



# Combi 185 S/LS EC

## Description

The Combi 185 is a combined heat recovery ventilation and domestic hot water heat pump appliance. Together with supply and extract air fans, there is a counter-flow heat exchanger which is up to 95% efficient. An air-source heat pump can heat the air and 185 litres of domestic hot water, prioritising the hot water. The hot water cylinder can be connected to a second heat source such as solar panels. There is an F7 pollen filter on the supply air and a plain G4 filter on the extract air. Controlling the Combi 185 is simple with an Optima 310 Design controller.



## Suitability

The Combi is used where mechanical balanced ventilation and heating of domestic water is needed and is normally used in living areas up to 292m<sup>2</sup> (at an average room height at 2.4 m) the living area is calculated to cover at 125Pa:

Air exchange/h	Max. capacity m <sup>3</sup> /h	Living area m <sup>2</sup> *
0.5	350	292

\* The power consumption is not included when calculating the living area

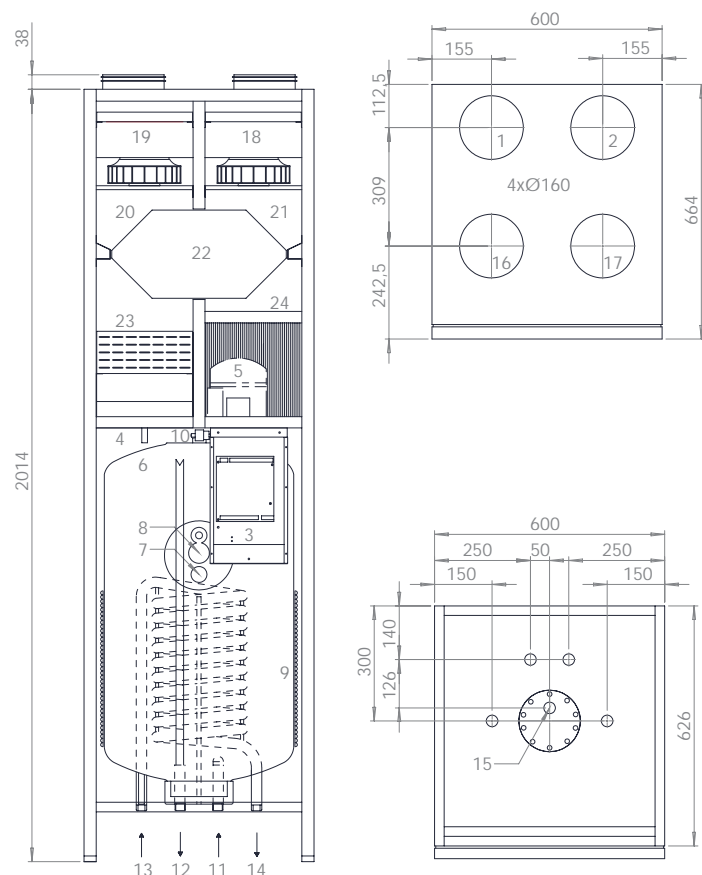
## Types

Combi 185 S EC Small compressor with internal heating coil (for solar)

Combi 185 LS EC Large compressor with internal heating coil (for solar)

## Dimensions

Combi 185 EC  
Dimensions in mm



1. Exhaust air
2. Supply air
3. Electrical connections
4. Condensation drain
5. Compressor
6. 185L cylinder
7. 3/4" anode
8. 1 kW electrical heating element
9. Condenser spiral
10. High pressure thermostat with manual reset
11. Cold water inlet 3/4" pipe thread
12. Hot water outlet 3/4" pipe thread
- 13+14. Connection for the internal coil 3/4" pipe thread
15. Hot water circulation 3/4" pipe thread
16. Intake air
17. Extract air
18. G4 filter
19. F7 filter
20. Supply air fan
21. Extract air fan
22. Counter-current heat exchanger
23. Evaporator
24. Sensor pocket



# Combi 185 S/LS EC



## Technical data

### Electrical connections

**Without electrical reheating and preheating coil**  
1 x 230V + N + PE + 10 A, 50 Hz

**With electrical reheating and preheating coil**  
max 1.2 + 1.0 kW  
1 x 230V + N + PE + 16 A, 50 Hz

### Fans

R3G 190

### Motor:

EC motors with integrated electronics

### Insulation class

B

### Protection class

IP 44

### Max. fan speed

3,320 Rpm

### Max. fan power input

71W

### Max. fan current

0.50A

### Fan speed control:

Individually the fans can be set to 3 different speeds.

### The working temperature range of the heat pump

-15°/+35°C

	Combi 185 S	Combi 185 LS
<b>Compressor</b>	NE 6170Z	NE6210Z
<b>Min. Airflow</b>	100m <sup>3</sup> /h	150m <sup>3</sup> /h
<b>Max. compressor power input</b>	331W	585W
<b>Max. compressor current</b>	1.9A	3.14A
<b>Average compressor power output</b>	895W	1,365W
<b>Average compressor power input</b>	292W	425W
<b>Refrigerant</b>	R134a	R134a
<b>Refrigerant weight</b>	1,100g	1,100g

## Automation

The Combi is delivered with an Optima 310 Design controller. It is supplied with factory settings so that the appliance can be started without setting up the menu. The factory settings are standard and can be changed to meet the specific needs and demands of your living area.

## Control panel



### Speed (1)

This sets the fan speed to levels 0-1-2-3-4.



### Extended operation (2)

This sets the timer to forced operation from 0 to 9 hours.



### After-heat (3)

This turns the supplementary after-heat on or off.



### Temperature (7)

This sets the room temperature.



### Information (6)

This gives a good overview of the appliance's current operating condition.



### Filter (5)

Use this function to reset the filter alarm.

## Sound data

Measuring point	1m in front of unit			Extract duct			Supply duct		
	1	2	3	1	2	3	1	2	3
Airflow									
	Lo dB			Lwu dB			Lwi dB		
63 Hz	48	48	48	81	88	89	73	78	79
125 Hz	49	50	51	84	85	86	75	79	79
250 Hz	43	43	43	72	82	82	66	76	76
500 Hz	32	32	36	60	70	73	62	66	66
1000 Hz	23	24	25	55	63	65	51	55	57
2000 Hz	21	21	23	52	61	62	43	51	53
4000 Hz	-	-	-	40	54	58	43	44	46
8000 Hz	-	-	-	29	44	46	41	42	42
Average	Lo dB(A)			Lwu dB(A)			Lwi dB(A)		
	36	37	38	67	75	77	63	68	70

1: Measured at 40% of max. speed with compressor on  
2: Measured at 70% of max. speed with compressor on  
3: Measured at 100% of max. speed with compressor on



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## Capacity

The capacity lines are based on an average of the supply and extract air volume, in a unit with filters

### Max. Capacity:

At 125Pa the max. capacity is: 350 m<sup>3</sup>/h.

With an average room height of 2.4 m, the living area is calculated as follows:

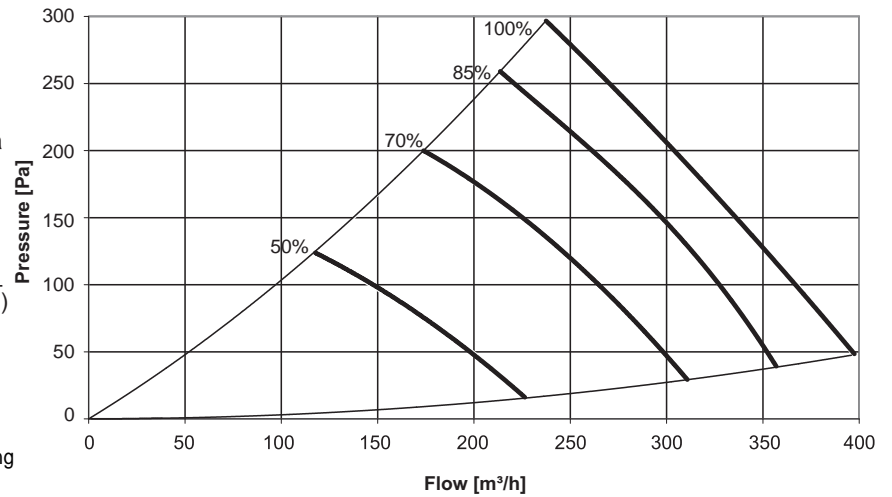
Living area (m<sup>2</sup>) x Room height (m) x Air exchange/h = Max. capacity

$$\text{Living area (m}^2\text{)} = \frac{\text{Max. capacity (m}^3\text{/h)}}{\text{Room height (m) x Air exchange (1/h)}}$$

### Example:

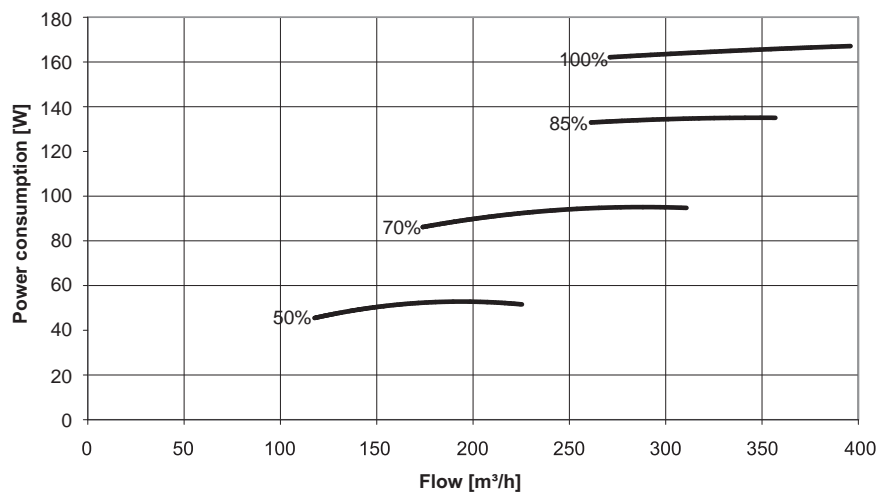
$$\text{Living area (m}^2\text{)} = \frac{350 \text{ m}^3\text{/h}}{2.4 \times 0.5/\text{h}} = 292\text{m}^2 *$$

\* The power consumption is not included when calculating the living area



## Total power consumption:

For both fans and controller.



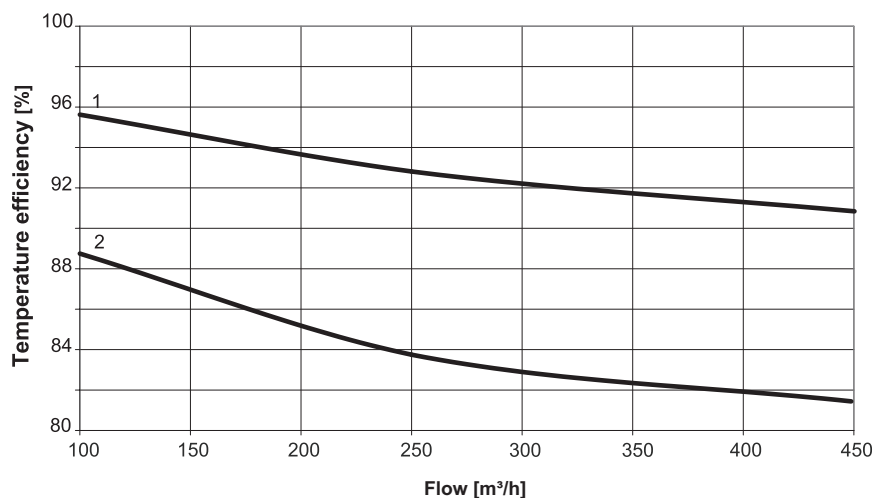
## Heat recovery rate

Heat recovery rate, for  $m_{in} = m_{out}$

There has been no consideration taken for any freezing of the heat exchanger at low outdoor temperatures.

1 = Temp.: -12°C  
RF: 50%

2 = Temp.: 4°C  
RF: 50%



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## Construction

**Size:**  
(h x w x d) ex. connecting pieces  
2,014 x 600 x 664mm

**Cabinet construction:**  
Fully closed hot galvanised plate with 30mm insulation.  
The cylinder is fully insulated with polyurethane foam.  
Plastic-coated white RAL 9010.

**Duct connection:**  
Ø160 mm with rubber ring seal

**Door:**  
6mm bolts and quick locks for filter service

**Counter-flow heat exchanger:**  
Salt-water resistant aluminium

**Condensation tray:**  
Stainless steel

**Condensate Pipe:**  
Synthetic tube Ø15mm (inside)

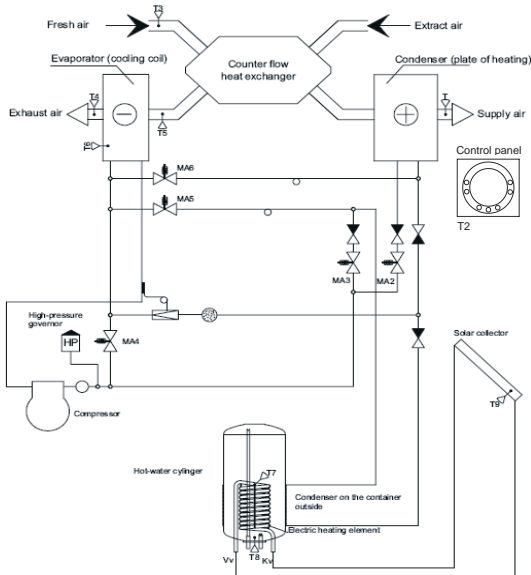
**Cylinder Fabric:**  
Enamelled on inside with Magnesium Anode

**Protection of the electrical water heater:**  
Enamel outside

**Filters:**  
Fresh air: F7 filter  
Extract air: G4 filter

**Weight with/without water:**  
395/210kg

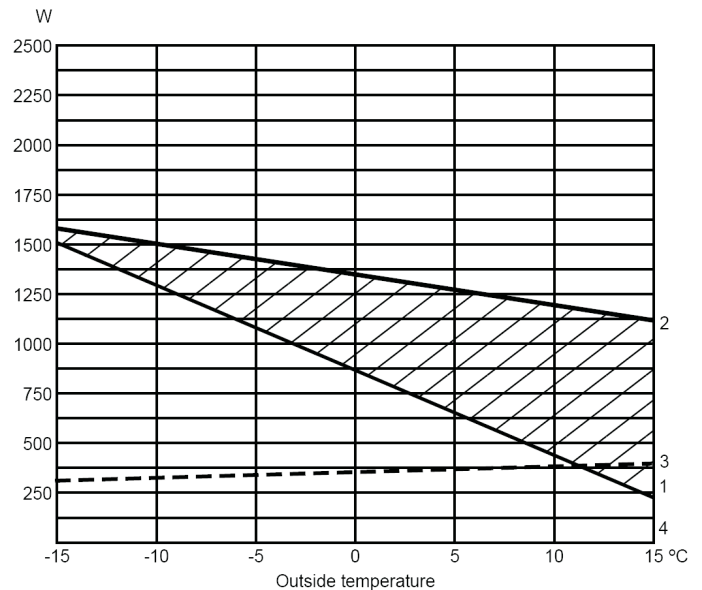
## Diagram of functions



## Capacity

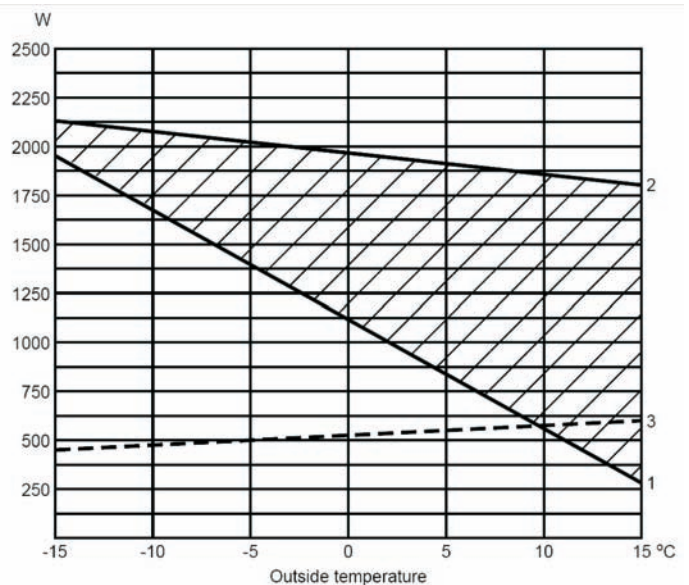
The COMBI 185 EC's capacity without domestic hot water (hot water temperature 55°C)

Airflow 120m³/h.



The Combi 185 Ec's capacity without domestic hot water (hot water temperature 55°C)

Airflow 160m³/h.



- 1) Energy consumption for heating incoming fresh air to room temperature at 20°C.
- 2) Total capacity of the appliance
- 3) Power input with compressor running

## Water heating

The heat pump is able to produce about 380L of hot water every 24 hours at a temperature of 55°C. The heating time for a whole tank, from 15-55°C is about 9 hours when the outdoor temperature is at 15°C.

Capacity depends on the outdoor temperature, the cold water temperature and the hot water use. The heating time will be longer with a low outdoor temperature but this can be reduced to 4.5 hours if you use the 1kW electrical heating element.