

# Installation and Maintenance Instructions



# ALLMÄNT

**S2-AIR** is an air to water heatpump. The ambient air is the heat source and the storage tank is the heatreceiver. S2 Air consists of a separate compressor unit which is connected to an accumulator tank with a condenser coil, coil for domestic hot water and an electric immersion heater for additional heating capacity. Included in the delivery is also a regulator for the normal operation of the heat-pump and the evaporator with the defreezing system.

The accumulator tank is delivered with a manual shunt valve as standard. The automatic control, type "VSE", is available as an addition and can be delivered upon request. The tank can also be fitted with a circuit for solar heating as an addition.

S2 Air is normally the only heat source for the dwelling, but may be combined with an existing boiler or other heat source.

## Transport

The heat-pump is delivered on a pallet and shall be transported standing. Storage must be in a dry room.

## Placement

The heat-pump must stand on a firm base. The compressor unit is placed on a floor or foundation of concrete in order to minimise sound and vibration transmission. If the heat-pump is situated in a space where the walls adjoin other habitable space, then the heat-pump should be placed in such a way that sound transmission is minimised to adjoining rooms. Never place the heat-pump against a wall adjoining a bedroom.

## Accumulator tank

The accumulator tank must be placed in a dry space and stand on a firm base which can withstand the total load of the filled tank of about 650kg for a 500 litre tank.

The various units which are delivered as separate units do not need to be placed next to each other, which allows for greater flexibility when choosing location. The cover of the heat-pump is manufactured in galvanised and subsequently powder lacquered steel plate. This allows the heat-pump to even be placed outdoors provided it is well protected from weather.

Practically it is an advantage the shorter the distance is between the heat-pump and the accumulator tank. The maximum recommended distance between the units is 10m.

## Technical Data

Heating capacity	7900 W
Power consumption	2400 W
Voltage	380 V
Current	5,5 A
Refrigerant	R-407C
Amount of refrigerant	ca 2,9 kg*
External dimensions of HP HxWxD	60x60x45 cm
Limit of pressure switch at high pressure	26 bar
Limit of pressure switch at low pressure	1,5 bar
Weight	75 kg
Defreezing capacity	4230 W

\*The amount of refrigerant is due to the length of the connection pipes and can vary significantly.

# HEAT CARRIER

## Heat-pump as sole heat source

### Radiator system

The radiators must be designed as a low temperature hot water (LTHW) heating system since the heat-pump does not yield more than approximately 50 centigrade for the flow.

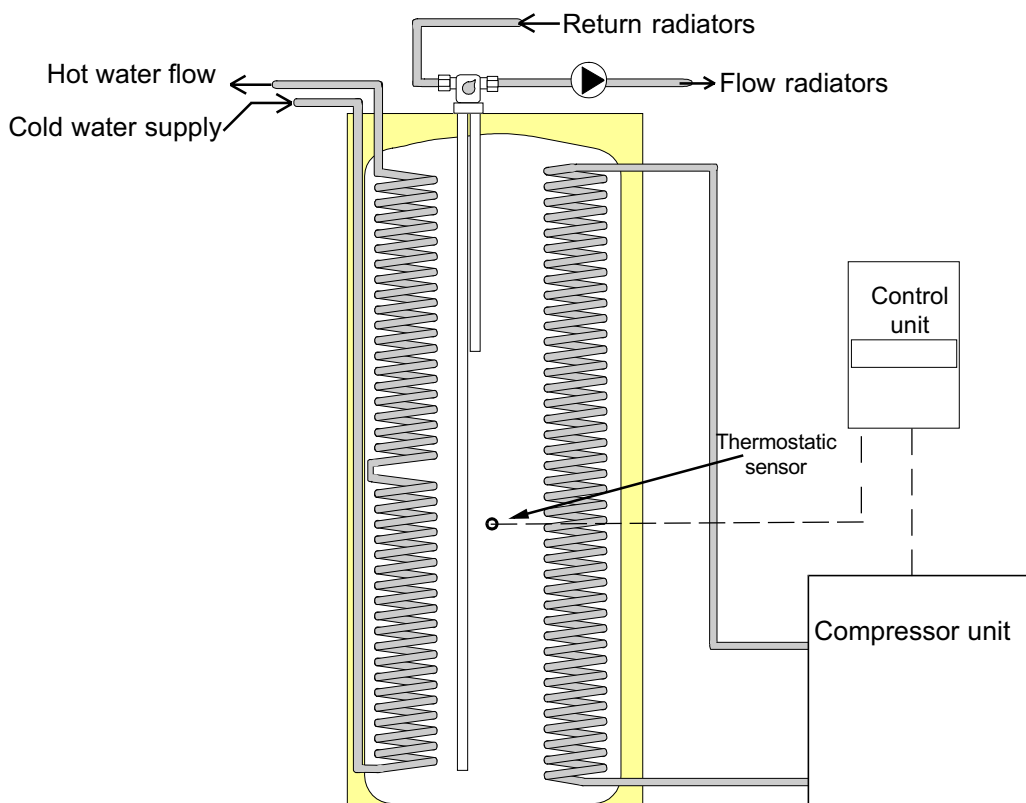
The radiator system is connected to the shunt valve of the accumulator tank. The shunt valve is of a rotating type with the flow connection placed on the right as viewed from the front of the tank. The expansion vessel and other safety equipment is installed according to relevant regulations.

### Hot water production

Domestic hot water is produced in coils which are placed in the left side of the tank and consist of a pre-heat and a post-heat coil. The normal procedure is to connect the outgoing end of the pre-heat coil with the incoming end of the post-heat coil. Both the cold water supply connection and the hot water flow connection consist of 22 mm copper tube as per diagram below.

Only the post-heat coil (the top coil) shall be included in the circuit if a pumped secondary hot water re-circulating circuit is connected. The flow of the hot water re-circulating circuit is joined to the outgoing domestic hot water. The return of the hot water re-circulating circuit is joined by a T-connection to the connector between the pre-heat and post-heat coils. (It is necessary to remove the external cover plates of the tank in order to access the connector pipe). A non-return valve must be installed which closes against the pre-heat coil. The circulation must be as small as possible in order to reduce the return temperature.

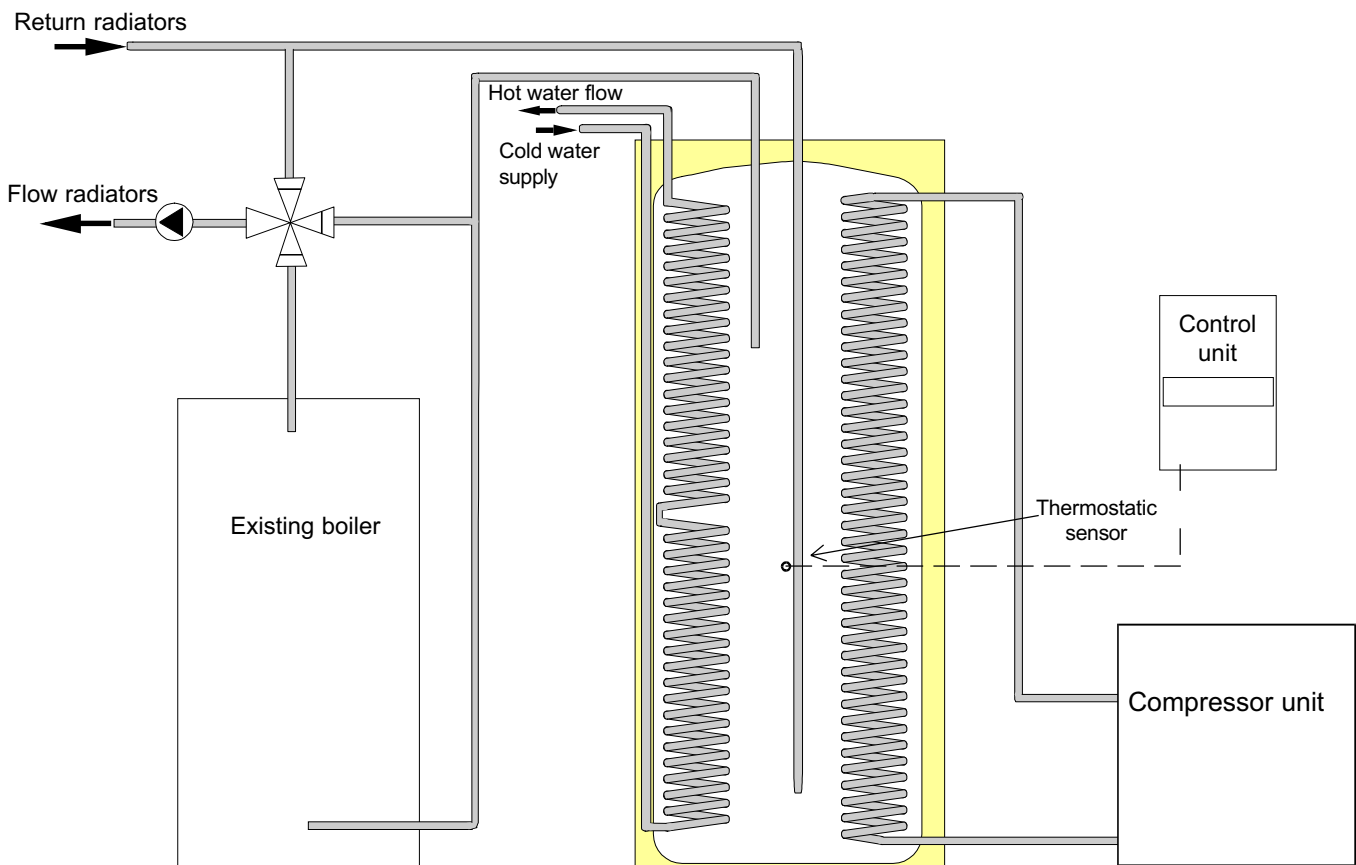
Thanks to the hot gas exchange which occurs in the condenser coil of the tank, high domestic hot water temperatures are obtained even during solely operation of the heat-pump. The mixer valve must therefore always be installed according to relevant regulations.



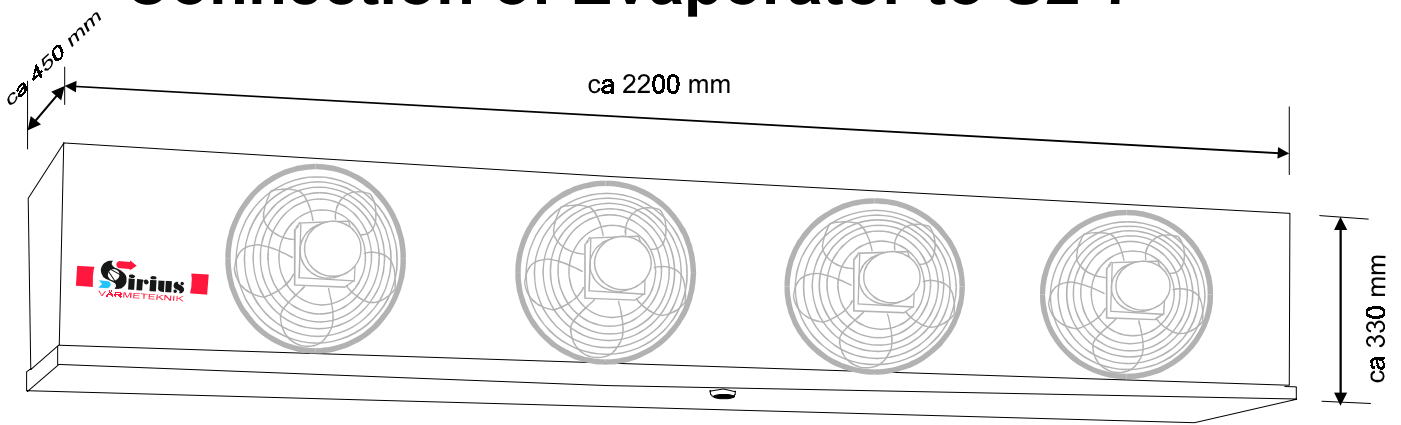
## In combination with an existing boiler

The accumulator tank of the heat-pump is connected to the existing boiler and heating system with a four way mixing valve type BIV which with rising heat demand in the first instance opens against the accumulator tank of the heat-pump and thereafter against the boiler. When the shunt valve is completely open the total flow of the radiator system first flows to the accumulator tank and thereafter via the boiler to the heating system.

The operating temperature of the boiler is not dependant upon the heating demand of the radiator system and the boiler can therefore be completely isolated by an outdoor thermostat when the external temperature allows the heat-pump to fully supply the heating demand.



# Connection of Evaporator to S2-7



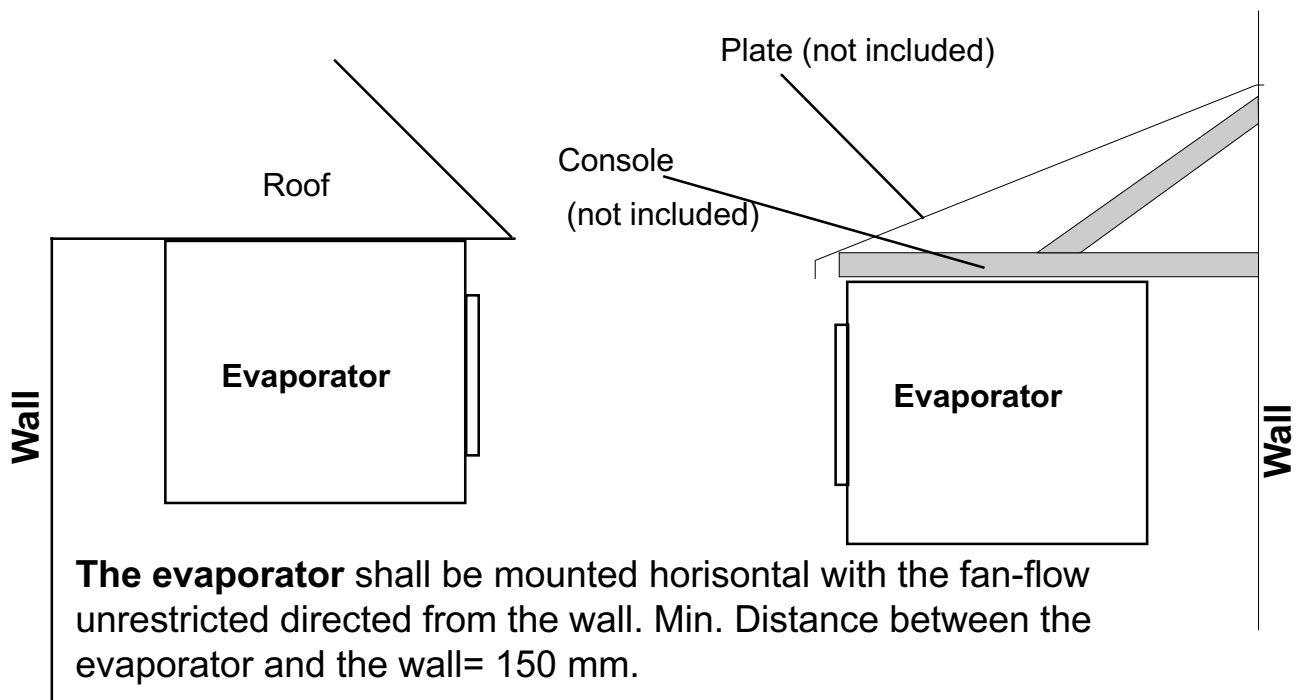
## Connecting pipes between the compressor and the evaporator

Liquid pipe= 3/8" max. 25 meters

Suction pipe= 3/4" max. 20 meters

Connection on left hand side where the expansion valve is mounted

Electrical connection (for fans and defreezer) on right hand side.

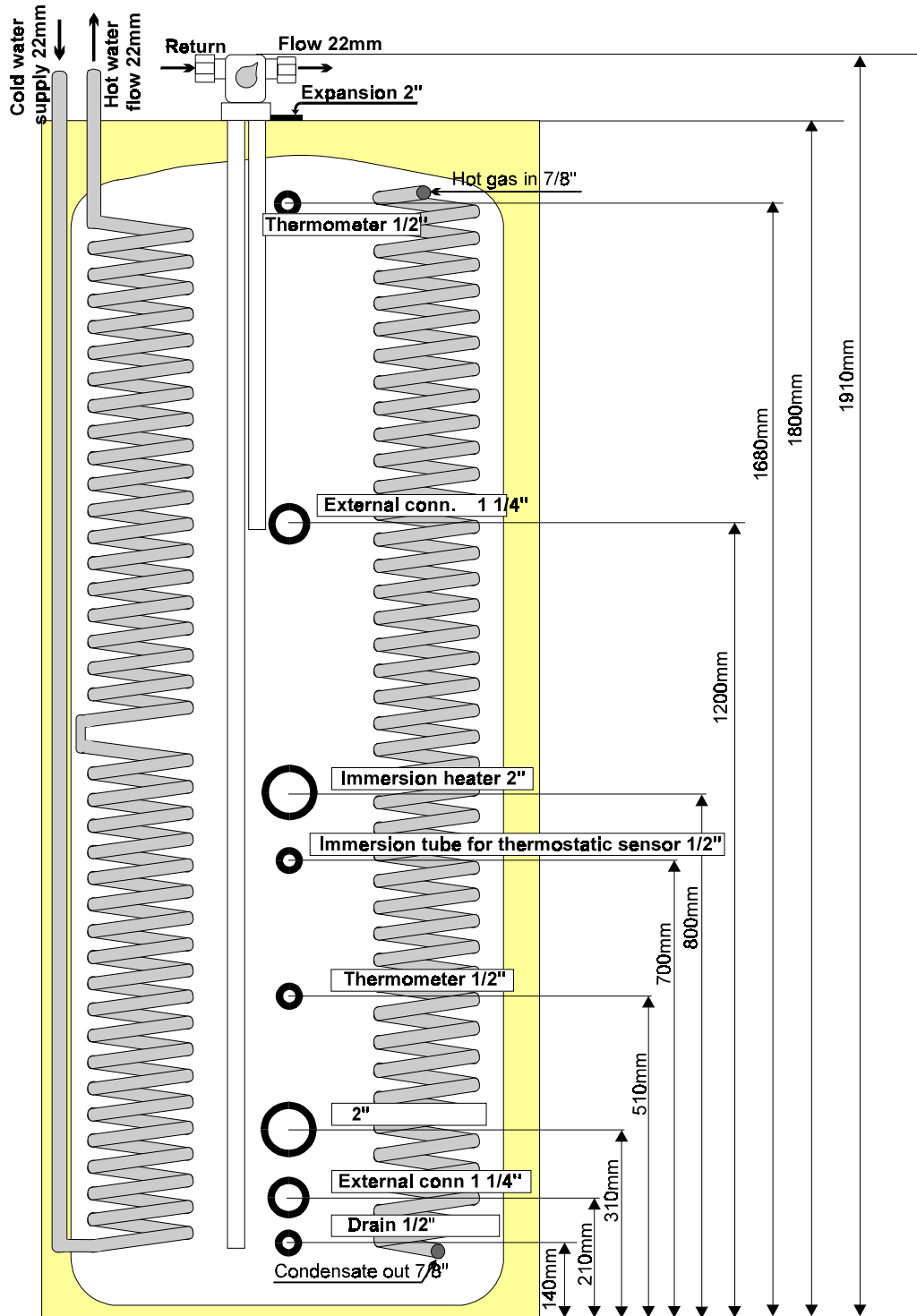


**The evaporator** shall be mounted horizontal with the fan-flow unrestricted directed from the wall. Min. Distance between the evaporator and the wall= 150 mm.

A protected position of the evaporator for ex. under a roof is an advantage.

# Accumulator tank

## Dimensions and connections

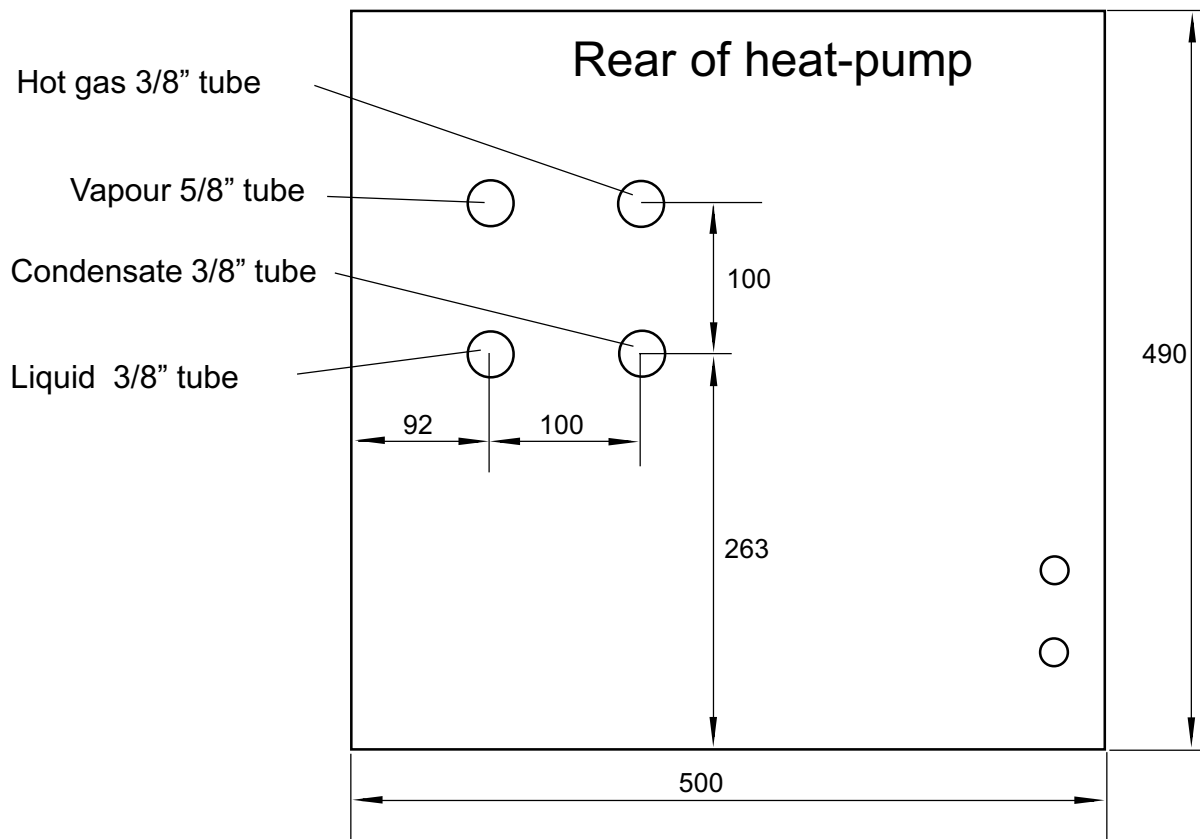


### Connecting accumulator tank

The hot gas connection from the heat-pump shall be insulated and connected to the top coil connection on the tank. The thickness of insulation shall be increased to a minimum of 15mm and the pipe dimension to 1/2" if the pipe length between the compressor and the accumulator tank exceeds 2.0 m.

The system shall be tested to a pressure of 20 bar after joining and leak test joints after which the system must be vacuum cleaned carefully before filling with refrigerant. (amount of refrigerant, see page 2)

## Connections and dimensions of the heat-pump



## Fault detection

### Re-instatement of pressure switch

If the compressor doesn't work when it normally should, it could be due to the pressure switch, also called the pressure guard, having released. The pressure switch is situated inside the heat-pump on the back of the box. The pressure switch is re-instated by pressing both the green buttons in the directions indicated by the arrows. If this occurs only occasionally it may be due to some eventuality, but if it happens repeatedly an engineer should attend to the installation.

