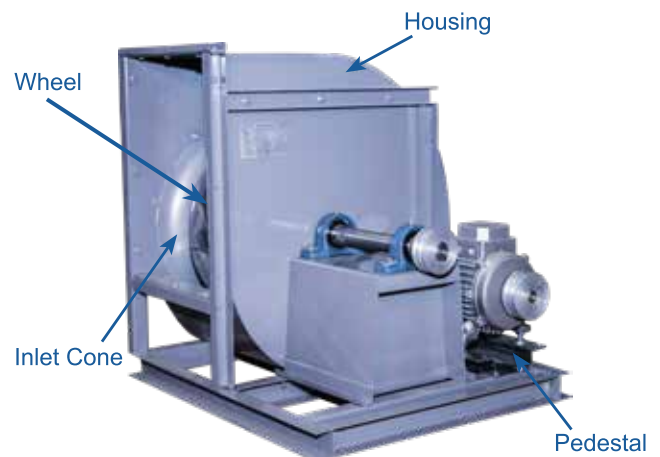
## Alternative Materials

WCB offers centrifugal fans in aluminum or stainless steel construction as an alternative to coated steel. GI construction provides advantages for applications with high moisture and various chemicals. GI also reduces the weight of the fan if there are structural concerns. Stainless steel construction is used for environments subject to continuous high heat up to 1000°F or severe corrosives. Both GI or stainless steel construction can be applied to the entire fan (housing, wheel, inlet cone and drive frame) or the airstream components (housing, wheel and inlet cone) only.

## Resistant Construction

WCB centrifugal fans are available with resistant designs suitable for applications that involve flammable particles, fumes or vapors. resistant construction options adhere to guidelines defined within WCB Standard.

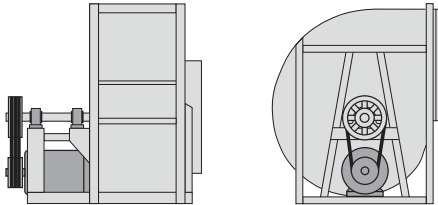
Spark A	All parts in contact with the airstream are constructed of non-ferrous material (usually GI).
Spark B	The fan wheel is constructed of a non-ferrous material (usually GI). A non-ferrous (GI) rub ring surrounds the fan shaft where it passes through the fan housing.
Spark C	The inlet cone is constructed of non-ferrous material (usually GI). A non-ferrous (GI) rub ring surrounds the fan shaft where it passes through the fan housing.





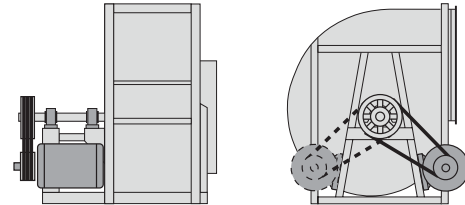
### Arrangement 10 — Belt Drive

- Recommended as first choice configuration for belt drive applications
- Most compact belt drive arrangement
- Bearings are mounted out of the airstream
- Motor is mounted beneath the drive frame
- Available with a weatherhood to cover motor, drives and bearings
- Moderate dirt and heat tolerance



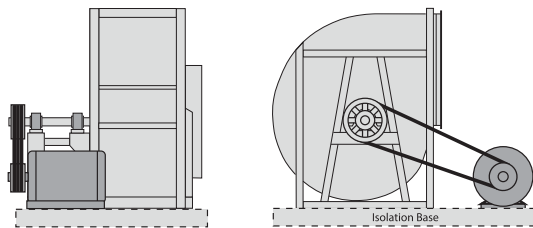
### Arrangement 9 — Belt Drive

- Bearings are mounted out of the airstream
- Easy access to large motors mounted on drive frame
- Standard motor position is on the right side of the drive frame
- Optional motor position is on the left side of the drive frame
- Available with motor cover, belt guard and shaft guard



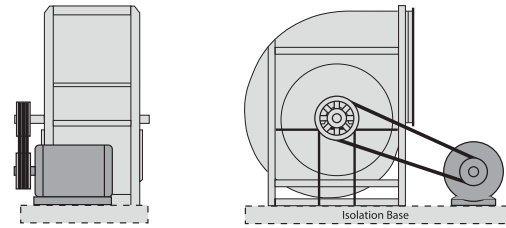
### Arrangement 1 — Belt Drive

- Bearings are mounted out of 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 (see page 9)
- Available with motor cover
- Suitable for high temperatures or contaminated air



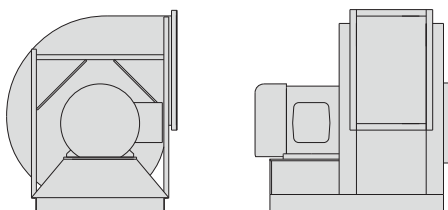
### Arrangement 3 — Belt Drive

- 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 (see page 9)
- Available with motor cover, belt guard
- Recommended for clean air at ambient temperatures



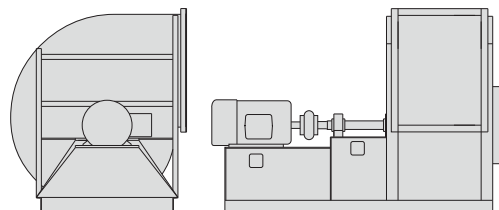
### Arrangement 4 — Direct Drive

- Available with partial width wheel and housing modifications for specific performance
- Recommended for higher horsepower applications in lieu of belt drive
- Limited to standard motor speeds, but are available with variable frequency drive compatible motors
- Provides compact design with low maintenance
- Available with motor cover



### Arrangement 8 — Direct Drive

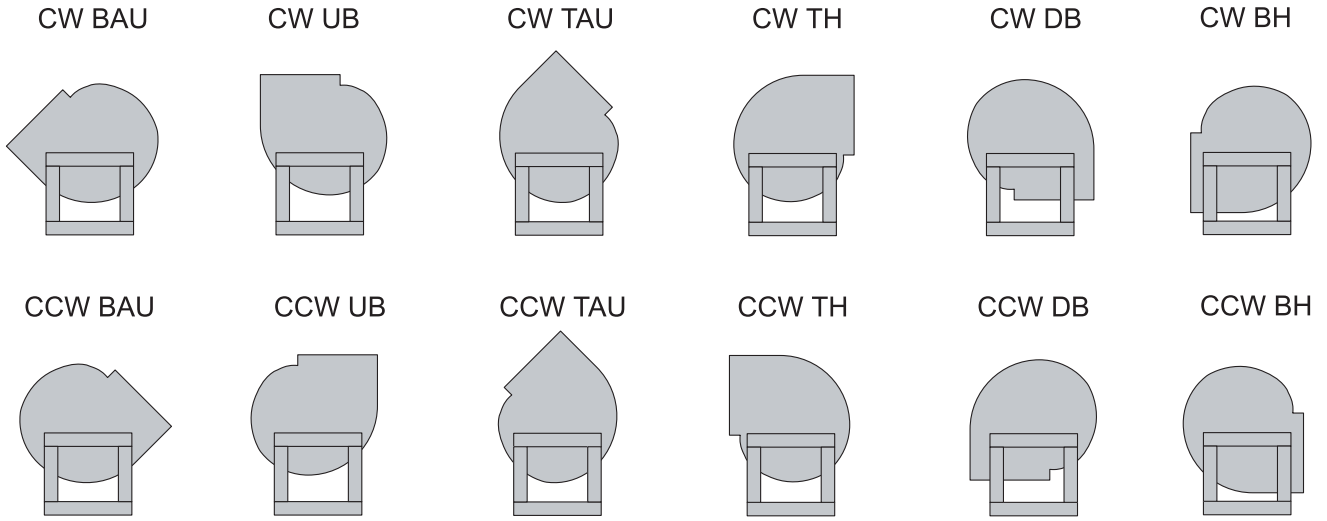
- Available with partial width wheel and housing modifications for specific performance
- Recommended for higher horsepower applications in lieu of belt drive
- Limited to standard motor speeds, but are available with variable frequency drive compatible motors
- Bearings located out of the airstream
- Suitable for high temperatures or contaminated air
- Available with motor cover, belt guard



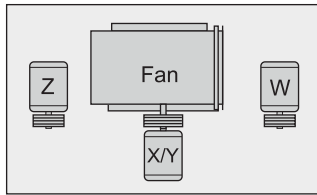


## Discharge Positions and Rotatable Housings

Rotation and discharge is always determined from the drive side of the fan.



## Motor Positions — Arrangements 1 and 3 Fans



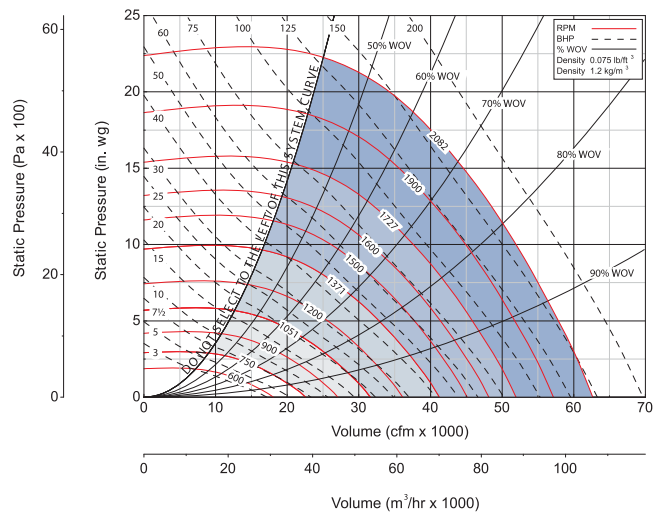
Motor position and fan rotation are determined from drive side

Fan arrangements 1 and 3 require a structural steel base or structural platform to support the fan and motor. The motor can be located in any of three 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/Y tend to make a shorter but wider footprint.

## Class of Construction

WBC defines fan class based on minimum outlet velocities and pressures a fan must be capable to produce. Fan classes are designated as 0, I, II, III or IV. As the fan class increases, the outlet velocity and pressure requirements increase as defined in WCB Standard 99. As the outlet velocity and pressures increase, the fan construction (material gauge, shaft diameter, motor size, etc.) must also change to physically accommodate the faster RPMs required.

Centrifugal products are available in Class 0, I, II, III, or IV, with Class 0 having the lowest maximum fan RPM and Class IV having the highest maximum fan RPM.



Class 0	Class I	Class II	Class III	Class IV
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## Vibration Isolators and Isolation Bases

Windmason offers a complete package of vibration isolators, isolation bases and inertia bases to simplify field assembly and reduce transmitted vibrations.

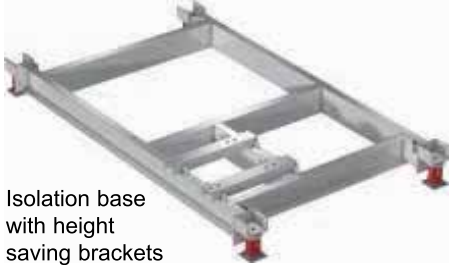
Refer to the catalog on [www.greenheck.com/Resources/Library/Literature](http://www.greenheck.com/Resources/Library/Literature). Search for [Mounting Bases and Vibration Isolation](#)

### Mounting Types



#### Direct Mount

No base required, isolators are attached directly to equipment. Direct isolation can be used if equipment is unitary and rigid without the use of additional support. Direct isolation is not recommended for equipment **having large overhung loads (e.g. motors on arrangement 9 fans)**. If there is any doubt that equipment can be supported directly on isolators, use bases or consult the factory.



Isolation base with height saving brackets

#### Isolation Base

Isolation bases consist of formed steel members welded into a rigid one-piece base. A motor slide base is included where applicable. Bases are required for all arrangement 1 and 3 fans with independently mounted motors. Isolation bases are available without isolators, with rubber mounts or with spring mounts. All formed steel bases with spring mounts incorporate height saving brackets.



Inertia base

#### Inertia Base

Inertia bases may be desirable where isolation bases do not provide sufficient mass or where discharge velocities cause greater reaction forces. The additional weight of the concrete reduces the vibration amplitude and reduces reaction forces from fan thrust and start and stop motion. Concrete is by others.

Note: Motor slide base is included on arrangement 1 & 3 fans.

### Isolator Types



Neoprene

#### Rubber Mount

Neoprene mountings consist of a steel top plate and base plate completely embedded in colored (oil-resistant) neoprene for easy identification of capacity. Neoprene mountings are furnished with a tapped hole in the center. This enables the equipment to be bolted securely to the rubber mount.



Restrained

#### Restrained Spring Mount

Restrained spring isolators consist of laterally stable, free-standing springs assembled into a steel housing. These assemblies are designed for vertical and horizontal motion restraint.

Springs provide 50% overload capacity and are color coded or identified to indicate load capacity. Restrained spring mounts are recommended for equipment subject to wind-loading or large torquing forces. They are also used for equipment subject to large weight changes such as swing-out fans.



Free Standing

#### Free-Standing Open Spring Mount

Free-standing spring isolators are unhoused laterally stable steel springs. They provide a minimum horizontal stiffness of 0.8 times the rated vertical stiffness and provide an additional 50% overload capacity. These isolators are equipped with a top mounted adjusting bolt and an acoustical non-skid base. Springs are color coded or identified to indicate load capacity.





# OUR KEY CLIENT

Who makes us PROUD



	 <p>الرومانسية alRomansiah</p>	 <p>شركة خير الحصاد التجارية BEST HARVEST TRADING CO. LTD.</p>	 <p>الخطوط الجوية العربية السعودية شركة المخازن والخدمات المساندة LSC</p>
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Gulf Catering Co	Al Romansiah	Imile Logistic	Multi Brands Trading
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Al rashed Food Group	Dar Al Uloom University	White Crystal For Filling	Packing Product Co.
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# CONDITIONING

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