

Ventilation Unit

Zehnder ComfoAir 350

Use

The ComfoAir 350 ventilation unit was developed for residential and small commercial buildings. It combines maximum comfort, simple operation and very high efficiency. The CA350 moves up to 218 cfm of air at 0.80" wc

Efficiency

The integrated cross-counterflow heat exchanger achieves efficiencies of up to 84% (according to testing by the Passive House Institute). For user comfort this means no unpleasant cold drafts, because the supply air is heated nearly to room temperature, even when external temperatures are very low.

Fans

The supply fan and extract fan are driven by efficient DC motors. Differential pressures in the supply and extract air distribution systems can be adjusted thanks to individual control. The especially quiet fans can be adjusted to the required volumetric flow in 1% increments. The air volumes of the selectable stages can be set to between 29 cfm and 218 cfm.

Filters

The CA350 is equipped with two class G4 filters (MERV 7/8). An optional class F7 pollen filter (MERV 13) is available for fresh air intake.

Installation

The CA350 can be wall-mounted or floor-mounted (with optional base). Connections for air and wiring are on the top of the unit. The insulated, sound-absorbing pipe connections can be rotated to optimize the location of the ventilation tubes while acoustically decoupling the CA350 from the air distribution system. The condensate drain is located on the bottom of the unit.

Operation

The CA350 is controlled by the ComfoSense control unit, typically installed in the living area. Optional, wireless remote control units are installed in bathrooms for timed boost mode.

Maintenance

Maintenance of the CA350 is limited to periodic cleaning or replacement of the filters accessible from the front of the unit. The exchanger core should be inspected and cleaned annually (depending on outside air quality). Please see the unit manual for additional servicing tasks.

Frost protection

If the ventilation unit is operated without an optional geothermal heat exchanger, condensate in the extract air may freeze. The frost protection setting prevents this by variably reducing the supply air volume. An optional, integrated electric preheater warms incoming fresh air to prevent the heat exchanger from freezing even at very low temperatures.



Filter G4



Filter F7



ComfoSense controller



Remote Control Timer

Bypass

During summer nights and in the “shoulder” seasons of spring and fall with strong sunshine, the house can become too warm, while the outside temperature remains pleasantly cool. In such cases, heat removal by what is known as “free cooling” helps: The CA350 is equipped with a standard automatic bypass for just this purpose, and diverts 100% of the relatively warm extract air from the heat exchanger, introducing cool supply air to the space.

Options

- **Humidity recovery with the Zehnder enthalpy exchanger**

When the CA350 is fitted with an enthalpy exchanger core, the humidity from the extracted air is partly transferred to the fresh supply air. In this case, the process of drying out the house in dry winter months is delayed. Additionally, there is no condensate that must be drained from the ComfoAir. Therefore a condensation drain is not necessary with an enthalpy exchanger.

The Zehnder enthalpy exchanger provides the ideal hygienic solution. Supply and extract air flows are kept completely separate so there is no transfer of odors or bacteria.

- **Pollen filter (F7/MERV 13)**

A pollen filter installed in the intake air line (upstream of the heat exchanger) keeps the inside of the house pollen-free and reduces particulates, spores and germs so occupants can breathe freely in times of increasing allergies.

- **Zehnder ComfoFond-L ground-coupled heat exchanger**

The ComfoFond-L uses the ground as passive storage via a brine (glycol) loop. In summer, it transfers heat from intake air to the ground and in winter it withdraws heat from the ground to warm the incoming supply air.

- **Electric post-heater**

An external electric post-heater guarantees a defined supply air temperature, even in extreme climatic conditions and on systems without a geothermal heat exchanger.

- **Wireless remote control**

With the Zehnder wireless remote control, the CA350 can be controlled from locations throughout the house, apartment, classroom, etc. Typically, one is installed in each bathroom to provide a boost function.

- **Open fire program**

The ventilation system can be installed in a home with a fireplace, wood stove, etc. but must be accounted for in the control unit. By indicating in the ComfoSense control unit the presence of a fireplace, negative pressure and possible back-drafting of unpleasant fumes and/or harmful gases can be avoided.

Benefits

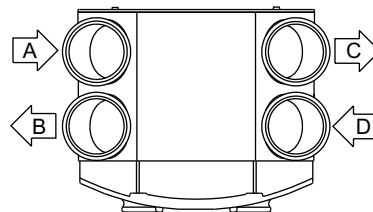
- Comfort ventilation up to 218 cfm
- Heat recovery with an efficiency of 84% (according to PHI)
- Moisture recovery with optional Zehnder enthalpy exchanger
- Low power consumption thanks to DC motors
- Automatic summer bypass
- Frost protection function
- Quick, safe installation, maintenance and servicing
- Simple operation
- Optional, integrated electric pre-heater
- Can be coupled with ComfoFond geothermal heat exchanger
- Integrated controller for geothermal heat exchanger
- Wireless remote control/boost switch
- Filter replacement indicator
- Electric and hydronic post-heater integration possible
- CO2 control (optional)
- Relative humidity control (optional)

Article Numbers

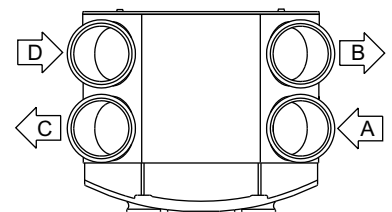
L = supply air left

R= supply air right

VV = integrated electric pre-heater



Version supply air left (L)



Version supply air right (R)

A = Return Air OUT
B = Supply Air IN
C = Exhaust Air Out
D = Out side air IN

Product	Article Number	Reference Number
CA350 HRV-L	471 236 710	9244
CA350 HRV-R	471 236 715	9245
CA350 HRV-VV-L	471 236 730	9304
CA350 HRV-VV-R	471 236 735	9452
CA350 ERV-L	471 236 840	9246
CA350 ERV-R	471 236 845	9247
CA350 ERV-VV-L	471 238 540	9428
CA350 ERV-VV-R	471 238 545	9429

Accessories	Article Number	Reference Number
ComfoSense control unit	655 010 215	9257
Wireless remote control	655 000 755	9238
ComfoAir 350 Assembly Base	642 300 135	9286
Waterless P-Trap	990 201 330	9362

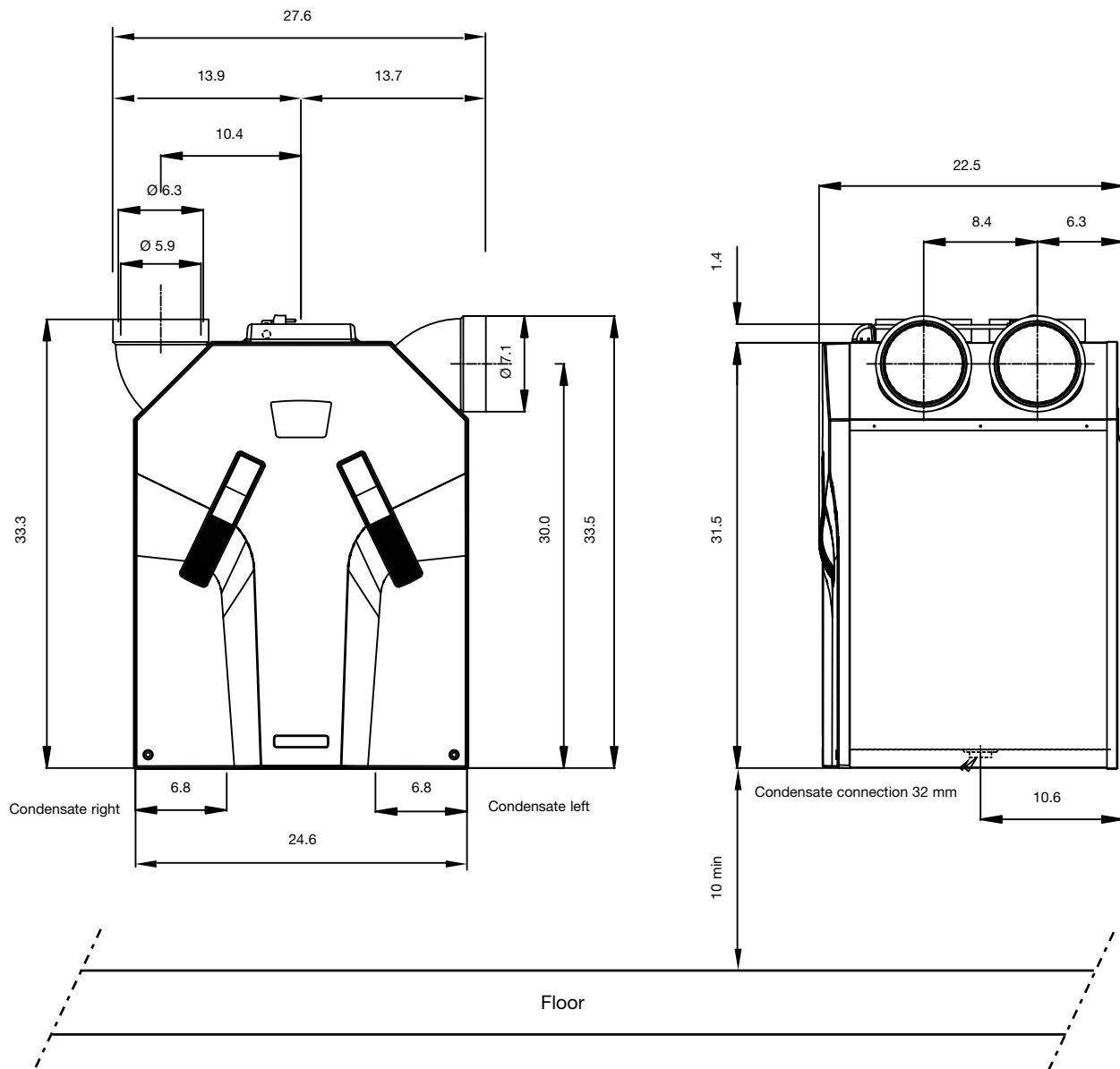
Filters	Article Number	Reference Number
G4 (MERV 7/8) 1pc	400 100 014	9240
F7 (MERV 13) 1pc	400 100 013	9241

Technical Specifications

Heat Exchanger:	Polystyrene
Fans:	ECM direct current, radial fans
Filters:	(2) Class G4 (MERV 7/8), F7 (MERV 13) optional
Condensate Connection:	32mm
Air Duct Connection:	6" ID (nominal) (x4)
Electrical Connection:	230v, 50-60Hz
Acoustic Performance:	Extract air (min – max): 34 - 59 dB(A) Supply air (min – max): 32 - 74 dB(A)
Heat Recovery:	84% (according to PHI)
Volumetric Flow:	29cfm - 218cfm
Power Consumption:	10W – 198W
Dimensions:	Height: 33.9" Width: 24.6" Depth: 22.5"
Weight:	77.2 pounds (35kg)
Versions:	ComfoAir HRV 350-L ComfoAir HRV 350-R ComfoAir HRV 350-VV-L ComfoAir HRV 350-VV-R ComfoAir ERV 350-L ComfoAir ERV 350-R ComfoAir ERV 350-VV-L ComfoAir ERV 350-VV-R
Manufacturer:	Zehnder Group Nederland B.V. Lingenstraat 2 8028 PM Zwolle NETHERLANDS

Ventilation Unit **Zehnder ComfoAir 350**

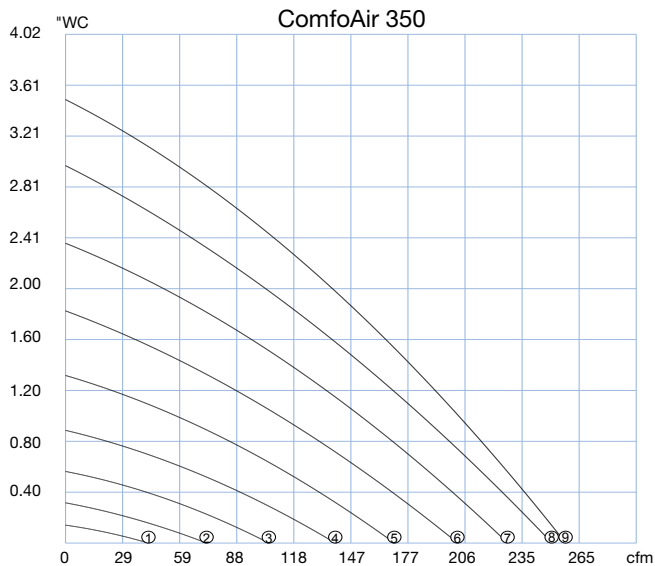
Dimensional drawing



Ventilation Unit

Zehnder ComfoAir 350

Switch settings	Speed	Air volume	Pressure	Power consumption	Current consumption		Acoustic performance		
Factory setting (speed)	%	Qv cfm	ΔP_{st} "WC	W	A	(-)	Extract air dB(A)	Supply air dB(A)	lb
ComfoAir 350									
(1)	15	24	0.016	10	0.08	0.50	34	32	77.2
(2)	30	59	0.080	17	0.13	0.57	37	45	
(3)	40	82	0.161	27	0.21	0.56	43	53	
(4)	50	106	0.261	44	0.35	0.55	47	59	
(5)	60	132	0.402	70	0.55	0.55	52	64	
(6)	70	153	0.562	105	0.81	0.56	54	68	
(7)	80	177	0.703	145	1	0.58	57	71	
(8)	90	191	0.863	198	1.42	0.60	59	74	



Sound, supply air

Acoustic performance at the intake air connection

Ventilation unit								
Type	Speed	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
ComfoAir350	1	46	35	23	11	4	5	13
ComfoAir350	2	55	49	40	33	22	12	12
ComfoAir350	3	60	59	49	43	35	25	12
ComfoAir350	4	66	64	56	50	43	34	22
ComfoAir350	5	71	68	62	56	49	42	29
ComfoAir350	6	74	70	66	60	53	47	35
ComfoAir350	7	76	73	69	64	57	51	39
ComfoAir350	8	78	76	72	68	61	55	43
ComfoAir350	9	79	76	74	69	62	57	45

Sound, extract air

Acoustic performance at the extract air connection

Ventilation unit								
Type	Speed	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
ComfoAir350	1	50	34	3	23	10	7	12
ComfoAir350	2	51	41	30	30	12	7	12
ComfoAir350	3	53	49	39	39	22	10	11
ComfoAir350	4	55	54	45	45	29	19	7
ComfoAir350	5	57	56	51	51	34	25	13
ComfoAir350	6	60	60	54	54	38	29	19
ComfoAir350	7	63	61	57	57	42	33	23
ComfoAir350	8	65	64	59	59	44	36	27
ComfoAir350	9	65	65	61	61	46	38	29

Sound, unit emission

Ventilation unit							
Type	Speed	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	dB (A)
ComfoAir350	1	27	17	17	14	4	19
ComfoAir350	2	32	29	24	19	16	26
ComfoAir350	3	36	36	32	29	27	35
ComfoAir350	4	41	40	39	36	35	41
ComfoAir350	5	46	44	44	42	41	47
ComfoAir350	6	50	47	50	46	45	52
ComfoAir350	7	52	49	52	50	49	55
ComfoAir350	8	53	52	55	54	52	58
ComfoAir350	9	53	53	56	55	54	59

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Ventilation Unit

Zehnder ComfoAir 350

Passive house Certificate

Certificate

Certified Passive House Component

For cool, temperate climates, valid until 31 December 2014

Category: **Heat recovery unit**
Manufacturer: **Zehnder Group Nederland B.V.
8028 PM Zwolle, NETHERLANDS**
Product name: **ComfoAir 350, ComfoD350, WHR930**

This certificate was awarded based on the following criteria:

Thermal comfort	$\theta_{\text{supply air}} \geq 16.5 \text{ }^\circ\text{C}$ at $\theta_{\text{outdoor air}} = -10 \text{ }^\circ\text{C}$
Effective heat recovery rate	$\eta_{\text{HR,eff}} \geq 75 \%$
Electric power consumption	$P_{\text{el}} \leq 0.45 \text{ Wh/m}^3$
Airtightness	Interior and exterior air leakage rates less than 3 % of nominal air flow rate
Balancing and adjustability	Air flow balancing possible: yes Automated air flow balancing: no
Sound insulation	Sound level $L_w \leq 35 \text{ dB(A)}$ not met Here $L_w = 54.1 \text{ dB(A)}$ Unit should be installed so that it is acoustically separated from living areas
Indoor air quality	Outdoor air filter F7 Extract air filter G4
Frostprotection	Frost protection for the heat exchanger with continuous fresh air supply down to $\theta_{\text{outdoor air}} = -15 \text{ }^\circ\text{C}$

Further information can be found in the appendix of this certificate.

www.passivehouse.com

0328vs03

Passive House Institute
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GERMANY



Certified for air
flow rates of

71 – 293 m³/h

$\eta_{\text{HR,eff}}$

84%

Electric power
consumption

0.29 Wh/m³



CERTIFIED
COMPONENT

Passive House Institute