

# SQX Series

Square Inline Fans

PRODUCT GUIDE



PENNBARRY™

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# INTRODUCTION

## SQX Square Inline Fan

SQX fans are widely used in square ducts as clean air boosters in both supply and exhaust systems where the installation of conventional blowers is impractical. Their compact design gives designers an excellent alternative to conventional blowers.

As an integral part of a ventilation system layout, SQX fans can be installed either horizontally, vertically or at any angle determined by the duct work. Full-size removable panels enable easy access to the fan interior. Direct-drive motors are isolated from the airstream. Belt drive motors are mounted on the outside housing and can be positioned at any angle to avoid existing building obstructions. Optional motor covers are available as accessories.

SQX fans feature durable galvanized steel construction (aluminum is optional for selected belt drive models), which works in conjunction with a patented wheel design and deeply spun inlets to provide smoother flow through the ventilator. The centrifugal wheels are aluminum, non-overloading, backwardly inclined, robotically welded, and dynamically balanced.

### Direct Drive Units

- Static pressure up to 2.75" wg.
- Flow capacity up to 22,000 CFM

### Standard Duty Belt Drive Units

- Static pressure up to 2.75" wg.
- Flow capacity up to 26,000 CFM.



# CERTIFICATIONS & LISTINGS



## SQX AMCA Certifications

PennBarry certifies that the SQX Square Inline fan models shown herein are licensed to bear the AMCA seal. The ratings shown are based on tests and procedures performed in accordance with AMCA publications 211 and 311, and comply with the requirements of the AMCA Certified Ratings Program.



## cULus Certification

SQX square inline fans carry the UL label, UL705 (ZACT/ZACT7), file #E28413.



The SQX square inline fan is suitable only for indoors applications. This fan is NOT suitable for outdoors installations. Installing this product in different ways that recommended by the manufacturer voids the warranty.

# FEATURES AND BENEFITS

## CFD and FEA Optimized Wheel

Highly efficient backward inclined non-overloading wheel designed using the latest Computational Fluid Dynamics (CFD) and Finite Element Analysis (FEA) software provides excellent air performance with unsurpassed low sound numbers.

Backplate and inlet are stamped and the wheel features an aluminum riveted construction, plus, dynamic balancing ensures smooth vibration-free operation.

Wheel is available on 100%, 80% and 50% width to cover a large range of performance requirements.

## Reverse Venturi

Reverse venturi reduces turbulence and improves distribution of the air as it enters the wheel inlet and is “captured” by the blades.

## Self-Aligning Bearings

Heavy-duty bearings are sized for minimum L10 life in excess of 100,000 hours of operation. One hundred percent factory tested, they are designed for air handling applications.

## Drive Belts

Pulleys are pre-set to the specified RPM. Cast iron variable pitch pulleys are adjustable, allowing for field balancing based on actual field conditions. All pulleys are sized for at least 150% of the driven horsepower.

## Internal Wiring

All SQX units have NEMA 1 internal wiring as an optional accessory to wire to an appropriate external junction box. An appropriately paired service switch is available as well. The initial electrical connection does not require the removal of any access panels. If an upgrade is desired, NEMA 3R wiring is available. Explosion proof units cannot have internal wiring.

## Removable Panels

Side panels are removable for inspection, periodic maintenance, or optional discharge ducting. And, if required for cramped close to-the-wall installations, once either side panel is removed, the bottom panel can then be removed.

## Speed Controller

These speed controllers allow for adjustment in motor rpm, improving productivity and providing a cost effective means for system balancing.

## Extended Lube Lines

Factory installed lube lines allow for easy bearing re-lubrication.

# OPTIONS & ACCESSORIES

## Filter Box (1)

The filter box is designed for compatibility with the SQX Fan. The filter box can be directly coupled to the inlet or installed remotely to the SQX unit in the system duct work.

## Slip fit inlet and outlet (2)

Typical applications for inline fans call for the use of flexible connectors. The SQX is supplied with a slip fit inlet and outlet as standard. This reduces the total fan length and the cost for slip connections.

## Motor Cover (3)

In order prevent damage to the drive from outside factors, a motor cover can be selected for protection.

## Belt Guard (4)

On Belt Drive units a Belt guard can be added as an accessory for additional safety.

## Punched Companion Flanges (5,6)

Punched companion flanges facilitate the connection of duct work by a transition section when required. The companion flange fits the fan to the transition and guarantees proper sizing.

## Flexible Duct Connectors (7)

Used as an alternative to rigid connections, these duct connectors are highly recommended since they reduce vibration transmission through the duct work.

## Fan Guards (8)

Both inlet and outlet guards are available whenever the unit is a termination point. Guards are highly recommended whenever the fan is mounted within seven feet of occupied space and/or otherwise unprotected by duct work. Each application must be reviewed for compliance with OSHA standards.

## Spare belt option

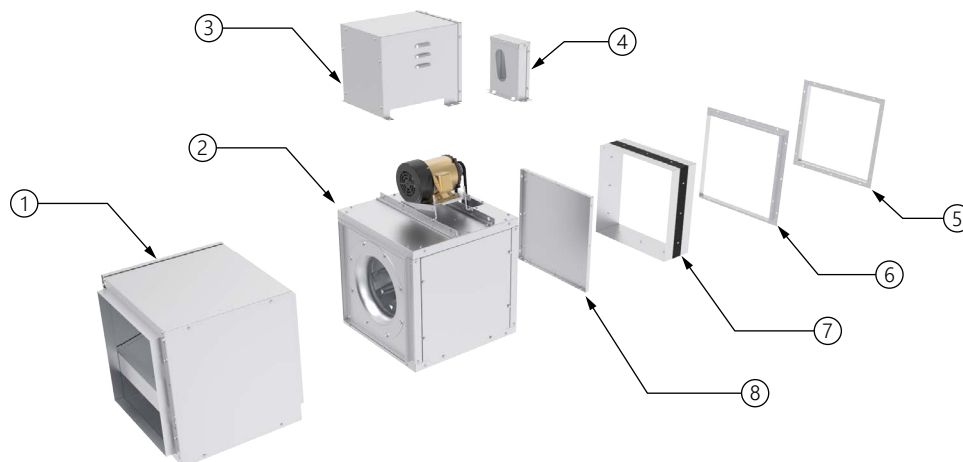
An extra set of one or two spare belts is an available selection.

## Stainless Steel Hardware

If another material is desired for the unit's hardware, stainless steel hardware is available for selection.

## Stainless Steel Shaft

If another material is desired for the motor shaft, stainless steel shafts are available for selection.



# OPTIONS & ACCESSORIES

## Variable Frequency Drives

Variable frequency drives (VFDs) are designed to meet performance requirements while increasing efficiency. By varying the fan motor input frequency and voltage, the VFD controls the motor speed and torque, helping to improve productivity and lower energy consumption. The VSC and VSA are ideal for both new and retrofit fan applications. Shipped loose and separately.

## AMCA B Construction

The SQX is available with AMCA B construction, providing optimal spark resistance.

## Firestat Switch

Firestat switch automatically disconnects the unit when the temperature of the air being exhausted exceeds a preset rating.

## Vibration Isolators

A variety of isolation devices for floor mounting are available, including flex pads and rubber in shear or spring isolators. These can be used in conjunction with support angles (standard) or support channels (optional).

## Vibration Hangers

To support installation from overhead structural members, these rubber in shear or spring type isolators attach to threaded rods provided by the installer. Vibration hangers are attached to the unit by support angles (standard) or support channels (optional).

## Safety Service Switch

Safety service switches are available to allow positive electrical shut-off and safety. Switches are factory mounted when factory wiring is requested. Wiring is only run from the motor to the junction box. (Factory wiring of explosion proof applications is not available.) A wide range of NEMA rated enclosures with service switches are available for indoor and explosion proof installations. Service switches are to be field wired by a licensed electrician.

## Backdraft Dampers

Backdraft dampers are available for either gravity or motorized operation (motor kit optional). Dampers feature square galvanized steel frames and multi-leaf, roll formed aluminum blades with nylon bearings.

## Finishes

Coatings such as Polyester Powder Coat, Epoxy Powder Coat, Phenolic Epoxy Powder Coat, and others are available. See the coatings brochure for details.

## Green Plus Electronically Commutated Motor

The Green Plus (GP) option utilizes EC motors to provide significantly greater efficiency, flexibility, and controllability over standard direct drive permanent split capacitor (PSC) motors. Using the included potentiometer, the Green Plus motors can be turned down to as low as 80% the max operating speed while maintaining 90% efficiency through the operating range. Additionally, the Green Plus can accept 0-10V input to tie to building management systems, not only allowing for savings in direct fan energy consumption but reducing the exhaust of conditioned air during off peak hours as well. All Green Plus motors come in open enclosure or totally enclosed for usage with 115V-208V/230V or 277V, single phase, 50/60 Hz applications.



# MOTOR AND VFD AVAILABILITY\*

Unit Size	Max HP	Max FRPM	ECM		PM Motor		Induction Motor			
			Motor HP Range - 1/6 HP to 3/4 HP		Motor HP Range - 1/2 HP to 10 HP		HP 1/4 hp to 10 hp			
			Motor RPM Range - 400 to 1725		Motor RPM Range - 350 to 2332		Motor RPM Range 870 to 3600,1450 (50 Hz)			
			Motor Enclosure - ODP, Voltages 115V/230V/277V, Phase - 1-ph, Frequency 60/50 Hz		Motor Enclosure - TENV ≤ 2 hp > TEFC, Voltages 230V/240V/(380V-480V), Phase - 3-phase, Frequency - 50/60 Hz		Motor Enclosure - ODP, TEFC Voltages 115-120V/230-240V, Phase - 1-phase, Frequency 50/60 Hz, Voltages 220V-240V/380V-480V, Phase - 3-phase, Frequency 50/60 Hz			
		Direct Drive	Belt Drive	Direct Drive - PM Motor w/On board Mtr. Spd. Cntrl	Belt Drive - PM Motor w/On board Mtr. Spd. Cntrl	Direct Drive w/VFD	Direct Drive w/o VFD	Belt Drive w/VFD	Belt Drive w/o VFD	
060	1/6 HP	1725	X	N/A	N/A	N/A	N/A	N/A	N/A	N/A
070	1/6 HP	1725	X	N/A	N/A	N/A	N/A	N/A	N/A	N/A
080	1/6 HP	1725	X	N/A	N/A	N/A	N/A	N/A	N/A	N/A
100	1/3 HP	1725	X	N/A	N/A	N/A	N/A	N/A	N/A	N/A
122	1/2 HP	1725	X	N/A	N/A	N/A	N/A	N/A	N/A	N/A
135	1 1/2 HP	2332	X	N/A	X	X	X	X	X	X
150	2 HP	2099	X	N/A	X	X	X	X	X	X
165	3 HP	2000	X	N/A	X	X	X	X	X	X
182	5 HP	1759	X	N/A	X	X	X	X	X	X
200	5 HP	1480	X	N/A	X	X	X	X	X	X
222	5 HP	1458	N/A	N/A	X	X	X	X	X	X
245	7 1/2 HP	1388	N/A	N/A	X	X	X	X	X	X
270	7 1/2 HP	1181	N/A	N/A	X	X	X	X	X	X
300	10 HP	1013	N/A	N/A	X	X	X	X	X	X
330	10 HP	928	N/A	N/A	X	X	X	X	X	X
365	10 HP	757	N/A	N/A	X	X	X	X	X	X
402	10 HP	666	N/A	N/A	N/A	X	N/A	N/A	X	X

\*-If VFD will be used with a fan mounted outdoors, the VFD will be ship loose only and it is recommended VFD be installed indoors (by others), or a weather resistant enclosure (enclosure and mounting, by others.)





# FILTER OPTIONS

## Filter Box

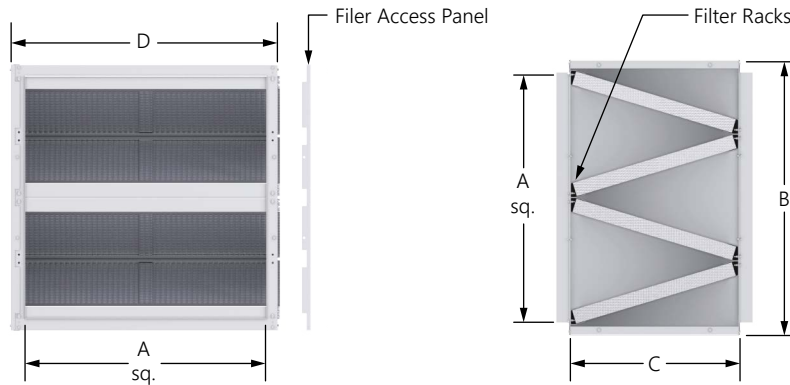
The filter box is designed for compatibility with the Square Centrex Inliner Fan. The filter box can be directly coupled to the Square Centrex inlet or installed remotely to the Square Centrex in the system duct work.

## Washable Filters

The unit is designed to handle 1" or 2" filters by utilizing tabs in the filter tracks. The filter media is washable aluminum available with a 1" or 2" inch thickness. Disposable filters are also available.

## Removable Side Panels

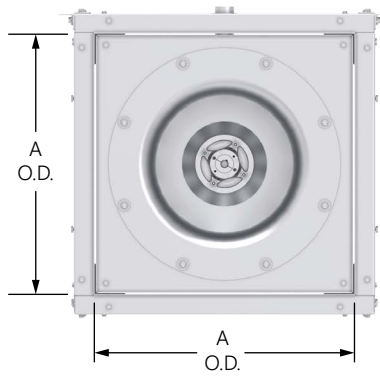
The side panels are removable for easy filter access from either side of the unit.



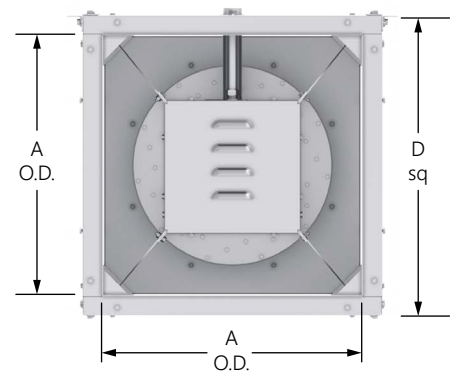
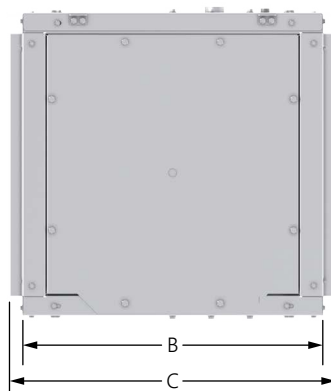
Size	A	B	C	D	Filter Information		Filter Area	Ship Wt. Steel	Ship Wt. Aluminum
					Qty	Nominal Size			
060	13 1/8	15 1/6	22 9/16	15 1/16	2	14 x 24 x 2	11/68	28	10
070	13 1/8	15 1/6	22 9/16	15 1/16	2	14 x 24 x 2	11/68	28	10
080	13 1/8	15 1/6	22 9/16	15 1/16	2	14 x 24 x 2	11/68	28	10
100	13 1/8	15 1/6	22 9/16	15 1/16	2	14 x 24 x 2	11/68	28	10
122	16	18 7/16	24 1/4	20 7/16	2	20 x 24 x 2	16.04	46	16
135	18	20 5/8	24 1/4	24 5/8	2	24 x 24 x 2	18.96	55	20
150	20	23	24 1/4	24 5/8	2	24 x 24 x 2	18.96	57	20
165	22	25 7/8	24 1/4	25	3	24 x 24 x 2	28.44	65	23
182	24	27 7/8	24 1/4	28 7/16	6	14 x 24 x 2	35.04	73	25
200	26	30 9/16	24 1/4	30 7/16	3	16 x 24 x 2	37.02	78	27
					3	14 x 24 x 2			
222	30	33 13/16	24 1/4	35 3/8	3	20 x 24 x 2	41.58	88	31
					3	14 x 24 x 2			
245	33	36 9/16	24 7/16	38 1/8	4	24 x 24 x 2	61.28	101	35
					4	14 x 24 x 2			
270	36	39 9/16	24 7/16	40 3/16	8	20 x 24 x 2	64.16	105	37
300	40	43 3/4	24 1/2	44 7/16	8	20 x 24 x 2	64.16	105	37
					4	16 x 24 x 2			
330	44	48 1/2	24 1/4	48 5/8	15	16 x 24 x 2	98.4	136	48
365	48 1/2	50 1/2	24 1/4	49 1/8	10	24 x 24 x 2	94.8	137	48
402	53 1/2	55	24 1/4	55 1/8	10	20 x 24 x 2	111.2	154	54
					5	15 x 24 x 2			

# DIRECT DRIVE | DIMENSIONS DATA

## SQX-DD (SIZES:060-165) | CENTRIFUGAL SQUARE INLINE



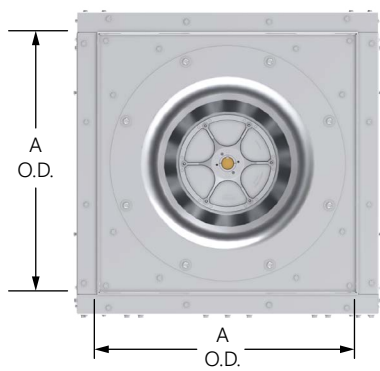
INLET VIEW



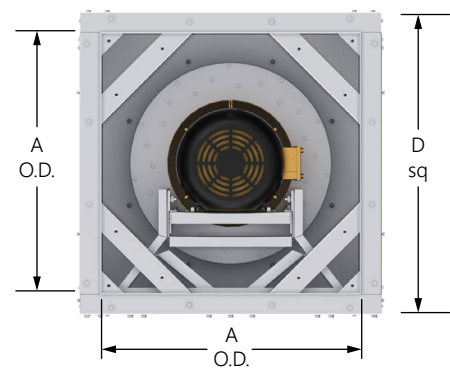
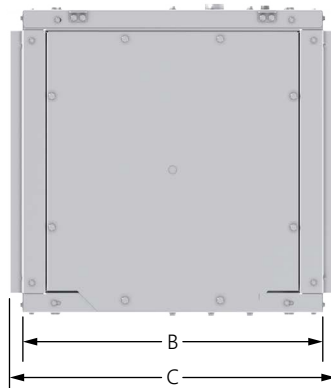
DISCHARGE VIEW

Size	A	B	C	D	Max MTR Frame	Less Motor/Drive Weight (lbs)
060	13 1/8	16 3/8	18 3/8	15 1/16	56	48
070	13 1/8	16 3/8	18 3/8	15 1/16	56	48
080	13 1/8	16 3/8	18 3/8	15 1/16	56	48
100	13 1/8	16 3/8	18 3/8	15 1/16	56	45
122	16	20	22	18 7/16	56	75
135	18	20 5/8	22 5/8	20 5/8	56	85
150	20	23	25	23	145T	110
165	22	25 5/16	27 5/16	25 5/16	145T	140

## SQX-DD (SIZES:182-365) | CENTRIFUGAL SQUARE INLINE



INLET VIEW

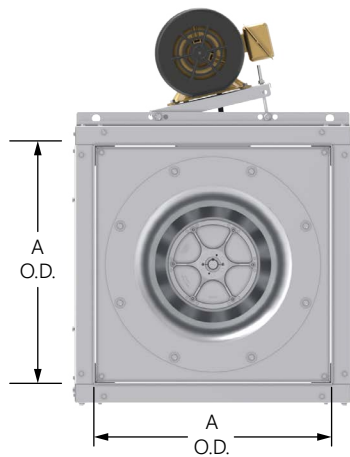


DISCHARGE VIEW

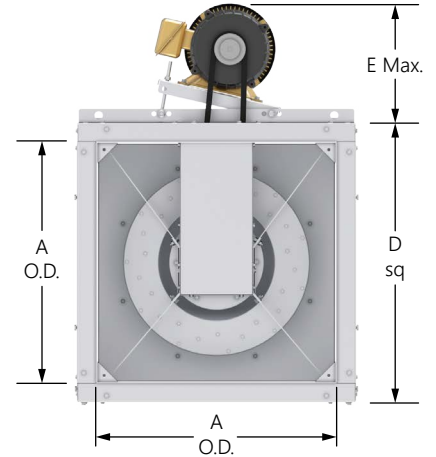
Size	A	B	C	D	Max MTR Frame
182	24	28	30	27 7/8	184T
200	26	30 11/16	33 11/16	30 9/16	184T
222	30	34 3/16	37 3/16	33 3/4	215T
245	33	37 9/16	41 9/16	36	215T
270	36	41 7/16	45 7/16	39 11/16	215T
300	40	46 1/16	50 1/16	44	254T
330	44	50 5/8	54 5/8	48 1/2	286T
365	48 1/2	56	60	53 9/16	286T

# BELT DRIVE | DIMENSIONS DATA

SQX-BD (SIZES:135-402) | CENTRIFUGAL SQUARE INLINE



INLET VIEW



DISCHARGE VIEW

Size	A	B	C	D	E	Max MTR Frame	Ship Wt.
135	18	20 5/8	22 5/8	20 5/8	9 3/4	145T	100
150	20	23	25	23	11	145T	120
165	22	25 5/16	27 5/16	25 5/16	11 1/4	182T	140
182	24	28	30	27 7/8	11 1/4	182T	160
200	26	30 3/8	33 3/8	30 9/16	11 1/4	182T	195
222	30	34 1/4	37 1/4	33 3/4	11 1/4	184T	235
245	33	34	38	36	15	184T	270
270	36	37 1/2	41 1/2	39 11/16	15	213	355
300	40	38	42	44	15	213	395
330	44	41 3/4	45 3/4	48 1/5	15	215T	460
365	48 1/2	46 1/4	50 1/4	53 1/2	15	215T	562
402	53 1/2	51	55	59	15	215T	657

# FAN SELECTIONS

## Model

SQX

## Construction

<b>Tag</b> <enter value>	<b>Drive Type</b> B = Belt D = Direct	<b>Paint Color</b> 0 = None A = Standard color (gray) B = Chrome green C = Pale green E = White F = Oxford beige G = Dover white H = Desert tan J = Black K = Smoke gray L = Brick red M = Peppercorn N = Pale brown P = Chocolate brown Q = Timeless bronze R = Charcoal X = Special *Colors only available for Standard Enamel
<b>Altitude</b> <enter value>	<b>Fan Speed</b> <####>	<b>UL / ETL Listing</b> 0 = None 1 = UL 705
<b>Temperature (°F)</b> <enter value>	<b>Impeller Type</b> B = Backward Inclined	
<b>Application Flow (CFM)</b> <enter value>	<b>Rotation/Discharge</b> 3 = Horizontal Installation 4 = Vertical Installation	
<b>Application Static Pressure (in. wg)</b> <enter value>	<b>Unit Material</b> A = Aluminum G = Galvanized Steel	
<b>Unit size</b> 060 070 080 100 122 135 150 165 182 200 222 245 270 300 330 365 402	<b>Stainless Hardware</b> 0 = Standard / None S = Stainless Hardware	
	<b>Paint/Coating</b> 0 = None A = Standard Enamel B = Airdry Epoxy E = Airdry Phenolic M = Airdry Phenolic Epoxy X = Special *Colors only available for Standard Enamel	

# FAN SELECTIONS

## Motor

### Motors and Drives

F = Factory supplied  
L = Less motor, less drive  
X = Special

### V-Belt Drive Kit

0 = None  
A = Adjustable drive kit  
L = Life safety  
X = Special

### Bearing Life

B = L10 80K Hours  
C = L10 100K Hours

### Motor Horsepower

0.50 = 1/20  
0.83 = 1/12  
.167 = 1/6  
.200 = 1/5  
.250 = 1/4  
.333 = 1/3  
.500 = 1/2  
.750 = 3/4  
1.00 = 1  
1.50 = 1 1/2  
2.00 = 2  
3.00 = 3  
5.00 = 5  
7.50 = 7 1/2  
10.0 = 10

### Motor Enclosure

0 = None  
1 = TEFC  
2 = TENV  
3 = TEAO  
4 = OPAO  
5 = ODP  
6 = OP (Open)  
7 = EXP C2D1  
X = Special

### Motor Efficiency

G = Gplus (ECM)  
M = Gplus (Permanent Magnet)  
P = Premium  
S = Standard

### Voltage

A = 115V  
B = 208V  
C = 230V  
D = 277V  
F = 460V  
G = 575V  
H = 220V  
J = 380V  
K = 400V

### Phase

1 = 1 Phase  
3 = 3 Phase

### Frequency

5 = 50 Hz  
6 = 60 Hz

### Motor Speed

0 = None  
A = 900 RPM  
B = 1200 RPM  
C = 1800 RPM  
D = 3600 RPM

### Shaft Grounding Ring

0 = None  
S = Shaft Grounding Ring

### Thermal Overload Protection

0 = None  
T = Thermal Overload Protection

# FAN SELECTIONS

## Options and Accessories

### VFD / Speed Controllers / Starters

0 = None  
S = Starter  
M = On board motor speed controller // IP22 or less  
V = VFD  
F = Field Provided VFD

### Controllers

0 = None / Provided by others  
A = 0-10V output potentiometer  
1 = Lek-Trol-SCR speed controller (mounted)  
2 = Lek-Trol SCR speed controller (loose)  
3 = Multi speed controller, iQ-MS (ECM only)  
5 = iQ-IPCM w/ 115V/230V power supply (ECM only)  
6 = iQ-IPCM w/ 277V power supply (ECM only)  
8 = 0-10v BMS wiring only (ECM only)

### Sensors

0 = None  
A = Airminder switch (time delay)  
B = Airminder+firestat  
F = Firestat switch

### Motor, Shaft and Belt Guards

0 = None  
C = Weather/Motor Cover  
B = Belt Guard

### Spare Belts

0 = None  
1 = 1 spare set  
2 = 2 spare set

### Service Switches

0 = None  
A = NEMA 1 - loose  
C = NEMA 1 - mounted  
D = NEMA 3R - loose  
F = NEMA 3R - mounted  
G = NEMA 4 - loose  
N = NEMA 7/9 - loose

### Internal Wiring

0 = None  
1 = NEMA 1  
3 = NEMA 3

### Spark Resistant Construction

0 = None  
B = AMCA B Spark Resistance  
C = AMCA C Spark Resistance

### Inlet and Outlet Guards / Screens

0 = None  
N = Inlet guard  
U = Outlet guard  
T = Inlet and outlet guard

### Inlet Flange

0 = None  
A = Punched inlet flange  
G = Punched companion inlet flange kit\*

### Outlet Flange

0 = None  
B = Punched outlet flange  
H = Punched companion outlet flange kit\*

### Vibration Isolators

0 = None  
1 = Rubber in shear floor  
2 = Rubber in shear hanger  
4 = Unhoused spring floor  
5 = Housed spring floor  
6 = Spring hanger  
X = Special

### Extended Lube Lines

0 = None  
L = Extended polyamide lube lines

### Crating Option

0 = Standard

### Damper

0 = None  
D = Damper

### Wheel Width

00 = Standard 100%  
80 = Partial Width 80%  
50 = Partial Width 50%  
30 = Partial Width 30%

### Outlet Discharge

0 = Inline Standard Discharge  
S = Single Side Discharge  
D = Double Side Discharge

### Filter Box

0 = None  
5 = 1" MERV 8 Pleated Filters  
6 = 2" MERV 8 Pleated Filters  
7 = 1" MERV 13 Pleated Filters  
8 = 2" MERV 13 Pleated Filters

### Sound Insulation

0 = None  
1 = Sound Insulation

### Belt Tensioner

0 = None  
B = Belt Tensioner

### Flex Duct Connector

0 = None  
C = Indoor single connector  
D = Indoor double connector

# PENNBARRYPRODUCTSOLUTIONS



## Commercial

- Roof & wall exhaust centrifugal fans
- Ceiling, wall, & inline centrifugal fans
- Roof supply centrifugal fans
- Square & round centrifugal fans
- Wall mounted axial fans
- Hooded roof axial fans
- Upblast roof axial fans
- Gravity ventilators
- Roof curbs



## Industrial

- Freestanding centrifugal fans
- Industrial & material handling fans
- Tubular centrifugal inline fans
- Mixed flow centrifugal fans
- Plug & plenum fans
- Wall mounted propeller fans
- Tube axial fans
- Vane axial fans
- Bifurcator fans
- Lab exhaust



## Kitchen ventilation

- Make-up air units
- Exhaust fans



## Energy recovery

- Outdoor units
- Indoor units

PennBarry is proud to be your preferred manufacturer of commercial and industrial fans and blowers. Learn how PennBarry can assist you in your next application by contacting your PennBarry Representative or visiting us on the web at [www.pennbarry.com](http://www.pennbarry.com)

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