Installation, operation and care

Aqualux 750 Teknik
Accumulator tank



VÄRMEBARONEN

2010-06-02
ver: 1
Replaces:

Contents

Notes **2**
Operation **3**
General **3**
Technical data **4**
Installation **6**
General
Design - Pipe dimensions
Expansion system
Vented
Unvented
Bleeding
Bivalent shunt
Charging package for firewood
Domestic hot water
Radiator system
Connection channel and sensor sockets
Operation and care **7**
General
Safety valves
Water pressure in the system
Water pressure in the water heater
If there is a risk of freezing
System principles **8**
Aqualux 750 Teknik - K2 solar collector 8
Aqualux 750 Teknik - K2 solar collector - Pellmax UB
Aqualux 750 Teknik - K2 solar collector - air/water heat pump 9
Aqualux 750 Teknik - K2 solar collector - Pellmax UB - heat pump
Aqualux 750 Teknik - K2 solar collector - heat pump/electric boiler 10
Aqualux 750 Teknik - Aqualux 750 UB - K2 solar collector - Vedolux
Aqualux 750 Teknik - Aqualux 750 UB - K2 solar collector - Biomax ... 11

Notes

To be completed when the Aqualux 750 Teknik is installed

Serial number: .....

Installation date: .....

Installer: .....

Tel: .....

Other: .....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

.....

VÄRMEBARONEN

Illustrations may differ from the actual product
Allowing for printing errors and errors on proofs

Storing energy to make firewood burning more convenient

To take advantage of all the benefits of a modern, environmentally-approved firewood boiler, the excess energy produced by the boiler must be stored. This energy is then used to heat the building, even after the burning cycle has finished. Using an accumulator tank reduces the number of burning cycles, making it more convenient to use firewood as a fuel.

If your electricity supplier offers differential electricity tariffs, it may be worth storing heat in cheaper periods, then consuming it when electricity is more expensive.

Storing energy in solar heating

The large volume of the Aqualux 750 Teknik is used to store the heat from the solar collectors. The energy provided by the sun rarely matches the pattern of use, allowing the accumulator can "save" the heat and release it more slowly over a longer period, for example overnight. A solar collector needs 50-200 litres of water per square metre, so up to 15 m^2 of solar collectors can be connected to the Aqualux 750 Teknik.

Heat pump

The Aqualux 750 Teknik is configured for connection to a heat pump.

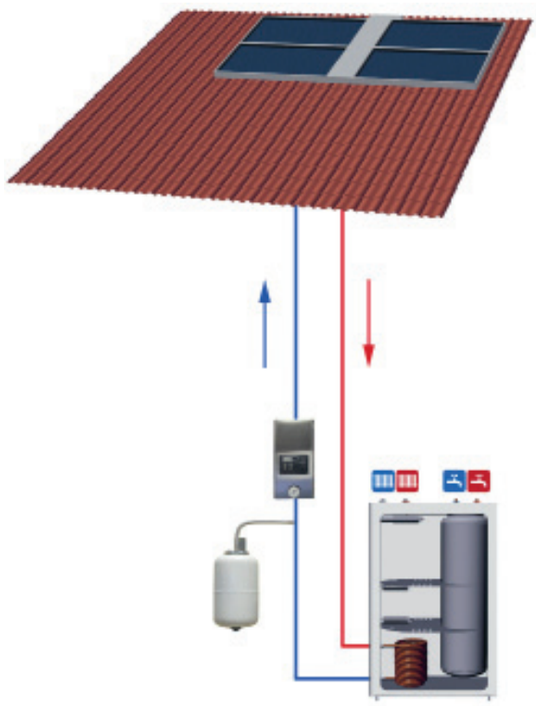
Thermal stratification

Aqualux 750 Teknik is designed to work as a stratified tank. Warm water is less dense than cold water, so it floats on top of cold water. The stratification properties of water are used in order to maximise the storage capacity of the tank and to optimise the operating conditions of solar collectors and heat pumps. Solar collectors and heat pumps work more efficiently and the hot water capacity increases if water is well stratified in the tank. The thermal stratification plates and diffusers in the Aqualux 750 Teknik create and reinforce stratification between cooler and warmer water. The temperatures inside the tank can be easily monitored using the three thermometers on the front of the tank – temperatures are measured at the top, in the middle and at the bottom.

Aqualux 750 Teknik

The Aqualux 750 Teknik has a copper-lined water heater, a solar coil and openings for two immersion heaters. There are thermometers for the top, middle and bottom temperatures. The position of the immersion heaters depends on the hot water requirement. If the immersion heater is installed in the upper opening, the hot water capacity is lower than if it is installed in the lower opening. If immersion heaters will be used for heating, the number of units and the size are based on the power requirement of the property.

Accessories	Product no.	Rsk
Drivpaket 1 pump/controller package for solar heating.	2610	620 20 58
Solstyrning 2, controller for solar heating.	2611	620 20 59
Solstyrning 1, controller for solar heating.	2954	620 16 29
Ack.Styrning 3 charging package for systems with a water heater in the accumulator tank.	2912	687 60 16
Bivalent shunt with connection package.	2918	
Valve package ball valve, drain valve and bleed valve with reducer.	2927	
VB 1510, immersion heater 1.5 kW.	1001	621 08 86
VB 2210, immersion heater 2.2 kW.	1002	621 08 87
VB 3010, immersion heater 3 kW.	1003	621 07 02
VB 4510, immersion heater 4.5 kW.	1004	621 07 10
VB 6010, immersion heater 6 kW.	1005	621 07 28
VB 6002, immersion heater 6 kW (3 + 3 kW).	1020	621 07 51
VB 9002, immersion heater 9 kW (4.5 + 4.5 kW).	1021	621 08 56
VBB 222, load guard for above immersion heaters, 16 - 35 A.	1910	621 09 09
VB 6003 F, immersion heater 6 kW (3 + 3 kW).	1032	621 07 78
VB 9003 F, immersion heater 9 kW (4.5 + 4.5 kW).	1034	621 08 57
VBB 12TX, load guard for VB 6003 F and VB 9003 F, 16 - 35 A.	1901	621 09 00



K2 solar collectors, Drivpaket 1 pump/controller package and Aqualux 750 Teknik

General

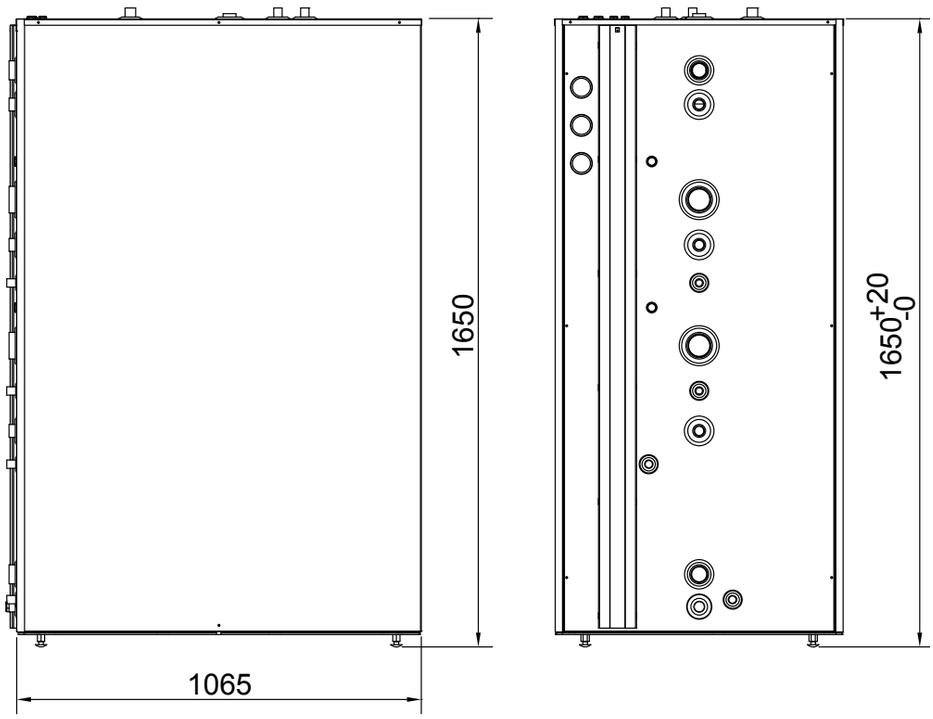
Read this document carefully before carrying out any installation, adjustment or service – and follow the instructions.

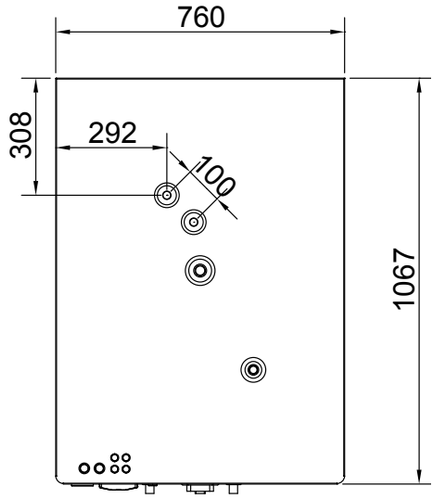
- **Keep these instructions close to the tank!**
- **The tank must not be modified, changed or rebuilt.**
- **To guarantee high reliability, all installation, adjustment and ongoing service must be carried out correctly.**
- **The correct settings are important for economical heating.**
- **The type and serial number of the tank must be quoted whenever you contact your retailer, see the rating plate.**
- **For service issues, contact your installer.**
- **Värmebaronen AB retains the right to change the specification without prior notice, as part of its policy of continuous improvement and development.**

Technical data

Product no.:		2125
RSK no.:		687 60 64
Volume:	overall	588 litre
	water heater	162 litre
Weight:	empty	290 kg
	full	1040 kg
Design pressure:	tank	1.5 bar
	water heater	10 bar
Test pressure:	tank	2.2 bar
	water heater	13 bar

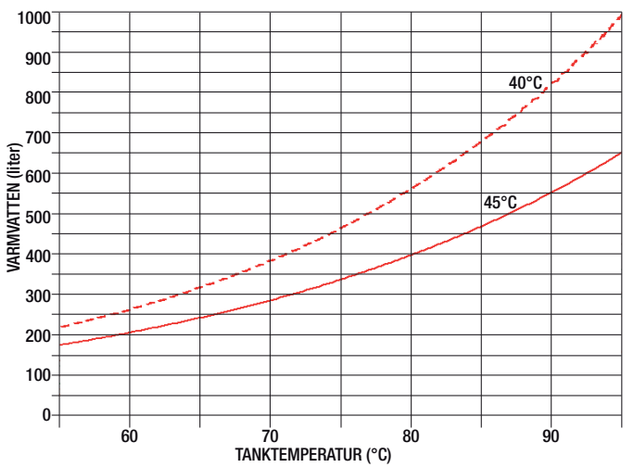
Design temperature:	tank	110 °C
	water heater	100 °C
Solar coil:	surface area	3 m²
	length	12 m
Length of immersion heater:		max 600 mm
Minimum room height:		1820 mm
Manufactured to:		AFS 1999:4 §8 97/23 EC Article 3





Hot water capacity

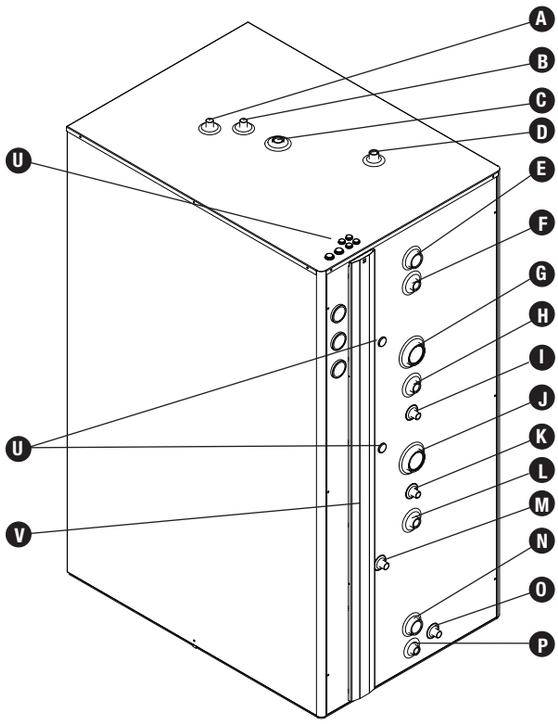
The chart shows the hot water capacity for 40° and 45°C domestic hot water with a fully charged tank.
Tap flow: 12 litres/min. Incoming cold water temperature: 10°C.

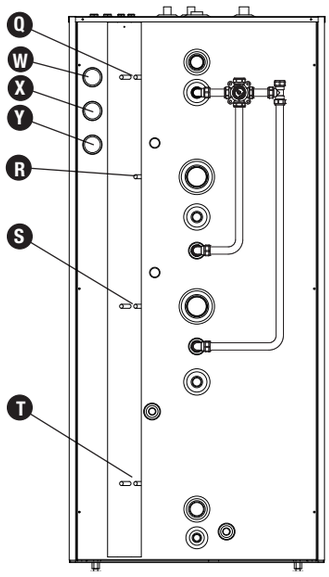


Minimum room height: 1820 mm

VÄRMEBARONEN

Illustrations may differ from the actual product
Allowing for printing errors and errors on proofs





The diagram also shows "Bivalent shunt with connection package", accessory

Connections

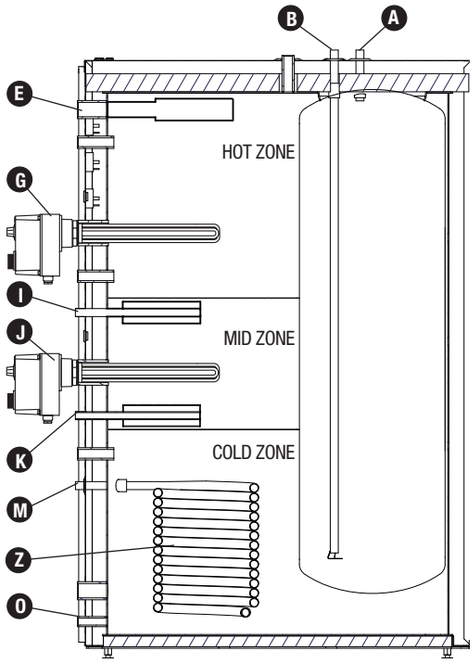
Some connections can have different functions, see the system principles.

		Dim.	Distance from floor (+20, -0 mm)
A	*Hot water.*	*Ø 22 mm*	
B	*Cold water.*	*Ø 22 mm*	
C	*Safety valve* ***(can be used for lifting).***	*DN 20 int*	
D	*Bleed valve.*	*DN 15 int*	
E	*With diffuser.*	*DN 32 int*	*1516 mm*
F		*DN 20 int*	*1426 mm*
G	*Upper immersion heater, accessory.*	*DN 50 int*	*1176 mm*
H		*DN 20 int*	*1057 mm*
I	*With diffuser.*	*Ø 22 mm*	*957 mm*
J	*Lower immersion heater, accessory.*	*DN 50 int*	*792 mm*
K	*With diffuser.*	*Ø 22 mm*	*673 mm*
L		*DN 20 int*	*568 mm*
M	*Hot water from solar panel, coil.*	*Ø 22 mm*	*480 mm*
N		*DN 32 int*	*191 mm*
O	*Cold water to solar panel, coil.*	*Ø 22 mm*	*124 mm*
P	*Draining, expansion.*	*DN 15 int*	*106 mm*

Immersion tubes for temperature sensors and thermometers
(remove the cover of the connection channel for access)

Q	*Immersion tube for temperature sensor.*	*8 mm int*	*1472 mm*
R	*Immersion tube for temperature sensor.*	*8 mm int*	*1177 mm*
S	*Immersion tube for temperature sensor.*	*8 mm int*	*793 mm*
T	*Immersion tube for temperature sensor.*	*8 mm int*	*267 mm*

U *Cable openings for immersion heaters and temperature sensors.*
V *Cover of connection channel.*
W *Thermometer, upper, hot zone.* *Product no.* 380003
X *Thermometer, middle, mid zone.* *Product no.* 380015
Y *Thermometer, lower, cold zone.* *Product no.* 380016
Z Solar coil.



The diagram also shows immersion heaters, VB 6003 F / VB 9003 F, accessory

- ***The installation must comply with the applicable Regulations for New Buildings [Nybyggnadsreglerna] and the Hot Water Instructions [Hetvattenanvisningarna].***
- ***Install the tank in the cellar or on the ground floor. The installation site must be designed for the weight of the tank when it is filled with water.***
- ***The pipes in front of the tank must be arranged so that the cover of the connection channel can be removed.***

Design - Pipe dimensions

To ensure that the system can function if there is a power failure, the installation should be designed to allow natural circulation between the boiler and the tanks. If the boiler and tanks are positioned next to each other, DN 25-35 pipe is recommended.

Expansion system

The accumulator tank must be connected to a vented or unvented expansion system.

The volume of the expansion vessel is dimensioned according to the circumstances. The guideline values for volume are approx. 5 % of the total system volume for vented systems, or 13- 15 % for unvented systems.

Vented The distance between the top of the highest radiator and the expansion vessel must be at least 2.5 metres in order to prevent oxygen saturation of the water in the heating system.
The expansion vessel is connected in a continuous and unisolatable rise from the tank's expansion connection
To prevent damage occurring if the expansion system fails, for example because of freezing, the installation should be fitted with a type approved safety valve, 1.5 bar.

Unvented In unvented systems, the tank must be fitted with a type approved safety valve, 1.5 bar, connected using an unisolatable pipe from the connection at the top, as well as a bleed valve.
The expansion vessel is best connected using 15 mm Cu pipe, as shown in the diagram showing the system principle.

Bleeding

The bleed valve must be installed at the top of the relevant tank to make venting easy.

Bivalent shunt

A bivalent shunt is included in the suggested systems. Because it first draws water from the middle of the tank, and only from the top when the tank is discharged, the bivalent shunt helps to optimise and maintain stratification. This keeps the water heater hotter for longer than if water is only drawn from the top of the tank.

A motor and regulator can be fitted to the shunt for automatic shunt control.

Charging package for firewood

The Ackstyrning 3 charging package must be fitted.

The function of the charging package is to quickly bring the boiler up to a high and constant working temperature and to maintain temperature stratification in the accumulator tank during charging. To connect the charging package, refer to the separate instructions.

Domestic hot water

The domestic hot water installation must be equipped with a shut-off valve, a non-return valve, a mixing valve and a type approved safety valve with 9 bar opening pressure.

Radiator system

An excessive flow rate in the heating system can disrupt the thermal stratification in the tank, and impair its functionality. It is therefore important to regulate the flow so there is a large temperature difference between the flow and return of the heating system.

Connection channel and sensor sockets

The Aqualux 750 Teknik has four cable openings to allow sensors to be connected to the tank, and four cable openings to allow the power supply to the immersion heaters to be concealed behind the front panel.

There are sockets for temperature sensors at four levels on the tank. To access the sockets, remove the cover of the connection channel on the front of the tank. Remove the cover by undoing the screws at the top, then lifting and unhooking.

Illustrations may differ from the actual product
Allowing for printing errors and errors on proofs

General

After installation, check with the installer that the system is in perfect condition. Ask the installer to demonstrate the settings and functions so you know how to operate and care for the system.

Safety valves

The safety valves for the domestic hot water system and the heating system must be operated regularly, around four times a year, in order to preserve the safety function.

Water pressure in the system

The pressure required in the heating system depends on the height difference between the lowest and highest points in the system, the static head. If the difference is 5 metres, the pressure is 0.5 bar, and if it is 10 metres, the pressure is 1.0 bar.

The pressure in the system varies with the boiler temperature – do not add water unnecessarily.

The volume of water changes with the temperature, and the change in volume in turn affects the pressure in the heating system. The higher the temperature the greater the volume and the higher the pressure. The expansion vessel partly takes up the changes in volume in the system.

Water pressure in the water heater

In the water heater, too, the pressure will vary depending on the water temperature. However, the water heater does not have an expansion vessel – instead, water is released through a safety valve when the water pressure is too high (over 9 bar).

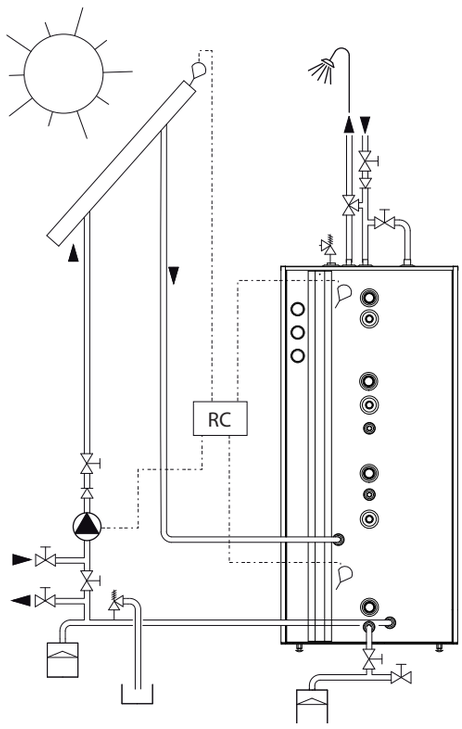
This could happen if a large amount of hot water has been drawn off for a shower or bath, causing a lot of cold water to enter the water heater. When this cold water is heated, it expands, causing the pressure to increase.

If there is a risk of freezing

In severe cold weather, no part of the heating system should be turned off as this would involve a risk of burst pipes.

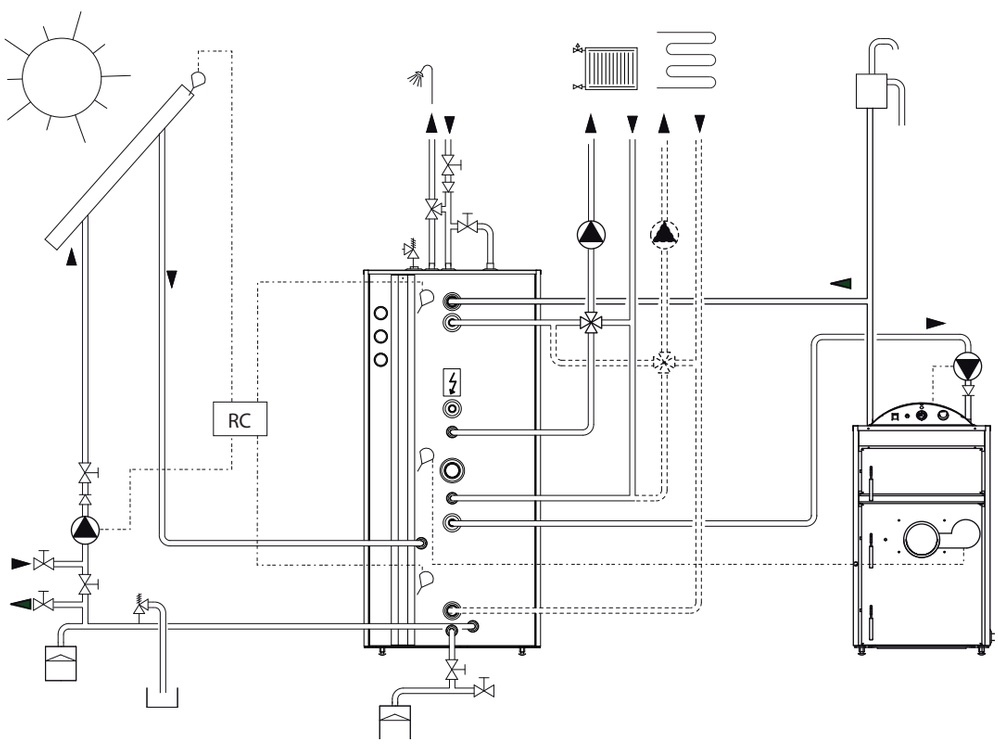
Never start a burning cycle if you suspect that any part of the heating system might be frozen. ***Call the installer.***

Aqualux 750 Teknik
K2 solar collector



Basic connections for solar collectors. K2 solar collectors heat the Aqualux 750 Teknik. The solar collectors provide domestic hot water. If the heating system is connected to the Aqualux 750 Teknik, the solar collectors can contribute to the heat input. Additional heat can be provided to the Aqualux 750 Teknik by connecting an immersion heater, boiler or heat pump.

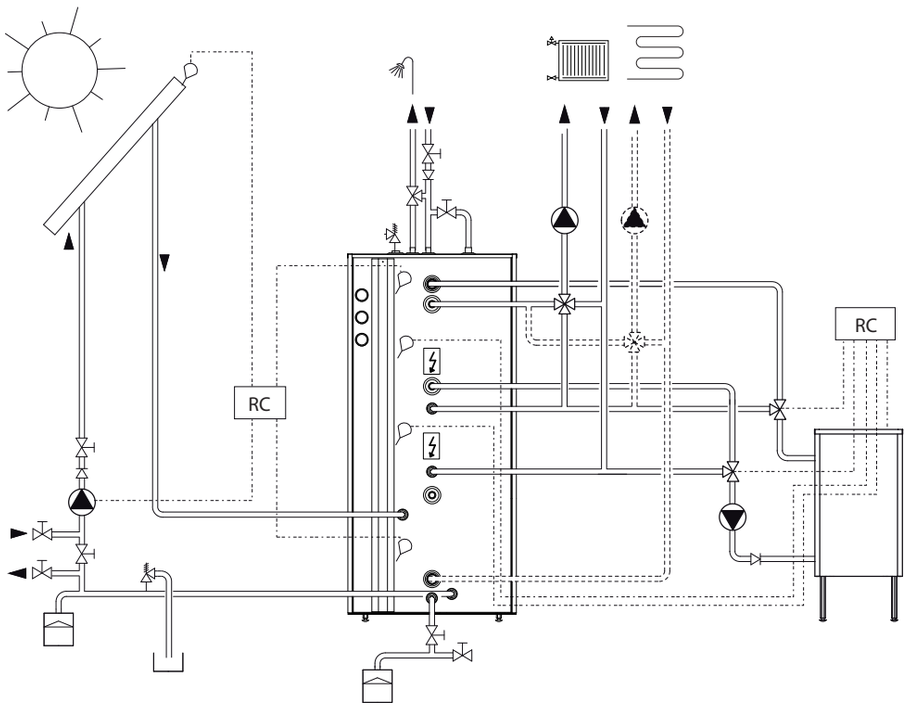
Aqualux 750 Teknik
K2 solar collector
Pellmax UB



K2 solar collectors heat the Aqualux 750 Teknik. The heat from the solar collectors can be used for heating as well as domestic hot water. The heat is drawn via a bivalent shunt. The Pellmax UB is shut down between March and October in order to avoid cycling losses and low efficiency. If additional heat is needed between March and October, the immersion heater in the Aqualux 750 Teknik is used and if more hot water is needed, the lower of the immersion heater openings is used. To keep the solar collectors working efficiently even with additional heat, the return side is connected so that the bottom of the Aqualux 750 Teknik is not heated.

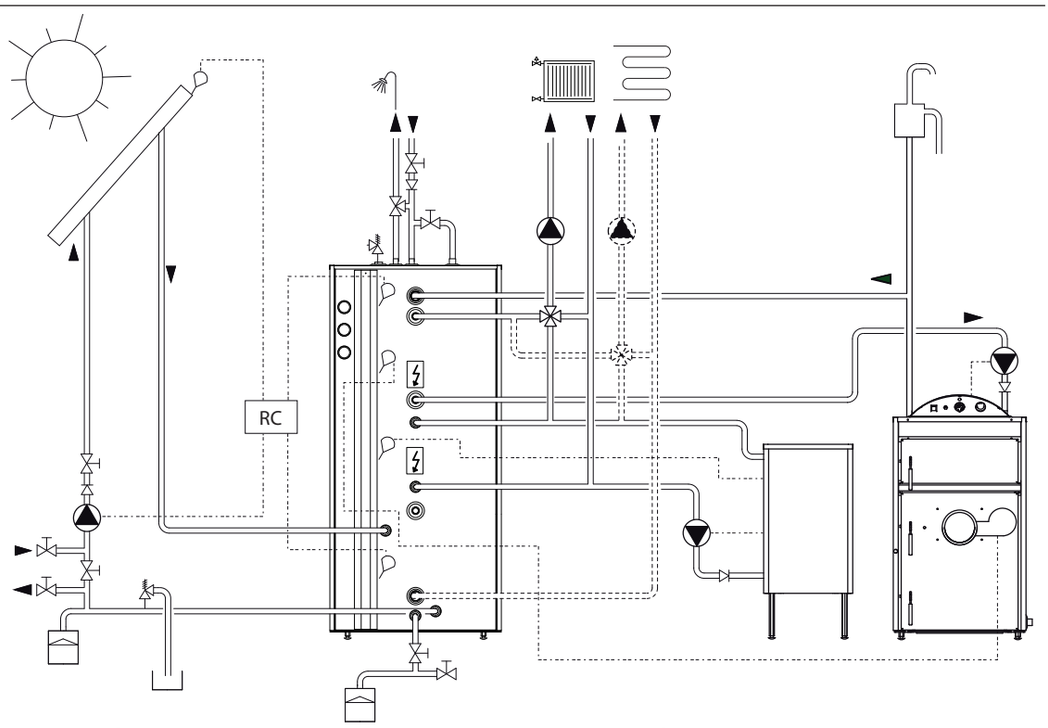
VÄRMEBARONEN
Illustrations may differ from the actual product
Allowing for printing errors and errors on proofs

Aqualux 750 Teknik
K2 solar collector
Air/water heat pump.



K2 solar collectors heat the Aqualux 750 Teknik. The solar collectors can provide heating as well as hot water. The heat is drawn via a bivalent shunt. Additional heat is mainly provided by the heat pump. The heat pump uses variable condensation in the mid zone of the Aqualux 750 Teknik and variable condensation in the top zone. If the heat pump cannot cover the heat load, immersion heaters in the top and mid zones are used. The domestic hot water takes heat first from the bottom of the tank, which is heated by the sun, then draws energy from the middle part of the tank, and finally from the top zone. By preheating the domestic hot water in this way, it is possible to improve the efficiency of the heat pump and to reduce wear. To allow the heat pump to operate at the lowest possible temperature, the automatic shunt and the immersion heaters must be managed by the heat pump controller. Aqualux 750 Teknik works as a volume vessel for the heat pump, allowing it to operate more evenly.

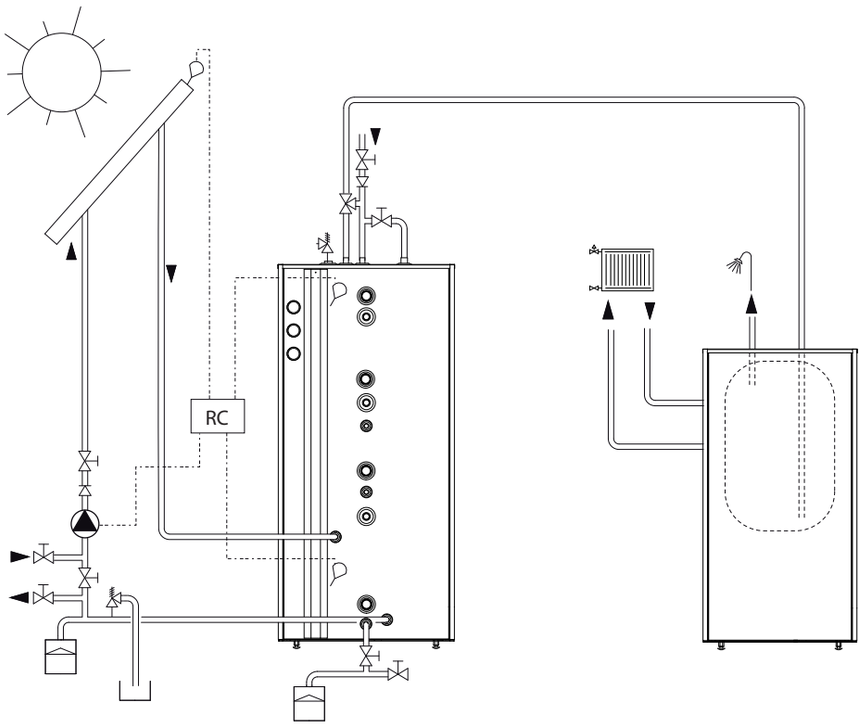
Aqualux 750 Teknik
K2 solar collector
Pellmax UB
Heat pump.



K2 solar collectors heat the Aqualux 750 Teknik. The solar collectors can provide heating as well as hot water. The heat is drawn via a bivalent shunt. The Pellmax UB is shut down between March and October. If the outside temperature is not too low, additional heat is mainly supplied by the heat pump. The heat pump uses variable or fixed condensation in the mid zone of the Aqualux 750 Teknik. Additional heat is supplied by the Pellmax UB to the hot zone, or by immersion heaters to the hot zone and/or mid zone. Aqualux 750 Teknik works as a volume vessel for the heat pump, allowing it to operate more evenly.

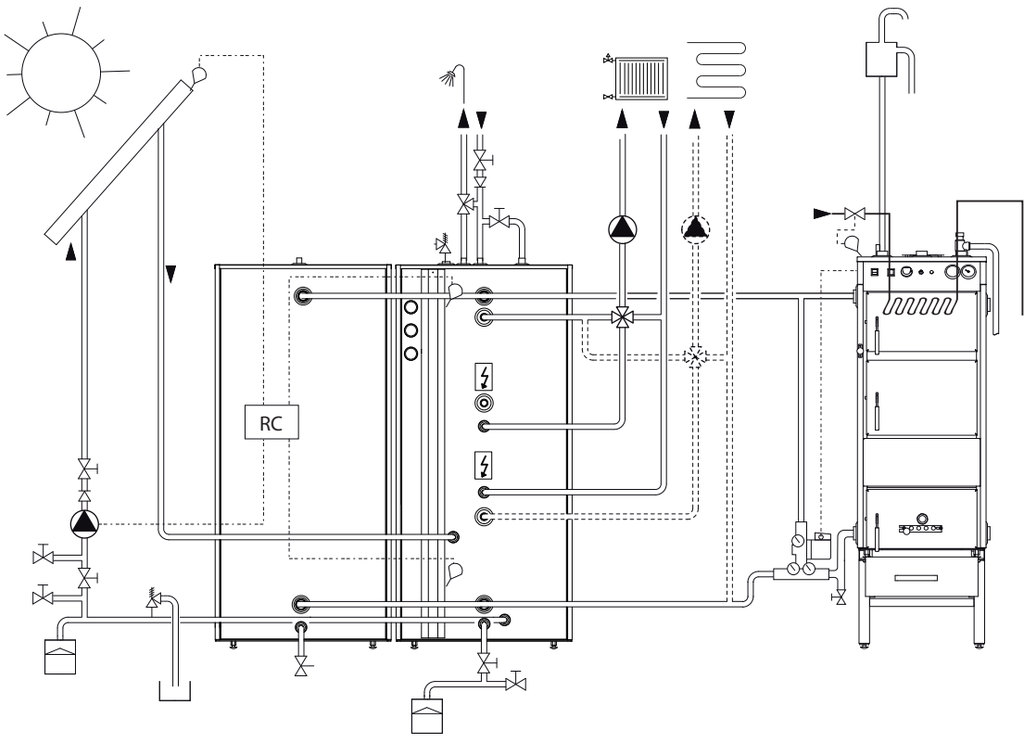
Illustrations may differ from the actual product
Allowing for printing errors and errors on proofs

Aqualux 750 Teknik
K2 solar collector
Heat pump/electric boiler



K2 solar collectors heat the Aqualux 750 Teknik. The solar collectors only provide hot water, and the heating system is connected to the heat pump/electric boiler. The domestic hot water is heated in the Aqualux 750 Teknik. The outgoing domestic hot water temperature from the Aqualux 750 Teknik is limited by a mixing valve to avoid exposing the heat pump to excessive temperatures. If necessary, the domestic hot water is boosted by the water heater in the heat pump/electric boiler.

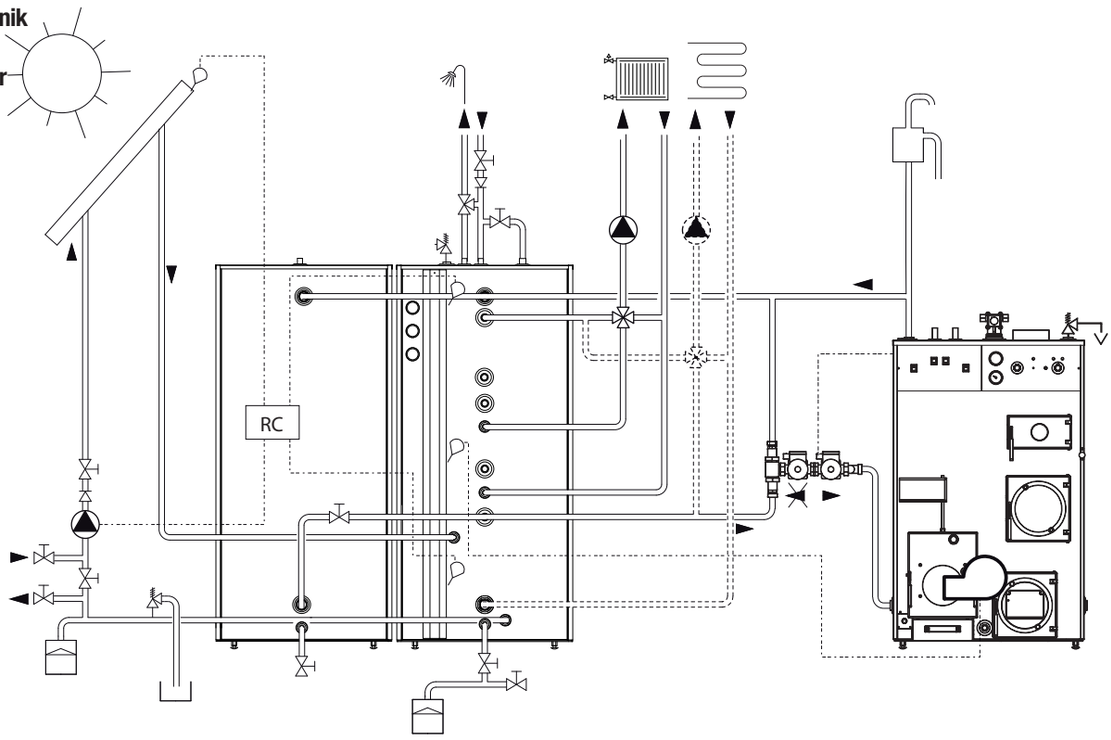
Aqualux 750 Teknik
Aqualux 750 UB
K2 solar collector
Vedolux



K2 solar collectors heat the Aqualux 750 Teknik. The solar collectors can provide heating as well as hot water. From October to March, the accumulator tanks are heated by the Vedolux boiler. Extra heat can also be provided by an immersion heater in the Aqualux 750 Teknik.

Illustrations may differ from the actual product
Allowing for printing errors and errors on proofs

Aqualux 750 Teknik
Aqualux 750 UB
K2 solar collector
Biomax



K2 solar collectors heat the Aqualux 750 Teknik. The solar collectors can provide heating as well as hot water. Domestic hot water and heating are provided by the Aqualux 750 Teknik via a bivalent shunt. The discharge pump in the Ackstyrning 11 accumulator controller is isolated so that only the Aqualux 750 Teknik can be charged. A Biomax burner is used to supply additional heat. To keep the solar collectors working efficiently even with additional heat, the return side is connected so that the bottom of the Aqualux 750 Teknik is not heated.

Illustrations may differ from the actual product
Allowing for printing errors and errors on proofs

Värmebaronen AB retains the right to change the specification of included components without prior notice, as part of its policy of continuous improvement and development.

Värmebaronen AB
Arkelstorpsvägen 88
291 94 Kristianstad
Sweden

T +4644-226320
F +4644-226358
www.varmebaronen.se
info@varmebaronen.se

VÄRMEBARONEN