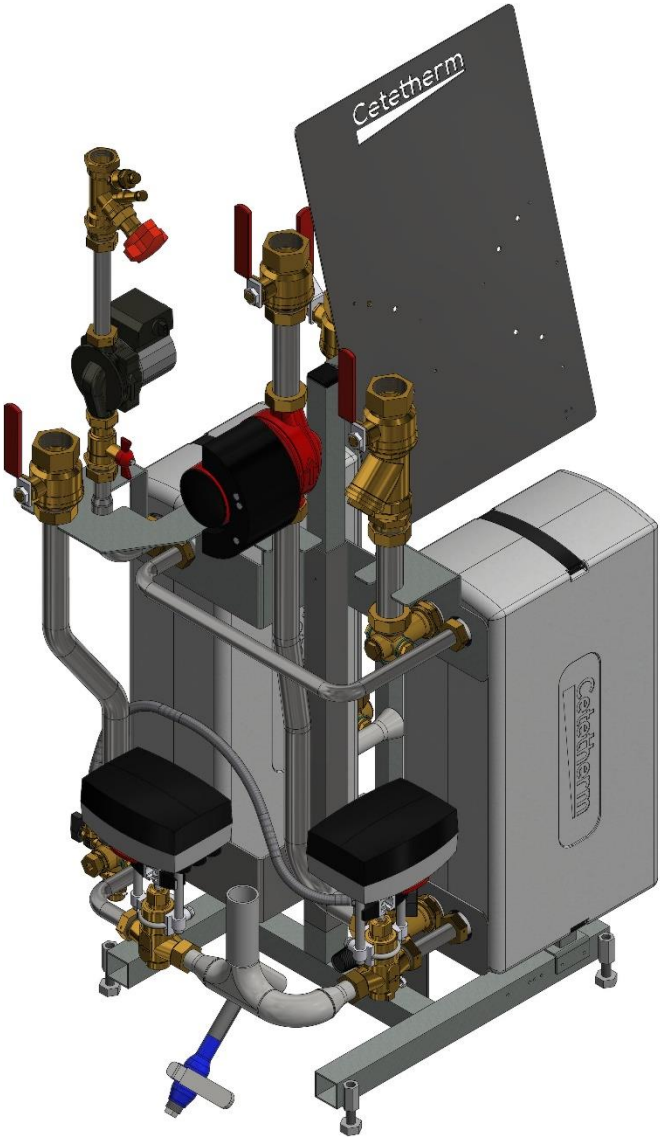
Cetetherm

Installation, service and operating instruction Cetetherm Midi Compact TA DHWC

Heating and domestic hot water substation for apartment houses (10-50 apts.)



For additional on-line information, latest version of this manual please scan the qr-code or use the link:
https://www.cetetherm.com/midicompact

QR-code:

This manual is published by Cetetherm.

Contents

1 General

Cetetherm Midi Compact is a complete, ready-to-install heating network substation for heating and hot water. It is designed for buildings with a primary connection to a heating network. Cetetherm has years of experience in heating network technology and has developed Midi Compact with well-planned pipe work and with all components easily accessible for inspection and possible future servicing.

1.1 Comfort

Midi Compact has fully automatic temperature control for hot water. The hot water is controlled and maintained at the desired temperature.

1.2 Installation

Before installation this manual must be read.

Well planned pipe work make installation very simple.
The Midi Compact is designed to be placed on the floor.

1.3 Long-term security

All the plates and pipes in the heat exchanger are made of acid-resistant stainless steel for long life. All components are adjusted together and undergo thorough function testing in accordance with ISO 9001:2015 quality assurance system.

For future servicing requirements, all components are easily accessible and individually replaceable.

1.4 CE-marking

Midi Compact is CE-marked to certify that the substation conforms to international safety regulations. To maintain the validity of the CE marking, only identical replacement parts must be used.

1.5 Information about the document

All pictures in this document are general images.
Midi Compact is available in different models and levels of equipment.

1.6 General warnings

	The installation work must be carried out by an authorized installation contractor. Before the system is taken into operation, it must be pressure tested in accordance with relevant regulations.
	The temperature and the pressure of the district heating water are very high. Only duly qualified technicians can work with the district heating substation. Incorrect operation may cause serious personal injury and result in damage to the building.
	If the hot water temperature is set too high, people may be scalded. If the hot water temperature is set too low, unwanted bacteriological growth may occur in the hot water system. This can result in serious personal injury.
	Parts of the Midi Compact may get very hot and should not be touched.
	Before the substation is connected to the electrical supply, make sure that the secondary heating system is topped up with water. Starting up the system without water will damage the circulation pump.
	When starting up the district heating substation: To avoid the risk of scalding, make sure that no-one draws any hot water until the hot water temperature has been adjusted.
	Start district heating circulation by first opening the valve in the **district heating supply** and then **return** lines, to avoid pollutions in the system. Open the valves slowly to avoid pressure surges. Do the same way with the heating circuit, first open the valve for **heating return** then **supply**.
	Do not shut of the electrical supply to the operator control panel. This will damage the circulation pump, valves, actuators etc.
	The heating station should be placed in a locked space, non-accessible for unauthorized personnel.

2 Operating instructions

2.1 Operation

The temperature and pressure of the incoming heating network water from the culvert network are very high. For this reason, only the heat from this water is used. The heating network water does not enter the heating and hot water systems of the building.

The heat from the heating network water is transferred to the heating and hot water systems of the building in the heat exchangers. The heat is transferred through thin plates of acid-resistant stainless steel which keep the heating network water completely separated from the systems in the building.

Midi Compact has automatic temperature control for hot water. The hot water temperature is controlled by a temperature control system which is set to about 55 ºC.

After adjustment, the Midi Compact operates completely automatically. However, in hard water areas it is advisable to be attentive and to remedy any faults in good time if the temperature of the hot water is too high; otherwise the risk of lime deposits in the heat exchanger may increase.

2.2 Safety equipment/inspection

- Daily inspection to check for leaks from pipes or components.
- Weekly inspection to make sure that the operation of the heating and hot water control systems is stable and that the temperature does not fluctuate. Temperature hunting causes unnecessary wear of valves, actuators and heat exchangers.
- Every three months check the safety valves and the pressure in the heating system.

To check the operation of a safety valve, turn its wheel until water escapes from the waste pipe of the valve, then close the wheel quickly. Occasionally a safety valve may open automatically to release excess pressure. After a safety valve has been open it is important that it closes properly and does not drip.

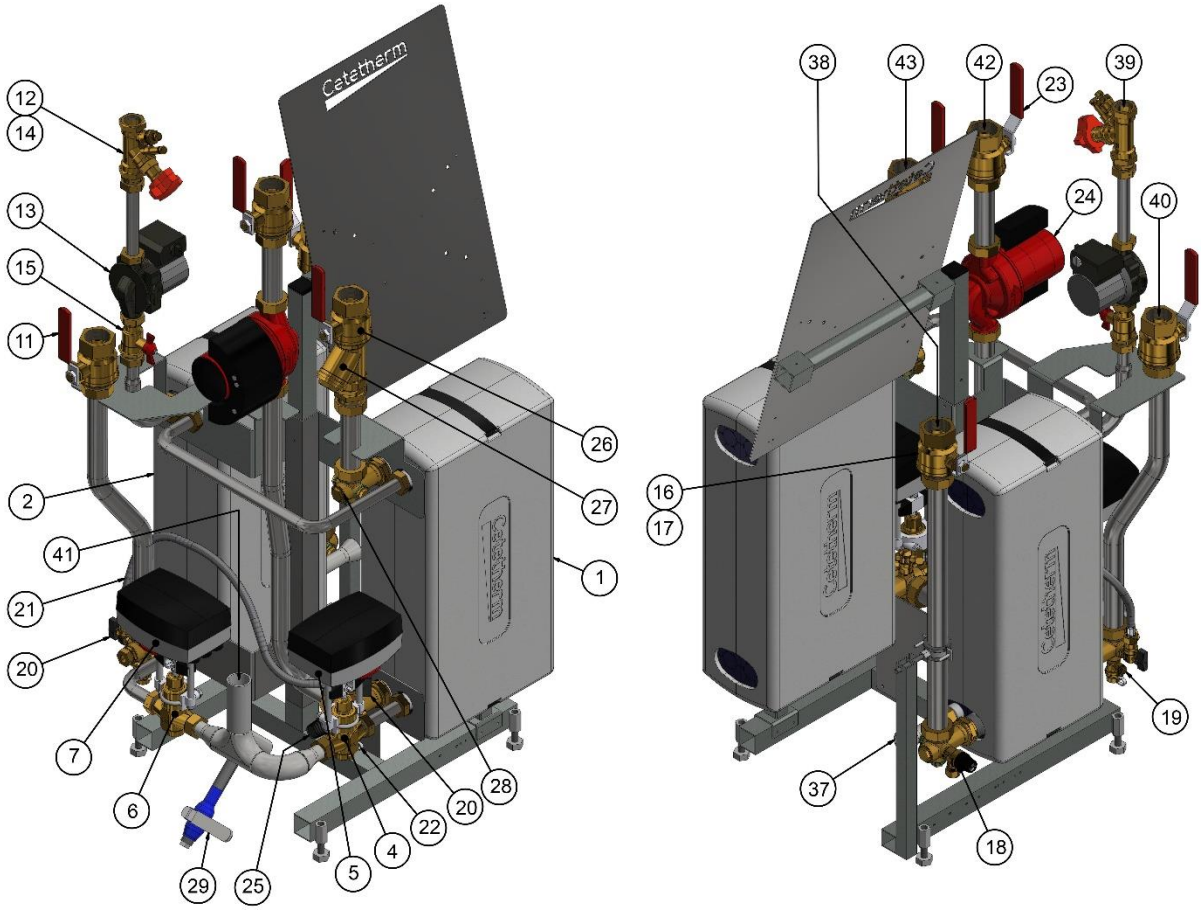
Hot water temperature in apartments or one family houses can be set to about 55°C. If the temperature is set too high, there is a risk of scalding. Setting the hot water temperature too low may result in unwanted bacteriological growth in the hot water system.

The heating system is topped up via the topping up valve. Be sure to close the valve when the correct pressure is reached. The water used to top up the system contains oxygen and may cause corrosion in the system. For this reason, the system should be topped up as seldom as possible, at most once

If a joining must be loosened and then re-installed, for example when installing the substation or when replacing a strainer unit, the joining gaskets should be exchanged to prevent leaks.

3 Product overview

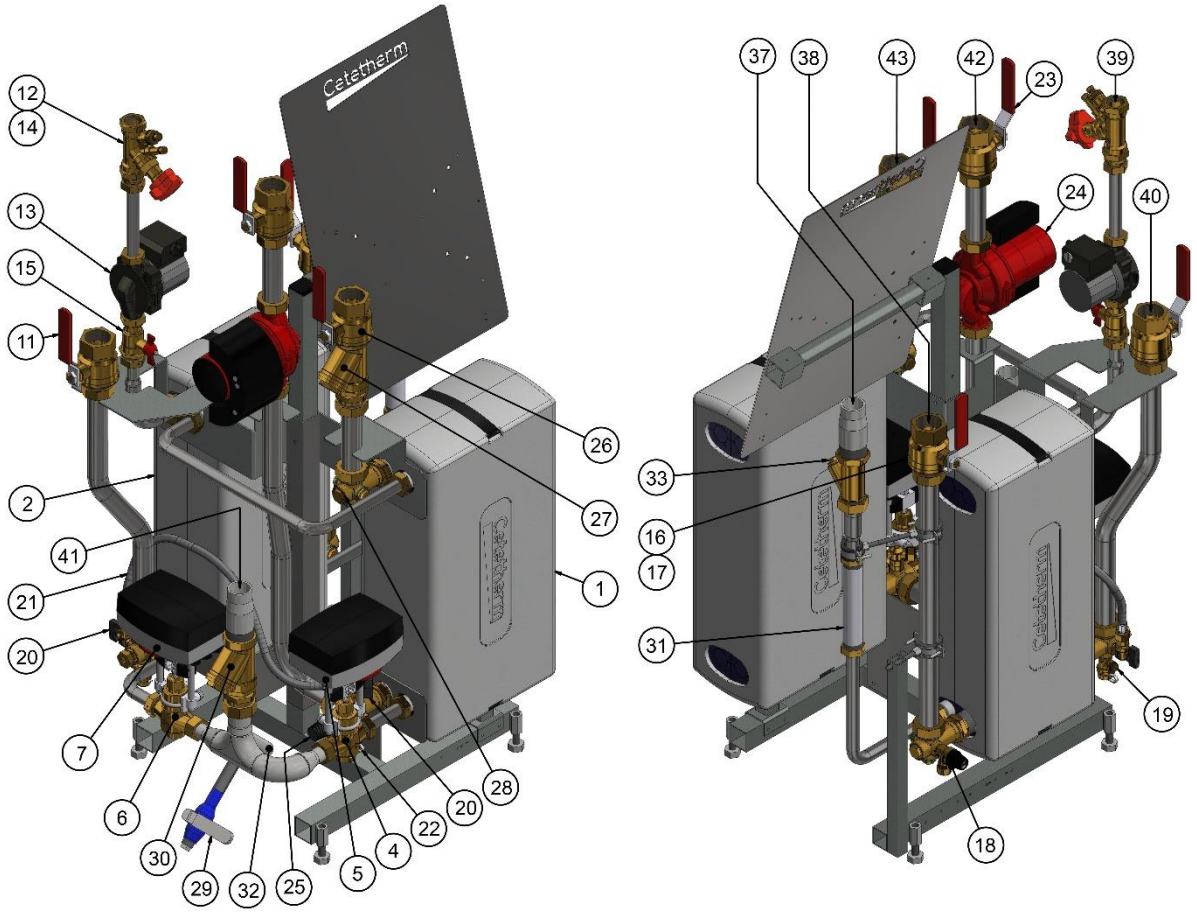
3.1 Midi Compact TA



Picture 1

1	Heat exchanger heat	21	Hose
2	Heat exchanger DHW	22	Draining valve, heat supply
4	Control valve, heating	23	Shut off valve, heat supply
5	Actuator, heating	24	Pump, heating
6	Control valve, DHW	25	Safety valve, heating
7	Actuator, DHW	26	Shut off valve, heat return
11	Shut off valve, DHW	27	Strainer, heat return
12	Balancing valve, DHWC	28	Connection, expansion vessel
13	Pump, DHWC	29	Draining valve, DH-Supply
14	None return valve, DHWC	37	DH Return
15	Shut off valve, DHWC	38	CW
16	Shut off valve, CW	39	DHWC
17	None return valve, CW	40	DHW
18	Safety valve, CW	41	DH supply
19	Draining valve, DH-Supply	42	Heat Supply
20	Topping up	43	Heat Return

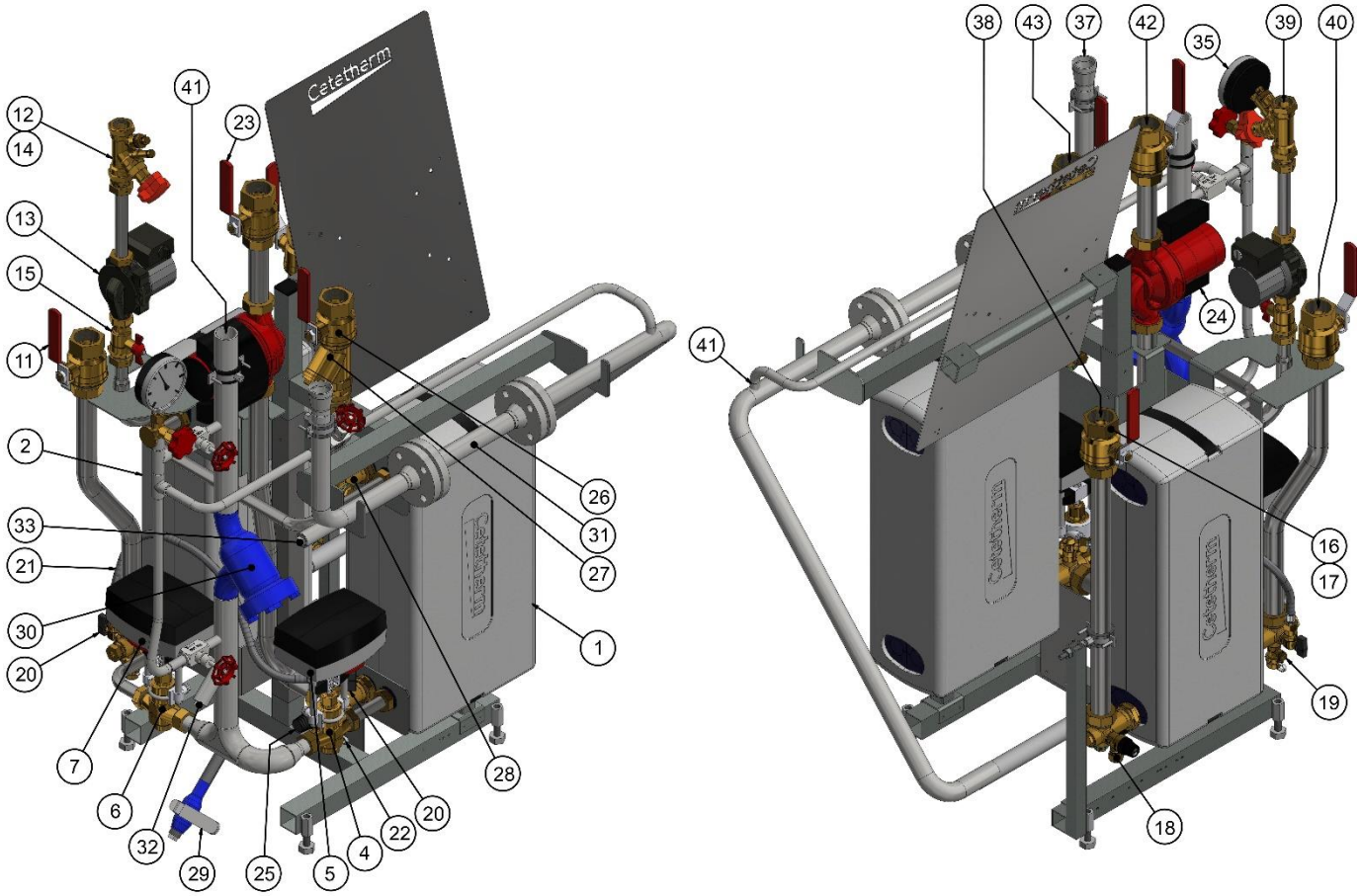
3.2 Product overview Midi Compact TA with vertical metering



Picture 2

1	Heat exchanger heat	23	Shut off valve, heat supply
2	Heat exchanger DHW	24	Pump, heating
4	Control valve, heating	25	Safety valve, heating
5	Actuator, heating	26	Shut off valve, heat return
6	Control valve, DHW	27	Strainer, heat return
7	Actuator, DHW	28	Connection, expansion vessel
11	Shut off valve, DHW	29	Draining valve, DH-Supply
12	Balancing valve, DHWC	30	Strainer, DH-Supply
13	Pump, DHWC	31	Heat meter dummy
14	None return valve, DHWC	32	Connection energy meter sensor primary supply
15	Shut off valve, DHWC	33	Connection energy meter sensor primary return
16	Shut off valve, CW	37	DH Return
17	None return valve, CW	38	CW
18	Safety valve, CW	39	DHWC
19	Draining valve, DH-Supply	40	DHW
20	Topping up	41	DH supply
21	Hose	42	Heat Supply
22	Draining valve, heat supply	43	Heat Return

3.3 Product overview Midi Compact TA with horizontal metering



Picture 3

1	Heat exchanger heat	24	Pump, heating
2	Heat exchanger DHW	25	Safety valve, heating
4	Control valve, heating	26	Shut off valve, heat return
5	Actuator, heating	27	Strainer, heat return
6	Control valve, DHW	28	Connection, expansion vessel
7	Actuator, DHW	29	Draining valve, DH-Supply
11	Shut off valve, DHW	30	Strainer, DH-Supply
12	Balancing valve, DHWC	31	Heat meter dummy
13	Pump, DHWC	32	Connection energy meter sensor primary supply
14	None return valve, DHWC	33	Connection energy meter sensor primary return
15	Shut off valve, DHWC	34	Connection 3-point HB metering
16	Shut off valve, CW	35	Pressure gauge connection
17	None return valve, CW	37	DH Return
18	Safety valve, CW	38	CW
19	Draining valve, DH-Supply	39	DHWC
20	Topping up	40	DHW
21	Hose	41	DH supply
22	Draining valve, heat supply	42	Heat Supply
23	Shut off valve, heat supply	43	Heat Return

4 Installation

4.1 Unpacking

- Remove the transport packaging and check that the product has not been damaged in transit and that the consignment agrees with the specifications.
- When lifting the unit, take care not to apply stress to pipes and heat exchangers as this may weaken them. Lift the unit in the frame; avoid lifting the unit by holding the heat exchangers. Use pallet lift where applicable, if using back straps these should be attached to the substructure of the substation.

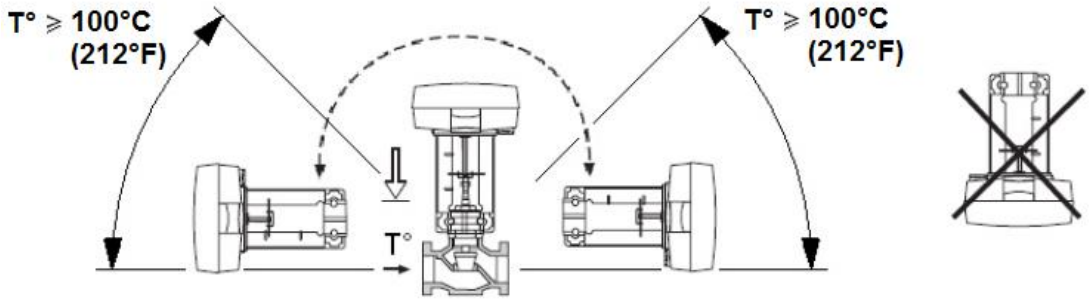
  Note: Risk of injury lifting heavy objects.

4.2 Preparation

- Choose a suitable installation area in accordance with official regulations.
  The system may generate sounds during operation caused by pumps, regulators systems, flows etc. This should be taken into consideration during installation of the unit, so that possible operational sounds affect the surroundings as little as possible.
- Check the applicable regulations of the district heating supplier. The available differential pressure should be at least 100 kPa and at most 600 kPa.
  Where the differential pressure is higher, a differential pressure controller should be added to the installation.
- Flush heating and hot water systems.

4.3 Mounting

- Place the substation so that connections, adjustment equipment and safety valves are easily accessible.
- Mount the shutoff valves on district heating supply and return. Shutoff valves are not supplied.
- Connect the pipe works to the connection points, see *4.6-4.8*.
- When executing hot work on or close by the substation, all incendiary components should be demounted and removed.
- With supply temperatures above 100°, it is recommended that the actuator is tilted or put down.



Picture 4

- Take rules and instructions regarding hot work into account.
- Connecting pipes shall be suspended so that their weight does not stress the unit.
- All connecting pipes within and connecting to the units system shall be insulated according to standards and regulations.
- Drainage pipes from safety valves must be taken to a floor gully.
- Energy meters must be installed at a prepared location, replacing a gauge block, or following the instructions of the energy supplier.

- Retighten all connections, including those made at the factory. If connections need retightening after the installation has been taken into service, the system should be depressurised before retightening. **If the system is not depressurised before retightening, gaskets will be damaged.**
- Required expansion volume shall be installed and provided with adequate pre-charge before start up.
- Remount plugs in drain valves after possible draining of circuit.

4.4 Adjustments and settings for start up

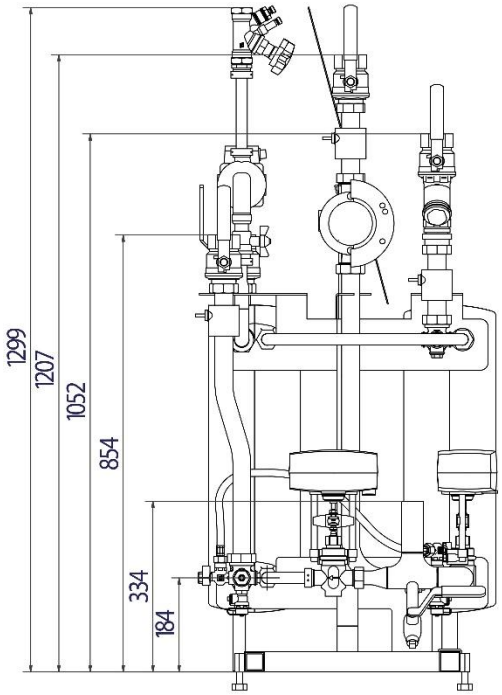
- Open up incoming cold water supply and fill the service water and heating circuits, bleeding off any trapped air.
- Check the operation and opening pressures of the safety valves.
- Adjust the hot water temperature by having a hot water tap open at normal flow rate for a time. Measure the temperature at the draw-off point with a thermometer. The temperature should be approximately 55°C. It takes about 20 seconds to get stable tap water temperature. See troubleshooting chart for adjusting hot water temperature, *7.1.1 Tap water temperature too low*.

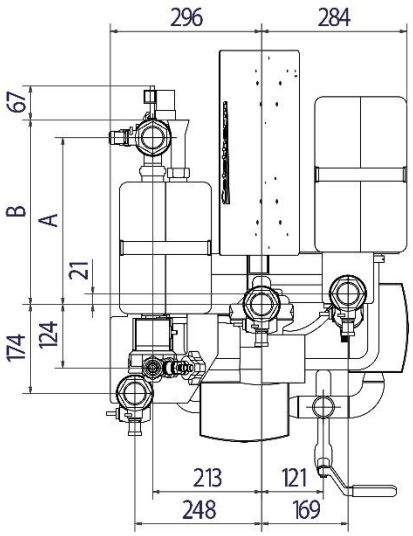
  NOTE: Make sure that no cold water is mixed with hot water while making this adjustment.
- Start the heating circulation pump at the strongest flow setting during some minutes. The pressure should be at least 1000 kPa during winter and at least 600kPA during summer.
- Set the pump capacity of the heating circulation pump and the DHWC-pump according to chapter *6 Pump settings and pump capacity*. Use the lowest setting that manages the heating demand for best electrical efficiency.
- The property owner must be informed on how to operate, adjust and maintain the unit. It is overly important to inform about the safety systems and the risks associated with the high pressure and temperature of the district heating systems water supply.

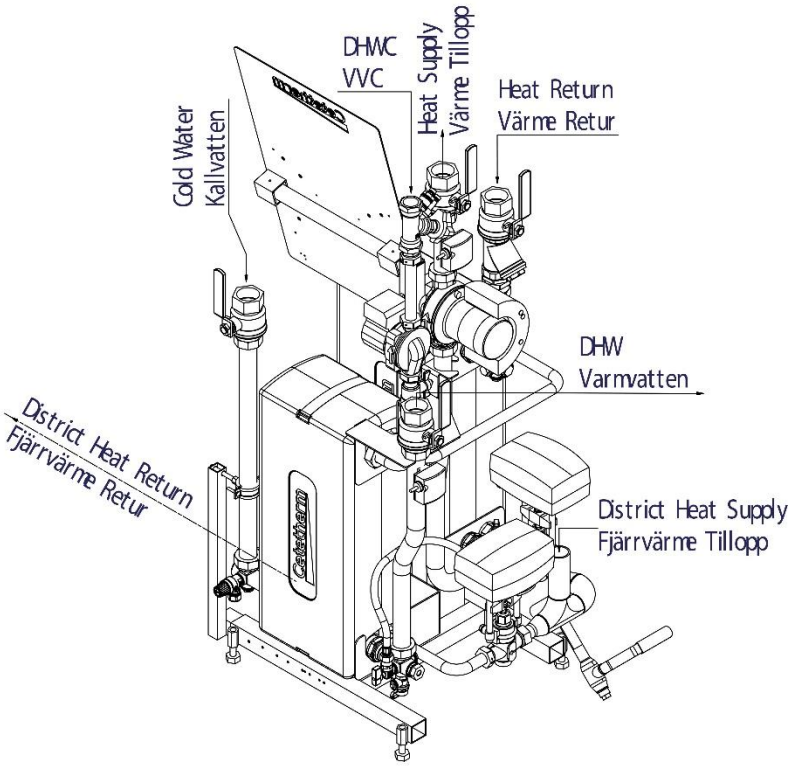
4.5 Dismantlement

When the time comes for the substation to be dismantled and scrapped it must be disposed of in the correct manner in accordance with local or national regulations.

4.6 Measure sketch Midi Compact



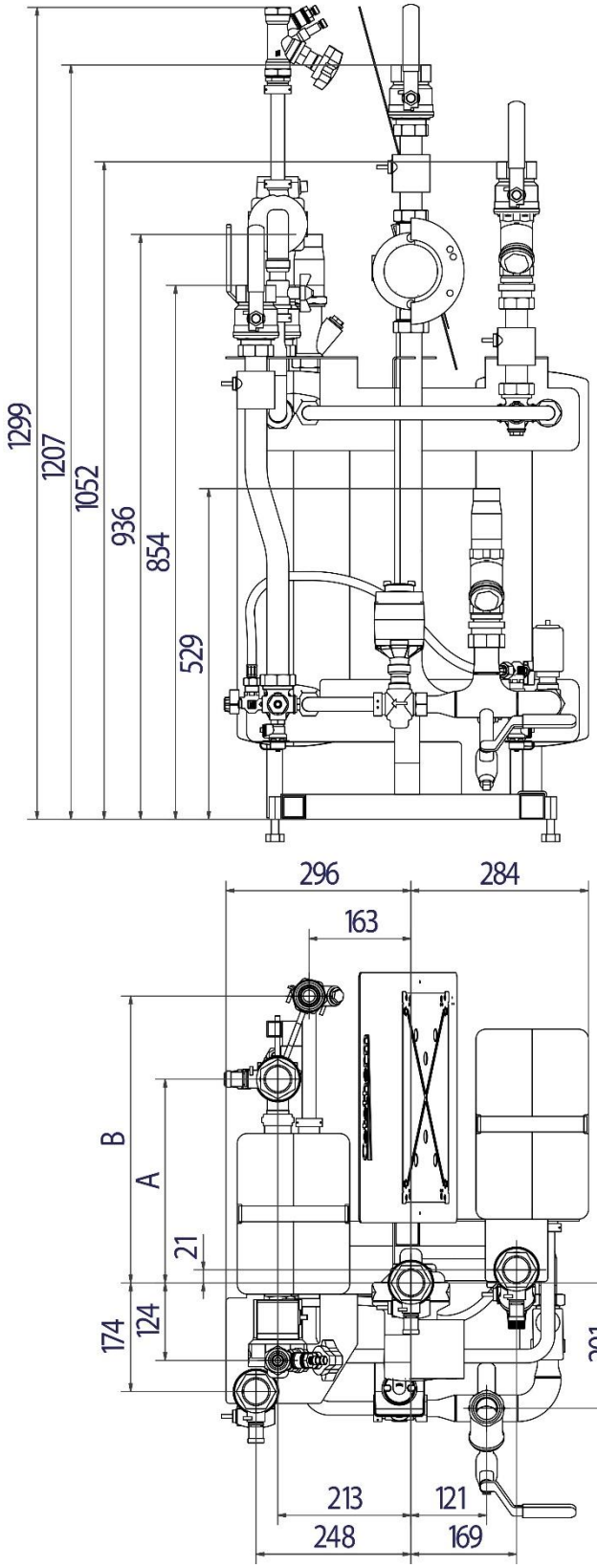


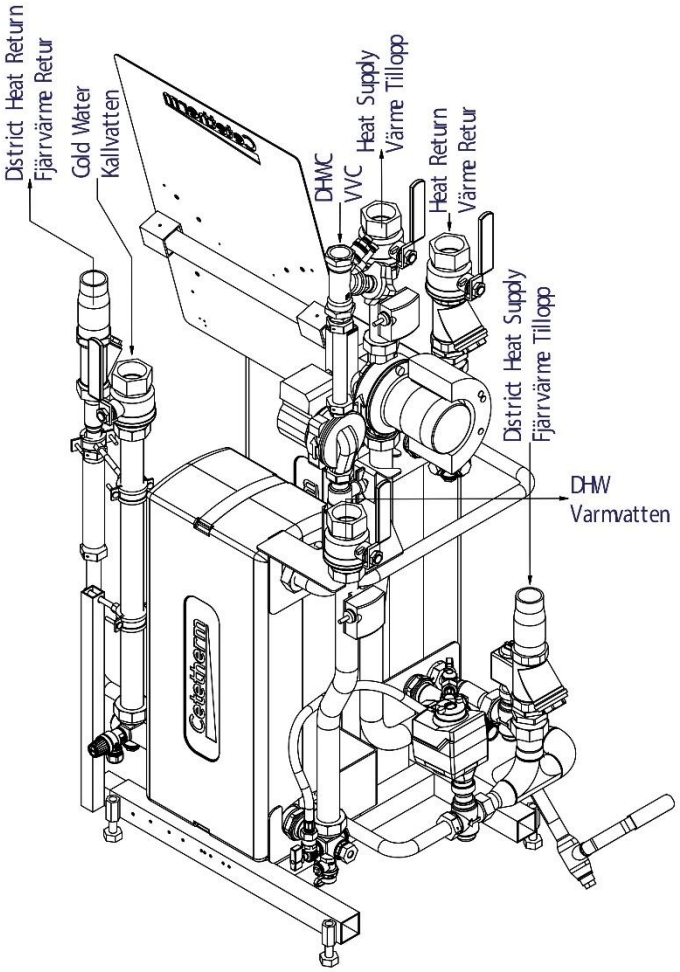


Length Table		
Type	A	B
80/100	222.6	253.5
160	241.4	272.3
200	269.6	300.5

Picture 5

4.7 Measure sketch Midi Compact with vertical metering

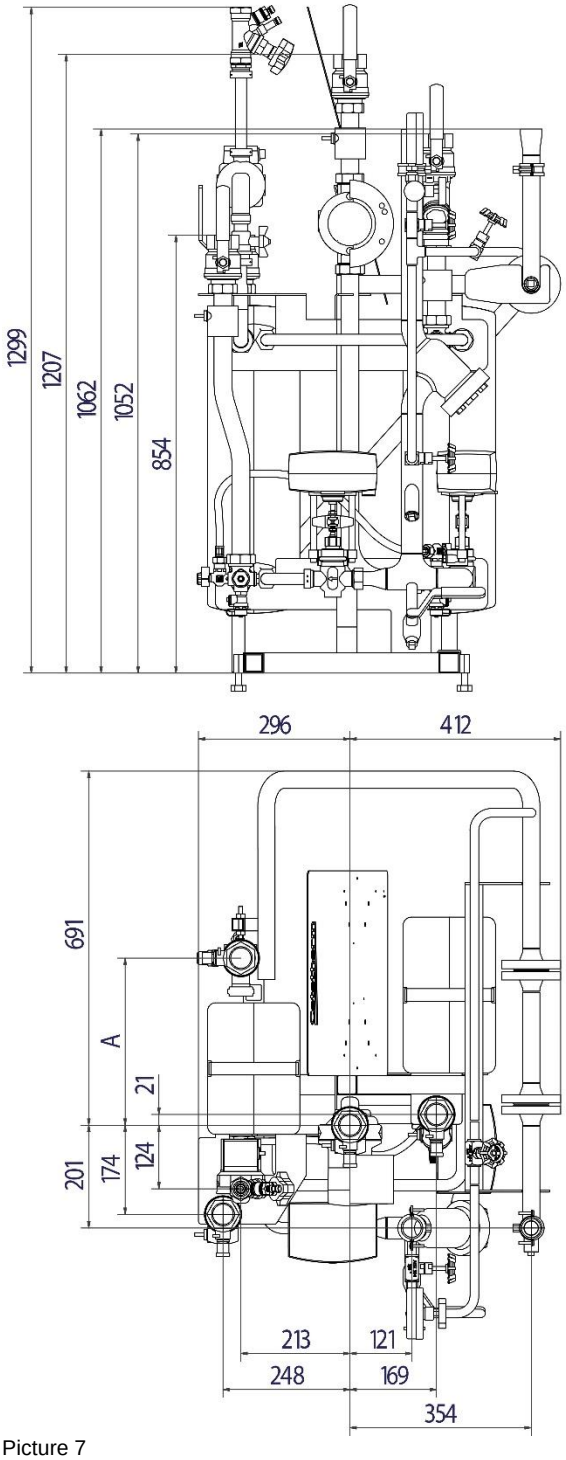


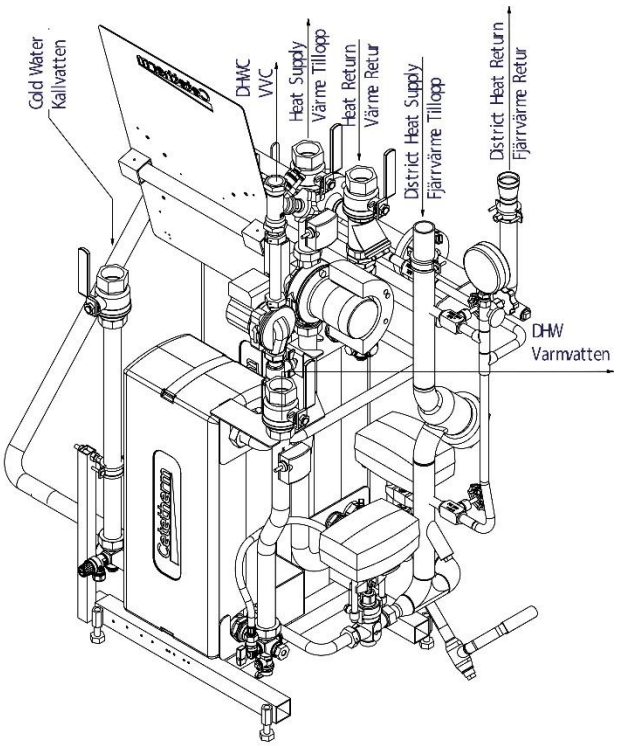


Length Table		
Type	A	B
80/100	223	398
160	242	417
200	270	445

Picture 6

4.8 Measure sketch Midi Compact with horizontal metering



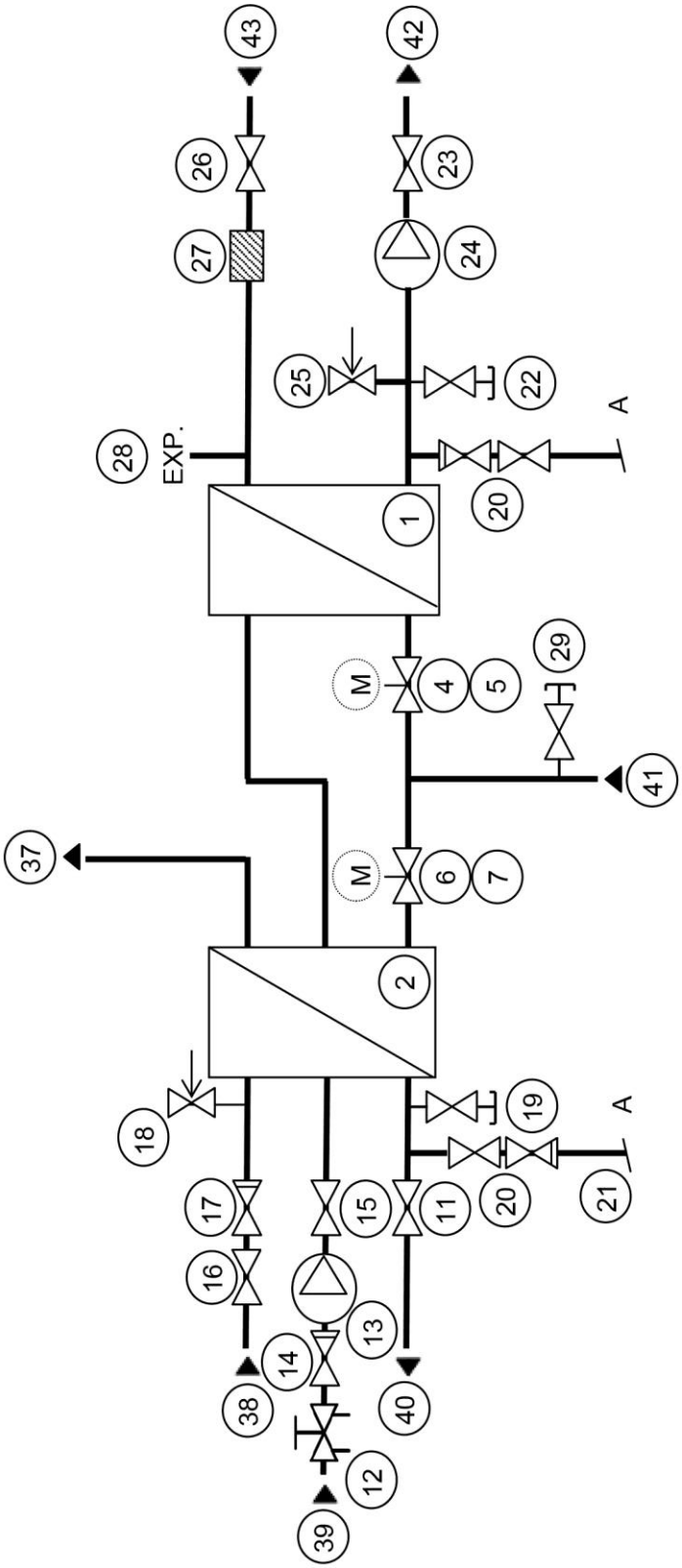


Length Table	
Type	A
80/100	223
160	242
200	270

Picture 7

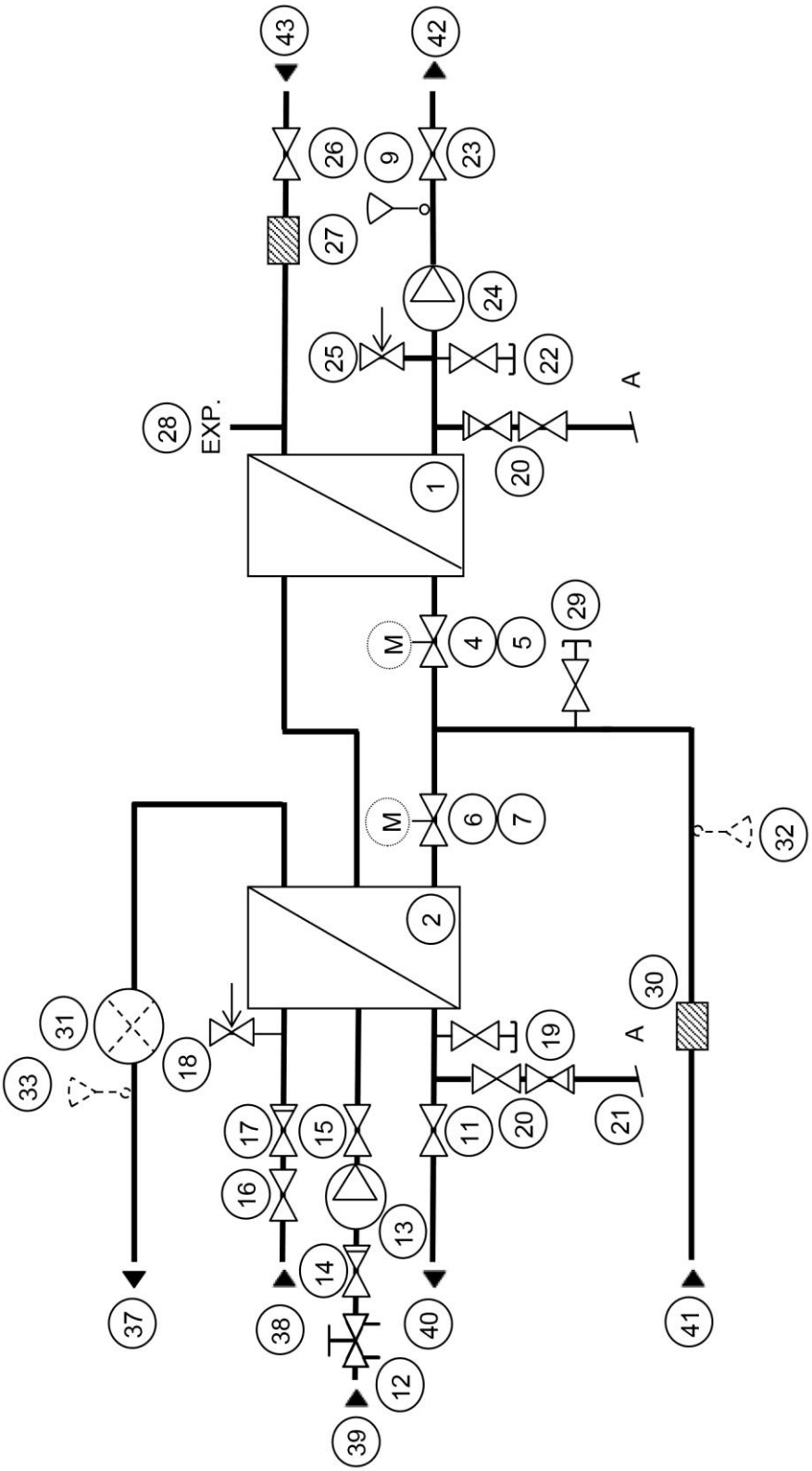
5 Schematic diagram, main components

5.1 Midi Compact



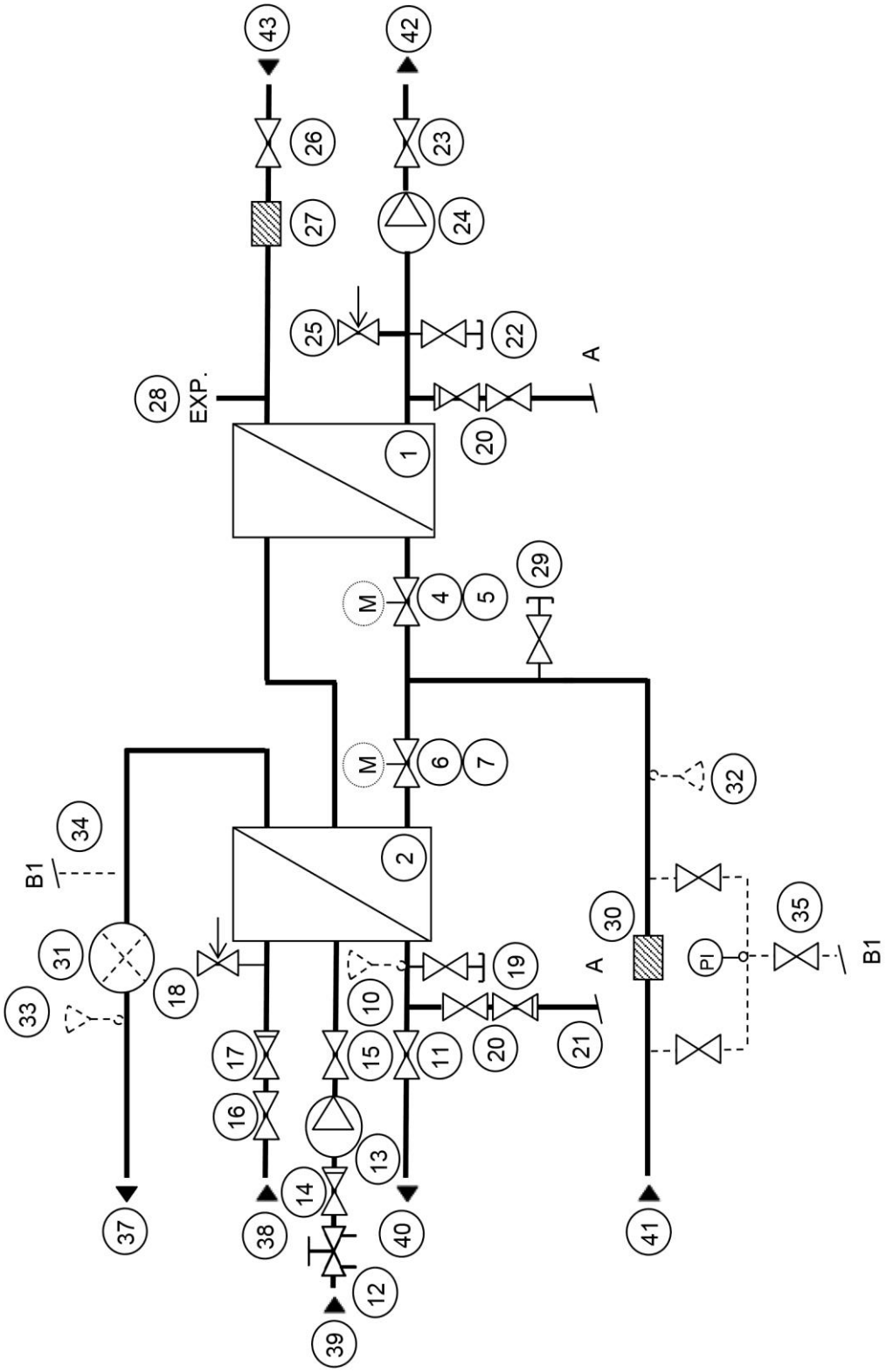
Picture 8

5.2 Midi Compact with vertical metering



Picture 9

5.3 Midi Compact with horizontal metering



Picture 10

6 Pump settings and pump capacity

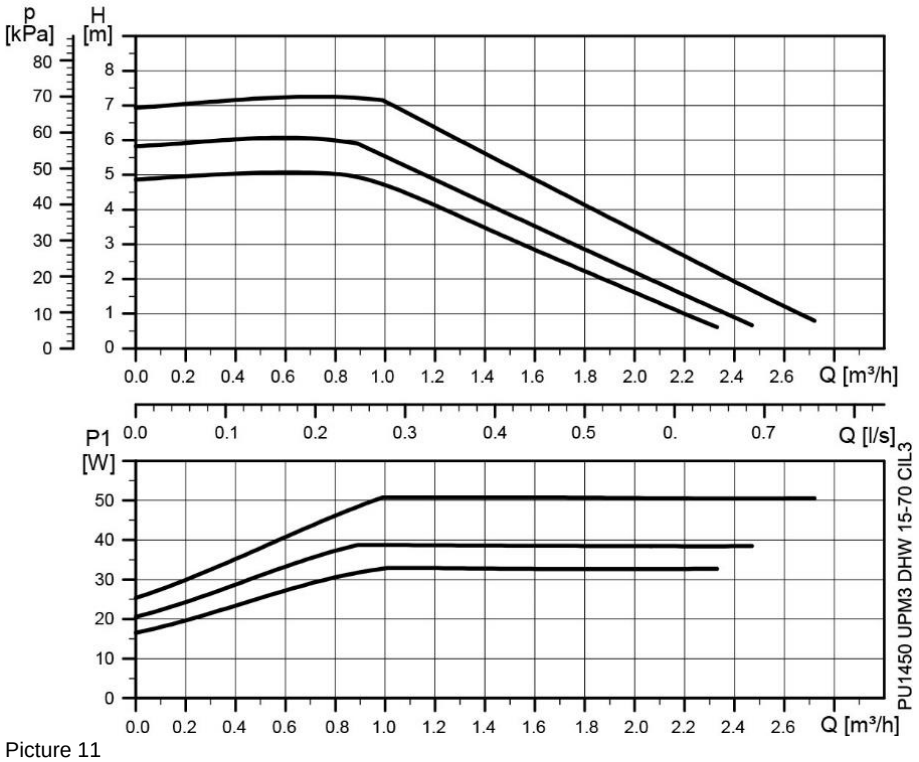
6.1 General

Mini Compact is equipped with two circulation pumps, one for the hot water circulation, DHWC-pump, and one for the heating circuit.

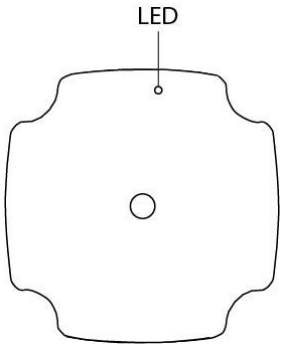
The DHWC pump is a speed-controlled, high-efficiency pump.

The circulation pump for heating circuit is a pressure-controlled pump.

6.2 DHWC pump Grundfos UPM3 DHW 15–70 CIL3, capacity



Picture 11



Picture 12

	Green LED	Red LED
No external control	●	
External control	●[1]	
Alarm		●

1) 12 flashes per second

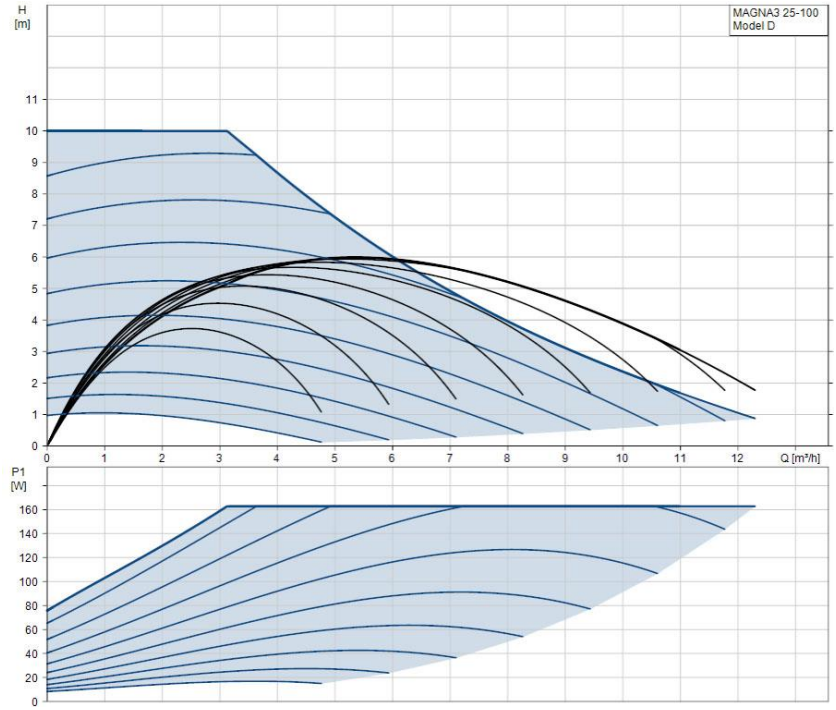
6.3 Heating circuit pump Grundfos Magna3 25–100, settings and capacity

The pumps have been factory-set to AUTOADAPT without automatic night setback.

AUTO$_{ADAPT}$ (factory set)

- Recommend control mode for most heating systems.
- Automatically adjusts the pump to actual system characteristics.
- Ensures minimum energy consumption and a low noise level.
- Reduced operating costs and increased comfort.

6.3.1 Heating circuit pump Grundfos Magna3 25-100, capacity



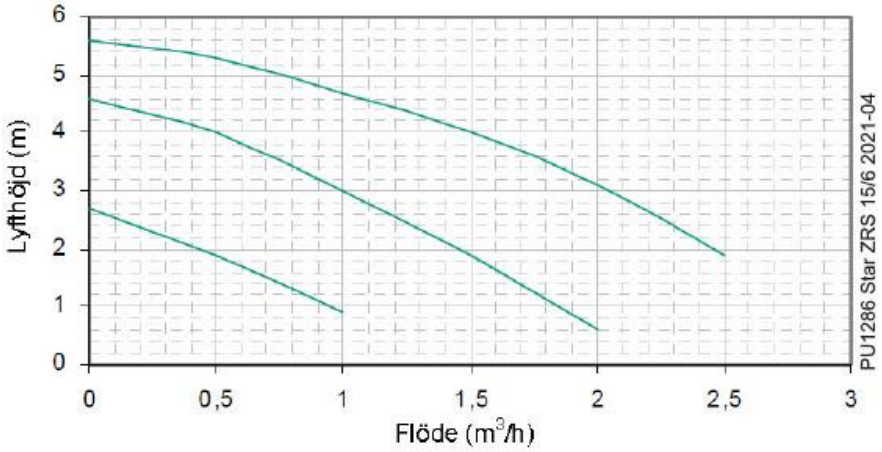
Picture 13

6.3.2 Grundfos Eye operating indications

Grundfos Eye	Indication	Cause
	No lights are on.	The power is off. The pump is not running.
	Two opposite green indicator lights running in the direction of rotation of the pump.	The power is on. The pump is running
	Two opposite green indicator lights are permanently on.	The power is on. The pump is not running.
	One yellow indicator light running in the direction of rotation of the pump.	Warning. The pump is running.
	One yellow indicator light is permanently on.	Warning. The pump has stopped.
	Two opposite red indicator lights flashing simultaneously.	Alarm. The pump has stopped.
	One green indicator light in the middle is permanently on in addition to another indication.	Remote-controlled.

6.4 DHWC pump StarZRS 15/6 Co, settings and capacity

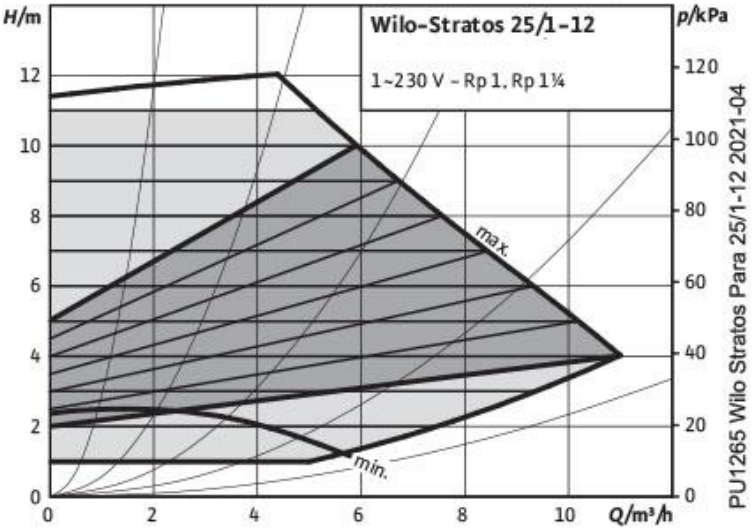
This pump is only available for Midi Compact 200kW



Picture 14

6.5 Heating circuit pump Wilo Stratos 25/1-12

This pump is only available for Midi Compact 200kW



Picture 15

7 Service instructions

To avoid the risk of scalding, make sure that no-one draws any water while servicing the substation.

Grey marked service actions must be carried out by an authorized service technician.

Note! Make sure that the substation has been correctly installed.

7.1 Service instructions, tap water

7.1.1 Tap water temperature too low

Reason	Action
District heating supply too low	**Check the primary inlet temperature** The temperature can be checked by means of the energy meter (min 65º C) or at the district heating medium supply.
Handle on control valve incorrectly positioned	**Adjust the handle on the control valve** Adjust the tap water temperature by turning the handle clockwise for increased and anti-clockwise for decrease temperature. Turn the handle until the desired temperature is reached (55º C approx.). The stabilisation time for the hot water temperature is about 20 seconds.
District heating strainer clogged	**See** *9.1 Cleaning the district heating strainer.*
Hot water valve and/or actuator does not work	**See** *8.1 Check the function of the hot water valve and actuator*

7.1.2 Tap water temperature too high

Reason	Action
Handle on control valve incorrectly positioned	**Adjust the handle on the control valve** Adjust the tap water temperature by turning the handle clockwise for increased and anti-clockwise for decrease temperature. Turn the handle until the desired temperature is reached (55º C approx.). The stabilisation time for the hot water temperature is about 20 seconds.
Hot water valve and/or actuator does not work	**See** *8.1 Check the function of the hot water valve and actuator.*

7.1.3 Hot water temperature unstable

Reason	Action
Alternating pressure on primary side	**Check available differential pressure and temperature at the district heating medium supply**. The temperature can be checked by means of the energy meter, minimum 65ºC, or at the district heating medium supply.
District heating strainer clogged	**See** *9.1 Cleaning the district heating strainer.*
DHWC pump is not running	**Check that the electrical power is on**
	See *8.3 Check DHWC pump.*

7.1.4 Noise in the DHWC system

Reason	Action
The pump capacity is set too high	**Reduce the pump capacity** Reduce the level by choosing a lower output setting on the pump. The lowest setting is the most economical.
Air in the pump	**Vent the pump** Set the pump to speed III. Loosen the pump motor end nut to and let it stay opened until the air in the pump is released. When the pump has been vented, i.e. when the noise has ceased, set the pump according to the recommendations.
The pump motor or pump component damaged	**See** *9.3 Change the complete DHWC pump or pump components*.

7.2 Service instructions, heating system

7.2.1 Heating system temperature too high or too low

Reason	Action
The heating control equipment may need to be adjusted	**Check and adjust the heating curve**
Heating circuit strainer clogged	**See** *9.2 Clean the heating circuit strainer.*
Heating valve and/or actuator does not work	**See** *8.2 Check the function of the heating actuator and valve*

7.2.2 No heating

Reason	Action
Circulation pump not running	**Check that the electrical power is on**
	Check the heating parameters in operator control panel
Air pockets in the substation or in the heating circuit	**Bleed the heating pump** The pump is self-venting. Air in the pump may cause noise. This noise ceases after a few minutes run time.
Heating circuit strainer clogged	**See** *9.2 Clean the heating circuit strainer.*

7.2.3 Noise in the radiator system

Reason	Action
The pump capacity set too high	**Reduce the pump capacity** Reduce the level by choosing a lower output setting on the pump.
Air in the DHWC pump	**Vent the pump** The pump is self-venting. Air in the pump may cause noise. This noise ceases after a few minutes run time.
The pump motor or pump component damaged	**See** *.9.4 Change the complete heating pump or pump components*.

7.2.4 Heating temperature unstable

Reason	Action
Alternating pressure on primary side	**Check available differential pressure and temperature at the district heating medium supply** The temperature can be checked by means of the energy meter, minimum 65ºC, or at the district heating medium supply.
District heating strainer clogged	**See** *9.1 Cleaning the district heating strainer*.

7.2.5 Heating system often needs topping up

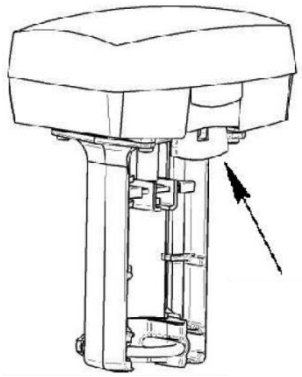
Reason	Action
Leaks in the substation or in the system	**Check the substation and the system for leaks** Leaks from the substation or the heating system cause pressure drop. Contact your service technician if finding any leaks.
The heating system safety valve is leaking or does not work	**Check the heating system safety valve** Check that the heating system safety valve is not leaking and that it works properly. Check the function by turning the wheel/knob until water runs out of the valve's waste pipe and then close the valve quickly.
The expansion vessel cannot handle the changes in the system	**See** *8.4 Check the volume take-up and pressure equalizing of the expansion vessel*

8 Service actions for the installer

8.1 Check the function of the hot water valve and actuator

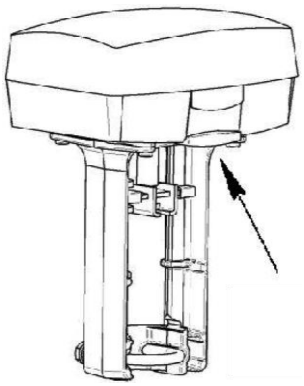
⚠	Service actions must be carried out by an authorized service technician.
⚠	Close the shutoff valves for the **DH supply** and **DH return** together with the **cold** and **hot wate**r. Relieve the pressure in the circuit.
⚠	After finishing repair, open the shutoff valves. Start with **DH supply** and then the **return** lines, to avoid pollutions in the system. Open the valves slowly to avoid pressure surges.

1. Disconnect the power supply to the substation.
2. Lower the manual operation handle to stop the motor. It is easier to lower the manual operation handle if you twist it a little forward and backwards when it is lowered a little.
3. Try to operate the actuator manually by turning the handle.
    - Actuator opens, the screw of the actuator moves against the red mark.
    - Actuator closes, the screw of the actuator moves inwards, against the blue mark. When the actuator closes it pull the valve spindle in.
4. Loosen the screws on the brace that holds the actuator to the valve, lift off the actuator.



Picture 16

5. Carefully press the valve's spindle with a tool and check the valve's travel and spring back.
   NOTE! The valve may be very hot!
6. Mount the actuator on the valve, slide the actuator onto the valve neck, thus making the square nut on the valve spindle fit into the groove on the cross bar. Then slide the brace into the groove on the valve neck and secure the nuts.
7. Raise the operation handle on the actuator to start the motor.

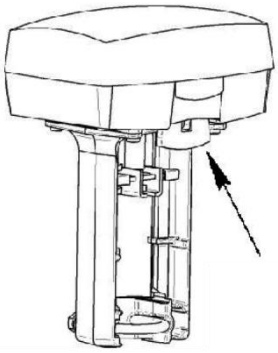


Picture 17

8.2 Check the function of the heating actuator and valve

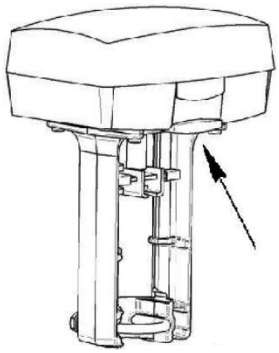
Service actions must be carried out by an authorized service technician.

1. Disconnect the power supply to the substation.
2. Lower the manual operation handle to stop the motor. It is easier to lower the manual operation handle if you twist it a little forward and backwards when it is lowered a little.
3. Try to operate the actuator manually by turning the handle.
    - Actuator opens, the screw of the actuator moves against the red mark.
    - Actuator closes, the screw of the actuator moves inwards, against the blue mark. When the actuator closes it pull the valve spindle in.
4. Check the flow rate at the energy meter during break in of the valve.
   If the system is lacking an energy meter, disconnect the heating actuator from the valve.
5. Loosen the screws on the brace that holds the actuator to the valve, lift off the actuator.
   Note! The valve can be very hot



Picture 18

6. Carefully press the valve spindle with a tool and check the valve´s travel and spring back.
   NOTE: The valve may be very hot!
7. Mount the actuator on the valve, slide the actuator onto the valve neck, thus making the square nut on the valve spindle fit into the groove on the cross bar. Then slide the brace into the groove on the valve neck and secure the nuts.
8. Raise the operation handle on the actuator to start the motor.



Picture 19

8.3 Check DHWC pump

If the pump fails to start after stopping, try to start it at the highest setting.

Service actions must be carried out by an authorized service technician.

Disconnect the power supply to the pump by pulling off the connecter before carrying out this service.
If the pump is powered when you use a screwdriver to assist the pump to start, the screwdriver may be wrenched out of your hand when the pump starts.

1. If the pump does not start, try starting it by removing the pump motor end nut and helping the pump with the aid of a screwdriver in the notch on the engine shaft.
2. Use a short screwdriver. If the pump is difficult to access, disconnect the heating actuator.
3. Connect the power supply to the pump and try to start again.

Picture 20

8.4 Check the volume take-up and pressure equalizing of the expansion vessel

Check the expansion vessel for possible leakage.

The cause may be that the expansion vessel cannot manage the volume changes on the heating side.
See *9.7 Change the expansion vessel*.

Alternatively, the system´s total volume of water may be too high, i.e. the volume changes are too large for the expansion vessel. If so, add extra expansion volume.

9 Maintenance and repairs

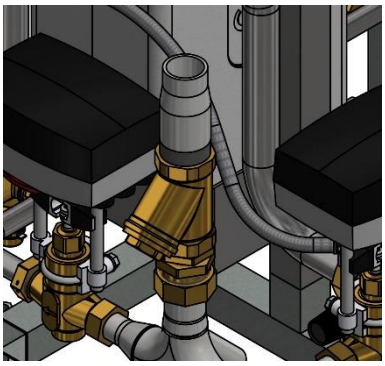
When carrying out repairs, please contact your local service partner.

⚠	Before starting out repairs always close the correct shutoff valves.
⚠	When dismounting a component there will be water coming out, hot and under pressure.

9.1 Cleaning the district heating strainer

⚠	Service actions must be carried out by an authorized service technician.
⚠	The temperature and the pressure of the district heating water are very high. Only qualified technicians can work with the district heating substation. Incorrect operation may cause serious personal injury and result in damage to the building.
⚠	Before starting out repairs close the **DH supply** and **DH return** shutoff valves.
⚠	After finishing repair, open the shutoff valves. Start with **DH supply** and then the **return** line, to avoid pollutions in the system. Open the valves slowly to avoid pressure surges.

1. Disconnect the power supply to the substation.
2. Close the shut-off valves.
3. Use a wrench and release the strainer holder and remove the cartridge.
4. Clean the strainer in water and refit the cartridge. Screw the strainer holder with a momentum of 10-20 Nm.
5. Open the shutoff valves and connect the power supply to the substation.

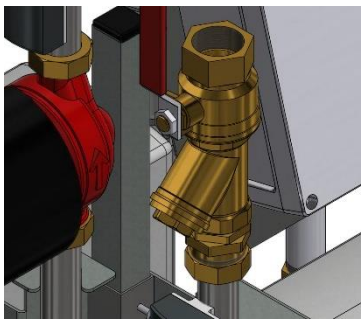


Picture 21

9.2 Clean the heating circuit strainer

⚠	Service actions must be carried out by an authorized service technician.
⚠	Before starting out repairs, close the shutoff valves **DH supply**, **DH return**, **heating supply and heating return**. Release the pressure using the heating circuit safety valve.
⚠	After finishing repair, fill up the heating circuit and vent. Then open the shutoff valves, start with **heat return** and then **supply**, after that open **DH supply** and then the **return** line, to avoid pollutions in the system. Open the valves slowly to avoid pressure surges.

1. Disconnect the power supply to the substation.
2. Close the shut-off valves.
3. Use a wrench and release the strainer holder and remove the cartridge.
4. Clean the strainer in water and refit the cartridge. Screw the strainer holder with a momentum of 10-20 Nm.
5. Fill up the heating circuit using the toping up valve, vent the heating circuit.
6. Open the shutoff valves and connect the power supply to the substation.



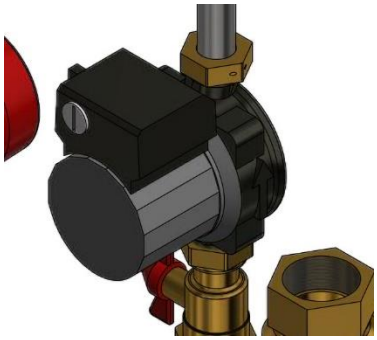
Picture 22

9.3 Change the complete DHWC pump or pump components

⚠	Maintenance and repairs must be carried out by an authorized service technician.
⚠	Before starting out repairs, close the shutoff valves **DH supply**, **DH return**, **cold-water** and **hot water**. Note the setting of the balancing valve, then close it. Release the pressure using the DHWC safety valve.
⚠	After finishing repair; fill up the hot water circuit and vent. Open the shutoff valves, start with **DH Supply** and then **DH return,** to avoid pollutions in the system. Open the valves slowly to avoid pressure surges.
⚠	Check the DHWC circulation.

Change the complete pump or just the pump motor.

1. Disconnect the power supply to the substation, disconnect the power cable to the pump.
2. Close the shut-off valves and the balancing valve.
3. Choose alternative a or b.
   a) When changing the complete pump, release the brass nuts with a wrench and replace the pump.
   Connect the pump cable.
   b) Only changing the motor, release it by unscrewing four socket head cap screws and replace the motor.
   Connect the pump cable.
4. Open the shut-off valves cold-water and hot water.
5. Open and adjust the balancing valve.
6. Vent the circuit by opening a hot water tap.



Picture 23

7. Connect the power supply to the substation.
8. Open the shutoff valves DH Supply and then DH return.

9.4 Change the complete heating pump or pump components

⚠	Maintenance and repairs must be carried out by an authorized service technician.
⚠	Before starting out repairs, close all shutoff valves Release the pressure using the heating safety valve.
⚠	After finishing repair; fill up the **heating circuit** and vent. Open the shutoff valves, start with **heating return** and then **heating supply**, then **DH Supply** and **DH return,** to avoid pollutions in the system. Open the valves slowly to avoid pressure surges.

Change the complete pump or just the pump head.

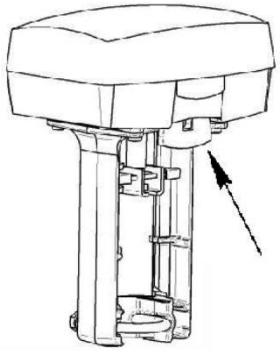
1. Disconnect the power supply to the substation and the pump.
2. Close the shut-off valves.
3. Choose alternative a or b.
   a) <u>When changing the complete pump</u>, release the brass nuts with a wrench and replace the pump.
   Connect the pump cable.
   b) <u>Only changing the pump head</u>
   Loosen the screw in the clamp that holds the pump head and pump housing together.
   Mount a new pump head, fit and tighten the screw that holds the clamp to 8 Nm ± 1 Nm.
   NOTE! Do not retighten the screw if condensed water is dripping from the clamp.
4. Fill up the heating circuit using the top up valves. Vent the heating circuit.
5. Open the shut-off valves and connect the power supply to the substation.

Picture 24

9.5 Change the actuator

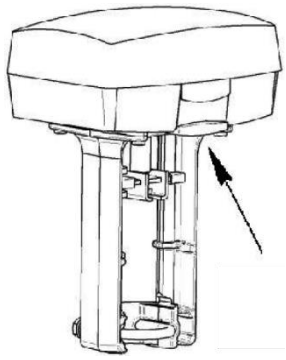
⚠	Maintenance work must be carried out by an authorized service technician.
⚠	Disconnecti the power supply to the pump and the substation.

1. Lower the operation handle on the actuator to stop the motor.
2. Remove the lid from the actuator, put a screwdriver under the lid lock and press gently. Disconnect the wiring- note where they are connected.
3. Loosen the screws on the brace that holds the actuator to the valve, lift off the actuator.
   Note! The valve can be very hot



4. Mount a new actuator on the valve, slide the actuator onto the valve neck, thus making the square nut on the valve spindle fit into the groove on the cross bar. Then slide the brace into the groove on the valve neck and secure the nuts
5. Remove the actuator lid an attach the wirings.
6. Raise the operation handle on the actuator to start the motor.

Picture 25



Picture 26

9.6 Change the heating or hot water valve

⚠	Maintenance work must be carried out by an authorized service technician.
⚠	Disconnecting the power supply to the pump and the substation.
⚠	Before starting out repairs always close the **primary supply** and **return** shutoff valves and drain the system. After finishing repair, open the shutoff valves. Start with primary supply and then the return lines, to avoid pollutions in the system. Open the valves slowly to avoid pressure surges. Do the same on the heating side open first heat **return** and then **supply**. Fill up the system, start the pump and vent.

1. Unscrew the actuator from the control valve.
2. Use a wrench to remove the control valve.
   Note the arrow direction on the valve.
3. Mount a new valve; **take special with care the arrow direction**.
4. Reattach the actuator.

Picture 27

9.7 Change the expansion vessel

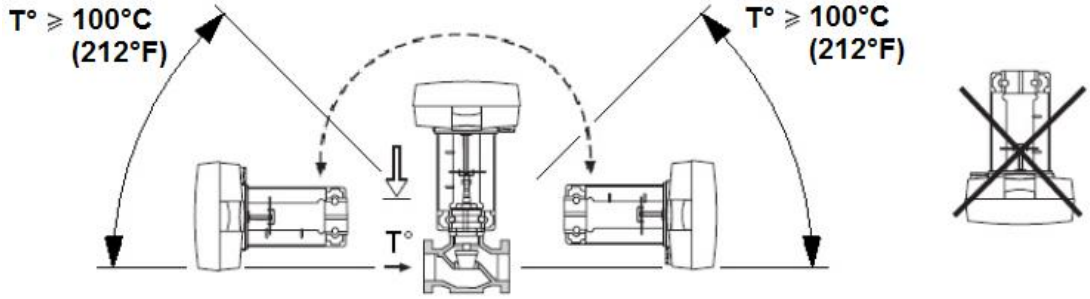
⚠	Maintenance work must be carried out by an authorized service technician.
⚠	Disconnect the power supply to the pump and the substation.

1. Close the shutoff valves for the radiator supply and return.
2. Replace the expansion vessel.

10 Options

10.1 Actuator

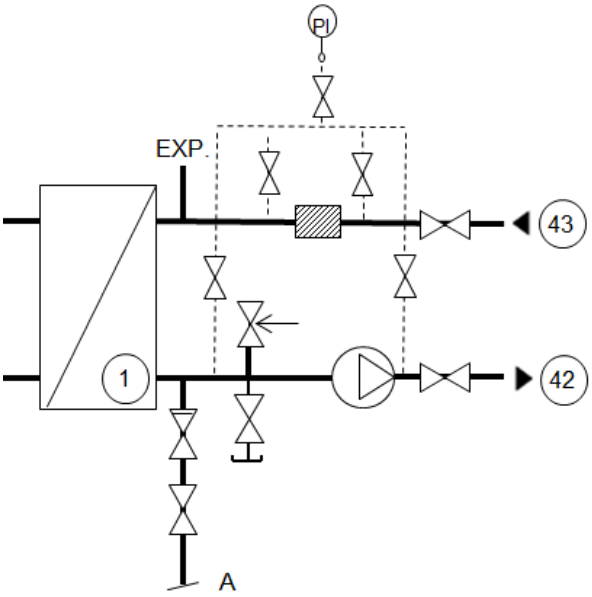
With supply temperatures above 100°, it is recommended that the actuator is tilted or closed down.



Picture 28

10.2 4-point HB metering

Measure before and after filter, together with before and after pump.



Picture 29

11 Operation data and capacity

11.1 Operation data Midi Compact 80

	Primary side	Heating	DHW
Design pressure PS	16 Bar	6 bar	10 Bar
Design temperature TS	120°C	100°C	100°C
Relief pressure safety-valve	-	3 Bar	9 Bar
Volume Heat exchanger, L	2,1/1,85 L	2,1 L	1,75 L

CB60-40L

Temperature program (°C) Heating	**Capacity** kW	**CB** type	**Plates** no	**Plates** primary	**Plates** secondary	**Flow P** l/s	**dPp** kPa	**Flow S** l/s	**dPs** kPa
100-63/60-80	**82**	**60**	**40**	**1*19L**	**1*20L**	**0,55**	**2,3**	**1,00**	**6,7**
100-63/60-80 (62,9)	80	60	40	1*19L	1*20L	0,54	2,2	0,97	6,4
100-58/55-75	101	60	40	1*19L	1*20L	0,60	2,7	1,23	10,1
100-58/55-75 (57,4)	80	60	40	1*19L	1*20L	0,47	1,7	0,97	6,5
100-53/50-70	118	60	40	1*19L	1*20L	0,63	2,9	1,43	13,6
100-53/50-70 (52)	80	60	40	1*19L	1*20L	0,42	1,4	0,97	6,6
100-48/45-60 (46,2)	93	60	40	1*19L	1*20L	0,43	1,5	1,50	15,1
100-48/45-60 (46)	80	60	40	1*19L	1*20L	0,37	1,1	1,29	11,4
100-43/40-60 (42,5)	**123**	**60**	**40**	**1*19L**	**1*20L**	**0,53**	**2,2**	**1,49**	**14,9**
100-43/40-60 (41,5)	80	60	40	1*19L	1*20L	0,34	1,0	0,97	6,7
100-43/40-70	67	60	40	1*19L	1*20L	0,29	0,7	0,54	2,2
100-43/40-80	26	60	40	1*19L	1*20L	0,11	0,1	0,16	0,2
100-36/33-40 (33,1)	42	60	40	1*19L	1*20L	0,16	0,3	1,45	14,6
100-33/30-60	85	60	40	1*19L	1*20L	0,32	0,8	0,68	3,5

CB60-36L 2V

Temperature program (°C) DHW	**Capacity** kW	**CB** type	**Plates** no	**Plates** primary	**Plates** secondary	**Flow P** l/s	**dPp** kPa	**Flow S** l/s	**dPs** kPa
80-23/10-60 (19,2)	140	60	36	1*9L+1*8L	2*9 L	0,61	19,9	0,67	32,8
80-23/10-60 (16,8)	94	60	36	1*9L+1*8L	2*9 L	0,41	8,9	0,45	15,7
80-23/10-55 (16,3)	126	60	36	1*9L+1*8L	2*9 L	0,55	15,1	0,67	33,1
80-23/10-55 (14,5)	85	60	36	1*9L+1*8L	2*9 L	0,37	6,9	0,45	15,8
70-25/10-55 (19,9)	**126**	**60**	**36**	**1*9L+1*8L**	**2*9 L**	**0,69**	**23,5**	**0,67**	**32,8**
70-25/10-55 (17,5)	85	60	36	1*9L+1*8L	2*9 L	0,46	10,3	0,45	15,7
70-22/10-55 (19,9)	126	60	36	1*9L+1*8L	2*9 L	0,64	23,5	0,67	32,8
70-22/10-55 (17,5)	85	60	36	1*9L+1*8L	2*9 L	0,43	10,3	0,45	15,7
65-22/10-55	**111**	**60**	**36**	**1*9L+1*8L**	**2*9 L**	**0,63**	**24,5**	**0,59**	**25,7**
65-22/10-55 (20,2)	85	60	36	1*9L+1*8L	2*9 L	0,48	13,8	0,45	15,6

11.2 Operation data Midi Compact 100

	Primary side	Heating	DHW
Design pressure PS	16 Bar	6 bar	10 Bar
Design temperature TS	120°C	100°C	100°C
Relief pressure safety-valve	-	3 Bar	9 Bar
Volume Heat exchanger, L	2,6/1,85 L	2,6 L	1,75 L

CB60-50L

Temperature program (°C) Heating	**Capacity** kW	**CB** type	**Plates** no	**Plates** primary	**Plates** secondary	**Flow P** l/s	**dPp** kPa	**Flow S** l/s	**dPs** kPa
100-63/60-80	**105**	**60**	**50**	**1*24 L**	**1*25 L**	**0,71**	**2,5**	**1,28**	**7,5**
100-63/60-80 (62,9)	100	60	50	1*24 L	1*25 L	0,67	2,2	1,22	6,8
100-58/55-75	130	60	50	1*24 L	1*25 L	0,77	2,9	1,58	11,2
100-58/55-75 (57,3)	100	60	50	1*24 L	1*25 L	0,58	1,7	1,22	6,9
100-53/50-70 (53)	151	60	50	1*24 L	1*25 L	0,80	3,2	1,83	15,0
100-53/50-70 (51,9)	100	60	50	1*24 L	1*25 L	0,52	1,4	1,21	6,9
100-48/45-60 (46,1)	112	60	50	1*24 L	1*25 L	0,52	1,4	1,81	14,8
100-48/45-60 (46,0)	100	60	50	1*24 L	1*25 L	0,46	1,1	1,62	12,0
100-43/40-60 (42,4)	**150**	**60**	**50**	**1*24 L**	**1*25 L**	**0,65**	**2,2**	**1,81**	**15,0**
100-43/40-60 (41,5)	100	60	50	1*24 L	1*25 L	0,43	1,0	1,21	7,0
100-43/40-70	87	60	50	1*24 L	1*25 L	0,38	0,8	0,70	2,5
100-43/40-80	33	60	50	1*24 L	1*25 L	0,14	0,1	0,20	0,3
100-36/33-40 (33,1)	52	60	50	1*24 L	1*25 L	0,19	0,3	1,79	15,0
100-33/30-60	109	60	50	1*24 L	1*25 L	0,41	0,9	0,88	3,9
100-33/30-60 (32,8)	100	60	50	1*24 L	1*25 L	0,37	0,8	0,80	3,3

CB60-36L 2V

Temperature program (°C) DHW	**Capacity** kW	**CB** type	**Plates** no	**Plates** primary	**Plates** secondary	**Flow P** l/s	**dPp** kPa	**Flow S** l/s	**dPs** kPa
80-23/10-60 (19,2)	140	60	36	1*9L+1*8L	2*9 L	0,61	19,9	0,67	32,8
80-23/10-60 (18,0)	115	60	36	1*9L+1*8L	2*9 L	0,50	13,3	0,55	22,7
80-23/10-55 (16,3)	126	60	36	1*9L+1*8L	2*9 L	0,55	15,1	0,67	33,1
80-23/10-55 (15,3)	104	60	36	1*9L+1*8L	2*9 L	0,45	10,2	0,55	23,0
70-25/10-55 (19,9)	126	60	36	1*9L+1*8L	2*9 L	0,69	23,5	0,67	32,8
70-25/10-55 (18,6)	104	60	36	1*9L+1*8L	2*9 L	0,56	15,6	0,55	22,7
70-22/10-55 (19,9)	**126**	**60**	**36**	**1*9L+1*8L**	**2*9 L**	**0,64**	**23,5**	**0,67**	**32,8**
70-22/10-55 (18,6)	104	60	36	1*9L+1*8L	2*9 L	0,53	15,5	0,55	22,7
65-22/10-55	**111**	**60**	**36**	**1*9L+1*8L**	**2*9 L**	**0,63**	**24,5**	**0,59**	**25,7**
65-22/10-55 (21,5)	104	60	36	1*9L+1*8L	2*9 L	0,59	21,1	0,55	22,6

11.3 Operation data Midi Compact 160

	Primary side	Heating	DHW
Design pressure PS	16 Bar	16 bar	10 Bar
Design temperature TS	120°C	100°C	100°C
Relief pressure safety-valve	-	3 Bar	9 Bar
Volume Heat exchanger, L	4,1/2,27 L	4,1 L	2,16 L

CB60-80L

Temperature program (°C) Heating	**Capacity** kW	**CB** type	**Plates** no	**Plates** primary	**Plates** secondary	**Flow P** l/s	**dPp** kPa	**Flow S** l/s	**dPs** kPa
100-63/60-80	**162**	**60**	**80**	**1*39L**	**1*40L**	**1,09**	**2,7**	**1,97**	**8,7**
100-63/60-80 (62,8)	160	60	80	1*39L	1*40L	1,07	2,7	1,95	8,5
100-58/55-75	162	60	80	1*39L	1*40L	0,96	2,2	1,97	8,8
100-58/55-75 (57,2)	160	60	80	1*39L	1*40L	0,93	2,1	1,95	14,9
100-53/50-70 (51,9)	164	60	80	1*39L	1*40L	0,86	1,8	1,98	8,9
100-53/50-70 (51,9)	160	60	80	1*39L	1*40L	0,83	1,7	1,94	8,6
100-48/45-60 (45,6)	122	60	80	1*39L	1*40L	0,58	0,9	1,97	8,9
100-43/40-60 (41,4)	**163**	**60**	**80**	**1*39L**	**1*40L**	**0,71**	**1,2**	**1,97**	**9,0**
100-43/40-60 (41,4)	160	60	80	1*39L	1*40L	0,68	1,1	1,93	8,7
100-43/40-70	144	60	80	1*39L	1*40L	0,63	1,0	1,16	3,3
100-43/40-80	56	60	80	1*39L	1*40L	0,24	0,2	0,34	0,3
100-36/33-40 (33,0)	57	60	80	1*39L	1*40L	0,22	0,2	1,96	9,1
100-33/30-60	181	60	80	1*39L	1*40L	0,67	1,1	1,45	5,1

CB60-44L 2V

Temperature program (°C) DHW	**Capacity** kW	**CB** type	**Plates** no	**Plates** primary	**Plates** secondary	**Flow P** l/s	**dPp** kPa	**Flow S** l/s	**dPs** kPa
80-23/10-60 (19,1)	174	60	44	2*12L	1*12L+1*13L	0,75	20,5	0,83	33,2
80-23/10-60 (18,0)	146	60	44	2*12L	1*12L+1*13L	0,63	14,5	0,70	24,2
80-23/10-55 (16,1)	154	60	44	2*12L	1*12L+1*13L	0,67	15,2	0,82	32,8
80-23/10-55 (15,4)	132	60	44	2*12L	1*12L+1*13L	0,57	11,1	0,70	24,4
70-25/10-55 (19,8)	156	60	44	2*12L	1*12L+1*13L	0,85	24,2	0,83	33,2
70-25/10-55 (18,7)	132	60	44	2*12L	1*12L+1*13L	0,72	17,0	0,70	24,2
70-22/10-55 (19,8)	156	60	44	2*12L	1*12L+1*13L	0,80	24,2	0,83	33,2
70-22/10-55 (18,7)	132	60	44	2*12L	1*12L+1*13L	0,67	17,0	0,70	24,2
65-22/10-55	139	60	44	2*12L	1*12L+1*13L	0,79	26,0	0,74	26,6
65-22/10-55 (21,6)	132	60	44	2*12L	1*12L+1*13L	0,75	21,6	0,70	24,0

11.4 Operation data Midi Compact 200

	Primary side	Heating	DHW
Design pressure PS	16 Bar	6 bar	10 Bar
Design temperature TS	120°C	100°C	100°C
Relief pressure safety-valve	-	3 Bar	9 Bar
Volume Heat exchanger, L	5,2/2,88 L	5,2 L	2,78 L

CB60-100L

Temperature program (°C) Heating	**Capacity** kW	**CB** type	**Plates** no	**Plates** primary	**Plates** secondary	**Flow P** l/s	**dPp** kPa	**Flow S** l/s	**dPs** kPa
100-63/60-80 (62,9)	**209**	**60**	**100**	**1*49L**	**1*50L**	**1,41**	**3,5**	**2,55**	**11,3**
100-63/60-80 (62,8)	200	60	100	1*49L	1*50L	1,34	3,2	2,44	10,3
100-58/55-75 (57,3)	209	60	100	1*49L	1*50L	1,24	2,7	2,54	11,3
100-58/55-75 (57,2)	200	60	100	1*49L	1*50L	1,16	2,4	2,43	10,4
100-53/50-70 (51,9)	210	60	100	1*49L	1*50L	1,11	2,2	2,55	11,4
100-53/50-70 (51,8)	200	60	100	1*49L	1*50L	1,03	1,9	2,43	10,4
100-48/45-60 (45,6)	157	60	100	1*49L	1*50L	0,75	1,1	2,54	11,4
100-43/40-60 (41,5)	**210**	**60**	**100**	**1*49L**	**1*50L**	**0,92**	**1,6**	**2,54**	**11,5**
100-43/40-60 (41,4)	200	60	100	1*49L	1*50L	0,85	1,3	2,42	10,5
100-43/40-70	183	60	100	1*49L	1*50L	0,80	1,2	1,47	4,0
100-43/40-80	72	60	100	1*49L	1*50L	0,31	0,2	0,44	0,4
100-36/33-40 (33,1)	74	60	100	1*49L	1*50L	0,29	0,2	2,55	11,7
100-33/30-60	229	60	100	1*49L	1*50L	0,85	1,4	1,84	6,3
100-33/30-60 (32,6)	200	60	100	1*49L	1*50L	0,74	1,0	1,61	4,8

CB60-56L 2V

Temperature program (°C) DHW	**Capacity** kW	**CB** type	**Plates** no	**Plates** primary	**Plates** secondary	**Flow P** l/s	**dPp** kPa	**Flow S** l/s	**dPs** kPa
80-23/10-60 (18,9)	222	60	56	1*14L+1*13L	2*14L	0,96	20,9	1,06	33,2
80-23/10-60 (17,5)	178	60	56	1*14L+1*13L	2*14L	0,77	13,3	0,85	22,1
80-23/10-55 (16,0)	198	60	56	1*14L+1*13L	2*14L	0,85	15,6	1,05	33,0
80-23/10-55 (15,0)	160	60	56	1*14L+1*13L	2*14L	0,69	10,3	0,85	22,3
70-25/10-55 (19,5)	**198**	**60**	**56**	**1*14L+1*13L**	**2*14L**	**1,08**	**24,2**	**1,05**	**32,7**
70-25/10-55 (18,2)	160	60	56	1*14L+1*13L	2*14L	0,87	15,6	0,85	22,1
70-25/10-55 (19,5)	198	60	56	1*14L+1*13L	2*14L	1,01	24,2	1,05	32,7
70-22/10-55 (18,2)	160	60	56	1*14L+1*13L	2*14L	0,82	15,6	0,85	22,1
65-22/10-55	**183**	**60**	**56**	**1*14L+1*13L**	**2*14L**	**1,04**	**28,0**	**0,97**	**28,0**
65-22/10-55 (21,1)	160	60	56	1*14L+1*13L	2*14L	0,91	21,1	0,85	21,9

11.5 Technical data

Electrical data: 230V 50Hz 1-phase, 227-458
Noise level: <70dB(A), 1,6 m above floor level, 1 m from source
Main measurements: 800x600x1300 mm (WxDxH)
Weight: 80-110 kg

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