Centrifugal Upblast & Sidewall Exhaust

Models CUE, CUBE and USGF

- General Clean Air
- Restaurant Grease
- High Wind
- Seismic
- Smoke Control
- Contaminants

VARI-GREEN. performance data included

GREENHECK
Building Value in Air.

BUILDING VALUE IN AIR.

August
2023

GREENHECK
Building Value in Air.

Table of Contents

c UL US LISTED

- UL/cUL705 Listed Power Ventilators
  File E40001 (CUE and CUBE)
- UL/cUL 705 Supplement SC Power Ventilators for Restaurant Exhaust Appliances
  File MH11745 (CUE, CUBE and USGF sizes 099 and larger)
- UL/cUL Power Ventilators for Smoke Control Systems
  File MH17511 (CUBE and USGF models 500˚F (260˚C) for 4 hours and 1,000ºF (538°C) for 15 minutes)

Note: UL/cUL is optional and must be specified

Model sizes CUBE-099, 160XP, 240XP, 300HP & 300XP are excluded from Power Ventilators for Smoke Control Systems

CE

Modes CUE, CUBE, and USGF meet CE (Conformité Européenne).

Greenheck Fan Corporation certifies that the Model CUE, CUBE, and USGF 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. The certified ratings for Model CUBE, CUE and USGF, are shown on pages 19-50.

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 Greenheck service programs.

- Our Quick Delivery program ensures shipment of our in-stock products within 24 hours of placing your order. Our Quick Build made-to-order products can be produced in 1-3-5-10-15-20 or 25-day production cycles, depending upon their complexity.
- eCAPS® online selection guides you to choose the best value products for your building projects. eCAPS® includes fan, louver, make-up air, energy recovery preconditioner, and dedicated outdoor air system (DOAS) selections, as well as a damper guide and toolbox.
- Greenheck's free Computer Aided Product Selection (CAPS®) program, 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 Greenheck services at greenheck.com

Model Comparison

Model	Location		Mounting					Airflow				Application								Drive Type		Impeller Type			Performance	
	Outdoor	Indoor	Roof Curb	Base/Floor	Hanging	Wall	Ceiling Mounted	Exhaust	Supply	Reversible	Recirculate	General/Clean Air	Contaminated Air	Spark Resistant	Grease (UL 705 Supplement SC)	Smoke Control (UL 705 Supplement SD)	High Wind (150 mph)	High Temp (above 200°F)	Seismic Certification	Belt	Direct	Centrifugal	Propeller/Axial	Mixed Flow	Maximum Volume (cfm)	Maximum Static Pressure (in. wg)
CUE	✓		✓			✓		✓				✓	✓	✓	✓		✓	✓	✓		✓	✓			14,700	3
CUBE	✓		✓			✓		✓				✓	✓	✓	✓	✓	✓	✓	✓	✓		✓			30,000	5
USGF	✓		✓					✓				✓	✓		✓	✓	✓	✓		✓		✓			6,800	3.25

When you buy a Greenheck roof upblast or sidewall exhaust fan, you'll receive a fan with the industry's best performance and durability for general clean air, restaurant grease, smoke control, light contaminants, seismic, high wind, and hurricane applications. Both roof upblast and sidewall configurations are specifically designed to discharge air directly away from the mounting surface.

- Performance as cataloged is assured. All fan sizes are tested in our AMCA accredited laboratory and all models are licensed to bear the AMCA Sound, Air and FEI Performance seal.
- UL/cUL Listed for Power Ventilators, Restaurant Exhaust Appliances and Smoke Control Systems.
- Greenheck subjects these products to extensive life testing, ensuring the fans will provide many years of reliable performance.

LEED information

Greenheck became one of the first manufacturers in the air movement and control industry to join the LEED/green movement when they joined the United States Green Building Council (USGBC) in 2005. Greenheck has been actively researching qualification requirements for our products to meet LEED credits and prerequisites.

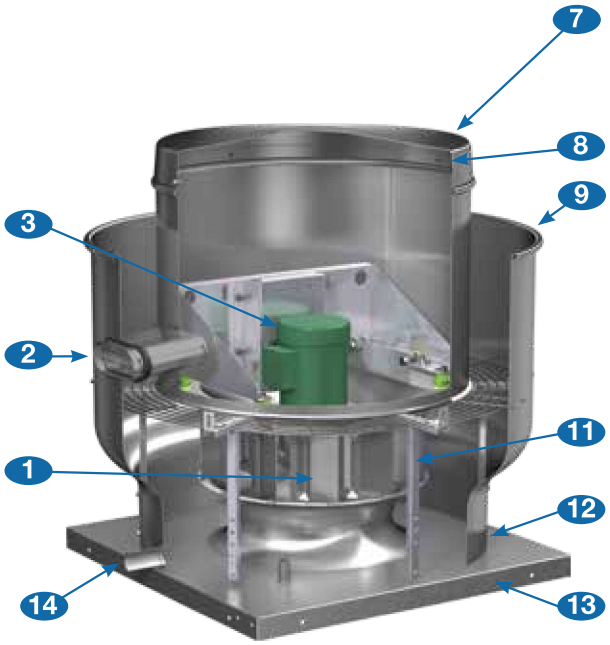
The Vari-Green® motor significantly helps qualification efforts for the Energy and Atmosphere credits and prerequisites, specifically credit one, Optimize Energy Performance and prerequisite two, Minimum Energy Performance.

Standard Construction Features

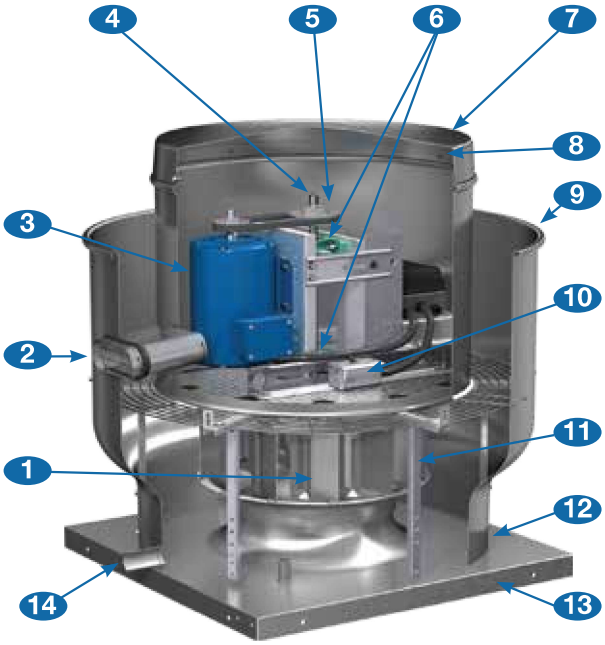
GREENHECK
Building Value in Air.

	Standard Construction Features	CUE CUBE	USGF
1 Wheel	A backward-inclined, non-overloading centrifugal wheel is utilized to generate high efficiency and minimal sound. Wheel cones are carefully matched to the venturi for maximum efficiency. Each wheel is statically and dynamically balanced for long life and quiet operation.	✓	✓ *Non-Stick, Steel
2 Motor Cooling Tube	Cooling fins located on top of the fan wheel draw outside air through a large breather tube directly into the motor compartment. Positive motor cooling with fresh air results in maximum motor life.	✓	✓
3 Motor	Carefully matched to the fan load and mounted out of the airstream.	✓	✓
4 Fan Shaft	Precisely sized, ground and polished so the first critical speed is at least 25% over the maximum operating speed. Where the shaft makes contact with bearings, close tolerances result in longer bearing life.	✓	✓
5 Drive Assembly	Belts, pulleys and keys are oversized 150% of driven horsepower. Machined-cast pulleys are adjustable for final system balancing. Belts are static-free and oil-resistant.	✓	✓
6 Bearings	100% factory tested and designed specifically for air handling applications with a minimum L_{10} life in excess of 100,000 hours (L_{50} life in excess of 500,000 hours).	✓	✓
7 Motor Cover	Constructed of aluminum. Attached with stainless steel fasteners for easy removal and access to the motor compartment and drive assembly.	✓	✓ *Steel
8 Stainless Steel Fasteners	Allow easy removal and access to the motor compartment and drive assembly.	✓	✓
9 Windband	One-piece, heavy-gauge aluminum with a rolled bead for extra strength directs exhaust air away from the mounting surface.	✓	✓ *Steel
10 Disconnect Switch	NEMA-1 switch is factory-mounted and wiring is provided from the motor as standard (other switches are available). All wiring and electrical components comply with the National Electric Code (NEC) and are either UL/cUL Listed or Recognized.	✓	
	NEMA-3R switch is factory-mounted and wired as standard. All wiring and electrical components comply with the National Electric Code (NEC) and are either UL/cUL Listed or Recognized.		✓
11 Internal Supports	Heavy-gauge supports provide additional strength to withstand wind loads of 150 PSF and support motor and drives.	✓	✓
12 Leakproof Construction	One-piece windband is continuously welded to the curb cap for leakproof protection on models CUE, CUBE, and USGF through size 240 and all sizes with UL/cUL 705 Supplement SC (restaurant exhaust).	✓	✓
13 Curb Cap with Mounting Holes	One-piece for a weathertight fit. Constructed of aluminum with an integral deep spun venturi. Aluminum curb cap has prepunched mounting holes to ensure correct attachment to the roof.	✓	✓ *Steel
14 Drain/Grease Trough	Allows for one-point drainage of water, grease and other residues.	✓	✓
Not Shown Nameplate	Permanent embossed aluminum nameplate for exact model and serial number identification.	✓	✓
Not Shown Internal Conduit Chase	For easy internal electrical wiring in applications. Not available on UL 705 Supplement SC (restaurant exhaust) rated fans per NFPA 96.	✓	
15 Dual Drives	Oversized 150%, adjustable, static-free and oil-resistant.		✓
16 Permatector™ Coating	Typically used for applications that require corrosion resistance in indoor and outdoor environments.		✓
17 Clean-Out Port	Allows for easy cleaning of the entire centrifugal wheel through a 4-inch diameter hole on the outside of the fan windband. Meets NFPA 96 standard.		✓
18 Hinged Curb Base with Cables	Allows maintenance personnel to gain access to wheel and ductwork for regular inspection and cleaning by utilizing the factory assembled hinge.		✓
19 Vibration Isolation	True vibration isolators consist of two independent studs separated by a neoprene (rubber) center. Reduces vibration and noise transfer between the drive system and fan housing. (No metal-to-metal contact. Factory-mounted ground wire used to ground system).	✓	✓
20 Lifting Points	Various lifting points located on the drive frame and bearing plate.	✓	✓

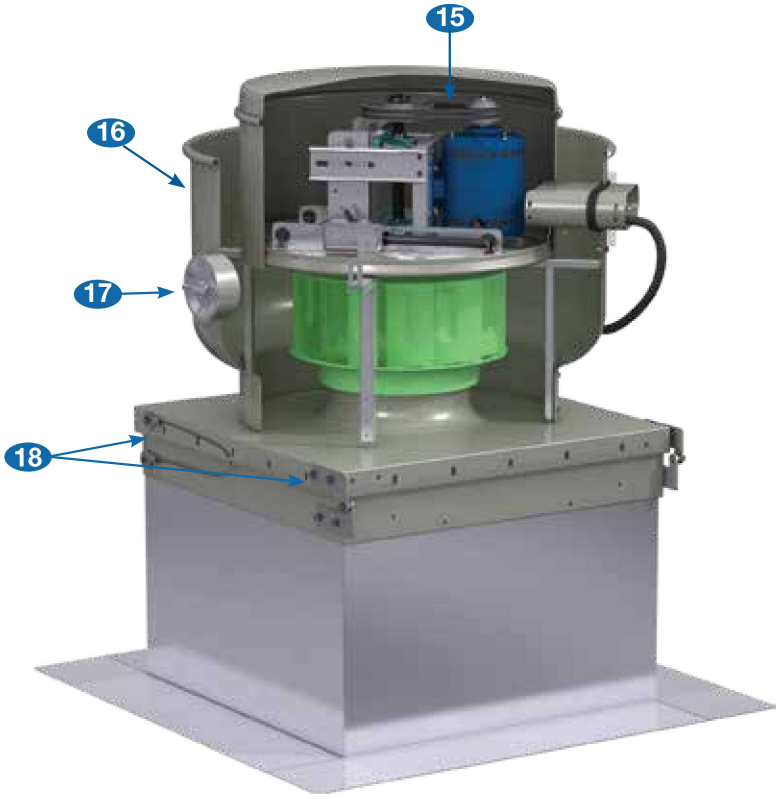
*Differences from the standard construction feature.



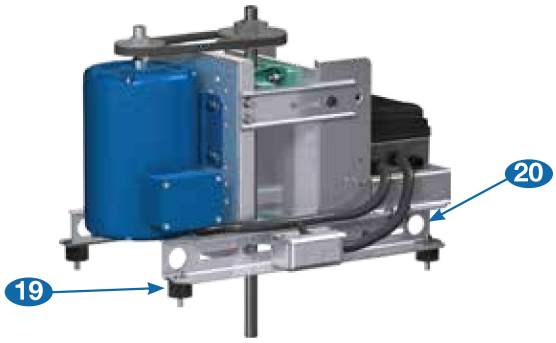
Model CUE



Model CUBE



Model USGF

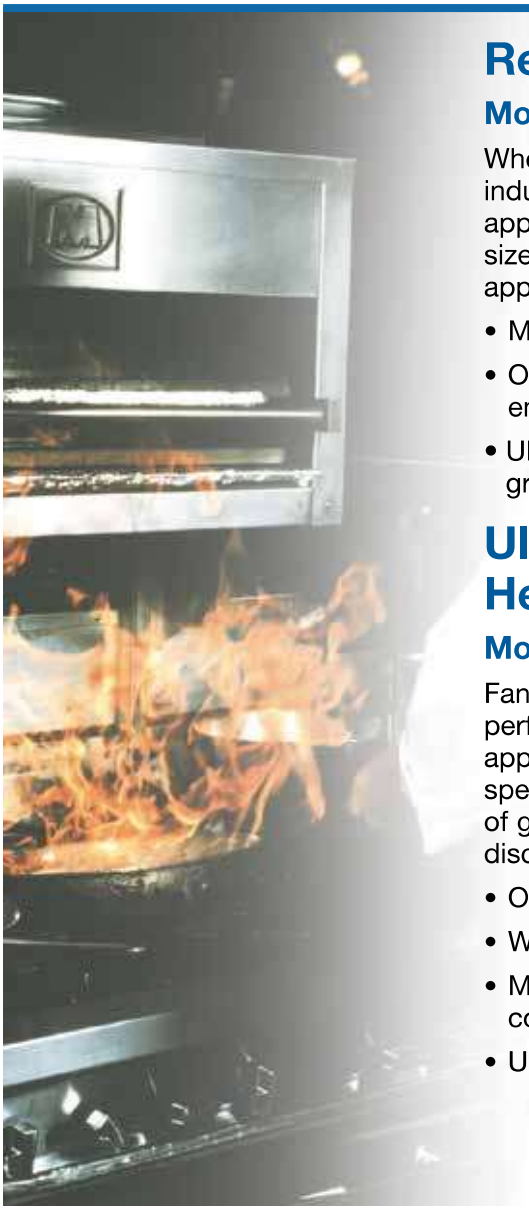


Clean Air Applications

Models CUE and CUBE

These spun aluminum fans are designed specifically for roof or wall-mounted applications. General clean or lightly contaminated exhaust air can be discharged directly upward, away from the roof surface, or discharged out and away from building walls.

- Most advanced motor cooling of any fan in its class.
- One-piece windband, continuously welded to the curb cap, ensures leak-proof construction for the life of the fan.
- Performance as cataloged is ensured. All fan sizes are tested in our AMCA accredited laboratory and all models are licensed to bear the AMCA Sound, Air and FEI Performance seal.
- Greenheck subjects these products to extensive life testing, ensuring the fans will provide many years of reliable performance.



Restaurant and Grease Applications

Models CUE and CUBE

When you choose a Greenheck fan, you have selected a fan with the industry's best performance and durability for restaurant and grease applications. Spun aluminum exhaust fans, models CUE and CUBE sizes 099 and larger, are specifically designed for use in restaurant applications to discharge air directly away from the mounting surface.

- Most advanced motor cooling of any fan in its class.
- One-piece windband, continuously welded to the curb cap, ensures leakproof construction for the life of the fan.
- UL/cUL 705 Supplement SC Listed for exhausting restaurant grease exhaust.

Ultimate Steel Grease Fan for Heavy Grease Applications

Model USGF

Fan model USGF is the industry's best for performance and durability for heavy grease applications. This spun steel exhaust fan is specifically designed to remove large amounts of grease and/or contaminants associated with solid fuel cooking and discharge the air directly away from the mounting surface.

- Only spun steel fan in the industry.
- Withstands the most severe cleaning conditions.
- Most advanced motor cooling of any grease fan. Capable of continuously handling 400°F (204°C) airstream temperatures.
- UL/cUL 705 Supplement SC Listed for restaurant grease exhaust.

Emergency Smoke Control

Models CUBE and USGF

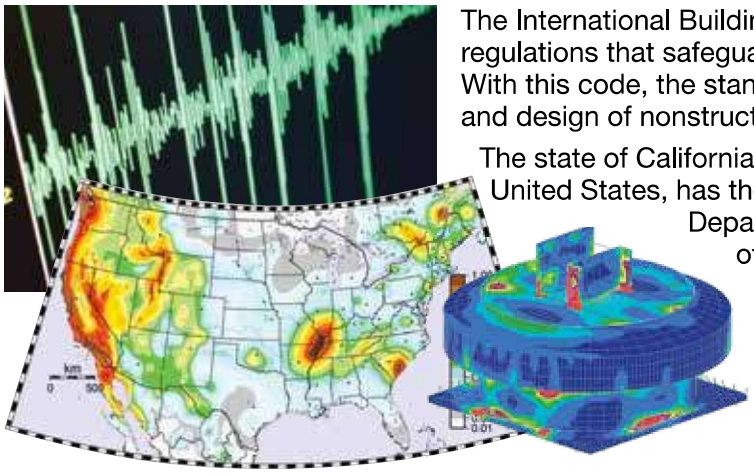
When you buy a Greenheck model CUBE or USGF with the smoke control option, you receive a fan with the industry's best performance and durability for smoke control applications (as found in emergency smoke control systems).

Note: Model sizes CUBE-099, 160XP, 240XP, 300HP & 300XP are excluded for Emergency Smoke Control.
Refer to page 18 for size chart.

- UL/cUL Listed for 500°F (260°C) for 4 hours and 1,000°F (538°C) for 15 minutes.
- Half the weight of traditional smoke control fans, an ideal choice for roof load concerns.
- Low profile, height is less than half of traditional smoke control fans, maximum of 48⅛ inches (1,334 mm) from curb cap to top of the fan.
- Multiple applications, capable of exhausting general clean air and satisfying emergency smoke control regulations.

Seismic

Models CUE and CUBE



With changes in building codes and standards, more equipment is being required to be seismically certified in areas of the country not commonly thought of as being in seismically active zones.

The International Building Code (IBC) is designed to provide model code regulations that safeguard public health and safety in all U.S. communities. With this code, the standards are intended to improve the performance and design of nonstructural systems subject to seismic events.

The state of California, one of the most active seismic areas in the United States, has the Health Care Access and Information (HCAI) Department. HCAI regulates the design and construction of health care facilities to ensure they are safe and capable of providing services to the public after a seismic event. HCAI developed their own unique certification process to incorporate the IBC and ASCE testing standards to ensure equipment remains operable after a seismic event.

Protocols designed for seismic standards:

Seismic Testing Criteria	All Greenheck seismically certified models have been tested using the most severe seismic event that is found on the Spectral Response Map per IBC Figures 1613.5 (1-2). Our testing is performed under the worst-case scenario using the highest mapped seismic load, highest level occupancy category, worst-case site class, and highest code mandated importance factor. This testing allows Greenheck seismically certified fans to be used anywhere in the United States under any conditions.
California HCAI Test Protocols	The California Department of Health Care Access and Information (HCAI) requires all certified models to be shake table tested in accordance with ICC ES AC-156, in which the fans are physically subjected to the same or greater forces than they will see during a seismic event. Subjecting models CUE and CUBE fans to this type of testing ensures the fans will operate without problems after a seismic event.
HCAI Certification	The HCAI certification numbers and supporting documents can be viewed on HCAI's website. This ensures that the fan has been subjected to and passed rigorous testing standards.

High Wind and Hurricane

Models CUE and CUBE

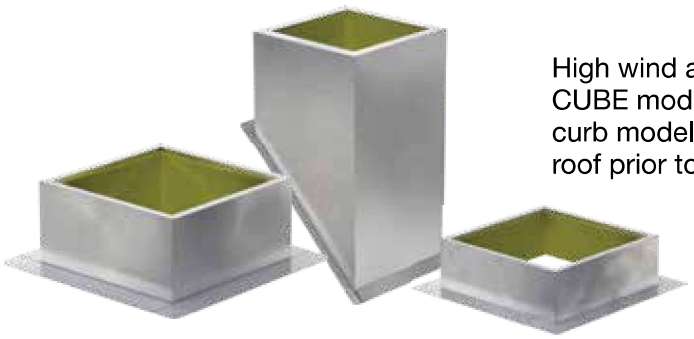
Greenheck is leading the High Wind Standard for rooftop fans and ventilators. Forceful winds are the cause of most hurricane damage. While forceful winds are not the only problem, wind-borne debris can also cause detrimental effects to objects and structures. High winds produce extreme forces on buildings and structures. By analyzing calculations, computer simulations, actual testing, and other standards—Greenheck developed the High Wind Standard.

Atlantic, Gulf and Pacific history of major hurricane tracks.

Protocols designed to protect against wind-borne debris and severe wind loads:

Structural Performance Load	A static load that is 1.5 times the design load (195 pounds per square foot pressure) is applied both positive and negative to simulate wind force loads in each direction. Structural Performance per Dade County Protocol TAS-202 (ASTM E-330).
Large Missile Impact Test	Large Missile Impact Testing is required when objects are 30 feet or less from the ground. The test is per Dade County Protocol TAS-201. The test unit is impacted three times with a piece of lumber (2 in. x 4 in. x 6 ft.) weighing approximately nine pounds and traveling at 34 mph. This simulates wind-borne debris striking the fan.
Miami-Dade NOA Numbers	View the certifications on the Miami-Dade County website. Models CUE and CUBE are the first upblast aluminum/steel fans in the industry that have received a Miami-Dade NOA for high wind (150 mph) and hurricane zones.
Certified Independent Third-Party Testing	Each Greenheck model has been subjected to extensive testing procedures. The CUE and CUBE have been certified by an independent third-party to the ASTM E-330 Static Pressure Difference Standard, Florida Building Code Test Protocols TAS-202 Static Pressure Difference and TAS-201 Large Missile Impact. All tests are videotaped for documentation of test method and results.

Large missile impact test



High wind and severe duty roof curbs are available on CUE and CUBE models with high wind certification. The severe duty roof curb models can ship separately to allow for final finishing of the roof prior to the fan arrival and installation.

Description	1 inch (25 mm) Insulation	Flashing Flange	Available Heights Inches (mm)
GPF for flat roofs Curbs are used for high wind/seismic applications. Fully formed on three sides with a single, fully welded seam when dimension (L+Wx2) <118 inches (2,997 mm). Larger sizes are a fully welded assembly.	✓	2 or 5 inches *(50.8 or 127 mm)*	8 to 42 *(203 to 1067)*
GPFHL for heavy load applications Curb construction is intended to support compression loads exceeding 1,000 pounds (454 kg). GPFHL is mounted directly to the roof deck structure. The roofing material is brought to the vertical surface and sealed to the flashing flange. Additional standard construction features include 14-gauge galvanized steel and internal vertical support members.	✓	5 inches *(127 mm)*	12 to 24 *(305 to 610)*
GPFHD for supporting heavy load equipment For severe duty, high wind and seismic applications. The double-thick flashing flange provides an extremely durable surface to secure the curb to the building structure. The roofing material is brought to the vertical surface and sealed to the flashing flange. Additional standard construction features include 12-gauge galvanized steel and internal vertical support members.	✓	Double Thick 5 inches *(127 mm)*	12 to 24 *(305 to 610)*

Model CUE

VARI-GREEN Motor

Greenheck's electronically commutated (EC) Vari-Green (VG) motor is the industry's first fully controllable motor. It combines motor technology, controllability and energy efficiency into a single low-maintenance unit. When combined with Greenheck fans, all the CFM and static pressure ranges of a belt drive can be attained with the benefits of a direct drive.

Motor Information			
HP	Voltages	Phase	Enclosure
1/15	115, 208-230	1	TENV
1/10	115, 208-230, 277	1	TENV
1/10	115, 208-230, 277	1	ODP
1/6	115, 208-230, 277	1	ODP
1/4	115, 208-230, 277	1	ODP
1/2	115, 208-230, 277	1	ODP
1/2	115, 208-230, 277	1	TENV
3/4	115, 208-230, 277	1	ODP
1	115, 208-230, 277	1	ODP
1	115, 208-230, 277	1	TENV
1	115, 208-230	1	TEFC
1	208-240, 380-480	3	TEFC
2	208-230	1	TEFC
2	208-240, 380-480	3	TEFC
3	208-230	1	TEFC
3	208-240. 380-480	3	TEFC
5	208-240. 380-480	3	TEFC
7 1/2	380-480	3	TEFC
10	380-480	3	TEFC

Benefits

- The motor can attain up to IE5 efficiency ratings and reduce energy consumption.
- Watt savings of 30-70% depending on RPM. Note: As motor speed is turned down, efficiency stays high as compared to an AC motor, which decreases dramatically.
- Operates cooler than a standard AC motor at lower RPMs. A cooler motor has longer motor life and reduces energy consumption.
- 75% usable RPM turndown versus 30%, see Motor Turndown Comparison chart at right.
- CUE fans with Vari-Green motors can provide all the CFM and static pressure ranges of a comparable belt drive.
- Maintenance costs are reduced as there are no belts or bearings to replace and no pulleys to adjust.
- Direct drive fans are often preferred where maintenance access is difficult.
- Provides a solution for demand-controlled ventilation applications.

Features

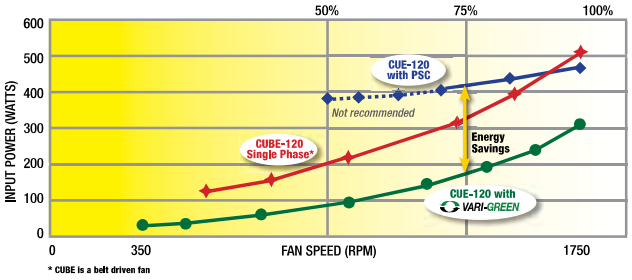
Dial on Motor Control - a potentiometer (dial on motor control) is mounted on the motor for easy speed adjustment for system balance. Simply turn the dial. There are no belts and pulleys to adjust.

Control Wire Inputs - the motor accepts a 0-10V DC signal from Building Automated Systems or other controls to adjust motor speed.

Vari-Green Advantages

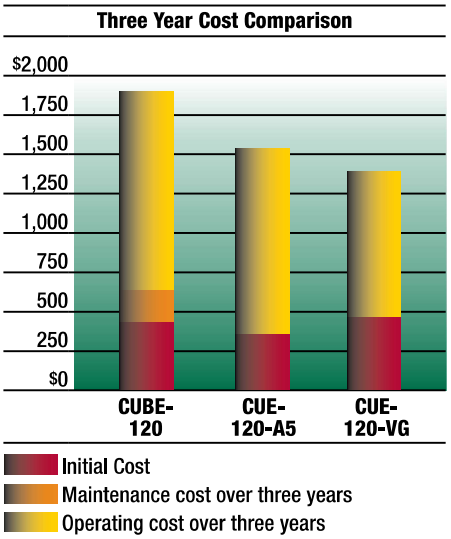
- Initial cost is similar to a belt drive
- Lower operating cost
- No maintenance: no belts, pulleys or bearings
- Easy RPM adjustment

Comparisons: Belt, Direct Drive with PSC and Direct Drive with Vari-Green



The length of each curve indicates the practical turndown range. Data is for 1/2 hp motors with load of 0.35 Bhp at full speed

Constant Volume Life Cycle Analysis



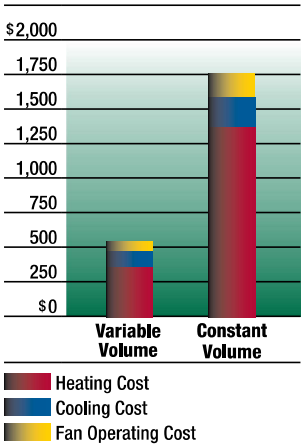
Analysis is based on operating costs for a period of three years where the fans operate continuously at 1725 rpm, 24/7, with an energy rate of $0.10/kWh. Maintenance on the CUBE-120 is estimated at $65/yr.

Note: Example is based on a relative cost. Use and installation variables may produce different results.

Demand Control Ventilation for Multistory Buildings

Applications requiring constant pressure or variable volume can utilize CUE fans with Vari-Green motors and Vari-Green controls. Demand control ventilation systems reduce the amount of energy used by decreasing the speed of the fan when demand is low. This lessens the amount of conditioned air exhausted, and in turn, reduces the total operating costs associated with air conditioning and heating in multistoried buildings including hotels, multifamily complexes, institutional facilities, and high-rise commercial buildings.

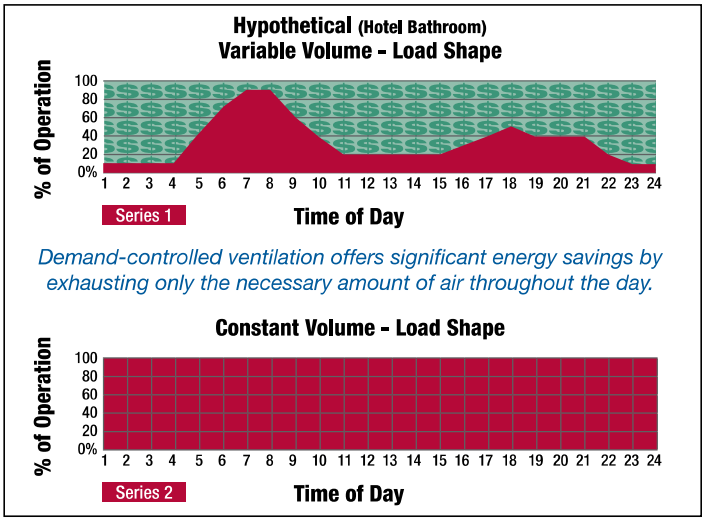
Variable Volume Operating Cost Analysis



Example of potential savings based on a northeast city in the USA using Vari-Green components for Variable Volume.

The Vari-Green constant pressure control is preprogrammed and easy to install for applications that include venting dryers, bathrooms, residential-type kitchen space, or industrial process exhaust.

Daily Operating Comparison: Variable Volume and Constant Volume



Demand-controlled ventilation offers significant energy savings by exhausting only the necessary amount of air throughout the day.

Note: A standard VFD compatible motor can also function within a Variable Volume system.

Vari-Green® Controls

Transformer - Provides 24V power from the existing line voltage at the fan to the Vari-Green motor and controls. Dual voltage primary (120/240V) transformer provided with the fan.

Hand/Off/Auto- Creates either a control or an accessory to other controls. Four modes are selectable. Hand mode: control of the motor at this device. Off mode: stops the motor. Auto-Local mode: select a speed at this control and toggle the fan on or off via voltage or dry inputs. Auto-Remote mode: accepts a speed reference signal from other devices and passes that to the motor when a voltage or dry input signal is received. Provides 24V power for other controls and an auxiliary contact for damper control.

Remote Dial - Allows for remote, manual airflow adjustments. Wall plate with dial may be mounted in a standard 2x4 inch electrical junction box.

Two-Speed Control - Control allows motor RPM to be set at two independent speeds (high or low). Meets minimum airflow requirements with the ability to bump up to high speed in an emergency or meet maximum airflow requirements, or reset down to low speed for energy conservation.

Constant Pressure Control - Control the Vari-Green® motor via static (variable volume) or velocity (constant CFM) pressure on the inlet or outlet side of the fan. Available with duct or room probes for use in:

- Multifamily structures including apartments, condos, hotels; residential kitchens and bathrooms
- Institutional facilities such as schools, prisons, multistory office buildings; bathrooms

Air Quality, Volatile Organic Compounds (VOC) - Control a Vari-Green motor via changes in VOCs. VOCs are gasses that are emitted from humans, building materials, perfumes, foods, and furniture off-gassing. Range is 0-2000 CO_2 PPM equivalent.

- Institutional facilities including schools, courthouses, hospital bathrooms, waiting rooms, cafeterias
- Commercial buildings including office space in conference rooms, bathrooms or breakrooms

Air Quality for Temperature and Humidity - Control the Vari-Green motor via changes in temperature, humidity, or both. Range is 32° to 120°F and 0% to 100% relative humidity.

- Multifamily structures including apartments, condos, hotels, with placement in bathrooms and utility rooms
- Commercial buildings such as office buildings for placement in general office space, conference rooms, utility rooms, and bathrooms

Greenheck's Vari-Green Drive is a factory-mounted, wired, and programmed variable frequency drive. Specifically designed for use in air handling applications, the Vari-Green Drive expands variable volume operation and simplifies speed adjustment to three phase applications.

Features

Vari-Green Drive model VGD-100+ is constructed with a NEMA-4X rated enclosure to ensure a long life operating under outdoor environmental conditions. Every Vari-Green Drive is compatible with all Vari-Green controls or any industry control sending a 0-10V signal. Model VGD-100+ is also equipped with Modbus/BACnet® communications allowing for seamless integration to building management systems.

	VGD-100+
Analog Input (0-10V, 4-20mA)	✓
Damper Actuator Output (24VDC)	✓
Control Voltage Output (24VDC)	✓
LED Indication Lights (3)	✓
Relay Output (2)	✓
Digital Input - Dry (2)	✓
Digital Input - Voltage (2)	✓
RS-485 (Modbus/BACnet®)	✓
Bluetooth/Smart Device Interface	✓
On-Board PID Control	✓
Optional Pressure Transducer	✓

Benefits

- Variable volume control from the factory on larger fan sizes where Vari-Green motors are not available.
- R^3 filtering and short leads mitigate harmonics.
- Quick start-up and simplistic commissioning as each drive comes preprogrammed and installed from the factory.
- Eliminate compatibility issues as the motor and drive are factory-matched.
- Induction motors are reliable, efficient and readily available if replacements are needed.

Vari-Green Drive 100+ App

VGD+ Available on the App Store GET IT ON Google Play

Vari-Green Drive model VGD-100+ features a smartphone companion app available for download from the app store. Manually control and monitor the drive from the app as well as access any advanced programming features. For more information about the companion app and its capabilities, reference the VGD-100+ Quick Start Guide located on greenheck.com and the documentation section of the app.

The following chart shows options and accessories available on Greenheck's roof upblast and sidewall exhaust fans.

Options and Accessories	CUE	CUBE	USGF
Sidewall Mount	✓	✓	
Roof Curbs	✓	✓	✓
Wall Bracket	✓	✓	
Curb Extensions	✓	✓	✓
Vented Curb Extensions	✓	✓	✓
Adapter/Reducer	✓	✓	
Curb Seal	✓	✓	std.
Windband Extension	✓	✓	✓
Hinged Curb Cap	✓	✓	✓
Hinged Base (Size 300-480)	✓	✓	std.
Tie-Down Points	✓	✓	✓
Grease Trap	✓	✓	✓
Grease Trap with Absorbent Material	✓	✓	✓
Grease Pan Kit	✓	✓	
Clean-Out Port	✓	✓	std.
Heat Baffle		✓	✓
Hood Hasps	✓	✓	✓
Birdscreen	✓	✓	
Wall Grille	✓	✓	
Non-Stick Aluminum Wheel	✓	✓	std.
Disconnect Switches	✓	✓	✓
Dampers	✓	✓	
Speed Controllers	✓		
Motor Starters	✓	✓	✓
UL 705	✓	✓	
UL 705 Supplement SC (Restaurant)	✓	✓	std.
UL 705 Supplement SD (Smoke)		✓	✓
Coatings	✓	✓	✓

Sidewall Mount — Allows for a horizontal discharge with a square mounting base, models CUE and CUBE.

Roof Curbs — Wide variety of roof curbs are available for mounting the fan to the roof including: vented, flanged, pitched and sound-absorbing. For more information on severe duty curbs refer to the information on page 9.

Wall Bracket — Available for our sidewall mounted CUE and CUBE fans for non-grease applications. This is a different option for wall mounting versus using a curb. Note: Your wall opening will be slightly different when using the wall bracket.

Curb Extensions — Mounts between roof curb and fan for additional height from roof top.

Vented Curb Extensions — Mounts between roof curb and roof-mounted fan to meet NFPA requirements of 40-inch (1016 mm) minimum discharge above the roof when mounted on a minimum 8-inch (203 mm) high roof curb.

Adapter/Reducer — This is used when you need to fit a fan to an existing curb. Use the adapter when the fan square size is smaller than the existing curb. The reducer is used when the fan square size is larger than the existing curb.

Curb Seal — Foam or high-temperature seal between fan and curb to assure proper sealing when attached to a curb.

Windband Extension — Aluminum tube raising the fan discharge height.

Hinged Curb Cap — The hinged curb cap allows the entire fan to swing open to allow maintenance personnel access to the wheel and ductwork for regular inspection and cleaning. Available as factory-mounted or shipped loose.

Hinged Base — Available on sizes 300 up to 480, allows for easy maintenance. Hinge and restraining cables are factory-mounted to a sub-base attached directly to the curb without additional height added.

Tie-Down Points — Four brackets located on the windband for securing the fan in heavy wind applications.

Grease Trap — Polypropylene trap designed to collect grease residue to avoid drainage onto roof surface. Only available with UL 705 Supplement SC (restaurant exhaust).

Shown on a CUBE-180

Grease Trap with Absorbent Material — Same as above with an absorbent material to collect grease residue for easy disposal.

Shown on a CUBE-360

Grease Pan Kit — Used for our sidewall-mounted CUE and CUBE fans.

Clean-Out Port — Patented removable plug allows for easy spray or steam cleaning of wheel through the windband. Available on select models.

Heat Baffle — The heat baffle is an insulation heat barrier mounted to the support pan. The heat baffle is designed to act as a shield against the high temperatures of grease exhaust applications.

Hood Hasp — Additional brackets attached to the motor compartment and vertical hoodband. This provides a location for security lock.

Birdscreen — Stainless rigid wire to protect the fan discharge from birds or small objects.

Wall Grille — Available on sidewall-mounted CUE or CUBE fans.

Non-Stick Aluminum Wheel — Patented coating helps prevent wheel imbalance in heavy grease applications and allows buildup on wheel to be easily removed.

Disconnect Switches — Assorted NEMA-rated switches are available for positive electrical shutoff and safety including: dust-tight, rainproof and corrosion-resistant.

Dampers — Designed to prevent outside air from entering back into the building when fan is off. Includes backdraft and motorized dampers. (Not available with UL/cUL 705 Supplement SC (restaurant exhaust) or USGF fans).

Speed Controllers — Available for use with shaded pole and permanent split capacitor motors on direct drive fans. They provide an economical means of system balancing.

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: SmartStart™ technology, physical interface, overload protection, disconnect, magnetic contractor, 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 starters web page.

UL/cUL 705 — Models CUE and CUBE may be Listed for Power Ventilators (Electrical). CUBE for Power Ventilators for Smoke Control Systems comes standard with UL 705.

UL/cUL 705 Supplement SC (Formerly UL-762)— Models CUE and CUBE, sizes 099 and larger, may be Listed for Power Ventilators for Restaurant Exhaust Appliances. Model USGF comes standard with UL 705 Supplement SC.

UL/cUL Power Ventilators for Control Systems — Models CUBE and USGF may be Listed for Power Ventilators for Smoke Control Systems.

Note: Model sizes CUBE-099, 160XP, 240XP, 300HP & 300XP are excluded from Ventilators for Smoke Control Systems

Coatings – A variety of coatings and colors are available for decorative to protective applications.

Permatector™ is our standard coating on steel fans and is typically used for applications that require corrosion resistance in indoor and outdoor environments.

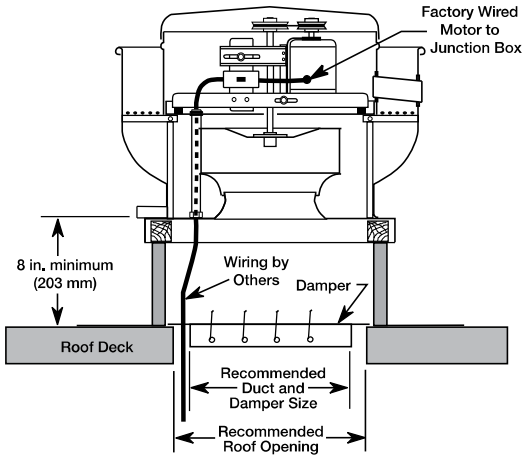
Hi-Pro Polyester is resistant to salt water, chemical fumes and moisture in more corrosive atmospheres. Typically used for applications that require superior chemical resistance, excellent abrasion and outdoor UV protection, this coating exceeds protective qualities of air dried Heresite and air dry phenolic. Customers can choose from seven standard decorative colors or color match any color.

Macropoxy with UV topcoat is a two-coat extreme duty coating system. The base coat of Macropoxy is designed specifically for harsh environments, while the topcoat is used for its chemical and UV resistance. Together this system offers the greatest protection in adverse environments, such as marine or chemical processing applications. Customers can choose from seven standard decorative colors.

Note: Colors are subject to change. See Performance Coatings for Commercial & Industrial Fans catalog for more details.

General Clean Air/Fume Hood (Non-Grease)

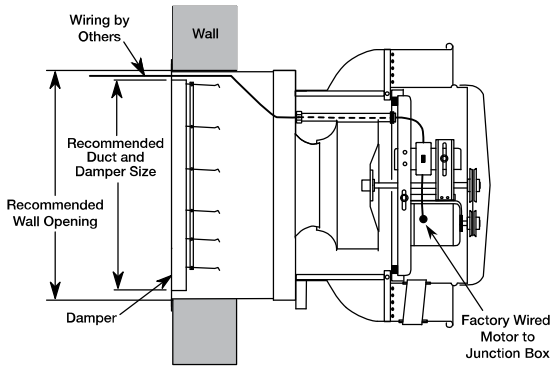
All CUE and CUBE exhaust fans are designed for applications ranging from clean air to contaminated air. A typical installation is shown.



Models CUE and CUBE Roof-Mounted

When roofing materials extend to the top of the curb, roof curbs should be 1½-inches (¾-inch on a side) less than the unit curb cap to allow for roofing and flashing.

- For recommended duct size, damper size and roof opening dimensions, refer to the performance data pages.
- Installation must include a means for inspecting, cleaning and servicing the exhaust fan.

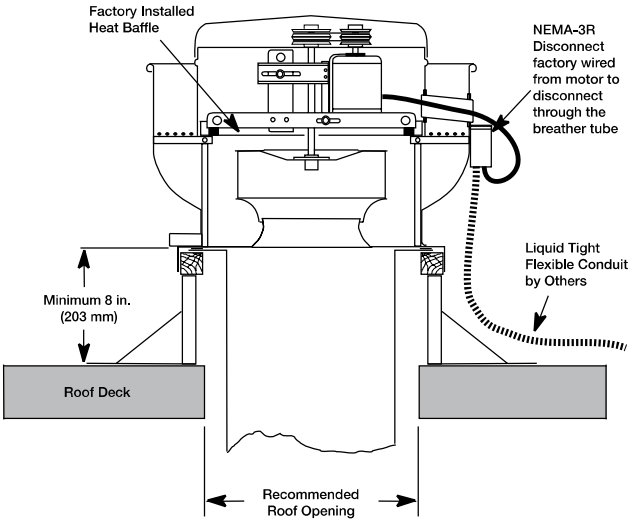


Models CUE and CUBE Wall-Mounted

Emergency Smoke Control

The CUBE with smoke option and the USGF are specifically designed for Emergency Smoke Control applications. These fans are UL/cUL Listed for Power Ventilators and Power Ventilators for Smoke Control Systems for 500°F (260°C) for 4 hours and 1,000°F (538°C) for 15 minutes.

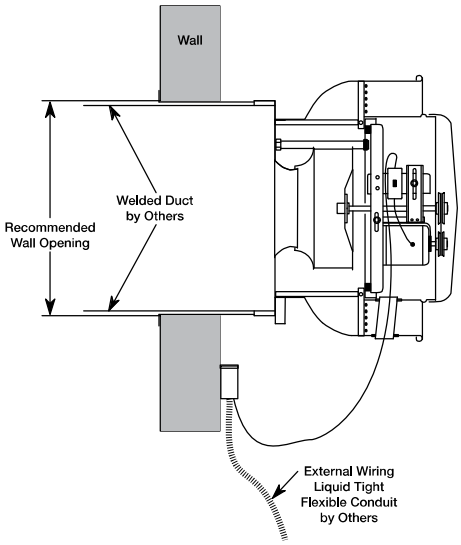
- Due to the varying airstreams encountered in commercial ventilation, system designers must be aware of national, state, and local codes and guidelines governing these installations. Consult with local code authorities before proceeding with any ventilation project.
- When roofing materials extend to the top of the curb, roof curbs should be 1½-inches (¾-inch on a side) less than the unit curb cap to allow for roofing and flashing.
- For recommended duct size, damper size and roof opening dimensions, refer to the performance data pages.
- Installation must include a means for inspecting, cleaning and servicing the exhaust fan.
- Exhaust fans used in emergency smoke applications must have external wiring. (Wiring must not be installed in the airstream).



Models CUBE and USGF

Commercial Kitchen (Grease)

Models CUBE, USGF and model CUE sizes 099 and larger, are designed to meet restaurant and food service applications. These fans are UL/cUL Listed Power Ventilators for Restaurant Exhaust Appliances and have been tested under high temperature [400°F (204°C)] and abnormal flare-up [600°F (316°C)] conditions.



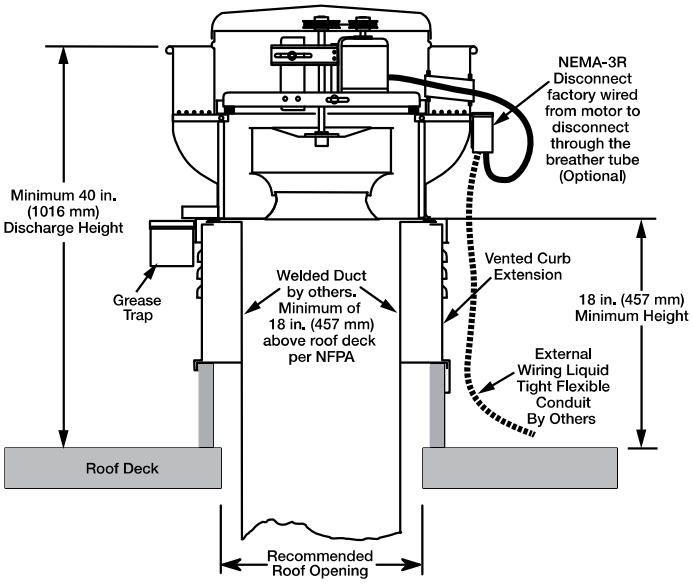
Models CUE and CUBE
Wall-Mounted

- Due to high temperatures and grease-laden airstreams in commercial kitchen ventilation, system designers must be aware of governing codes and guidelines. The National Fire Protection Association (NFPA) is the primary source which governs many codes for commercial kitchen ventilation. Selected information from NFPA 96 is shown below. Consult with local code authorities before proceeding with any kitchen ventilation project.
- Exhaust fans used in kitchen ventilation applications must have external wiring. (Wiring must not be installed in the airstream).
- Installation must include a means for inspecting, cleaning and servicing the exhaust fan. Greenheck offers a Hinged Curb Cap option for upblast exhaust fans.
- No dampers are to be installed in the system.

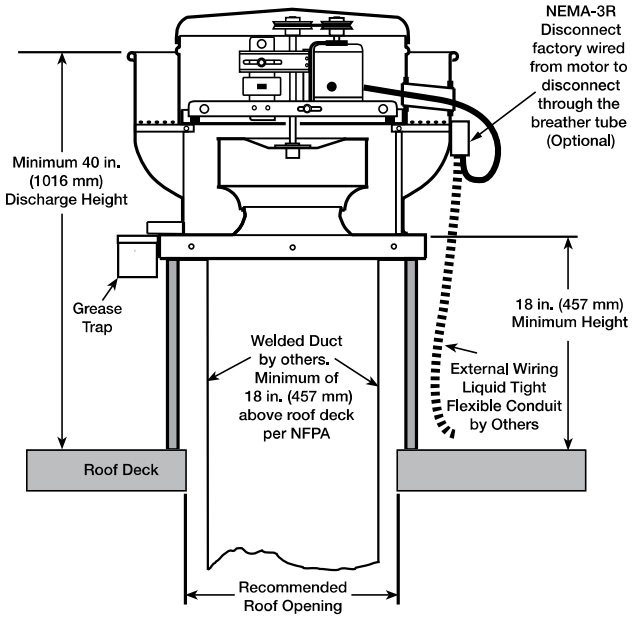
Note:

- *The typical installations shown on these two pages are recommendations based on national codes. Local authority may supersede these recommendations.*
- *Drawing shows NEMA-1 Standard, NEMA-3R is optional.*

c UL US LISTED



Models CUE and CUBE
Vented Installation



Models CUE and CUBE
Non-Vented Installation

Performance & Dimensions Quick Reference

Page Index					Material Thickness		
Model Size	CUBE	CUE	CUBE Smoke Option	USGF	Windband	Motor Cover	Curb Caps
060		19 •			0.051 *(1.3)*	0.051 *(1.3)*	0.051 *(1.3)*
070		20 •					
080		21 •			0.051 *(1.3)*	0.051 *(1.3)*	0.064 *(1.6)*
090		22 •					
095		23 •					
099	24 •				0.051 (1.3)	0.040 *(1.0)*	0.064 *(1.6)*
100	25 •		x				
100HP	26 •		x				
120	27 •		x				
130	28 •		x				
140	29 •		x	x			
140HP	30 •		x	x			
160	31 •		x	x			
160HP	32 •		x	x			
160XP	33 •			x			
180	34 •		x	x	0.064 *(1.6)*	0.040 *(1.0)*	0.064 *(1.6)*
180HP	35 •		x	x			
200	36 •		x	x			
200HP	37 •		x	x			
220	38 •		x		USGF 0.051 *(1.3)*		
220HP	39 •		x				
240	40 •		x				
240HP	41 •		x		0.064 *(1.6)*	0.051 *(1.3)*	0.064 *(1.6)*
240XP	42 •						
300	43 •		x		0.080 *(2.0)*	0.051 *(1.3)*	0.064 *(1.6)*
300HP	44 •						
300XP	45 •						
360	46 •		x		0.080 *(2.0)*	0.064 *(1.6)*	0.080 *(2.0)*
360HP	47 •		x				
360XP	48 •						
420	49 •		x		0.080 *(2.0)*	0.064 *(1.6)*	0.100 *(2.5)*
480	50 •		x				

• Vari-Green option available

The Model number system is designed to completely identify the fan. The correct code letters must be specified to designate belt or direct drive. The remainder of the model number is determined by the size and performance.

CUBE-240HP-A-5-VG/VGD-1-34-X

Configuration
CUE - Direct Drive Roof or Wall Mounted
CUBE - Belt Drive Roof or Wall Mounted
USGF - Belt Drive Roof Mounted

Fan Size
060 thru 480

Wheel Pressure Level
HP - High-Pressure
XP - Extended High-Pressure

60 Hz Motor RPM *(Direct Drive Only)*

A = 1725	D = 1550
B = 1140	E = 1050
C = 860	G = 1300

50 Hz Motor RPM *(Direct Drive Only)*
International *(See CAPS for performance)*
K = 950 RPM J = 1425 RPM
L = 1290 RPM

Motor HP

4 = 1/4	10 = 1	30 = 3
3 = 1/3	15 = 1½	50 = 5
5 = 1/2	20 = 2	75 = 7½
7 = 3/4		

VG = Vari-Green® Motor
VGD = Vari-Green® Drive

Performance Revision

Curb Cap Size (inches)

X = UL 705
F = UL 705 Supplement SD (Smoke)
G = UL 705 Supplement SC (Restaurant)