Centrifugal Inline Fans

Models SQ and BSQ

Direct and Belt Drive

GREENHECK

Building Value in Air.

April
2012

Models SQ and BSQ
Centrifugal Square Inline Duct Fans

GREENHECK
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Table of Contents

Greenheck Fan Corporation certifies the model SQ and BSQ 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. The certified ratings for models SQ and BSQ are shown on pages 15 to 45.

c UL us LISTED

UL is optional and must be specified. SQ and BSQ models are Listed for Electrical (UL/cUL 705) File no. E40001

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- 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.
- Greenheck has been Green for a long time! Our energy-saving products and ongoing corporate commitment to sustainability can help you qualify for LEED credits.
- Our 3D service allows you to download at no charge lightweight, easy-to-use AutoDesk™ Revit™ 3D drawings for many of our ventilation products.

Find out more about these special Greenheck services at greenheck.com

Models SQ and BSQ
Centrifugal Square Inline Duct Fans

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Model Comparison

Model	Location		Mounting					Airflow				Application							Drive Type		Impeller Type			Performance		Relative Cost
	Outdoor	Indoor	Roof Curb	Base/Floor	Hanging	Wall	Ceiling Mounted	Exhaust	Supply	Reversible	Recirculate	General/Clean Air	Contaminated Air	Spark Resistant	Grease (UL 762)	Smoke Control (UL)	High Wind (150 mph)	High Temp (above 200°F)	Belt	Direct	Centrifugal	Propeller/Axial	Mixed Flow	Maximum Volume (cfm)	Maximum Static Pressure (in. wg)	
SQ		✓		✓	✓			✓	✓		✓	✓	✓	✓						✓	✓			5,000	2	$
BSQ		✓		✓	✓			✓	✓		✓	✓	✓	✓					✓		✓			27,200	4	$

Greenheck's model SQ and BSQ centrifugal inline fans feature a unique combination of installation flexibility, rugged construction, ease of service, high efficiency and low sound levels. These compact inline fans are the ideal selection for indoor clean air applications including intake, exhaust, return or make-up air systems where space is a prime consideration. The need for costly square-to-round transition pieces is eliminated reducing installation costs. The square housing design, compact size and straight-thru airflow also give the system designer the flexibility to mount SQ and BSQ fans in any configuration - horizontal, vertical or at any angle.

- Broadest performance in the industry, up to 4 in. wg (1,000 Pa) and 28,000 cfm (47,000 m^3/hr).
- 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 and Air Performance seals.
- UL Listed for Electrical.
- These Greenheck products are subjected to extensive life testing to assure the fans will provide many years of reliable performance.

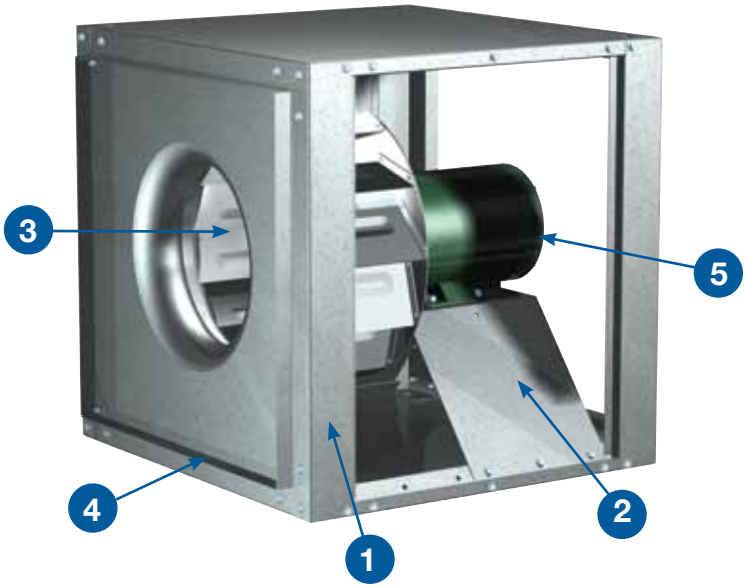
Over the years Greenheck has listened to your needs and input to remain the industry leader.

- Each fan is tested at the factory prior to shipping. The test includes vibration check, adjusting RPM and maximum amp draw.
- Each fan displays a permanently stamped metal nameplate with complete model number, mark and unique serial number for future identification.
- Packaged-product is tested in accordance with ISTA (International Safe Transit Association) standards and procedures.

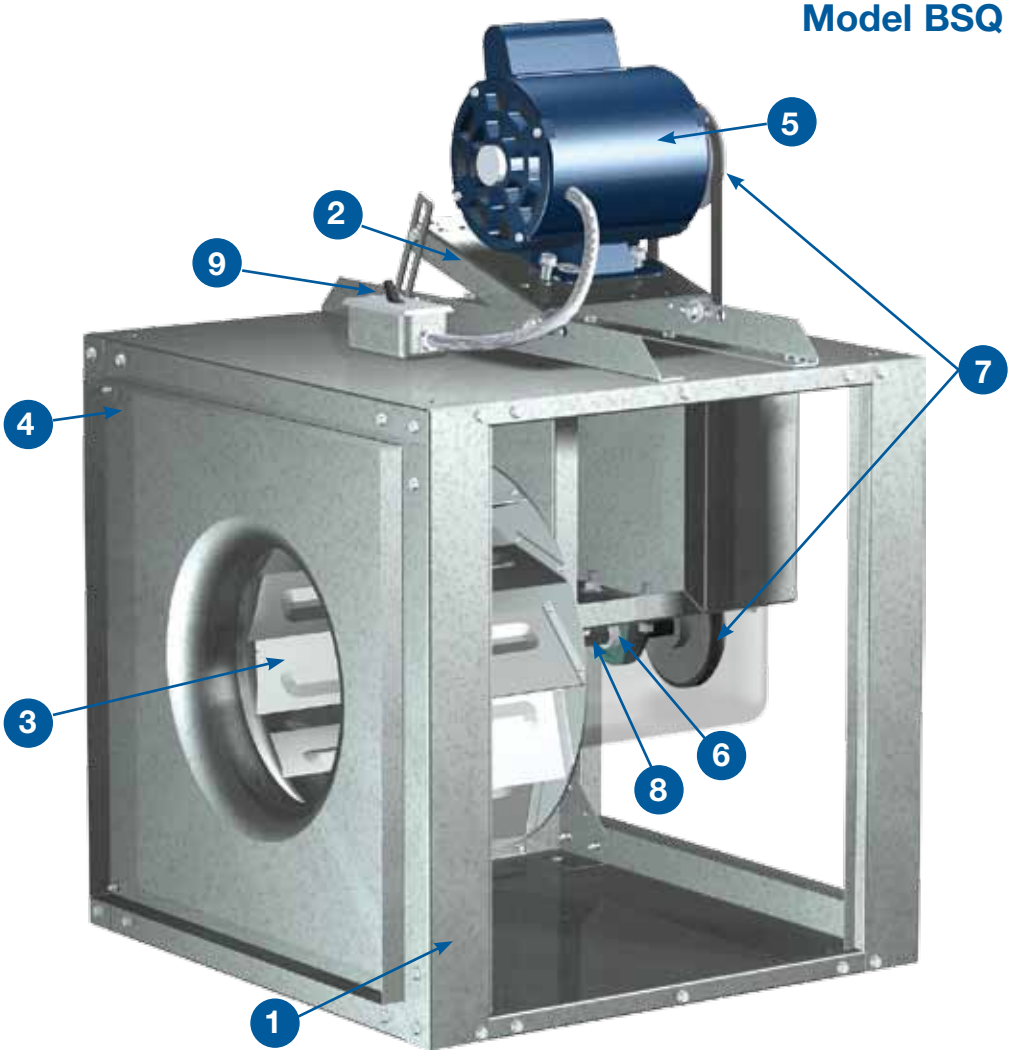
Turn to our inline fans to meet your requirements for applications in office buildings, schools and hospitals to name a few.

Standard Construction Features

Model SQ Direct Drive



Model BSQ Belt Drive



Standard Construction Features

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1 Cabinet Construction
The fan housing is constructed of rigid structural members and formed galvanized steel panels. (Aluminum construction is optional in all SQ sizes 60-160 and in BSQ sizes 70-300).

2 Drive Frame
Constructed from heavy-gauge steel.

3 Wheel
An aluminum, backward inclined, non-overloading centrifugal wheel is utilized to deliver maximum efficiency. Each wheel is statically and dynamically balanced.

4 Duct Collars
Inlet and discharge duct collars are provided for easy duct connection. The square design provides a larger discharge area than tubular centrifugal and vane axial fans; outlet velocities are reduced for quieter operation.

5 Motor
Permanently lubricated, sealed ball bearing motors are selected to provide years of trouble-free operation with minimal maintenance.

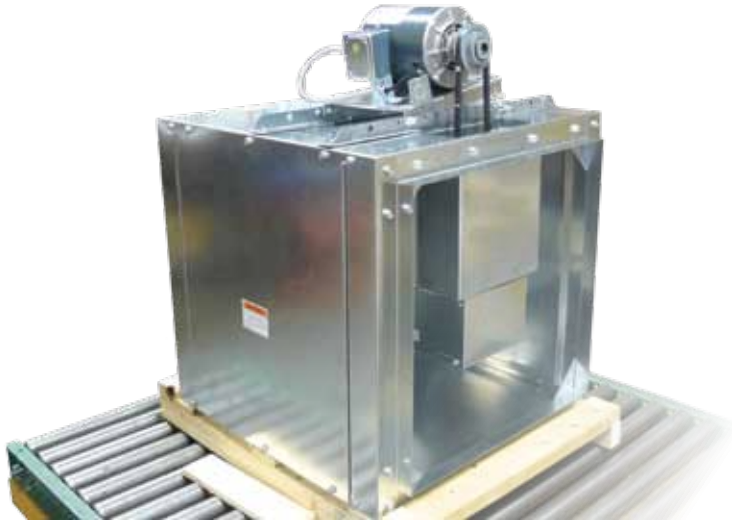
6 Bearings
100 percent factory tested bearings are designed specifically for air handling applications with a minimum L_{10} life in excess of 100,000 hours (L_{50} average life in excess of 500,000 hours).

7 Drive Assembly
Drives are sized for a minimum of 150 percent of driven horsepower. Machined cast iron pulleys are factory set to the required RPM and adjustable for final system balancing. Belts are static free and oil resistant. Belt adjustment is accomplished by loosening fasteners, sliding the motor plate and retightening fasteners.

8 Fan Shaft
Fan shafts are precisely sized, ground and polished so the first critical speed is at least 25 percent over the maximum operating speed. Close tolerances where the shaft makes contact with bearings result in longer bearing life.

9 Disconnect Switch
NEMA-1 disconnect switch is factory-mounted and wiring is provided from the motor as standard. All wiring and electrical components comply with the National Electric Codes and materials are UL Listed. Other NEMA enclosure disconnect switches are optional.

Access Panels *(not shown on images)*
The cabinet construction features two removable access panels permitting easy access to all interior components.



Vari-Green® Options

Vari-Green® Motor - Model SQ

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

The Vari-Green motor is available in:

- 1/6 - 3/4 horsepower 115 volt only.
- 1 horsepower 115/208-230 volt.
- 2 horsepower 208-230 volt.

All motors are available in a 50/60 Hz power.

Benefits

Operates on AC power that's converted to DC—providing a more efficient motor operation as compared to an AC operation.

- The motor can attain up to 85% efficiency 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 that decreases dramatically.
- Operates cooler than a standard AC motor at lower RPMs. A cooler motor has longer motor life and reduces energy consumption.
- 80% usable RPM turndown vs. 30%. (chart at right)
- SQ 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.
- The Vari-Green provides a solution for demand controlled ventilation applications.

Vari-Green Advantages

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

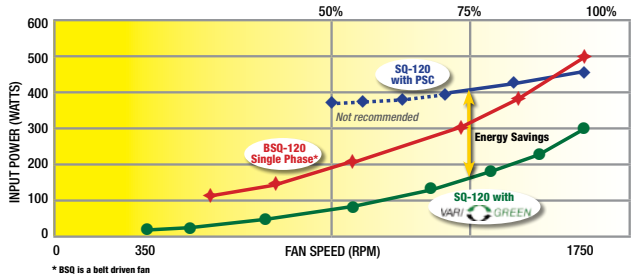
Features

1. **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.
2. **Control Wire Inputs** - the motor accepts a 0-10V DC signal from Building Automated Systems, Vari-Green Controls or other controls to adjust motor speed.

1

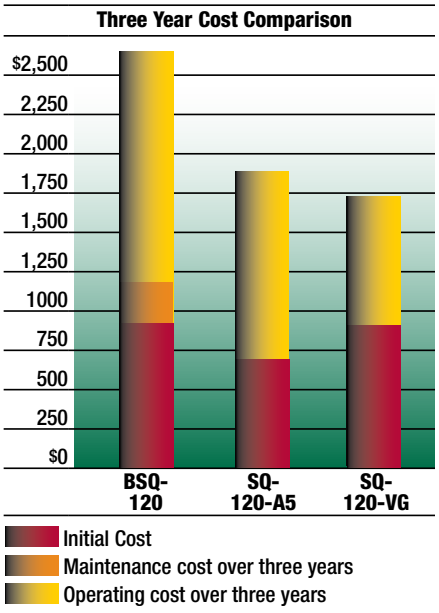
2

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 SQ-120 is estimated at $65/yr.

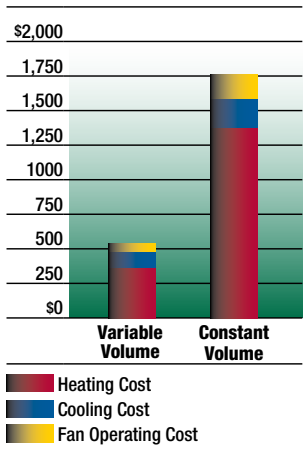
Note: Example is based on a relative cost. Use and installation variables may produce different results.

Vari-Green® Options

Demand Control Ventilation for Multistory Buildings

Applications requiring constant pressure or variable volume can utilize SQ 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 in turn lessens the amount of conditioned air exhausted and further reduces total operating costs associated with air conditioning and heating in multistoried buildings such as: hotels, multifamily complexes, institutional facilities, and high rise commercial buildings.

Variable Volume Operating Cost Analysis

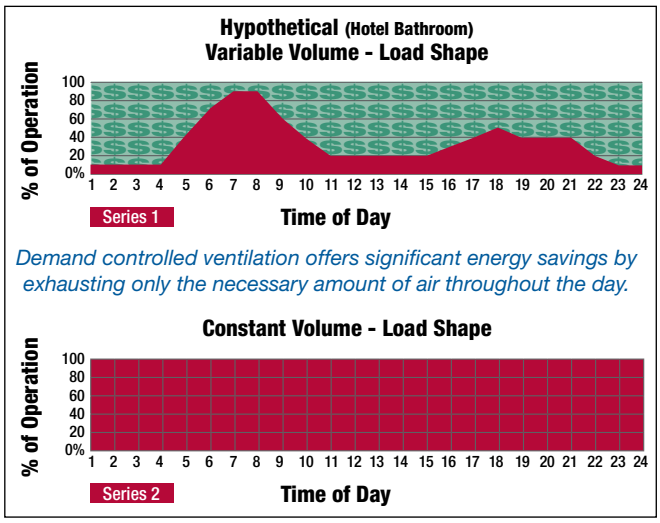


Example of potential savings based on a northeast city in the USA using Vari-Green components for variable volume.

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

Contact fans@greenheck.com for more information.

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.

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 with Integral Transformer 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 emergency or meet maximum airflow requirements, or reset down to low for energy conservation.

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

- Multifamily structures - Apartments, condos, hotels; dryers, residential kitchens and bathrooms.
- Institutional facilities - Schools, prisons, multistory office buildings; bathrooms.

Constant Pressure Control-Outdoor
(previously referred to as GreenVent)
Control Vari-Green motor via static pressure on the inlet side of the fan. Includes one duct probe and transducer for use in:

- Multifamily structures - Apartments, condos, hotels; residential kitchen, dryer facilities and bathrooms.
- Institutional facilities - Schools, prisons, multistory.

Air Quality – VOC - Control a Vari-Green motor via changes in volatile organic compounds (VOC's). VOC's 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 – Schools, court house, hospitals; bathrooms, waiting rooms, cafeteria.
- Commercial buildings – Office space, conference rooms, bathrooms, break room.

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

- Multifamily structures – Apartments, condos, hotels; bathrooms, utility rooms.
- Commercial buildings – Office buildings; office space, conference rooms, utility rooms, bathrooms.

Options and Accessories

Aluminum Construction
Aluminum construction is available for all direct drive sizes 60-160 and belt drive sizes 70-300. Some drive frame components may still be of galvanized construction to maintain structural integrity.

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

Inlet and Outlet Guards
Inlet and outlet guards provide protection for non-ducted applications. Guards are fabricated of welded wire on a galvanized steel frame. They are easily removed for maintenance and inspection.

Belt Drive Motor Cover and Belt Guard
For belt driven fans, combination motor cover and belt guards constructed of galvanized steel are available for protection of motors, drives and personnel. Standard on units specified with UL.

Direct Drive Motor Cover
Formed, galvanized steel motor covers are available to isolate direct drive motors from the airstream. When motor covers are furnished, vents to the exterior of the fan are provided to ensure sufficient motor cooling.

Backdraft Dampers
Gravity or motorized parallel blade dampers (model WD-330) are available for duct mounting. These dampers feature sturdy galvanized frames, aluminum blades with vinyl blade seals, and a balanced design for minimal resistance to airflow.

Control Dampers
Square, opposed blade volume control dampers (model VCD) are available for duct mounting. These dampers feature sturdy galvanized frames, and steel blades with optional blade and jamb seals. A balanced design results in minimal resistance to airflow.

Coatings
Wide variety of coatings and colors are available.

Decorative coatings are available in sixteen standard colors.

Protective coatings are available in a choice of five electrostatic applied powders providing an available selection for most environments.

All Greenheck coatings and resistance charts can be found in our Performance Coatings for Commercial & Industrial Fans brochure.

Inlet Vane Dampers
Variable inlet vane dampers (model IVDE) are available for models SQ and BSQ sizes 140-420 and are factory-assembled to the fan. They can be specified for either manual or automatic operation (controls furnished by others). These dampers are constructed of heavy-gauge steel and feature uniform blade movement for positive control. Companion inlet rings for round duct connections are also available.

Insulated Housing
For noise reduction and condensation control, the interior of the fan housing can be lined with a 1-inch fiberglass duct liner. The optional motor cover can also be insulated.

The table depicts the radiated sound reduction that can be obtained in each octave band for the insulated housing and motor cover together.

Approximate Radiated Sound Attenuation (dB)								
Octave Band	1	2	3	4	5	6	7	8
Sizes 60 - 130	-2	-7	-4	-4	-6	-13	-13	-9
Sizes 140 - 420	-3	-2	-5	-4	-5	-5	-7	-8

Wiring Pigtail
Allows direct hook-up to the power supply eliminating field wiring at the fan.

Filter Options

The filter box is designed to provide a compact and convenient clean air solution. Factory-assembled as a single unit, this fan eliminates the costly process of designing, fabricating and installing special remote filter box assemblies. Both the fan and filter section feature removable access panels on both sides to remove and replace filters, making fan maintenance simple and fast.

Model Selection Procedure

1. Calculate system pressure drop and cfm requirements (not including filters).
2. Make a preliminary model size selection.
3. Calculate a filter pressure drop (P) for the preliminary model size selected in step 2 using the equation: $P = F \times (\frac{cfm}{10{,}000})^2$
   • To determine the filter factor (F) refer to chart below.
4. Add the filter pressure drop (P) to the system pressure drop and make a revised model size selection.

Model	Fan Size	Filter Box Weight	Filter Size	Filter Quantity	Filter Factor (F)			
					1 inch *(25)*		2 inch *(51)*	
					Aluminum	Paper Filters (MERV 7)	Aluminum	Paper Filters (MERV 8)
Model SQ	60 - 75	40 *(18)*	10 x 12 *(254 x 305)*	1	186	318.06	251.1	303.18
	80 - 95	74 *(34)*	14 x 25 *(356 x 635)*	1	21.8	37.28	29.43	35.53
	100	88 *(40)*	16 x 20 *(406 x 508)*	2	8.72	14.91	11.77	14.21
	120	114 *(52)*	16 x 25 *(406 x 635)*	2	5.58	9.54	7.53	9.10
	130	120 *(54)*	20 x 20 *(508 x 508)*	2	5.58	9.54	7.53	9.10
	140	174 *(79)*	20 x 25 *(508 x 635)*	2	3.57	6.11	4.82	5.82
	160	246 *(112)*	20 x 20 *(508 x 508)*	4	2.09	3.57	2.82	3.41
Model BSQ	70 - 80 - 90	117 *(53)*	14 x 25 *(356 x 635)*	1	21.8	37.28	29.43	35.53
	100	120 *(54)*	16 x 20 *(406 x 508)*	2	8.72	14.91	11.77	14.21
	120	144 *(79)*	16 x 25 *(406 x 635)*	2	5.58	9.54	7.53	9.10
	130 - 130HP	140 *(64)*	20 x 20 *(508 x 508)*	2	5.58	9.54	7.53	9.10
	140 - 140HP	181 *(82)*	20 x 25 *(508 x 635)*	2	3.57	6.11	4.82	5.82
	160 - 160HP	294 *(133)*	20 x 20 *(508 x 508)*	4	2.09	3.57	2.82	3.41
	180 - 180HP	344 *(156)*	20 x 25 *(508 x 635)*	4	1.34	2.29	1.81	2.18
	200 - 200HP	441 *(200)*	12 x 25 *(305 x 635)*	3	0.77	1.32	1.04	1.26
			16 x 25 *(406 x 635)*	3				
	240 - 240HP	573 *(260)*	20 x 25 *(508 x 635)*	4	0.41	0.70	0.55	0.67
			16 x 25 *(406 x 635)*	4				
	300 - 300HP	759 *(344)*	20 x 25 *(508 x 635)*	8	0.33	0.56	0.45	0.54
	360 - 360HP	957 *(434)*	16 x 25 *(406 x 635)*	10	0.15	0.26	0.20	0.25
			20 x 25 *(508 x 635)*	5				
	420	1185 *(538)*	16 x 25 *(406 x 635)*	5	0.13	0.22	0.18	0.21
			20 x 25 *(508 x 635)*	10				

Note: 24-inch side clearance is recommended for accessing and removing filters.
All dimensions in inches *(millimeters)* and weight in pounds *(kilograms)*.

Discharge Configurations

The side discharge option helps to reduce system effect. It will increase performance and reduce installation labor. The most notable is reducing system effects. Note: The figure 1 example shows the air being discharged into the corner. It will take several duct lengths before the airflow becomes laminar or smooth again after making the turn.
In figure 2, the fan is placed in the corner using a side discharge. In this configuration the air flow pattern at discharge is smooth and supports a more predictable system. Remember the duct length on the discharge side, should be approximately two to three wheel diameters to achieve catalog performance.

Discharge Configuration

Fan performance will change with different discharge positions. Catalog data is based on an inline discharge. Right side discharge will give you 108% of cataloged performance and left side will give you 109% of cataloged performance. Use figure 3 to locate the orientation to fit your application. Figures 4 and 5 on page 11 illustrate the proper side discharge definitions. Refer to Greenheck's CAPS (Computer Aided Product Selection) program or consult factory for performance modifications.

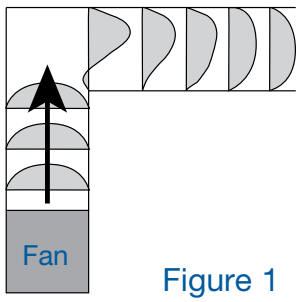


Figure 1

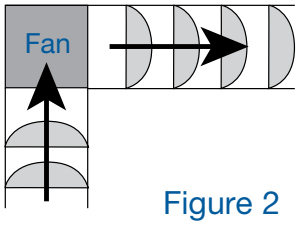


Figure 2

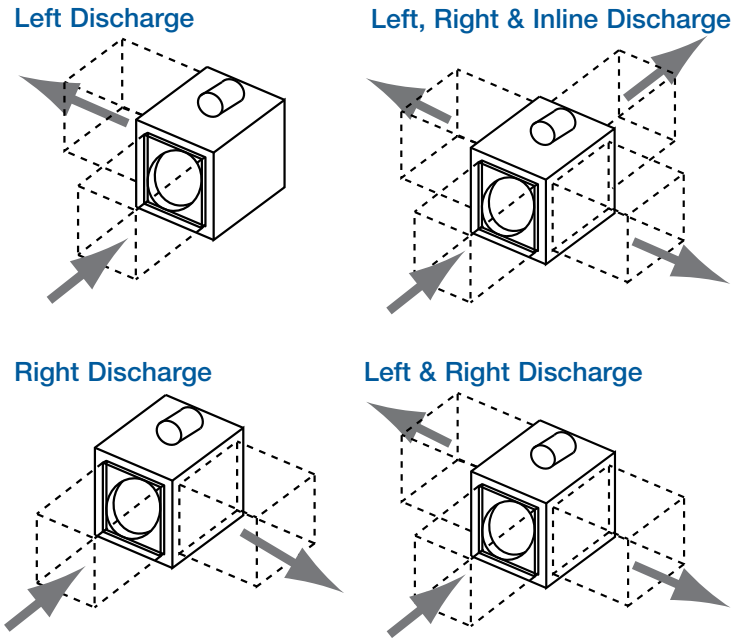


Figure 3

Side Discharge

SQ Side Discharge

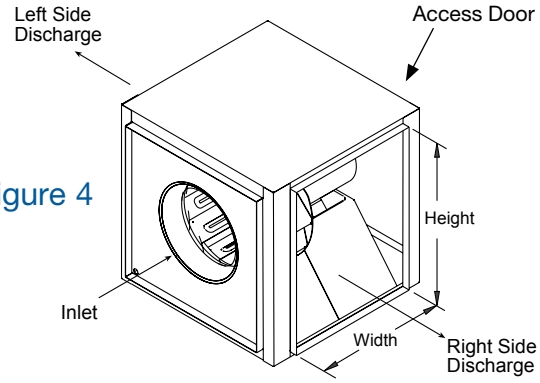


Figure 4

SQ Side Discharge Duct Openings		
Unit Size	**Width**	**Height**
60-75	9⅞ *(251)*	8⅞ *(225)*
80-95	12⅞ *(327)*	11⅞ *(302)*
100	13⅞ *(352)*	13⅞ *(352)*
120	15⅞ *(403)*	15⅞ *(403)*
130	17⅞ *(454)*	17⅞ *(454)*
140	19⅞ *(505)*	19⅞ *(505)*
160	22⅞ *(581)*	22⅞ *(581)*

All dimensions in inches (millimeters).

BSQ Side Discharge

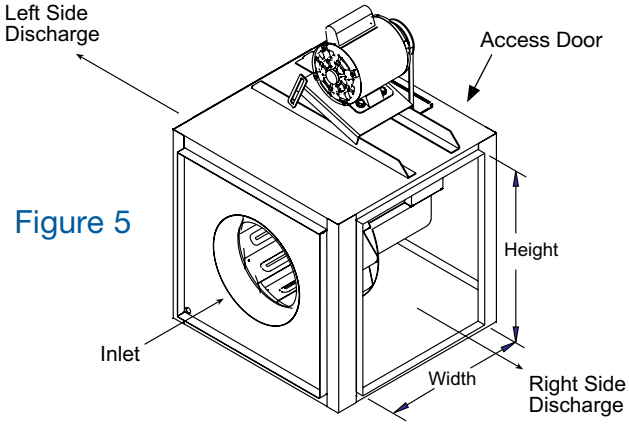


Figure 5

BSQ Side Discharge Duct Openings		
Unit Size	**Width**	**Height**
70-80-90	11⅞ *(302)*	11⅞ *(302)*
100	13⅞ *(352)*	13⅞ *(352)*
120	15⅞ *(403)*	15⅞ *(403)*
130-130HP	17⅞ *(454)*	17⅞ *(454)*
140-140HP	19⅞ *(505)*	19⅞ *(505)*
160-160HP	22⅞ *(581)*	22⅞ *(581)*
180-180HP	23⅞ *(606)*	23⅞ *(606)*
200-200HP	27⅞ *(708)*	27⅞ *(708)*
240-240HP	28⅞ *(733)*	34⅞ *(886)*
300-300HP	31⅞ *(810)*	41⅞ *(1064)*
360-360HP	32⅞ *(835)*	37⅞ *(962)*
420	34⅞ *(886)*	43⅞ *(1114)*

All dimensions in inches (millimeters).

Horizontal and Vertical Mounting Options

All SQ and BSQ fan models can be mounted horizontally, vertically or at an angle. For ease of installation, knockouts are provided at each location where mounting brackets are shown in figures 6, 7 and 8. Optional brackets are universally adjustable to mount in any of these locations.

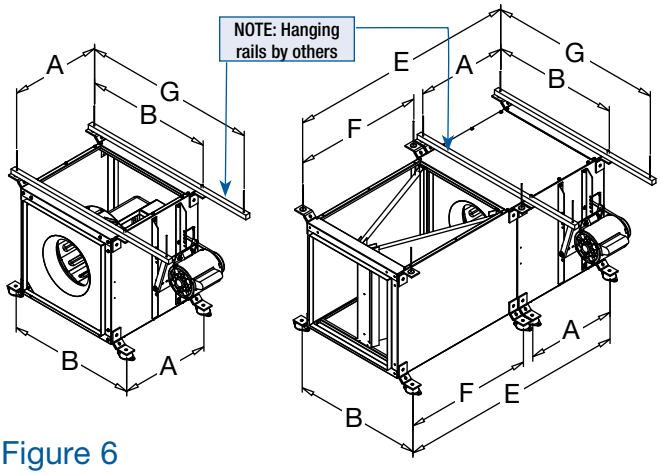


Figure 6

Horizontal Hanging or Base Mount

With either a hanging or base mount the motor may be located on either side. The base mount allows top access panels only.

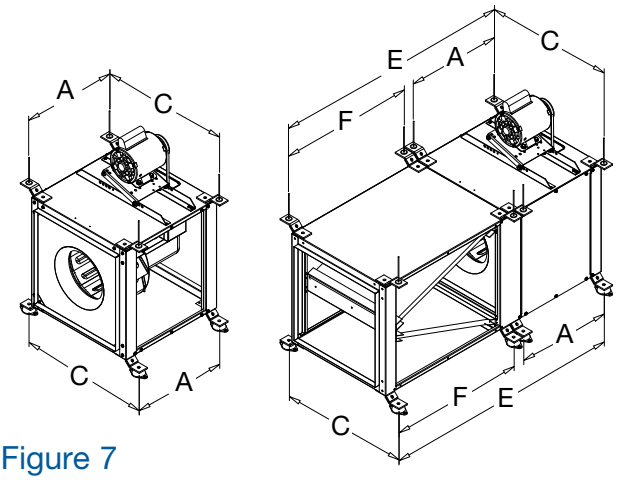


Figure 7

Horizontal Hanging or Base Mount

With a hanging mount, the motor may be located on either top or bottom. The base mount allows top motor location only. Both options provide access panels on two sides.

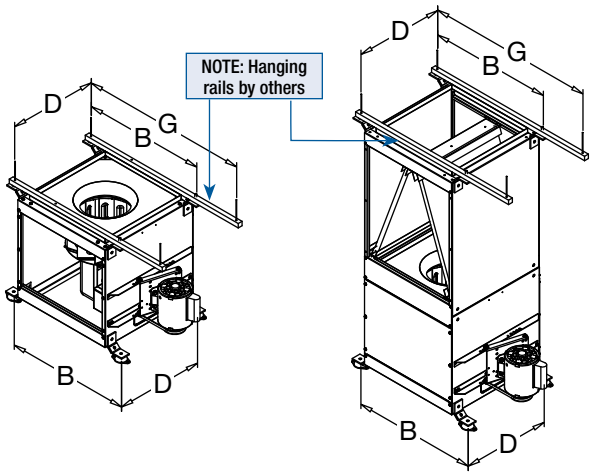


Figure 8

Vertical Hanging or Base Mount

Mounting brackets are turned 90 degrees for vertical mounting. Access panels are located on the two sides adjacent to the motor.

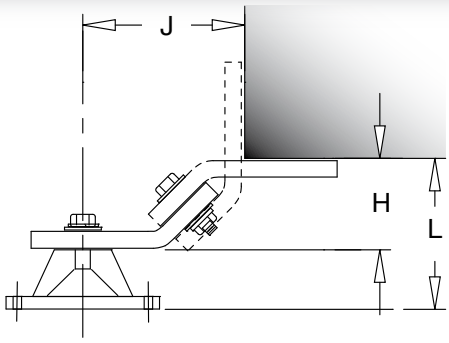
Model	A	B	C	D	E	F	G
SQ 60-75	10⅝ *(270)*	17 *(432)*	15¾ *(400)*	8⅞ *(225)*	19¾ *(502)*	7 *(178)*	Hanging rails not included. Supplied by others.
SQ 80-95	13¼ *(337)*	20 *(508)*	18¾ *(476)*	11⅞ *(302)*	43 *(1092)*	27⅜ *(695)*	
BSQ 70-90	18⅝ *(473)*	20⅛ *(511)*	18¾ *(476)*	11⅞ *(302)*	48⁵⁄₁₆ *(1227)*	27⅜ *(695)*	
SQ-BSQ 100	18⅝ *(473)*	22⅛ *(562)*	20¾ *(527)*	13⅞ *(352)*	44⅞ *(1140)*	24 *(610)*	
SQ-BSQ 120	18⅝ *(473)*	24 *(610)*	22¾ *(578)*	16 *(406)*	49⅜ *(1254)*	28⅛ *(714)*	
SQ-BSQ 130	18⅝ *(473)*	26⅛ *(664)*	24¾ *(629)*	17⅞ *(454)*	44 *(1118)*	23 *(584)*	
SQ-BSQ 140	19⅝ *(498)*	28⅛ *(714)*	26¾ *(679)*	19⅞ *(505)*	50¹⁄₁₆ *(1272)*	28 *(711)*	
SQ-BSQ 160	23½ *(597)*	31 *(787)*	29¾ *(756)*	22⅞ *(581)*	49⅝ *(1260)*	23⅝ *(600)*	Hanging rails not included. Supplied by others.
BSQ 180	25½ *(648)*	33½ *(851)*	29⁹⁄₁₆ *(751)*	22¾ *(578)*	52⁹⁄₁₆ *(1335)*	24½ *(622)*	
BSQ 200	29⅛ *(740)*	37 *(940)*	33¾ *(857)*	26¾ *(679)*	64³⁄₁₆ *(1630)*	32¼ *(819)*	
BSQ 240	31⅝ *(803)*	44¼ *(1124)*	40¾ *(1035)*	33⅞ *(860)*	66½ *(1689)*	32⅛ *(816)*	
BSQ 300	35 *(889)*	51 *(1295)*	47¾ *(1213)*	40⅞ *(1038)*	69⅛ *(1756)*	31⅜ *(797)*	
BSQ 360	38¾ *(974)*	57¼ *(1454)*	53½ *(1359)*	46¾ *(1187)*	76 *(1930)*	34¹¹⁄₁₆ *(881)*	
BSQ 420	47⅛ *(1197)*	63 *(1600)*	59⅞ *(1521)*	59⅞ *(1521)*	90½ *(2299)*	40½ *(1029)*	

All dimensions in inches (millimeters).

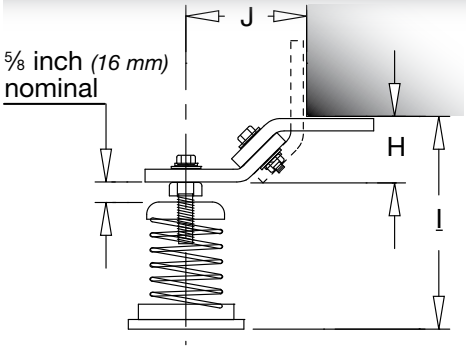
Base Mount or Hanging Isolators

GREENHECK
Building Value in Air.

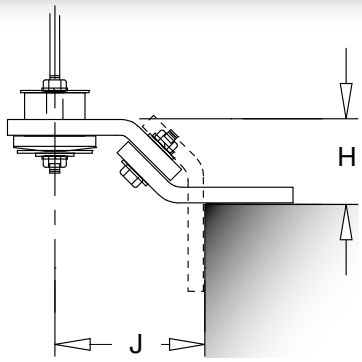
Standing Neoprene Isolator



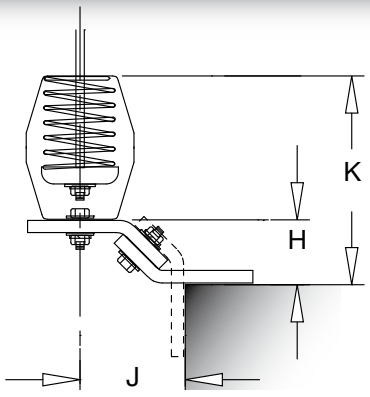
Standing Spring Isolator



Hanging Neoprene Isolator



Hanging Spring Isolator



Complete isolation kits are available with either neoprene or spring isolators and are sized to match the weight of the specified fan size. The base isolator support brackets are designed to permit mounting of the fan with the motor located on top or either side. The hanging isolator support brackets are designed to permit mounting of the fan with the motor located on top, bottom or side.

Note: Hanging rods to be supplied by others.

Model	H	I	J	K	L
SQ 60-75	1⅜ *(35)*	5½ *(140)*	2 *(51)*	6¾ *(171)*	2⁵⁄₁₆ *(59)*
SQ 80-95					
BSQ 70-90					
SQ-BSQ 100					
SQ-BSQ 120					
SQ-BSQ 130					
SQ-BSQ 140					
SQ-BSQ 160	1⅜ *(35)*	5½ *(140)*	2 *(51)*	6¾ *(171)*	2⅝ *(67)*
BSQ 180					
BSQ 200					
BSQ 240					
BSQ 300					
BSQ 360					
BSQ 420					

All dimensions in inches (millimeters).

Typical Installation

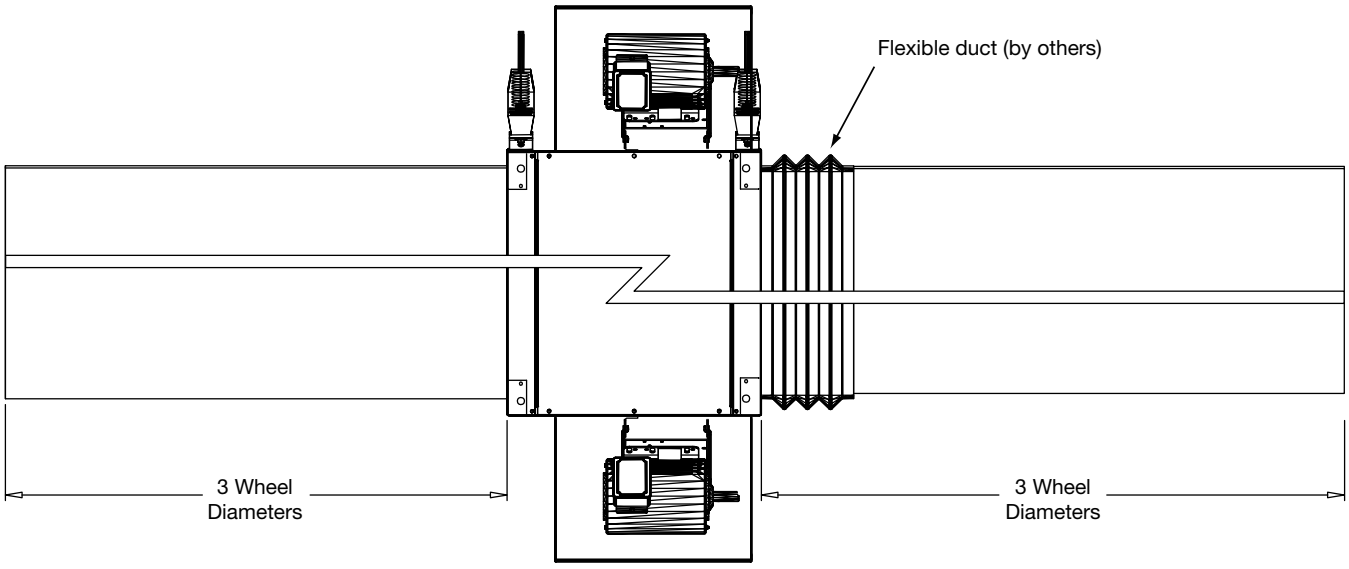
Models SQ and BSQ ducted inline fans are designed for the exhaust, supply or recirculation of air in a building. Typical installation requires ductwork on the inlet and outlet side of the fan. A minimum of three duct diameters is required on the inlet and outlet of the fan to minimize system effect losses. See the diagram below for a typical installation.

Installations can include flexible duct connections (by others) on either the inlet or outlet side of the fan or both. The motor is rigidly mounted and can be oriented in any direction (top, bottom, side).

The model BSQ ducted inline fan must be installed with the motor accessible for maintenance and inspection.

External isolators are recommended, hanging (shown below) or base mounted.

Installation must meet all local governing codes and the NEC.



Model Number Code

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 selected from the following pages.

BSQ - 120 HP - VG/75/A

MODEL CONFIGURATION

BSQ - Belt Drive Inline Exhaust

SQ - Direct Drive Inline Exhaust

FAN SIZE

60 through 420

PRESSURE LEVEL *(Belt Drive Only)*

HP - High Pressure Wheel

VG = Vari-Green®
(Direct Drive only)

MOTOR HP *(Belt Drive only)*

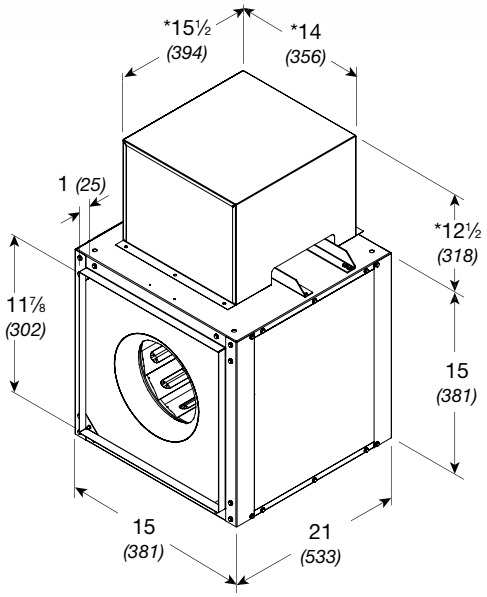
6 = 1/6	7 = 3/4	30 = 3
4 = 1/4	10 = 1	50 = 5
3 = 1/3	15 = 1½	75 = 7½
5 = 1/2	20 = 2	100 = 10

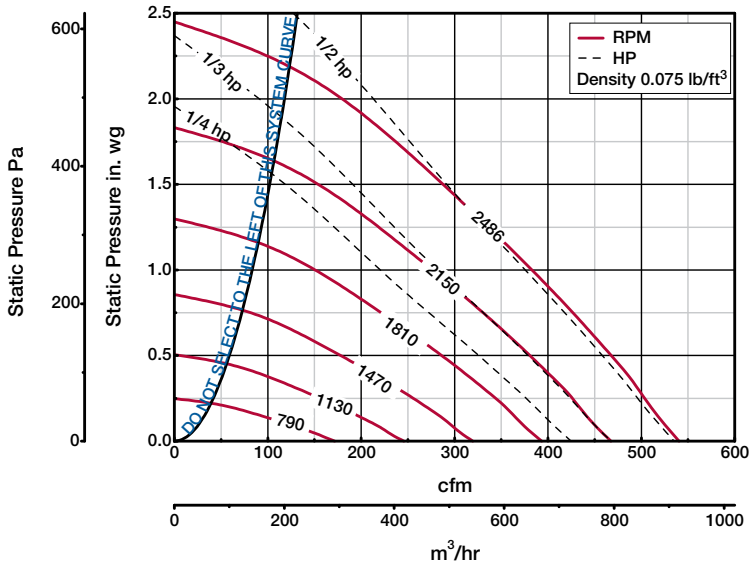
MOTOR RPM *(Direct Drive only)*

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

International
(See CAPS for performance)
K = 950 RPM J = 1475 RPM

BSQ 70 - Belt Drive





Damper size = 12 x 12 *(305 x 305)*
Unit weight** = 76 *(34)*
Housing thickness = 18 ga

Dimensions shown in inches (millimeters) and weight is shown in pounds (kilograms).
*Motor cover is optional. Size may be greater depending on motor.
**Weight shown is largest cataloged Open Drip Proof motor.

Model Number	Motor HP	Fan RPM		CFM / Static Pressure in Inches wg									
				0.125	0.250	0.500	0.625	0.750	1.000	1.250	1.500	1.750	2.000
70													
70-4	1/4	1050	CFM	184	129								
			BHP	0.039	0.037								
			Sones	8.0	7.5								
		1313	CFM	251	211	117							
			BHP	0.077	0.076	0.068							
			Sones	11.0	10.4	9.2							
		1445	CFM	284	249	169	122						
			BHP	0.103	0.102	0.097	0.09						
			Sones	12.8	12.3	10.7	10.3						
		1577	CFM	314	284	213	175	131					
			BHP	0.13	0.13	0.13	0.12	0.12					
			Sones	14.9	14.6	12.7	11.9	11.4					
		1709	CFM	345	318	254	220	184	97				
			BHP	0.17	0.17	0.17	0.16	0.16	0.14				
			Sones	16.1	15.9	14.5	13.9	13.3	12.4				
		1840	CFM	375	351	293	262	231	159				
			BHP	0.21	0.21	0.21	0.21	0.20	0.19				
			Sones	17.3	17.0	16.4	16.0	15.4	14.5				
		1972	CFM	405	384	331	302	273	212	142			
			BHP	0.26	0.26	0.26	0.25	0.25	0.24	0.22			
			Sones	19.2	19.1	18.6	18.2	17.9	17.7	16.5			
70-3	1/3	2072	CFM	428	408	360	332	305	249	184	103		
			BHP	0.30	0.30	0.30	0.30	0.29	0.29	0.27	0.24		
			Sones	20	20	19.9	19.5	19.1	18.5	18.2	16.8		
		2172	CFM	450	431	387	361	335	282	224	161		
			BHP	0.34	0.35	0.35	0.34	0.34	0.33	0.32	0.30		
			Sones	21	21	21	21	20	19.7	19.2	18.8		
70-5	1/2	2329	CFM	486	467	428	406	381	332	283	225	166	
			BHP	0.43	0.43	0.43	0.43	0.42	0.42	0.41	0.39	0.36	
			Sones	23	23	23	23	23	22	21	20	21	
		2486	CFM	521	504	468	447	426	380	334	287	232	176
			BHP	0.52	0.52	0.52	0.52	0.52	0.51	0.50	0.49	0.47	0.44
			Sones	25	25	25	25	25	24	23	22	22	23

MAX Bhp AT A GIVEN RPM = (rpm/3084)³
MAXIMUM RPM = 2486
TIP SPEED (ft/min) = rpm x 2.928
MAX NEMA MOTOR FRAME SIZE = 145T
OUTLET VELOCITY (ft/min) = 1.0212 x cfm

Performance certified is for installation type B: Free inlet, Ducted outlet. Power rating (Bhp) does not include transmission losses. Performance ratings do not include the effects of appurtenances (accessories).

The sound ratings shown are loudness values in fan sones at 1.5 m (5 feet) in a hemispherical free field calculated per AMCA International Standard 301. Values shown are for installation type B: free inlet hemispherical sone levels.

Belt Drive Specifications
Model BSQ

Duct mounted supply, exhaust or return fans shall be of the centrifugal, belt driven, inline type. The fan housing shall be of a square design constructed of heavy-gauge galvanized steel or aluminum and shall include square duct mounting collars.

Fan construction shall include two removable access panels located perpendicular to the motor mounting panel. The access panels must be of sufficient size to permit easy access to all interior components.

The fan wheel shall be centrifugal backward inclined, constructed of aluminum and shall include a wheel cone carefully matched to the inlet cone for precise running tolerances. Wheels shall be statically and dynamically balanced.

Motors shall be heavy-duty ball bearing type carefully matched to the fan load and furnished at the specified voltage, phase, and enclosure. Motors and drives shall be mounted out of the airstream. Motors shall be readily accessible for maintenance.

Precision ground and polished fan shafts shall be mounted in permanently sealed, lubricated pillow block ball bearings. Bearings shall be selected for a minimum L_{10} life in excess of 100,000 hours (L_{50} average life in excess of 500,000 hours) at maximum cataloged operating speed.

Drives shall be sized for a minimum of 150 percent of driven horsepower.

Pulleys shall be of the fully machined cast iron type, keyed and securely attached to the wheel and motor shafts. Motor pulleys shall be adjustable for final system balancing.

A NEMA-1 disconnect switch shall be provided as standard, except with explosion resistant motors, where disconnects are optional. Factory wiring shall be provided from motor to the handy box.

Fan shall bear the AMCA Certified Ratings Seal for Sound and Air Performance.

Fan shall bear a permanently affixed manufacturer's nameplate containing the model number and individual serial number for future identification.

Fan shall be model BSQ as manufactured by Greenheck Fan Corporation of Schofield, Wisconsin, USA.

Quick Delivery and Quick Build Programs

Greenheck Fan Corporation offers an extensive selection of Quick Delivery (QD) and Quick Build (QB) offerings. The QD program is Greenheck's stock program and the QB program offers configurable fans in one, three, five, or ten days.

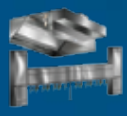
Model	Best Available Program
SQ-75 through 120 and 140	In Stock
BSQ-70 through 120, 140 through 180 and 240	
SQ-60 through 70, 130 and 160	1 Day
BSQ-130 and 200	
High Pressure BSQ-130HP through 240HP	
BSQ-300 through 420	3 Days
High Pressure BSQ-300HP and 360HP	

Hundreds of in stock ventilation products and accessories are available for shipment to your jobsite in less than 24 hours from our strategically located warehouses throughout the world.

The Greenheck Stock and Quick Build catalog is a great resource for specific options and accessories available with QD and QB fans.









Our Warranty

Greenheck warrants this equipment to be free from defects in material and workmanship for a period of one year from the shipment date. Any units or parts which prove defective during the warranty period will be replaced at our option when returned to our factory, transportation prepaid. Motors are warranted by the motor manufacturer for a period of one year. Should motors furnished by Greenheck prove defective during this period, they should be returned to the nearest authorized motor service station. Greenheck will not be responsible for any removal or installation costs.

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

Prepared to Support Green Building Efforts

GREENHECK
Building Value in Air.

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

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