

**Use**

The ComfoAir (CA) 350 ventilation unit was specially developed for use in residential and commercial buildings with high ventilation demand. It combines maximum comfort, simple operation and high efficiency with flexible integration into building services. The CA 350 ventilation unit has more powerful fans compared to the G90 and G91 units and moves 370 m<sup>3</sup>/h of air at an external pressure of 100 Pa.

**Efficiency**

The integrated cross-counterflow heat exchanger achieves efficiencies of more than 90%. For user comfort this means no unpleasant draft effects, because the supply air is heated almost to room temperature even when external temperatures are around freezing.

**Fans**

The two supply and extract fans are driven by efficient DC motors. Differential pressures in the supply and extract air distribution systems can be compensated thanks to direct 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 50 m<sup>3</sup>/h and 370 m<sup>3</sup>/h on the Zehnder CA 350.

**Filters**

The CA 350 ventilation unit is equipped with a class G4 filter. An optional F7 pollen filter is available for outside air.

**Installation**

The Zehnder CA 350 ventilation unit is characterised by its extra compact design. All air connections are located on the top. The air connections provide all the possible flexible connection options. The insulating, sound-absorbing pipe connections can be rotated to suit your needs, thus simplify installation of the ventilation tubes to the unit and simultaneously offer acoustic decoupling from the air distribution system.

**Operation**

The ventilation unit is controlled using a control unit commonly employed in living areas. The ComfoAir 350 is controlled by the CC-Ease control unit as standard. The optional high-quality Luxe control unit allows the ComfoAir 350 to be controlled with full-text menus in English using a touch screen.

**Servicing**

Servicing of the Zehnder ComfoAir CA 350 ventilation unit is limited to regular replacement and cleaning of the filter integrated in the front of the unit. The heat exchanger should be cleaned every 3-4 years depending on how dirty the outside air is. This can be done by simply removing the heat exchanger from the unit and cleaning it with soapy water. Please see the unit manual for additional servicing tasks.



ComfoAir 350



ComfoControl Luxe



CC-Ease remote control



Wireless remote control

### Frost protection

If the ventilation unit is operated without a geothermal heat exchanger, the condensate in the extract air may freeze. The frost protection setting prevents this by variably reducing the supply air volume. Conventional units must reduce the supply air volume by an entire step from  $-3^{\circ}\text{C}$  or switch off the supply air completely. Optional electric preheater prevents the heat exchanger freezing even at the lowest temperatures.

### Bypass

During summer nights and in the transition periods with strong sunshine, the house often becomes too warm, while the outside air remains pleasantly cool. In such cases heat removal by what is known as *free cooling* helps: The cooler outside air is fed to the rooms in the living area, bypassing the heat recovery system. The Zehnder CA 350 ventilation unit is equipped with an automatic bypass for just this purpose. The bypass is a standard component and takes 100% of the extract air past the heat exchanger.

### Options

- **Moisture recovery with the Zehnder enthalpy exchanger**  
 The Zehnder enthalpy plate exchanger provides a hygienic ideal solution for excessively dry air in winter. Not only heat, but also up to 65% of the moisture contained in the extract air is transferred from the extracted air to the supply air. Supply and extract air flows are kept completely separate so there is no transfer of odours or bacteria.
- **Pollen filter**  
 A large pollen filter installed in the supply air line keeps the inside of the house pollen-free and reduces the particulate, spore and germ load: breathe freely in times of increasing allergies.
- **Zehnder ComfoFond geothermal heat exchanger**  
 With the Zehnder ComfoFond geothermal heat exchanger fresh air is preconditioned by means of ground collectors. The outside air is passed through the ground. The results: more comfort and greater efficiency in winter, cooler supply air in summer.
- **Zehnder ComfoFond-L brine geothermal heat exchanger**  
 The Zehnder ComfoFond-L utilises the ground as passive storage via a brine loop. In summer, it transfers heat to the ground and in winter it withdraws heat again and uses it to preheat the supply air. A control unit is available as both an external and an internal controller.
- **Electric air heater and hot water postheater**  
 An external electric air heater or hot water postheater guarantees a defined supply air temperature, even in extreme climatic conditions and on systems without a geothermal heat exchanger. A control unit is available as both an external and an internal controller.
- **Wireless remote control**  
 More installation freedom. With the Zehnder wireless remote control the ventilation unit can be wirelessly controlled from several switches distributed throughout the house or flat.

**Benefits**

- Comfort ventilation up to 370 m<sup>3</sup>/h
- Heat recovery with an efficiency of more than 90%
- Moisture recovery with the Zehnder enthalpy exchanger (optional)
- Low power consumption thanks to DC motors
- Automatic 100% summer bypass
- Frost protection function: Efficient even at low temperatures
- Quick, safe installation and servicing
- Simple operation
- Integrated preheater and humidity control (optional)
- Wireless remote control and filter replacement indicator
- Geothermal heat exchanger control
- Electrical and hot water postheater integration possible
- Small minimum air volume, specially designed for single family houses
- Digital Ease or Luxe control unit
- CO<sub>2</sub> control (optional)

**Article numbers**

L = supply air left, R = supply air right, V = preheater  
 Luxe = advanced controls

Product	Article number
ComfoAir 350 L Luxe	471 232 211
ComfoAir 350 R Luxe	471 232 216
ComfoAir 350 VL Luxe	471 232 311
ComfoAir 350 VR Luxe	471 232 316
ComfoAir 350 L Luxe Enthalpy	471 232 451
ComfoAir 350 R Luxe Enthalpy	471 232 456

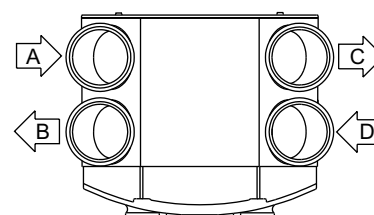
**Description**
**Comfort ventilation unit Zehnder ComfoAir 350**

with plastic cross-counterflow heat exchanger, thermal efficiency of more than 90%, direct control in 1% increments variable supply and extract fans with EC direct current motors, automatically controlled, integrated 100% bypass, housing with rotating insulated pipe connections, maximum air volume 370 m<sup>3</sup>/h at 100 Pa, H x W x D: 800 x 625 x 572 mm, version left/right unit with preheater, CO<sub>2</sub> control, humidity, timer, postheater and geothermal heat exchanger possible.

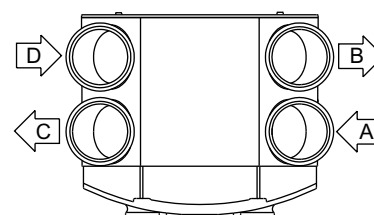
**Air directions**

The figures on the right show the air directions (top view).

- A = extract air
- B = supply air
- C = exhaust air
- D = outside air



Version supply air left (L)



Version supply air right (R)

Ventilation unit

**Zehnder ComfoAir 350**

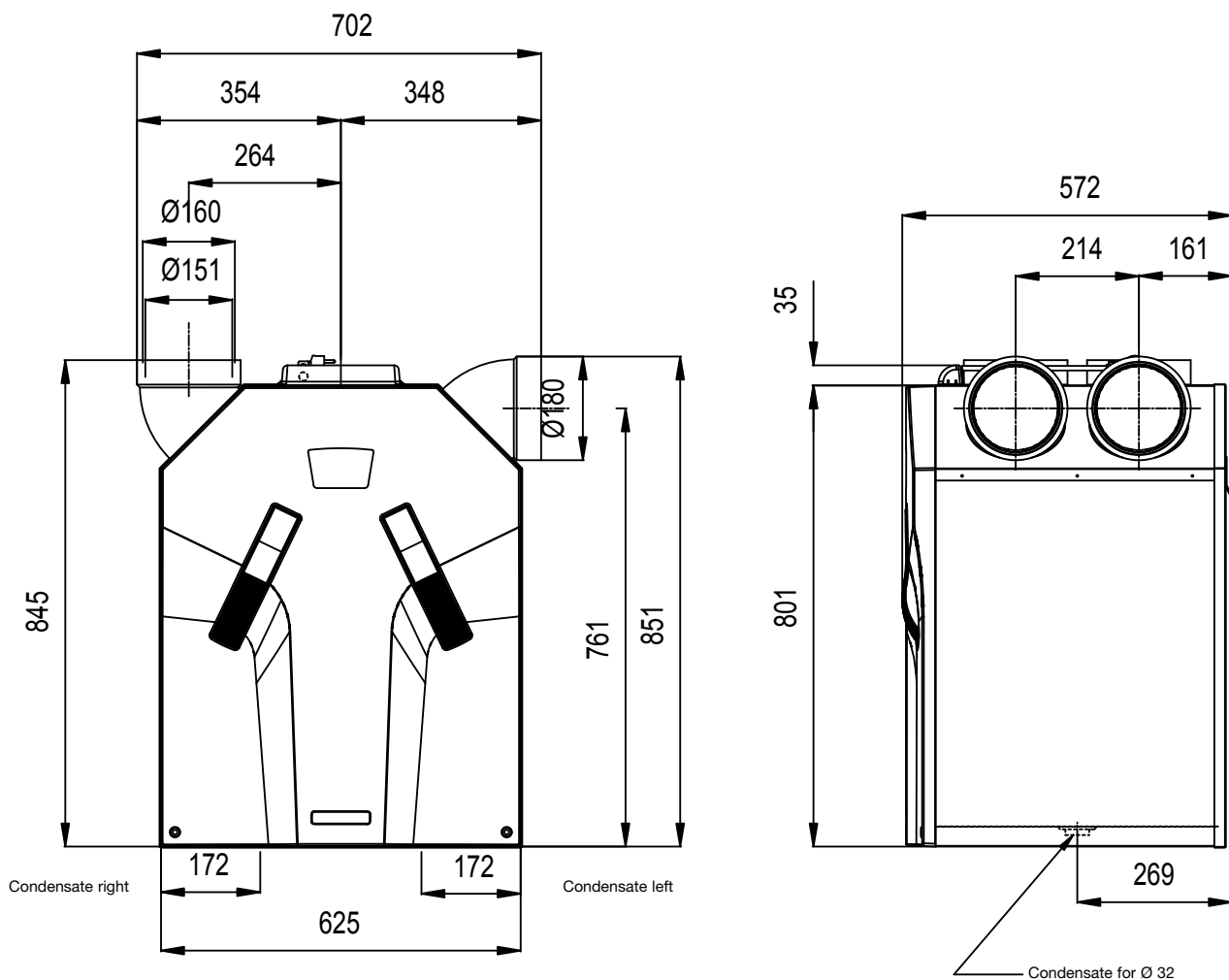
Technical specifications

Dimensions	
Height (mm)	800
Overall height (mm)	860
Width (mm)	625
Overall width (mm)	702
Depth (mm)	572

Specification

HR exchanger material	Polystyrene
Interior lining material	(E) PP / PA / PA
Thermal output	95%
Weight	35 kg

Dimensional drawing



**Certificates**

- General Building Regulations [Germany] approval applied for.

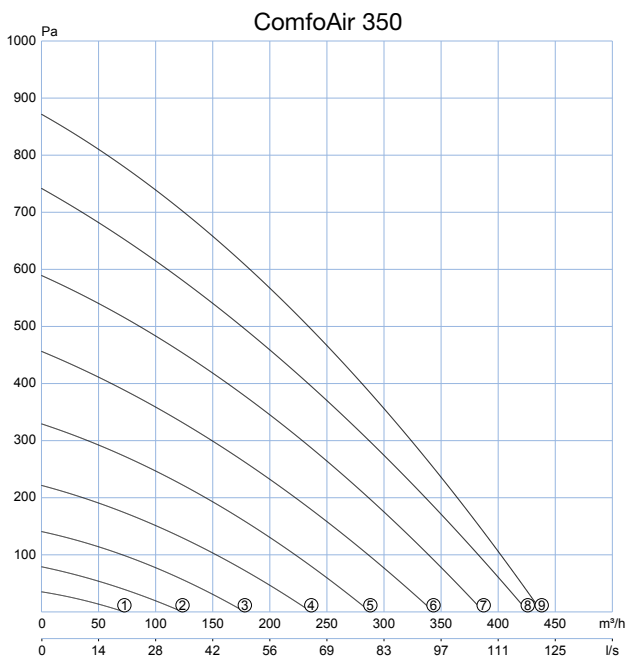
**Equipment**

Equipment	CA 350 Luxe	CA 350 V Luxe
Bypass	x	x
Preheater		x
Digital clock with weekly programme	x	x
Right-handed version	x	x
Pipe connections DN 150/160	x	x
Rotating pipe connections	x	x
Geothermal heat exchanger controller, NE, filter	x	x
Ready to plug in design	x	x
Luxe control unit	x	x
CC-Ease control unit	x	x
Wireless remote control unit (optional)	x	x

**Function**

- Frost protection function/automatic defrost
- Supply and extract air separate and infinitely variably programmable
- Switch on and off delay for bathroom switch
- Adjustable comfort temperature
- Controller for geothermal heat exchanger
- Controller for electrical air heater
- Controller for hot water postheater
- Fault indicator interface
- Filter replacement indicator
- Supply air + extract air can be switched off
- Fast heat-up (using postheater)
- Fireplace circuit

Switch setting	Speed	Air volume	Pressure	Power consumption	Current consumption	COS	Acoustic performance		Weight
Factory setting (speed)	%	Qv m <sup>3</sup> /h	$\Delta P_{st}$ Pa	W	A	(-)	Extract air dB(A)	Supply air dB(A)	kg
<b>ComfoAir 350</b>									
(1)	15	40	4	10	0.08	0.50	34	32	35
(2)	30	100	20	17	0.13	0.57	37	45	
(3)	40	140	40	27	0.21	0.56	43	53	
(4)	50	180	65	44	0.35	0.55	47	59	
(5)	60	225	100	70	0.55	0.55	52	64	
(6)	70	260	140	105	0.81	0.56	54	68	
(7)	80	300	175	145	1	0.58	57	71	
(8)	90	325	215	198	1.42	0.60	59	74	



**Technical specifications**
**Sound, supply air**

Acoustic performance at the supply air connection at a distance of 0 m

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 at a distance of 0 m

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

# Certificate

valid until Dec 31<sup>st</sup>, 2011

## Component suitable for

**Passive Houses: Heat recovery unit**

**Manufacturer: J.E. Stork Ventilatoren B.V.**

**Name of product: Zehnder ComfoAir 350**  
(Zehnder Comfo D 350, G90-380, WHR 930)

Passivhaus  
Institut  
Dr. Wolfgang Feist  
Rheinstraße 44/46  
D-64283 Darmstadt



### The following criteria were checked for the award of this certificate:

1) **Passive House Thermal Comfort Criterion:**

A minimum supply air temperature of 16.5 °C is achieved at an ambient temperature of -10 °C.

**Reasoning:** In Passive Houses there is no need to install radiators on exterior walls. In order to avoid discomfort due to exposure to cold air, the supply air temperature must not sink below a minimum value.

2) **Efficiency Criterion (heat):**

The effective dry heat recovery rate, determined at an ambient air temperature between -15 and 10 °C, dry extraction air (21 °C) and with balanced mass flows, must be greater than

$\eta_{HR,t,eff} \geq 75\%$  (in this case: 84%).

3) **Efficiency Criterion (electricity):**

The unit's total specific electric power consumption for the operating levels applied in Passive Houses must not exceed **0,45 W/(m<sup>3</sup>/h)**, for the supply air delivered at design mass flow (in this case: 0,29 W/(m<sup>3</sup>/h), under conditions described in the appendix).

4) **Airtightness and thermal insulation:**

The interior and exterior air leakage flow rates must not exceed 3 % of the nominal extraction air flow rate. (Requirements and verification are described in the certificate's appendix.)

5) **Balancing and controllability:**

(Requirements and verification are described in the certificate's appendix.)

6) **Sound insulation:** The certificate is only valid with the restriction of installation in a separate room for building services.

The required sound pressure level of 35 dB(A) in the installation space with an equivalent absorption area of 4 m<sup>2</sup> is met, sound levels of < 25 dB(A) in living spaces and < 30 dB(A) in functional spaces are achieved with sound absorbers. (Requirements and verification are described in the certificate's appendix.)

7) **Room air hygiene:**

If the unit and all components are installed and operated according to the manufacturer's instructions, the unit will provide perfectly hygienic supply air. (Requirements and verification are described in the certificate's appendix.)

8) **Anti-freeze protection:** (Requirements and verification are described in the certificate's appendix.)

### The certificate is to be used as follows:

**COMPONENT  
suitable for  
PASSIVE  
HOUSES**



**Heat recovery:**

**Heat recovery rate  
(effective): 84 %**

**Electric efficiency: 0.29 Wh/m<sup>3</sup>**

CDE-FLYERTS105, V0710, en, subject to changes