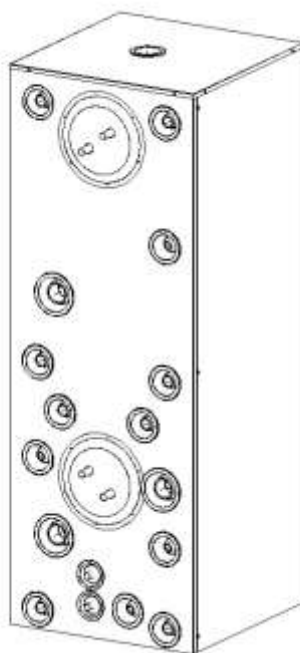




GTV HYBRID 500 ENERGY HEATER



INSTALLATION AND OPERATING INSTRUCTIONS

Manufacturer:
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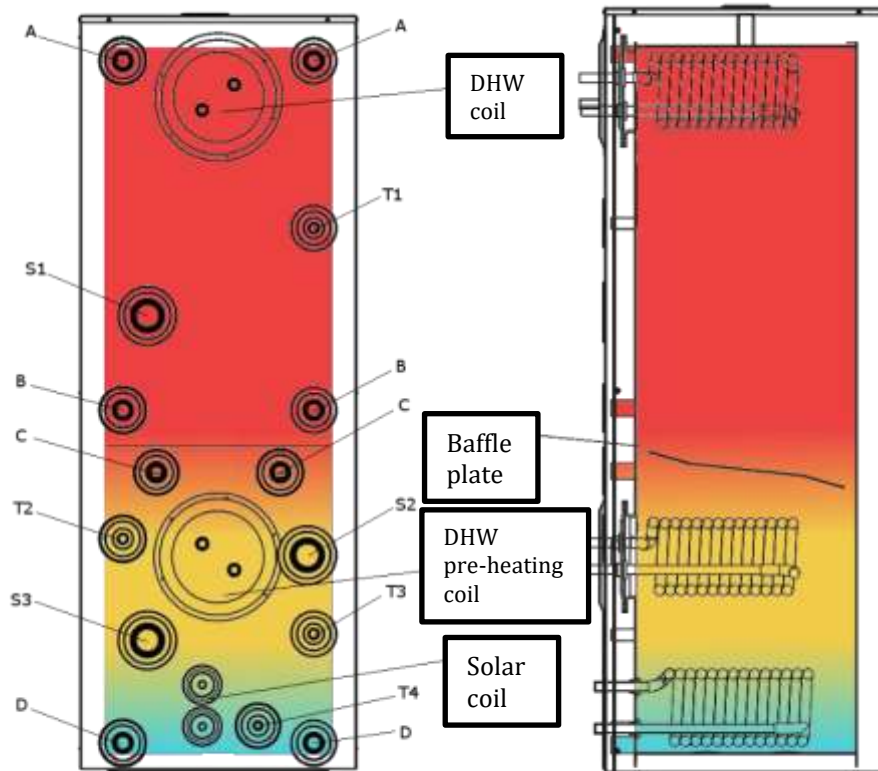
Children should be supervised so they don't play with this device.

This appliance is not intended for use by children or other persons whose physical, sensory or mental characteristics or lack of experience and knowledge prevent them from using the appliance safely, unless they have been supervised or instructed by a person responsible for their safety.

ACTIVITY DESCRIPTION

The Jäspi GTV Hybrid 500 energy heater is suitable alongside all forms of energy, both heat pumps and traditional heating modes. Product design has been based on versatility, space friendliness and advanced energy economy.

Hybrid accumulators are energy accumulators developed alongside low-temperature systems (e.g. heat pumps and solar energy) that provide heating of a waterborne floor and/or radiator system and hot water. Hybrid bookers are suitable for both new and renovation sites. The water space of the 500-liter Hybrid Accumulator is divided into two parts; a top of 300 liters and a lower part of 200 liters separated by an intermediate bulkhead with a flow channel. At the bottom of the 200 litres, which serves as the buffer tank for the heating circuit, a solar charging spiral and a preheating spiral of domestic water are located. The top 300 liters store energy for the needs of the domestic water cycle.



1 Temperature distribution and combinations in hybrid use

Jäspi Hybrid heaters are ideally suited to all heat pumps on the market, e.g. alongside rapidly increasing air-to-water heat pumps. If the consumption of domestic water is consistently particularly high, or if the property has a pre-arranged, we recommend connecting the Jäspi water heater to the Hybrid Heater.

To ensure the yield of heating and hot domestic water, the hybrid heater heat pump combination is always equipped with spare heat sources, e.g. electricity. Jäspi Elbox (6kW + 6 kW) is available as an accessory for hybrid accumulators + Power watch automation). Jäspi Elbox's power guard car automation enables efficient use of the main fixed fuse by taking into account the rest of the property's electrical load.

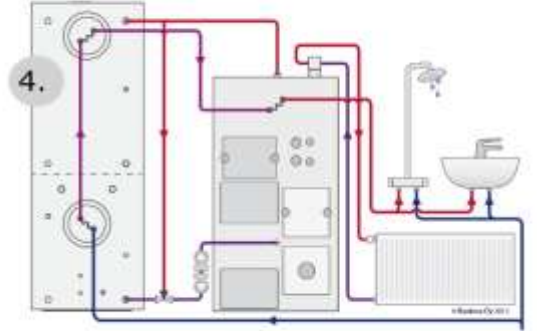
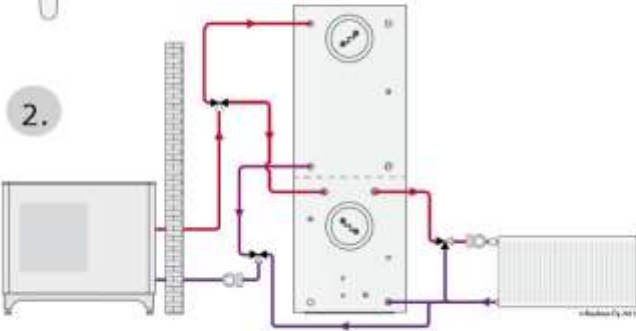
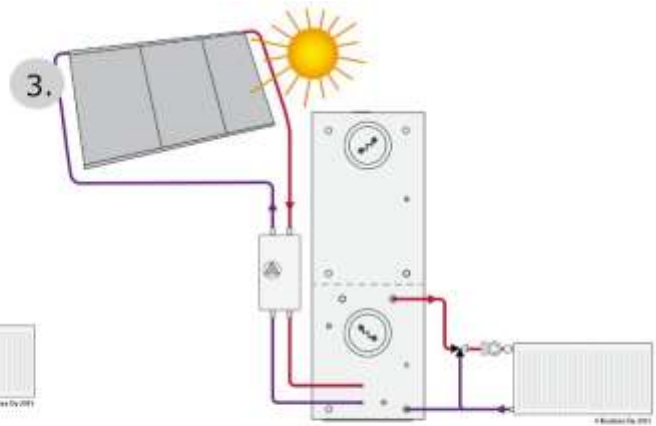
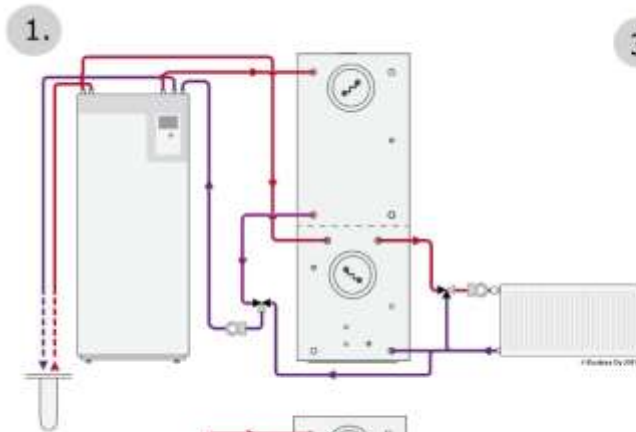
Figure 1 shows the temperature distribution of the boiler water in hybrid use, where the upper part of the accumulator is heated hotter than the lower part of the accumulator. The intermediate bulkhead below the halfway point of the boiler prevents the hot water at the top of the tank and the hot water at the bottom of the tank from being mixed without need.

Entities:

- A: Domestic water charging, inlet to tank / Heating circuit, output from tank
- B: Domestic water charging, output from tank / Heating circuit, inlet to tank
- C: Charging low temperature heating, inlet to tank / Low temperature heating circuit, output from tank
- D: Low temperature heating charge, output from tank / Low temperature heating circuit, input into tank

S1: One S2 of the domestic water firing resistance: One S3 of the auxiliary heating element: One of the emergency heating resistance

More detailed coupling images can be found at the end of the operating instructions.



1. GTV Hybrid 500 with ground source heat pump
2. GTV Hybrid 500 with air-to-water heat pump

3. GTV Hybrid 500 with solar collectors
4. GTV Hybrid 500 with combi boiler

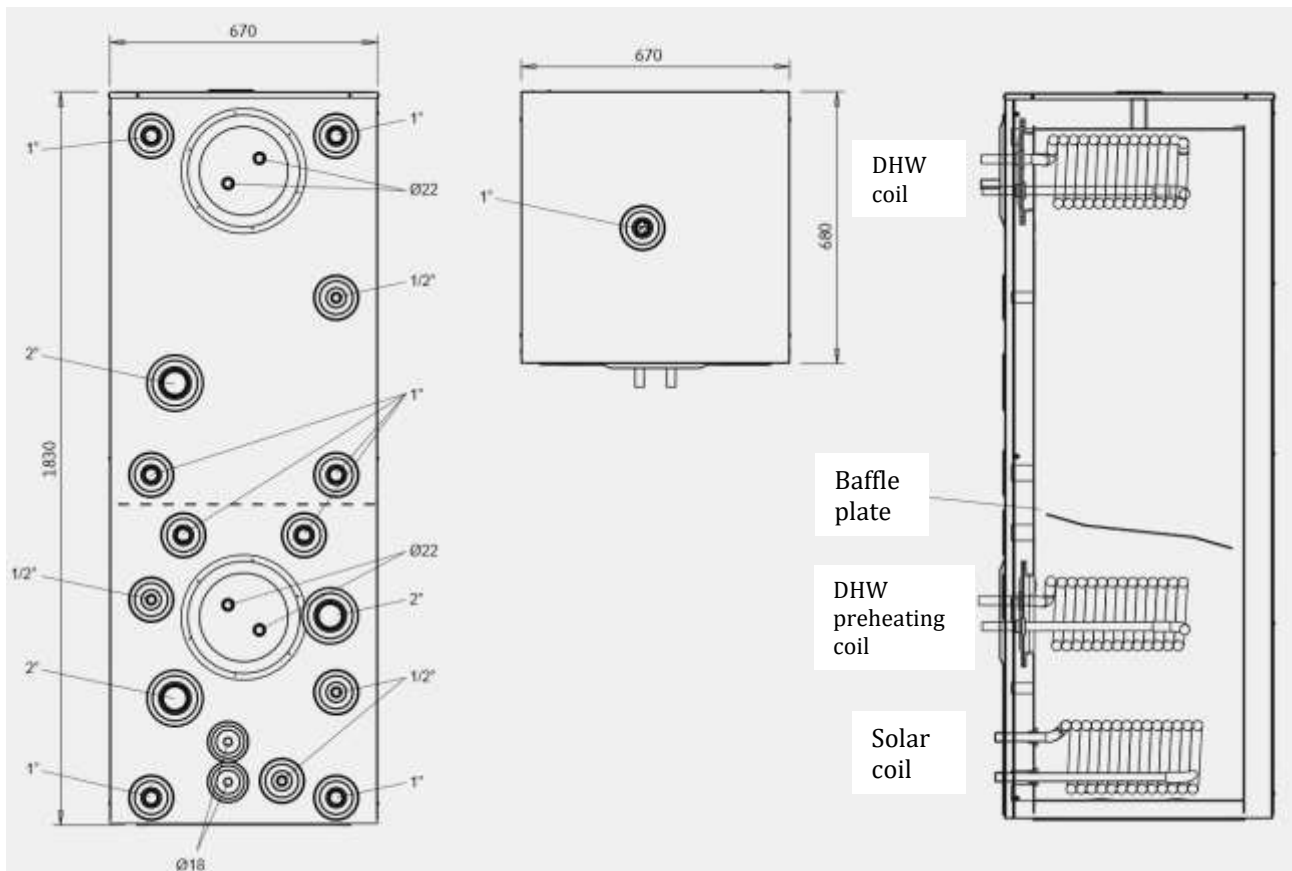
GtV Hybrid 500 bookers also have a solar spiral as standard. It is therefore easy to switch to the utilisation of solar heat later on. You can find different models of the possibilities of utilising Jäspi Hybrid Accumulators at the internet address www.kaukora.fi.

Jäspi Hybrid Accumulators combines Kaukora Oy's over 30 years of experience in domestic water heaters and traditional energy accumulators. Jäspi Hybrid accumulators are manufactured in Finland using the most modern production technology.

TRANSPORT AND HANDLING

It is recommended that the booker be transported upright. Do not leave the heater with moisture on sensitive flooring materials before installing it, as condensation or test pressure water may leak from the container. Do not cover the paintwork with rubbers, plastics or fabrics, as the surface may be damaged.

TECHNICAL DATA AND DIMENSIONS



2 Dimensions and sizes of joints

Height: 1830 mm
Width: 670 mm
Depth: 680 mm
Weight: 230 kg
Maximum design pressure: 3 bar
Maximum operating temperature: 110°C

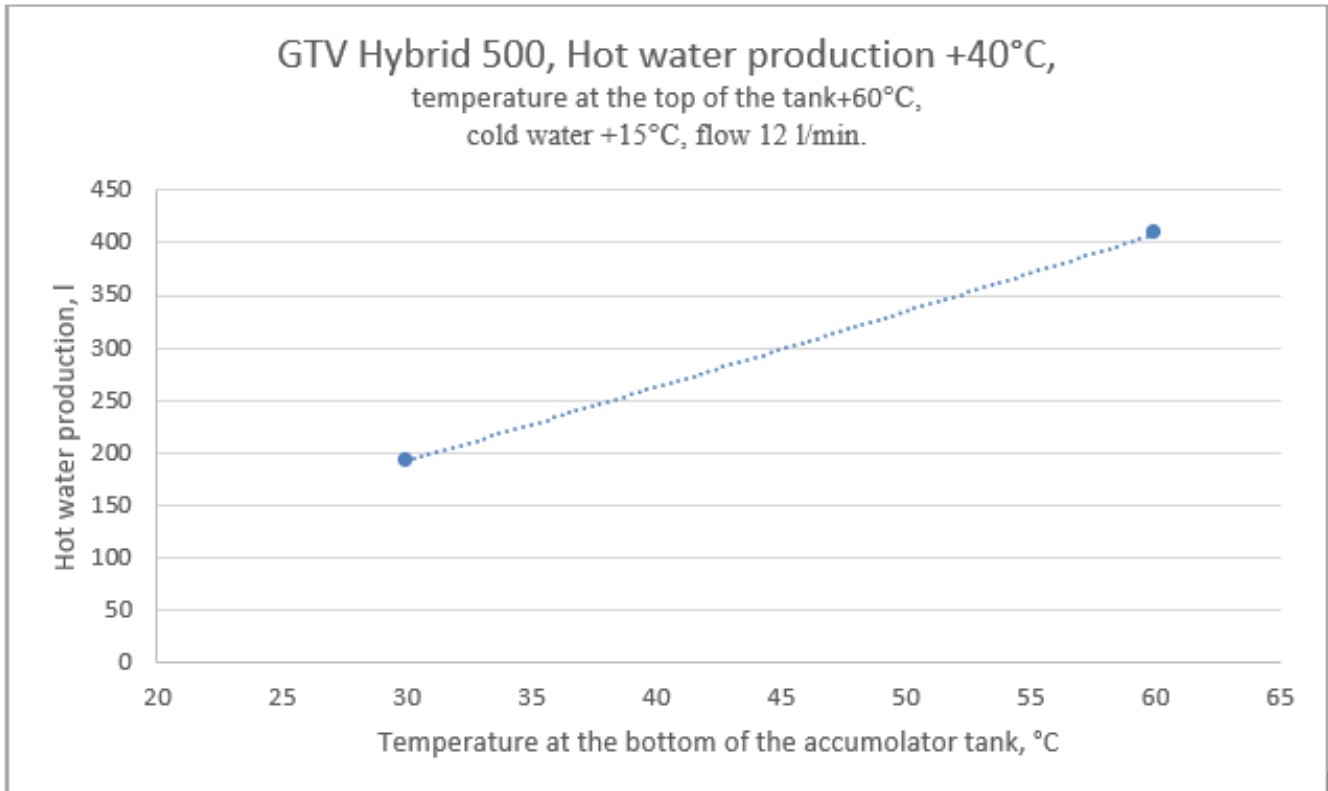
DOMESTIC WATER CYCLES

The heater has two 10m long \varnothing 22mm combed copper coils when installed in factory.

Coil type	Flow (l/min)	Power (kW)	Program
(58°C) LK 2	30	100	80 / 10-

Total liquid volume of coils 6.2 litres

Total external heat transfer area of the coils 5,1m²



SOLAR SPIRAL

The boiler has one 6.3m long \varnothing 18mm solar charging spiral when installed at factory. The liquid volume of the coil is 0.2 litres.
The heat transfer area outside the coil is 1.3 m².

GENERAL INSTALLATION INSTRUCTIONS

The accumulator is a model standing on the floor and requires a floor area of 665 mm x 675 mm. The charger is installed upright in a dry space near the floor drain.

When planning the location of the accumulator, sufficient installation and maintenance space around the accumulator must also be taken into account. When selecting the location, it should also be noted that the overflow pipe of the safety valve can be led to a nearby sewer, etc. It must also be possible to empty the boiler if necessary.

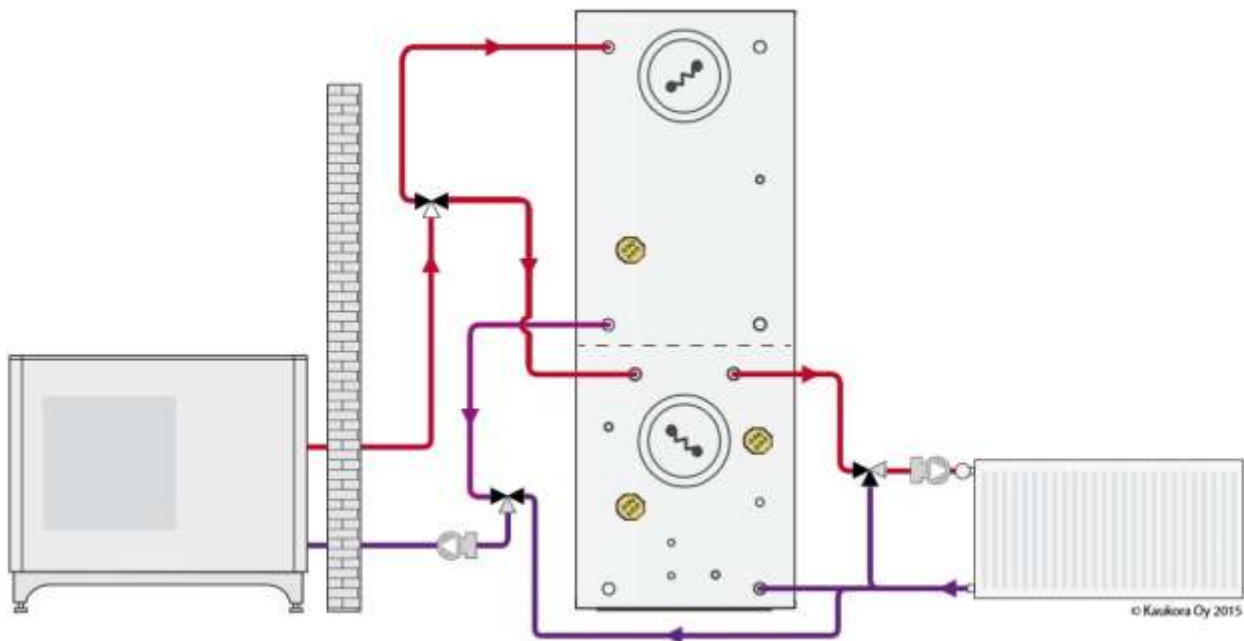
USE OF ELECTRICAL RESISTORS

Electrical connections of the accumulator may only be made by a qualified electrician. All electrical connections must comply with the current specifications and instructions. N.B.! If foreign control voltages are connected to the boiler, accumulator or heat pump, the device must be fitted with the following warning text: "Note! The control voltage that is foreign to the appliance."

PIPE INSTALLATION

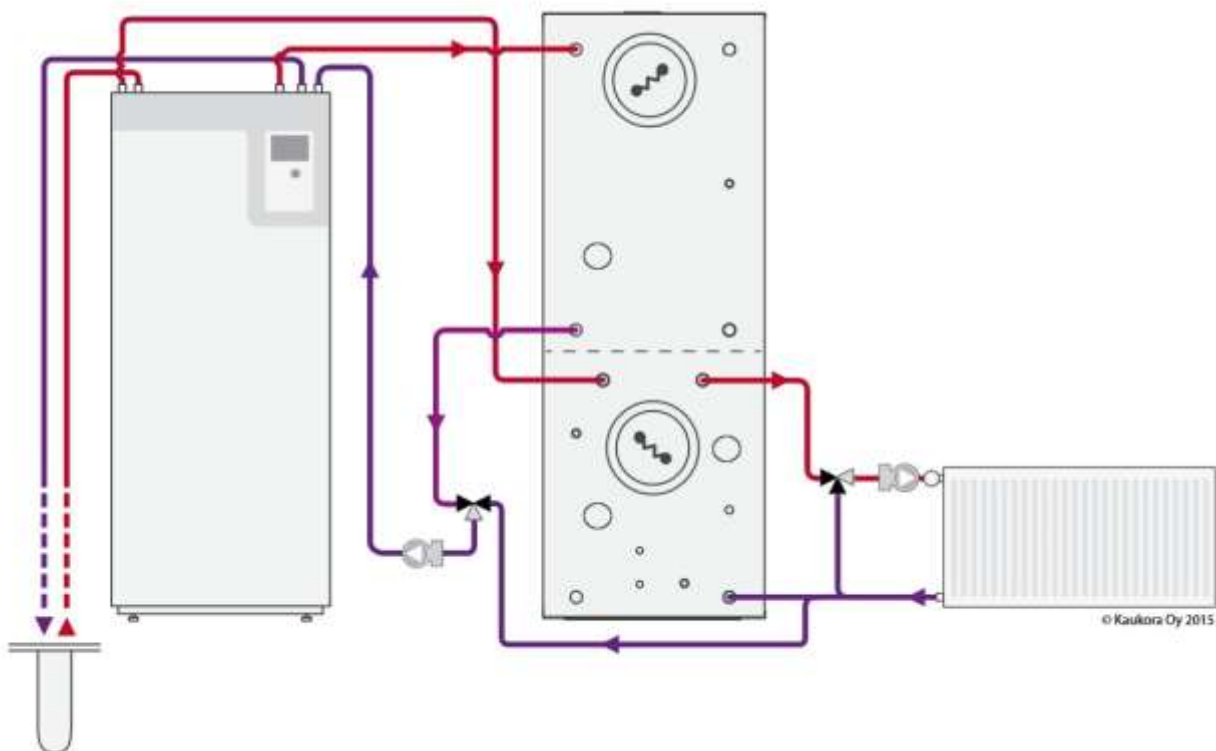
Pipe installations must be carried out in accordance with the current regulations. The structural pressure of the tank is 3 bar. The safety valve must be connected to an overflow pipe and placed in an appropriate location, e.g. in the case of a safety valve. floor drain. On the possibility of emptying the tank, e.g. care shall be taken care of through the group of safety devices.

Illustration of the connection of the air-water heat pump



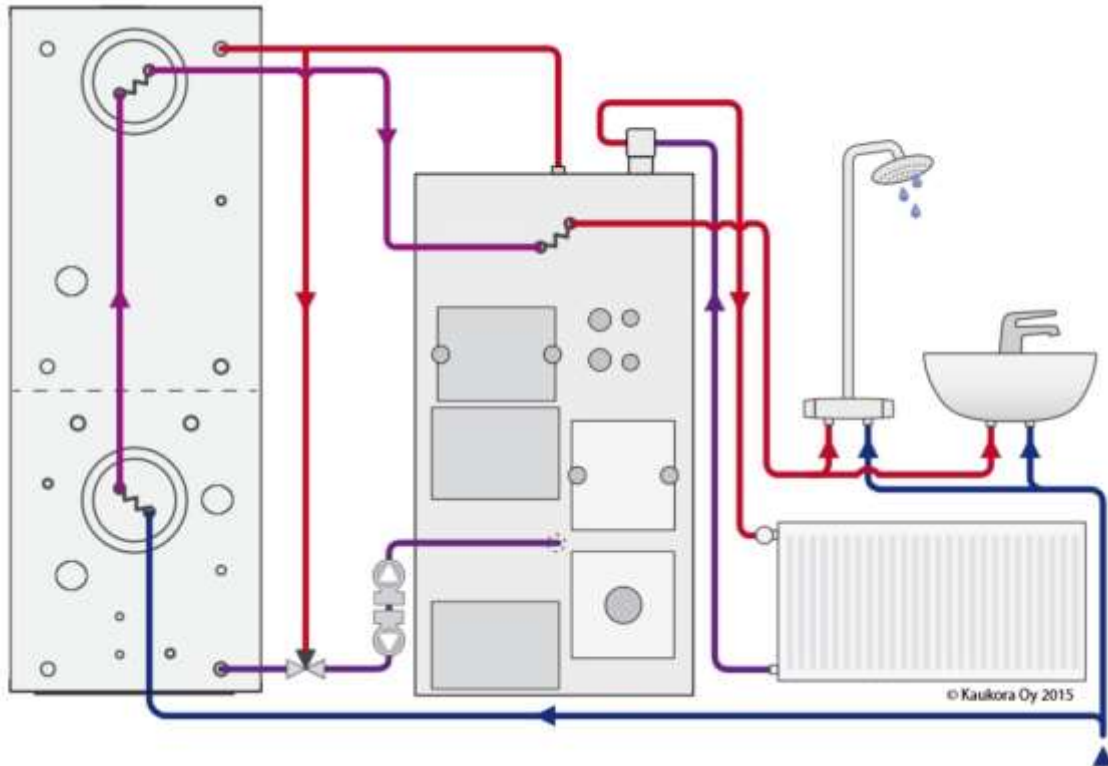
Jämä Moon switching image for installation on page 12.

Illustration of the connection of the geothermal heat pump



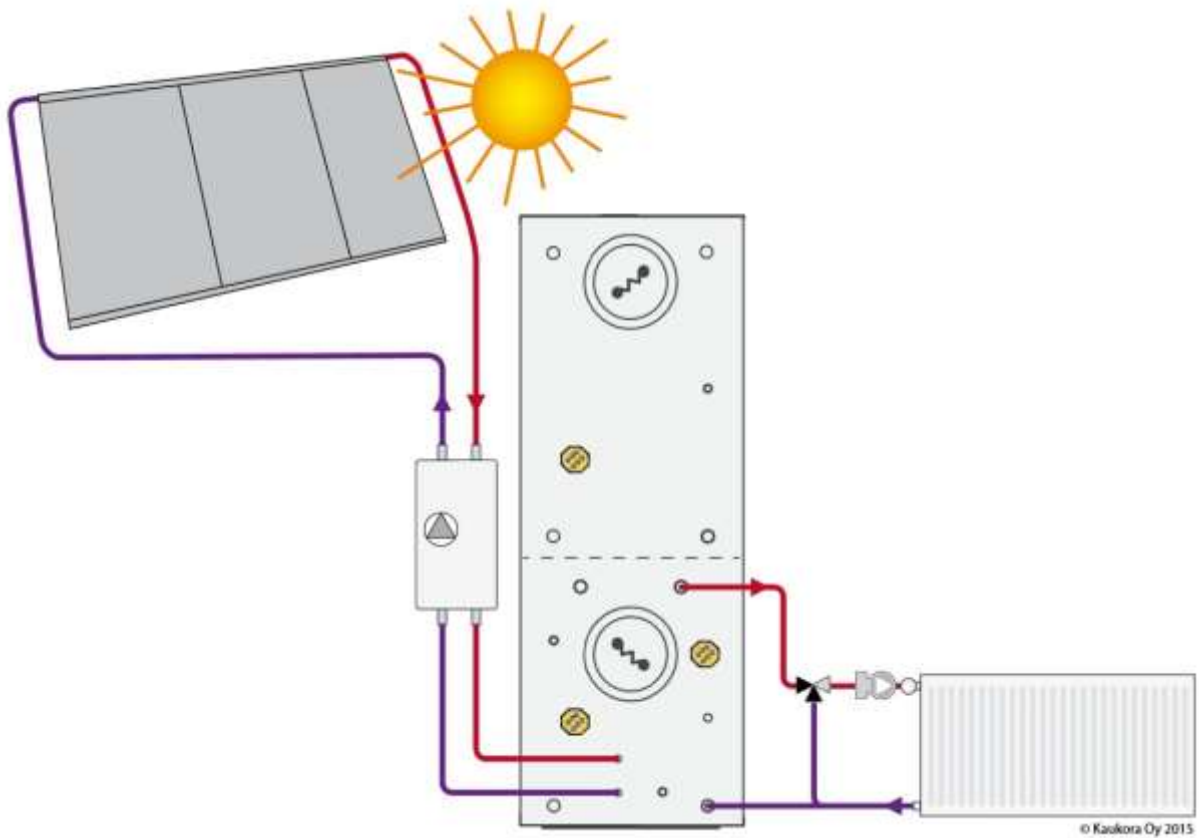
Jämä Earth heat pump switching images used for installation on pages 13-14.

Illustration of boiler connection



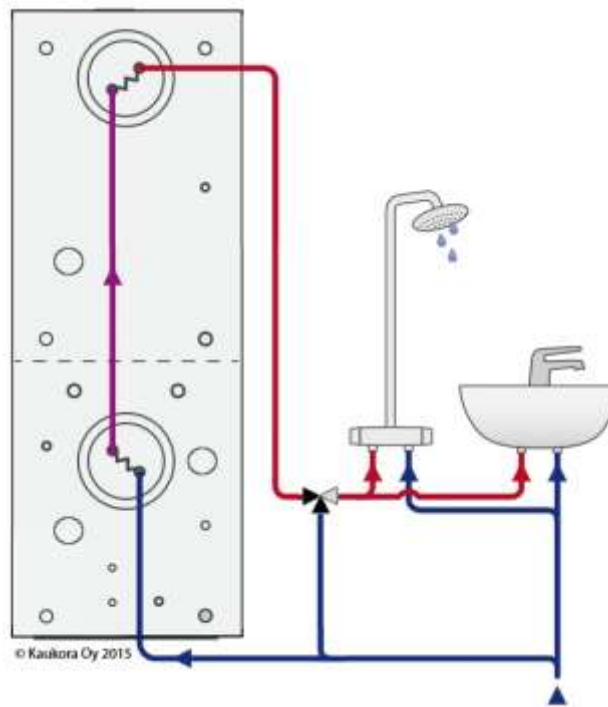
Jäspi Double chamber boiler switching image for installation on page 15.

Illustration of solar connection



Jäspi Solar system switching image for installation on page 16.

Illustration of the connection of domestic water



Switching images for installation on pages 12-16.

USE

Before commissioning, it must be ensured that the piping has undergone a leakage test and that the accumulator is full of water. The tank must be filled with water to avoid damage to any electrical resistors installed. The operation of the safety valve should be checked every 3-4 months, as its lack of functioning may cause a hazardous situation. The valve is triggered by turning its knob counterclockwise, allowing water to flow through the safety valve brick outlet. If this does not happen, the valve is defective and must be replaced.

MAINTENANCE

The operation of the safety valve should be checked every 3-4 months, as its malfunction may cause a hazardous situation. The valve is triggered by turning its knob counterclockwise, allowing water to flow through the safety valve discharge pipe. If this does not happen, the valve is defective and must be replaced.

The broken electrical part must be replaced with the original spare part. Maintenance must only be carried out by a qualified electrician. Paint surfaces can be cleaned with diluted detergents.

To remove the domestic water spirals, remove the coil cover and cut a hole in the insulation behind the lid using a knife. After removing the insulation, the thread can be removed by opening the bolts on the coil flange.

After removing the lower circulator, the solar coil can be removed through the operating water coil's installation opening, from the inner side. In addition, the counter nuts of the solar spiral penetrations must be removed from under the surface damper to remove the coil.

TROUBLESHOOTING

- The boiler does not provide enough hot water.

The higher boiler temperature produces more domestic water, but especially in heat pump heating, the high temperature yield requirement for a heat pump reduces the efficiency of the pump. See *The operating description of possible actions*.

- The safety valve drips water : **NOTE!** The drip of the safety valve is generally interpreted as having something wrong with it, even though it is quite reversed. The safety valve will then work exactly as it should. The drip is caused by the thermal expansion of the water. In renovation projects, pipes and valves are often replaced when the domestic water system is renewed. In this case, the one-way valve in the network will also be renewed, through which the increase in pressure has previously been able to escape to other parts of the network. Therefore, the safety valve drops more in renovation sites than before. Water density is at its highest at + 4 °C. When the temperature is raised or lowered, the volume of water increases. The coefficient of thermal expansion of the water volume when increasing the temperature from +4 °C to +80 °C shall be 0,0290:

1 Kg H₂O (water) + 4 °C at = 1 litre

1 Kg H₂O (water) + 80 °C = 1,0290 liter

E.g. 300 kg of water at + 4 °C = 300 liters

300 kg water at + 80 °C = 308,7 litres

In the example, the volume increases by 8.7 litres and this amount is removed through the safety valve.

E.G. 50 kg of water + 4 °C = 50 liters of 50 kg of water at + 80 °C = 51,45 litres

In example 2, 1.45 l is removed respectively.

The examples are used to illustrate how much water expands as it heats up, and thus how much water can be removed through the safety valve in 24 hours. If this expanded part of the water cannot escape through the safety valve, the pressure in the system will rise so high that eventually the weakest point in the network will fail and cause water damage.

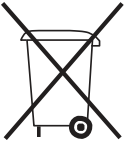
GUARANTEE

The warranty of the tank is 2 years, for components 1 year.

The warranty does not apply to situations where the operating and installation instructions have been followed.

RECYCLING

When removing the appliance from service, it must be agreed with a qualified installer that the appliance will be delivered to an appropriate and authorised recycling station.



LP01 Jämsä Star
 S01 GTV HYBRID 500
 KBR10 Täyryryhmä

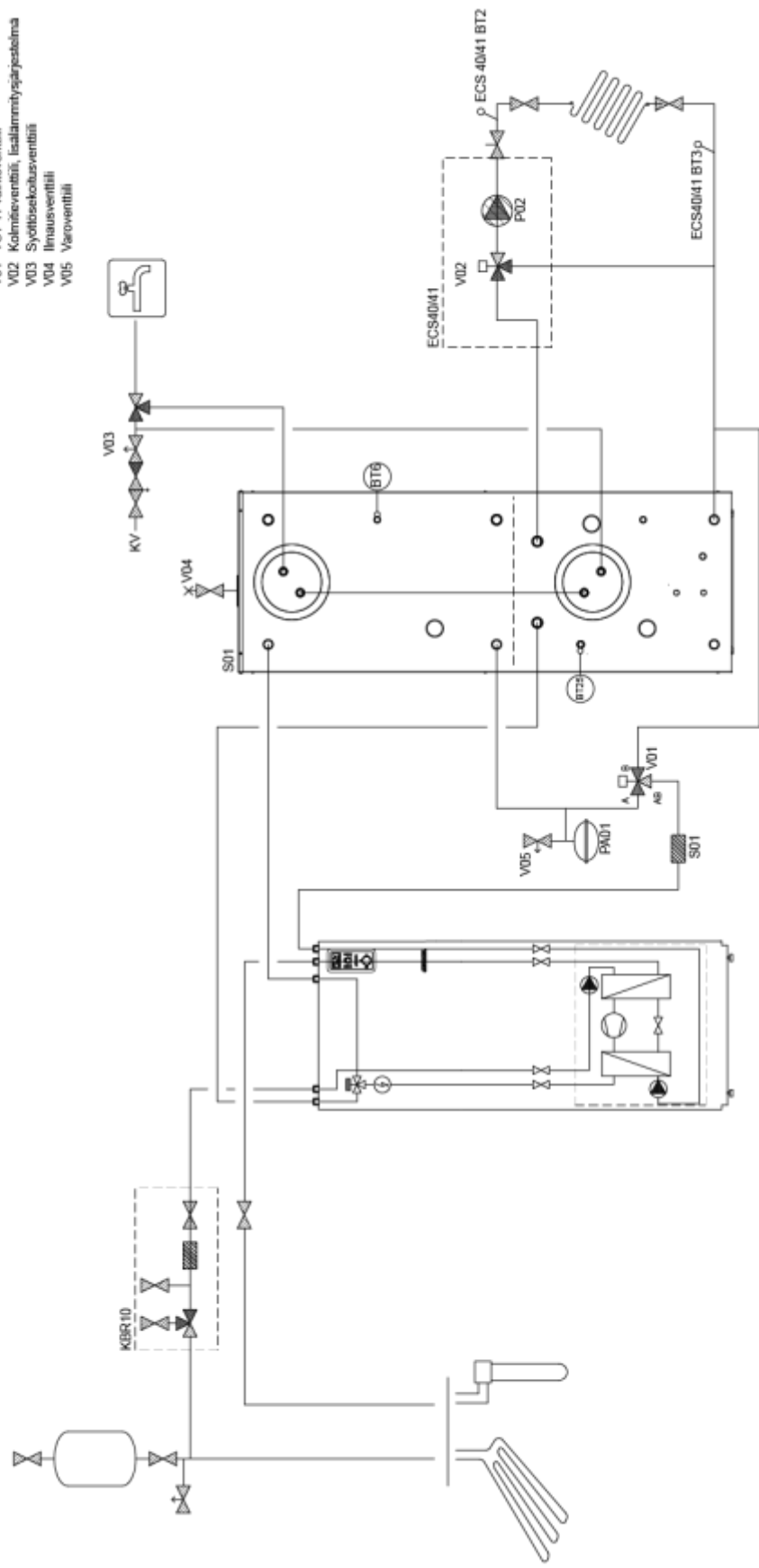
BT25 Lämpötila-anturi, ulkoinen menovesi
 BT6 Lämpötila-anturi, käyttöveden täyttö

ECS4041 LISÄHUUNTTISARJUA

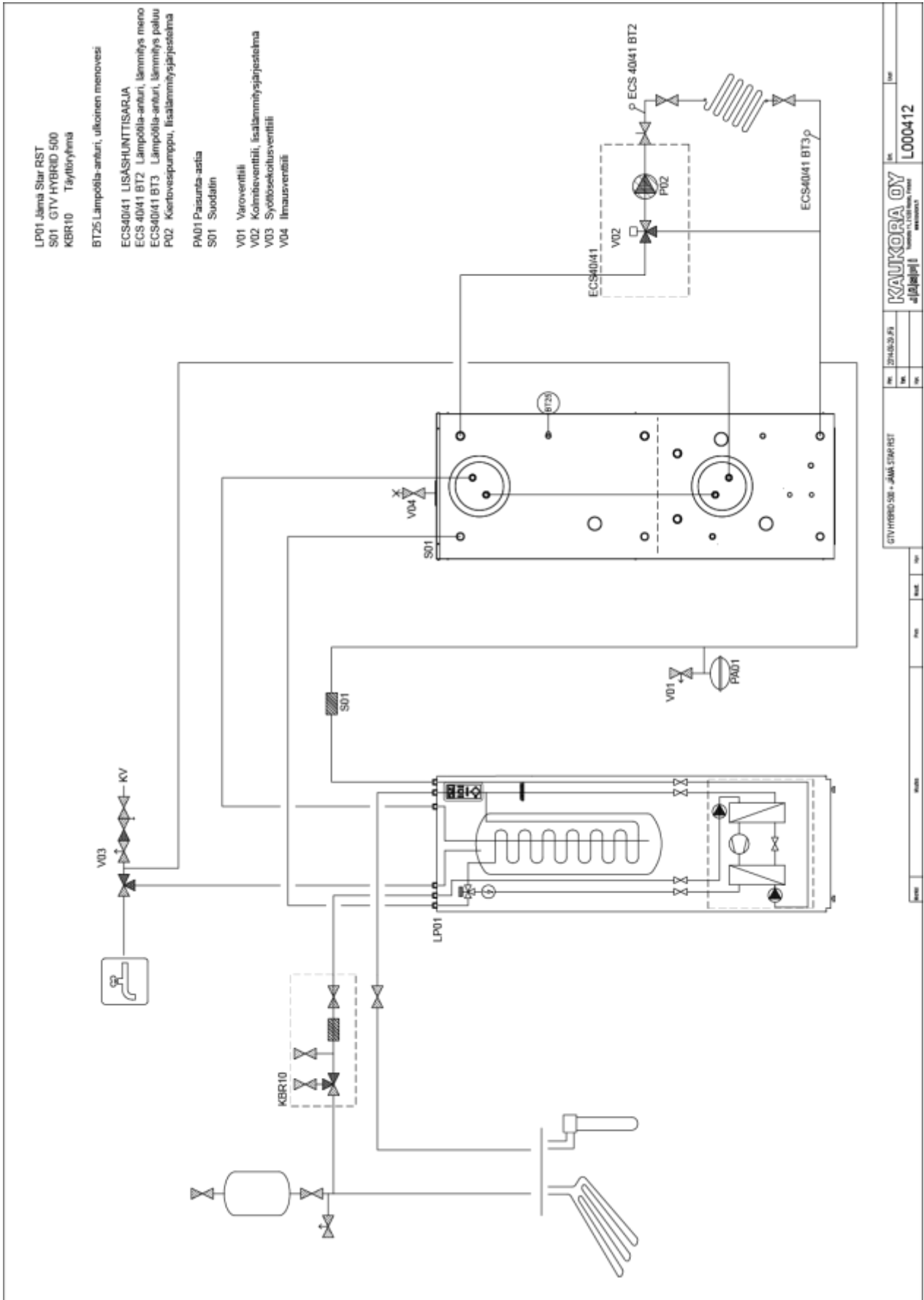
ECS 4041 BT2 Lämpötila-anturi, lämmitys meno
 ECS4041 BT3 Lämpötila-anturi, lämmitys paluu
 P02 Kiertovesipumppu, lisälämmitysjärjestelmä

PA01 Paisuriita-asia
 S01 Suodatin

V01 VST 11 vaihtoverentili
 V02 Kolmeventili, lisälämmitysjärjestelmä
 V03 Syöttösekkoventili
 V04 Ilmausventili
 V05 Varoventili



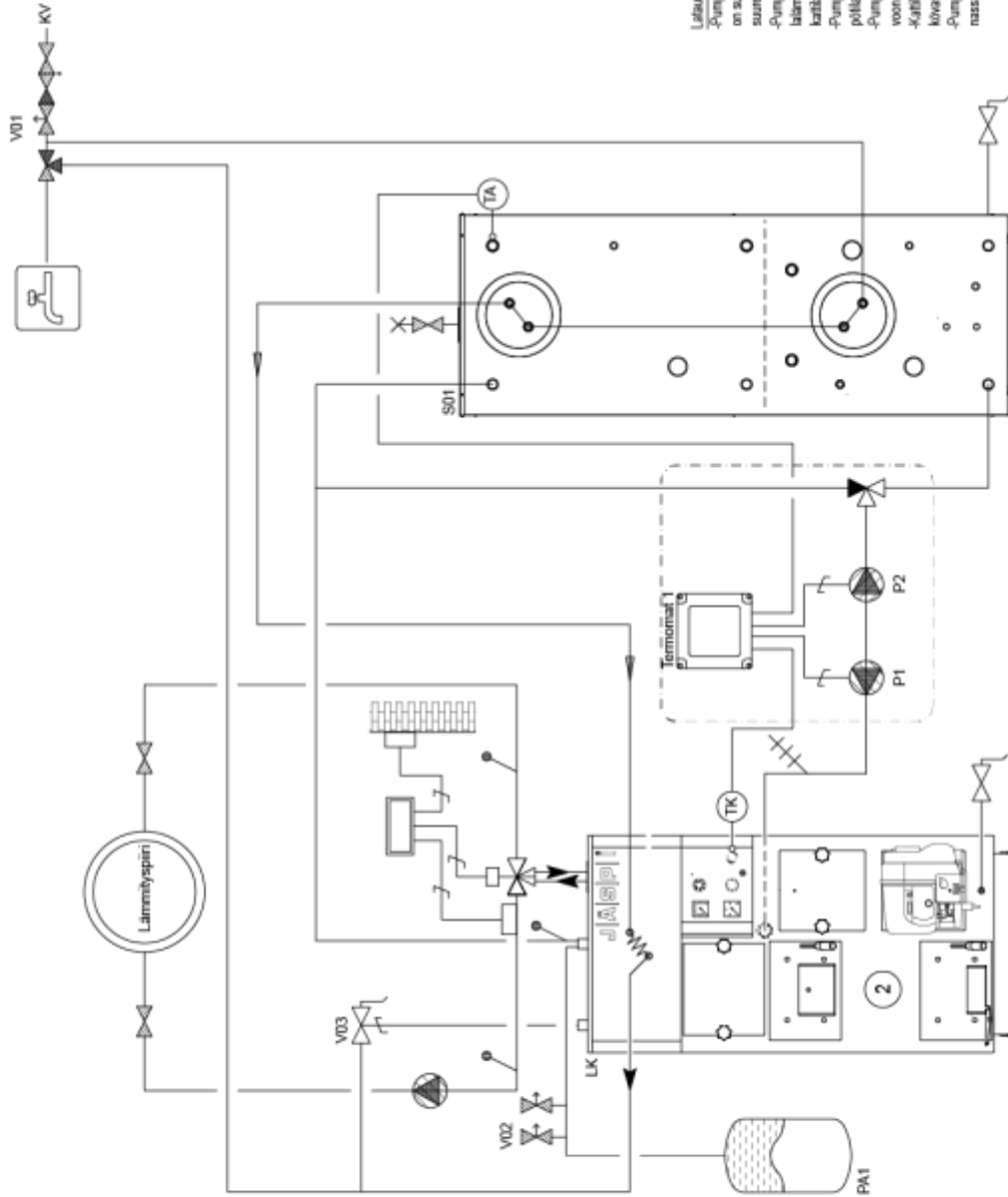
GTV HYBRID 500 - JÄMSÄ STAR		Kaukora Oy	
Rev	2014-03-23	Rev	L000411
Ma		Ma	
Pa		Pa	
Si		Si	
To		To	
Ke		Ke	
Pe		Pe	
La		La	
Su		Su	



GTV HYBRID 500 - JÄMA STAR RST		KAIKORA OY	
Rev	2018.03.29	Rev	L000412
Ma		Ma	
Mo		Mo	

Proj		Ma	
Ma		Ma	
Mo		Mo	
Ma		Ma	

- LK Yhdistelmäkaeli
- S01 GTV HYBRID 500
- Termomat 1
- P1 Kiertovesipumppu
- P2 Kiertovesipumppu
- TA Lämpötila-anturi, Varaaja
- TK Lämpötila-anturi, kattila
- PA1 Paisunta-astia
- V01 Syöttösekoitusventtiili
- V02 Varoventtiili 2 kpl
- V03 Lämpötilanrajoitusventtiili



Latauslaitteen toiminta:

- Pumppu P1 käynnistää latauksen kattilasta varaajaan, kun kattilalämpötila Tk on suurempi kuin kattilalämpötilan asetustaso (ohitusaistus 60 °C) ja yli 1 °C suurempi kuin varaajalämpötila Ta.
- Pumppu P1 pysähtyy, kun kattilalämpötila Tk on yli 1 °C pienempi kuin kattilalämpötilan asetustaso tai varaajalämpötila Ta on yli 1,5 °C suurempi kuin kattilalämpötila Tk.
- Pumppu P2 käynnistää ohitusaistuksen varaajasta kattilaan, kun varaajalämpötila Ta on asetustason (4-8 °C) venon suurempi kuin kattilalämpötila Tk.
- Pumppu P2 pysähtyy, kun kattilan ja varaajan lämpötilaero laskee asetustasoon (2-3 °C).
- Kattilalämpötilan laskiessa alle 40 °C käynnistyy kattilan ohjotin tai sähköstus.
- Pumput P1 ja P2 eivät käy, kun kattilan ohjotin tai sähköstus ovat toiminnassa.

