Technical Sheet

Flair 400

Heat recovery appliance

English

Air for Life

General information

The Flair 400 and the Flair 400 Plus is a ventilation unit for the balanced ventilation of dwellings with heat recovery.

Features:

- Maximum capacity 400 m³/h
- High return plastic heat exchanger
- Filters ISO Coarse 60%
- Modular electric preheater
- Automatic bypass valve
- Touchscreen
- Adjustable air quantity
- Filter indication on the appliance and the possibility of a filter indication on the multiple switch
- An intelligent frost protection including modular preheater
- Low sound level
- Constant flow control

The Flair 400 is available in two types:

- **the "Flair 400"**
- **The "Flair 400 Plus"**

The Flair 400 Plus has, compared with standard Flair 400, an extra pcb giving this more functions/ connection possibilities (→).
These installation instructions describe both the standard Flair 400 and the Flair 400 Plus.

The Flair 400 and the Flair 400 Plus are available in **Left-hand** and **Right-hand** versions; it is not possible to convert the left and right-hand models into one another.
For the correct connection ducts and dimensions (→).

It is possible, however, to later equip the appliance with a Plus pcb.

The appliance comes ready to plug in with a 230 V mains plug.

Technical info

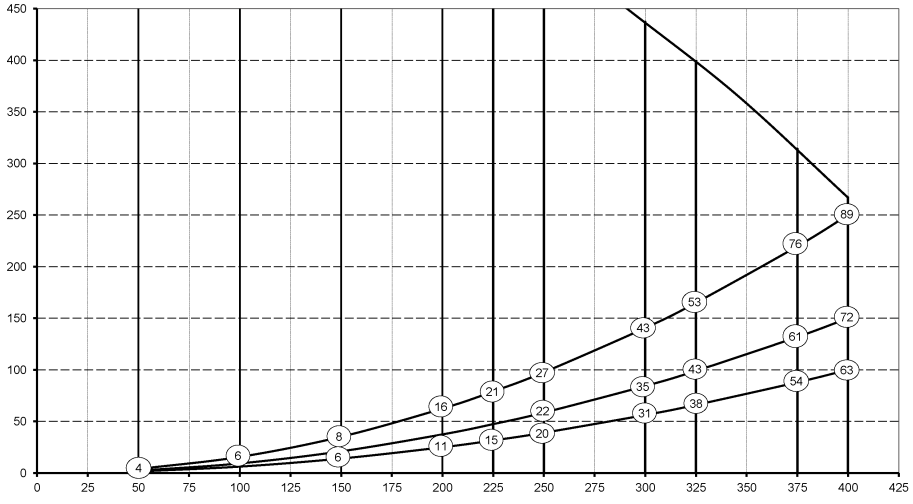
Technical information

Flair 400 (Plus)										
Supply voltage [V/Hz]	230V/50Hz									
Dimensions (w x h x d) [mm]	**4-0 Version**				**2-2 Version**					
	750 x 650 x 560				750 x710 x 560					
Duct diameter [mm]	ø180									
Ext. diameter condensate discharge [mm]	ø32									
Weight [kg]	37									
Filter class	ISO Coarse 60% (ISO ePM1.0 50% for the air supply optional)									
Fan setting (factory setting)	0		1		2		3		max	
Factory setting [m³/h]	50		100		200		300		400	
Permissible resistance of duct system [Pa]	2	4	6	16	25	63	56	141	100	250
Rated power (excl. preheater) [W]	7.6	7.8	10.3	11.5	23.0	31.4	62.5	87.0	126.6	177.9
Rated current (excl. preheater) [A]	0.12	0.12	0.15	0.16	0.25	0.33	0.58	0.77	1.01	1.38
Max. rated current (incl. preheater switched on) [A]	6									
Cos φ	0.270	0.272	0.300	0.310	0.369	0.410	0.470	0.493	0.545	0.560

Sound power					
Ventilation capacity [m^3/h]		150	250	350	400
Sound power level Lw(A)	Static pressure [Pa]	25	50	100	100
	Casing radiation [dB(A)]	37	43,5	52	55
	Duct “From dwelling’ [db(A)]	43,5	46,5	51	61
	Duct ‘To dwelling’ [db(A)]	50	58	69,5	71

*) Duct noise including end correction
In practice the value may differ by 1dB(A) through measurement tolerances.

Resistance of duct system [Pa]



Flow rate [m^3/h]

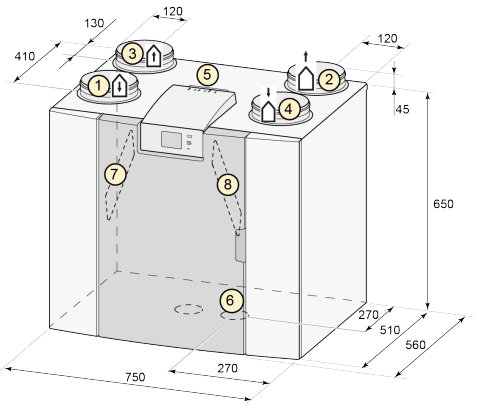
Note:
The stated value in the circle is the capacity (in Watt) per fan.

Connections and dimensions

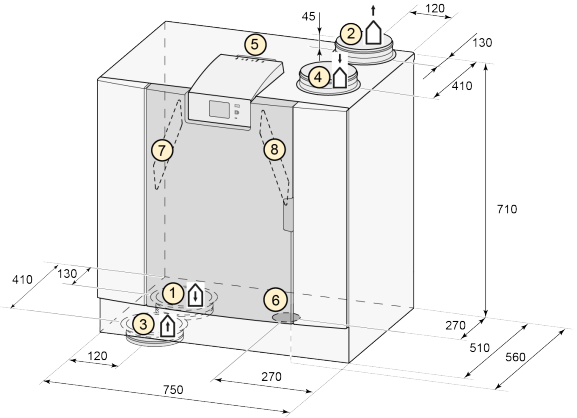
The Flair appliance is available in a left-hand and right-hand version. With a left-hand version the "warm" connections (from dwelling 3 and to dwelling 1) are on the left-hand side of the appliance; the condensate discharge is then mounted at the right-hand opening below the appliance. With a right-hand version the "warm" connections (1 & 3) are on the right-hand side of the appliance.

Left-hand version

4-0 connections

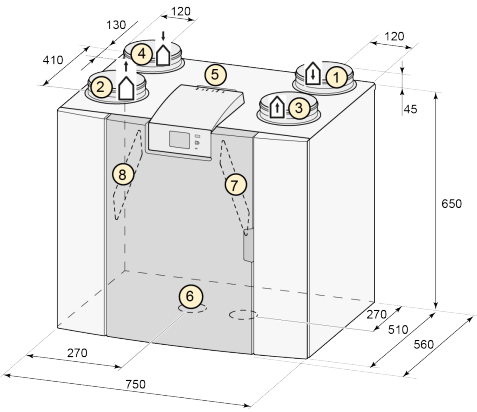


2-2 connections

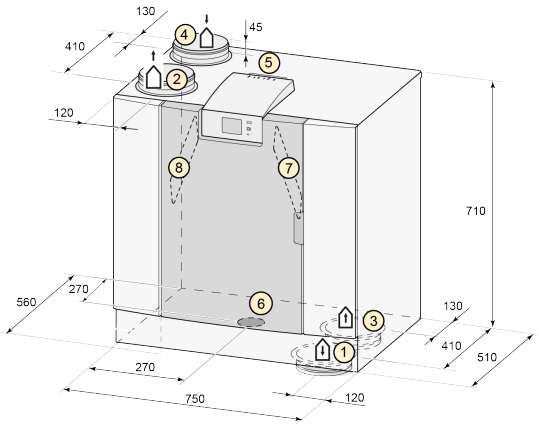


Right-hand version

4-0 connections



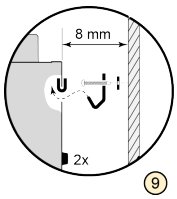
2-2 connections



All dimensions in millimeters. Diameter of all collars is 180 mm

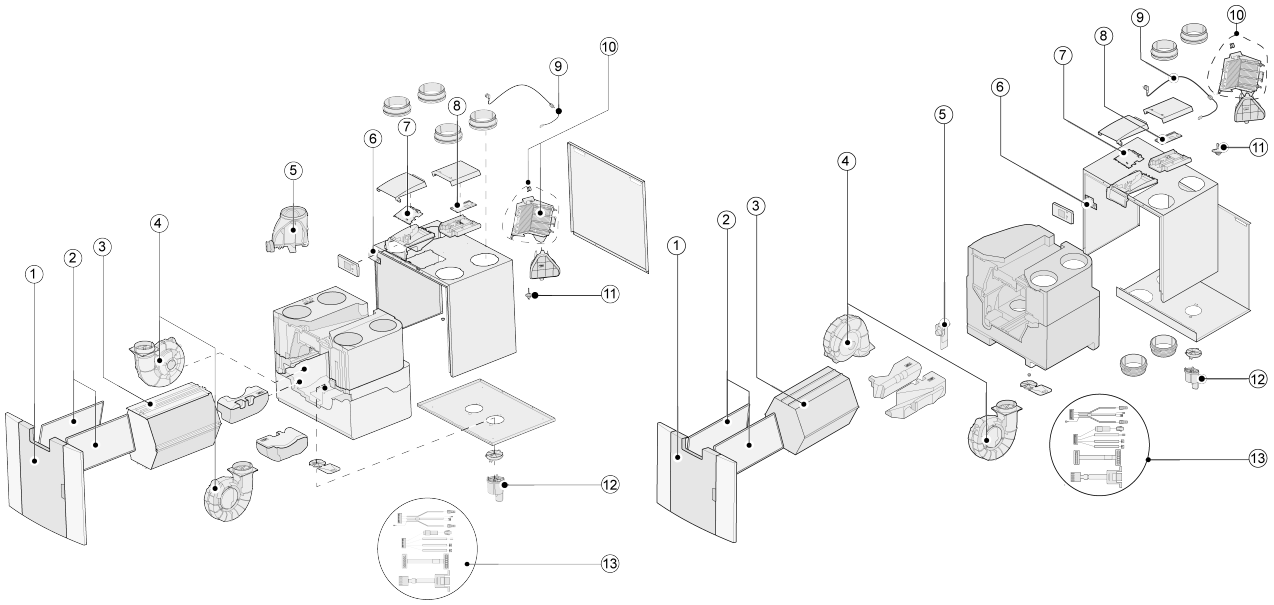
1	To dwelling	2	To outside	3	From dwelling	4	From outside

5	Electrical connections
6	Siphon connection
7	Exhaust air filter
8	Supply air filter
9	Mounting



Service parts

4-0 Version	2-2 Version



No.	Article description	Article code
1	Front panel complete	532763
2	Filters (2 items) ISO Coarse 60%	532716
3	Heat exchanger	532754
4	Fan (1 item)	532770
5	Bypass valve with motor complete (4-0 version)	532760
	Bypass motor complete (2-2 version)	531778
6	Display pcb UBP-2	532752
7	Basic pcb UWA2-B	532750
8	Plus pcb UWA2-E (only applicable with Plus version)	532751
9	Mains plug and cable 230 V *	532756
10	Internal preheater incl. maximum security	532761
11	Temperature sensor NTC 10K	531775
12	Condensation discharge	532762
13	Cable set	532767

* The power cable is fitted with a circuit board connector. When replacing it, always order a replacement mains cable from Brink.

To prevent dangerous situations, a damaged mains connection can only be replaced by a qualified expert.

Certificates

Conformity declaration

Conformity declaration

Manufacturer:	**Brink Climate Systems B.V.**
Address:	**Postbus 11** **NL-7950 AA, Staphorst, The Netherlands**
Product:	**Heat recovery appliance type:** **Flair 400** **Flair 400 Plus**

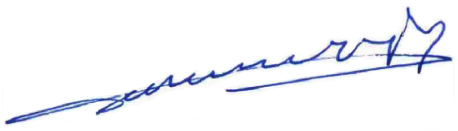
The product described above complies with the following directives:

- 2014/35/EU (low voltage directive)
- 2014/30/EU (EMC directive)
- RoHS 2011/65/EU (substances directive)
- 2009/125/EG (1253/1254 EU (EU ErP directive))

The product bears the CE label:

CE

Staphorst, 24-11-2017



M. Schouten
Managing Director

1 ERP values

Technical information sheet Flair 400 (Plus) in accordance with Ecodesign (ErP), no. 1254/2014 (Annex IV)					
Manufacturer:		**Brink Climate Systems B.V.**			
Model:		**Flair 400 (Plus)**			
Climate zone	**Type of control**	**SEC Value in kWh/m²/a**	**SEC Class**	**Annual electricity consumption (AEC) in kWh**	**Annual heating saved (AHS) in kWh**
Average	manual	-40,68	A	258	4646
	clock control	-41,33	A	237	4658
	1x sensor (RV/CO_2/VOC)	-42,54	A+	199	4684
	2 or more sensors (RV/CO_2/VOC)	-44,65	A+	135	4735
Cold	manual	-79,74	A+	795	9088
	clock control	-80,50	A+	774	9113
	1x sensor (RV/CO_2/VOC)	-81,96	A+	736	9163
	2 or more sensors (RV/CO_2/VOC)	-84,56	A+	672	9263
Hot	manual	-15,68	E	213	2101
	clock control	-16,26	E	192	2106
	1x sensor (RV/CO_2/VOC)	-17,33	E	154	2118
	2 or more sensors (RV/CO_2/VOC)	-19,16	E	90	2141
Type of ventilation unit:		Balanced residential ventilation appliance with heat recovery			
Fan:		EC - fan with infinitely variable control			
Type of heat exchanger:		Recuperative plastic cross-counterflow heat exchanger			
Thermal efficiency		92 %			
Maximum flow rate:		400 m³/h			
Maximum rated power:		193 W			
Sound power level Lwa:		50 dB(A)			
Reference flow rate:		280 m³/h			
Reference pressure:		50 Pa			
Specific Power Input (SEL):		0,17 Wh/m³			
Control factor:		1.0 in combination with multiple switch			
		0.95 in combination with clock control			
		0.85 in combination with 1 sensor			
		0.65 in combination with 2 or more sensors			
Leakage*	Internal	2.85 %			
	External	2.85 %			
Position dirty filter indication:		On the display of the appliance / on the multiple switch (LED) / on the Brink Air Control. **Attention!** For optimal energy efficiency and a proper operation, a regular filter inspection, cleaning or replacement is necessary.			
Internet address for Assembly instructions:		http://www.brinkclimatesystems.nl/nl/professionals			
Bypass:		Yes, 100% Bypass			

* Measurements executed by TZWL according to the EN 13141-7 standard

Classification from 1 January 2016	
SEC class ("Average climate zone")	SEC in kWh/m²/a
A+ (Most efficient)	SEC < -42
A	-42 ≤ SEC < -34
B	-34 ≤ SEC < -26
C	-26 ≤ SEC < -23
D	-23 ≤ SEC < -20
G (Least efficient)	-20 ≤ SEC < -10

EN 13141-7:2010 Certificate

KF.82.06.268.AD.01
13.12.18

Declaration of confirmity regarding the determination of energetic efficiency according to EN 13141-7:2011-01

On behalf of Brink Climate Systems B.V. the determination of energetic efficiency was conducted by Europäisches Testzentrum für Wohnungslüftungsgeräte (TZWL) e. V. in Dortmund, Germany.

Tests were carried out according to:

- EN 13141-7:2010; Ventilation for buildings - Performance testing of components/products for residential ventilation - Part 7: Performance testing of a mechanical supply and exhaust ventilation units (including heat recovery) for mechanical ventilation systems intended for single family dwellings

Technical data of the tested unit:

Manufacturer:	Brink Climate Systems B.V.
Type:	Flair 400 4/0 R EU
Serial Number:	431001184001
Year of construction:	2018
Power supply:	230 V ~ 50 Hz
CE-Label:	Yes
Maximum volume flow:	400 m³/h

Results, energetic efficiency 7°C:

Air flow [m³/h]	Temperature ratio, supply air $\eta_{t,su}$ [%]	Total electric power consumption P_E [W]	Specific electric power consumption [W/m³/h]
50	97,3	10,8	0,22
279	92,1	46,5	0,17
400	88,5	113,0	0,28

Results, energetic efficiency 2°C:

Air flow [m³/h]	Temperature ratio, supply air $\eta_{t,su}$ [%]	Total electric power consumption P_E [W]	Specific electric power consumption [W/m³/h]
50	100,2*	10,9	0,22
279	93,5	53,1	0,19
397	92,5	119,4	0,30

*Massflow corrected in order to DIN EN 13141-7

Results of performance tests of aerodynamic characteristics, of heat recovery characteristics and of the effective power consumption are taken from tests with number M.82.06.268.AD.

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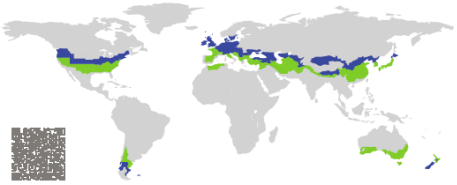
Passive House Certificate

CERTIFICATE

Certified Passive House Component

Component-ID 1362vs03 valid until 31st December 2019

Passive House Institute
Dr. Wolfgang Feist
64283 Darmstadt
Germany



Category:	**Air handling unit with heat recovery**
Manufacturer:	**Brink Climate Systems B.V. Netherlands**
Product name:	**Brink Flair 400**
Specification:	Airflow rate < 600 m³/h
Heat exchanger:	Recuperative

This certificate was awarded based on the product meeting the following main criteria

Heat recovery rate	η_{HR}	≥	75 %
Specific electric power	$P_{el,spec}$	≤	0.45 Wh/m³
Leakage		<	3 %
Comfort	Supply air temperature ≥ 16.5 °C at outdoor air temperature of –10 °C		

Airflow range
70–313 m³/h
Heat recovery rate
η_{HR} = 89 % [1]
Specific electric power
$P_{el,spec}$ = 0.20 Wh/m³ [2]

cool, temperate climate

CERTIFIED COMPONENT
Passive House Institute

[1] At an airflow of 85 m³/h, a heat recovery of η_{HR} = 94 % is reached.
[2] At an airflow of 175 m³/h, the specific electric power $P_{el,spec}$ = 0.18 Wh/m³.

Brink Climate Systems B.V.
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Passive House comfort criterion

At an outdoor air temperature of - 10 °C a supply air temperatur higher than 16.5 °C is achieved by use of an internal and additional external electric preheater. The criterion is therefore met.

Efficiency criterion (heat recovery rate)

The effective heat recovery rate is measured at a test facility using balanced mass flows of the outdoor and exhaust air. The boundary conditions for the measurement are documented in the testing procedure.

$$\eta_{HR} = \frac{(\vartheta_{ETA} - \vartheta_{EHA}) + \frac{P_{el}}{\dot{m} \cdot c_p}}{(\vartheta_{ETA} - \vartheta_{ODA})}$$

With

η_{HR}	Heat recovery rate in %
ϑ_{ETA}	Extract air temperature in °C
ϑ_{EHA}	Exhaust air temperature in °C
ϑ_{ODA}	Outdoor air temperature in °C
P_{el}	Electric power in W
$\dot{m}$	Mass flow in kg/h
c_p	Specific heat capacity in W h/(kg K)

Heat recovery rate
η_{HR} = 89 %

Efficiency criterion (electric power)

The overall electrical power consumption of the device is measured at the test facility at an external pressure of 100 Pa (50 Pa, respectively, for the intake and outlet). This includes the general electrical power consumption for operation and control but not for frost protection.

Specific electric power
$P_{el,spec}$ = 0.20 Wh/m³

Efficiency ratio

The efficiency ratio provides information about the overall energy performance of the respective ventilation unit. It specifies the achieved reduction in ventilation heat losses by using a ventilation unit with heat recovery rather than without.

Efficiency ratio
ϵ_L = 0.74

Leakage

The leakage airflow must not exceed 3 % of the average airflow of the unit's operating range.

Internal leakage	External leakage
1.30 %	1.10 %

Settings and airflow balance

It must be possible to adjust the balance of airflows at the unit itself (either between the exhaust and the outdoor airflows or between the supply and the extract airflows, if the unit is respectively placed inside or outside of the insulated thermal envelope of the building).

- This unit is certified for airflow rates of 70–313 m³/h.
- Balancing the airflow rates of the unit is possible.
- The user should have at least all the following setting options:
  - ✓ Switching the system on and off.
  - ✓ Synchronized adjustment of the supply and extract airflows to basic ventilation (70–80 %), standard ventilation (100 %) and increased ventilation (130 %) with a clear indication of the current setting.
- The device has a standby power consumption of 3.90 W. The target value of 1 W was exceeded. The device should be equipped with an additional external switch so that it can be disconnected from the mains, if required.
- After a power failure, the device will automatically resume operation.

Acoustical testing

The required limit for the sound power level of the device is 35 dB(A) in order to limit the sound pressure level in the installation room. The sound level target value of less than 25 dB(A) in living spaces and less than 30 dB(A) in functional spaces must be ensured by installing commercial silencers. The following sound power levels are met at an airflow rate of 298 m³/h:

Device	Duct			
	Outdoor	Supply air	Extract air	Exhaust air
51.0 dB(A)	56.5 dB(A)	65.5 dB(A)	59.5 dB(A)	63.0 dB(A)

- The unit does not fulfil the requirements for the sound power level. The unit must therefore be installed acoustically separated from living areas.
- One example of suitable silencers for supply and extract air ducts is mentioned in the detailed test report or can be obtained from the manufacturer. It is recommended to identify suitable silencers for each individual project.

Indoor air quality

This unit is equipped with following filter qualities by default:

Outdoor air filter	Extract air filter
ISO ePM1 50%	ISO Coarse 60%

On the outdoor air / supply air side the filter efficiency of ISO ePM1 50% (F7 according to EN 779) or better is recommended. If not standard configuration, the recommended filter is available as accessory part.

Frost protection

Appropriate measures should be taken to prevent the heat exchanger and optional downstream hydraulic heater coil from getting damaged by frost during extreme winter temperatures (–15 °C). It must be ensured that the unit's ventilation performance is not affected during frost protection cycles.

- Frost protection of the heat exchanger:
  - ✓ In order to protect the heat exchanger from freezing, the unit is equipped with an internal electric preheater with a power of 1000 W. In order to ensure the frost protection even at low outdoor air temperature, the unit can be optionaly equipped with an additional extrnal electric preheater with a power of 1000 W. The operation of this frost protection is controlled depending on the outdoor air temperature. The laboratory measurement has proved, that this frost protection at an upper airflow rate and an outdoor air temperature of -15 °C is sufficient. By the laboratory testing, the preheaters were first activated by an outdoor air temperature of -5.8 °C.
- Frost protection of downstream hydraulic heater coils:
  - ✓ In order to protect a downstream hydraulic heater coil, both fans are switched off in case the supply air temperature drops down to 5 °C.

See also: Complete Passive House Certificate