

PRODUCT DATA

COMPACT P - SERIES BY NILAN



Domestic



Passive
heat recovery



Active
heat recovery



Ventilation
< 300 m³/h



Comfort
heating



Comfort
cooling



Sanitary
hot water
production



Heating

THE VENTILATION AND HEATING SOLUTION OF THE FUTURE

Compact P is developed for future homes. The system can be used in all types of low-energy and passive buildings, but can also ensure low energy consumption in any home or flat.

Top-class efficiency

Compact P is equipped with the latest technology, comprising a highly-efficient counterflow heat exchanger, as well as a special designed heating pump that utilises the residual energy in the extracted air.

Overall, the system yields top-class performance. The counter flow heat exchanger has a temperature efficiency of up to 95%, combined with a heat pump that ensures a high supply air temperature and very low costs to production of sanitary hot water.

The integrated AIR 9, GEO 3, GEO 6 and GEO 9 heat pumps utilise the latest compressor technology to ensure that the heat output is continuously matched to the home's requirements.

Many benefits

The compact design and numerous functions combined in one unit ensures minimum installation, space requirements, as well as rapid and easy installation. The latest technology and high-quality components not only provide an optimum indoor climate, but also low annual operating costs, making this a sound investment in every respect.



ONE UNIT - SEVERAL SOLUTIONS

COMPACT P SERIEN BY NILAN

Since Compact P is module-based, it offers not just one, but several solutions. The unit can be combined with a geothermal or an outdoor air heat pump that can be fully integrated into Compact P. As either a supplementary or total heating solution, Compact P combines up to five functions:

- Ventilation with active and passive heat recovery
- Comfort heating
- Comfort cooling
- Sanitary hot water production
- Heating of the home (with AIR 9 or GEO 3/6/9)

Compact P

- Ventilation with heat recovery
- Sanitary hot water production

Compact P can ventilate up to 300 m³/h and recovers more than 100 % of the energy from the extracted air via a counter flow heat exchanger that is combined with a heat pump.

The heat pump produces hot water and contributes to heating the supply air.

The heat pump has a reversible cooling circuit, so that in the summer it can cool the intake air while it also producing hot water.

Compact PEK has a built in electrical kettle to heat the home via the central heating system.



Compact P AIR 9

- Ventilation with heat recovery
- Sanitary hot water production
- Space heating via an air/water heat pump

Besides ventilating the home and producing hot water, Compact P AIR 9 can also heat the home via underfloor heating or low-energy radiators.

AIR 9 is an air/water heat pump with a high heat output and a low energy consumption.



Compact P GEO 3/6/9

- Ventilation with heat recovery
- Sanitary hot water production
- Space heating via a geothermal/water heat pump

Besides ventilating the home and producing hot water, Compact P GEO 3/6/9 can also heat the home via under floor heating or low-energy radiators.

GEO 3, GEO 6 and GEO 9 are geothermal heat pumps that both have a high output and low energy consumption compared to their sizes.



DELIVERY AND HANDLING

Transport and storage

Compact P comes in factory packaging that protects it during transport and storage.

Compact P must be stored in a dry place in its original packaging until installation. The packaging should only be removed immediately prior to installation.

Lifting cover

Lifting cover for Compact P makes it possible to lift Compact P off the pallet without making any heavy lifts and transport the system around in the home. Detach the filter box and the system fits under an average inner door.



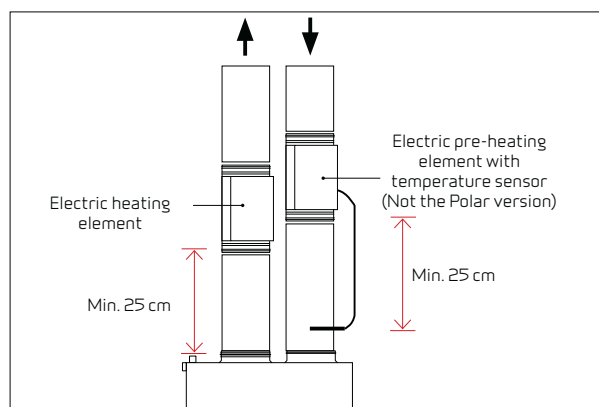
Installation conditions

During installation, future service and maintenance should be taken into account. We recommend a minimum gap in front of the unit of 60 cm.

The unit must be installed level for the sake of the condensate drain.

Installation of electric heating element

Electric heating elements (accessories) are fitted in the duct. The heating element must be insulated using fire-resistant insulation material. The electric heating element must be connected by an authorised electrician.



COMPACT P AIR 9

Product description

Compact P AIR 9 has the same benefits and functions as Compact P, but also has an integrated air/water heat pump, with connection to waterborne underfloor heating or low-temperature radiators for central heating.

The solution consists of an integrated interior section in Compact P, as well as an exterior section that is easy to connect.

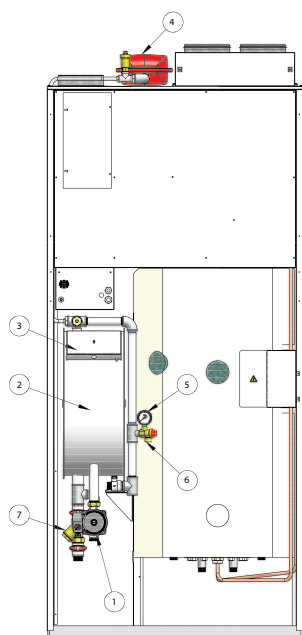
AIR 9 is delivered with a reversible heat pump, which also makes the unit capable of cooling.

AIR 9 is very silent and can be placed without disturbing its surroundings. During summer, when only hot sanitary water is needed, the fan is limited, reducing the noise level. This limit occurs when the outdoor temperature exceeds 7 °C and limiting the compressors output to a maximum of 60 %. These criteria can be set individually.

Variable
Compressor

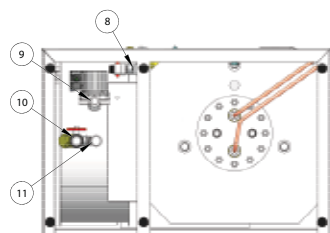


Inside unit for Compact P AIR 9



Front

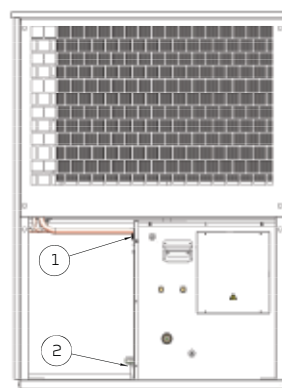
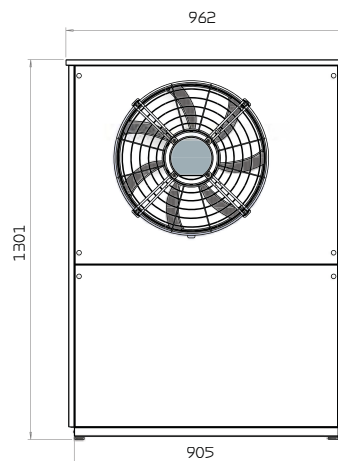
1. Integrated circulation pump interior/ exterior sections 1"
2. 50-litre buffer tank
3. 2x3 kW supplementary electrical heating
4. Pressure expansion vessel (central heating circuit)
5. Manometer (central heating circuit)
6. Safety valve, 2.5 bar (central heating circuit)
7. Particle filter



Base

8. Flow, central heating 3/4"
9. Flow to exterior section 1"
10. Return flow from exterior 1"
11. Return flow from exterior 3/4"

Outside unit for Compact P AIR 9



1. Flow 1"
2. Return flow 1"



Effective and quiet ventilator with "owl wings".

Summer/winter setting ensures an extra low sound level in the summer.

Low-energy EC-motor.

AIR 9 exterior unit is made from white powder-coated aluzinc steel plate (RAL 9016).

Powder-coated condensation tray prevents "acid water" and leads off the condensation.

A heating cable for frost protection of the condensation drain is included.

Adjustment screws for levelling

AIR 9 is controlled via the same CTS 700 touch panel as is used for Compact P.



A large, well-dimensioned evaporator ensures a good output.

AIR 9 is reliable right down to -22°C

An inverter-controlled DC compressor ensures a variable output and low energy consumption.

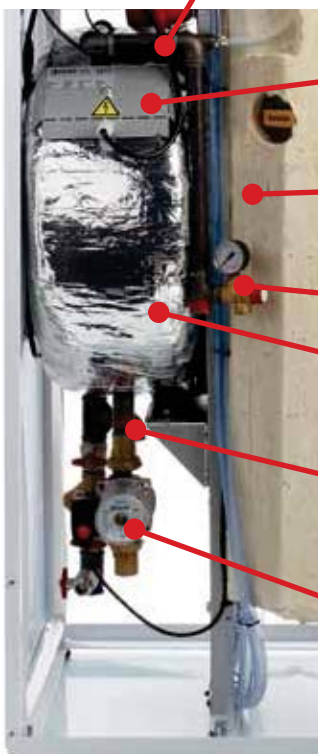
Hermetically-sealed cooling circuit.

The aggregate can therefore be installed without requiring a cooling technician.



AIR 9 interior unit is integrated in Compact P.

This saves space and ensures a neat and tidy installation.



Supplementary electrical heating of 2 x 3 kW
Ensures indoor heating during periods of severe frost.

8-litre expansion tank for central heating.
Placed on top of the system.

Safety valve to the central heating system.

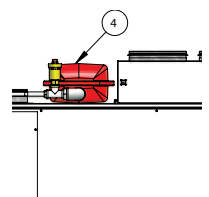
Manometer showing the current pressure in the central heating system.

50-litre buffer/charge circuit.
The central heating can thus be activated as required.

Filling tank for central heating.

Soil filter.

Integrated circulation pump to AIR 9 (exterior unit).



TECHNICAL DATA

Technical specifications

Dimensions (inside part) (W x D x H) - Integrated in Compact P	550 x 300 x 1100 mm
Weight (inside part)	55 kg
Control	CTS 700
Dimensions (outside part) (W x D x H)	962 x 542 x 1301 mm
Weight (outside part)	125 kg
Supply voltage (inside part)	400/230V 3L + N+PE, 50Hz
P _{MAX} (inside part)	6.1 kW
Fuse size (inside part)	16 A
Standby electricity consumption	2.5 W
Supplementary electrical heating	2 x 3 kW
Buffer tank (integrated)	50 L
Design pressure (central heating)	4 bar
Opening pressure safety valve (central heating)	2.5 bar
Expansion vessel (central heating)	8 Litre
Booster expansion vessels	0.5 bar G
Max. air volume	3400 m³/h
Variable compressor	30 - 100 %
Tightness class fan	IP54
Supply voltage (outside part)	230V 1 N+PE, 50Hz
P _{MAX} (outside part)	3.3 kW
Fuse size (outside part)	16 A
Rated output, (max/min) A-Pump	31/99 W
Rated output, (max/min) A-Pump	0.2/0.63 A
Condenser pressure loss (central heating)	15 kPa/0.42 l/s
Central heating connection	3/4"
Refrigerant	R410A
Refrigerant filling	3,4 kg
Pressostat low pressure (on/off)	2.2/3.4 bar G
Pressostat high pressure (on/off)	42/33 bar G
Operating temperatures	-22 °C → 50 °C
Central heating, flow temperature	25 °C → 45 °C
Connection dimension	1"
Heat output P _H with variable compressor at 7°C/35°C, according to EN 14511:2012 (max. 5400 RPM)	8,4 kW
Heat output P _H with variable compressor at 2°C/35°C, according to EN 14511:2012 (max. 5400 RPM)	6,7 kW
Heat output P _H with variable compressor at -7°C/35°C, according to EN 14511:2012 (max. 5400 RPM)	5,7 kW
Heat output P _H with variable compressor at -15°C/35°C, according to EN 14511:2012 (max. 5400 RPM)	4,5 kW
Heat output P _H with variable compressor at 7°C/45°C, according to EN 14511:2012 (max. 5400 RPM)	7,8 kW
Heat output P _H with variable compressor at -7°C/45°C, according to EN 14511:2012 (max. 5400 RPM)	5,4 kW
SCOP testet according to EN 14825:2012*	5,11
P _{design} (t _{out} -10°C)	5,21 kW

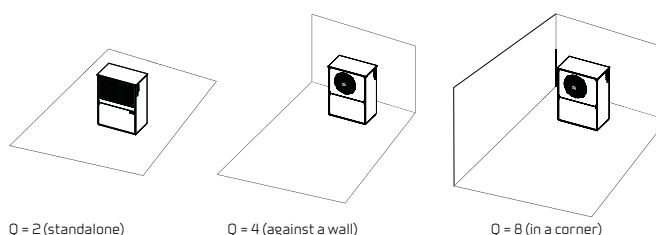
*SCOP (Seasonal COP) is for "low temperature use, average climate, defined flow, reversible"

Sound

The sound from the AIR outside part reverberates depending on the placement around the house as well as the substrate on which the unit stands and the surroundings. The below is measured for hard substrate.

Sound effect L_{wa} dB(A) 7/6 °C - 30/35 °C = 46 dB(A) according to EN14511, EN 12102, EN3743/1 - Ecodesign 811/2013 and 813/2013.

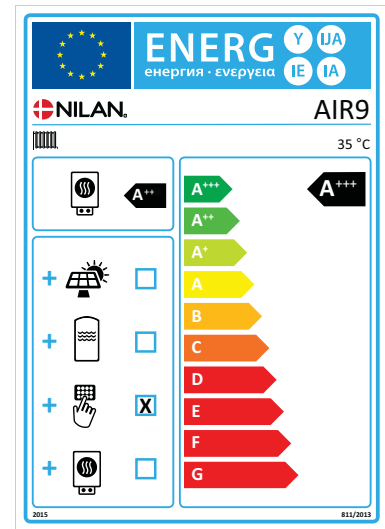
Sound pressure L_{pa} dB(A) according to EN13487:2003



Distance in meters	1	2	6	10	21
Position factor 2	38	32	22	18	12
Position factor 4	41	35	26	21	15
Position factor 8	44	38	28	24	18

Heat pump for space heating

Model	AIR 9
Air-to-water heat pump	Yes
Water-to-water heat pump	No
Brine-to-water heat pump	No
Low-temperature heat pump	Yes
Equipped with a supplementary heater	Yes
Heat pump combination heater	No
Temperature control:	
Model	CTS700
Class	2
Contribution to seasonal space heating energy efficiency	2%



Item	Symbol	Value	Unit
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Rated heat output	P_{rated}	5,21	kW
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Declared capacity for heating for part load at indoor temperature 20 °C and outdoor temperature of T_j

$T_j = -7\text{ °C}$	P_{dh}	4,79	kW
$T_j = +2\text{ °C}$	P_{dh}	2,88	kW
$T_j = +7\text{ °C}$	P_{dh}	1,90	kW
$T_j = +12\text{ °C}$	P_{dh}	2,12	kW
$T_j = \text{bivalent temperature}$	P_{dh}	5,21	kW

$T_j = \text{operation limit temperature}$	P_{dh}	0	kW
For air-water-heating pumps $T_j = -15\text{ °C}$ (if TOL < -20 °C)	P_{dh}		kW
Bivalent temperature	T_{biv}	-10	°C
Cycling interval capacity for heating	P_{cyc}		kW
Degradation co-efficient	C_{dh}	0,94-0,99	

Power consumption in modes other than active mode

Off mode	P_{OFF}	0,01	kW
Thermostat off-mode	P_{TO}	0,005	kW
Standby mode	P_{SB}	0,01	kW
Crankcase heater mode	P_{CK}	0	kW

Other items

Capacity control:	Variable compressor Variable indoor water flow		
	Variable indoor temperature adjustment		
Sound power level, outdoors	L_{WA}	46	dB
Emissions of nitrogen oxides	Q_{HE}	1464	kWh

Item	Symbol	Value	Unit
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Seasonal space heating energy efficiency	η_s	206	%
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Declared coefficient of performance or primary energy ratio for part load at indoor temperature 20 °C and outdoor temperature T_j

$T_j = -7\text{ °C}$	COP_d	3,20	
$T_j = +2\text{ °C}$	COP_d	4,95	
$T_j = +7\text{ °C}$	COP_d	6,53	
$T_j = +12\text{ °C}$	COP_d	9,69	
$T_j = \text{bivalent temperature}$	COP_d	2,83	

$T_j = \text{operation limit temperature}$	COP_d	0	
For air-to-water heat pumps: $T_j = -15\text{ °C}$ (if TOL < -20 °C)	COP_d		
For air-to-water heat pumps: Operation limit temperature	TOL	-22	°C
Cycling interval efficiency	COP_{cyc}		
Heating water operating limit temperature	WTOL	45	°C

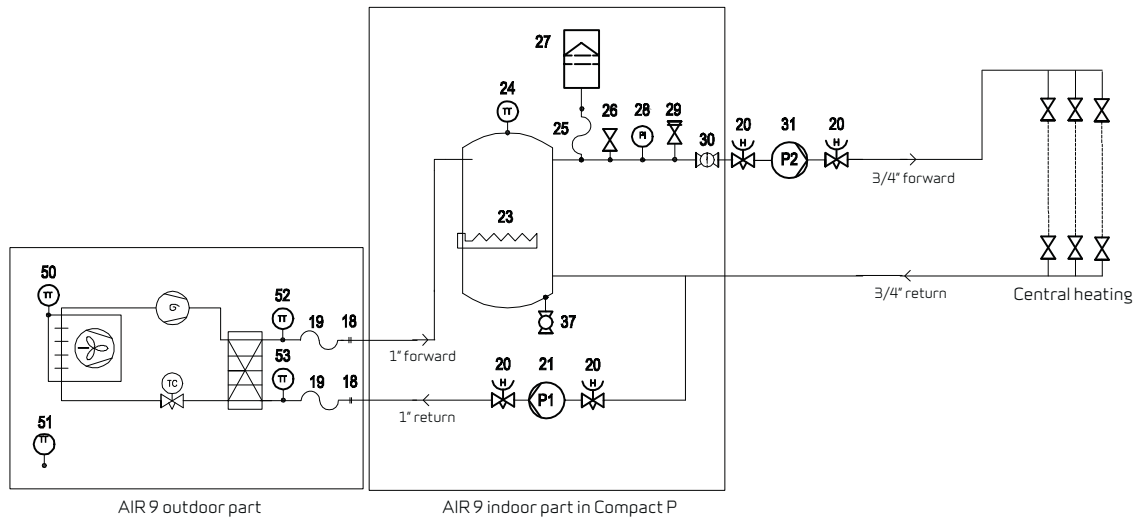
Supplementary heater

Rated heat output	P_{sup}	6	kW
Type of energy input	Electrical		

For air-to-water heat pumps: Rated air flow rate, outdoors		3000	m³/h
For water-/brine-water heat pumps: Rated brine or water flow rate, outdoor heat exchanger			m³/h

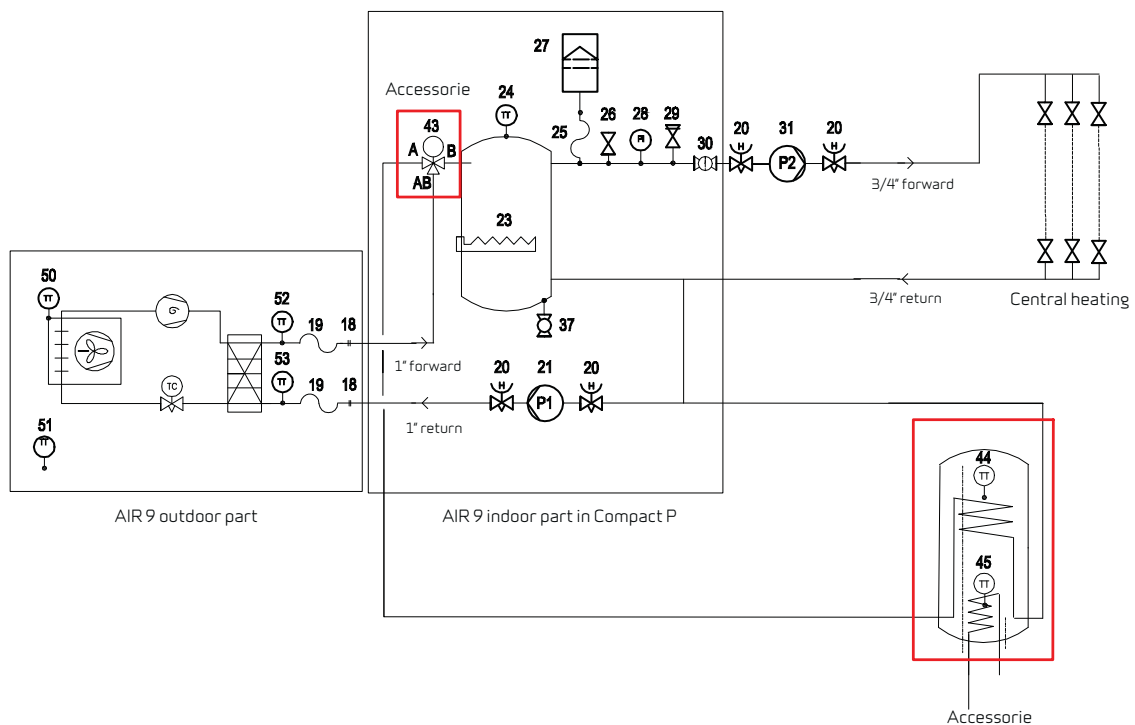
INSTALLATION

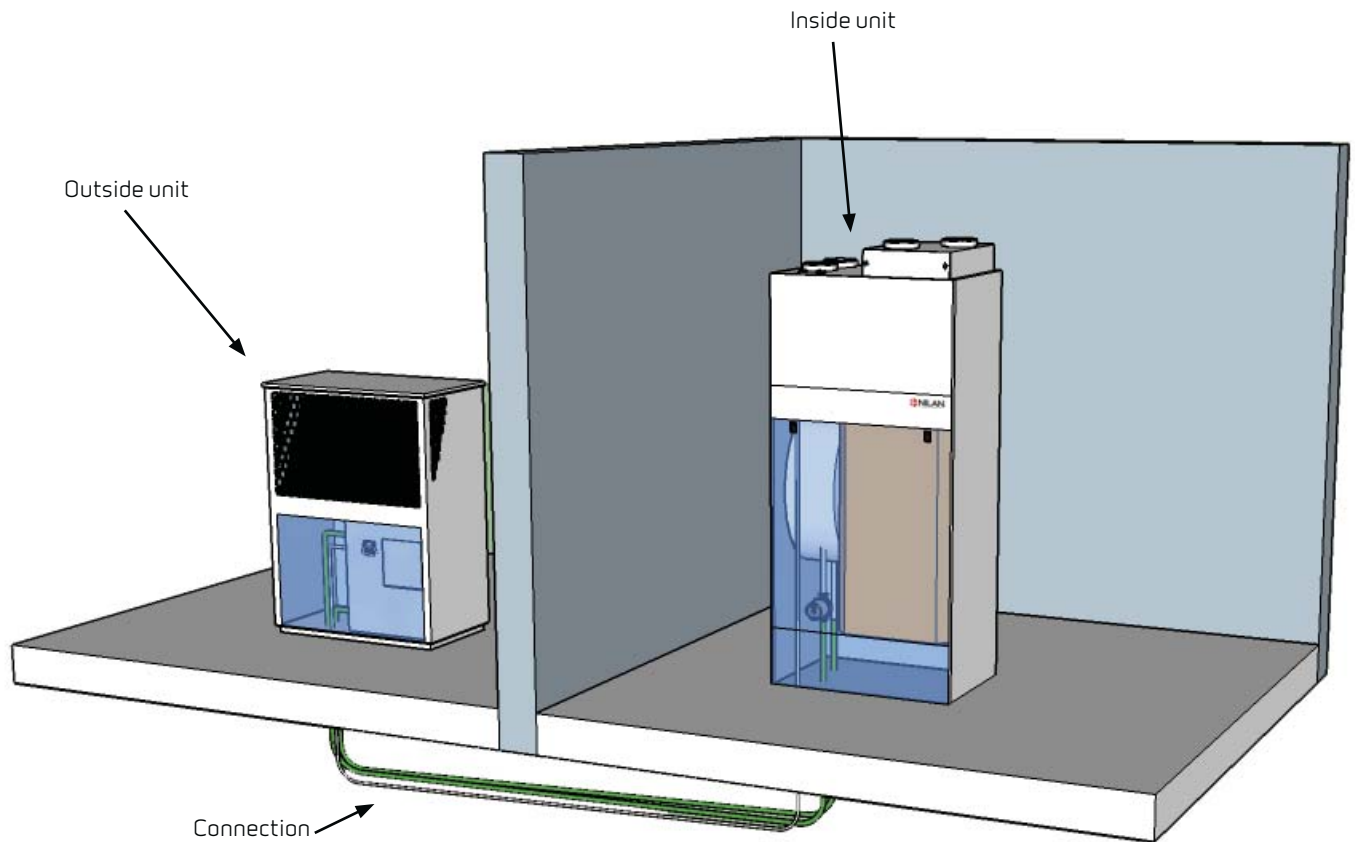
Compact P AIR 9



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|---|---|
| 18 Connection 1" | 28 Manometer |
| 19 Flexihose 1" | 29 Safety valve 2,5 bar |
| 20 Shut-off valve | 30 Shut-off valve with dirt filter |
| 21 P1 circulation pump 130 mm | 31 P2 circulation pump |
| 23 Supplementary electrical heating 2 x 3 kW | 37 Feed tap 1/2" |
| 24 Temperature sensor T18 buffer tank (forward) | 43 3-way valve |
| 25 Flexihose 10 mm | 50 Temperature sensor T23 evaporator |
| 26 Automatic control vent 3/8" | 51 Temperature sensor T20 outdoor temperature |
| 27 Expansion tank 8 litre | 52 Temperature sensor T17 after condenser |
| | 53 Temperature sensor T16 before condenser |

SHW warmwater-tank connected to Compact P AIR 9





Simple installation

AIR 9 is an outdoor air heat pump that is connected to the Compact P interior section via hydraulic tubes and a communication line.

The hermetically sealed heat pump is installed in the outside part, with reliable operation right down to -22°C .

A circulation pump is mounted on the inside part, to pump the boiler water between the outside and inside sections. The circulation pump is a low-energy pump.

There is an integrated frost protection cable to ensure that the condensation drain does not freeze.

The outside part is run by CTS700 automatic controls via the control panel used for the Compact P.

AIR 9 is placed on a stable base, e.g. a cast foundation, and towards the prevailing wind direction.

