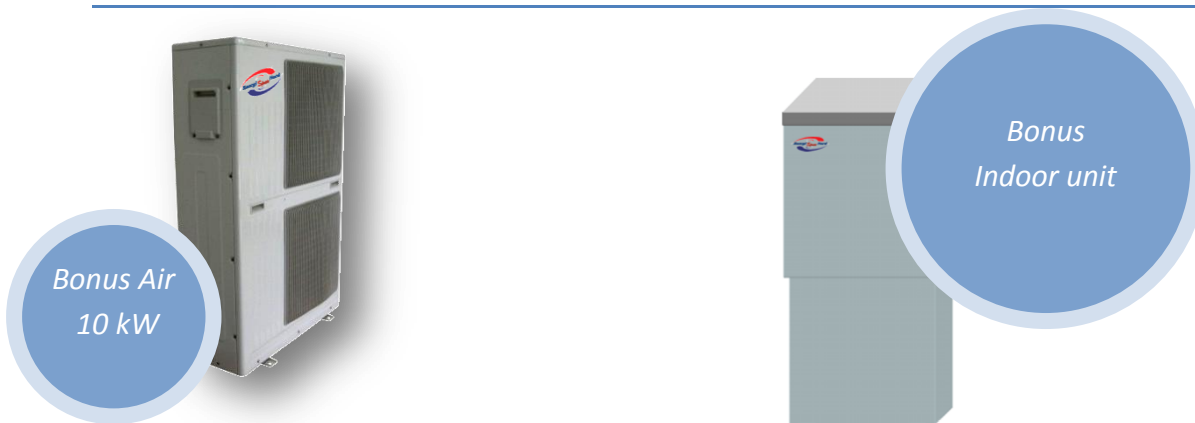


Bonus Air 10 with Indoor unit



Design

Bonus Air 10 is the medium size in a series of air to water heat pumps of similar design and performance. In addition to Bonus Air 10, which has a nominal output power of 10 kW, the nominal powers of 6, 8 and 15 kW are also manufactured. This range covers most of the power demand from small to relatively large buildings. Bonus Air heat pumps provide good heating economy for outdoor temperatures down to -15°C .

The Bonus Air heat pumps take full advantage of the latest technology in all its mechanical parts and they also have a sophisticated control system for optimum performance. This combination provides an efficient heating system with a heat factor of up to 4.0. Bonus Air heat pumps are built for long life and safe operation. All delivered systems are tested before they leave the factory. Running conditions are factory set for quick and easy installation but the conditions can easily be adjusted by suite local climate conditions.

Compressor

Bonus Air heat pumps use high-efficiency scroll compressors that are loaded with modern refrigerant R410A.

Evaporator

The heat pump has extra large evaporator and a high air flow resulting in improved energy absorption and better performance at low temperatures.

Indoor unit

Bonus Indoor unit can work together with the heat pump or as a standalone heating device for both domestic hot water productions as a central heating station. It is factory prepared with all necessary components for quick installation to the water radiator system and the tap water system in the building. The heat pump alone can warm the tank to 55°C which corresponds to approximately 300 L hot water of 40 degrees. This water is secured against bacterial growth by a weekly heating the entire tank volume to 63°C . If more tap water is needed, the tank temperature can be increased to 70°C , which gives approximately 400 L hot water. For these settings, the heat pump will heat the tank to 55°C and then the electric heater will take over to and heat the tank to the set point.

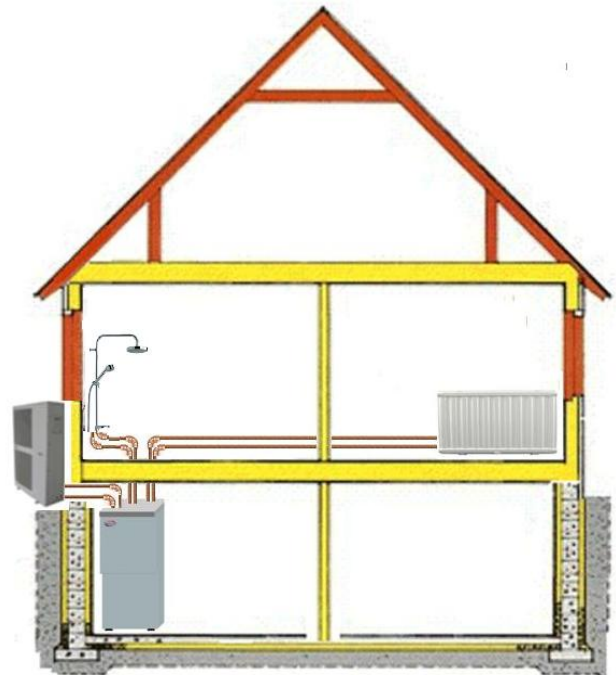
Protection device

Bonus Air Source Heat Pumps has several installed protection systems. That protects the compressor and the outdoor flow system in case of flow failure at ambient temperature below the freezing point.

Bonus Indoor unit

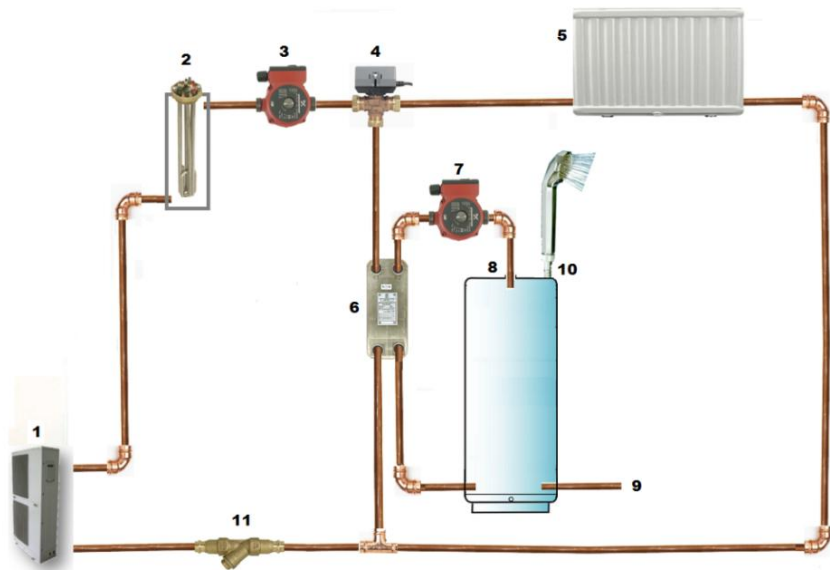
The indoor unit is connected to the water radiator system in the house and to the tap water pipe lines. The Indoor unit has all the components for a complete heating system, and these are regulated and controlled by the system microprocessor and associated control panel. The heat pump is water connected to the indoor unit.

The Heat pump is controlled by ambient temperature sensors and by temperature sensors in the house and in the tap water tank. These sensors will regulate the direction of the water flow and the on and off of the heat pump, the circulation pumps and also the on and off of the electric heater.



During heating of the house the 3-way valve and the main circulating pump drives water to flow from the heat pump through the radiator system of the house. If extra power is needed, the electric heater will be turned on to assist the heat pump.

The production of domestic hot water will start when the water temperature in the tap water tank falls five degrees below the tap water set point. This event triggers the 3-way valve to direct the water flow through the plate heat exchanger located in the indoor unit. At the same time the tank circulation pump will start.



Flow system for Bonus Air connected to Bonus Indoor unit

- | | |
|---------------------------|-------------------------------------|
| 1. Heat pump | 7. Tank circulation pump * |
| 2. Electric heater* | 8. Domestic hot water tank* |
| 3. Main circulation pump* | 9. Pipe connection for cold water* |
| 4. 3-way valve* | 10. Pipe connection for hot water * |
| 5. Water radiator | 11. Filter* |
| 6. Plate heat exchanger * | |

*Factory installed in the indoor unit.