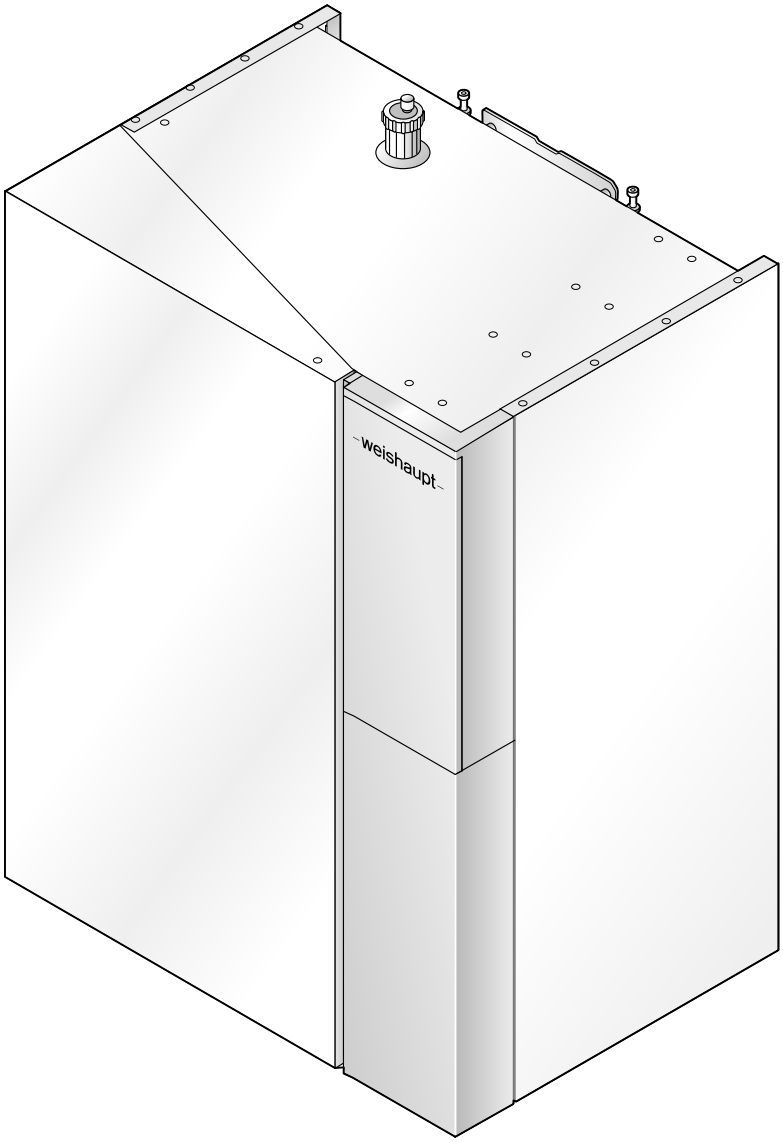
–weishaupt–

manual

Installation and operating instruction



Hydraulic unit WWP L 7 … L 15

83279602 ▪ 1/2014-05

Conformity certification

5115000002

Manufacturer: **Max Weishaupt GmbH**

Address: **Max-Weishaupt-Straße**
D-88475 Schwendi

Product: Hydraulic unit

WWP L 7 AERS-HE,
WWP L 11 AERS-HE,
WWP L 15 ARS-HE

The product described above conforms with

the regulations of directives:

LVD	2006 / 95 / EC
EMC	2004 / 108 / EC

This product is labelled as follows:

CE

Schwendi, 27.06.2013

ppa.

Dr. Schloen

Manager Research
and Development

ppa.

Denkinger

Manager Production and
Quality Management

1 User instructions

This installation and operating manual forms part of the appliance and must be kept on site.

1.1 User guide

1.1.1 Symbols

 **DANGER**	Immediate danger with high risk. Non observance can lead to serious injury or death.
 **WARNING**	Danger with medium risk. Non observance can lead to environmental damage, serious injury or death.
 **CAUTION**	Danger with low risk. Non observance can cause damage to the equipment and injury to personnel.
	Important information
▶	Requires direct action
✓	Result after an action
▪	Itemisation
...	Range of values

1.1.2 Target group

These installation and operating instructions are intended for the operator and qualified personnel. They should be observed by all personnel working on the unit.

Work on the unit must only be carried out by personnel who have the relevant training and instruction.

Persons with limited physical, sensory or mental capabilities may only work on the unit if they are supervised or have been trained by an authorised person.

Children must not play near or on the unit.

1.2 Guarantee and Liability

Guarantee and liability claims for personal and equipment damage are excluded, if they can be attributed to one or more of the following causes:

- Non approved application,
- non-observance of the installation and operating instruction,
- operation with faulty safety equipment,
- continual operation despite a fault,
- improper installation, commissioning, operation and service,
- unauthorised modifications made to the unit,
- the installation of additional components, which have not been tested with the unit,
- repairs, which have been carried out incorrectly,
- the use of non original Weishaupt parts,
- unsuitable media,
- defects in the inlet lines,
- acts of God.

2 Safety

2.1 Designated application

The hydraulic unit, in conjunction with the outdoor unit, is suitable for
- heating of heating water to VDI 2035,
- mono-energetic and bivalent operation up to -20 °C external temperature,
- room cooling,
- domestic hot water preparation.

The unit is only suitable for domestic application. It is not suitable for use in industrial processes.

Improper use could:
- endanger the health and safety of the user or third parties,
- cause damage to the appliance or other material assets.

2.2 Procedure when refrigerant leaks

Leaking refrigerant collects at the base of the unit. Inhalation may cause suffocation, and even death.

Avoid open flames and spark generation.

- ► Use protection provided on site to isolate the outdoor unit/system from the mains supply.
- ► Open doors and windows.
- ► Leave the room.
- ► Warn all tenants.
- ► Notify refrigeration engineer.

2.3 Safety measures

Safety relevant fault conditions must be eliminated immediately.

2.3.1 Normal operation

- All labels on the unit must be kept in a legible condition,
- only operate the unit with its panels fitted,
- stipulated settings, service and inspection work should be carried out at regular intervals.

2.3.2 Electrical connection

For work carried out on live parts:
- Observe the accident prevention instructions BGV A3 and adhere to local directives,
- tools in accordance with EN 60900 should be used.

2.3.3 Refrigeration circuit

- Only a competent person in accordance with §5 ChemKlimaSchutzV (Carbon Chemical Regulation) may install, alter and service a refrigeration circuit.
- Observe BG regulation "Operating works material" (BGR 500).
- Wear safety glasses and work gloves when handling refrigerant.
- Carry out leakage test with leak detecting device after each service and fault rectification.

2.4 Disposal

Dispose of all materials used in a safe and environmentally friendly way. Observe local regulations.

Dispose of refrigerant in the correct manner.

3 Product description

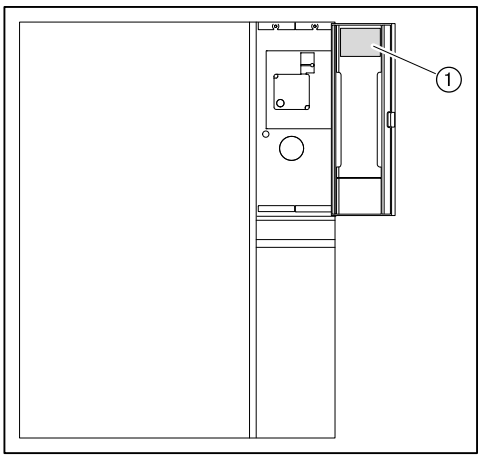
3.1 Type key

Example: WWP L 11 AERS-HE

WWP	Type: Weishaupt heat pump
L	Heat source: Air
11	Ratings size: 11 kW
A	Version: Outdoor installation
E	Version: Single phase
R	Version: Reversible
S	Version: Split
-HE	Hydraulic unit

3.2 Serial number

The serial number on the name plate identifies the product. This is required by Weishaupt's customer service department.



① Name plate

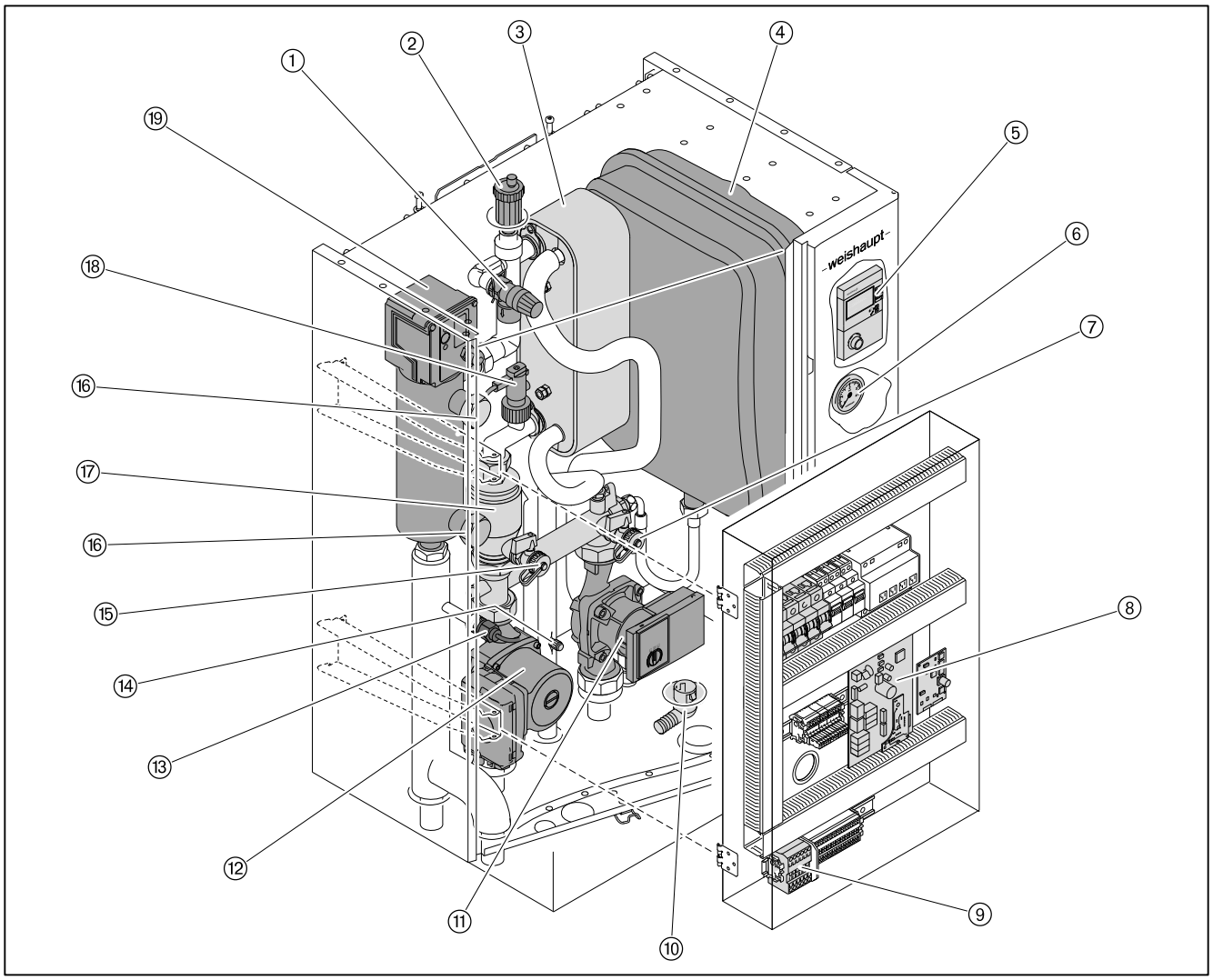
Serial-No. _____

3.3 Function

The hydraulic unit transfers the heat supplied by the outdoor unit to the heating circuit.

An internal circuit reversal in the outdoor unit allows the hydraulic unit to be used for cooling.

Overview



① Safety valve 3 bar
② Quick action vent valve
③ Condenser
④ Expansion vessel 18 l
⑤ Remote control station WP-FS
⑥ Pressure gauges
⑦ Inlet and outlet tap
⑧ Circuit board
⑨ Electrical connection
⑩ Condensate outlet
⑪ Domestic water feed pump
⑫ Heating circuit pump
⑬ Supply sensor
⑭ Schrader valve of 3/8" pipework (WWP L 15)
⑮ Flushing device sludge separator
⑯ Hydraulic connections boiler (additional heat source)
⑰ Sludge separator
⑱ Flow switch
⑲ Electric heating (3 kW / 2 x 3 kW)

3 Product description

Condenser

In the condenser, the refrigerant releases the recovered energy to the heating water.

Heating circuit pump

The high efficiency pump pumps water through the heating circuit during heating operation.

Domestic water feed pump

The 3 stage domestic water feed pump provides water to top up the water tank.

Non return valves

A non-return valve above the pumps prevents incorrect circulation in the pipework system.

Sludge separator

The sludge separator filters impurities from the heating water and thus protects the condenser.

Flow switch

The flow switch monitors the minimum flow in the water circuit.

Electric heating

If the external temperature is low or if there is a fault, the electric heating can support the heat pump.

3.4 Technical data

3.4.1 Approval data

	WWP L 7 AERS-HE WWP L 11 AERS-HE	WWP L 15 ARS-HE
EHPA, Germany	DE-HP-00386	-
EHPA, Switzerland	CH-HP-00407	-

	WWP L 7 AERS-HE WWP L 11 AERS-HE	WWP L 15 ARS-HE
Basic standards	EN 60730-1 EN 60730-2 EN 60335-1 EN 60335-2-40	EN 61000-3-12(1 EN 55014-1 EN 60335-1 EN 60335-2-40

(1 Only in conjunction with three-phase system connection and a short circuit capacity of 1.32 MVA at the transfer point from the utility grid.

3.4.2 Electrical data

	WWP L 7 AERS-HE	WWP L 11 AERS-HE	WWP L 15 ARS-HE
Supply voltage / frequency	230 V, 1~, N, 50 Hz	230 V, 1~, N, 50 Hz optional: 400 V, 3~, N, 50 Hz	230 V, 1~, N, 50 Hz optional: 400 V, 3~, N, 50 Hz
Consumption of electric heating	3000 W	3000 W optional: 2 x 3000 W	3000 W optional: 2 x 3000 W
Consumption of heating circuit pump (1	maximum 87 W	maximum 87 W	maximum 140 W
Consumption domestic water feeder pump (1	maximum 45 W	maximum 45 W	maximum 45 W
Type of protection	IP 42	IP 42	IP 42

(1 Voltage supply via external unit.

3.4.3 Installation location

Installation location	indoors

3.4.4 Ambient conditions

Temperature in operation	+3 … +30 °C
Temperature during transport / storage	-10 … +60 °C
relative humidity	max 80 %, no dew point

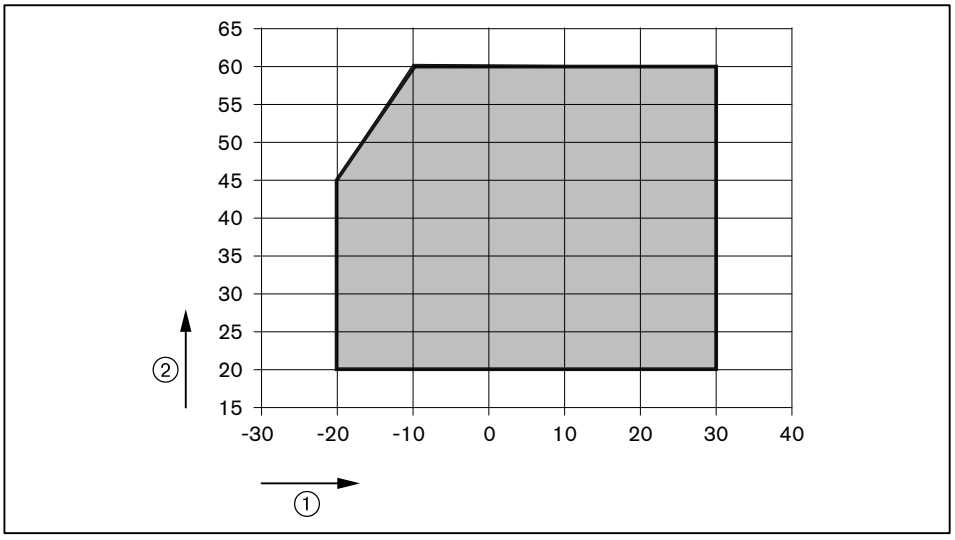
3.4.5 Rating

		WWP L 7 AERS-HE	WWP L 11 AERS-HE	WWP L 15 ARS-HE
Evaporator air throughput		2820 m³/h	5970 m³/h	5770 m³/h
Heating water flow rate condenser	max	1.342 m³/h	1.878 m³/h	3.095 m³/h
	nom	1.118 m³/h 8.6 kPa	1.565 m³/h 7.3 kPa	2.579 m³/h 11.56 kPa
	min	0.89 m³/h	1.238 m³/h	2.063 m³/h

Capacity data - heating (EN 14511)

		WWP L 7 AERS-HE	WWP L 11 AERS-HE	WWP L 15 ARS-HE
Heating water supply temperature		+20 ... +60 °C		
Air temperature application limit outdoor unit		-20 ... +30 °C		
Heating water temperature differential	A2 / W35	5 K		
Heat capacity	A2 / W35	3.4 kW	6.7 kW	9.5 kW
Coefficient of performance (COP)	A2 / W35	3.41	3.30	3.15
Heating water temperature differential	A7 / W35	5 K		
Heat capacity	A7 / W35	5.0 kW	9.1 kW	15.0 kW
Coefficient of performance (COP)	A7 / W35	4.43	4.43	4.3

Capacity graph heating



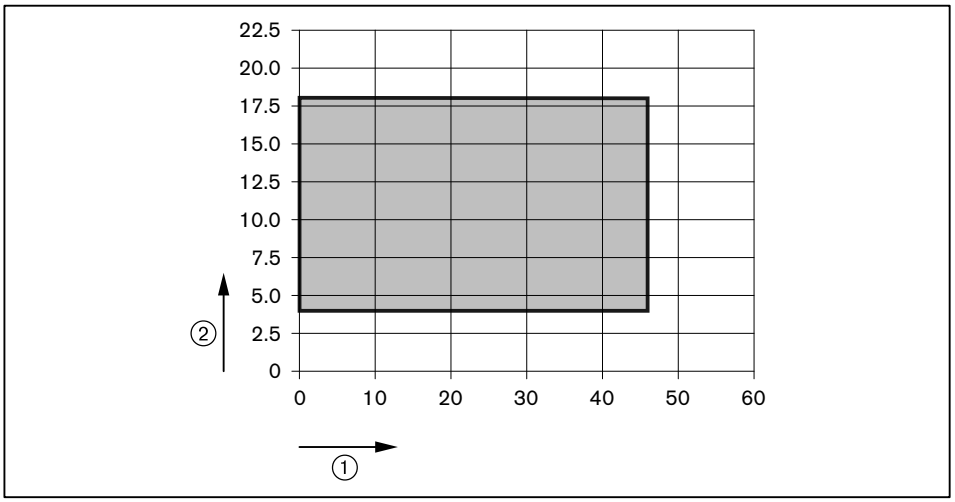
① External temperature [°C]
② Supply temperature [°C]

3 Product description

Capacity data - cooling (EN 14511)

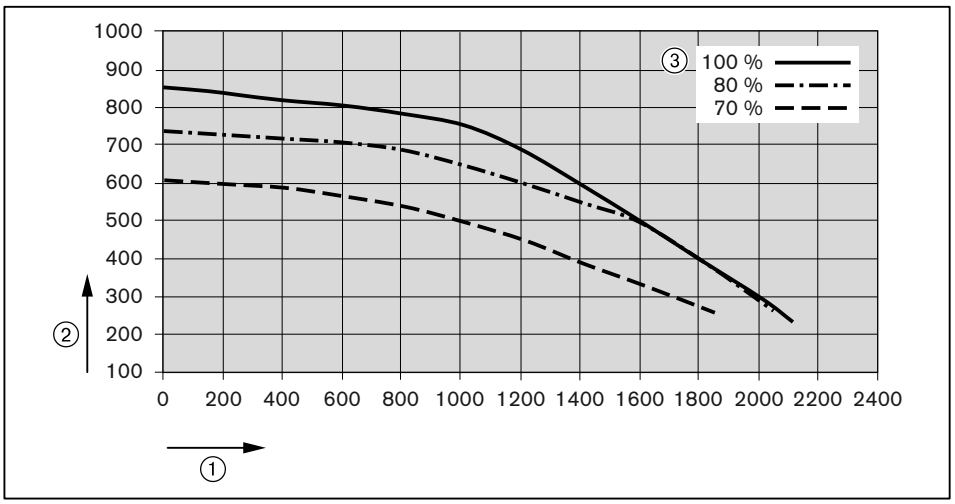
		WWP L 7 AERS-HE	WWP L 11 AERS-HE	WWP L 15 ARS-HE
Cooling water supply temperature		+4 ... +18 °C		
Air temperature application limit outdoor unit		0 ... +46 °C		
Cooling - temperature differential	A35 / W7	5 K		
Cooling capacity	A35 / W7	5.25 kW	5.95 kW	12.6 kW
Efficiency ratio (EER)	A35 / W7	2.47	3.07	3.17
Cooling - temperature differential	A35 / W18	5 K		
Cooling capacity	A35 / W18	7 kW	7.875 kW	15.8 kW
Efficiency ratio (EER)	A35 / W18	3.4	4.05	4.24

Capacity graph cooling



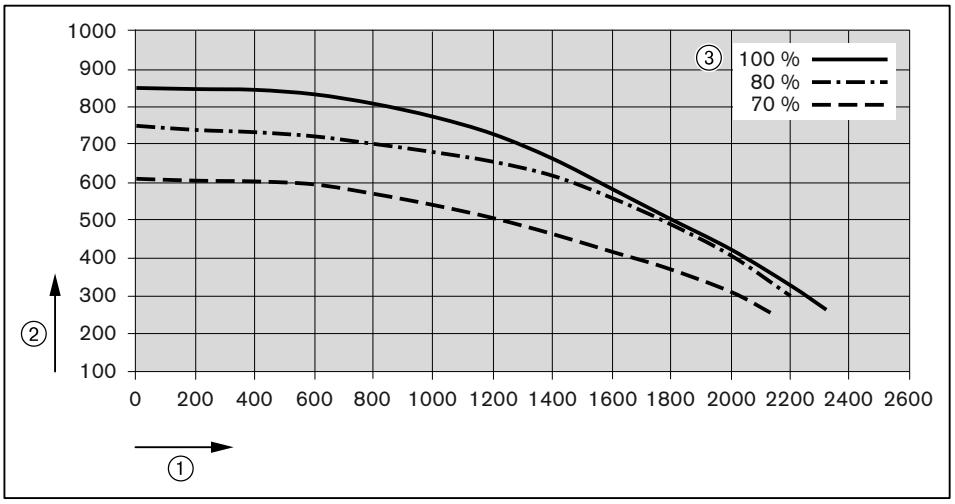
① External temperature [°C]
② Supply temperature [°C]

Resulting supply pressure WWP L 7 AERS-HE with UPM-Geo pump 25-85



① Heating water flow rate [l/h]
② Resulting supply pressure [mbar]
③ Speed UPM-Geo pump

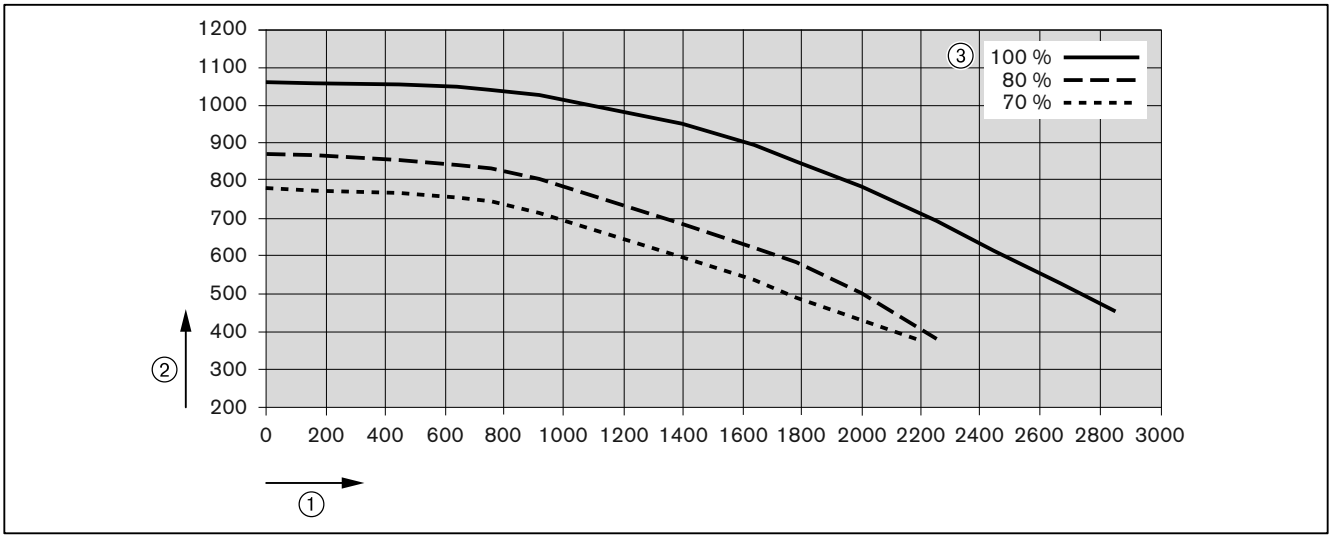
Resulting supply pressure WWP L 11 AERS-HE with UPM-Geo pump 25-85



① Heating water flow rate [l/h]
② Resulting supply pressure [mbar]
③ Speed UPM-Geo pump

3 Product description

Resulting supply pressure WWP L 15 ARS-HE with UPM-Geo pump 25-105



① Heating water flow rate [l/h]
② Resulting supply pressure [mbar]
③ Speed UPM-Geo pump

3.4.6 Operating pressure

Refrigerant high pressure side	max 42 bar
Refrigerant low pressure side	max 19 bar
Heating water	max 3 bar

3.4.7 Contents

Hydraulic unit and outdoor unit

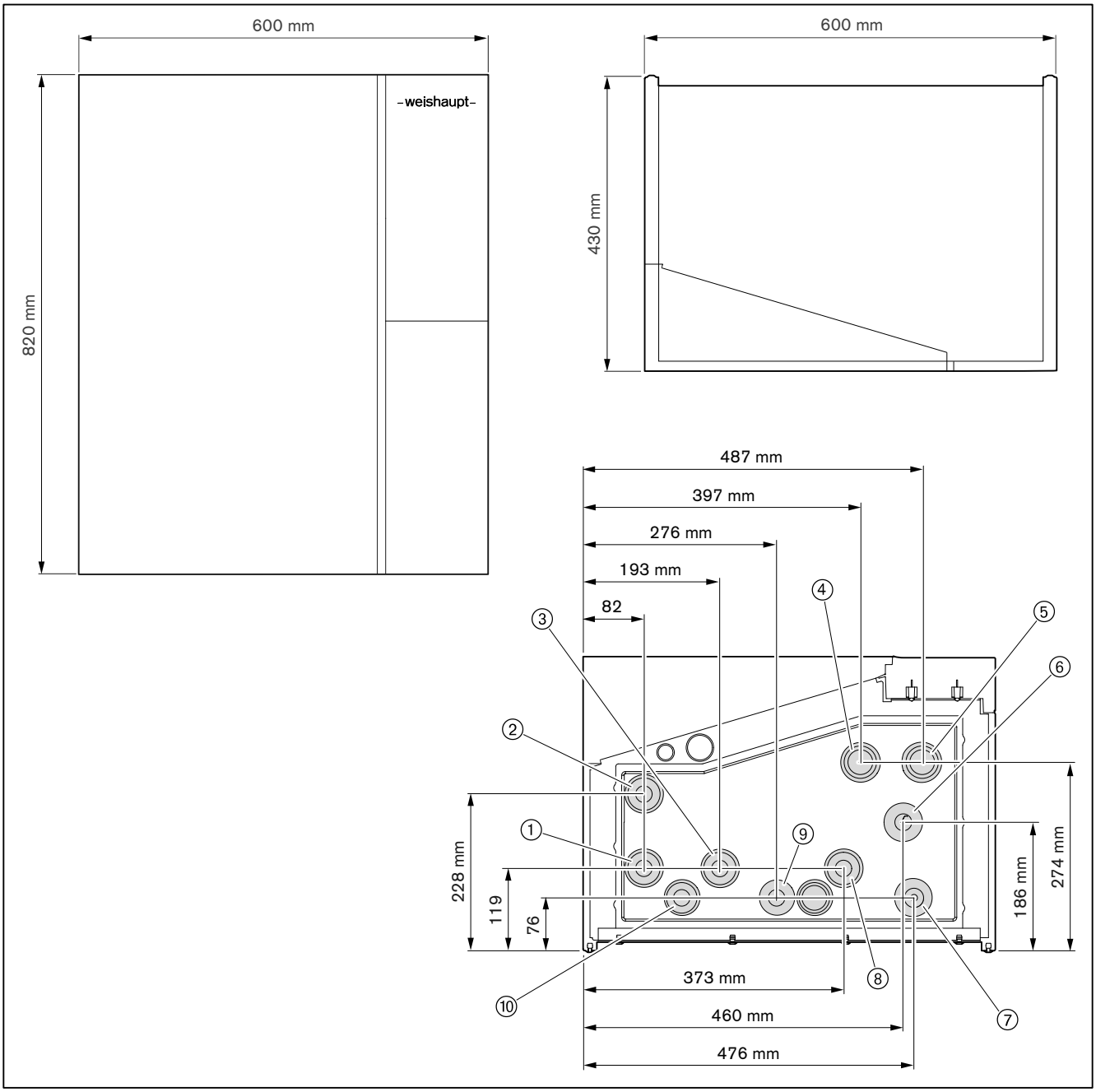
	WWP L 7 AERS	WWP L 11 AERS	WWP L 15 ARS
Refrigerant R 410 A	1.365 kg	2.1 kg	3.9 kg(1

(1 If more than 3 kg, an annual leakage test of the refrigerant circuit is mandatory.

3.4.8 Weight

	WWP L 7 AERS-HE	WWP L 11 AERS-HE	WWP L 15 ARS-HE
Weight empty	approx. 61 kg	approx. 63 kg	approx. 65 kg

3.4.9 Dimensions



① Heating supply external Ø 28 mm
② DHW supply external Ø 28 mm
③ Heating return external Ø 28 mm
④ External heat source connection Ø 22 mm (optional)
⑤ External heat source connection Ø 22 mm (optional)
⑥ Condensate outlet internal Ø 14 mm
⑦ Refrigerant pipework 5/8" (hot gas pipe)
⑧ DHW return external Ø 28 mm
⑨ Refrigerant pipework 3/8" (liquid pipe)
⑩ Safety valve outlet hose

4 Installation

4.1 Installation conditions

Installation location

► Prior to installation ensure that:
- the installation location is frost free,
- the bearing capacity of the wall is sufficient (see Ch. 3.4.8),
- the space for the hydraulic unit is sufficient (see Ch. 3.4.9),
- the space for the hydraulic connection is sufficient,
- the installation location is of sufficient volume.

	WWP L 7 AERS-HE	WWP L 11 AERS-HE	WWP L 15 ARS-HE
Minimum room volume EN 378	greater than 4 m³	greater than 6 m³	greater than 10 m³

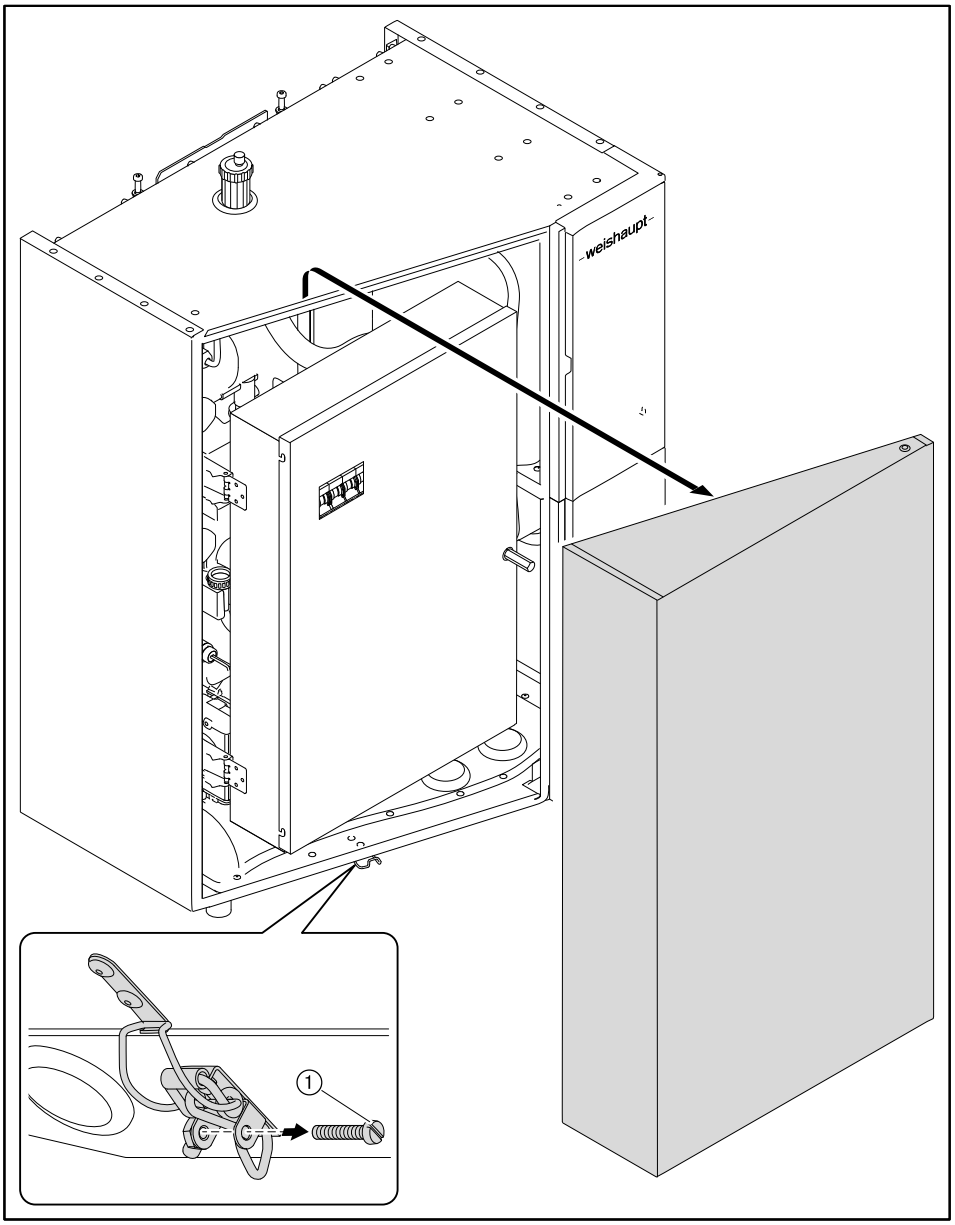
Minimum clearance

Observe a side clearance of minimum 3 cm to walls and other objects for installation and service work.

4.2 Remove front panel

The front panel is secured with a screw at the tension lock to prevent accidental opening.
- ▶ Refit screw when mounting front panel.

- ▶ Remove screw ① from the tension lock at the bottom of the unit.
- ▶ Open the tension lock and remove the front panel.



4.3 Installing the hydraulic unit

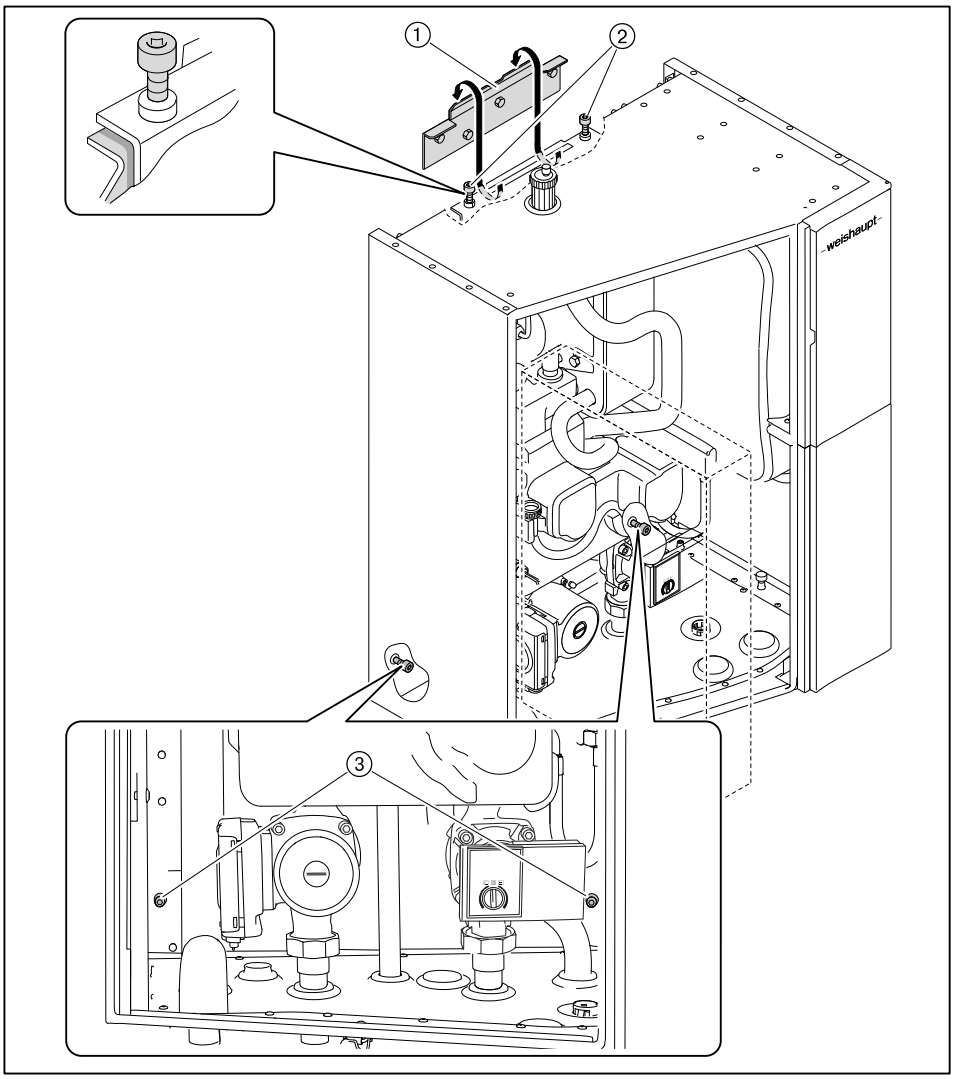
Mounting the wall bracket

Observe the following when mounting the wall bracket:
- Leave sufficient clearance beneath the unit for the hydraulic connections,
- check the fixings supplied are suitable for the wall construction (see Ch. 3.4.8).

► Position the wall bracket (see Ch. 3.4.9).
► Mount the wall bracket to the wall using suitable fixings and using all drilling positions.

Fixing and aligning the unit

► Hook the hydraulic unit into the wall bracket ① and align horizontally using adjustment screws ②.
► Remove front panel (see Ch. 4.2).
► Adjust clearance to the wall using adjustment screws ③ and horizontally align the hydraulic unit.



5 Installation

5.1 Requirements for the heating water

The central heating water must comply with VDI Guideline 2035 or similar local regulations.

- Untreated fill and top-up water must be of domestic water quality (colourless, clear and without sedimentation),
- the fill and top-up water must be pre-filtered (mesh max 25 µm),
- the pH value must be 8.5 ± 0.5,
- there must be no oxygen enrichment of the heating water (max 0.05 mg/l),
- in the case of diffusion resistant system components, the unit must be de-coupled from the heating circuit by means of a separator.

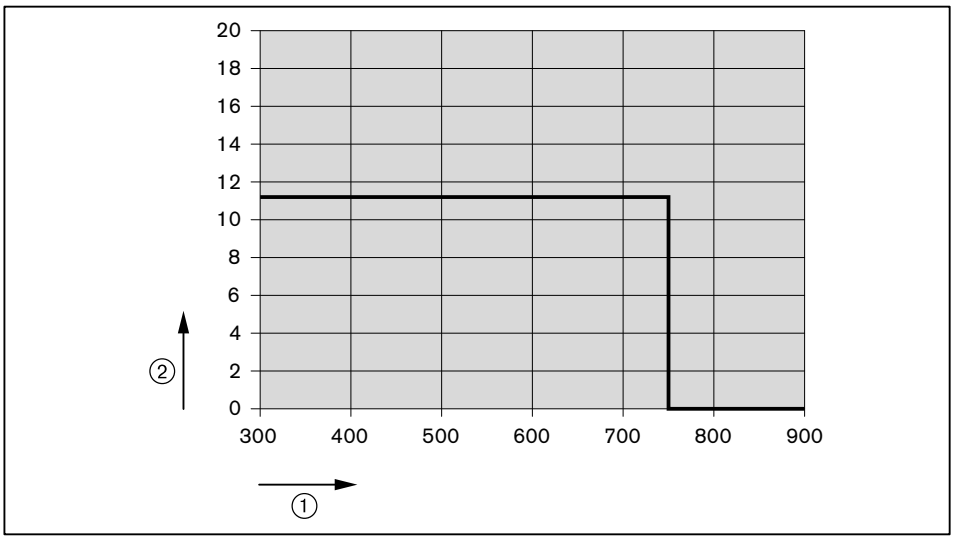
5.1.1 Water hardness

The admissible water hardness is determined in relation to the fill water quantity.

► Determine from the diagram below whether water treatment measures are necessary.

If the fill water lies in the range above the curve:
► treat the fill and top-up water.

Fill water volumes < 300 litres and within the range below the limit curve need not be treated.



① Fill water volume [litres]
② Total hardness [°dH]

5.1.2 To-up water volume

► Record the fill and top-up water quantities in the system logbook.

If the quantity of top-up water exceeds twice the volume of the contents of the system:
► Treat the fill and top-up water as a basic principle (irrespective of the water hardness).

5.1.3 Treating fill and top-up water

De-ionisation (recommended by Weishaupt)

- ► De-ionise the fill and top-up water completely.
  (recommendation: mixed bed procedure)

When the heating water has been entirely de-ionised, additional top-up water up to 10% of the system contents may be untreated. Higher quantities of top-up water must be de-ionised.

- ► Check the ph value (8.5 ∓ 0.5) of the de-ionised water:
  - after the commissioning,
  - after 4 weeks of operation,
  - during the annual servicing.
- ► If necessary, increase the pH value of the heating water by the addition of Trisodium Phosphate.

Softening (cation exchanger)

CAUTION

Damage to the appliance due to raised pH value
Softening the water by means of cation exchange leads to self alkalisation of the heating water. Corrosion can damage the appliance.
- ► Following the softening of the water by means of cation exchanger the pH value has to be stabilised

- ► Soften the fill and top-up water.
- ► Stabilise the pH value.
- ► Check the pH value (8.5 ± 0.5) during the annual servicing.

Stabilisation of hardness

CAUTION

Damage to the appliance due to inappropriate inhibitors
Corrosion and scale could damage the appliance.
- ► Only use inhibitors when the manufacturer can guarantee the following:
  - the requirements relating to the heating water are fulfilled,
  - the heat exchanger in the appliance will not be attacked by corrosion,
  - there will be no formation of sludge in the heating system.

- ► Treat the fill and top-up water with inhibitors.
- ► Check the pH value (8.5 ± 0.5) according to the instructions of the inhibitors.

5.2 Hydraulic connection

Observe the installation and operating manual of the outdoor unit when installing the refrigerant pipework.

DANGER

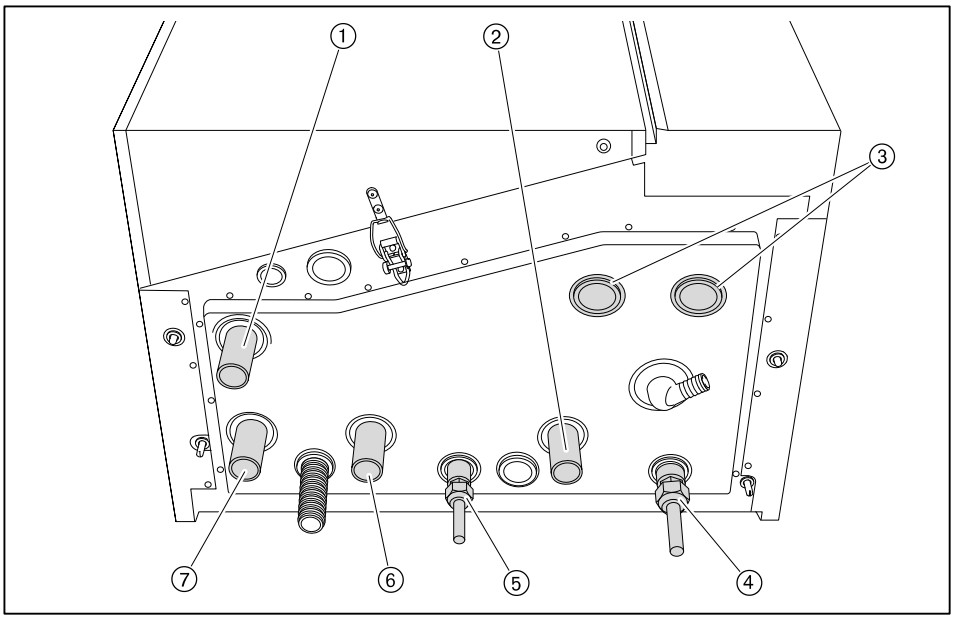
Risk of suffocation due to leaking refrigerant
Leaking refrigerant collects at the base of the unit.
Inhalation may cause suffocation, and even death.
Contact with the skin can cause frostbite.
► Do not damage refrigeration circuit.

WARNING

Environmental damage due to leaking refrigerant
Refrigerant contains fluorinated greenhouse gases in accordance with the Kyoto Protocol and must not be discharged into the atmosphere.
► Do not damage refrigeration circuit.

► Flush the heating system with at least twice the total system content.
✓ Contaminants are removed.

► Connect supply and return using shut off valves.



① DHW supply external Ø 28 mm
② DHW return external Ø 28 mm
③ External heat source connections Ø 22 mm (optional)
④ Refrigerant pipework 5/8" (hot gas pipe)
⑤ Refrigerant pipework 3/8" (liquid pipe)
⑥ Heating return external Ø 28 mm
⑦ Heating supply external Ø 28 mm

5 Installation

Filling with water

CAUTION

Damage to the unit due to unsuitable fill water
Corrosion and scale could damage the system.
► Adhere to the requirements for the heating water and the local directives (see Ch. 5.1).

► Check the design and inlet pressure of the expansion vessel, adapt if necessary (see Ch. 13.1).

For defrosting, a water quantity of at least 60 litres must be present in the heating circuit.

system pressure = inlet pressure + 0.5 bar.
► Open the shut off valves.
► Undo cap on quick action vent valve.
► Gradually fill the heating system using the inlet tap (observe the system pressure).
► Vent the system.
► Check soundness and system pressure.

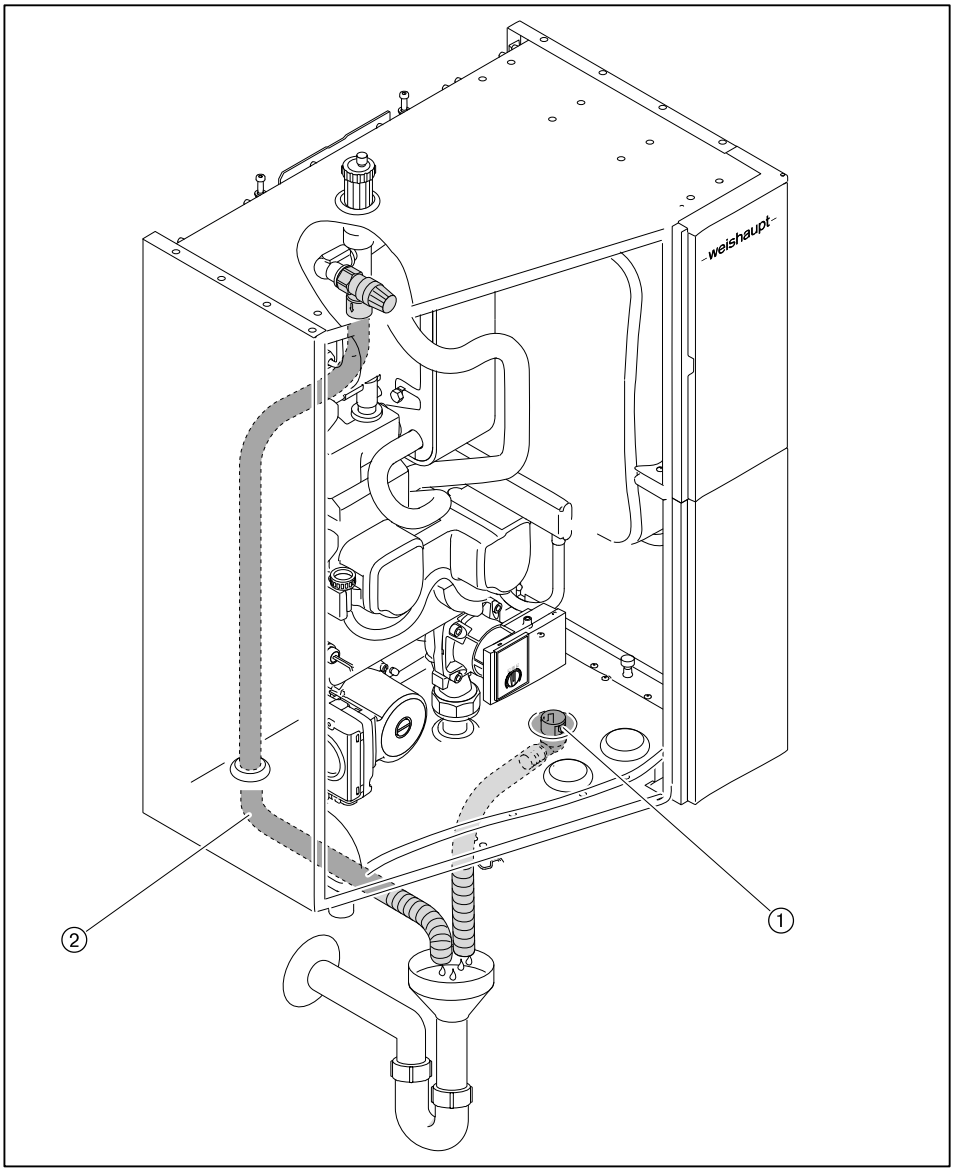
5.3 Refrigerant pipework

Connect refrigerant pipework, see installation and operating manual of outdoor unit.

5.4 Condensate connection

Condensate hose internal Ø 16 mm is supplied with the hydraulic unit.

- ► Connect condensate hose to the connection piece ① and drain into the domestic sewage system.
- ► Outlet ② of the safety valve should drain into the domestic sewage system.



5.5 Electrical connection

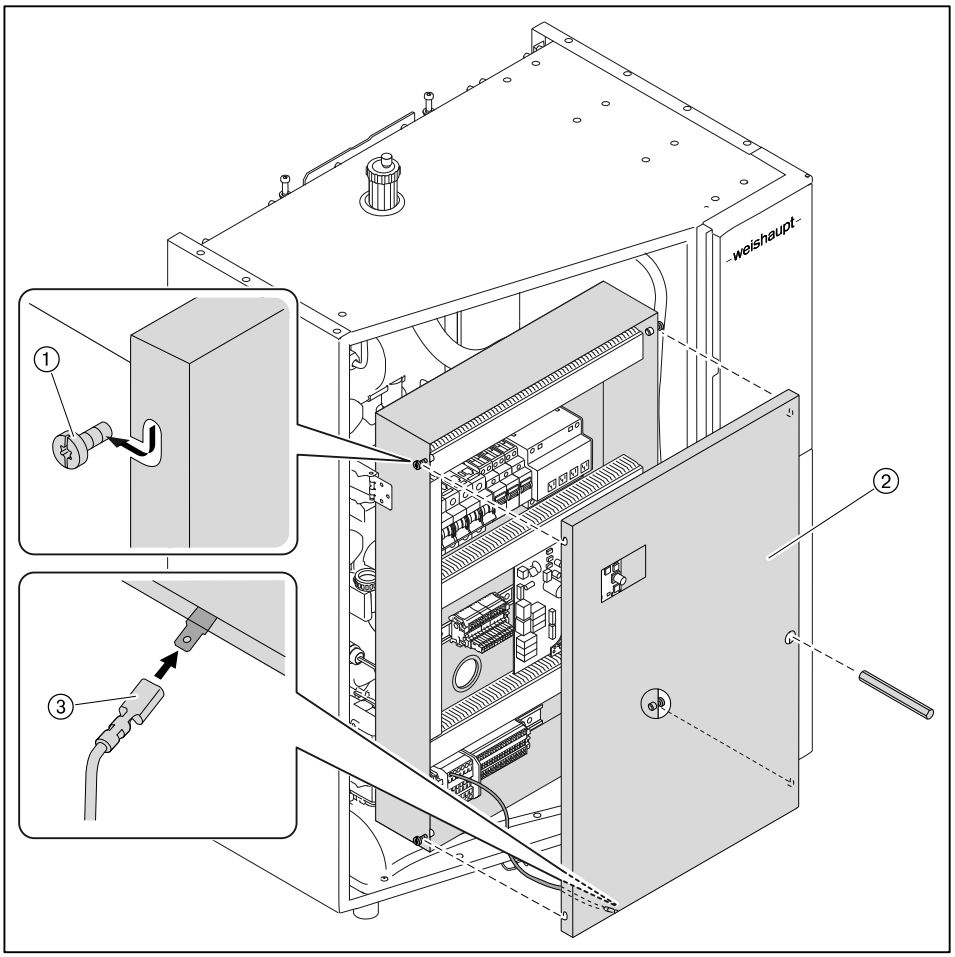
DANGER

Risk of electric shock
Working on the unit when voltage is applied can lead to electric shock.
- ► Isolate hydraulic unit and outdoor unit from power supply prior to carrying out work.
- ► Safeguard against accidental re-start.

The electrical connection must only be carried out by qualified electricians. Observe local regulations.

Run Bus cable separate and preferably using screened cable, connecting the screen only on one side.

- ► Remove front panel (see Ch. 4.2).
- ► Undo 4 screws ① and unhinge control box cover②.
- ► Undo protective conductor connection ③ on the cover.
- ► Remove cover.



5 Installation

Observe wiring diagram supplied.

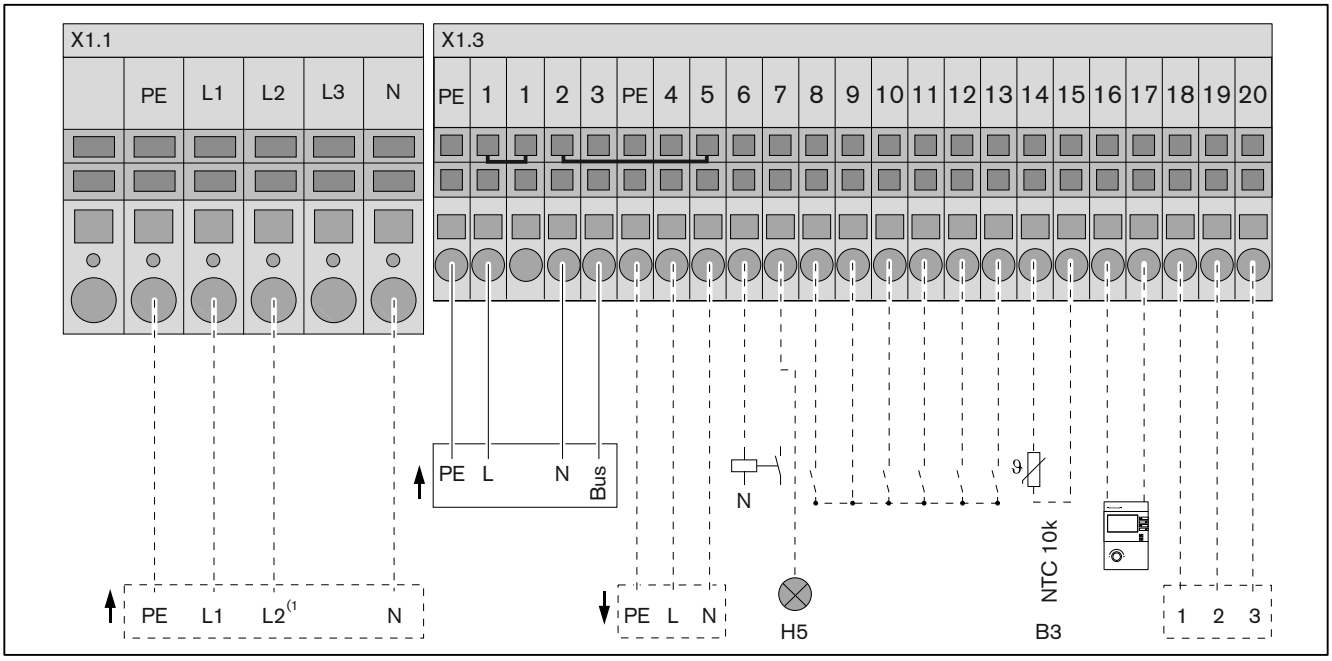
Carry out electrical installation in such a way that the control box can still be hinged open.

Use flexible wiring.

- ► Feed the wiring from the bottom of the unit through the openings to the control box.
- ► Connect wiring as shown in the wiring diagram.
- ► reconnect protective conductor connection to the cover.
- ► Refit cover and screw down.
- ► Mount the front panel and secure the tension lock with the screw.

5 Installation

Wiring diagram



Terminal rail	Terminal	Connection	Explanation
X1.1	PE / L1 / L2[1] / N	Supply electric heating: WWP L 7 AERS-HE	230 V, 1~, N, 50 Hz Fuse B 16 A,
		WWP L 11 AERS-HE	230 V, 1~, N, 50 Hz Fuse B 25 A, optional: 400 V, 3~, N, 50 Hz Fuse 3 x 16 A,
		WWP L 15 ARS	230 V, 1~, N, 50 Hz Fuse B 25 A, optional: 400 V, 3~, N, 50 Hz Fuse 3 x 16 A,

[1] Optional connection L2 only for WWP L 11 AERS-HE and WWP L 15 ARS-HE, when using the second stage electric heating.

Terminal rail	Terminal	Connection	Explanation
X1.3	PE / 1 / 2 / 3	Connection of outdoor unit	230 V, 1~, N, 50 Hz
	PE / 4 / 5	Supply additional heating circuit (optional)	230 V, 1~, N, 50 Hz
	6	Load contactor hot water flange heating (optional)	230 V Relay output
	7	Error output H5 (optional)	230 V output
	8	Contact utility lock (optional) Switch against "9 Earth", with potential free contact.	If contact closed: ▪ compressor out of operation, ▪ pumps switched off, ▪ second heat exchanger switched off.
	9	Earth (optional)	
	10	Heating/cooling thermostat (optional) Switch against "9 Earth", with potential free contact.	If contact closed: ▪ Heating or cooling operation interrupted, ▪ heating circuit pump switched off, DHW supply possible.
	11	Boiler change-over (optional) Switch against "9 Earth", with potential free contact - see expert level/ add.HE/add. heat exchanger (parameter 602).	If contact closed: ▪ When selecting additional heat exchanger boiler the compressor is switched off. Heating circuit and domestic water feeder pumps remain in operation. ▪ When selecting additional heat exchanger electric heating the contact becomes ineffective.
	12	Heating/cooling (optional) Switch against "9 Earth", with potential free contact.	Change-over between heating and cooling via external access.
	13	DHW thermostat (optional) Switch against "9 Earth", with potential free contact.	If contact closed: ▪ DHW supply (no water sensor B3 connected), ▪ DHW supply blocked (if DHW sensor B3 connected).
	14 / 15	DHW sensor B3 (optional)	NTC 10 kΩ
	16 / 17	eBus remote control station (optional)	Terminal 16 on eBus- Terminal 17 on eBus+
	18 / 19 / 20	RS485-Bus add. heating circuit (optional)	

(1 Optional connection L2 only for WWP L 11 AERS-HE and WWP L 15 ARS-HE, when using the second stage electric heating.

6 Operation

See installation and operating manual of remote control station.

7 Commissioning

7.1 Prerequisite

Commissioning must only be carried out by qualified personnel.

Only correctly carried out commissioning ensures the operational safety of the unit.

Commissioning must only be carried out once the cooling circuit has been installed completely (see installation and operating manual of outdoor unit).

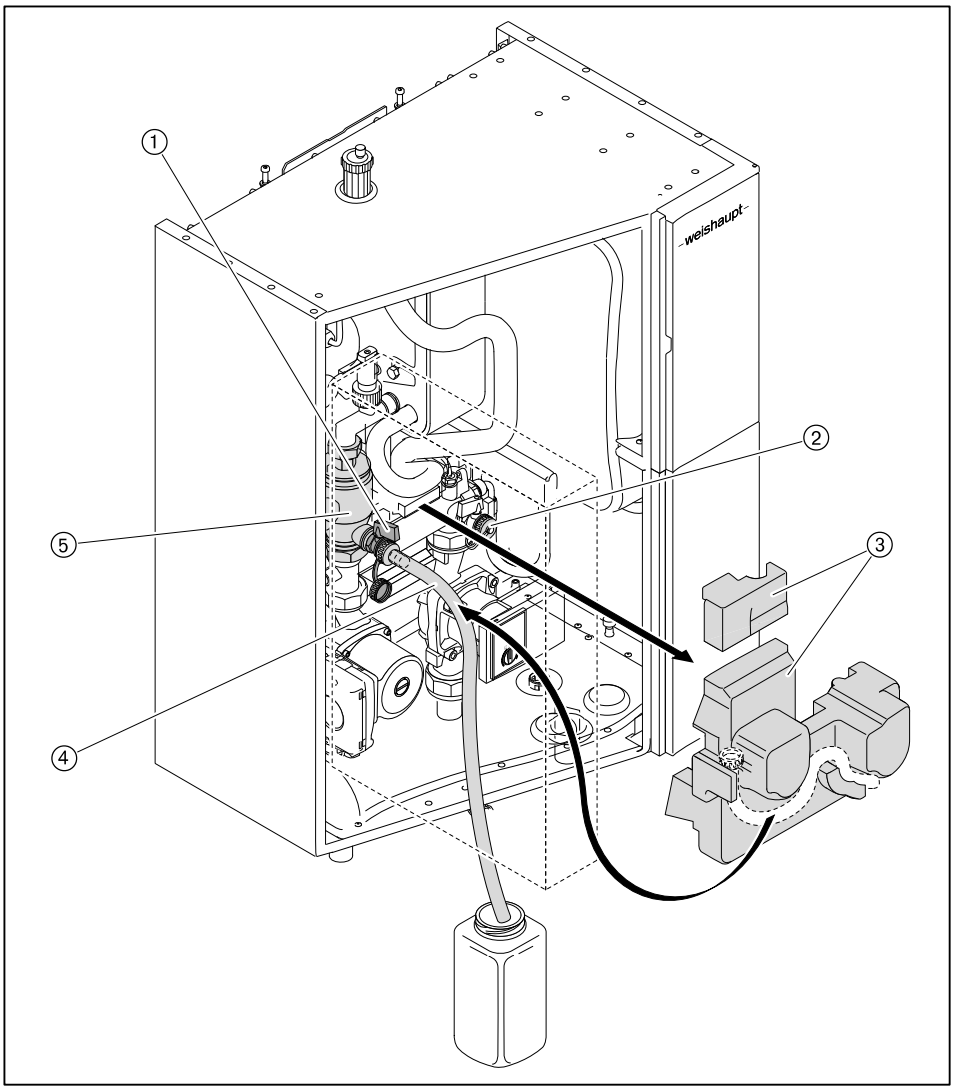
► Prior to commissioning ensure that:
- all assembly and installation work has been carried out correctly
- The unit and the system have been filled with media and vented,
- cooling or heating demand exists.

Additional system-related tests could be necessary. Please observe the operating guidelines for the individual components.

7.2 Steps for commissioning

1. Rinsing the sludge separator

- ▶ Close flow and return shut off devices of heating circuit.
- ▶ Close flow and return shut off devices of hot water circuit.
- ▶ Provide collecting container.
- ▶ Remove cladding ③.
- ▶ Remove hose ④ from cladding and connect to rinsing device ①.
- ▶ Open rinsing device ① and rinse sludge collector ⑤.
- ▶ Refill water quantity via rinsing device ②:
  system pressure = inlet pressure + 0.5 bar.



2. Apply voltage supply

► Apply voltage to the outdoor unit/system using fusing provided on site.

CAUTION

Damage to the condenser because electric heating has not been connected
The condenser can freeze, if the supply temperature drops to much during commissioning.
► Connect electric heating and switch on voltage supply (see Ch. 5.5).
► Select the electric heating as additional heat exchanger on the remote control station.

3. Set parameters

► Set commissioning parameters at the remote control station (see installation and operating manual remote control station).

4. Set heating water flow rate

► Set heating water flow rate.
► If necessary set the overflow valve with flow meter to minimum nominal flow rate (see Ch. 3.4.5).

5. Set domestic water flow rate

► Set domestic water circulation pump to stage 3.

6. Concluding work

► Mount the front panel and secure the tension lock with the screw.
► Inform the operator about the use of the equipment.
► Hand the installation and operating manuals to the operator and inform him that these must be kept with the units.
► Point out to operator that the installation should be serviced annually.
► Document all work carried out on the engineers report.

8 Shutdown

For breaks in operation:

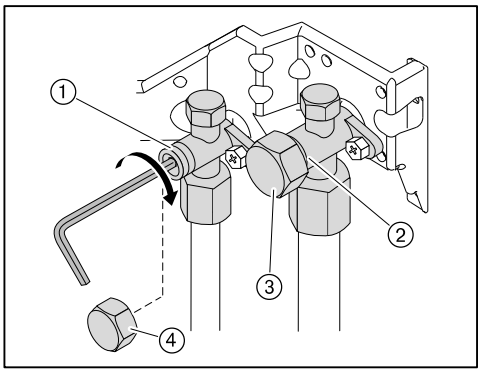
- ► Interrupt voltage supply.
- ► If there is a risk of frost, drain the water from the system.

If refrigerant is to be pumped into the outdoor unit do not interrupt voltage supply.

8.1 Pumping refrigerant into the outdoor unit

Refrigerant may be pumped into the outdoor unit:
- if repairs are needed on the hydraulic unit or the refrigerant pipework,
- for system shutdown.

On the outdoor unit:
- ► Remove cap ④ from the service valve of the 3/8" pipework.
- ► Close service valve of 3/8" pipework ①.
- ► Remove cap ③ from the service valve of the 5/8" pipework.
- ► Connect manifold gauge to service valve of 5/8" pipework ②.



The refrigerant can only be pumped into the outdoor unit once per voltage recurrence.
- ► Set operating mode `Standby` at the remote control station.
- ► Use protection provided on site to isolate the outdoor unit/system from the mains supply.
- ► Switch voltage supply on again.
- ► In the expert level in menu point `Commissioning` , set the parameter `Manual operation` to `Drain` .

✓ System switches to `Cooling` .
✓ Refrigerant is pumped into the outdoor unit for approx. 5 minutes.

During these 5 minutes:
- ► Check negative pressure and if it is constant (vacuum less than 0.01 bar) close the service valve of 5/8" pipework.

✓ Compressor switches off.

- ► Drain remaining refrigerant from the refrigerant pipework and dispose of in an appropriate manner.
- ► Remove manifold gauge.
- ► Close service valves with caps.
- ► Interrupt voltage supply.

9 Servicing

9.1 Notes on servicing

DANGER

Risk of electric shock
Working on the unit when voltage is applied can lead to electric shock.
► Isolate hydraulic unit and outdoor unit from power supply prior to carrying out work.
► Safeguard against accidental re-start.

DANGER

Risk of suffocation due to leaking refrigerant
Leaking refrigerant collects at the base of the unit.
Inhalation may cause suffocation, and even death.
Contact with the skin can cause frostbite.
► Do not damage refrigeration circuit.

WARNING

Danger of getting burned on hot components
Hot components can lead to burns.
► Allow components to cool.

WARNING

Environmental damage due to leaking refrigerant
Refrigerant contains fluorinated greenhouse gases in accordance with the Kyoto Protocol and must not be discharged into the atmosphere.
► Do not damage refrigeration circuit.

Servicing must only be carried out by qualified personnel. The unit should be serviced annually. Depending on site conditions more frequent checks may be required.

To comply with EU Directive 842/2006, an annual leakage test of the refrigerant circuit must be carried out and documented on units with a refrigerant quantity of more than 3 kg (see Ch. 3.4.7).

Weishaupt recommends a service contract is entered into to ensure regular inspections.

Prior to servicing

► Inform the operator about the extent of service work to be carried out.
► Switch off installation and safeguard against accidental re-start.
► Remove front panel (see Ch. 4.2).

9 Servicing

Following servicing

Observe national regulations for soundness test of refrigerant circuit.

- ► Carry out visual inspection:
  - ▪ check pipe connections,
  - ▪ check refrigerant pipework and insulation for visible damage,
  - ▪ complete insulation of refrigerant pipework.
- ► If necessary replace damaged refrigerant pipework and insulation.
- ► Check for leaks using a leak detecting device during operation.
- ► Carry out a function test.
- ► Document all work carried out on the engineers report.
- ► Mount the front panel and secure the tension lock with the screw.

9.2 Service work

Observe notes on servicing (see Ch. 9.1).

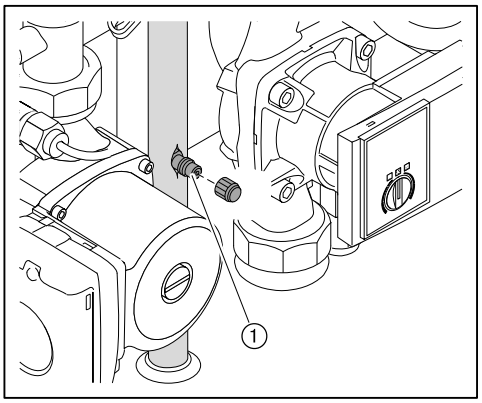
- ► Check condensate drain and clean if necessary.
- ► Rinse sludge separator (see Ch. 9.5).
- ► Check vent valve (visual check).
- ► Check heating water pressure (see Ch. 3.4.6).
- ► Check inlet pressure in the expansion vessel and adjust if necessary (see Ch. 13.1).

Working on the refrigerant pipe pipework

On the units WWP L 7 and WWP L 11 work on the refrigerant pipework is carried out on the relevant outdoor unit. See installation and operating manual of outdoor unit.

The hydraulic unit WWP L 15 is equipped with an additional Schrader valve ①. Work on the refrigerant pipework can be carried out either on the outdoor unit or on the hydraulic unit, e.g.:

- checking for leaks,
- evacuating refrigerant pipework,
- filling refrigerant.

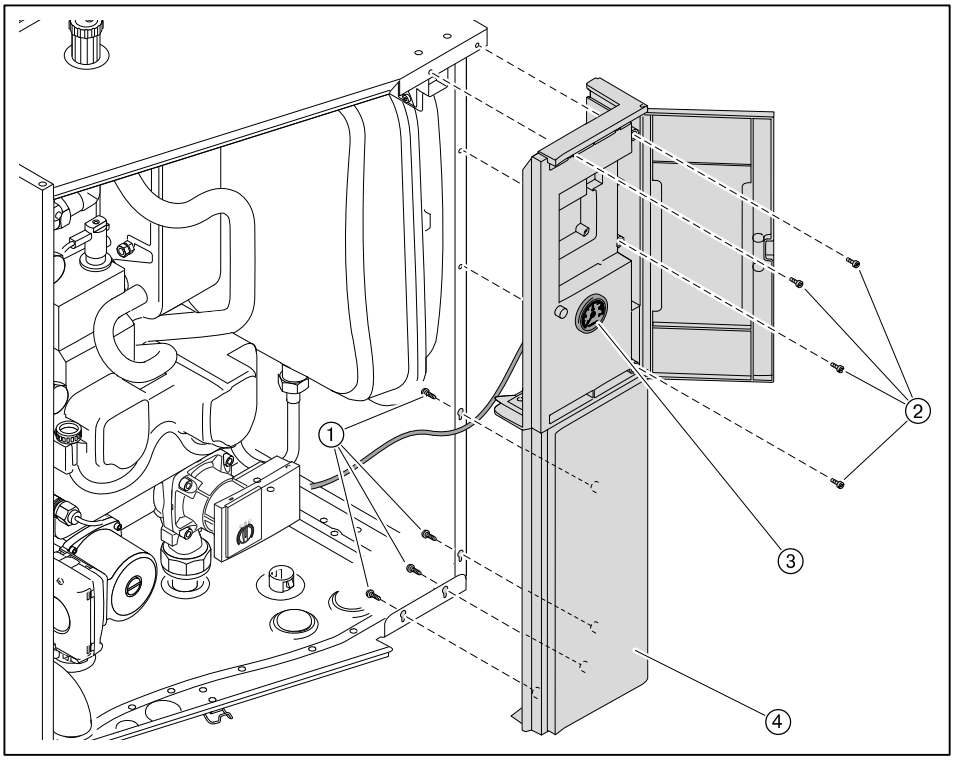


9.3 Removing and refitting expansion vessel

Observe notes on servicing (see Ch. 9.1).

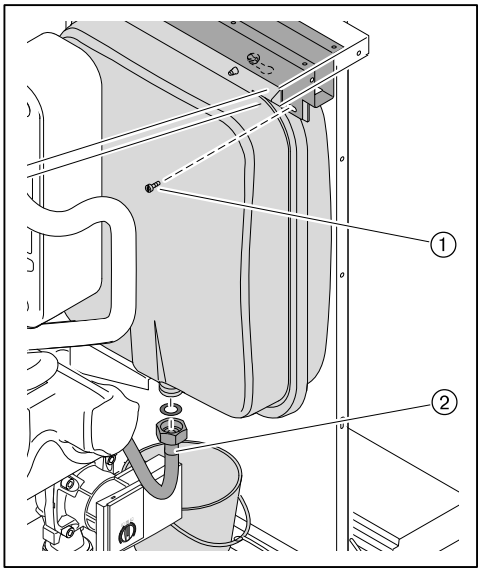
Removing

- ► Close flow and return shut off devices of heating circuit.
- ► Close flow and return shut off devices of hot water circuit.
- ► Drain hydraulic unit using the outlet tap.
- ✓ Hydraulic unit is depressurised.
- ► Remove operating panel:
  - Undo screws ①
  - Remove screws ②
  - If fitted, remove pressure gauge ③
  - Remove control panel ④



9 Servicing

- ► Separate connection hose ② from expansion vessel.
- ► Remove locking screw ①

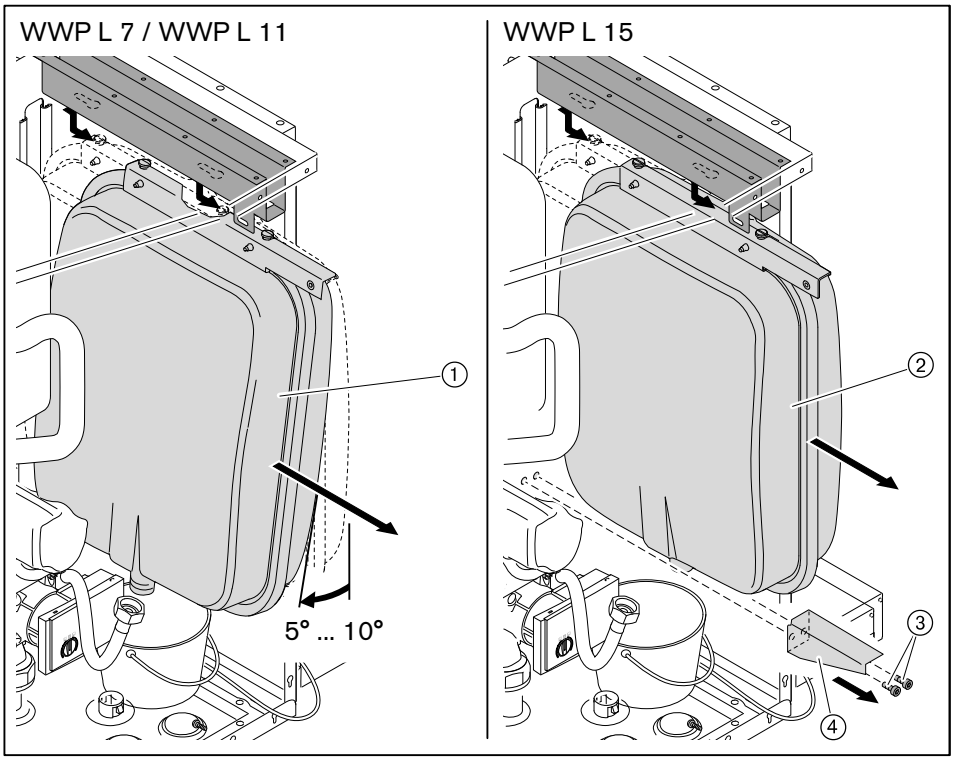


WWP L 7 / WWP L 11:

- ► Slightly tilt expansion vessel ① and pull to the front

WWP L 15:

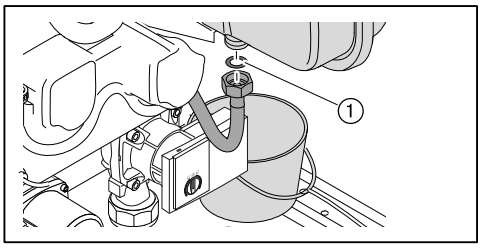
- ► Remove screws ③ and remove bracket ④.
- ► Pull expansion vessel ② to the front.



9 Servicing

Refitting

► Refit expansion vessel in reverse order, at the same time replace washer ①.



9.4 Removing and refitting safety valve

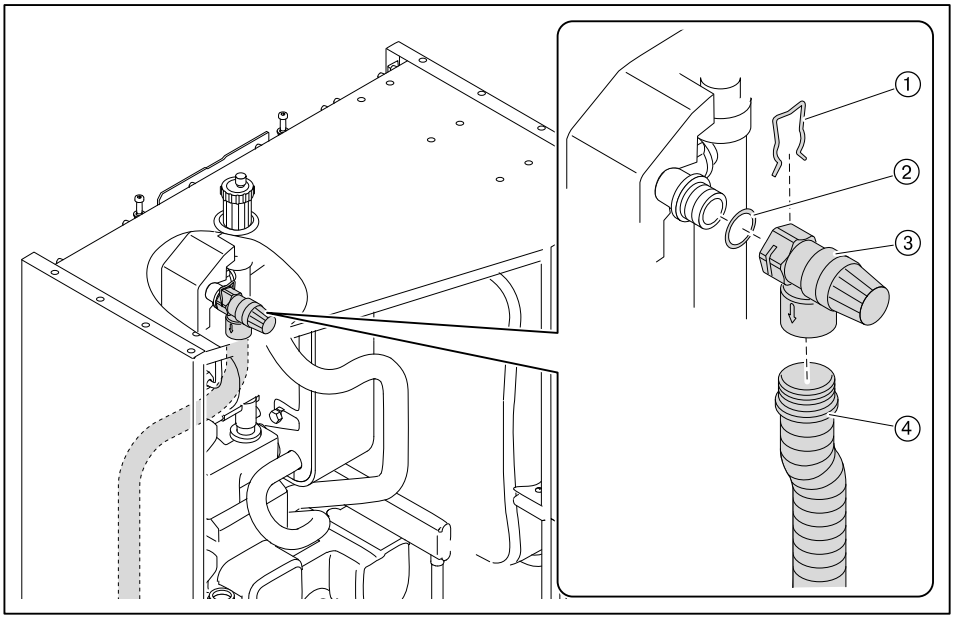
Observe notes on servicing (see Ch. 9.1).

Removing

- ► Close flow and return shut off devices of heating circuit.
- ► Close flow and return shut off devices of hot water circuit.
- ► Drain hydraulic unit using the outlet tap.
- ✓ Hydraulic unit is depressurised.
- ► Remove retaining clip ① with pliers.
- ► Pull safety valve ③ away.
- ► Separate outlet hose ④ from safety valve.

Refitting

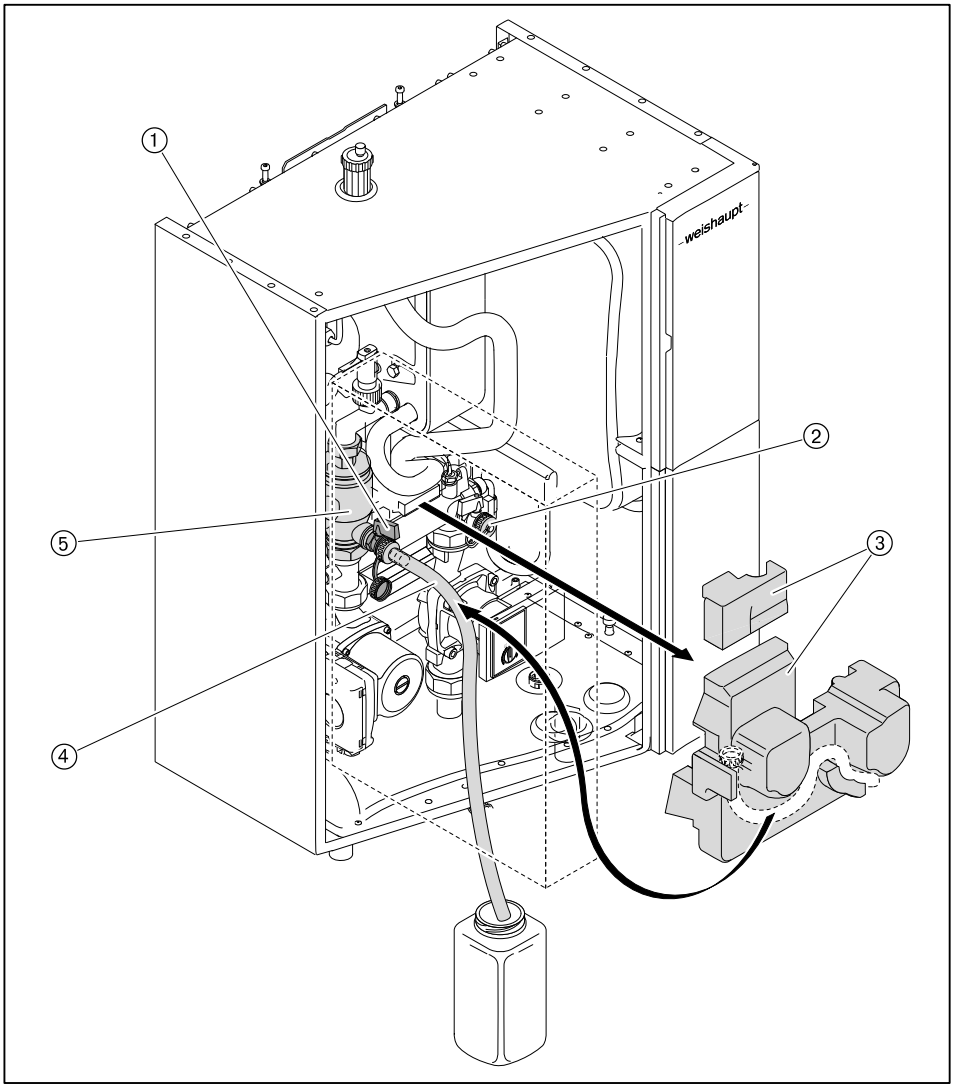
- ► Connect new safety valve to outlet hose.
- ► Refit safety valve in reverse order, and
  - ensure O ring ② is seated correctly
  - if necessary replace O ring,
  - if necessary lubricate O ring with EPDM suitable lubricant



9.5 Rinse sludge separator

Observe notes on servicing (see Ch. 9.1).

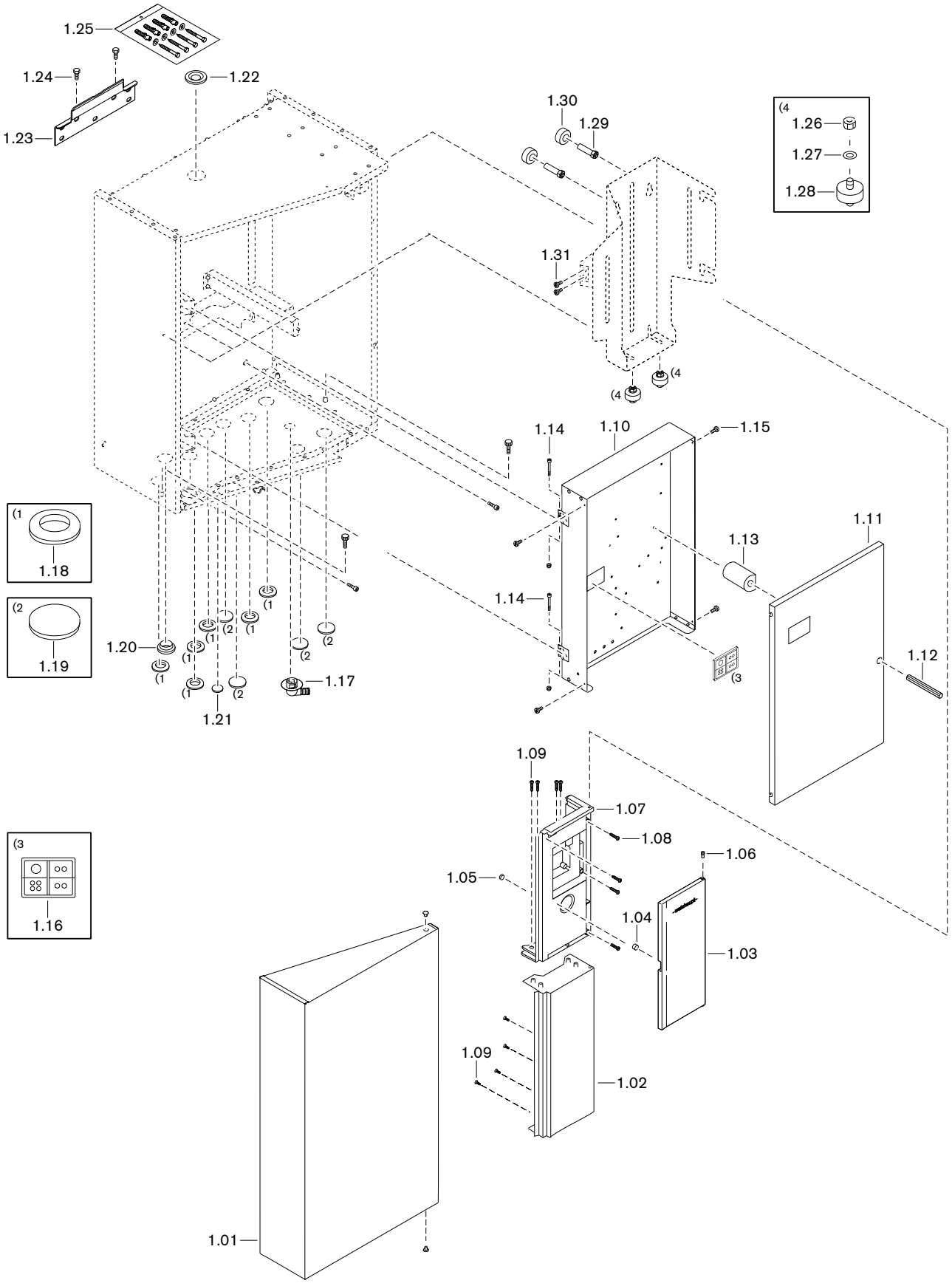
- ► Hinge open electrical box.
- ► Close flow and return shut off devices of heating circuit.
- ► Close flow and return shut off devices of hot water circuit.
- ► Provide collecting container.
- ► Remove cladding ③.
- ► Remove hose ④ from cladding and connect to rinsing device ①.
- ► Open rinsing device ① and rinse sludge collector ⑤.
- ► Refill water quantity via rinsing device ②:
  system pressure = inlet pressure + 0.5 bar.



10 Troubleshooting

See installation and operating manual of remote control station.

11 Spares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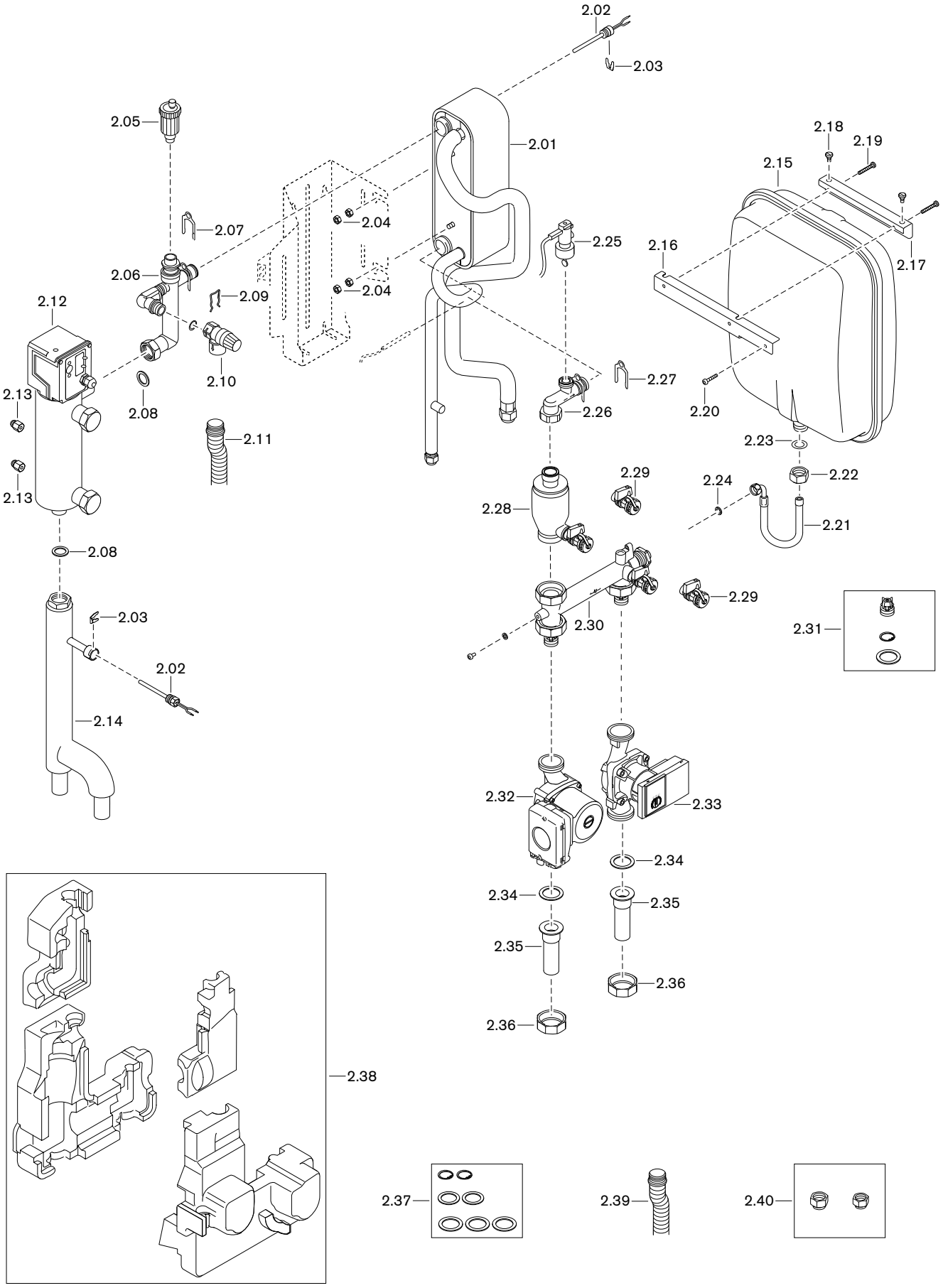
11 Spares

Pos.	Description	Order No.
1.01	Cover complete	511 502 01 20 2
1.02	Aperture	511 502 02 18 7
1.03	Flap operating panel	481 011 22 35 7
1.04	Magnet	481 011 22 23 7
1.05	Bonding plate for magnet	481 011 22 22 7
1.06	Bearing screw	481 011 22 24 7
1.07	Operating panel	481 011 02 01 7
1.08	Screw M4 x 12 DIN 7500-PE-TX20	409 374
1.09	Screw 4 x 12 -WN1411-K40	409 351
1.10	Electrical box - lower part	511 502 03 08 2
1.11	Cover electrical box	511 502 03 10 7
1.12	Stay bolt	511 502 01 18 7
1.13	Guide for locking bolt	511 502 03 14 7
1.14	Joint electrical box	511 502 03 09 7
1.15	Screw M5 x 8 DIN 933 8_8 A2G	401 204
1.16	Frame with cable grommets KEL-QTA B4	511 502 03 29 7
	– cable grommet QT / 1 hole	756 154
	– cable grommet QT2/5 / 2 holes	756 155
	– cable grommet QT4/4 / 4 holes	756 162
1.17	Condensate outlet for housing	499 059
1.18	Grommet Dm.I 24	481 011 02 23 7
1.19	Grommet quick action vent valve closed	481 011 02 24 7
1.20	Nozzle condensate hose Dm.I 24	481 011 02 36 7
1.21	Nozzle closed	481 011 02 20 7
1.22	Grommet water connections Dm.I 22	481 015 02 14 7
1.23	Wall bracket	471 064 02 33 7
1.24	Screw M6 x 35 DIN 7984	402 406
1.25	Dowel kit TOXI TRI 10/61	481 011 02 05 2
1.26	Hexagonal nut M6 DIN 934-8	411 301
1.27	Washer A 6.4 DIN 125 St	430 400
1.28	Rubber metal buffer type A 25 x 10	511 502 01 22 7
1.29	Screw M4 x 10 DIN 7500-C	409 225
1.30	Spacer sleeve 6.4-20-10 PA6	511 502 01 23 7
1.31	Screw M5 x 12 Combi-Torx-Plus 2	409 265

11 Spares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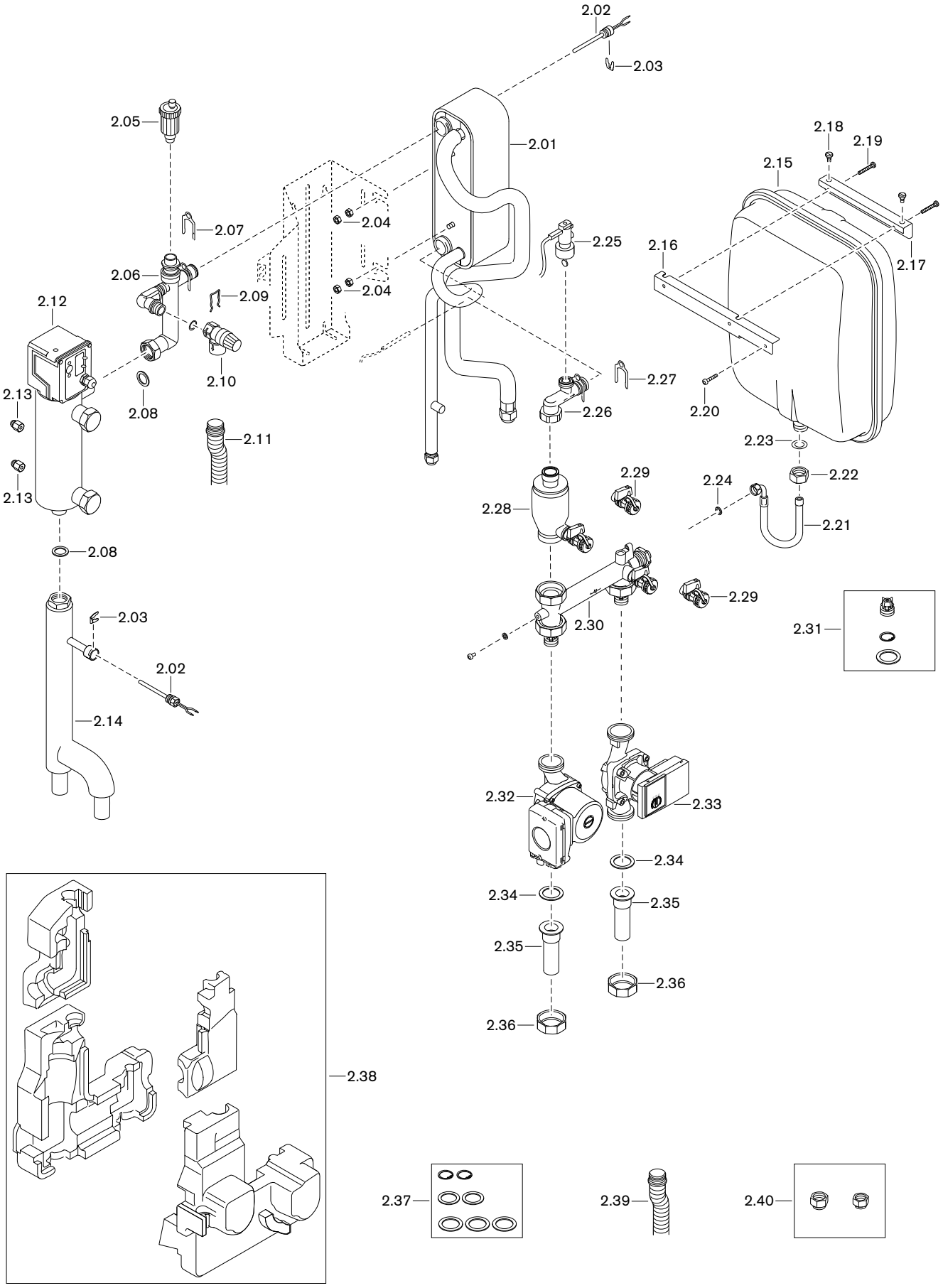
11 Spares

Pos.	Description	Order No.
2.01	Plate heat exchanger (condenser)	
	– WWP L 7	511 502 02 01 2
	– WWP L 11	511 502 02 02 2
	– WWP L 15	511 502 02 03 2
2.02	Temperature sensor NTC 10K water incl. seal	660 333
	– Bracket for temperature sensor	426 411
2.03	Fixing plate temperature sensor water	511 502 02 24 7
2.04	Hexagonal nut with flange M8	411 610
2.05	Quick action vent valve G3/8" with O ring	662 042
2.06	Connection elbow safety valve complete with seal	511 506 00 08 2
2.07	Fixing plate condenser	511 502 02 21 7
2.08	Gasket 21 x 30 x 2 (1") AFM34	480 020 02 84 7
2.09	Retaining clip safety valve	481 015 40 07 7
2.10	Safety valve 3 bar G½" socket connection	481 015 40 06 7
	– O ring 18 x 2.0-N EPDM 70, DIN 3771	445 137
2.11	Outlet hose G¾", 1000 mm long, with O ring fitted	461 012 40 03 7
2.12	Electric heating	
	– WWP L 7 (3 kW / 230 V)	511 502 02 39 2
	– WWP L 11 and WWP L 15 (6 kW / 2 x 230 V)	511 502 02 06 2
2.13	M5 bolts for electric heating	511 502 02 30 7
2.14	Distributor water supply	511 502 02 32 2
2.15	Expansion vessel 18 l	511 502 02 01 7
2.16	Expansion vessel holder left	481 015 40 03 2
2.17	Expansion vessel holder right	481 015 40 02 2
2.18	Screw M6 x 5 DIN 923 8.8	403 319
2.19	Screw M4 x 35-8.8 ISO 4762	402 149
2.20	Screw M4 x 12 DIN 912 8.8	402 130
2.21	Connection hose expansion vessel	511 502 02 20 7
2.22	R¾" union nut for expansion vessel connection hose	511 502 02 37 7
2.23	Sealing washer 17 x 24 x 2 (¾"), AFM 34	480 020 02 85 7
2.24	Seal 10 x 14.8 x 2	441 077
2.25	Flow switch with O ring	
	– WWP L 7 and WWP L 11 (switch point 420)	511 506 00 09 2
	– WWP L 15 (switch point 650)	511 506 00 12 2
2.26	Connection elbow for sludge separator complete with gasket and fixing plate	511 506 00 06 2
2.27	Fixing plate condenser	511 502 02 217

11 Spares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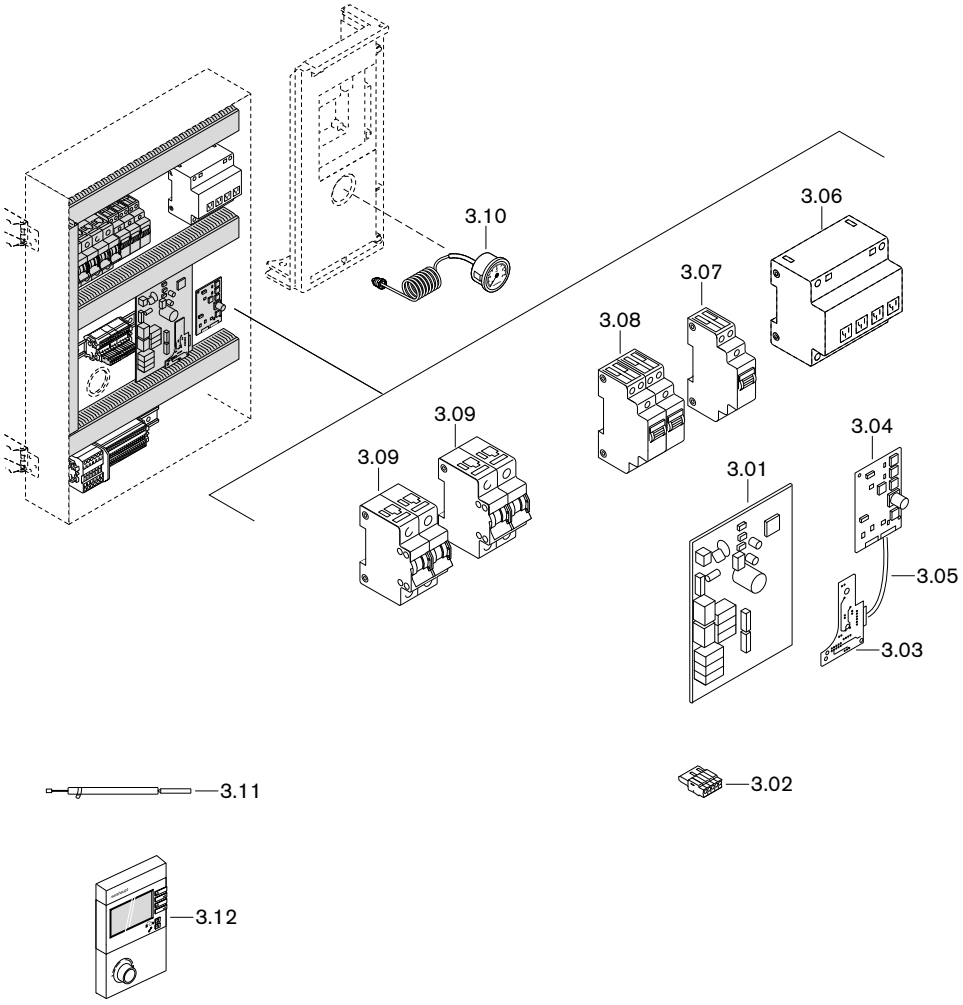
11 Spares

Pos.	Description	Order No.
2.28	Sludge separator complete with G½" ball valve	511 506 00 02 2
2.29	G½" ball valve for sludge separator	511 506 00 03 2
2.30	Distributor assembly pump HE, complete with seal and ball valve	511 506 00 04 2
2.31	Non return valve complete	511 506 00 10 2
2.32	Circulation pump with plug complete (heating circuit)	
	– WWP L 7 and WWP L 11	511 502 02 28 2
	– WWP L 15	511 502 02 52 2
2.33	Circulation pump with plug complete (domestic water feed pump)	511 502 02 29 2
2.34	Sealing washer 32 x 44 x 2 (1½")	482 301 30 43 7
2.35	Pump inlet free-floating	511 502 02 34 2
2.36	Union nut G1½" x 42, L=18	511 502 02 36 7
2.37	Seal set pipe assembly	511 506 00 11 2
	– 2 x O ring 20 x 1.5	
	– 2 x seals G1	
	– 3 x seals G1½"	
2.38	Cladding distributor WWP 6-piece	511 506 00 01 2
2.39	Condensate hose	511 505 01 10 7
2.40	Flare nut connection set	511 505 01 33 2
	– Flare nut connection SAE 5/8"	
	– Flare nut connection SAE 3/8"	

11 Spares



11 Spares

Pos.	Description	Order No.
3.01	Printed circuit board for heat pump	
	– WWP L 7 and WWP L 11	511 502 03 04 2
	– WWP L 15	511 502 03 56 2
3.02	Plugs	
	– cable for temperature sensor LWT with plug	511 502 03 01 2
	– cable for temperature sensor TWB with plug	511 502 03 022
	– cable for flow switch with plug	511 502 03 03 2
	– plug J2 with stranded wire	716 513
	– plug J4 with stranded wire	716 514
	– plug J7 with stranded wire	716 516
	– plug J11 with stranded wire	716 517
	– plug J13 with stranded wire	716 518
	– plug J16 with stranded wire	716 519
	– plug J20 with stranded wire	716 521
	– plug J22 with stranded wire	716 522
	– plug with stranded wire e-Bus	716 530
3.03	Printed circuit board RS485	511 502 03 06 2
3.04	Gateway WP-FS	511 502 03 59 2
3.05	Plug with stranded wire RS485	716 523
3.06	Transformer type B1204012	710 575
3.07	Relay 22.24.8.230.4000	704 341
3.08	Relay 22.22.8.230.4000	704 342
3.09	Circuit breaker FAZ-C16/1N	721 114
3.10	Pressure gauge 0-4 bar	481 011 22 27 7
3.11	Temperature sensor NTC 10K refrigerant	660 334
	– Bracket for temperature sensor	426 411
3.12	Remote control station WP-FS	660 345

12 Technical documentation

12.1 Sensor variables

TE sensor evaporating temperature
TS sensor suction side temperature
TO sensor external temperature
TL sensor evaporator (WWP L 15)
External sensor (accessory)
Water temperature sensor
Refrigerant temperature sensor
De-couple sensor
Hot water sensor B3

TD sensor pressure side temp.

	NTC 10 kΩ		**NTC 50 kΩ**
°C	Ω	**°C**	Ω
-20	96807	20	72000
-15	72809	40	27000
-10	55253	60	16000
-5	42282	80	7000
0	32640		
5	25391		
10	19902		
15	15713		
20	12493		
25	10000		
30	8056		
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40	5325		
45	4367		
50	3601		
55	2985		
60	2487		
65	2082		
70	1751		
75	1480		
80	1256		

13 Project planning

13.1 Expansion vessel and system pressure

The unit is equipped with and integrated expansion vessel:
- Content 18 litres
- Inlet pressure 0.75 bar

► Use the following table to verify whether an additional expansion vessel should be installed.

Example

A maximum flow temperature of 50 °C and an installation elevation of 7.5 metres would result in a maximum system content of 500 litre. An additional expansion vessel must be installed if this volume is exceeded.

Flow temperature	Height of unit				
	5 m	7.5 m	10 m	12.5 m	15 m
	Maximum admissible total water content				
max 40 °C	820 l	700 l	620 l	420 l	300 l
max 50 °C	620 l	500 l	410 l	280 l	190 l
max 60 °C	440 l	360 l	290 l	190 l	140 l

Expansion vessel inlet pressure

The primary pressure is calculated from the static ceiling of the system (e.g. 10 metres is equivalent to 1.0 bar). The static height is measured from the connection of the expansion vessel to the highest point of the system.

Select 0.5 bar if the static height is less than 5 metres.

► Calculate and record inlet pressure.
► Check the inlet pressure of the expansion vessel and set to the calculated value, if necessary.

System pressure

► Set the system pressure 0.5 bar above the inlet pressure of the expansion vessel.

Example

10 metre static installation height results in:
expansion vessel inlet pressure 1.0 bar
system pressure 1.5 bar

When installing the hydraulic unit incl. an expansion vessel at the highest point of the building, e. g. in the loft, set the inlet pressure to 0.5 bar.

14 Notes

14 Notes

15 Key word index

15 Key word index

–weishaupt–

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WK Burners **up to 28,000 kW**

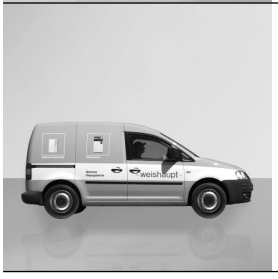
These industrial burners of modular construction are adaptable, robust and powerful.
Even on the toughest industrial applications these oil, gas and dual fuel burners operate reliably.

multiflam® Burners **up to 17,000 kW**

This innovative Weishaupt technology for medium and large burners provides minimum emission values at capacities up to 17 MW.
The burners with the patented mixing head are available for oil, gas and dual fuel operation.

MCR Technology / Building Automation from Neuberger

From control panels to complete building management systems - at Weishaupt you can find the entire spectrum of modern control technology. Future orientated, economical and flexible.



Service

Weishaupt customers can be assured that specialist knowledge and tools are available whenever they are needed. Our service engineers are fully qualified and have extensive product knowledge, be it for burners, heat pumps, condensing boilers or solar collectors.

Wall-hung condensing boilers for oil and gas **up to 240 kW**

The wall-hung condensing boilers WTC-GW and WTC-OW have been developed to meet the highest demands in ease of operation and efficiency.
Modulating operation means these units operate quietly and economically.

Floor standing condensing boiler for oil and gas **up to 1,200 kW**

The floor-standing boilers WTC-GB and WTC-OB are efficient, low in emissions and versatile. Higher capacities are achieved by cascading up to four gas-fired condensing boilers.

Solar systems

The stylish flat-plate collectors are the ideal complement for any Weishaupt heating system. They are suitable for solar water heating and for combined heating support. With versions for on-roof, in-roof and flat roof installations, solar energy can be utilised on almost any roof.

Water heaters / energy storage tanks

This attractive program for domestic water heating includes classic water heaters, solar storage tanks, heat pump storage tanks and energy storage tanks.

Heat pumps **up to 130 kW**

The heat pump range offers solutions for the utilisation of heat from the air, the soil or ground water.
Some systems are also suitable for cooling buildings.

Geothermal probe drilling

With its daughter company, BauGrund Süd, Weishaupt also offers geothermal probe and well drilling. With the experience of more than 10,000 systems and more than 2 million meters of drilling, BauGrund Süd offers a comprehensive service program.