



RAFAT

8850 GEORGE BOLTON PARKWAY, CALEDON, ONTARIO L7E 2Y4

Shop Drawings
Transmittal No:

23 34 00-01R0

Project Name:	Construction of Victoria Park Arena and Brampton Sports Hall of Fame	Project No.	NRFP2024-232
		DATE:	21 Feb 2025
		Submittal Required Return Date:	07 Mar 2025
Submittal No:	37		

Title:	SD-Fans
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To:	Mark Falkenburger
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Checked by:	Abdullah Hissamuddin	To Be Reviewed By the Following Consultants	Architecture49 & WSP
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Submitted for:	Review and Approval
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Consultants Response	
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SUBMITTAL REVIEW
For general compliance with the design concept and contract documents. Subcontractor is solely responsible for jobsite correlation and correctness of all ratings, sizings, type, style, dimensions, finish, quantities and satisfactory fitting to other work and equipment. This review does not change the intent of the contract document.

REVIEWED

RESUBMIT

REJECTED



- ☐ REVIEWED
☒ REVIEWED AS NOTED
☐ REVISE & RESUBMIT

BY Jerry Nweisser
DIVISION Buildings - Sustainability
DATE 3/11/2025
SUBMITTAL# 21-10
PROJECT CA-WSP-221-05263-00

THE REVIEW OF THIS DRAWING DOES NOT IN ANY WAY RELIEVE THE VENDOR OR CONTRACTOR OF RESPONSIBILITY FOR ITS ACCURACY OR FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS.



SHOP DRAWING REVIEW

Project Name: Victoria Park Arena

Project No. CA-WSP-221-05263-00

Date 2025-03-05

Received:

Shop Drawing: Title: Fans
Revision: 00
Submission No.: 21-10

This review by consultant is for sole purpose of ascertaining conformance with general design concept. This review does not mean that consultant approves detail design inherent in shop drawings, responsibility for which remains with contractor, and such review does not relieve contractor of responsibility for errors or omissions in shop drawings or of contractor's responsibility for meeting all requirements of contract documents. Be responsible for dimensions to be confirmed and correlated at job site, for information that pertains solely to fabrication process or to techniques of construction and installation, and for coordination of the work of subtrades.

<input type="checkbox"/> Reviewed	Mechanical Review Required <input checked="" type="checkbox"/>	Electrical Review Required <input checked="" type="checkbox"/>
<input checked="" type="checkbox"/> Reviewed as Noted	Reviewed by: Jerry Nweisser	Reviewed by: Brad Li
<input type="checkbox"/> Revise & Resubmit	Review Date: 2025-03-05	Review Date: 2025-03-06
Item	Comments	
1.	Contractor to provide speed controllers for EF-3 & 4 as indicated on Note #4 of the exhaust fans schedule.	
2.		

End of Review



54 Audia Court, Unit 2
Concord, ON L4K 3N5
(905)-738-1400

Submittal 24-280-016

PROJECT NAME	PROJECT ADDRESS	DATE SUBMITTED
VICTORIA PARK ARENA	24-280 20 Victoria Crescent, Brampton, ON L6T 1E4	Feb 20, 2025

TO	FROM
Abdullah Hissamuddin	INZAMAN KHAN
COMPANY	COMPANY
RAFAT GENERAL CONTRACTOR INC.	Consult Mechanical Inc.
EMAIL	EMAIL
abdullah.hissam@rafat.ca	inzaman@consultmechanical.com
ADDRESS	ADDRESS
8850 GEORGE BOLTON PKWY BOLTON, ON L7E 2Y4	54 Audia Court, Unit 2 Concord, ON L4K 3N5

Title

Fans (23 34 00)

Description

Centrifugal Square Inline Fan EF-1to4

- Backdraft dampers
- Green Plus models where noted with ECM
- EF-1 & 2- c/w speed controller with single phase Input / 3 phase motor - with service switch (wiring diagram included in the shop) - This will allow the fans to work perfectly on site despite their 3 phase motors.

Package Items

SPEC	SUBSECTION	ITEM	TYPE
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Submittal # 85700
APPROVAL REQUIRED

Project 22104386-MECH-1- Brampton Victoria Park Arena
Leader Nevin Wong
Job Site Brampton Victoria Park Arena
Submission Date 2025-02-20
Sold To CONSULT MECH
Submitted By Chantal Koudou

Contacts

Role	Customer	Contact	Our Rep
Mechanical Contractor	Con-Sult Mechanical Inc.*	Inzaman Khan	Nevin Wong
General Contractor	Rafat General Contracing Inc		
Mechanical Contractor	Con-Sult Mechanical Inc.*	Mohammed Ali Khan Lodhi	Nevin Wong
Mechanical Contractor	Con-Sult Mechanical Inc.*	Paul Leddy	Nevin Wong
Designer	WSP MMM Group		Alex Forsea

Deliverables

Track #	289034		
Tag	EF-1-4		
Description	Centrifugal Square Inline Fan		
Quantity	4		
Manufacturer	PENN BARRY		
Production Lead Time	6 - 8 weeks		
Revision #	0		

Notes:

- Backdraft dampers
- Green Plus models where noted with ECM
- EF-1 & 2- c/w speed controller with single phase Input / 3 phase motor - with service switch (wiring diagram included in the shop)

Attention:

- 1) HTS will provide equipment in accordance with the attached shop drawings.
- 2) Upon approved submittal and customer release, HTS will release equipment to fabrication per the published lead times. Any storage fees associated with project schedule changes will be the responsibility of the purchaser.
- 3) HTS can provide freight and logistics to the purchaser as an added benefit of doing business with HTS. When freight is received by the purchaser, any noticeable damage must be recorded. Otherwise, HTS is not responsible for subsequent damage claims.

Approval Stamps



Submittal Data

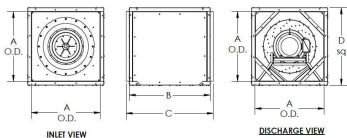
02/20/2025
<p>Project Name: Brampton Victoria Park Arena, 22104386/22104386</p> <p>Engineer: Architect: Contractor:</p> <p>Submitted By: HTS Eng. Toronto Sagar Prajapati 115 NORFINCH DRIVE NORTH YORK, Ontario M3N 1W8</p>

SQX182 - 0041GP

Duct Mounted Square Centrifugal Inline Fan

Quantity: 1
 Special: None

Dimensions



Unit Size	A	B	C	D	Weight
182	24	28	30	27.875	160

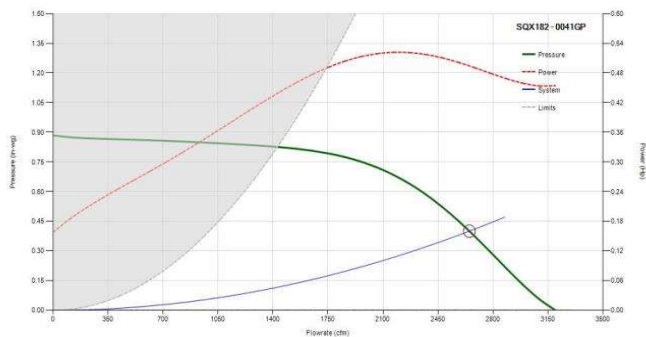
Standard Construction Feature

- Suitable for indoor ducted exhaust or supply light-duty applications
- Flexible mounting fitted for horizontal and vertical installations
- Statically and dynamically balanced stamped aluminum wheel
- Slip fit inlet and outlet
- Complies with AMCA Standard 204-96

Accessories

Application: E - Exhaust
 Damper Type: BD - Backdraft Damper
 Drive Type: D - Direct
 Drives and Starters: J - 200-240V 1ph to 3ph OnBrd Mtr Spd Ctrl IP22
 Internal Wiring: 1 - NEMA 1
 Motor Efficiency: M - Gplus (Permanent Magnet)
 Motor Speed: C - 1800 RPM
 Service Switches: C - NEMA 1 - mounted
 Temperature: 70
 UL / ETL Listing: 1 - UL 705
 Unit Material: G - Galvanized Steel
 Unit Size: 182
 Vibration Isolator: 6 - Spring Hanger

Performance



Operating Point

Volume (CFM)	2649
Static Pressure (in. wg)	0.4
Fan RPM	957
Horse Power (BHP)	0.49
Elevation (ft)	700
Temperature (°F)	70
Drive Loss (%)	N/A
FEI	1.27

Motor Information

Motor HP	1 HP
Volt/Ph/Hz	208V /3 /60
Enclosure	2 - TENV
NEC FLA*	4.6
Weight+ (lbs)	35

* NEC FLA - based on tables 430.248 or 430.250 of National Electrical Code 2014. Actual motor FLA may vary depending on motor manufacturer.

+ Motor weight may vary depending on supplier

(continued)

SOUND POWER							
OCTAVE POWER CENTER FREQUENCY (hz)							
63	125	250	500	1000	2000	4000	8000
84/86	75/78	73/75	73/70	70/67	63/61	59/55	39/36

LWA	dBa	Sones
74/73	63	11.3

LwA - Weighted sound power, based on ANSI S1.4, dBA - Weighted sound pressure, based on 11.5 dB attenuation per Octave band at 5 ft. Sones - calculated using AMCA 301 at 5 ft.

Damper

Control or General with various blade type dampers

Quantity: 1
Special: None

Product Image

Damper

4 3/4" MAX OPEN

1 1/4"

ALUM. BRACKETS

ALUM. TIE ROD

.0276 STEEL FRAME

.020 ALUM. BLADES

SHOULDER RIVETS 1/8" DIA.

FELT GASKET .046 THICK

BOTTOM ANGLE 20 GA GALV STEEL

Damper Width

Damper Height

•Sensitive and responsive to low velocities up to 1500 FPM range.

•Square galvanized steel frame,

•Multi-leaf, roll formed aluminum blades; with

•Nylon bearings; and

•Felt Edges for quiet operation

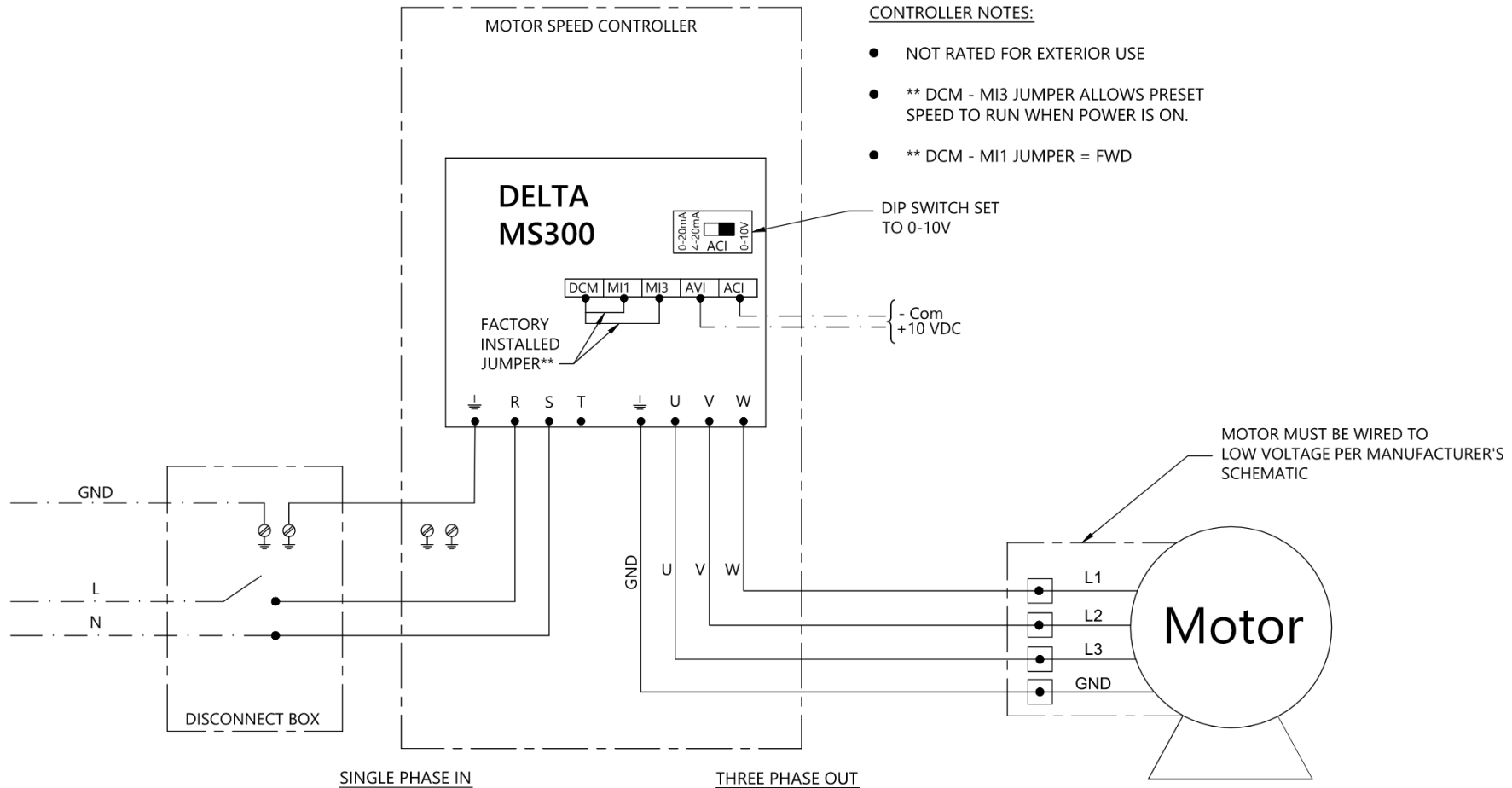
Model Parent	Part No	Height
SQX182	24560-SQX182	24.000

Width
24.000

Schedule		
ID	Quantity	Tag
1	1	EF-1

Page 1 of 1 - SelNav Version 1.0.00 - Product Information is Subject to Change without notice

Speed Controller with Single Phase Input / 3 Phase Motor - With Service Switch



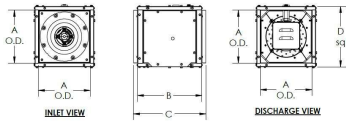
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SQX150 - 0041GP

Duct Mounted Square Centrifugal Inline Fan

Quantity: 1
 Special: None

Dimensions



Unit Size	A	B	C	D	Weight
150	20	23	25	23	110

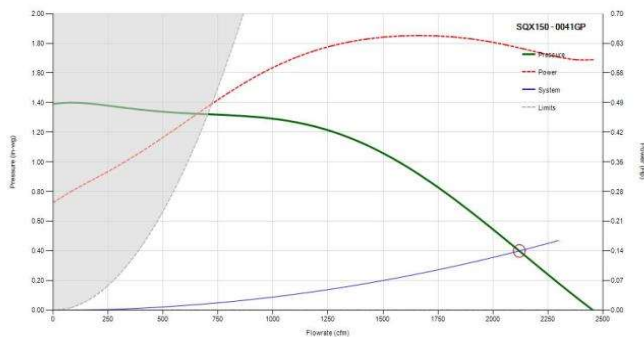
Standard Construction Feature

- Suitable for indoor ducted exhaust or supply light-duty applications
- Flexible mounting fitted for horizontal and vertical installations
- Statically and dynamically balanced stamped aluminum wheel
- Slip fit inlet and outlet
- Complies with AMCA Standard 204-96

Accessories

Application: E - Exhaust
 Damper Type: BD - Backdraft Damper
 Drive Type: D - Direct
 Drives and Starters: J - 200-240V 1ph to 3ph OnBrd Mtr Spd Ctrl IP22
 Internal Wiring: 1 - NEMA 1
 Motor Efficiency: M - Gplus (Permanent Magnet)
 Motor Speed: C - 1800 RPM
 Service Switches: C - NEMA 1 - mounted
 Temperature: 70
 UL / ETL Listing: 1 - UL 705
 Unit Material: G - Galvanized Steel
 Unit Size: 150
 Vibration Isolator: 6 - Spring Hanger

Performance



Operating Point

Volume (CFM)	2119
Static Pressure (in. wg)	0.4
Fan RPM	1496
Horse Power (BHP)	0.62
Elevation (ft)	700
Temperature (°F)	70
Drive Loss (%)	N/A
FEI	0.87

Motor Information

Motor HP	1 HP
Volt/Ph/Hz	208V /3 /60
Enclosure	2 - TENV
NEC FLA*	4.6
Weight+ (lbs)	35

* NEC FLA - based on tables 430.248 or 430.250 of National Electrical Code 2014. Actual motor FLA may vary depending on motor manufacturer.

+ Motor weight may vary depending on supplier

(continued)

SOUND POWER							
OCTAVE POWER CENTER FREQUENCY (hz)							
63	125	250	500	1000	2000	4000	8000
86/82	81/85	75/82	74/78	74/73	73/75	67/74	60/71

LWA	dBA	Sones
79/82	67.7	16.5

LwA - Weighted sound power, based on ANSI S1.4, dBA - Weighted sound pressure, based on 11.5 dB attenuation per Octave band at 5 ft. Sones - calculated using AMCA 301 at 5 ft.

Damper

Control or General with various blade type dampers

Quantity: 1
Special: None

Product Image

Damper

4 3/4" MAX OPEN

1 1/4"

ALUM. BRACKETS

ALUM. TIE ROD

.0276 STEEL FRAME

.020 ALUM. BLADES

SHOULDER RIVETS 1/8" DIA.

FELT GASKET .046 THICK

BOTTOM ANGLE 20 GA GALV STEEL

Damper Width

Damper Height

•Sensitive and responsive to low velocities up to 1500 FPM range.

•Square galvanized steel frame,

•Multi-leaf, roll formed aluminum blades; with

•Nylon bearings; and

•Felt Edges for quiet operation

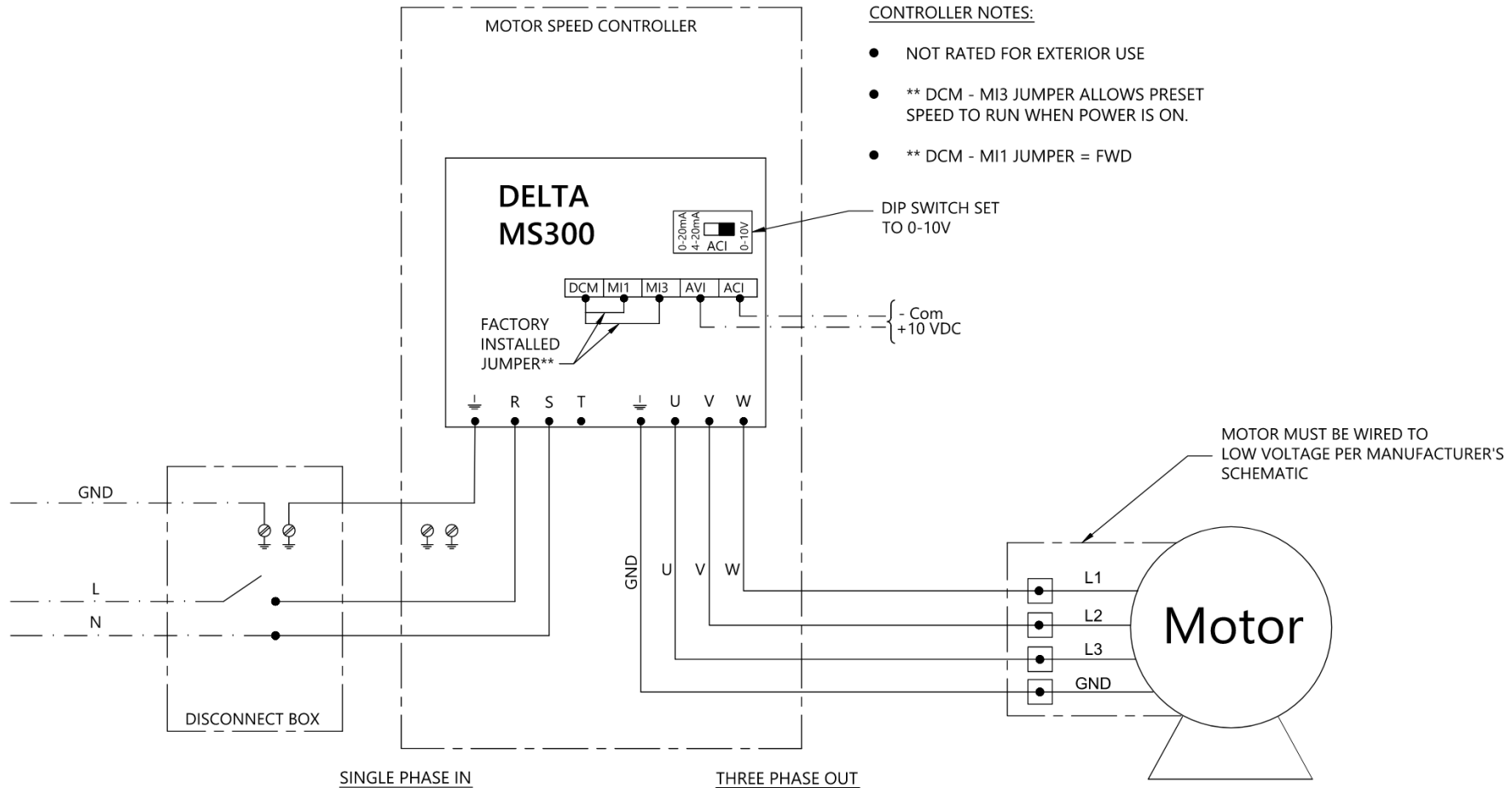
Model Parent	Part No	Height
SQX150	24560-SQX150	20.000

Width
20.000

Schedule		
ID	Quantity	Tag
1	1	EF-2

Page 1 of 1 - SelNav Version 1.0.00 - Product Information is Subject to Change without notice

Speed Controller with Single Phase Input / 3 Phase Motor - With Service Switch



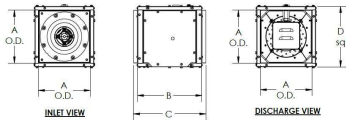
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SQX080 - 0041GP

Duct Mounted Square Centrifugal Inline Fan

Quantity: 1
 Special: None

Dimensions



Unit Size	A	B	C	D	Weight
080	13.125	16.375	18.375	15.0625	48

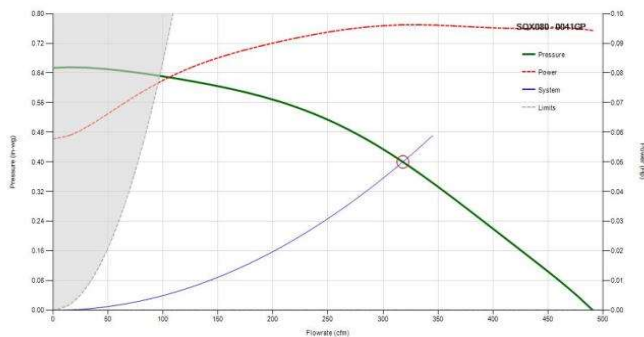
Standard Construction Feature

- Suitable for indoor ducted exhaust or supply light-duty applications
- Flexible mounting fitted for horizontal and vertical installations
- Statically and dynamically balanced stamped aluminum wheel
- Slip fit inlet and outlet
- Complies with AMCA Standard 204-96

Accessories

Application: E - Exhaust
 Damper Type: BD - Backdraft Damper
 Drive Type: D - Direct
 Internal Wiring: 1 - NEMA 1
 Motor Efficiency: G - Green Plus ECM
 Motor Speed: S - 1725 RPM
 Service Switches: C - NEMA 1 - mounted
 Temperature: 70
 Thermal Overload Protection: T - Thermal Overload Protection
 UL / ETL Listing: 1 - UL 705
 Unit Material: G - Galvanized Steel
 Unit Size: 080
 Vibration Isolator: 6 - Spring Hanger

Performance



Operating Point

Volume (CFM)	318
Static Pressure (in. wg)	0.4
Fan RPM	1559
Horse Power (BHP)	0.1
Elevation (ft)	700
Temperature (°F)	70
Drive Loss (%)	N/A
FEI	1.21

Motor Information

Motor HP	0.167 - 1/6 HP
Volt/Ph/Hz	115V /1 /60
Enclosure	5 - ODP
NEC FLA*	4.4
Weight+ (lbs)	C/F

* NEC FLA - based on tables 430.248 or 430.250 of National Electrical Code 2014. Actual motor FLA may vary depending on motor manufacturer.

+ Motor weight may vary depending on supplier

(continued)

SOUND POWER
OCTAVE POWER CENTER FREQUENCY (hz)

63	125	250	500	1000	2000	4000	8000
80/76	66/74	66/72	65/67	63/65	68/65	58/58	52/51

LWA	dBA	Sones
71/71	59.5	10.1

LwA - Weighted sound power, based on ANSI S1.4, dBA - Weighted sound pressure, based on 11.5 dB attenuation per Octave band at 5 ft. Sones - calculated using AMCA 301 at 5 ft.

Damper

Control or General with various blade type dampers

Quantity: 1
Special: None

Product Image

Damper

4 3/4" MAX OPEN

1 1/4"

ALUM. BRACKETS

ALUM. TIE ROD

.0276 STEEL FRAME

.020 ALUM. BLADES

SHOULDER RIVETS 1/8" DIA.

FELT GASKET .046 THICK

BOTTOM ANGLE 20 GA GALV STEEL

Damper Width

Damper Height

•Sensitive and responsive to low velocities up to 1500 FPM range.

•Square galvanized steel frame,

•Multi-leaf, roll formed aluminum blades; with

•Nylon bearings; and

•Felt Edges for quiet operation

Model Parent	Part No	Height
SQX80	24560-SQX80	13.125

Width
13.125

Schedule		
ID	Quantity	Tag
1	1	EF-3

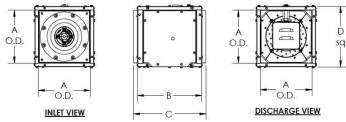
Page 1 of 1 - SelNav Version 1.0.00 - Product Information is Subject to Change without notice

SQX135 - 0041GP

Duct Mounted Square Centrifugal Inline Fan

Quantity: 1
 Special: None

Dimensions



Unit Size	A	B	C	D	Weight
135	18	20.625	22.625	20.625	85

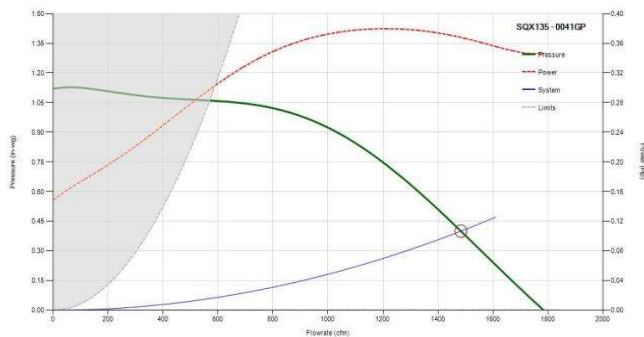
Standard Construction Feature

- Suitable for indoor ducted exhaust or supply light-duty applications
- Flexible mounting fitted for horizontal and vertical installations
- Statically and dynamically balanced stamped aluminum wheel
- Slip fit inlet and outlet
- Complies with AMCA Standard 204-96

Accessories

Application: E - Exhaust
 Damper Type: BD - Backdraft Damper
 Drive Type: D - Direct
 Internal Wiring: 1 - NEMA 1
 Motor Efficiency: G - Green Plus ECM
 Motor Speed: S - 1725 RPM
 Service Switches: C - NEMA 1 - mounted
 Temperature: 70
 Thermal Overload Protection: T - Thermal Overload Protection
 UL / ETL Listing: 1 - UL 705
 Unit Material: G - Galvanized Steel
 Unit Size: 135
 Vibration Isolator: 6 - Spring Hanger

Performance



Operating Point

Volume (CFM)	1483
Static Pressure (in. wg)	0.4
Fan RPM	1492
Horse Power (BHP)	0.37
Elevation (ft)	700
Temperature (°F)	70
Drive Loss (%)	N/A
FEI	1.05

Motor Information

Motor HP	0.75 - 3/4 HP
Volt/Ph/Hz	208V /1 /60
Enclosure	5 - ODP
NEC FLA*	7.6
Weight+ (lbs)	C/F

* NEC FLA - based on tables 430.248 or 430.250 of National Electrical Code 2014. Actual motor FLA may vary depending on motor manufacturer.

+ Motor weight may vary depending on supplier

(continued)

SOUND POWER							
OCTAVE POWER CENTER FREQUENCY (hz)							
63	125	250	500	1000	2000	4000	8000
85/83	82/86	74/81	74/78	74/72	72/74	67/73	59/70

LWA	dBA	Sones
78/82	66.9	15.7

LwA - Weighted sound power, based on ANSI S1.4, dBA - Weighted sound pressure, based on 11.5 dB attenuation per Octave band at 5 ft. Sones - calculated using AMCA 301 at 5 ft.

Damper

Control or General with various blade type dampers

Quantity:1

Special:None

Product Image

Damper

4 3/4" MAX OPEN

1 1/4"

ALUM. BRACKETS

ALUM. TIE ROD

.0276 STEEL FRAME

.020 ALUM. BLADES

SHOULDER RIVETS 1/8" DIA.

FELT GASKET .046 THICK

BOTTOM ANGLE 20 GA GALV STEEL

Damper Width

Damper Height

•Sensitive and responsive to low velocities up to 1500 FPM range.

•Square galvanized steel frame,

•Multi-leaf, roll formed aluminum blades; with

•Nylon bearings; and

•Felt Edges for quiet operation

Model Parent	Part No	Height
SQX135	24560-SQX135	18.000

Width
18.000

Schedule		
ID	Quantity	Tag
1	1	EF-4

Page 1 of 1 - SelNav Version 1.0.00 - Product Information is Subject to Change without notice