Installation

(The extract from Installation Instruction SHP-TH22DDN/DHN-SW)

01. Introduction

The Sanyo CO2 Eco is a complete heat pump system that warms both the house and the hot water.

The Sanyo CO2 Eco is equipped with a motorized mixing valve which constantly ensures that a correct and even temperature reaches the radiators.

The Sanyo CO2 Eco has a built-in circulating pump for connection to the heat pump.

The Sanyo CO2 Eco has an micro chip operating system which:

- monitors all functions in the product.
- admits individual adjustments
- clear text shows the desired values, e.g. temperatures, operation times, fault indications and so on.
- in a simple and structured way facilitates the adjustments and fault localization.

The Sanyo CO2 Eco has a built-in copper coil which provides domestic hot water abundantly.

The Sanyo CO2 Eco has a basement heating function which makes it possible to heat only the basement if needed, i.e. summer time. In case of under floor heating installation it has a electronic controlled temperature limiter.

The Sanyo CO2 Eco has a built-in night reduction, where you can change the temperature in the house day by day.

The Sanyo CO2 Eco is easy to service with easy access to electrical components, and good fault tracing functions in the operating program.

The Sanyo CO2 Eco is delivered with a room sensor as standard. The room sensor is equipped with a light-emitting diode which alarms in case of fault. The fault can be read in clear text on the display on the indoor unit (signals window).

Due to the quick development the right to changes in specifications and parts are reserved.

02. Important points

General information

Upon delivery and installation carefully check the following important points:

- Unpack the product and check before installation that it has not been damaged during transport.
  Report eventual transport damage to the transporters.
- **The Sanyo CO2 Eco must be transported standing**
  When moving inside the house the product can be temporarily placed on its back.
- If the product is placed in a room with soft carpeting, bottom plates must be placed under the adjusting feet of the product.
- Make sure that the product stands straight. Check with a water level.
- Check that waste water pipe from the mounted safety valve is drawn to the floor drain.

Note: The current sensors shall always be mounted. The boiler detects what phase the heat pump is mounted, and adjusts the step sequence of the electrical heater.

Use this installation manual together with the users manual where the control system functions are described.

Safety instructions

The following safety instructions must be observed upon handling, installation and use of the product.

- Install a safety valve 9 bar on the cold water connection, see chapter “Plumbing system”.
- Fit the mixing valve to the hot tap water to prevent scalding, see chapter “Plumbing system”.
- Ensure that the product is currentless before any interventions.
- Do not flush the boiler with water.
- When handling the product with a lifting eye, make sure that the lifting tackle, eyes etc are not damaged. Never place yourself under the lifted up product.
- Never risk your safety by dismantling casings, covers etc that are screwed tight.
- Never risk your safety by setting safety equipment out of function.
- Interventions in the electric or the cooling system must be done only by a qualified person.

03. Technical data

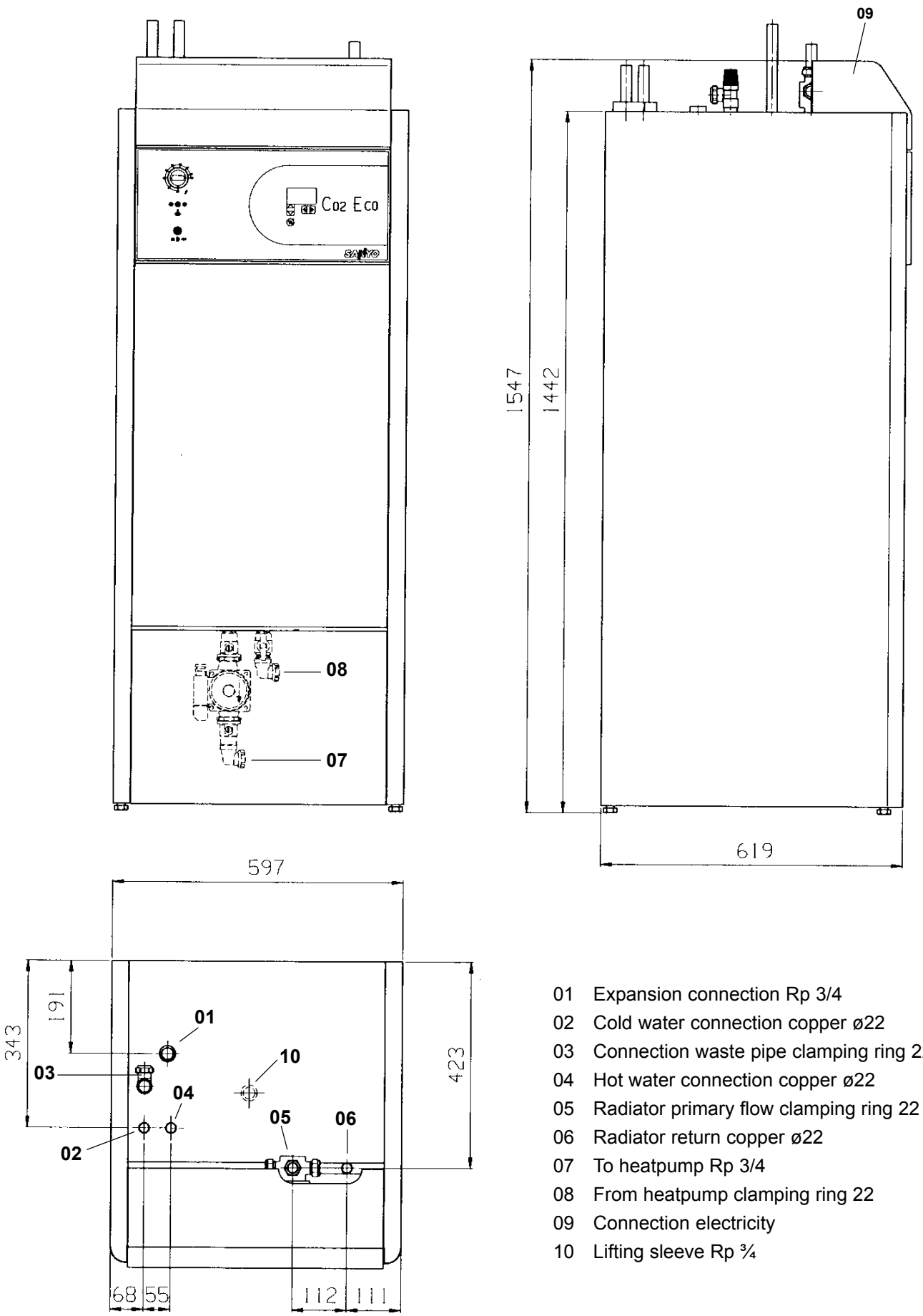
SHP-TH22DDN-SW

Electrical data:		400V 3N~
Electrical supply (adjustable)	kW:	1.5-9
Min group fuse at inst of 3,6,9 kW el	A:	10, 10, 16
Water volume boiler	l:	223
Max operation pressure boiler	bar:	2.5
Water volume hot water coil	l:	5.7
Max operation pressure hot water coil	bar:	9
Load pump speed adjustment:		3
Hot water capacity, quantity 40°C (10° cold water) at:		
- 50°C electric boiler, 12 l/min tap flow	l	100
- 65°C electric boiler, 12/21 l flow	l	>365/100
Weight (emballing included)	kg:	180

SHP-TH22DHN-SW

Electrical data:		230V 3~
Electrical supply (adjustable)	kW:	1.175-7.05
Min group fuse at inst of 2.35, 4.7, 7.05 kW el	A:	16, 16, 20
Water volume boiler	l:	223
Max operation pressure boiler	bar:	2.5
Water volume hot water coil	l:	5.7
Max operation pressure hot water coil	bar:	9
Load pump speed adjustment:		3
Hot water capacity, quantity 40°C (10° cold water) at:		
- 50°C electric boiler, 12 l/min tap flow	l	100
- 65°C electric boiler, 12/21 l flow	l	>330/100
Weight (emballing included)	kg:	180

04. Measurements



01 Expansion connection Rp 3/4
02 Cold water connection copper ø22
03 Connection waste pipe clamping ring 22
04 Hot water connection copper ø22
05 Radiator primary flow clamping ring 22
06 Radiator return copper ø22
07 To heatpump Rp 3/4
08 From heatpump clamping ring 22
09 Connection electricity
10 Lifting sleeve Rp ¾

05. Principal boiler construction

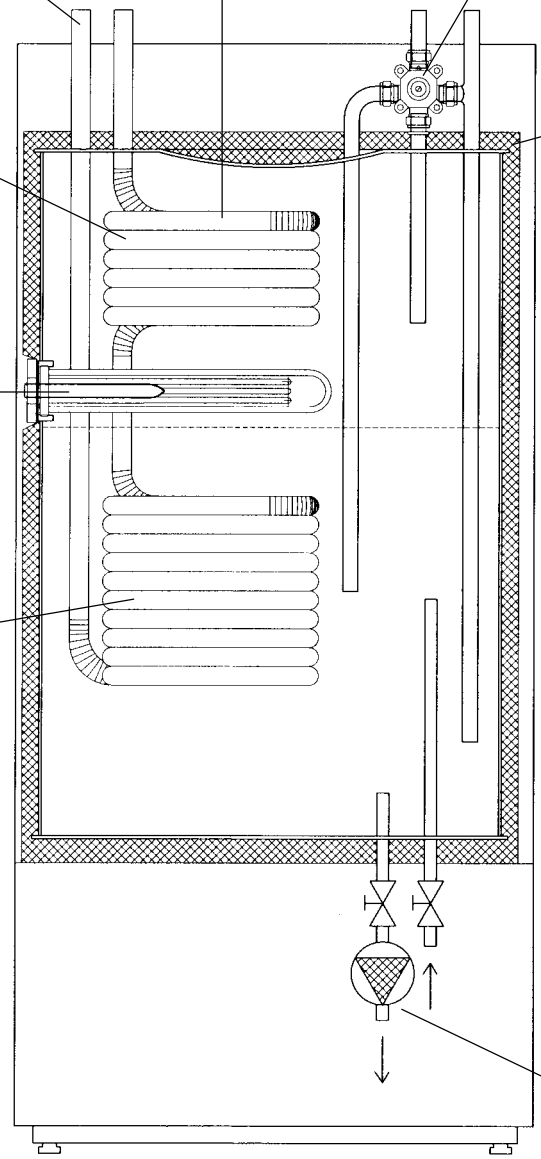
General information

The picture below shows the fundamental construction of the product.
Note: Do not connect the product according to this construction sketch, see instead the measurements on page 38 and the chapter "Plumbing system".

Fresh water connections
Here you connect the fresh water connections of the property. The cold water is led down to the lower part of the coil.

Coil for hot water
The product is equipped with a well dimensioned copper coil. The product is not supplied with any parts which can rust and break. The temperature can be kept low without risk of legionella bacteria.

Bivalent mixing valve
The automatic mixing valve ensures that an even heat reaches the radiator system all the time. The valve has double ports and collects first the hot radiator water from the water heated by the heating pump.



Upper part
In the upper part of the coil the water is heated to the selected hot water temperature.

Insulation
The boiler of the boiler is insulated with die cast polyurethane foam for minimal heat losses.

Immersion heaters
A built-in immersion heater functions as peak heat if the effective output is not sufficient along with the rising of the hot water temperature.

Lower part
In the lower part of the coil the water is pre-heated by the heating pump. The major part of the coil is located in this part.

Load pump
The load pump transports the water between the heat pump and the boiler. The water is the same as for the radiators.

06. Plumbing system

General information

The installation must be carried out in accordance with local regulations.
The boiler must be connected to an expansion vessel in an open or closed system.
Carry out installation adjustments in accordance with the descriptions in Chapter 10 “First start-up” before starting up the equipment.
Inform the user of the handling and maintenance, show him the knobs, the handles etc to make sure he clearly understands how the equipment works and must be maintained.
The radiator system must be rinsed before connecting it.

Operation without heat pump

Sanyo CO2 Eco can be set in function without the heat pump being installed. The product works then like a common electric boiler with full function of the regulation. Nevertheless the hot water capacity is a little lower when only the upper part of the boiler is heated. Make sure the heat pump is blocked in the controls.

Transport

To avoid transport damages, do not unpack the boiler until it has been transported to its installation site in the boiler room. The boiler can be handled and lifted in the following way:

- Fork truck
- Lifting eye to be fitted to the lifting sleeve on top of the boiler (extra sleeve can be found on top of the boiler in the centre under the insulation).
- Lifting band around the pallet. Note! Only with the wrapping on.

Remember that the boiler has a high gravity, handle with caution.

Unpacking

To avoid damages in the handling, unpack the boiler first when it is located in its place. After the unpacking check:

- That the boiler has not been damaged during transport. Report eventual damages to the forwarding agent.
- Ensure that the delivery is complete, see below.

Standard delivery

- Boiler Sanyo CO2 Eco, including load pump
- Enclosed bag with:
  room sensor
  primary flow sensor
  outdoor sensor
  installation and maintenance instruction
  safety valve for use water, 9 bar
  current sensors, 3 pcs

Basement heating for the summer time

The boiler can be programmed for ”basement heating”, if a certain basic heating, e.g. in the basement or in the loghouse, is desired during the summer to avoid raw and damp air. Under the menu ”SETTING” in the control system ”MIN DEPART TEMP” (=min. allowed flow temp) can be selected.
If the function is activated the control system makes sure that the flow temperature does not goes below the set value, even if the room sensor or the heating curve desires a lower temperature.
The function demands that functioning radiator thermostats or shut-off valves are mounted in the other parts of the house.
The function can also be used for floor heating installed in e.g. a bathroom.

Domestic hot water:

Mixing valve domestic water

Mixing valve for the domestic water must be mounted on the hot water tap to avoid the risk of scalding

Safety valve hot tap water

Mount the enclosed valve to the incoming cold water connection. The waste pipe must be connected to the draining gutter directly, or if the distance is more than 2 m, to the waste funnel. The waste pipe must lean toward the draining gutter.

Non-return valve

Mount a non-return valve to the incoming cold water connection.

Radiator system:

Circulation pump radiator system

The circulation pump must be mounted on the primary flow of the boiler and is electrically connected from the boiler, see ”Electric installation”.

Safety valve boiler

The safety valve of the boiler is mounted by the manufacturer. The waste pipe must be connected to the draining gutter directly, or if the distance is more than 2 m, to the waste funnel. The waste pipe must lean toward the draining gutter.

Fillet valve radiator system

Must be mounted between the cold water connection and the radiator return pipe (alternative: between the cold water and the expansion connection).

Pressure gauge, system pressure

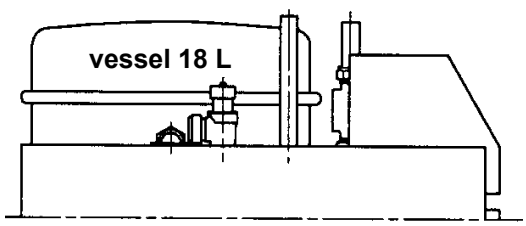
The pressure gauge must be mounted to the expansion pipe, alternatively to the return pipe of the radiator.

Connection of the expansion vessel

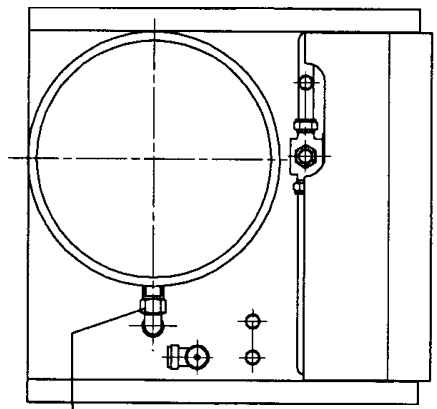
The boiler can be connected to a closed expansion vessel (recommended) or to an open vessel. The boiler is ready for assembly to an 18 l closed vessel, placed compact on top of the boiler. The expansion vessel with required angle connection can be bought as an accessory from the supplier. Connect then the system pressure gauge to the return pipe of the radiator. If another expansion vessel is chosen, the pressure gauge is often included. With an open system, the height between the highest placed radiator and the expansion vessel must not be less than 2,5 m to avoid air getting into the system.

Assembly of expansion vessel

Side view



Top view

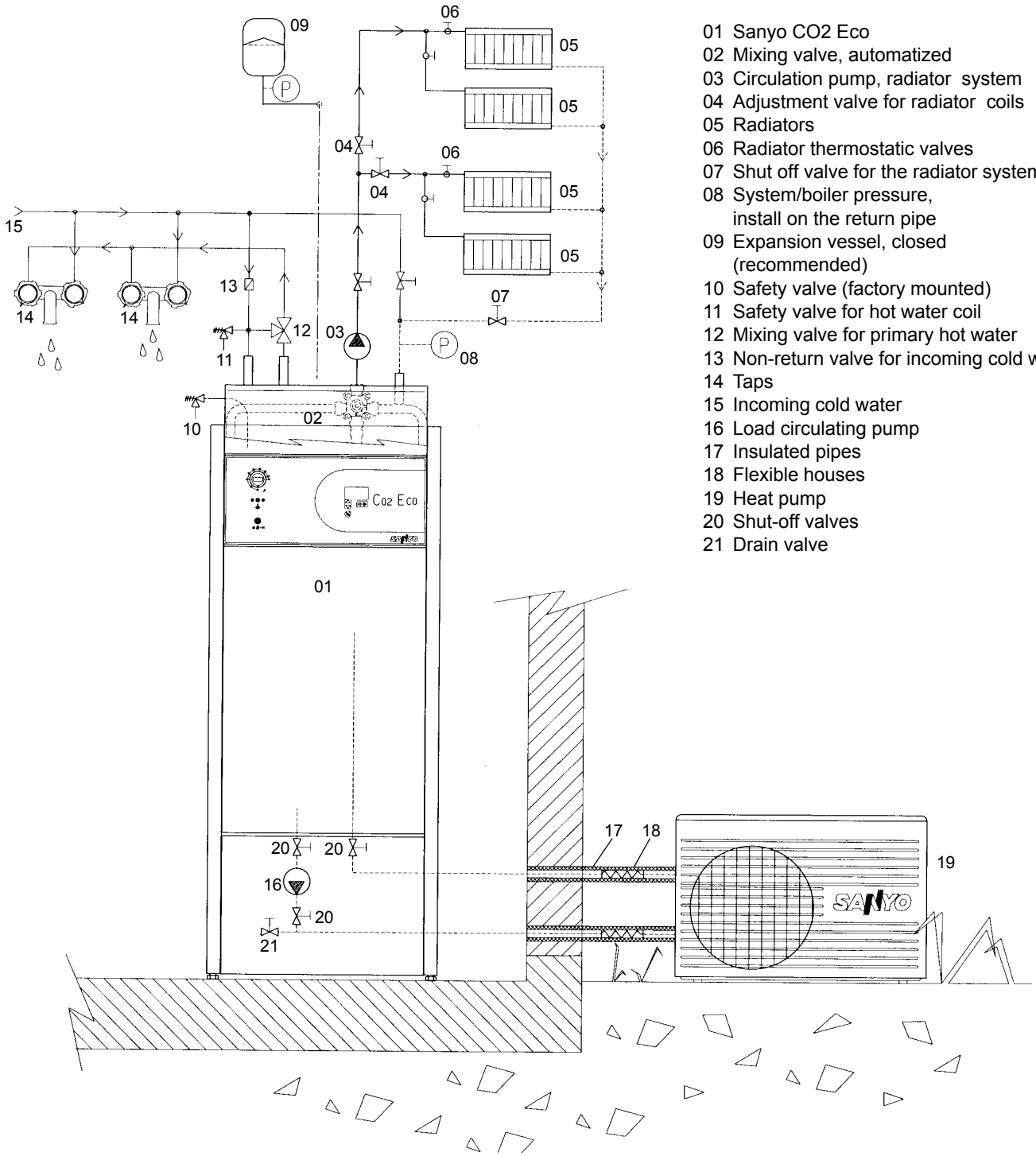


Angular coupling

06. Plumbing system

Principle sketch for pipe connection

The ***principle sketch*** shows the main connection of the boiler to the radiator and hot water system of the house, and the connection to the heat pump. Different systems may look different, e.g. single or double pipe systems, which can make the final installation to be different.



01 Sanyo CO2 Eco
02 Mixing valve, automatized
03 Circulation pump, radiator system
04 Adjustment valve for radiator coils
05 Radiators
06 Radiator thermostatic valves
07 Shut off valve for the radiator system
08 System/boiler pressure, install on the return pipe
09 Expansion vessel, closed (recommended)
10 Safety valve (factory mounted)
11 Safety valve for hot water coil
12 Mixing valve for primary hot water
13 Non-return valve for incoming cold water
14 Taps
15 Incoming cold water
16 Load circulating pump
17 Insulated pipes
18 Flexible houses
19 Heat pump
20 Shut-off valves
21 Drain valve

07. Connection to the heat pump

Connections

For connection to the heat pump, please follow the instructions in the heat pump manual.

Drain valve

Mount a drain valve on the pipe from connection (21) “to the heat pump”, see page 43.

Releasing the air

Before starting the heat pump the air must be released in the system. Enter menu “Manual” and start the circulating pump manually until all air is released.

Load circulating pump

Check that the “speed selector switch” is at the STEP III setting.

Open all three of the shut-off valves (20).