zehnder
always the best climate

Zehnder ComfoAir Q350 TR

Technical specification for comfort ventilation unit

General

Whether you are working on a new build or a renovation project: With a maximum air volume flow of 206 cfm at an external pressure of 0.8"WC, the Zehnder ComfoAir Q350 TR comfort ventilation unit is flexibly suitable for single-family houses and apartment buildings, offices and commercial buildings.
With its new technologies, starting with the diamond heat exchanger, through the revolutionary fan technology for a modulating by-pass and the optional adaptive pre-heater, combined with state-of-the-art control system technology like flow control and active comfort control and a user-friendly operating concept from simple switches to apps, Zehnder ComfoAir Q contributes to a comfortable, healthy and energy-efficient indoor climate.

Zehnder ComfoAir Q350 TR

Zehnder
ComfoSense C67

Zehnder
ComfoSwitch C67

Zehnder
ComfoControl

Benefits

- More heat recovery and less power consumption because of the diamond heat exchanger with a larger surface and lower pressure losses
- Silent and efficient operation via the latest fan technology with RadiCal impeller, flow ring and flow grid
- More comfort via optimal supply temperature via the modulating by-pass with an intelligent temperature controller
- Energy-saving and demand-oriented tempering of outdoor air via adaptive pre-heater (optional)
- Security for planning and installation as one unit combines right and left version
- Simple commissioning and quiet operation with perfectly balanced volume flows because of flow control technology
- User-friendly operation via the tailored operating concept: from an intelligent switch to the app
- Hygienic because of optimal filter concept with filter change wizard
- Avoidance of excessively dry room air because of humidity recovery with the Zehnder enthalpy exchanger (optional)

Technical specifications

Zehnder ComfoAir Q350 TR	
Max. air volume	206 cfm
Height	32 in (809 mm)
Total height	34 in (850 mm)
Width	29 in (725 mm)
Overall width	31 in (790 mm)
Depth	22 in (570 mm)
Total depth	22.8 in/23.4 in (580 mm/595 mm)
Weight	110 lbs (50 kg)
Installation	Wall-mounted / floor-mounted
Temperature range	+44 °F to 104 °F in the mechanical room
Condensate drain	32 mm / DN 32 external thread
Duct connection diameter	160 mm (6.3 in)
Supply voltage	240 V, 60 Hz
Power consumption without/with pre-heater	180 W / 1,850 W
Current draw without/with pre-heater	1.42 A / 10 A
Housing	Sheet steel
Designer front panel	ABS, RAL 9003
Inner zone	EPP / ABS
Heat exchanger	PS
Enthalpy exchanger	PE-Copolymer

Passivhause certification

See attached PHI certificates	HRV	ERV
Component ID	0956vs03	1006vs03
Application [m^3/h]	70-270	70-270
Heat recovery efficiency η_{WRG} [-]	90%	86%
Specific electric power consumption $p_{el,spec}$ [$W/(m^3/h)$]	0.24	0.22
Humidity recovery ηX [-]	-	73%

Article numbers

TR = rotating connectors

Comfort ventilation unit	Article number
ComfoAir Q350 TR HRV	9648-01
ComfoAir Q350 TR ERV	9668-00

Accessories	Article number
ComfoAir Q350/450/600 pre-heater	9656-00
ComfoAir Q350/450/600 mounting base	9575-00
Waterless p-trap	9637-00

Filters	Article number
Filter set for ComfoAir Q350/450/600, G4 / F7 (contains 2 units)	9672-00
Filter for ComfoAir Q350/450/600, G4 (MERV 7/8)	9671-00
Filter for ComfoAir Q350/450/600, F7 (MERV 13)	9670-00

Control units	Article number
ComfoSense C67 control panel	9617-00
ComfoSwitch C67 control panel	6918-00
ComfoConnect LAN C interface	6919-00
ComfoConnect KNX C interface	9655-00
ComfoAir Q350/450/600 option box	9620-00
CO_2 sensor	9260-01
Humidity sensor	9256-01
ComfoSplitter	9647-00
Boost switch, momentary contact	9556-00

System expansions	Article number
Zehnder ComfoFond-L Q L TR brine-earth heat exchanger, supply air connection left	9658-00
Zehnder ComfoFond-L Q R TR brine-earth heat exchanger, supply air connection right	9657-00

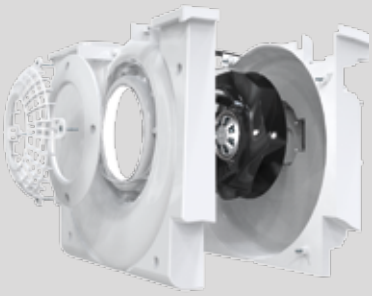
Technologies

Diamond heat exchanger

Unique, ultra-powerful heat exchanger – for maximum energy efficiency

The "diamond" heat exchanger features an especially large surface, which allows it to achieve a higher level of efficiency. Variable duct heights ensure even flow and lower pressure losses, and thus optimal airflow. As a result, less energy is required to overcome the air resistance.

Fans



State-of-the-art fan technology – for quiet, energy-saving operation

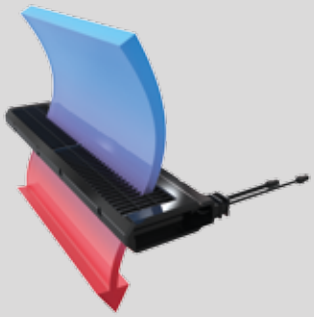
The flow grid, scroll housing and ebm-papst RadiCal impeller ensure the best possible air flow. This guarantees not only extremely quiet operation, but also particularly low power consumption. A high-quality, future-proof solution, based on tried-and-tested technology.

Modulating by-pass

Comfortable indoor ventilation because of intelligent control of the heat recovery

The by-pass controls the exact degree of heat recovery and influences the supply air temperature as a result. The modulating by-pass is guided by an optimum comfort temperature, which is determined on the basis of information from the temperature and humidity sensors as well as an intelligent algorithm.

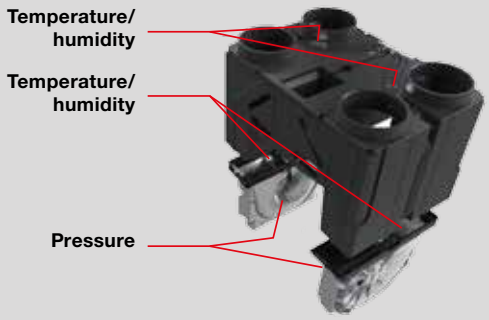
Pre-heater



Intelligent temperature control of the drawn-in outdoor air for the best possible energy efficiency

The adaptive pre-heater adapts perfectly to the temperature, volume flow and air humidity, and provides the outside air temperature required for energy-efficient operation no matter what the temperatures are outside. The level of pressure loss is negligible because of its large surface and delta shape – and that also reduces the power consumption.

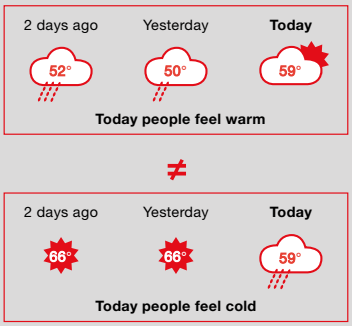
Sensors



Flawless operation because of intelligent control

Individual sensors continuously determine the temperature, humidity and air pressure in the comfort ventilation unit. This permits precise control of the modulating by-pass, the pre-heater, flow control and humidity comfort mode.

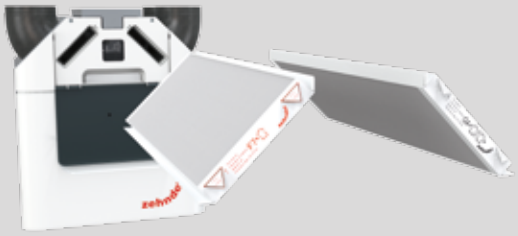
Comfort temperature



Optimized supply air temperature because of comfort technology

People's temperature sensation depends on the current outdoor temperature and the average outdoor temperatures experienced recently. For this reason, the adaptive climate technology in Zehnder ComfoAir Q adapts the supply air temperature to suit their current needs. As a result, Zehnder ventilation units make an important contribution to ensuring a comfortable indoor climate throughout the year – benefiting your customers.

Filters



Optimum hygiene because of powerful filters

Completely sealed and maximized, the filters prevent dust from getting into the room air. There is also a programmable warning indicator to show when it is time to replace the filters, ensuring the air is always clean and healthy. The indicator factors in not only the elapsed time, but also the air volume transported.

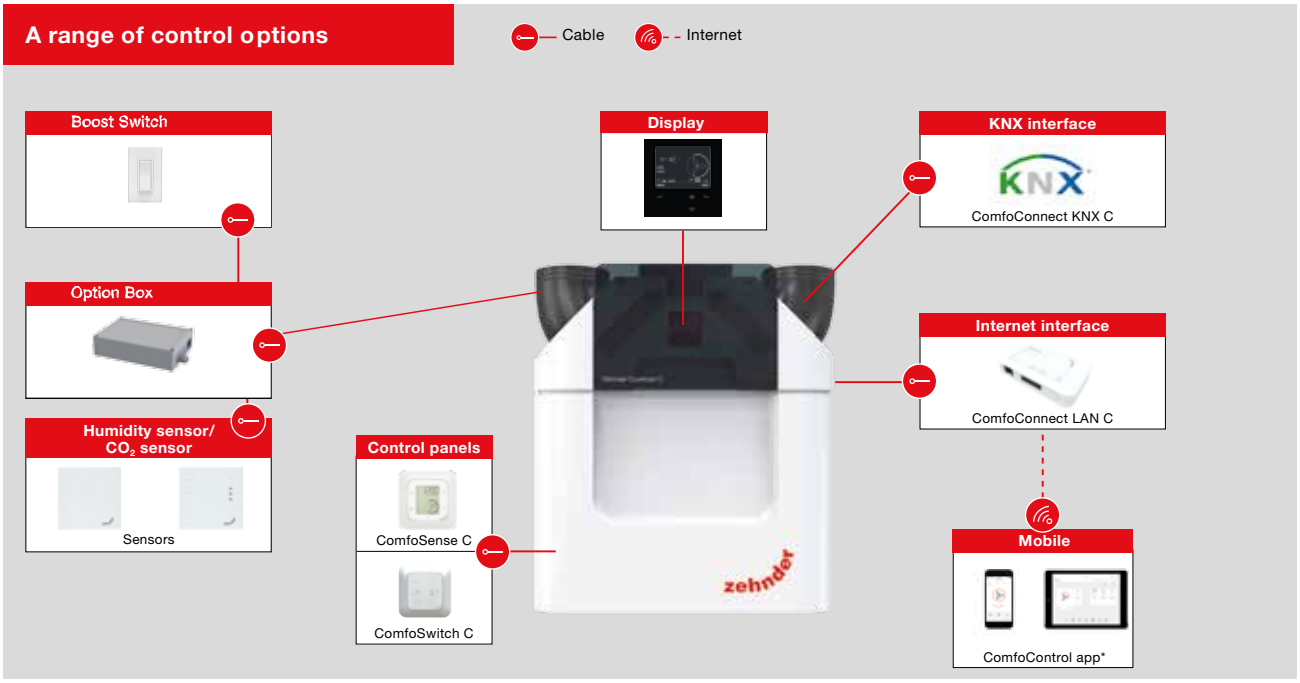
Flow control

Innovative air volume balancing for maximum heat recovery

New and patented: innovative sensor technology automatically ensures balanced supply air and extract air volumes. This flow control guarantees maximum heat recovery. What's more, you save time during commissioning because there is no need to adjust the speed manually and the air volumes are balanced automatically.

Control options

A range of control options



Control panel	Description	Article number	Accessories required
Unit display	Display integrated ex works	-	-
External control panels	ComfoSense C67 control panel ComfoSwitch C67 control panel	9617-00 9618-00	-
Boost Switch	Momentary contact	9556-00	Option box
Sensor (wired, 0 - 10 V control output)	CO_2 sensor Humidity sensor	9260-01 9256-01	Option box
App control and web portal	ComfoConnect LAN C interface	9619-00	Internet access + router with WiFi access
Connection to KNX network	ComfoConnect KNX C interface	9655-00	

All components can be combined with one another. If there are more than four components, a Zehnder ComfoSplitter (9647-00) is required.
* Internet access and a router with WiFi access are required for connection

Control functions

Comfort ventilation unit
Commissioning wizard
Filter change wizard
Real time information for energy saving/consumption
Adaptive comfort temperature control
Flow control technology, constant volume and constant speed control
4 levels, party and absence settings
Weekly time schedule
Control for a modulating electric preheater
Supply and extract air can be set and deactivated separately
Frost protection function
Program setting: fire place

Option box
Control for ComfoFond-L Q brine-earth heat exchanger
Power-on and power-off delay for bathroom switch
Demand control (CO_2 sensor, humidity sensor)

Tender specification

Zehnder ComfoAir Q350 TR ventilation unit with integrated display

The Zehnder ComfoAir Q350 TR is a centralized, compact ventilation unit with heat recovery and integrated adaptive summer by-pass. This ventilation unit is ideal for new builds as well as for renovation projects.

The housing, made of galvanised or painted sheet steel, is acoustically and thermally insulated. Economical DC fans with RadiCal impeller, flow ring and flow grid ensure economical operation and therefore permit a high level of electrical efficiency. Supply and extraction fans can be controlled separately and can be precisely adjusted to within one percent by entering the balance air volume.

The core of Zehnder ComfoAir Q350 TR is the plastic cross-counterflow heat exchanger with up to 95% heat recovery.

The unit is operated via the integrated control panel. Optionally, it can be operated via a wired control panel (ComfoSense C or ComfoSwitch C), which is connected to the ventilation unit with a cable provided on site (JYSTY 2x2x0.6). It can also be operated via the Zehnder ComfoConnect LAN C or ComfoConnect KNX C interfaces. All working conditions and error messages can be read from the display.

Zehnder ComfoAir Q350 TR is delivered ready to plug in and use. The filters can be replaced easily from the front by the user without opening the unit. The Zehnder ComfoAir Q350 TR can be either wall-mounted or floor-mounted with an optionally available base. It is connected via 4 rotating 160 mm (6.3") connectors at the top of the unit or on the side.

- Automatic frost protection regulation - Filter replacement display
- Automatic and temperature-controlled by-pass
- Fault history including the last three error messages
- Supply and extraction fans can be activated separately
- Comfort temperature controller
- Program setting: fire place
- Heat exchanger: PE-Copolymer
- Fans: EC DC fans, radial, suction side
- Filters:
  Extract air: G4 (MERV 7-8)
  Outdoor air: F7 (MERV 13)
- Condensate drain: 32 mm
- Air duct connections: 4x 160 mm (6.3") on top or at the side, freely r otating
- Mains power supply: 240 V, 60 Hz
  (208V/60Hz is possible but will result in approximately7% reduction in power)
  Performance data is based on European 230V/50Hz
- Temperature range: 44 °F to 104 °F in the installation room
- Sound power (min./max.):
  Extract air: 35.0 dB(A) / 51.0 dB(A)
  Supply air: 46.0 dB(A) / 66.0 dB(A)
- Waste heat recovery efficiency: up to 92%
- Volume flow:
  max. 206 cfm (350 m³/h) at 0.8" WC (200 Pa) externai min. 23.5 cfm (40 m³/h) at 0.04" WC (10 Pa) external
- Power consumption:
  Maximum 175 watt
- Electrical efficiency:
  0.34 W/cfm at 245 m³/h (144 cfm)
- Dimensions:
  Height: with connector 33 in (850 mm)
  Width: with connector 30 in (757 mm)
  Depth: 22 in (570 mm)
- Type: ZE ComfoAir Q350 TR ventilation unit with integrated display
- Brand: Zehnder Comfosystems

Sound specifications

Sound, pressure side (supply air/exhaust air)*

Measurement point	[cfm]	["WC]	63 Hz [dB]	125 Hz [dB]	250 Hz [dB]	500 Hz [dB]	1,000 Hz [dB]	2,000 Hz [dB]	4,000 Hz [dB]	8,000 Hz [dB]	Total [dB(A)]
1	88	0.1	59.0	54.0	50.0	44.6	37.8	31.5	23.6	18.2	46.5
2	118	0.2	62.0	57.0	54.9	49.0	42.4	37.4	30.1	22.7	50.9
3	144	0.2	64.0	58.9	57.9	51.7	45.2	40.9	34.1	25.4	53.7
4	147	0.4	66.0	60.5	60.5	54.1	47.8	44.1	37.7	27.8	56.2
5	177	0.4	67.0	62.4	63.7	56.9	50.7	47.9	41.9	30.7	59.2
6	206	0.4	70.0	64.5	67.0	59.9	53.8	51.9	46.4	33.8	62.4
7	147	0.6	67.0	62.0	62.9	56.2	50.0	47.0	40.9	30.0	58.4
8	147	0.8	68.0	63.4	65.2	58.3	52.2	49.8	44.0	32.1	60.7
9	177	0.8	70.0	64.8	67.6	60.4	54.4	52.6	47.2	34.3	63.0
10	206	0.8	72.0	66.6	70.3	62.9	57.0	55.9	50.9	36.8	65.7

Sound, suction side (extract air/outdoor air)*

Measurement point	[cfm]	["WC]	63 Hz [dB]	125 Hz [dB]	250 Hz [dB]	500 Hz [dB]	1,000 Hz [dB]	2,000 Hz [dB]	4,000 Hz [dB]	8,000 Hz [dB]	Total [dB(A)]
1	88	0.1	51.0	46.0	40.0	29.4	18.0	14.1	14.5	18.5	35.1
2	118	0.2	53.0	47.9	44.4	33.8	22.5	18.4	16.9	18.6	38.6
3	144	0.2	54.0	49.0	47.0	36.5	25.2	21.0	18.4	18.7	40.9
4	147	0.4	55.0	50.1	49.5	38.9	27.6	23.3	19.7	18.8	43.1
5	177	0.4	56.0	51.3	52.3	41.7	30.5	26.0	21.2	18.8	45.6
6	206	0.4	58.0	52.6	55.3	44.7	33.5	28.9	22.9	18.9	48.5
7	147	0.6	56.0	51.0	51.6	41.0	29.8	25.3	20.8	18.8	45.0
8	147	0.8	57.0	51.9	53.7	43.1	31.9	27.4	22.0	18.9	47.0
9	177	0.8	58.0	52.8	55.8	45.2	34.0	29.4	23.1	18.9	49.0
10	206	0.8	59.0	53.9	58.3	47.7	36.6	31.8	24.5	19.0	51.4

Housing radiation, installation room*

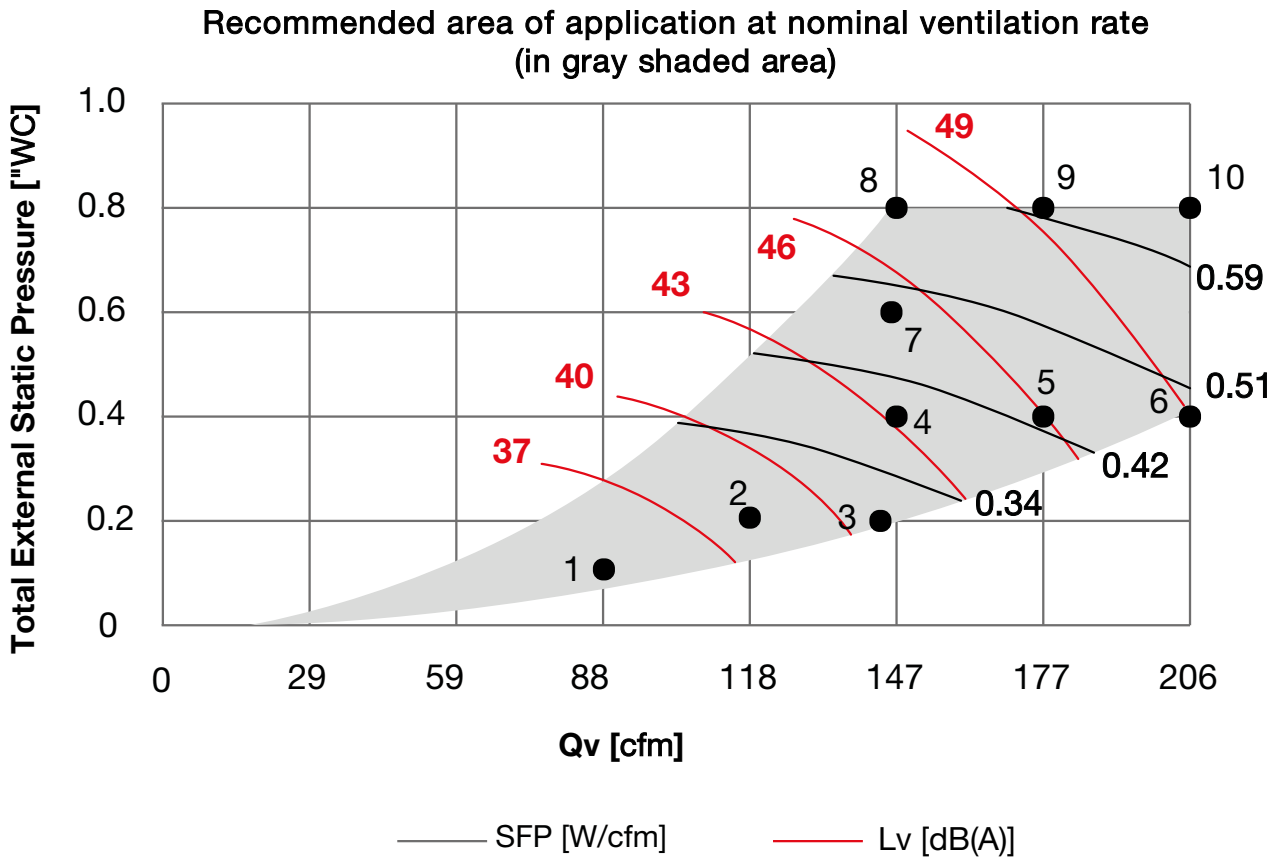
Measurement point	[cfm]	["WC]	63 Hz [dB]	125 Hz [dB]	250 Hz [dB]	500 Hz [dB]	1,000 Hz [dB]	2,000 Hz [dB]	4,000 Hz [dB]	8,000 Hz [dB]	Total [dB(A)]
1	88	0.1	43.0	38.2	37.6	31.7	25.2	22.5	17.1	17.6	33.8
2	118	0.2	47.0	41.8	41.7	35.9	29.7	27.9	21.8	19.5	38.1
3	144	0.2	49.0	44.0	44.1	38.4	32.5	31.1	24.7	20.7	40.7
4	147	0.4	51.0	46.0	46.4	40.7	34.9	34.1	27.3	21.7	43.1
5	177	0.4	53.0	48.3	49.0	43.4	37.8	37.5	30.4	22.9	45.9
6	206	0.4	56.0	50.8	51.8	46.3	40.9	41.2	33.6	24.3	48.9
7	147	0.6	53.0	47.8	48.3	42.7	37.1	36.7	29.6	22.6	45.2
8	147	0.8	54.0	49.5	50.3	44.7	39.2	39.2	31.9	23.6	47.3
9	177	0.8	56.0	51.2	52.3	46.7	41.4	41.8	34.2	24.5	49.4
10	206	0.8	58.0	53.3	54.6	49.1	43.9	44.9	36.9	25.6	52.0

* Housing radiation measured per ISO 3741:2010
Lw in dB(A) at reference power 10^{-12}W

Performance data

Performance data*								
Measurement point	[cfm]	["WC]	P [W]	cos ϕ	SFP [W/cfm]	Lw, pressure side [dB(A)]	Lw, suction side [dB(A)]	Lw, housing [dB(A)]
1	88	0.1	15	0.44	0.17	46.5	35.1	33.8
2	118	0.2	32	0.47	0.27	50.9	38.6	38.1
3	144	0.2	46	0.48	0.32	53.7	40.9	40.7
4	147	0.4	62	0.49	0.42	56.2	43.1	43.1
5	177	0.4	82	0.50	0.46	59.2	45.6	45.9
6	206	0.4	100	0.51	0.51	62.4	48.5	48.9
7	147	0.6	75	0.50	0.51	58.4	45.0	45.2
8	147	0.8	89	0.51	0.61	60.7	47.0	47.3
9	177	0.8	111	0.51	0.63	63.0	49.0	49.4
10	206	0.8	138	0.52	0.66	65.7	51.4	52.0

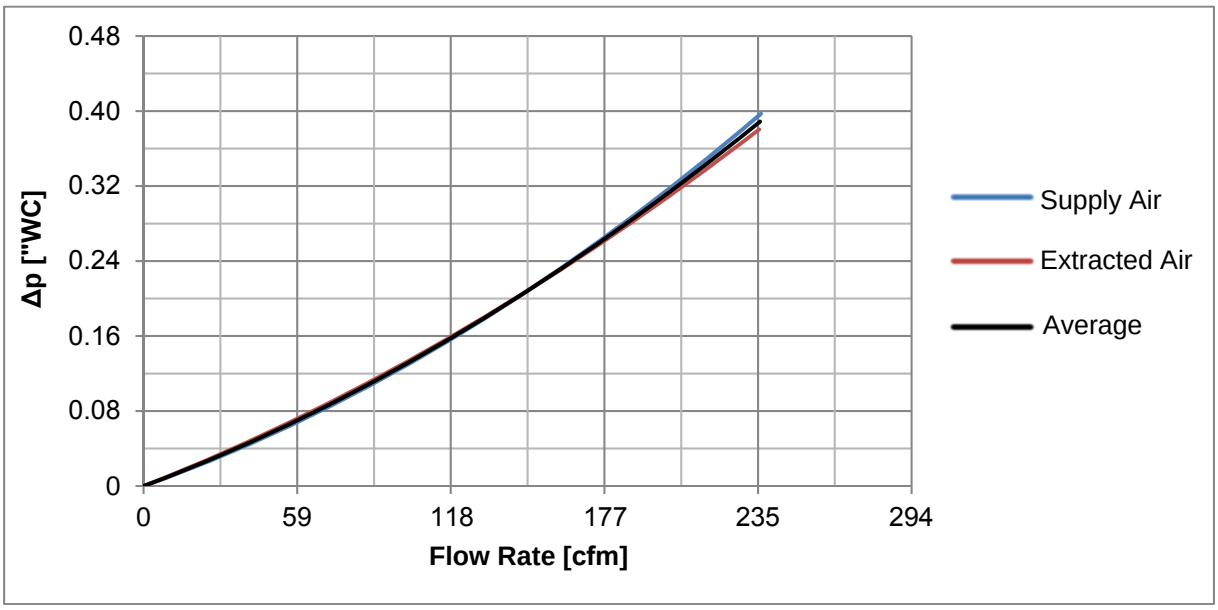
* SFP in W/cfm calculated per EN13141-7:2010
cos phi with pre-heater deactivated



Zehnder ComfoAir Q350/Q450/Q600
HRV Core Performance

(Heat Exchanger (with grille) 370-H500-G)

Pressure Drop (core only)



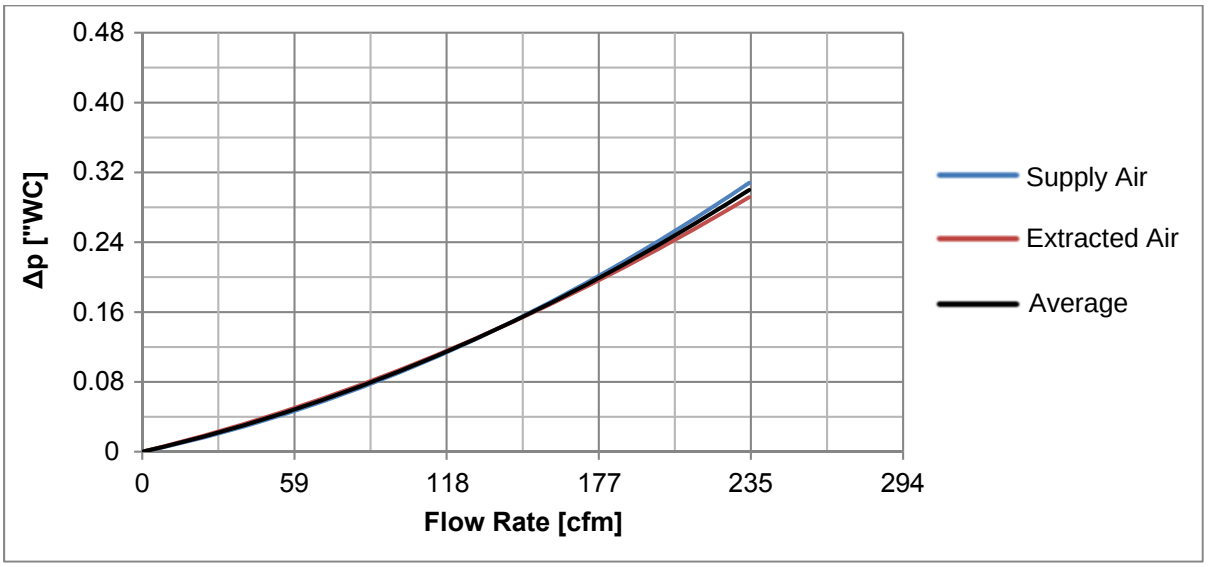
Recovery Efficiency (core only)

Flow Rate [cfm]	59	118	177	235
Sensible Recovery Efficiency [%]				
Supply	95.2	92.4	90.2	88.3
Extracted	91.3	89.2	87.3	84.7
Average	93.2	90.8	88.7	86.5
Latent Recovery Efficiency [%]				
Supply	N/A	N/A	N/A	N/A
Extracted	N/A	N/A	N/A	N/A
Average	N/A	N/A	N/A	N/A
Enthalpy Recovery Efficiency [%]				
Supply	74.5	71.1	69.5	68.1
Extracted	72.8	70.1	68.2	66.2
Average	73.7	70.6	68.9	67.1

Zehnder ComfoAir Q350/Q450/Q600
ERV Core Performance

(Enthalpy Exchanger 370-H500-S)

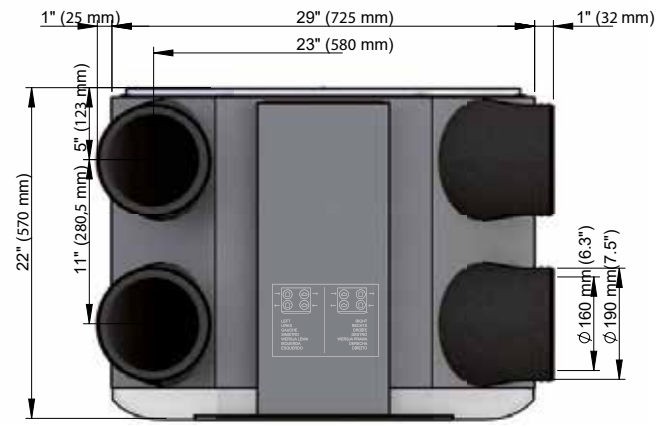
Pressure Drop (core only)



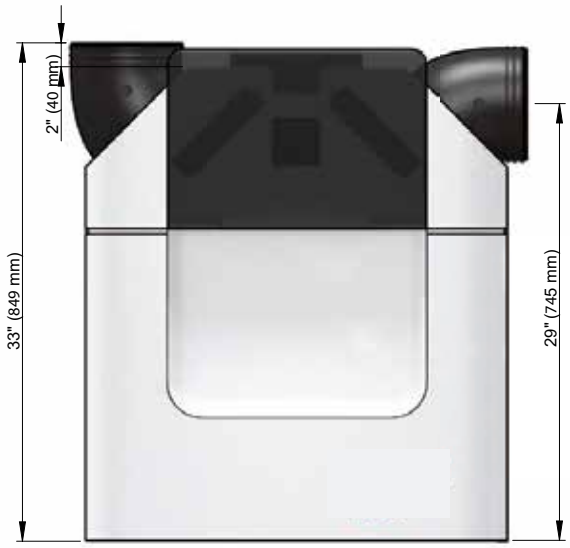
Recovery Efficiency (core only)

Flow Rate [cfm]	59	118	177	235
Sensible Recovery Efficiency [%]				
Supply	90.3	84.6	79.8	76.2
Extracted	87.6	82.3	78.4	74.9
Average	88.9	83.4	79.1	75.5
Latent Recover Efficiency [%]				
Supply	81.5	69.5	61.0	54.6
Extracted	82.5	71.3	64.0	58.2
Average	82.0	70.4	62.5	56.4
Enthalpy Recovery Efficiency [%]				
Supply	86.3	77.8	71.3	66.3
Extracted	85.4	77.6	72.1	67.6
Average	85.9	77.7	71.7	66.9

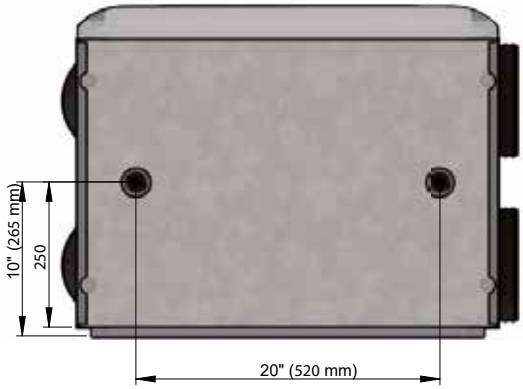
Dimensional drawings



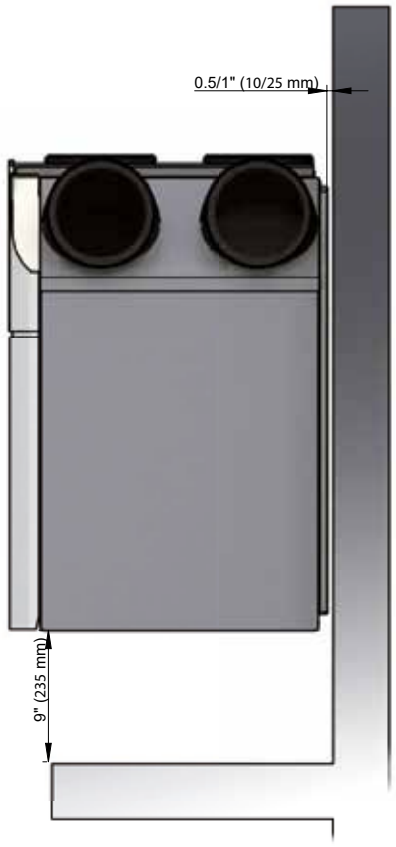
Top



Front

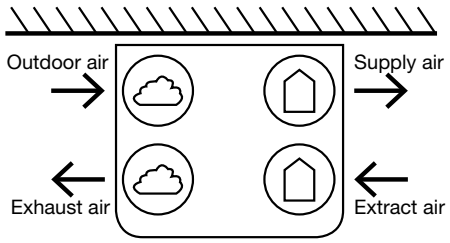


Bottom

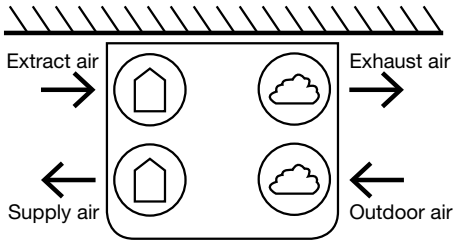


Side

Air directions



Supply and extract air to right

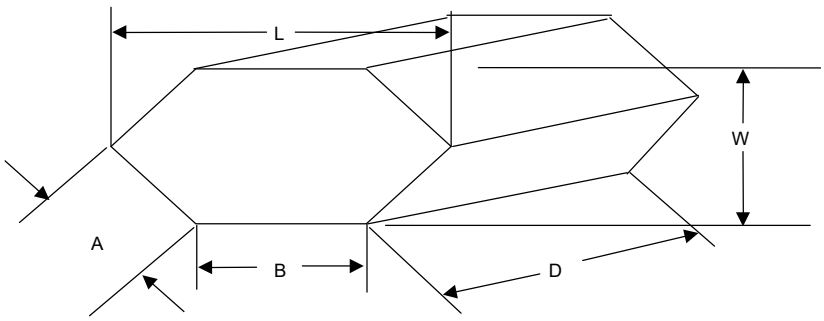


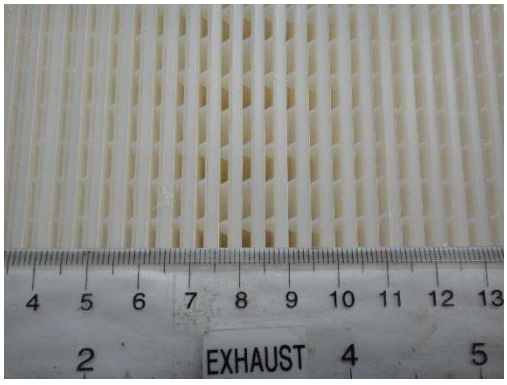
Supply and extract air to left

Zehnder America · 6 Merrill Industrial Dr #7 · Hampton, NH · 03842
T 603-601-8544 · F 603-658-2742
info@zehnderamerica.com · www.zehnderamerica.com

Table 1

Manufacturer:	**Zehnder America Inc.** 100 Rittling Blvd. Buffalo, NY 14220 USA
Model:	CAQ350
Serial No.:	000915352618
Element Sample No.:	20-06-E0121
Fans:	Two, one in the supply and one exhaust air streams
Type:	Centrifugal, internally mounted
Fan Motors:	One motor in the supply and one motor in exhaust air streams
Other Motors:	None
Volts:	240 at 60 Hz (instructed by client)
Amperes:	1.5 A
Casing Area:	2.35 m^2
Duct Size:	6 inches
Core Dimensions:	





ERV Core Dimensions

L	14.5	inches
W	17.75	inches
A	11.5	inches
B	8	inches
D	19.625	inches

VERIFICATION SHEET

Table 2

Testing Agency:	**Element**	Model:	**CAQ350**
Date Tested:	January and February 2021	Serial Number:	000915352618
Maunufacturer:	Zehnder America Inc.	Options Installed:	Integrated controller
Address:	100 Rittling Blvd.	Filter Type:	F7 (MERV 13) Supply / G4 (MERV 8) Exhaust — Duct size: 6 in
	Buffalo, NY 14220 USA		
Telephone:	716-218-2817	Electrical Requirements:	**240** Volts **1.5** Amps

VENTILATION PERFORMANCE

Maximum Continuous Rated Airflows:
88 L/s @ 0 °C
0 L/s @ -25 °C

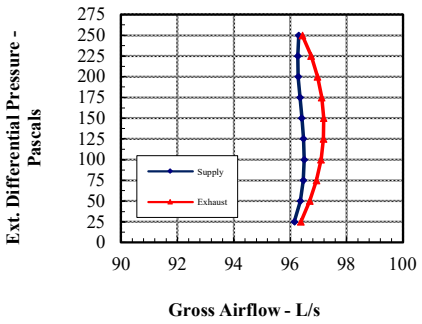
Low Temperature Imbalance Factor **LTIF =** **n/a**
Low Temperature Ventilation Reduction **LTVR** During -25°C Test: **n/a** %
Maximum Unbalanced Airflow During -25°C Test: **0.0** L/s

Airflow Range for Multispeed Units:
High Speed: - L/s Low Speed: - L/s

Standby power: **2.0** W
Exhaust Air Transfer Ratio: **0.0100**

External Static Pressure		Net Supply Air Flow		Gross Air Flow				Power
				Supply		Exhaust		
Pa	in. W.C.	L/s	scfm	L/s	scfm	L/s	scfm	Watts
25	**0.1**	**95**	**202**	**96**	**204**	**96**	**204**	**68**
50	**0.2**	**95**	**202**	**96**	**204**	**97**	**205**	**79**
75	**0.3**	**96**	**202**	**96**	**204**	**97**	**205**	**87**
100	**0.4**	**96**	**202**	**96**	**204**	**97**	**206**	**96**
125	**0.5**	**96**	**202**	**96**	**204**	**97**	**206**	**104**
150	**0.6**	**95**	**202**	**96**	**204**	**97**	**206**	**113**
175	**0.7**	**95**	**202**	**96**	**204**	**97**	**206**	**124**
200	**0.8**	**95**	**202**	**96**	**204**	**97**	**205**	**136**
225	**0.9**	**95**	**202**	**96**	**204**	**97**	**205**	**143**
250	**1.0**	**95**	**202**	**96**	**204**	**96**	**204**	**154**

NOTE: FAN CURVE PERFORMED ON HIGHEST SPEED



ENERGY PERFORMANCE

HEATING	Supply Temperature		Net Airflow		Supply / Exhaust Flow Ratio	Average Power	Sensible Recovery Efficiency	Adjusted Sensible Recovery Efficiency	Apparent Sensible Effectiveness	Net Moisture Transfer
	°C	°F	L/s	scfm		(Watts)				
i	**0**	**32**	**45**	**96**	**1.00**	**28**	**83**	**85**	**88**	**0.72**
ii	**0**	**32**	**65**	**138**	**1.00**	**48**	**79**	**82**	**84**	**0.65**
iii	**0**	**32**	**88**	**185**	**1.00**	**90**	**76**	**79**	**81**	**0.59**
iv										
v										
vi										

COOLING	Supply Temperature		Net Airflow		Supply / Exhaust Flow Ratio	Average Power	Sensible Recovery Efficiency	Adjusted Sensible Recovery Efficiency	Total Recovery Efficiency	Adjusted Total Recovery Efficiency	Apparent Sensible Effectiveness	Net Moisture Transfer
	°C	°F	L/s	scfm		(Watts)						
i	**35**	**95**	**47**	**99**	**0.99**	**30**	**76**	**81**	**73**	**75**	**84**	**0.72**
ii	**35**	**95**	**65**	**138**	**0.94**	**56**	**72**	**77**	**67**	**69**	**80**	**0.65**

Description of Defrost:

Comments from Test Agency:
Fan curve test was done at ERV's highest speed.

Ref. Report: 20-06-E0121
Sample No: 20-06-E0121

*Indicates the Supply/Exhaust Flow Ratio at 22°C prior to the start of the 72 Hour Cold Weather Test
250 Pascals = 1" of Water : 0.472 L/s = 1 cfm

Testing was performed in general accordance with CAN/CSA-C439-18, Standard Methods of Test for Rating The Performance of Energy Recovery Ventilator, and was conducted in accordance with normal professional standards. Neither Element nor their employees shall be responsible for any loss or damage resulting directly or indirectly from any default, error or omission. Specification Sheet format revised January 2021.