# PRODUCT DATA

## VPR 120-560 BY NILAN


## Ventilation & active heat recovery

Commercial

Active heat recovery

Ventilation < 6600 m³/h

Comfort heating

Comfort cooling

NILAN®
OUTSTANDING INDOOR CLIMATE

# VPR 120-560

VPR 120-560 is a series of ventilation units with heat recovery useful for ventilation of schools, offices and business premises with a ventilation requirement of up to 6,600 $m^3$/h, and where cooling may also be required.

The primary heat recovery takes place via a high efficiency rotary heat exchanger, which is supplemented with the built-in heat pump, so the supply air can be heated and ensure that users do not experience drafts caused by the ventilation.

The reversible heat pump that can reverse the cooling circuit so it can cool the supply air in the summer and thus help to ensure that the indoor climate does not get too hot.

**Rotary heat exchanger**
The main heat recovery takes place via a high-efficiency rotary heat exchanger, supplemented by the built-in heat pump.

The construction of the evaporator and the condenser located on each side of the rotary heat exchanger, gives full advantage of the rotary heat exchanger's performance in both the heating and cooling operation, resulting in a high heating and cooling effect.

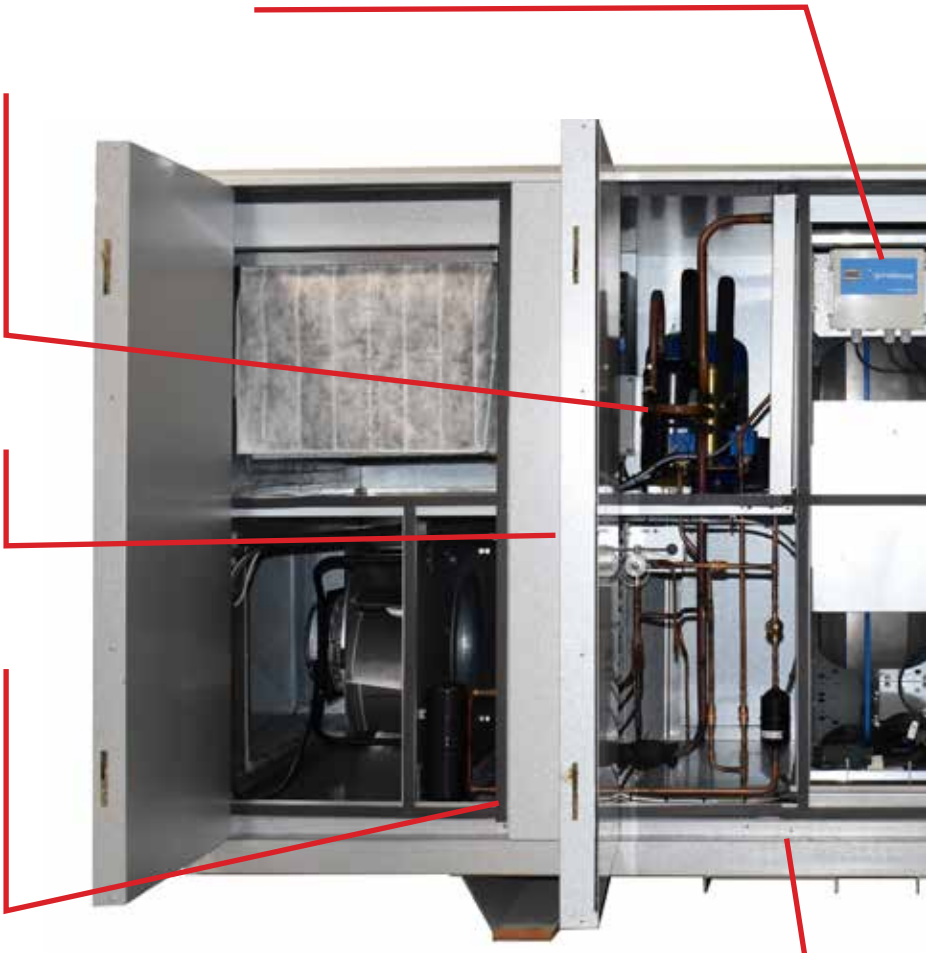
**Heating elements**
Supplementary water heating or electrical heating elements can be added on, and these are regulated via the CTS 602i control.

The heating elements can be integrated into the unit. The automatic control can also operate external heating elements.

**Low internal counter pressure**
The air's straight path through the unit ensures a unit with very low internal counter pressure.

**Chamber fans**
The two fan sections consist of energy-saving EC motors with built-in motor controls, regulated via a 0-10 V signal.

The effective fan wheel has rear-facing blades, with low noise emission.



**Design**
VPR 120-560 is built into a strong frame structure in 0.9 and 1.5 mm aluzinc, with 50 mm insulation.

VPR 120-560 is delivered with a strong, integrated base, with powder-coated condensation water trays.

**Heat pump**
The VPR 120-560 has a reversible heat pump that can reverse the cooling circuit so it can cool the supply air in the summer and thus help to ensure that the indoor climate does not get too hot.

The variable compressor provides optimal operation in relation to the performance of the rotary exchanger.

The software in the CTS602i control ensures that the rotary heat exchanger and the heat pump work together, so that the greatest effect is achieved, and the energy consumption is thus kept at a very low level.

**Doors**
The large doors give good access to replace filters, and to service the unit.

**Easy to install**
A plug-and-play solution which is delivered as a unit that does not need to be assembled. Is wired from the factory.

**Filters**
VPR 120-560 is supplied with bag filters and as standard with an ISO ePM10 >60% (M5) filter in the extracted air and an ISO ePM1 50% (F7) filter in the outdoor air.

The CTS 602i control has a time-controlled filter change alarm. It is possible to install a pressure-controlled filter alarm as an accessorie.

**Automation**
As standard, VPR 120-560 is delivered with an integrated CTS 602i control, which is operated via the supplied HMI touch panel.

The modern CTS 602i control features Modbus RTU RS485 communication, and a building management system that uses this communication method can easily be connected to the unit.

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# ALL-IN-ONE SOLUTION

Nilan's brand new energy-efficient commercial units VPR 120 - 560 are ventilation units with rotary heat exchanger in combination with a heat pump.

The Nilan VPR series is an all-in-one solution, which provides a comfortable indoor climate as well as low energy consumption. The VPR solution combines ventilation, comfort heating, comfort cooling, active heat recovery as well as effective humidity control and air filtration.

The VPR series has an intelligent VAV control with a good user interface on the control panel. There are many setting options, and the control provides efficient and safe operation.

The VPR 120-560 series is easy to install and maintain. During installation, there is no need for a refrigeration technician, as the units have a hermetically sealed refrigeration circuit, and the refrigerant is implemented from the factory.

The units have a low noise level and a compact design, which makes them easy to place in projects. The space and resource saving units are thus an economically good investment, where it is possible save up to 75% space compared to conventional solutions.

# VPR 120

## Technical specifications

| | |
|---|---|
| Dimensions (W x D x H) excl. base | 2100 x 810 x 990 mm |
| Weight | 315 kg |
| Min. airflow | 400 $m^3/h$ |
| Max. airflow | 1950 $m^3/h$ |
| Power consumption | 2.3 kW |
| Power supply | 3 x 400V + N, 50 Hz |
| Max. phase current | 3 x 16 A |
| Plate type casing | Aluzinc steel plate |
| Variable compressor | Frequency controlled |
| Refrigerant cooling circuit | R 410 A / 1.6 kg |
| Condenser/evaporator (HxW) | 404 x 400 mm |
| Condensation capacity | 2.5 l/h (25 °C / 70% RH, nominal air volume) |
| Condensation outlet | PVC, Ø 20×1.5 mm |
| Filter class | Standard bagfilter ISO ePM10 >60% (M5) extract air and ISO ePM1 50% (F7) fresh air |
| Duct connections | Ø 315 mm |
| Tightness class DS/EN 1886 | L2 |

## Motor and motorcontrol

| | |
|---|---|
| Motor type | EC-motor |
| Motor class according to IEC 60034-30 | IE3 (Premium efficiency) |
| Voltage input | 1 x 230 V |
| Current overload protection | Built-in |
| Control signal | 0 - 10 V DC |
| Fluid temperature (air) | -20 / +40 °C |
| Ambient temperature (operating) | -20 / +40 °C |

## Data for ecodesign

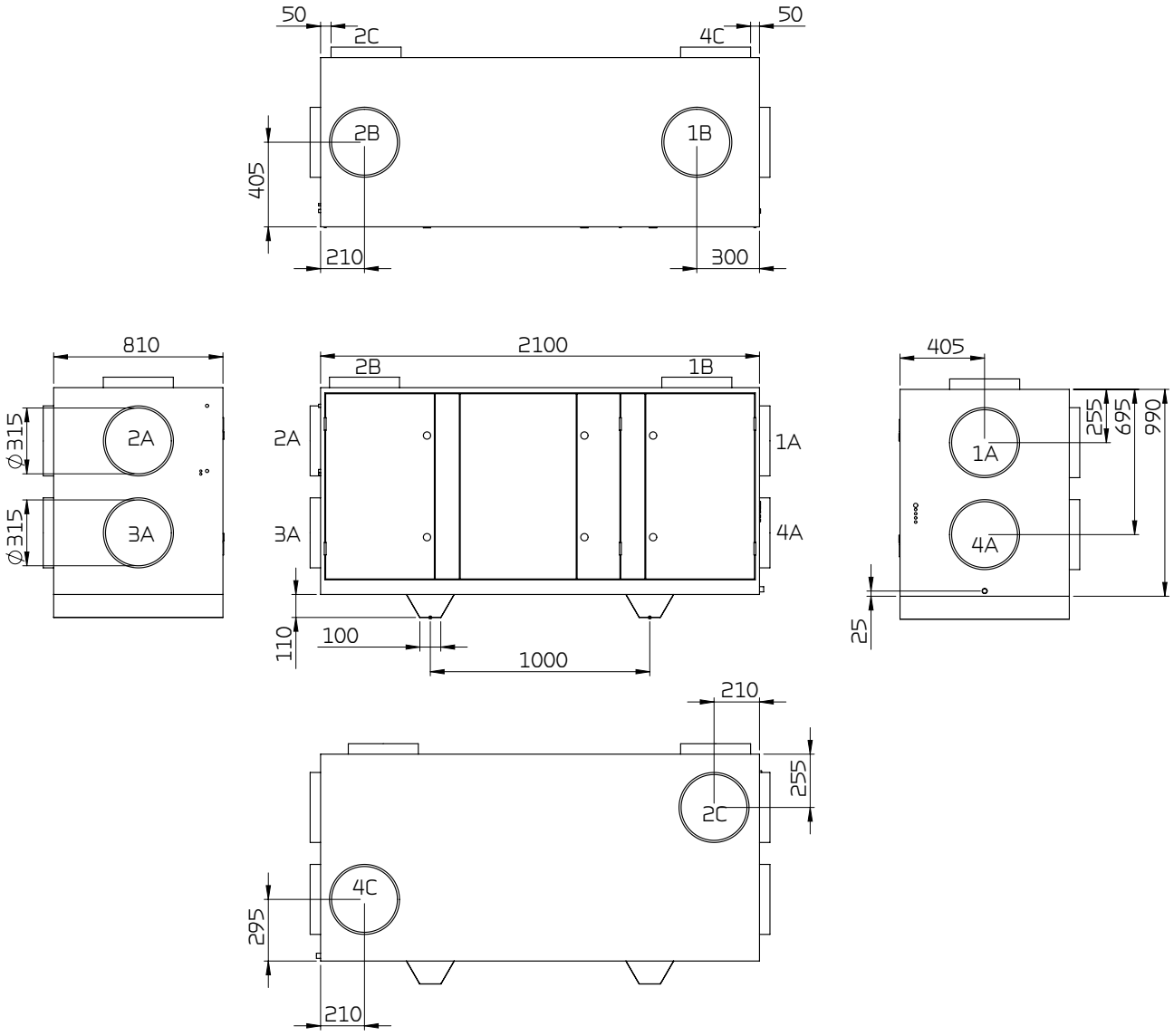
| | |
|---|---|
| Overall efficiency | 67.6 % |
| Measurement category | A |
| Efficiency category | Static |
| Efficiency grade N | 81.1 |
| Variable speed drive | Yes |
| Power consumption $P_{ed}$ | 0.52 kW |
| Air flow $q_v$ | 1750 $m^3/h$ |
| Pressure increase | 653 Pa |
| Speed n | 3075 |
| Specific racio | 1.01 |

Conditions according to EC327/2011

# Dimensional drawing

All dimensions are shown in mm.

The dimensional drawing is for a left version.
The unit can also be delivered in a right version.




1. Outdoor air
2. Supply air
3. Extract air
4. Discharge air

A. Gable location
B. Top location
C. Rear location

# VPR 120 WITH CONDENSATION EXCHANGER

If the unit's primary function is heating, it is advantageous to order the unit with a condensation exchanger.
The following design data is calculated on the basis of a condensation exchanger.

## Heating data

| | |
|---|---|
| RPM | 3700 |
| Air flow | 1200 m³/h |
| Rotary heat exchanger | 10.64 kW |
| Condenser | 3.43 kW |
| Total heating capacity | 14.07 kW |
| Supply temperature | 23.2 °C |
| Compressor power consumption | 0.763 kW |
| COP | 18.44 |

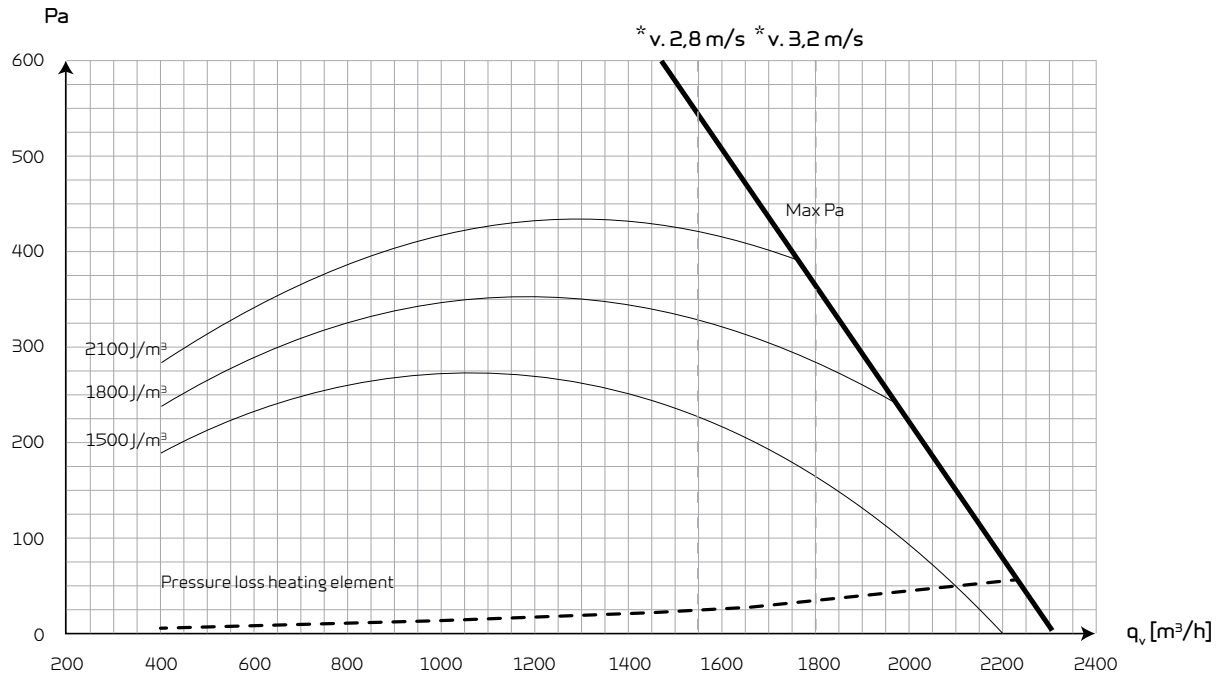
## Capacity

Max Pa capacity of standard unit, $P_{t,ext}$ as a function of $q_v$, with regard to SFP-values.

SFP-values according to EN13414-7 for a standard unit with ISO ePM10 >60% (M5) & ISO ePM1 50% (F7) filters an no heating element.

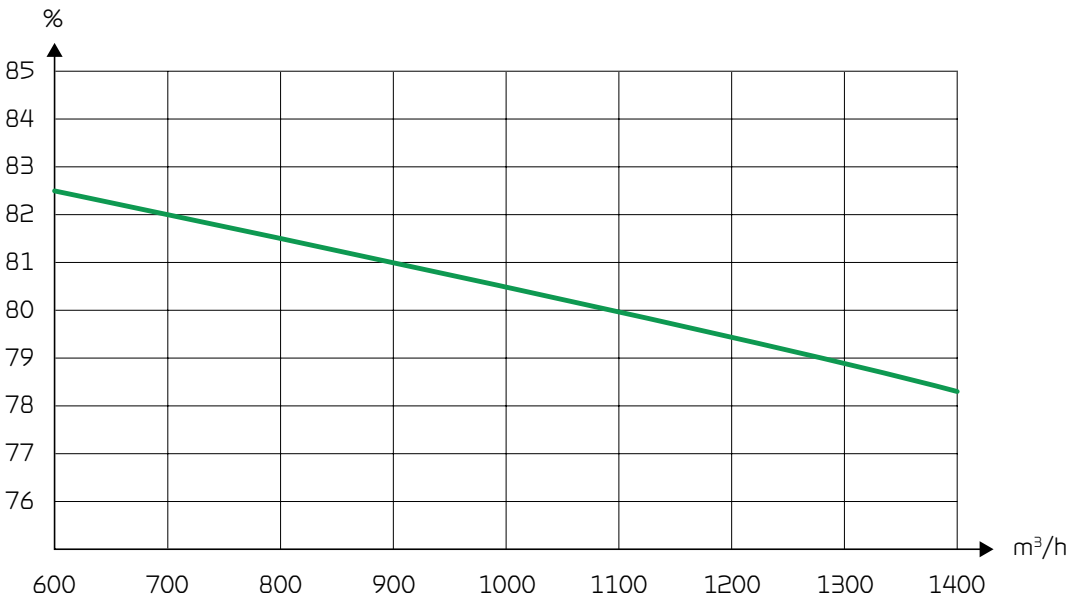
* Airflow speed above evaporator is measured at meters per second.

**Attention! The SFP values are measured and stated as a total value for both fans.**



# Temperature efficiency

Temperture efficiendy for rotatry heat exchanger according to EN308 (dry).




# Sound data

Sound data for $q_V$ = 1200 m³/h and $P_{t, ext}$ = 250 Pa according to EN 9614-2 for surfaces and EN 5136 for ducts.

Sound output level $L_{WA}$ drops with falling air volume and falling back pressure.
Sound output level $L_{pA}$ at a given distance will depend on acoustic conditions in the place of installation.

### Sound output level ($L_{WA}$)

| Octave band Hz | Surface dB(A) | Supply air dB(A) | Extract air dB(A) | Fresh air dB(A) | Discharge air dB(A) |
|---|---|---|---|---|---|
| 125 | 56.0 | 68.3 | 64.0 | 64.0 | 68.3 |
| 250 | 44.1 | 70.1 | 61.1 | 61.1 | 70.1 |
| 500 | 32.4 | 67.6 | 56.4 | 56.4 | 67.6 |
| 1,000 | 26.4 | 67.0 | 50.4 | 50.4 | 67.0 |
| 2,000 | 21.7 | 65.4 | 37.7 | 37.7 | 65.4 |
| 4,000 | 23.7 | 60.8 | 29.7 | 29.7 | 60.8 |
| Total ±2 dB(A) | 42.0 | 72.0 | 58.0 | 58.0 | 72.0 |

# VPR 120 WITH SORPTION EXCHANGER

If the unit's primary function is cooling, it is advantageous to order the unit with a sorption exchanger.
The following design data is calculated on the basis of a sorption exchanger.

## Cooling data

| | |
|---|---|
| RPM | 3700 |
| Air flow | 1200 m³/h |
| Rotary heat exchanger | 4.74 kW |
| Condenser | 4.49 kW |
| Total cooling capacity | 9.23 kW |
| Supply temperature | 19.8 °C |
| Compressor power consumption | 1.452 kW |
| COP | 6.36 |

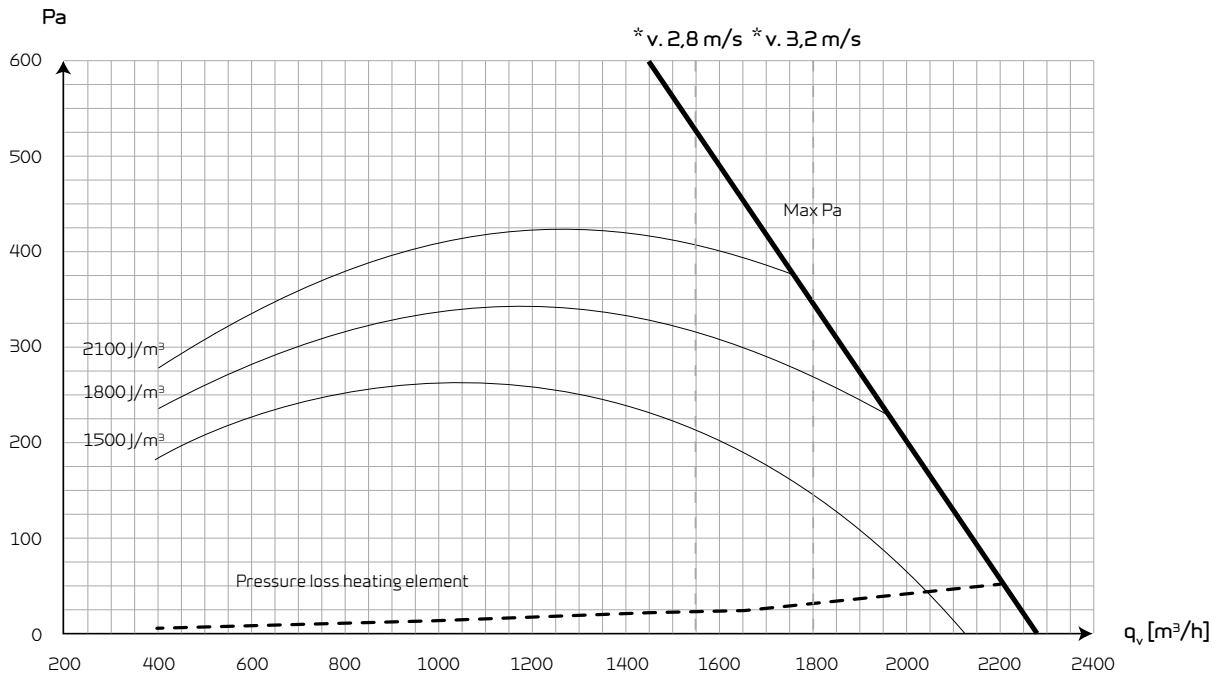
## Capacity

Max Pa capacity of standard unit, $P_{t,ext}$ as a function of $q_v$, with regard to SFP-values.

SFP-values according to EN13414-7 for a standard unit with ISO ePM10 >60% (M5) & ISO ePM1 50% (F7) filters and no heating element.

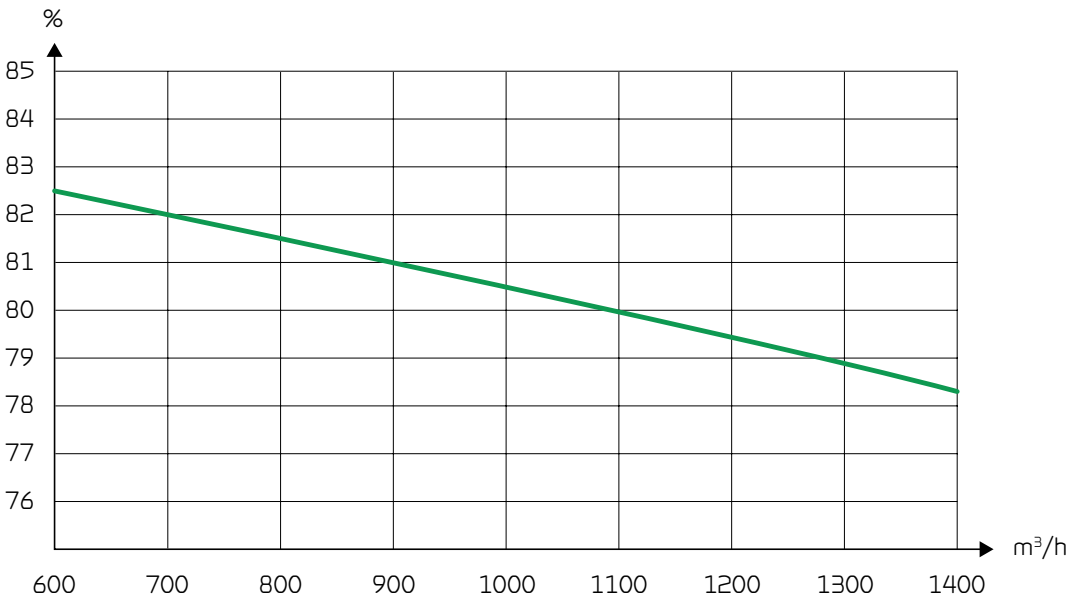
* Airflow speed above evaporator is measured at meters per second.

**Attention! The SFP values are measured and stated as a total value for both fans.**



# Temperature efficiency

Temperture efficiendy for rotatry heat exchanger according to EN308 (dry).




# Sound data

Sound data for $q_V$ = 1200 m³/h and $P_{t, ext}$ = 250 Pa according to EN 9614-2 for surfaces and EN 5136 for ducts.

Sound output level $L_{WA}$ drops with falling air volume and falling back pressure.
Sound output level $L_{pA}$ at a given distance will depend on acoustic conditions in the place of installation.

### Sound output level ($L_{WA}$)

| Octave band Hz | Surface dB(A) | Supply air dB(A) | Extract air dB(A) | Fresh air dB(A) | Discharge air dB(A) |
|---|---|---|---|---|---|
| 125 | 56.0 | 68.3 | 64.0 | 64.0 | 68.3 |
| 250 | 44.1 | 70.1 | 61.1 | 61.1 | 70.1 |
| 500 | 32.4 | 67.6 | 56.4 | 56.4 | 67.6 |
| 1,000 | 26.4 | 67.0 | 50.4 | 50.4 | 67.0 |
| 2,000 | 21.7 | 65.4 | 37.7 | 37.7 | 65.4 |
| 4,000 | 23.7 | 60.8 | 29.7 | 29.7 | 60.8 |
| Total ±2 dB(A) | 42.0 | 72.0 | 58.0 | 58.0 | 72.0 |

# VPR 240

## Technical specifications

| | |
|---|---|
| Dimensions (W x D x H) excl. base | 2300 x 910 x 1040 mm |
| Weight | 405 kg |
| Min. airflow | 800 $m^3/h$ |
| Max. airflow | 2650 $m^3/h$ |
| Power consumption | 4.5 kW |
| Power supply | 3 x 400V + N, 50 Hz |
| Max. phase current | 3 x 16 A |
| Plate type casing | Aluzinc steel plate |
| Variable compressor | Frequency controlled |
| Refrigerant cooling circuit | R 410 A / 2.0 kg |
| Condenser/evaporator (HxB) | 429 x 622 mm |
| Condensation capacity | 5.5 l/h (25 °C / 70% RH, nominal air volume) |
| Condensation outlet | PVC, Ø 20×1.5 mm |
| Filter class | Standard bagfilter ISO ePM10 >60% (M5) extract air and ISO ePM1 50% (F7) fresh air |
| Duct connections | Ø 400 mm |
| Tightness class DS/EN 1886 | L2 |

## Motor and motorcontrol

| | |
|---|---|
| Motor type | EC-motor |
| Motor class according to IEC 60034-30 | IE3 (Premium efficiency) |
| Voltage input | 1 x 230 V |
| Current overload protection | Built-in |
| Control signal | 0 - 10 V DC |
| Fluid temperature (air) | -20 / +40 °C |
| Ambient temperature (operating) | -20 / +40 °C |

## Data for ecodesign

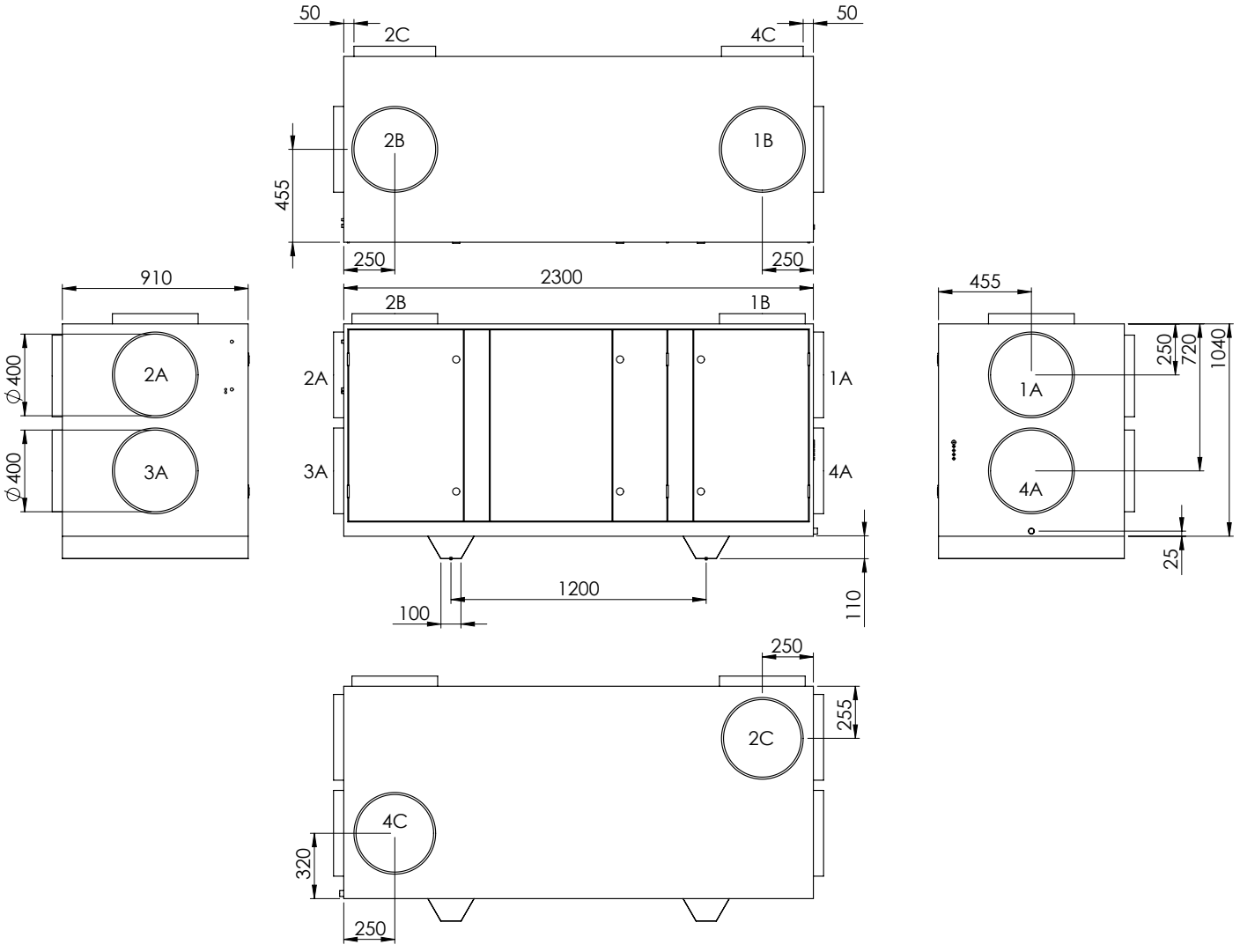
| | |
|---|---|
| Overall efficiency | 67.6 % |
| Measurement category | A |
| Efficiency category | Static |
| Efficiency grade N | 79.6 |
| Variable speed drive | Yes |
| Power consumption $P_{ed}$ | 0.72 kW |
| Air flow $q_v$ | 2400 $m^3/h$ |
| Pressure increase | 665 Pa |
| Speed n | 2990 |
| Specific racio | 1.01 |

Conditions according to EC327/2011

# Dimensional drawing

All dimensions are shown in mm.

The dimensional drawing is for a left version.
The unit can also be delivered in a right version.




1. Outdoor air
2. Supply air
3. Extract air
4. Discharge air

A. Gable location
B. Top location
C. Rear location

# VPR 240 WITH CONDENSATION EXCHANGER

If the unit's primary function is heating, it is advantageous to order the unit with a condensation exchanger.
The following design data is calculated on the basis of a condensation exchanger.

## Heating data

| | |
|---|---|
| RPM | 5000 |
| Air flow | 2400 m³/h |
| Rotary heat exchanger | 20.18 kW |
| Condenser | 6.8 kW |
| Total heating capacity | 26.98 kW |
| Supply temperature | 22.3 °C |
| Compressor power consumption | 1.716 kW |
| COP | 15.72 |

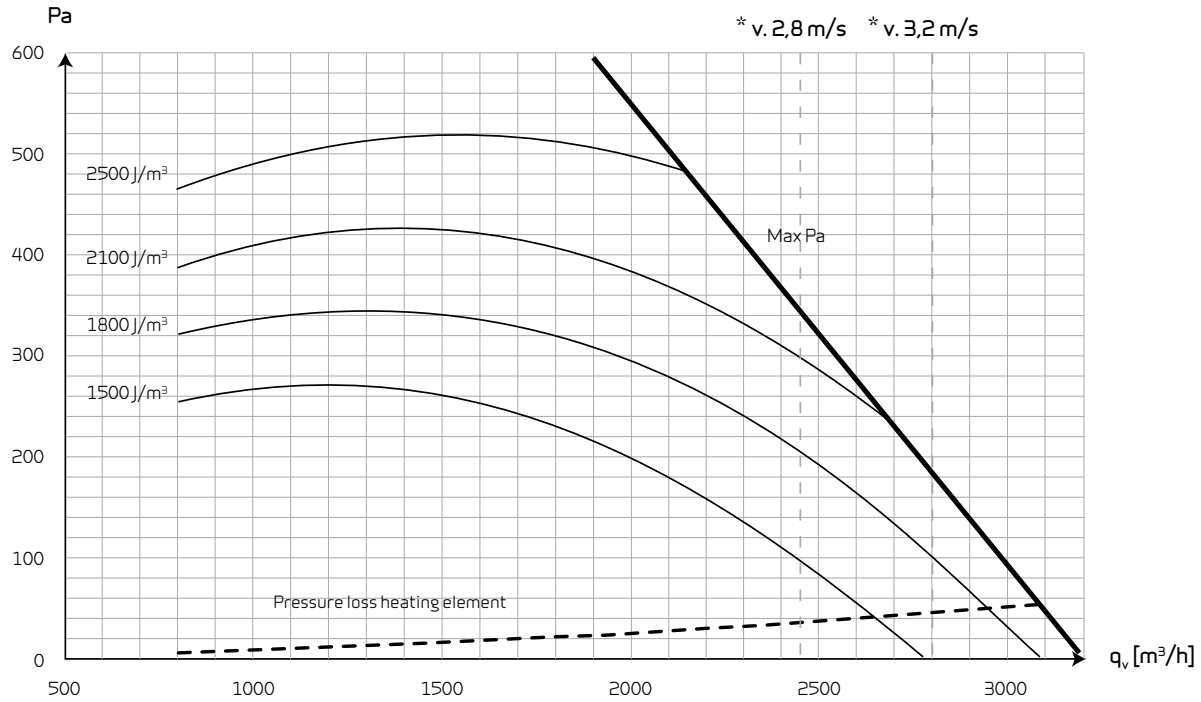
## Capacity

Max Pa capacity of standard unit, $P_{t,ext}$ as a function of $q_v$, with regard to SFP-values.

SFP-values according to EN13414-7 for a standard unit with ISO ePM10 >60% (M5) & ISO ePM1 50% (F7) filters and no heating element.

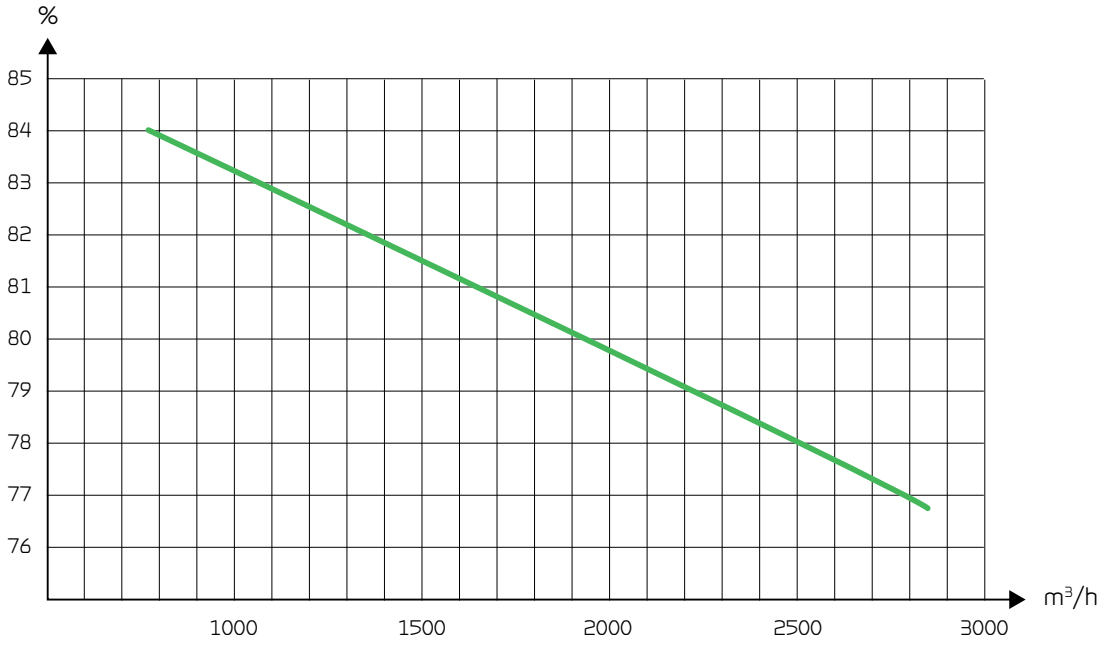
* Airflow speed above evaporator is measured at meters per second.

**Attention! The SFP values are measured and stated as a total value for both fans.**



# Temperature efficiency

Temperture efficiendy for rotatry heat exchanger according to EN308 (dry).




# Sound data

Sound data for $q_V$ = 2400 m³/h and $P_{t, ext}$ = 250 Pa according to EN 9614-2 for surfaces and EN 5136 for ducts.

Sound output level $L_{WA}$ drops with falling air volume and falling back pressure.
Sound output level $L_{pA}$ at a given distance will depend on acoustic conditions in the place of installation.

### Sound output level ($L_{WA}$)

| Oktave band Hz | Surface dB(A) | Supply air dB(A) | Extract air dB(A) | Fresh air dB(A) | Discharge air dB(A) |
|---|---|---|---|---|---|
| 125 | 53.1 | 70.9 | 61.1 | 61.1 | 70.9 |
| 250 | 47.9 | 79.9 | 64.9 | 64.9 | 79.5 |
| 500 | 35.5 | 77.3 | 59.5 | 59.5 | 77.3 |
| 1.000 | 31.0 | 77.4 | 55.0 | 55.0 | 77.4 |
| 2.000 | 29.5 | 75.9 | 45.5 | 45.5 | 75.9 |
| 4.000 | 34.3 | 71.2 | 40.3 | 40.3 | 71.2 |
| Total ±2 dB(A) | 43.0 | 82.0 | 61.0 | 61.0 | 82.0 |

# VPR 240 WITH SORPTION EXCHANGER

If the unit's primary function is cooling, it is advantageous to order the unit with a sorption exchanger.
The following design data is calculated on the basis of a sorption exchanger.

## Cooling data

| | |
|---|---|
| RPM | 5000 |
| Air flow | 2400 m³/h |
| Rotary heat exchanger | 8.57 kW |
| Condenser | 8.75 kW |
| Total cooling capacity | 17.32 kW |
| Supply temperature | 20.9 °C |
| Compressor power consumption | 3.324 kW |
| COP | 5.21 |

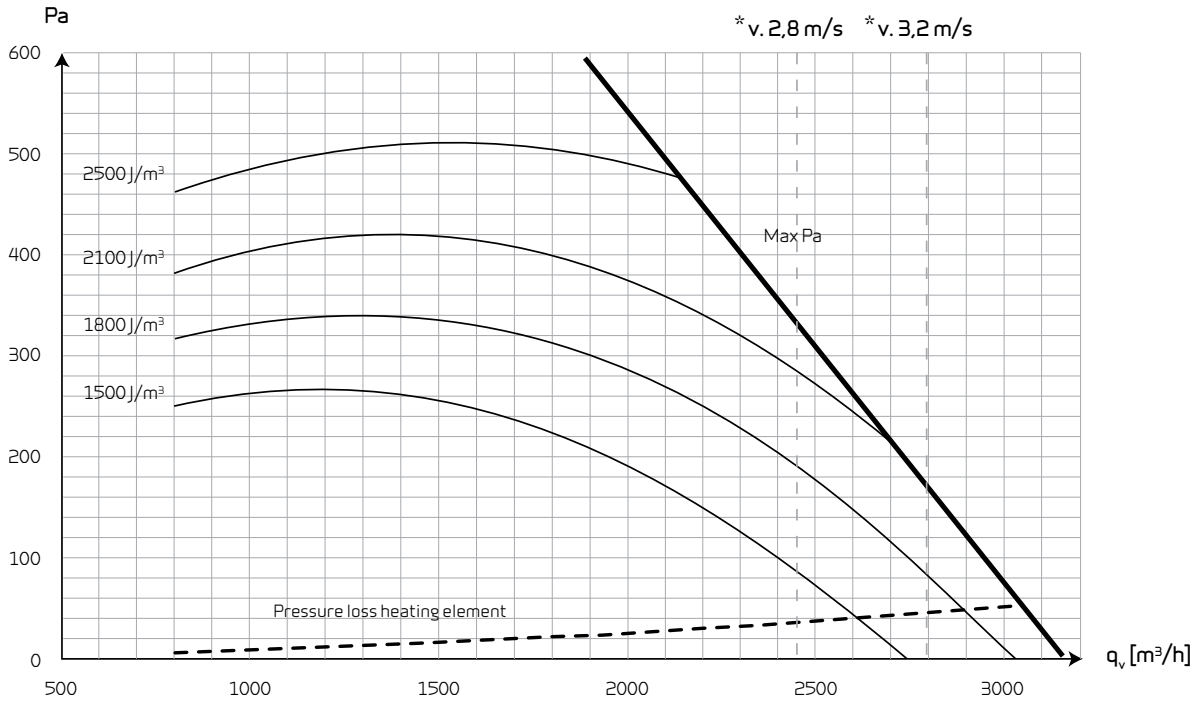
## Capacity

Max Pa capacity of standard unit, $P_{t,ext}$ as a function of $q_v$, with regard to SFP-values.

SFP-values according to EN13414-7 for a standard unit with ISO ePM10 >60% (M5) & ISO ePM1 50% (F7) filters and no heating element.

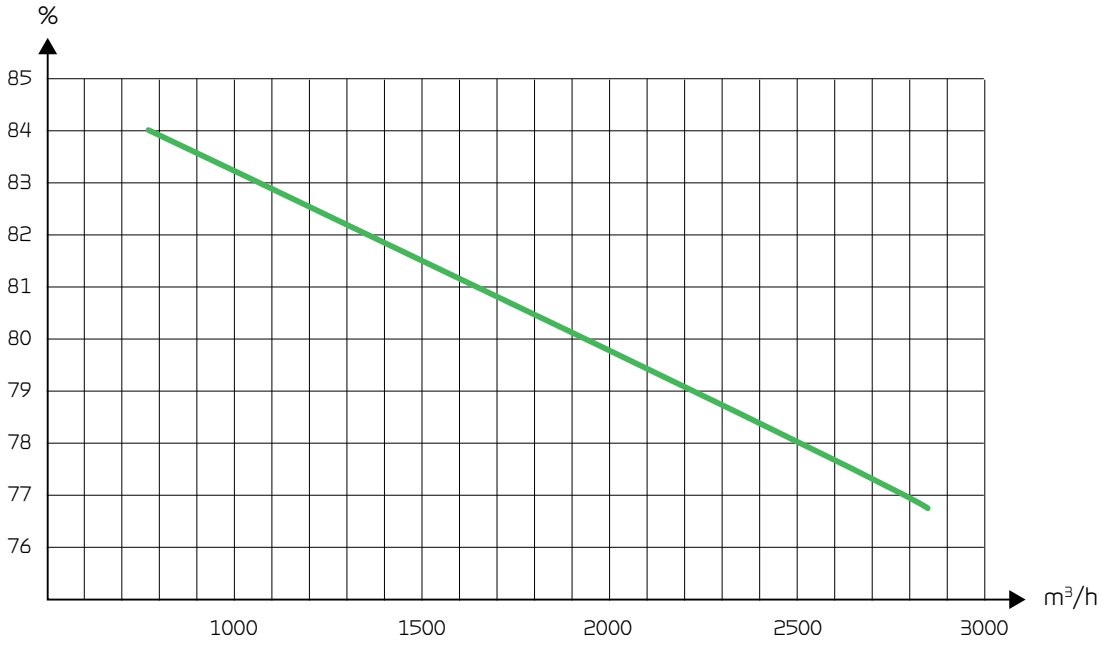
* Airflow speed above evaporator is measured at meters per second.

**Attention! The SFP values are measured and stated as a total value for both fans.**



# Temperature efficiency

Temperture efficiendy for rotatry heat exchanger according to EN308 (dry).




# Sound data

Sound data for $q_V$ = 2400 m³/h and $P_{t, ext}$ = 250 Pa according to EN 9614-2 for surfaces and EN 5136 for ducts.

Sound output level $L_{WA}$ drops with falling air volume and falling back pressure.
Sound output level $L_{pA}$ at a given distance will depend on acoustic conditions in the place of installation.

### Sound output level ($L_{WA}$)

| Oktave band Hz | Surface dB(A) | Supply air dB(A) | Extract air dB(A) | Fresh air dB(A) | Discharge air dB(A) |
|---|---|---|---|---|---|
| 125 | 53.1 | 70.9 | 61.1 | 61.1 | 70.9 |
| 250 | 47.9 | 79.9 | 64.9 | 64.9 | 79.5 |
| 500 | 35.5 | 77.3 | 59.5 | 59.5 | 77.3 |
| 1,000 | 31.0 | 77.4 | 55.0 | 55.0 | 77.4 |
| 2,000 | 29.5 | 75.9 | 45.5 | 45.5 | 75.9 |
| 4,000 | 34.3 | 71.2 | 40.3 | 40.3 | 71.2 |
| Total ±2 dB(A) | 43.0 | 82.0 | 61.0 | 61.0 | 82.0 |

# VPR 360

## Technical specifications

| | |
|---|---|
| Dimensions (W x D x H) excl. base | 2445 x 1110 x 1240 mm |
| Weight | 480 kg |
| Min. airflow | 900 $m^3/h$ |
| Max. airflow | 4150 $m^3/h$ |
| Power consumption | 6.5 kW |
| Power supply | 3 x 400V + N, 50 Hz |
| Max. phase current | 3 x 16 A |
| Plate type casing | Aluzinc steel plate |
| Variable compressor | Frequency controlled |
| Refrigerant cooling circuit | R 407 C / 4.1 kg |
| Condenser/evaporator (HxB) | 529 x 822 mm |
| Condensation capacity | 8.0 l/h (25 °C / 70% RH, nominal air volume) |
| Condensation outlet | PVC, Ø 20×1.5 mm |
| Filter class | Standard bagfilter ISO ePM10 >60% (M5) extract air and ISO ePM1 50% (F7) fresh air |
| Duct connections | 400 x 700 mm |
| Tightness class DS/EN 1886 | L2 |

## Motor and motorcontrol

| | |
|---|---|
| Motor type | EC-motor |
| Motor class according to IEC 60034-30 | IE3 (Premium efficiency) |
| Voltage input | 3 x 400 V |
| Current overload protection | Built-in |
| Control signal | 0 - 10 V DC |
| Fluid temperature (air) | -20 / +40 °C |
| Ambient temperature (operating) | -20 / +40 °C |

## Data for ecodesign

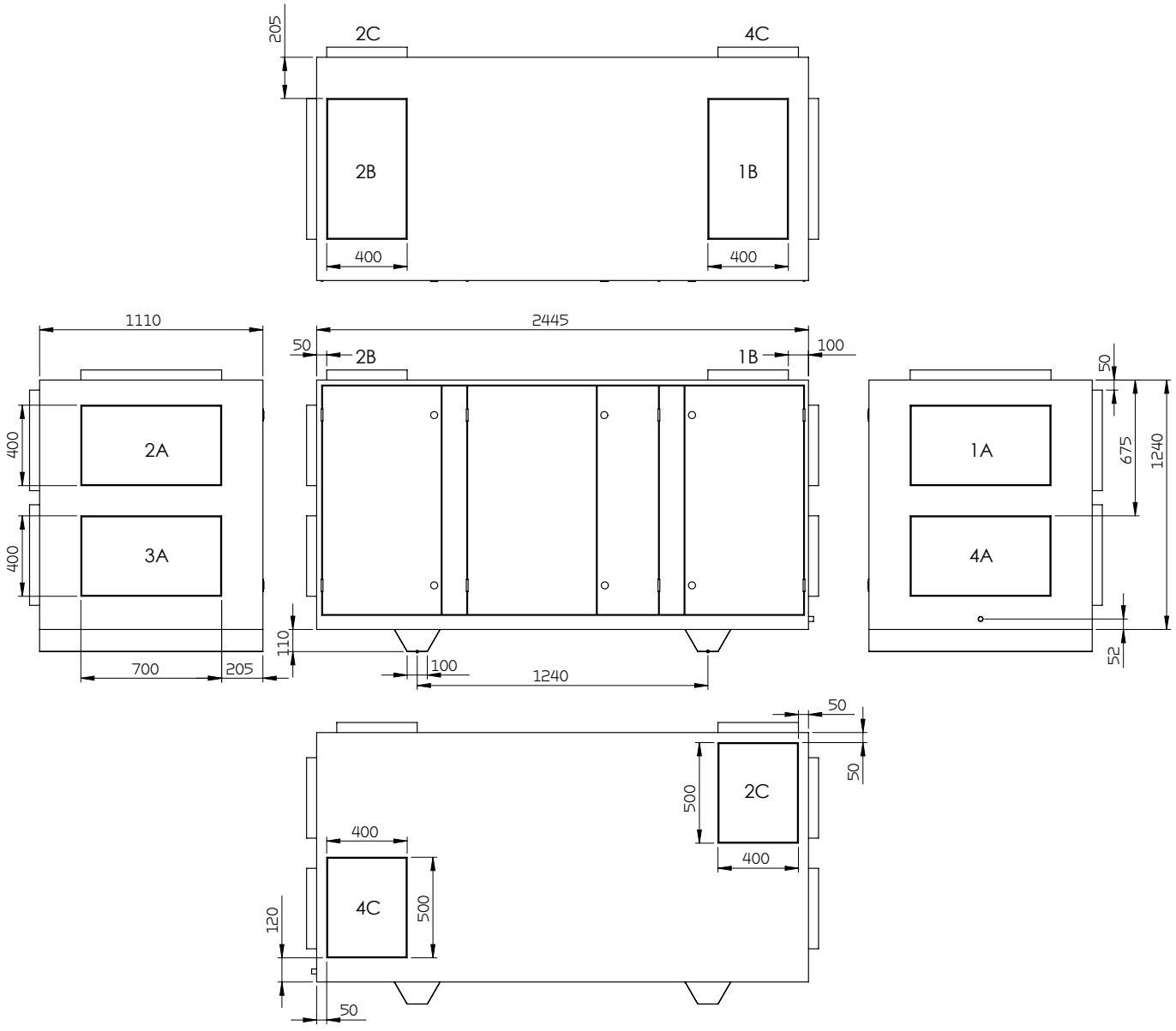
| | |
|---|---|
| Overall efficiency | 69.2 % |
| Measurement category | A |
| Efficiency category | Static |
| Efficiency grade N | 79.3 |
| Variable speed drive | Yes |
| Power consumption $P_{ed}$ | 1.09 kW |
| Air flow $q_v$ | 3655 $m^3/h$ |
| Pressure increase | 692 Pa |
| Speed n | 2405 |
| Specific racio | 1.01 |

Conditions according to EC327/2011

# Dimensional drawing

All dimensions are shown in mm.

The dimensional drawing is for a left version.
The unit can also be delivered in a right version.




1. Outdoor air
2. Supply air
3. Extract air
4. Discharge air

A. Gable location
B. Top location
C. Rear location

# VPR 360 WITH CONDENSATION EXCHANGER

If the unit's primary function is heating, it is advantageous to order the unit with a condensation exchanger.
The following design data is calculated on the basis of a condensation exchanger.

## Heating data

| | |
|---|---|
| RPM | 5400 |
| Air flow | 3600 $m^3/h$ |
| Rotary heat exchanger | 30.6 kW |
| Condenser | 10.49 kW |
| Total heating capacity | 41.09 kW |
| Supply temperature | 22.7 °C |
| Compressor power consumption | 2.385 kW |
| COP | 17.23 |

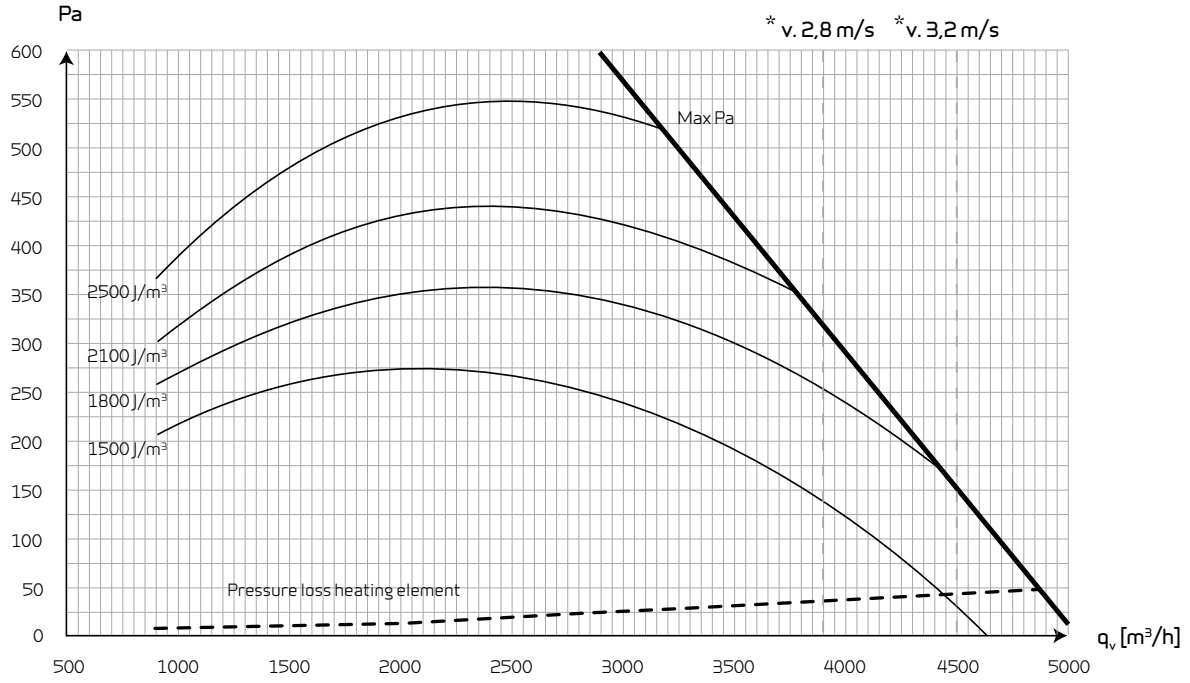
## Capacity

Max Pa capacity of standard unit, $P_{t,ext}$ as a function of $q_v$, with regard to SFP-values.

SFP-values according to EN13414-7 for a standard unit with ISO ePM10 >60% (M5) & ISO ePM1 50% (F7) filters and no heating element.

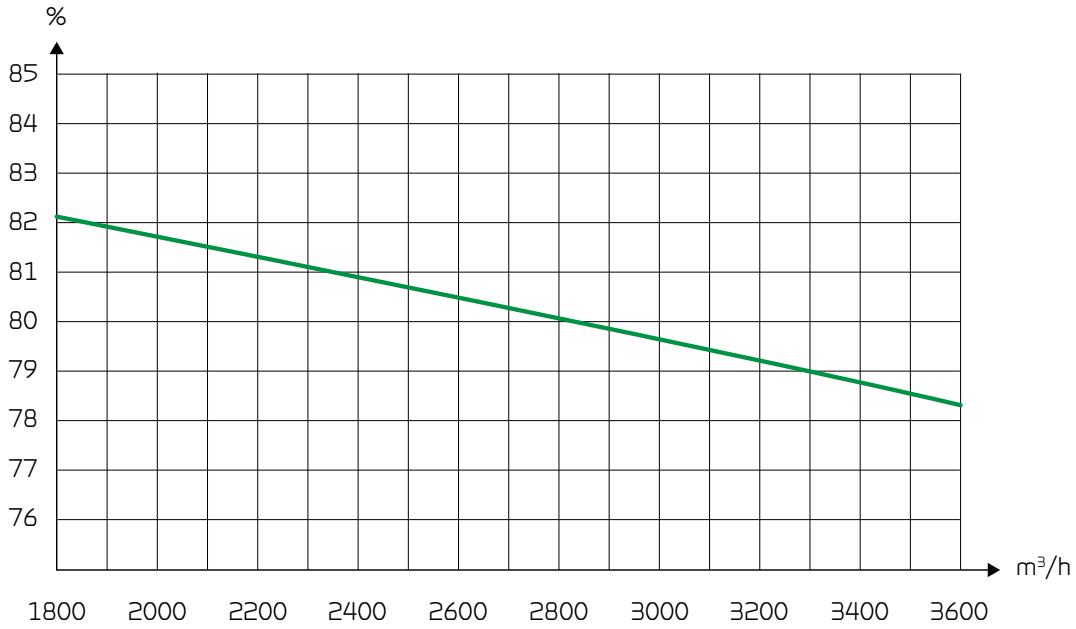
* Airflow speed above evaporator is measured at meters per second.

**Attention! The SFP values are measured and stated as a total value for both fans.**



# Temperature efficiency

Temperture efficiendy for rotatry heat exchanger according to EN308 (dry).




# Sound data

Sound data for $q_V$ = 3600 m³/h and $P_{t, ext}$ = 250 Pa according to EN 9614-2 for surfaces and EN 5136 for ducts.

Sound output level $L_{WA}$ drops with falling air volume and falling back pressure.
Sound output level $L_{pA}$ at a given distance will depend on acoustic conditions in the place of installation.

### Sound output level ($L_{WA}$)

| Oktave band Hz | Surface dB(A) | Supply air dB(A) | Extract dB(A) | Fresh air dB(A) | Discharge air dB(A) |
|---|---|---|---|---|---|
| 125 | 53.8 | 68.4 | 61.8 | 61.8 | 68.4 |
| 250 | 46.1 | 69.7 | 63.1 | 63.1 | 69.7 |
| 500 | 34.8 | 72.4 | 58.8 | 58.8 | 72.4 |
| 1,000 | 28.6 | 74.1 | 52.6 | 52.6 | 74.1 |
| 2,000 | 30.8 | 72.9 | 46.8 | 46.8 | 72.9 |
| 4,000 | 34.1 | 72.8 | 40.1 | 40.1 | 72.8 |
| Total ±2 dB(A) | 43.0 | 79.0 | 60.0 | 60.0 | 79.0 |

# VPR 360 WITH SORPTION EXCHANGER

If the unit's primary function is cooling, it is advantageous to order the unit with a sorption exchanger.
The following design data is calculated on the basis of a sorption exchanger.

## Cooling data

| | |
|---|---|
| RPM | 5400 |
| Air flow | 3600 $m^3/h$ |
| Rotary heat exchanger | 13.12 kW |
| Condenser | 14.07 kW |
| Total cooling capacity | 27.19 kW |
| Supply temperature | 19.5 °C |
| Compressor power consumption | 4.604 kW |
| COP | 5.91 |

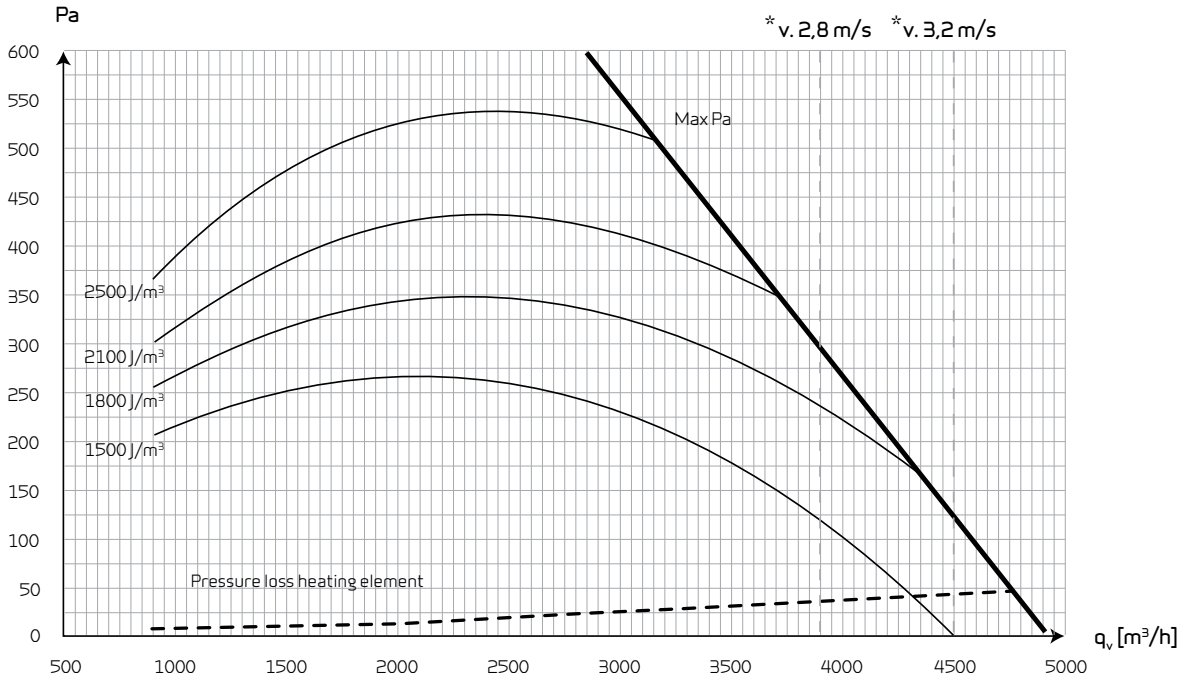
## Capacity

Max Pa capacity of standard unit, $P_{t,ext}$ as a function of $q_v$, with regard to SFP-values.

SFP-values according to EN13414-7 for a standard unit with ISO ePM10 >60% (M5) & ISO ePM1 50% (F7) filters and no heating element.

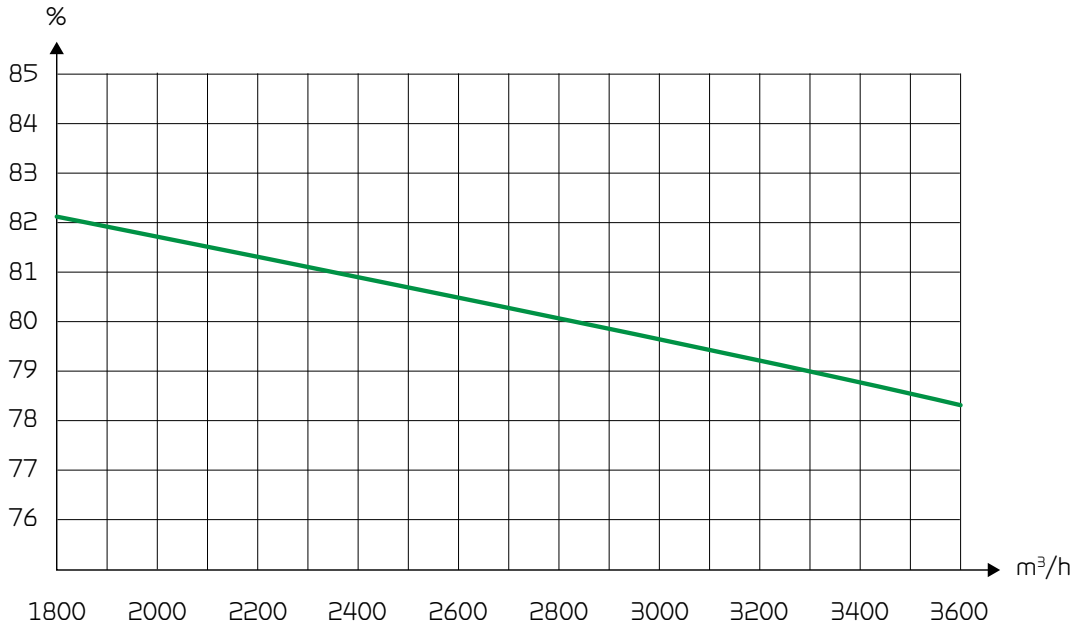
* Airflow speed above evaporator is measured at meters per second.

**Attention! The SFP values are measured and stated as a total value for both fans.**



# Temperature efficiency

Temperture efficiendy for rotatry heat exchanger according to EN308 (dry).




# Sound data

Sound data for $q_V$ = 3600 m³/h and $P_{t, ext}$ = 250 Pa according to EN 9614-2 for surfaces and EN 5136 for ducts.

Sound output level $L_{WA}$ drops with falling air volume and falling back pressure.
Sound output level $L_{pA}$ at a given distance will depend on acoustic conditions in the place of installation.

### Sound output level ($L_{WA}$)

| Oktave band Hz | Surface dB(A) | Supply air dB(A) | Extract dB(A) | Fresh air dB(A) | Discharge air dB(A) |
|---|---|---|---|---|---|
| 125 | 53.8 | 68.4 | 61.8 | 61.8 | 68.4 |
| 250 | 46.1 | 69.7 | 63.1 | 63.1 | 69.7 |
| 500 | 34.8 | 72.4 | 58.8 | 58.8 | 72.4 |
| 1,000 | 28.6 | 74.1 | 52.6 | 52.6 | 74.1 |
| 2,000 | 30.8 | 72.9 | 46.8 | 46.8 | 72.9 |
| 4,000 | 34.1 | 72.8 | 40.1 | 40.1 | 72.8 |
| Total ±2 dB(A) | 43.0 | 79.0 | 60.0 | 60.0 | 79.0 |

# VPR 480

## Technical specifications

| | |
|---|---|
| Dimensions (W x D x H) excl. base | 2445 x 1235 x 1400 mm |
| Weight | 555 kg |
| Min. airflow | 1200 $m^3/h$ |
| Max. airflow | 5600 $m^3/h$ |
| Power consumption | 10.25 kW |
| Power supply | 3 x 400V + N, 50 Hz |
| Max. phase current | 3 x 25 A |
| Plate type casing | Aluzinc steel plate |
| Variable compressor | Frequency controlled |
| Refrigerant cooling circuit | R 407 C / 4.5 kg |
| Condenser/evaporator (HxB) | 604 x 940 mm |
| Condensation capacity | 11.5 l/h (25°C / 70% RH, nominal airflow) |
| Condensation outlet | PVC, Ø 20×1.5 mm |
| Filter class | Standard bagfilter ISO ePM10 >60% (M5) extract air and ISO ePM1 50% (F7) fresh air |
| Duct connections | 500 x 700 mm |
| Tightness class DS/EN 1886 | L2 |

## Motor and motorcontrol

| | |
|---|---|
| Motor type | EC-motor |
| Motor class according to IEC 60034-30 | IE3 (Premium efficiency) |
| Voltage input | 3 x 400 V |
| Current overload protection | Built-in |
| Control signal | 0 - 10 V DC |
| Fluid temperature (air) | -20 / +40 °C |
| Ambient temperature (operating) | -20 / +40 °C |

## Data for ecodesign

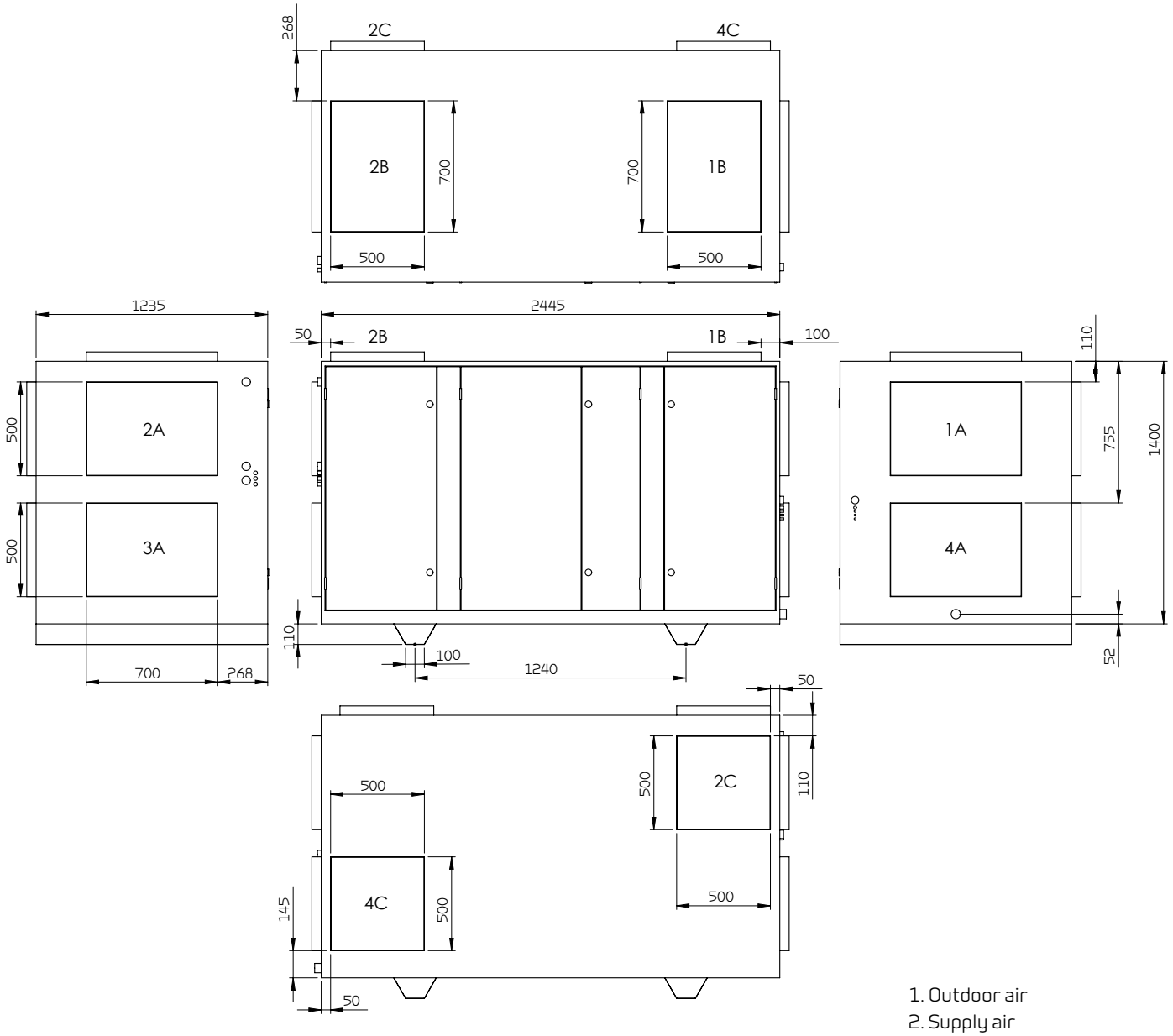
| | |
|---|---|
| Overall efficiency | 68.8 % |
| Measurement category | A |
| Efficiency category | Static |
| Efficiency grade N | 76.4 |
| Variable speed drive | Yes |
| Power consumption $P_{ed}$ | 1.89 kW |
| Air flow $q_v$ | 4470 $m^3/h$ |
| Pressure increase | 991 Pa |
| Speed n | 2895 |
| Specific racio | 1.01 |

Conditions according to EC327/2011

# Dimensional drawing

All dimensions are shown in mm.

The dimensional drawing is for a left version.
The unit can also be delivered in a right version.




1. Outdoor air
2. Supply air
3. Extract air
4. Discharge air

A. Gable location
B. Top location
C. Rear location

# VPR 480 WITH CONDENSATION EXCHANGER

If the unit's primary function is heating, it is advantageous to order the unit with a condensation exchanger.
The following design data is calculated on the basis of a condensation exchanger.

## Heating data

| | |
|---|---|
| RPM | |
| Air flow | 4800 m³/h |
| Rotary heat exchanger | 41.82 kW |
| Condenser | 13 kW |
| Total heating capacity | 54.82 kW |
| Supply temperature | 22.5 °C |
| Compressor power consumption | 3.45 kW |
| COP | 15.89 |

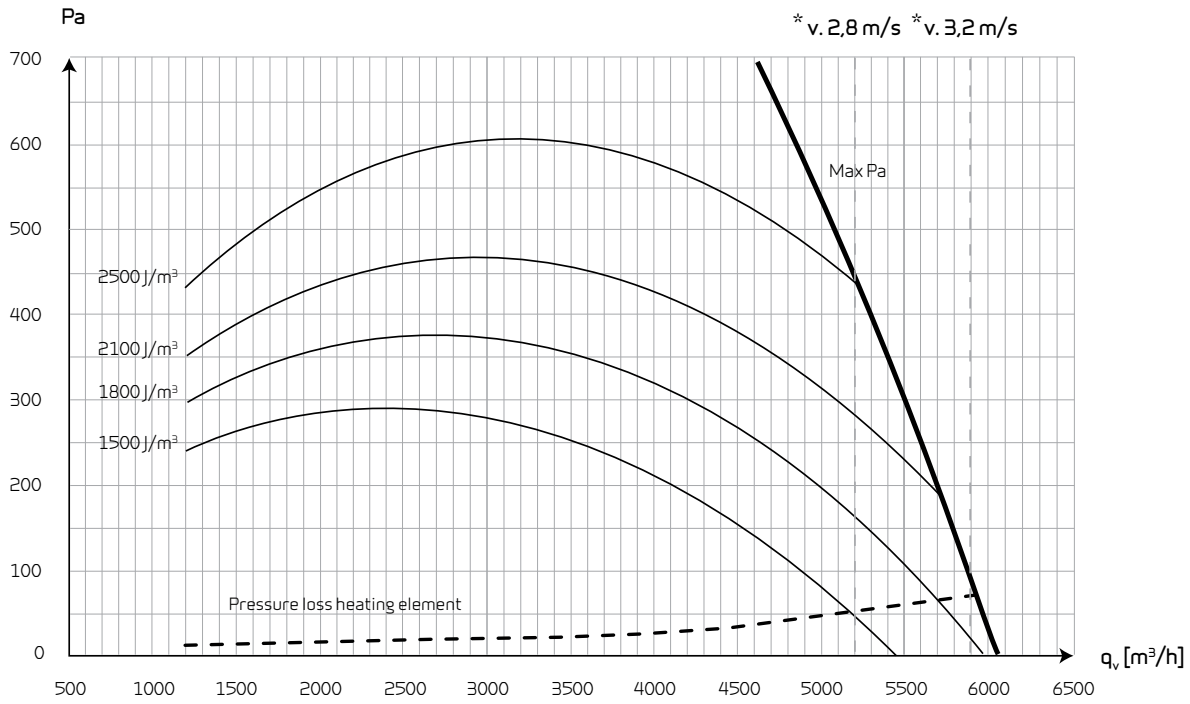
## Capacity

Max Pa capacity of standard unit, $P_{t,ext}$ as a function of $q_v$, with regard to SFP-values.

SFP-values according to EN13414-7 for a standard unit with ISO ePM10 >60% (M5) & ISO ePM1 50% (F7) filters and no heating element.

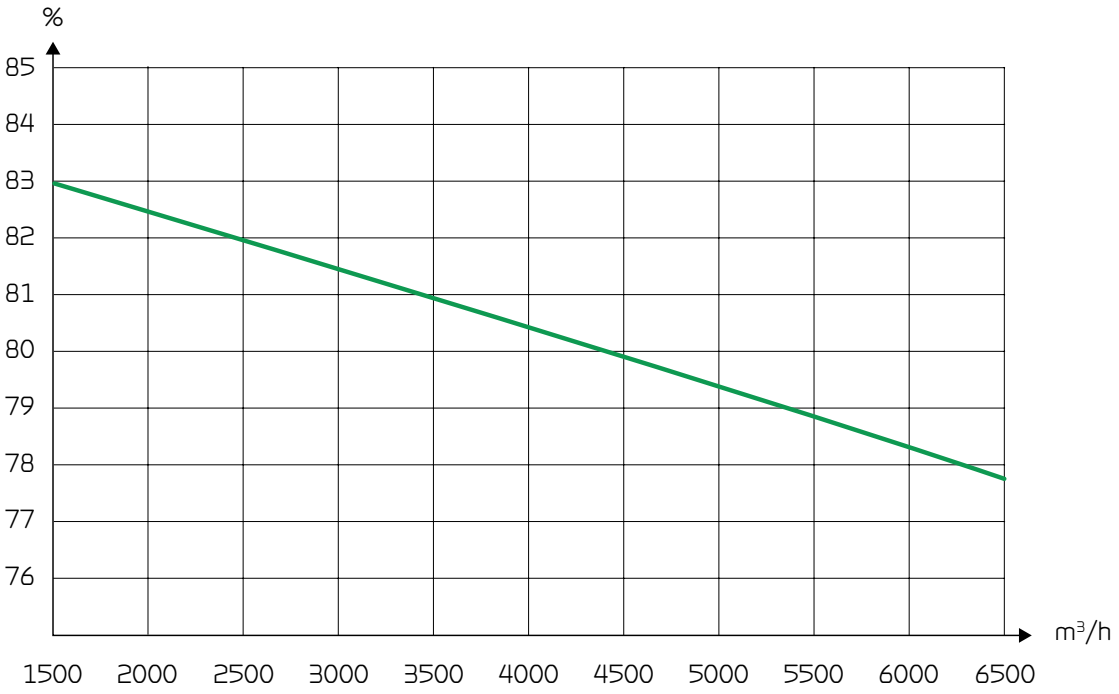
* Airflow speed above evaporator is measured at meters per second.

**Attention! The SFP values are measured and stated as a total value for both fans.**



# Temperature efficiency

Temperture efficiendy for rotatry heat exchanger according to EN308 (dry).




# Sound data

Sound data for $q_V$ = 4800 m³/h and $P_{t, ext}$ = 250 Pa according to EN 9614-2 for surfaces and EN 5136 for ducts.

Sound output level $L_{WA}$ drops with falling air volume and falling back pressure.
Sound output level $L_{pA}$ at a given distance will depend on acoustic conditions in the place of installation.

### Sound output level ($L_{WA}$)

| Oktave band Hz | Surface dB(A) | Supply air dB(A) | Extract air dB(A) | Fresh air dB(A) | Discharge air dB(A) |
|---|---|---|---|---|---|
| 125 | 59.5 | 77.5 | 69.0 | 68.5 | 77.0 |
| 250 | 52.8 | 80.7 | 72.2 | 71.8 | 79.9 |
| 500 | 42.6 | 80.8 | 67.9 | 67.6 | 80.0 |
| 1,000 | 30.4 | 79.7 | 56.9 | 55.4 | 79.0 |
| 2,000 | 30.0 | 75.2 | 46.9 | 45.0 | 74.3 |
| 4,000 | 28.0 | 68.7 | 34.9 | 33.0 | 67.8 |
| Total ±2 dB(A) | 60.0 | 86.0 | 75.0 | 75.0 | 86.0 |

# VPR 480 WITH SORPTION EXCHANGER

If the unit's primary function is cooling, it is advantageous to order the unit with a sorption exchanger.
The following design data is calculated on the basis of a sorption exchanger.

## Cooling data

| | |
|---|---|
| RPM | |
| Air flow | 4800 m³/h |
| Rotary heat exchanger | 18.32 kW |
| Condenser | 15.91 kW |
| Total cooling capacity | 34.23 kW |
| Supply temperature | 19.2 °C |
| Compressor power consumption | 6.49 kW |
| COP | 5.27 |

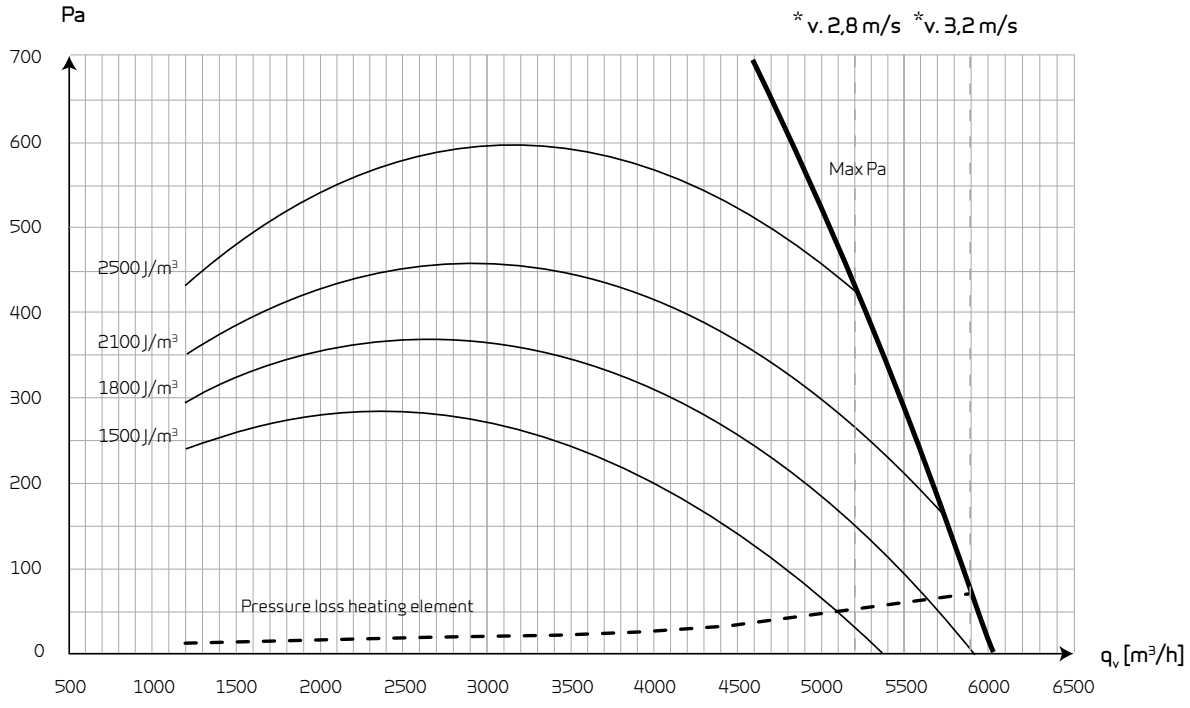
## Capacity

Max Pa capacity of standard unit, $P_{t,ext}$ as a function of $q_v$, with regard to SFP-values.

SFP-values according to EN13414-7 for a standard unit with ISO ePM10 >60% (M5) & ISO ePM1 50% (F7) filters and no heating element.

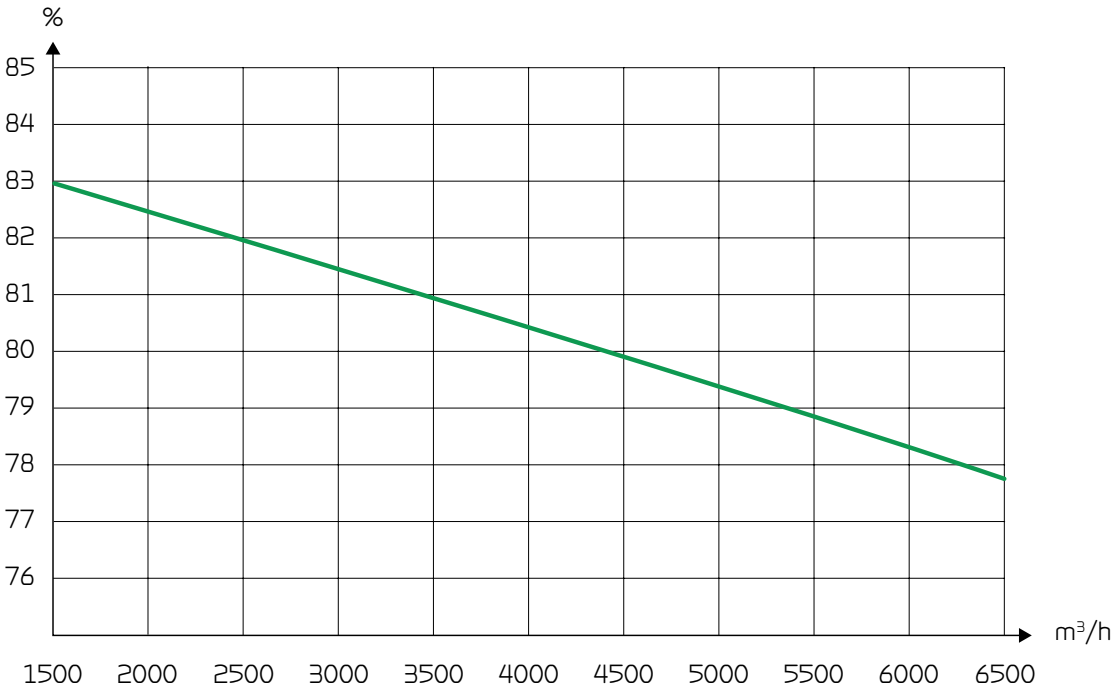
* Airflow speed above evaporator is measured at meters per second.

**Attention! The SFP values are measured and stated as a total value for both fans.**



# Temperature efficiency

Temperture efficiendy for rotatry heat exchanger according to EN308 (dry).




# Sound data

Sound data for $q_V$ = 4800 m³/h and $P_{t, ext}$ = 250 Pa according to EN 9614-2 for surfaces and EN 5136 for ducts.

Sound output level $L_{WA}$ drops with falling air volume and falling back pressure.
Sound output level $L_{pA}$ at a given distance will depend on acoustic conditions in the place of installation.

### Sound output level ($L_{WA}$)

| Oktave band Hz | Surface dB(A) | Supply air dB(A) | Extract air dB(A) | Fresh air dB(A) | Discharge air dB(A) |
|---|---|---|---|---|---|
| 125 | 59.5 | 77.5 | 69.0 | 68.5 | 77.0 |
| 250 | 52.8 | 80.7 | 72.2 | 71.8 | 79.9 |
| 500 | 42.6 | 80.8 | 67.9 | 67.6 | 80.0 |
| 1,000 | 30.4 | 79.7 | 56.9 | 55.4 | 79.0 |
| 2,000 | 30.0 | 75.2 | 46.9 | 45.0 | 74.3 |
| 4,000 | 28.0 | 68.7 | 34.9 | 33.0 | 67.8 |
| Total ±2 dB(A) | 60.0 | 86.0 | 75.0 | 75.0 | 86.0 |

# VPR 560

## Technical specifications

| | |
|---|---|
| Dimensions (W x D x H) excl. base | 2445 x 1235 x 1400 mm |
| Weight | 555 kg |
| Min. airflow | 1200 $m^3/h$ |
| Max. airflow | 6600 $m^3/h$ |
| Power consumption | 10.25 kW |
| Power supply | 3 x 400V + N, 50 Hz |
| Max. phase current | 3 x 25 A |
| Plate type casing | Aluzinc steel plate |
| Variable compressor | Frequency controlled |
| Refrigerant cooling circuit | R 407 C / 4.5 kg |
| Condenser/evaporator (HxB) | 604 x 940 mm |
| Condensation capacity | 11.5 l/h (25°C / 70% RH, nominal airflow) |
| Condensation outlet | PVC, Ø 20×1.5 mm |
| Filter class | Standard bagfilter ISO ePM10 >60% (M5) extract air and ISO ePM1 50% (F7) fresh air |
| Duct connections | 500 x 700 mm |
| Tightness class DS/EN 1886 | L2 |

## Motor and motorcontrol

| | |
|---|---|
| Motor type | EC-motor |
| Motor class according to IEC 60034-30 | IE3 (Premium efficiency) |
| Voltage input | 3 x 400 V |
| Current overload protection | Built-in |
| Control signal | 0 - 10 V DC |
| Fluid temperature (air) | -20 / +40 °C |
| Ambient temperature (operating) | -20 / +40 °C |

## Data for ecodesign

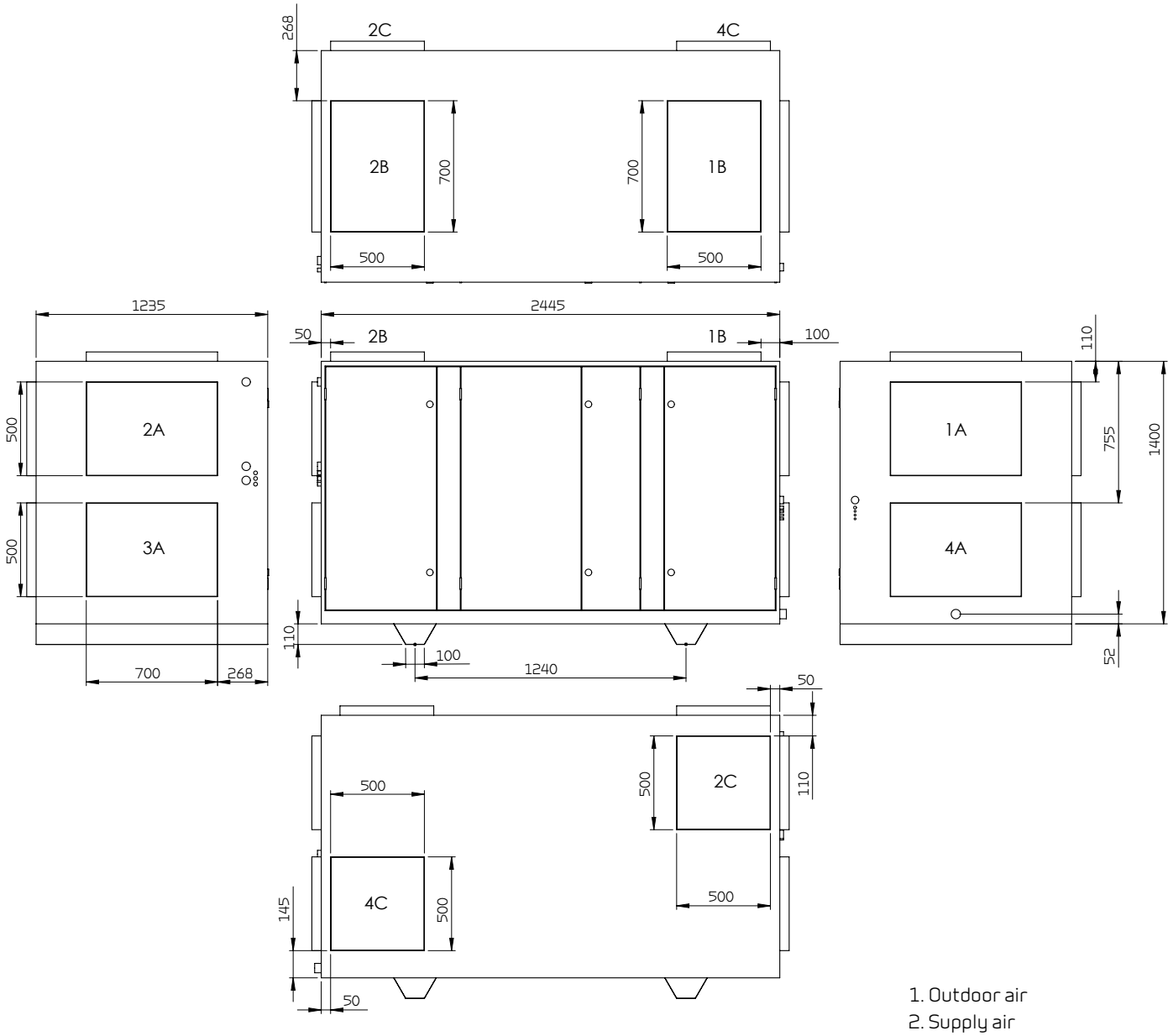
| | |
|---|---|
| Overall efficiency | 68.8 % |
| Measurement category | A |
| Efficiency category | Static |
| Efficiency grade N | 76.4 |
| Variable speed drive | Yes |
| Power consumption $P_{ed}$ | 1.89 kW |
| Air flow $q_v$ | 4470 $m^3/h$ |
| Pressure increase | 991 Pa |
| Speed n | 2895 |
| Specific racio | 1.01 |

Conditions according to EC327/2011

# Dimensional drawing

All dimensions are shown in mm.

The dimensional drawing is for a left version.
The unit can also be delivered in a right version.




1. Outdoor air
2. Supply air
3. Extract air
4. Discharge air

A. Gable location
B. Top location
C. Rear location

# VPR 560 WITH CONDENSATION EXCHANGER

If the unit's primary function is heating, it is advantageous to order the unit with a condensation exchanger.
The following design data is calculated on the basis of a condensation exchanger.

## Heating data

| | |
|---|---|
| RPM | |
| Air flow | 5600 m³/h |
| Rotary heat exchanger | 47.78 kW |
| Condenser | 17.95 kW |
| Total heating capacity | 65.73 kW |
| Supply temperature | 23.7 °C |
| Compressor power consumption | 4.78 kW |
| COP | 13.75 |

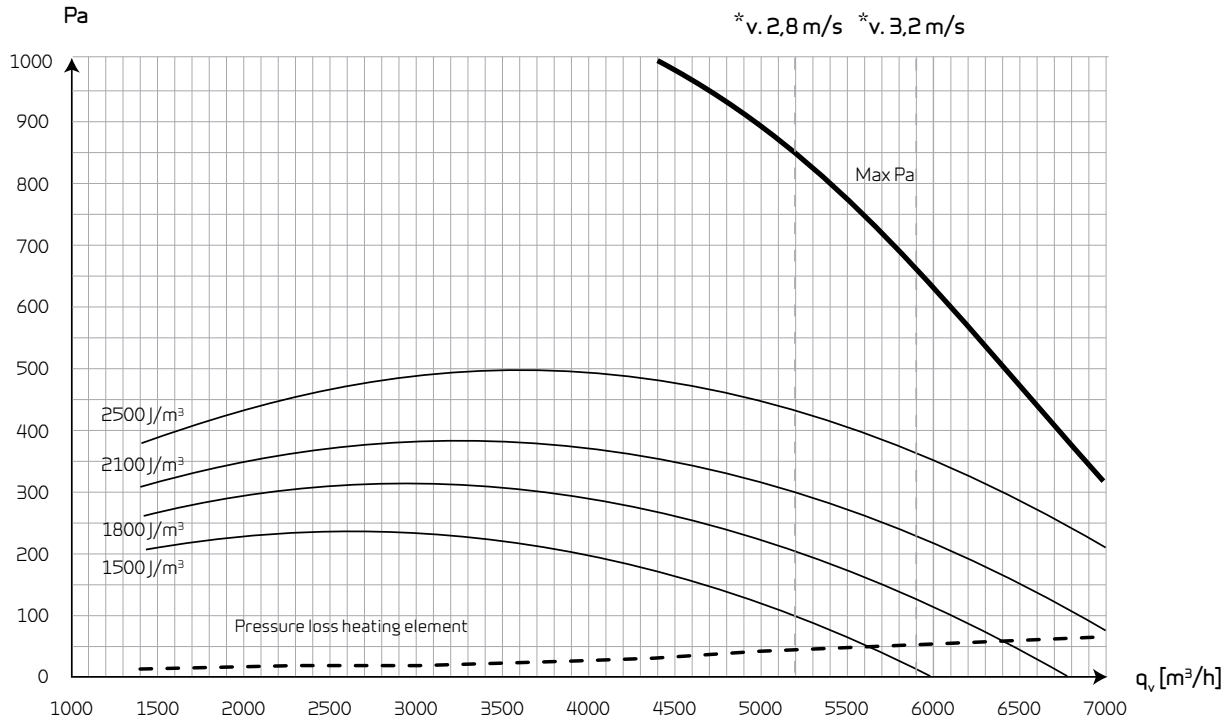
## Capacity

Max Pa capacity of standard unit, $P_{t,ext}$ as a function of $q_v$, with regard to SFP-values.

SFP-values according to EN13414-7 for a standard unit with ISO ePM10 >60% (M5) & ISO ePM1 50% (F7) filters and no heating element.

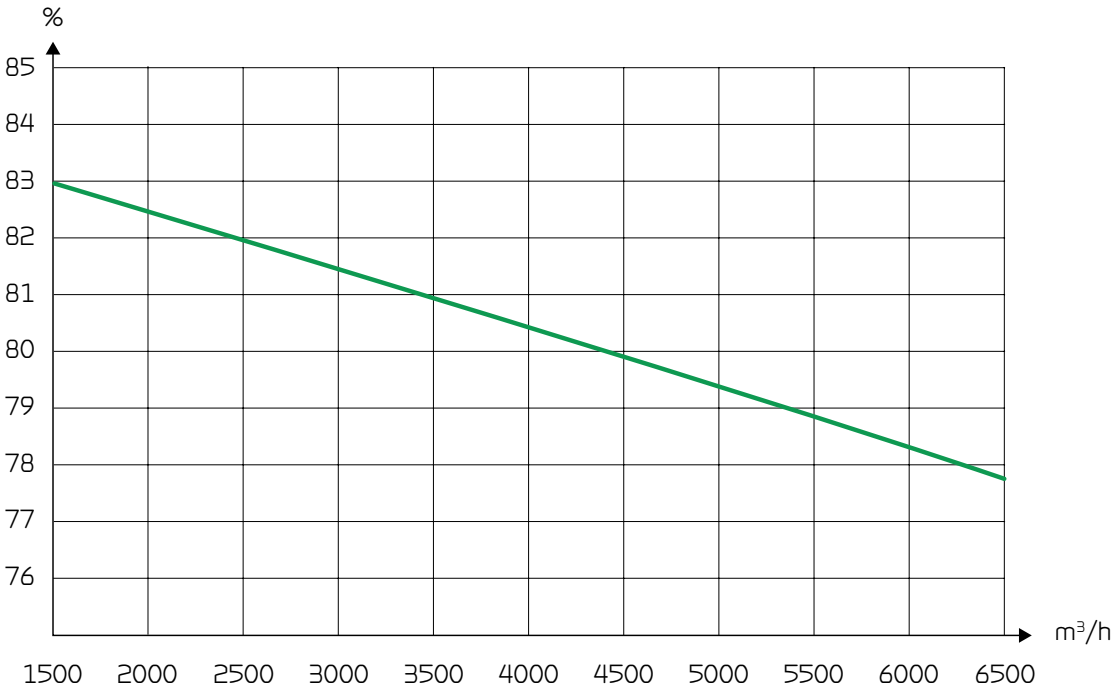
* Airflow speed above evaporator is measured at meters per second.

**Attention! The SFP values are measured and stated as a total value for both fans.**



# Temperature efficiency

Temperture efficiendy for rotatry heat exchanger according to EN308 (dry).




# Sound data

Sound data for $q_V$ = 5600 m³/h and $P_{t, ext}$ = 250 Pa according to EN 9614-2 for surfaces and EN 5136 for ducts.

Sound output level $L_{WA}$ drops with falling air volume and falling back pressure.
Sound output level $L_{pA}$ at a given distance will depend on acoustic conditions in the place of installation.

### Sound output level ($L_{WA}$)

| Oktave band Hz | Surface dB(A) | Supply air dB(A) | Extract air dB(A) | Fresh air dB(A) | Discharge air dB(A) |
|---|---|---|---|---|---|
| 125 | 59.5 | 77.5 | 69.0 | 68.5 | 77.0 |
| 250 | 52.8 | 80.7 | 72.2 | 71.8 | 79.9 |
| 500 | 42.6 | 80.8 | 67.9 | 67.6 | 80.0 |
| 1,000 | 30.4 | 79.7 | 56.9 | 55.4 | 79.0 |
| 2,000 | 30.0 | 75.2 | 46.9 | 45.0 | 74.3 |
| 4,000 | 28.0 | 68.7 | 34.9 | 33.0 | 67.8 |
| Total ±2 dB(A) | 60.0 | 86.0 | 75.0 | 75.0 | 86.0 |

# VPR 560 WITH SORPTION EXCHANGER

If the unit's primary function is cooling, it is advantageous to order the unit with a sorption exchanger.
The following design data is calculated on the basis of a sorption exchanger.

## Cooling data

| | |
|---|---|
| RPM | |
| Air flow | 5600 m³/h |
| Rotary heat exchanger | 20.56 kW |
| Condenser | 21 kW |
| Total cooling capacity | 41.56 kW |
| Supply temperature | 18.9 °C |
| Compressor power consumption | 8.82 kW |
| COP | 4.71 |

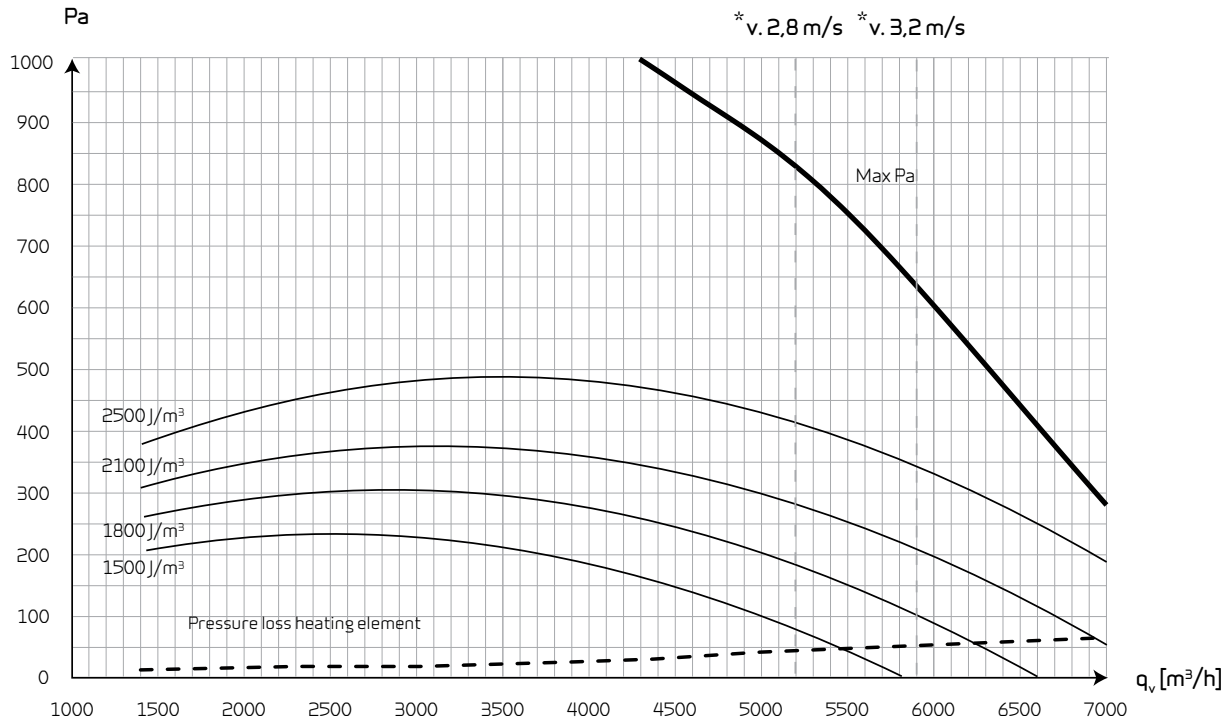
## Capacity

Max Pa capacity of standard unit, $P_{t,ext}$ as a function of $q_v$, with regard to SFP-values.

SFP-values according to EN13414-7 for a standard unit with ISO ePM10 >60% (M5) & ISO ePM1 50% (F7) filters and no heating element.

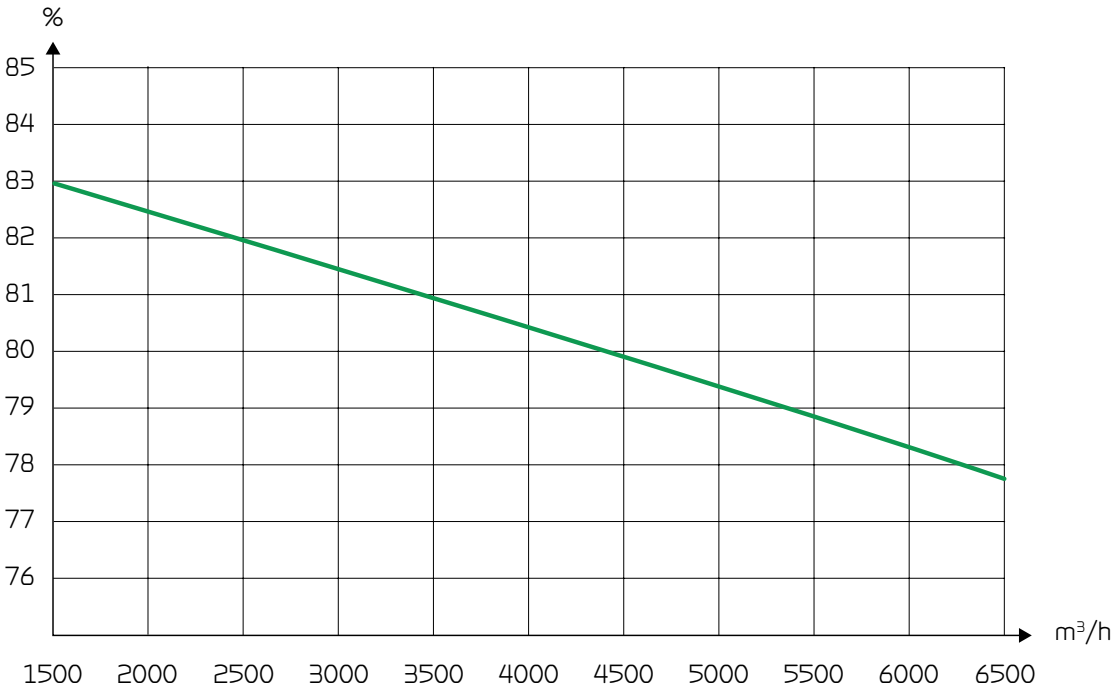
* Airflow speed above evaporator is measured at meters per second.

**Attention! The SFP values are measured and stated as a total value for both fans.**



# Temperature efficiency

Temperture efficiendy for rotatry heat exchanger according to EN308 (dry).




# Sound data

Sound data for $q_V$ = 5600 m³/h and $P_{t, ext}$ = 250 Pa according to EN 9614-2 for surfaces and EN 5136 for ducts.

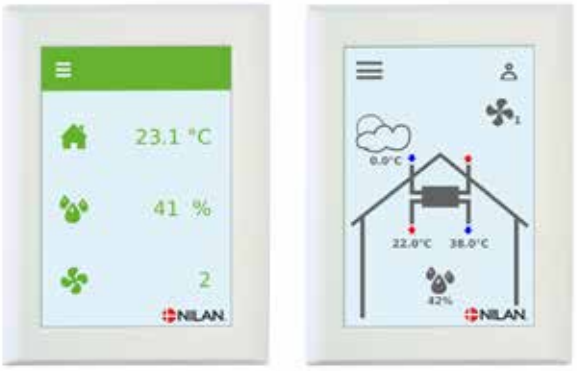
Sound output level $L_{WA}$ drops with falling air volume and falling back pressure.
Sound output level $L_{pA}$ at a given distance will depend on acoustic conditions in the place of installation.

### Sound output level ($L_{WA}$)

| Oktave band Hz | Surface dB(A) | Supply air dB(A) | Extract air dB(A) | Fresh air dB(A) | Discharge air dB(A) |
|---|---|---|---|---|---|
| 125 | 59.5 | 77.5 | 69.0 | 68.5 | 77.0 |
| 250 | 52.8 | 80.7 | 72.2 | 71.8 | 79.9 |
| 500 | 42.6 | 80.8 | 67.9 | 67.6 | 80.0 |
| 1,000 | 30.4 | 79.7 | 56.9 | 55.4 | 79.0 |
| 2,000 | 30.0 | 75.2 | 46.9 | 45.0 | 74.3 |
| 4,000 | 28.0 | 68.7 | 34.9 | 33.0 | 67.8 |
| Total ±2 dB(A) | 60.0 | 86.0 | 75.0 | 75.0 | 86.0 |

# AUTOMATION

## CTS602i Control




The VPR 120-560 range is controlled using its CTS 602i HMI touch panel, featuring a wide range of functions, e.g., menu-controlled operation, weekly programme settings, filter monitor with timer, fan speed adjustment, summer bypass, post-heating element control, error messages etc.

The CTS 602i comes with factory settings, including a default setting which can be customised to operational requirements to achieve optimum operation and utilisation of the system.

## Nilan User APP

A Nilan gateway is fitted as standard on the VPR 120-560 range, where the user can gain access to the unit via a Nilan User APP. The APP enables the user to access and monitor the current operation, also from the outside of the property.

The APP allows you to adjust the default settings of, for instance, room temperature, fan speed level and the humidity control system.

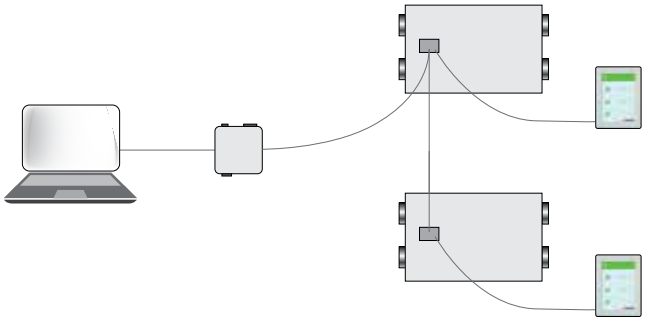
The APP shows when filter change is next due. This is an important function, and you are automatically notified when filters need changing or an alarm is triggered.

It also provides you with useful trend curves so you can follow the operation of the unit for the previous week with regards to, for instance, room temperature or humidity level.

Using a LAN connector, you connect the gateway to the Modbus of the unit and then to the user's internet router via a LAN or a WiFi connection. This creates a secure cloud connection between the unit and the smartphone.

## External communication

The CTS 602i control unit communicates by default with Modbus RTU RS485 communication. A CTS system using this form of communication can easily be connected to the unit.



Nilan units have an open Modbus communication, i.e. not only can the unit be monitored, but its operation can also be set in the same way as it can via the operating panel.

The protocol is set up by default for a Modbus RTU 30 address, but can be set to a value between 1 and 247.

A Modbus converter allows you to connect one or more units to a computer to monitor and control the unit.

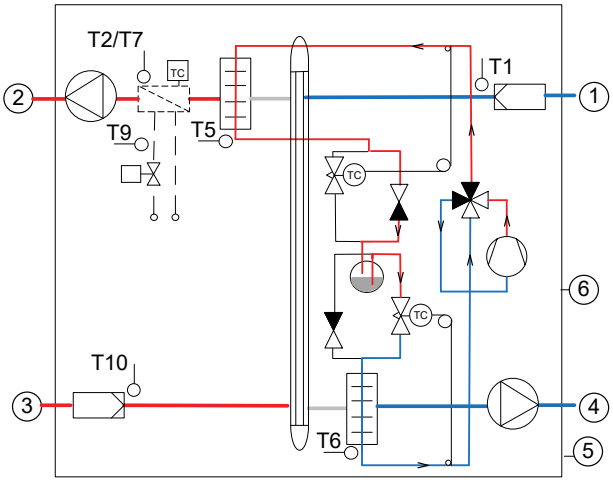
| Functions overview | | + Standard<br>- Accessories |
|---|---|---|
| Alarms | Description of errors indicated with alarms. Alarm log displaying the latest 16 alarms. | + |
| Joint alarm | The CTS602 control system has an output signal that is activated in the case of an alarm. It can be connected to, for example, external automation. | |
| Filter monitor | Filter alarm with timer that can be set to 30/90/180/360 days. | + |
| Data display | An overview of the current operation with regards to temperatures, fan speed level etc. | + |
| Week program | The CTS602 control system has 3 week programs that can be set individually (the default setting is "off"). | + |
| Humidity control system | Enables a higher or lower degree of ventilation at a high/low level of humidity. | - |
| Air quality | Enables you to adjust the degree of ventilation depending on the $CO_2$ level in the air. | - |
| Winter low | You can prevent a low level of humidity in the dwelling by activating low ventilation at low outdoor temperatures. | + |
| Temperature regulation | Enables you to control the operation of the unit in accordance with the room temperature. | + |
| Summer/winter mode | You can set the unit to operate in summer or winter mode. | |
| Language | You can choose from more than 10 languages in the control panel. | + |
| User levels | The menu in the control panel is divided into 3 user levels: User/Installer/Factory. | + |
| User selection 1 | Enables you to override the operating mode via an external potential free signal. | + |
| Electrical after-heating element | An electrical after-heating element allows you to control the supply air temperature. In this way the unit can help heat the dwelling. | - |
| Water after-heating element | A water after-heating element allows you to control the supply air temperature. In this way the unit can help heat the dwelling. | - |
| Frost protection | In order to protect a potential water after-heating element against frost damage, the unit will stop and display an alarm if the temperature in the water after-heating element becomes too low. | - |
| Air exchange | Stepless setting of four fan speed levels. The supply air and the extract air can be set individually. | + |
| De-icing | Based on temperature, this automatic function de-ices the counterflow heat exchanger if ice has formed within it. | + |
| Room low | Safety function that will cause the ventilation unit to stop if the heating system for the dwelling fails. This will prevent the unit from cooling the dwelling even further. | + |
| External heating | The ventilation unit can control an external heat supply in accordance with the current room temperature. | + |
| External fire automation system | You can connect the ventilation unit to an external fire automation system or to a fire thermostat. This will signal to the unit whether to stop or continue operation. | + |
| Integral fire automation system | The ventilation unit is available with an integral fire automation system that can control fire and smoke dampers. | - |
| Pressure sustaining regulator | You can install a pressure sustaining regulator on the side of both the extract air and the supply air. | - |
| Delayed start-up | You can activate a delayed start-up of the fans if you install, for instance, a shut-off damper. | + |
| Restore settings | You can save the current settings and subsequently restore them if, for instance, the user has altered the settings on the unit. You can also reinstall the default settings. | + |
| Manual operation | Different functions can be tested manually. | + |
| Energy saving function | You can activate a power saving function of the operation. | + |
| Modbus | You can set the Modbus address of the unit. The default setting is 30. | + |
| Data logging | It is possible to log the operational data of the unit every 1 - 120 min. Alarms are logged when they occur. | + |
| Control panel | You can choose from 2 different images for the main screen. | + |

You can find further information about all the functions in the Software and Installation instructions for the unit.

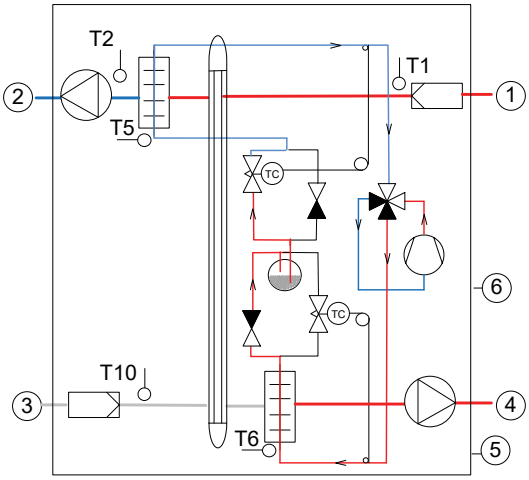
# AUTOMATION

## Functional diagrams

### Heating




### Cooling




**Connections**

1: Fresh air
2: Supply air
3: Extract air
4: Discharge air
5: Condensate drain
6: Electric and water heating

**Automatik**

T1: Outdoor air sensor
T2/T7: Supply air sensor
T9: Heating element frost protection
T5: Capacitor sensor
T6: Evaporator sensor
T10: Room sensor


15%
SUCCESS
MARKETING
IDEAS

# ACCESSORIES

## Electrical after-heating element

The electric heating element is prepared for mounting internally in the fan unit VPR and is equipped with a binary power distribution.

## Water after-heating element

With a water after-heating element you can increase the supply air temperature to the desired level. Water-heater can be built into the system and comes with the necessary sensors. The water-heating element is controlled using Danfoss Actuator, which is connected to the plant. The unit can also control external heating elements.

## Shut-off damper

Damper for external installation is provided in a set of two, with attached servomotor.

## $CO_2$-control

Integrated $CO_2$ control can be included in the unit, to control the ventilation according to a defined $CO_2$ level in the extracted air.

## Humidity control

Integrated humidity control can be ordered for the unit, to control the ventilation according to the relative humidity in the extracted air.

## Pressure regulation

The motor for the extraction and/or air intake fan can be regulated by one or two pressure transmitters mounted in the extraction and/or supply air duct. In the standard version, the pressure transmitters are delivered with a 5-m cable, including power supply.

## Pressure-regulated filter alarm

Measures the pressure drop across the filter and alerts when the filter is to be replaced.

## Water trap with ball

To prevent "false" air from being sucked into the unit via the condensate drain, a water trap must be established. When there is water in the condensate drain, the water trap works very well, but in the summer months, when there is no condensation of the extract air, the water trap will dry out and no longer prevent "false" air. A Nilan water trap with ball ensures against "false" air throughout the year.

## Vibration absorbers

Vibration dampers (sylomers) for placement under the unit ensure effective damping of the vibrations of the unit against the substrate.

## Handle with lock cylinder

If you wish to be able to lock the service doors of the unit, it is possible to purchase handles with lock cylinder and key.

## Top cover

If the unit is to be installed outside, it is possible to order a top cover for protection against rain and snow.

## Extension cable HMI user panel for 8-pole plug

The user panel for the ventilation unit is connected to a short cable so that it can be mounted near the unit. The panel can also be mounted on the front of the unit.

If the unit is located in a place where you cannot immediately see the user panel, e.g. in a technical room or on a ceiling, you can order a 10 or 20 m extension cable with connectors so that the user panel can be placed in a place where the user can see it.

It is important that the user panel is placed so that the user can see any alarms such as filter alarm.

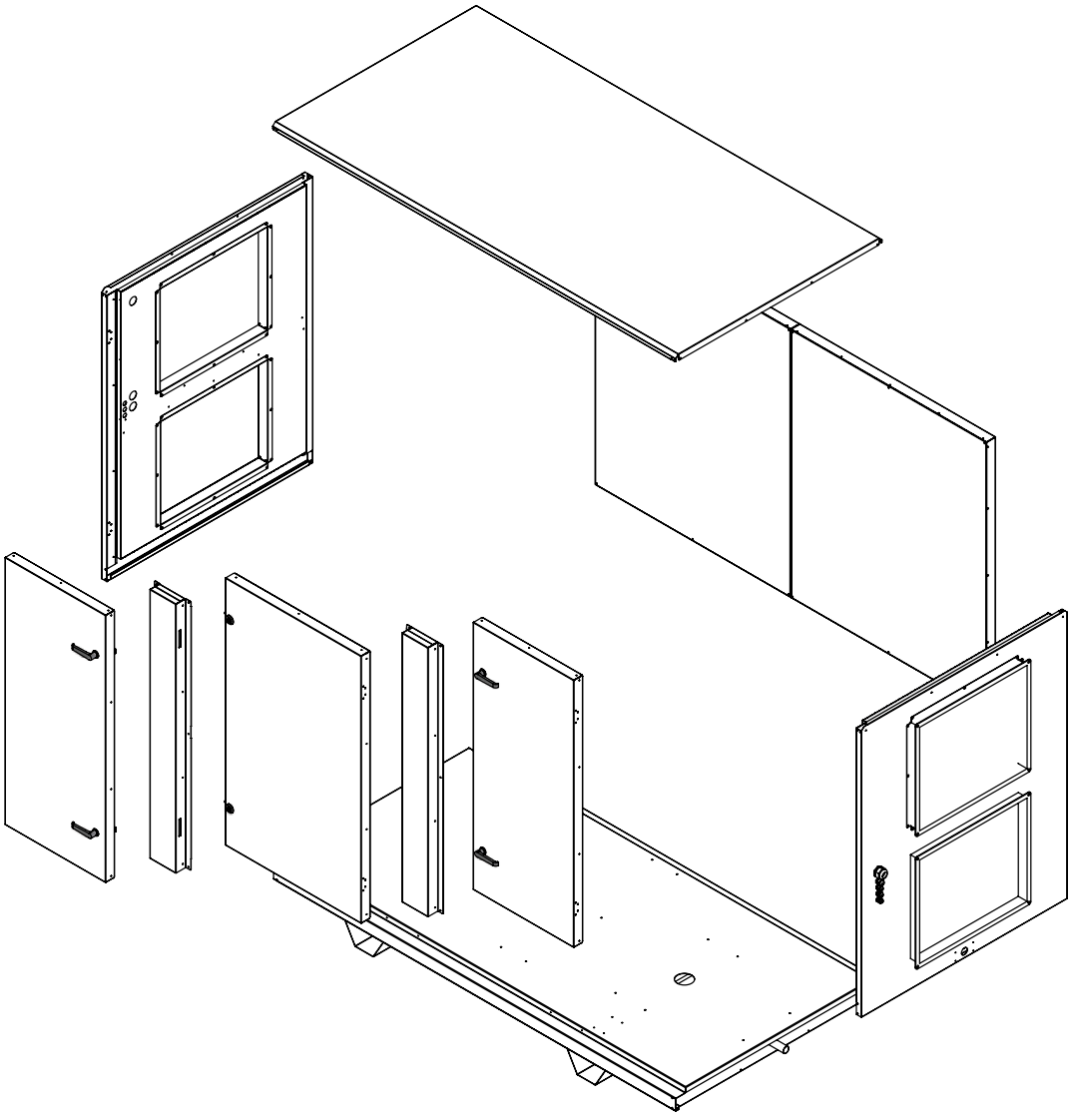
# ON-SITE INSTALLATION

## Split-unit

If there is insufficient space to bring in the unit in full size, VPR units for on-site installation are available.

This means that the unit is delivered unassembled on pallets. The parts are carried into the building where the unit is to be located. Nilan will send two technicians to assemble the unit on-site.

Once the unit has been assembled, it will be subject to quality and functional testing.



# DELIVERY AND HANDLING

## Transport and storage

VPR comes in factory packaging that protects it during transport and storage.
VPR must be stored in a dry place in its original packaging until installation.

The packaging should only be removed immediately prior to installation.

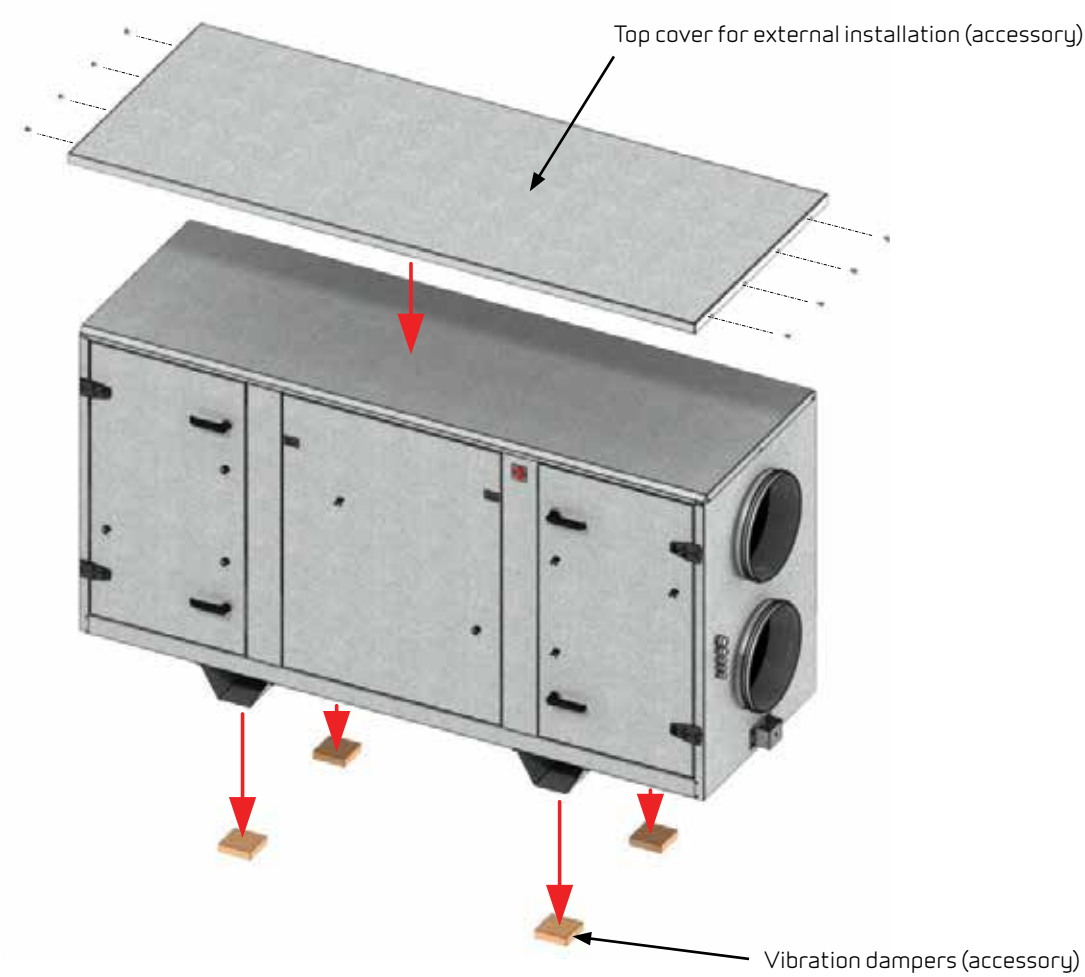
## Installation conditions

On installation, allowance should be made for future service and maintenance. We recommend a minimum free space in front of the unit of 81 to 124 cm.

It must be ensured that the unit is level, due to the condensation drain. The condensation drain requires clearance of minimum 12.5 cm under the drain spout.

The unit is quiet, with low vibration, although account must also be taken of any vibration that might be transmitted to the building fabric.

It is recommended to place the unit on vibration dampers, in order to separate the unit from the base.



# INFORMATION FROM A TO Z

Nilan develops and manufactures premium-quality, energy-saving ventilation and heat pump solutions that provide a healthy indoor climate and low-level energy consumption with the greatest consideration for the environment. In order to facilitate each step in the construction process - from choosing the solution through to planning, installation and maintenance - we have created a series of information material which is available for download at www.nilan.dk.

**Brochure**

General information about the solution and its benefits.


**Product data**

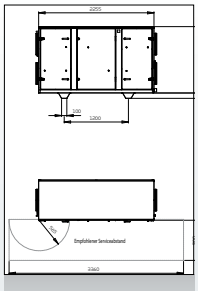
Technical information to ensure correct choice of solution.


**Installation instructions**

Detailed guide for installation and initial adjustment of the solution.


**User manual**

Detailed guide for regulation of the solution to ensure optimum day-to-day operation.



**Drawings**

Tender documents and 3D drawings are available to download for planning purposes.

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Visit us at www.nilan.dk to find out more about our company and solutions, download further information and find your nearest dealer.

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