

Compress 7001iAW and 7400iAW

Compress Hybrid 7000iAW

## Air to water heat pumps



 **WORCESTER**

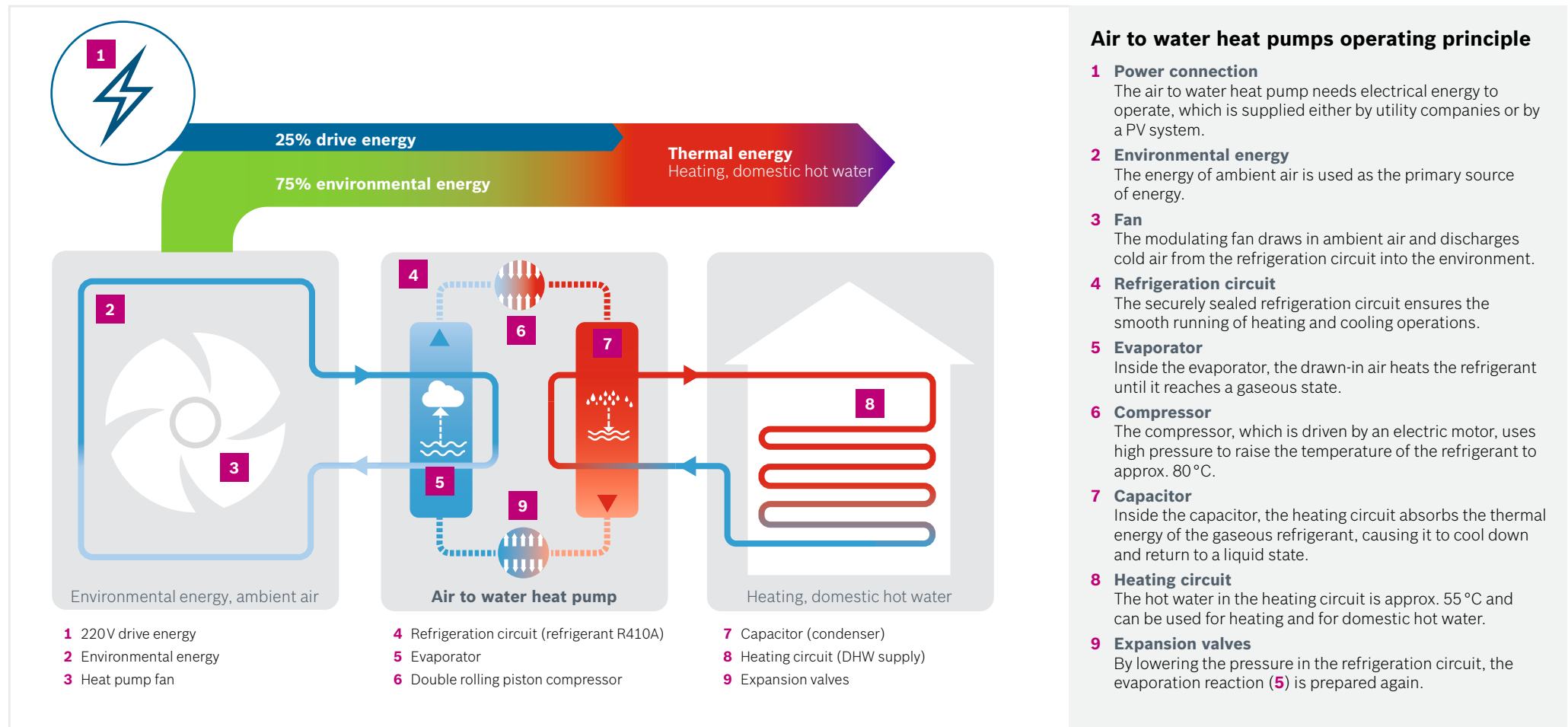
 **BOSCH**

# Engineering

## Air to water heat pumps operating principle

### Space and domestic hot water heating with air to water heat pumps

Air to water heat pumps work on the "refrigerator principle". Whereas a refrigerator draws heat out from its interior and pushes it outside, a heat pump draws heat from outside and pushes it inside the house as heat energy. The ambient air is used as a primary regenerative energy source for space heating and domestic hot water. This equates to approx. 75% environmental energy, with the remaining electricity coming from either the grid or from renewable energy sources.



## Appliance type

# Understanding monoblock versus split system

Air to water heat pumps comprise of either a monoblock and split design. Here's an overview of how they work and perform. Learn more about our Compress 7001iAW and 7400iAW, with a monoblock design, and its many benefits of installation.



### Monoblock design

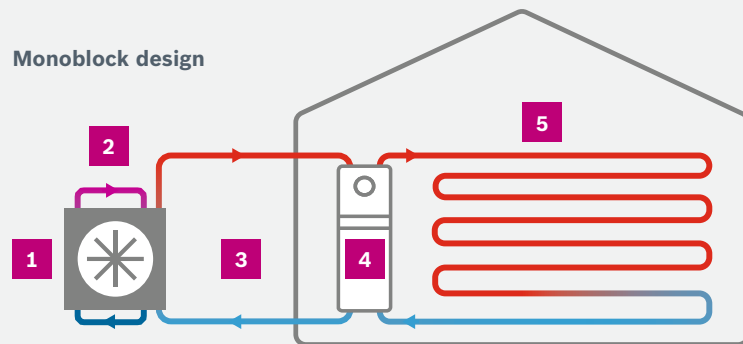
- ▶ Easy installation and quick to integrate into heating hydraulics
- ▶ Complete refrigeration circuit in the outdoor unit
- ▶ Heat production in the outdoor unit (evaporator, compressor, condenser)
- ▶ Heat transfer within the heating circuit in the outdoor unit
- ▶ Low-maintenance, hermetically sealed refrigeration circuit
- ▶ Piping between outdoor unit and indoor unit is a separate hot water circuit
- ▶ Well insulated piping for high efficiency (up to 30m)



### Split design

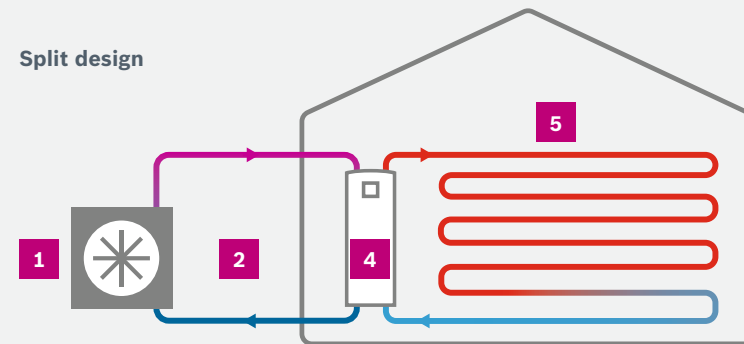
- ▶ Advancement of existing split air conditioning units to heat pumps
- ▶ Refrigeration circuit split across two device units
- ▶ Heat production in outdoor unit (evaporator, compressor)
- ▶ Heat transfer in the indoor unit (condenser)
- ▶ Routine leakage tests on refrigeration circuit
- ▶ Piping between outdoor unit and indoor unit is part of the refrigeration circuit
- ▶ Flexible installation options thanks to long pipes (up to 50m)

### Monoblock design



- 1 Heat pump
- 2 Refrigeration circuit
- 3 Heating circuit for heat pump
- 4 Indoor unit
- 5 Heating circuit for house

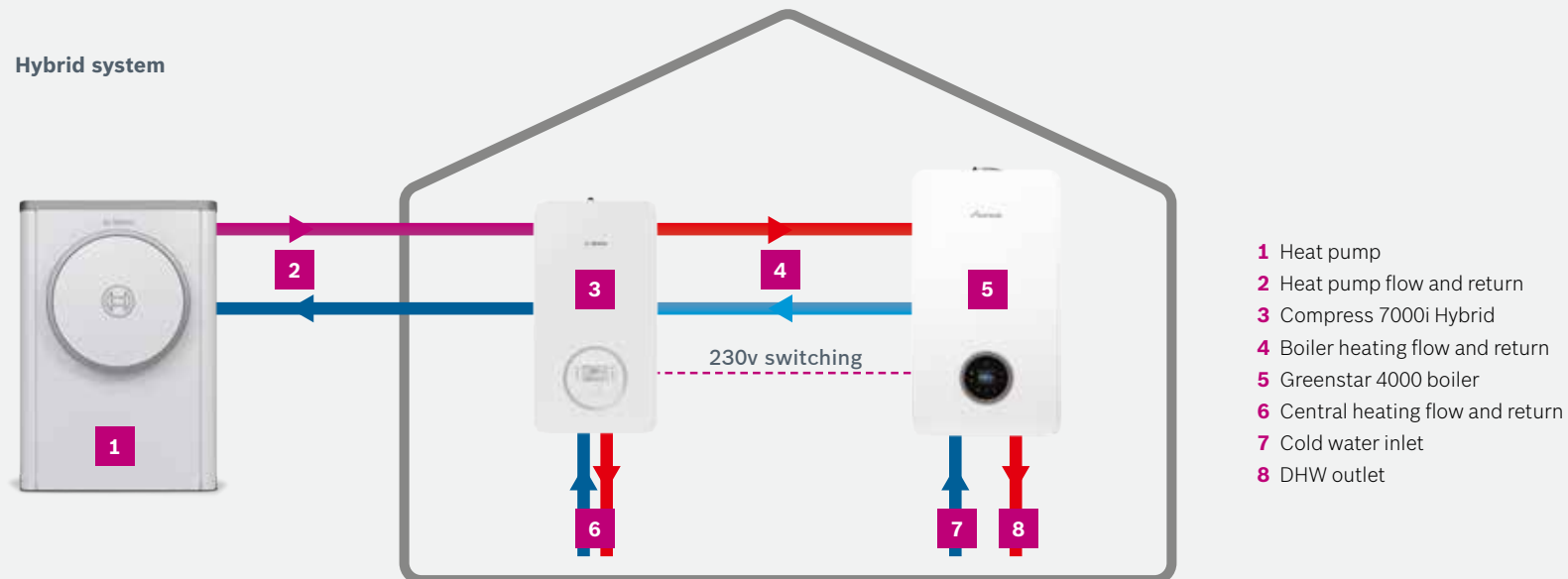
### Split design



# Appliance type

## Hybrid system design

Here's an overview of how the hybrid system will work and perform. Learn more about our Compress Hybrid 7000i and its many installation benefits.



### Hybrid design

- ▶ Works with modulating combi boilers
- ▶ Hot water function solely from combi boiler
- ▶ No buffer tank required
- ▶ Integrated mixing valve allows longer operating time of the heat pump
- ▶ Flexible operation between heating mediums offers higher system efficiency
- ▶ Can be set to run parallel (heat pump and boiler at the same time) or individual (heat pump or boiler) dependent of the conditions the system
- ▶ Weighting of the system can be adjusted dependent on gas and electricity prices

# System

## Compress 7001iAW and Compress 7400iAW system

An air to water heat pump system comprises of an air to water heat pump (outdoor unit) and an indoor unit in various configurations. The hydraulics of the indoor unit are connected to the homeowner's heating and hot water circuit and guarantees a reliable supply of thermal energy.

### Outdoor units

- ▶ Compress 7001i AW outputs between 5 kW and 17 kW
- ▶ Compress 7400iAW outputs 5kW and 7kW
- ▶ Suitable for renovation and new build projects (depending on the building)
- ▶ Heating mode from  $-20^{\circ}\text{C}$  to  $35^{\circ}\text{C}$  (outside temperature)
- ▶ Cooling mode from  $15^{\circ}\text{C}$  to  $45^{\circ}\text{C}$  (outside temperature)
- ▶ Ultra low-noise operation
- ▶ High efficiency due to inverter technology
- ▶ Compatible with electric only and hybrid indoor units



**Compress 7001iAW**



**Compress 7400iAW**

### Indoor units

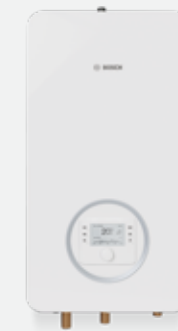
- ▶ Pre-configured hydraulic units for quick and simple installation
- ▶ Stand alone Green Storage WB Range Heat Pump cylinders for all different DHW applications from 150 to 300 litres
- ▶ Wall-mounted unit for system flexibility



**Green Storage DHW Heat Pump cylinder**



**AWE with electric booster heater**



**Compress Hybrid 7000iAW**

# Inside the unit

## Heat pump and Hybrid components

All refrigeration circuit components in the monoblock design are contained in the outdoor unit. This means the heating process and the heat transfer takes place in the outdoor unit. Furthermore, all important components such as the inverter, and control, filter and circuit boards are also housed in the outdoor unit.

The system specific indoor unit can be selected based on the customer's requirements and the operating conditions of the air to water heat pump. Wall-mounted indoor units (AWE) contain the control and the hydraulic components that connect them with the customer's heating and domestic hot water circuits.

### Outdoor unit

- 1 Evaporator
- 2 Modulating fan
- 3 Double rolling piston compressor
- 4 Condenser (capacitor)
- 5 Two electronic expansion valves
- 6 Inverter
- 7 Weather-proof housing made from EPP

### Indoor unit (AWE)

- 8 Integrated IP interface
- 9 High efficiency circulation pump
- 10 Electric booster heater
- 11 Expansion vessel
- 12 Electrical junction box

### Indoor unit (Hybrid)

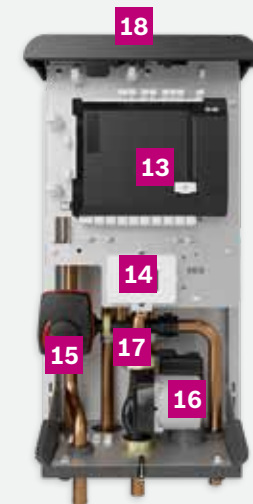
- 13 Control board
- 14 Wiring Centre (230v connections)
- 15 Motorised mixing valve
- 16 High efficiency circulating pump
- 17 Integrated IP interface
- 18 Automatic air vent



Outdoor unit air to water heat pump



AWE indoor unit



Hybrid indoor unit

# System options

## Compress 7001iAW or 7400iAW and AWE Wall hung unit with external DHW cylinder

**Compress 7001iAW**  
5 - 17kW

**Compress 7400iAW**  
5 - 7kW

**AWE indoor wall hung unit**

**Green Storage WB Range Heat Pump cylinder**  
From 150 to 300 litres

**CR10H controller**

**Optional buffer**  
50 litre buffer vessel  
(If required)

**RETROFIT OR NEW BUILD**

 Suitable for majority of residential dwellings

 Flexible hot water options to suit most hot water demands

**System solutions for demanding lifestyles**

The heat demand of a new build or existing property is a decisive factor when choosing the right type of air to water heat pump.

The AWE wall hung indoor unit gives system flexibility, with outputs up to 17kW and domestic hot water external cylinders options to suit more demanding lifestyles.



# System options

## Compress 7000iAW or 7400iAW and Compress Hybrid 7000iAW

**Compress 7000iAW**  
5 - 9kW

**Compress 7400iAW**  
5 - 7kW

**Compress Hybrid 7000i AW**

**Greenstar 4000 boiler**

**CR10H controller**

**RETROFIT OR NEW BUILD**

Suitable for small to medium properties

To suit most hot water demands

**Hybrid system**

The Bosch Compress Hybrid 7000i AW allows the integration of the high efficiency heat pump with the benefits of a gas combi boiler. Dependant on climate conditions, the system can operate to be most effective using either the boiler or heat pump when it will be most favorable to do so.

The system can be set up to run the boiler and heat pump at the same time, or each appliance can be used individually if required.

It is also possible to adjust the weighting of the system in favour of electricity or gas if the price of fuels change.



# Control

## Indoor unit user interface

Our air to water heat pumps are controlled and operated via the indoor unit. The HPC 410 control unit is built into the indoor unit of the air to water heat pump. This makes controlling our entire heat pump system simple. The external CR10H room controller is also available for additional user comfort.



HPC 410 control unit  
(integral to indoor unit)



### CR10H

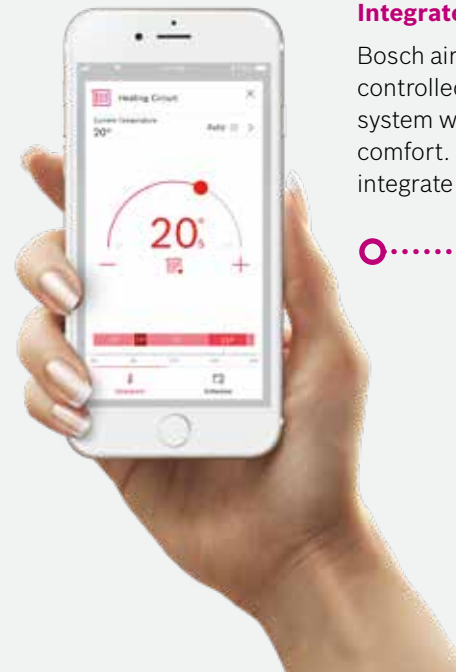
An easy to use remote control with the HPC410 for room temperature setting. Provides error messages from the heat pump and integrated room humidity sensor for room cooling (when selected).



AWE

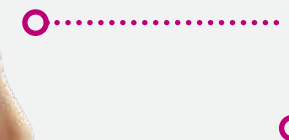


Hybrid



### Integrated internet interface

Bosch air to water heat pumps and air conditioning units can be controlled via the HomeCom Easy app. The app interacts with your system whether you are at home or out and about for continuous comfort. Ongoing development ensures the heat pump will integrate seamlessly into intelligent Smart Home systems.

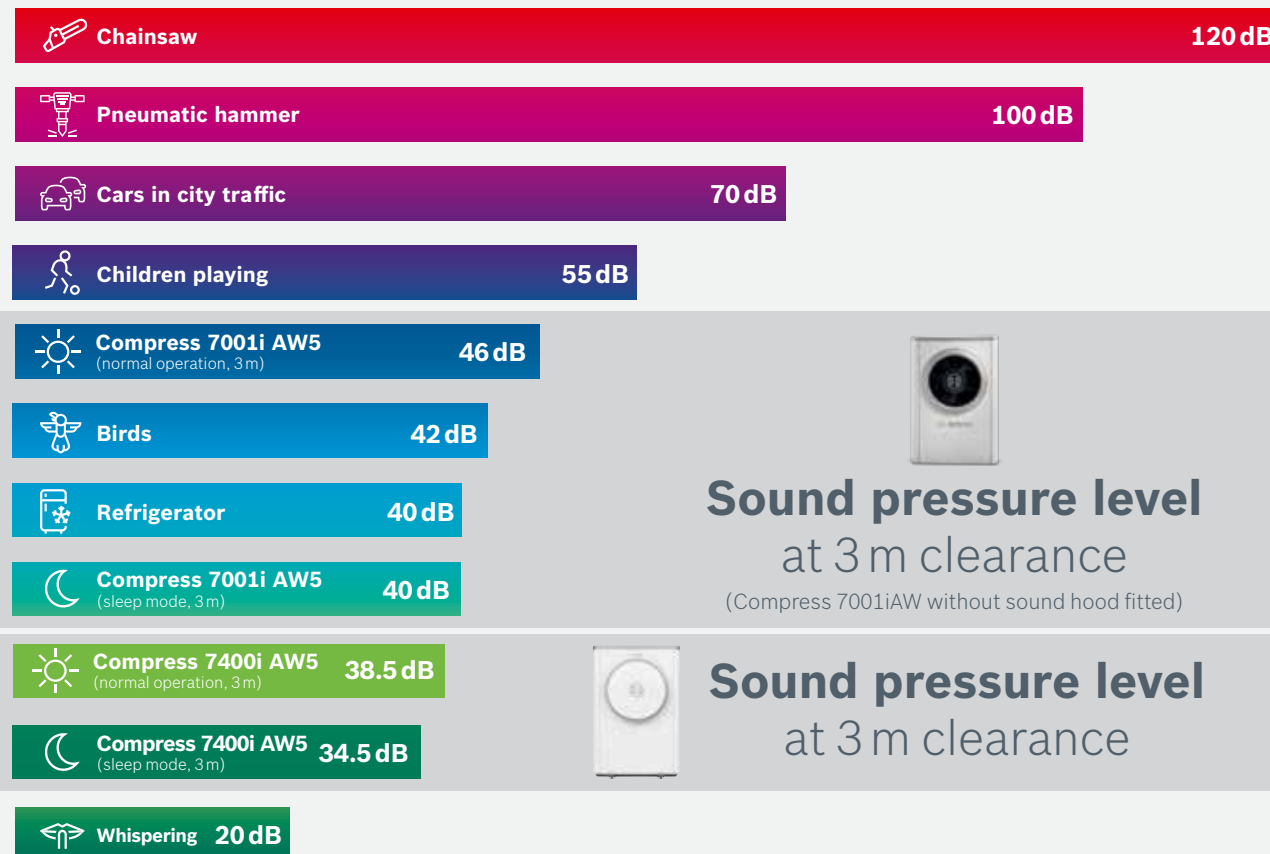


# Information

## Sound insulation optimisation

### Sound levels

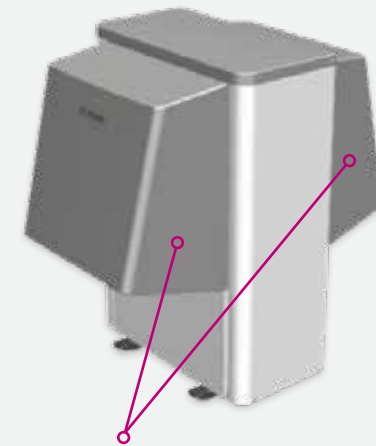
The sound level of outdoor air to water heat pumps installed are measured in decibels. Depending on local regulations, residential areas are sometimes subject to specific noise levels during the day and/or at night. Air to water heat pumps can be optimised to a certain degree to comply with even the strictest noise regulations.



**Sound pressure level**  
at 3 m clearance  
(Compress 7001iAW without sound hood fitted)



**Sound pressure level**  
at 3 m clearance



Sound-insulating hood for noise reduction  
(Optional accessory for Compress 7001iAW)



Sound diffuser to reduce noise

# Information

## Good to know

### SCOP (Seasonal Coefficient of Performance)

In order to operate, an air to water heat pump must be supplied with energy in the form of electrical current. Together with environmental energy, thermal energy is produced to provide heating and domestic hot water.

An important indicator of a heat pump's efficiency is its SCOP value. This value shows how much thermal energy (in kW) the heat pump produces for every kW of electrical current supplied, averaged out across one year.



The Heat Pump KEYMARK is a voluntary, independent European certification mark for all heat pumps, combination heat pumps and hot water heaters (as covered by Ecodesign, EU Regulation 813/2013 and 814/2013). The certification provides third party test measurements but also includes factory production control and quality management audits. The scheme is now accepted by all participating Certification Bodies.

In the UK, certified products are approved in the eligibility list for the Domestic Renewable Heat Incentive (RHI), therefore HP KEYMARK certification can be used to apply for products to be listed on the MID database.

### Outdoor installation

When installing an outdoor unit, minimum distances must be maintained from house walls, pavements and patios. The heat pump should be freely accessible from all sides. Tight or enclosed spaces are best avoided. Unit-specific measurements can be found in the heat pump's installation instructions.

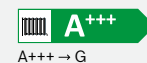
A concrete foundation with drainage must be provided at the installation site of the outdoor unit. **Ensure that cables and heating pipes running from the outdoor unit to the indoor unit are well insulated.**



### Energy consumption labelling

EU directive  
(2017/1369)

Air to water heat pumps are heating systems and, depending on the indoor unit connected, can also function as water heaters. As such, they are subject to the EU-wide energy labelling regulations.



Energy efficiency class A+++ for heating capacity

A+++ → G



Energy efficiency class A for domestic hot water heating

A → G

The labels A → G represent the spectrum of different energy efficiency classes.

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