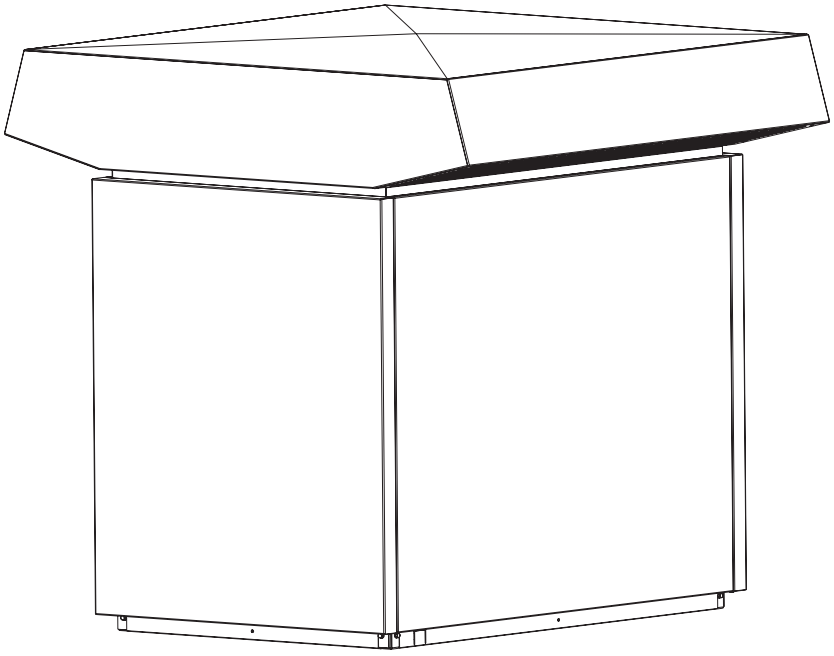
STIEBEL ELTRON

WPL 33
Compact air/water heat pump
Installation instructions



The installation (water and electrical work) and commissioning, as well as the maintenance of this equipment, must only be carried out by an authorised qualified contractor in accordance with these instructions.

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Information for the owner of the heat pump heating system

Keep these operating instructions safely and pass them on to any new user, should the equipment change hands. Let your contractor check their content in conjunction with required maintenance or repair work.

Risk of injury

Where children or persons with limited physical, sensory or mental capabilities are to be allowed to control this appliance, ensure that this will only happen under supervision or after appropriate instructions by a person responsible for their safety.

Children should be supervised to ensure that they do not play with the appliance.

1 General

These installation instructions are for contractors. The heat pump installation also requires the operating instructions of the heat pump manager WPM.

The heating system heat pumps and the WPM represent one function unit. Consequently, their instructions are matched to each other.

Subject to the relevant system, observe the installation instructions of the components of which the system comprises.

1.1 Equipment description

- For fully automatic heating of heating water to a flow temperature of 60 °C.
- Suitable for underfloor heating and radiator heating systems; preferred are low temperature heating systems, as these achieve higher performance factors.
- Extracts energy from the ambient air (outside)
  even at outside temperatures as low as –20 °C.
- Comprises all components required for its function and all safety equipment.
- Central control of the heating system and safety functions through the WPM heat pump manager (required accessory, part no. see section 1.6).
- Corrosion-protected, external casing made from hot-dipped galvanised sheet steel plus stove enamelled finish.
- Compact design, therefore modest space requirements for interior or exterior installations.
- Test symbol of independent test bodies (see type plate).
- Filled with non-combustible safety refrigerant R407C.

1.2 Function

Heat is extracted from outside air with temperatures ranging from + 30 °C to –20 °C by the heat exchanger on the air side (evaporator). Heating water is heated in the heat exchanger on the water side (condenser) to flow temperature levels by this extracted heat and added heat from the electrical power used by the compressor. At air temperatures below approx. +7 °C, the humidity in the air condenses as hair-frost on the evaporator fins. This hair-frost is automatically removed. Any water created from this defrosting is caught in the defrost basin and drained off via a hose (Fig. 7 and 8).

The fan is switched OFF and the heat pump circuit is reversed to enable the defrost phase. The energy required for defrosting is drawn from the buffer cylinder. For that reason, operation without a buffer cylinder is not permissible, otherwise unfavourable conditions could lead to the heating water freezing up.

The heat pump automatically reverts to heating mode at the end of the defrost phase.

1.3 Correct operation

The heat pump is designed for extracting energy from the air and for
utilising this energy in water-based
heating systems within the stated operating temperature range.

1.4 Incorrect operation

The installation location must be prepared by your contractor in line with section 3.2. Never operate the heat pump in areas at risk from explosions or outside the stated operating temperature range.

1.5 Regulations and standards

Observe the following regulations and standards during assembly and installation.

On the water side:

DIN EN 12828
Safety equipment for hot water heating systems
DIN 1988: Technical rules for DHW installations
TRD 721: Safety equipment to prevent excess pressure - safety valves

On the electrical side:

DIN VDE 0100: Regulations for the installation of HV systems with rated voltages up to 1000 V.
VDE 0701: Regulations regarding the repair, modification and testing of used electrical equipment.
VDE 0298-4
TAB: Technical connection conditions for connections to the LV mains.

On the refrigerant side:

EN 378: Safety and environmental requirements
DIN 7003: (draft)

General:

Collation of technical requirements for boiler rooms, e.g. boiler room guidelines or national/local Building Regulations, commercial and fire as well as emission control regulations and requirements.
TA Lärm: Technical instructions to protect against noise emissions

1.6 Standard delivery and accessories

Type	WPL 33
Standard delivery – external installation	**Part no.**
–Base unit	18 53 48
–Accessories (comprising the casing).	18 53 69
Standard delivery – internal installation	**Part no.**
–Base unit	18 53 48
–Accessories (comprising the casing)	18 53 68
Special accessories - internal installation	**Part no.**
Air hose with thermal insulation, 3 m	16 80 80
Air hose with thermal insulation, 4 m	16 80 81
Hose connection plate	00 34 78
Condensate pump PK9	18 21 38
Special accessories – external and internal installation (required)	**Part no.**
Heat pump manager with wall mounting enclosure, WPMW II	18 54 50
Heat pump manager as control panel mounted version, WPMS II	18 54 51
Cylinder SBP 200 E	18 54 58
Cylinder SBP 400 E	22 08 24
Cylinder SBP 700 E	18 54 59
Special accessories – external and internal installation	**Part no.**
Mixer module with wall mounting enclosure, MSMW	07 45 19
Mixer module as control panel mounted version, MSMS	07 45 18
Pressure hose G 1¼“ x 1 m (DN32)	07 44 14
Pressure hose G 1¼“ x 2 m (DN32)	18 20 19
Pressure hose G 1¼“ x 5 m (DN32)	18 20 20
Hose fitting for pressure hoses 5 m	07 06 92
Heat pump Compact Installation WPKI 5	22 08 30
UP kit 25 - 60 (for WPKI 5)	07 43 25
UP kit 25 -80 (for WPKI 5)	07 43 16
Remote control for heating system FE 7	18 55 79
Contact sensor AVF 6	16 53 41
Immersion sensor TF 6	16 53 42

2 Specification (check details on the rating plate)

2.1 Specification (equipment information)

Heat pump	**Type**	**WPL 33**
Order no.		**18 53 48**
Type and operating mode		
Type		
Compact/split/open version		Compact
Operating mode		mono-mode alternative dual-mode parallel dual-mode
Dimensions, weights, connection dimensions		
Shipping unit - base equipment		
Dimensions (Basic unit) L/W/H	mm	1332 x 784 x 1116
Weight	kg	260
Refrigerant	Type	R 407C
Filling weight	kg	4.4
Pipe connector – heating side		
Flow and return	Inch	G 1¼" male
Hose connector - air		
Inlet and exhaust connectors (only for internal installation)	mm	248 x 721 oval
Output		
Heat output for A-7/W35 [1)] (both compressors)	kW	14,9
Heat output for A2/W35 [2)] (single compressor)	kW	10,8
Power consumption for A-7/W35 [1)] (both compressors)	kW	5,8
Power consumption for A2/W35 [2)] (single compressor)	kW	3,3
Performance factor for A-7/W35 [1)] (both compressors)		2,7
Performance factor for A2/W35 [2)] (single compressor)		3,3
Power consumption – auxiliary heater	kW	8.8
Process medium		
Volume flow, hot side WNA min[4)]	m³/h	1.4
Internal pressure differential	hPa	190
Volume flow, cold side WQA min[3)]	m³/h	3500
Externally available static pressure differential (only for internal version)	hPa	1.0
Operating temperature limits		
WQA min. / WQA max[3)]	°C	– 20 / + 30
WNA min. / WNA max[4)]	°C	+ 15 / + 60
Electrical specification		
Mains supply, Fuse	A	25 gl
Secondary heater DHC (internal HS 2), Fuse	A	16 gl
Control circuit, Fuse	A	16 gl
Protection EN 60529 (DIN VDE 0470)		IP 14 B
Voltage / Frequency - compressor	V/Hz	3/PE~400/50
Voltage / Frequency – secondary heater DHC (internal HS 2)	V/Hz	3/N/PE~400/50
Voltage / Frequency – control circuit	V/Hz	1/N/PE~230/50
Start-up current (start-up current limit)	A	< 30
Defrost		
Time/Demand/manual defrost		Demand / manual
Type of defrost: Hot gas/electrical/air/flow reversal		Flow reversal
Heating the drip pan		yes, supercooler
Other model characteristics		
Frost protection measures	yes/no	yes
Corrosion protection – frame and housing		hot-dipped galvanised
In line with safety regulations		DIN EN 60335 ; DIN 8975, EMC Directive 89/336/EEC, Low Voltage Directive 73/23/EEC
Sound power level	dB(A)	65
(external installation with silencer accessories)	dB(A)	63
(internal installation; internal/external)	dB(A)	58/62

1) A–7/W35 = Air inlet temperature: –7 °C, heating flow: 35 °C

2) A2/W35 = Air inlet temperature: 2 °C, heating flow: 35 °C

3) WQA = Heat source system (cold side)

4) WNA = Heat utilisation system (hot side)

2.2 Output diagram for heat pump WPL 33 (both compressors)

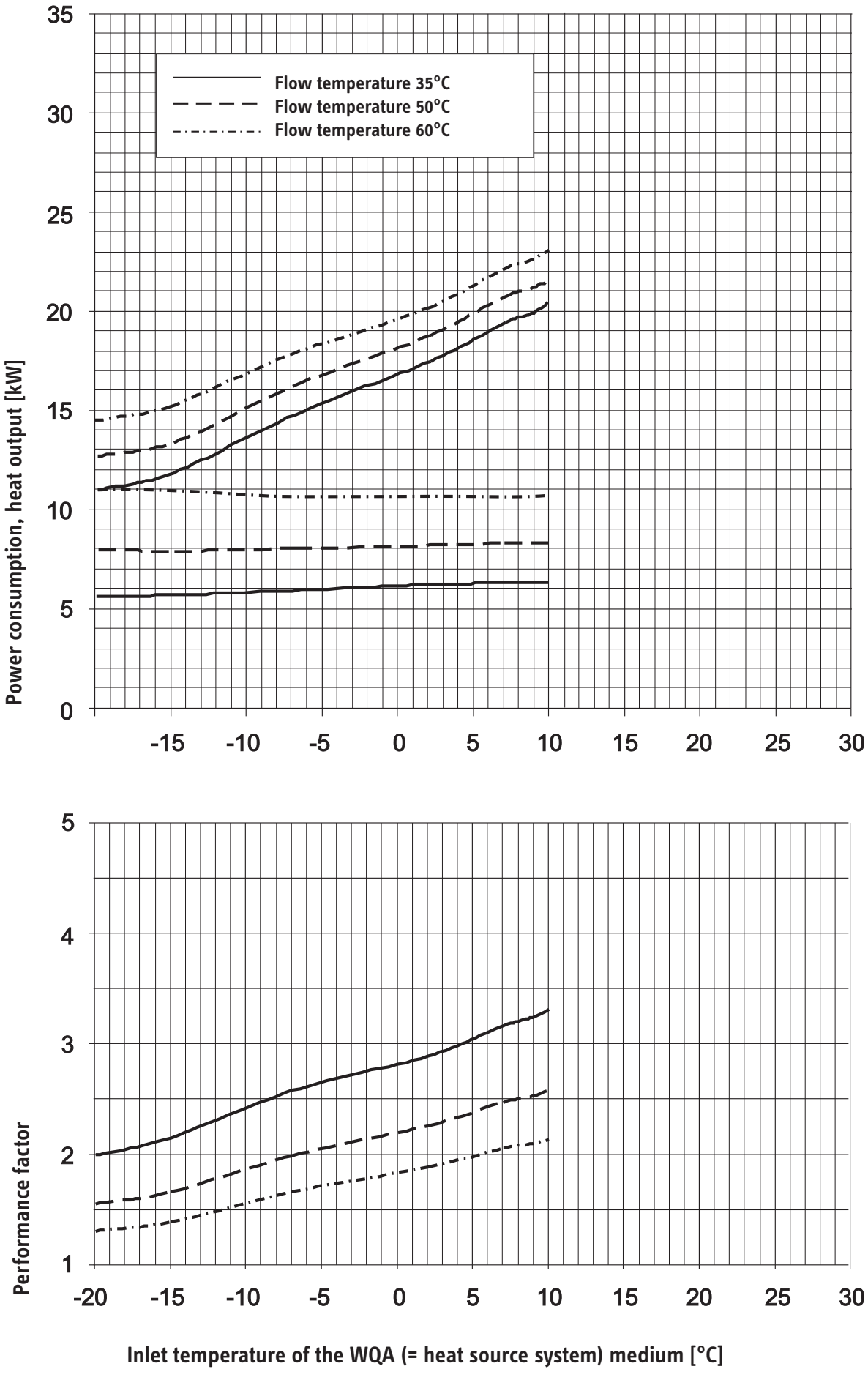


Fig. 1a

2.3 Output diagram for heat pump WPL 33 (single compressor)

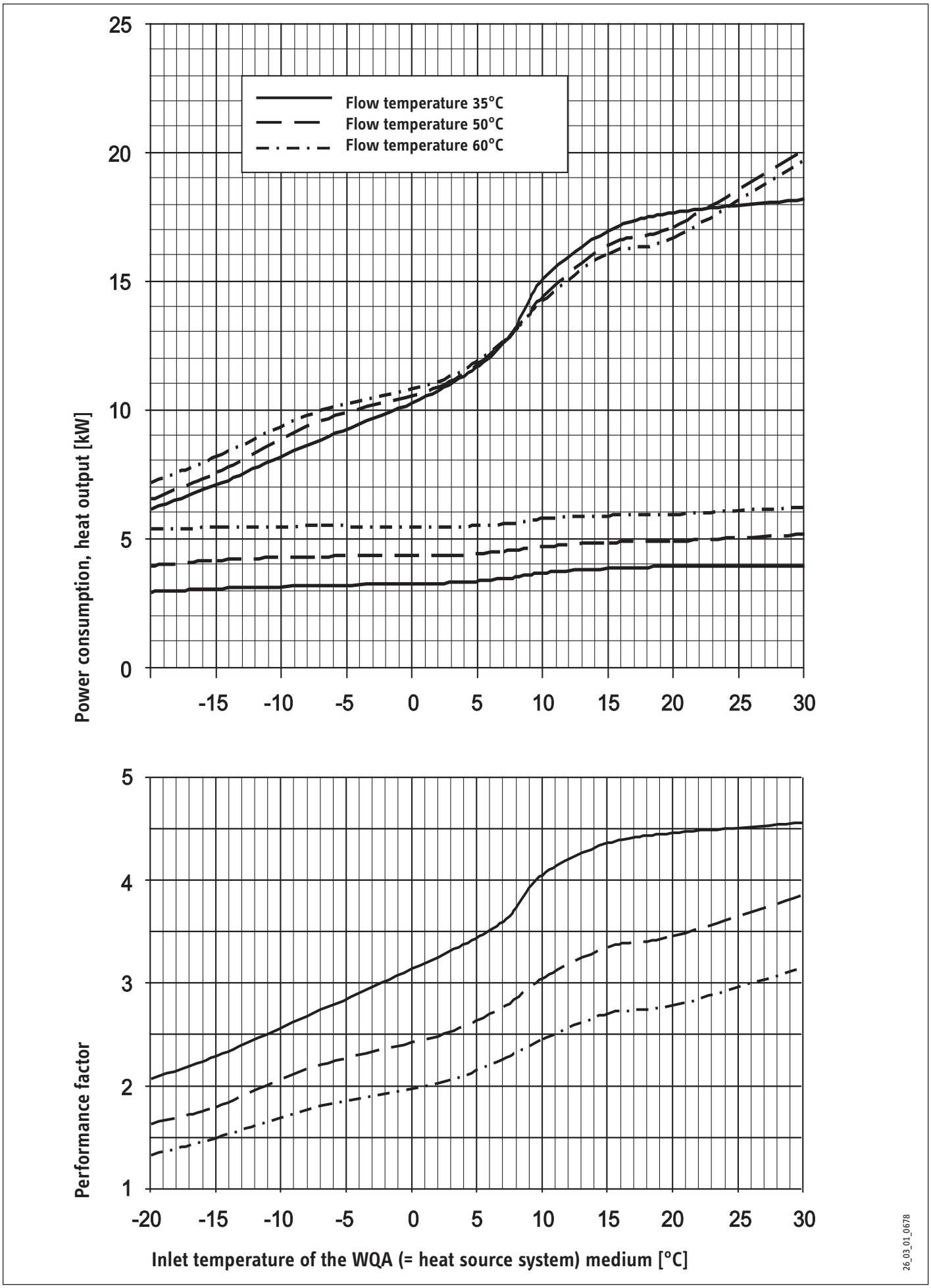


Fig. 1b

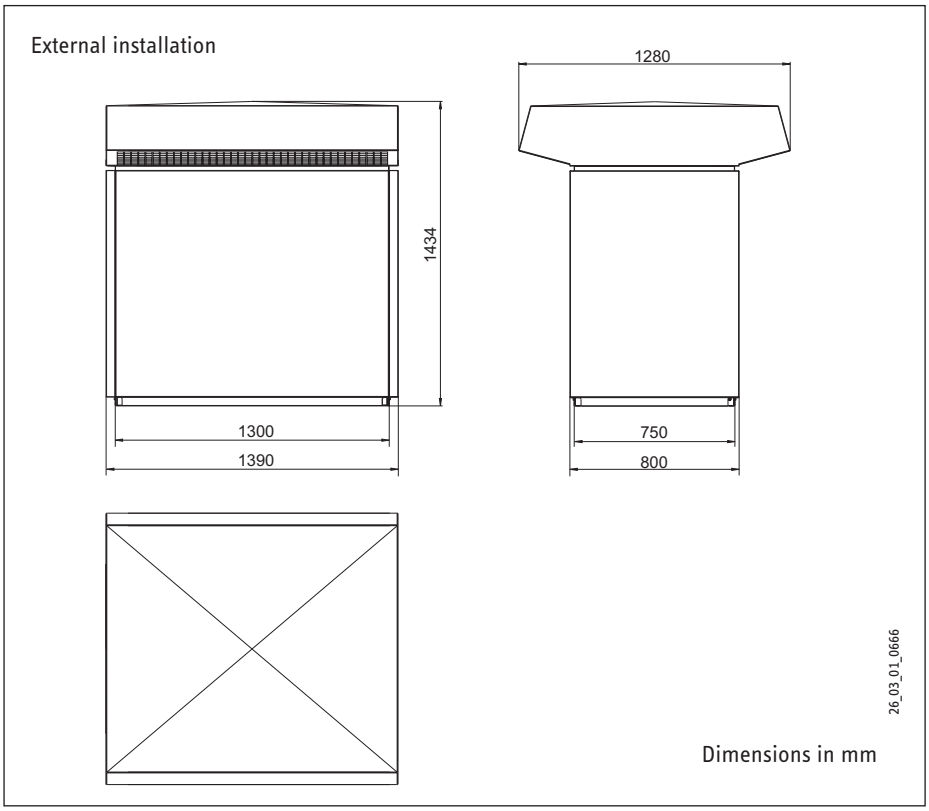


Fig. 2

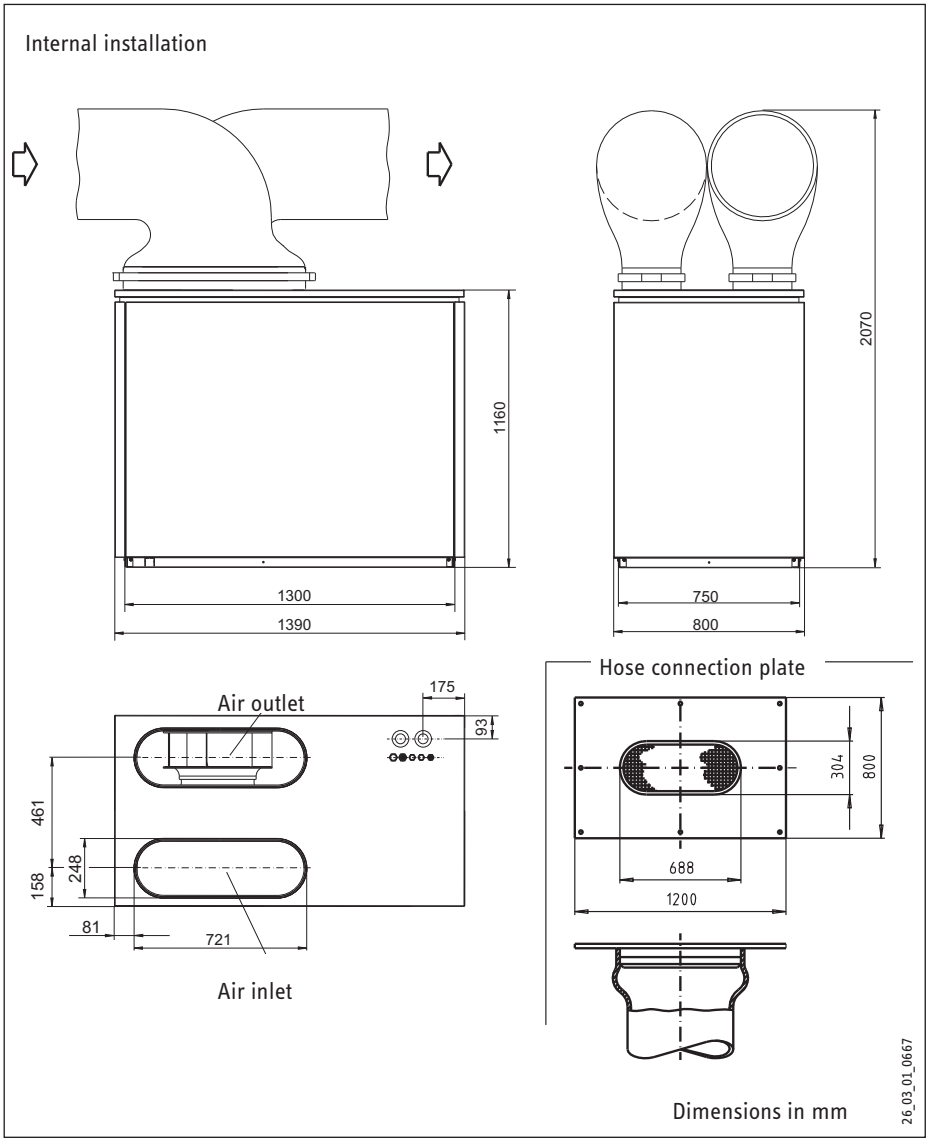


Fig. 3

3 Installation, connection and sound emissions

3.1 Transport

Protect the heat pump against severe impact. Short tipping to one of its longitudinal sides is permissible.

The casing, cover (in case of external installations) and the cover with air hose connections (for internal installation) are separate shipping units, which will only be assembled to the base unit on site.

3.2 Installation location

Ensure that the surface on which the heat pump is to be installed, is horizontal, level, solid and permanent.

The entire heat pump frame should be in contact with the substrate. Uneven substrates can detrimentally affect the noise emissions from the heat pump.

The heat pump must be accessible from all sides.

3.2.1 Special considerations in case of external installation

Recommended surface:

- Foundation (Fig. 4)
- Curb stones (Fig. 5)
- Stone plate

A recess (space) must be provided underneath the heat pump to enable water and electrical pipes/cables to be connected from below (Fig. 4 and 7).

Ensure a minimum wall clearance on the air expulsion side of 2 m.

Section 3.3.1 Observe „Sound emissions with external installations“.

3.2.2 Special considerations in case of internal installation

Substrate: Concrete or screed

Water and electrical pipes/cables are routed into the heat pump from the top through the cover (Fig. 8).

3.3 Noise emissions

3.3.1 Noise emissions in case of external installation

At the air inlet and air outlet sides, the heat pump is louder than on the enclosed sided. Therefore point these two sides away from noise sensitive rooms of the house (e.g. bedrooms). The air inlet direction should be, where practicable, in line with the main wind direction, in other words, air should not be drawn in against the wind.

Lawn areas and shrubs can contribute to the reduction of noise expansion.

Avoid installation on large floor areas off which sound can bounce (e.g. those covered with slabs) as well as in between reflective building walls, both of which could raise the sound level.

Please ensure that noise should not be emitted through the floor of the heat pump or through the installation aperture.

The sound power level in external installations is 65 dB(A) without silencer accessories and 63 dB(A) with silencer accessories.

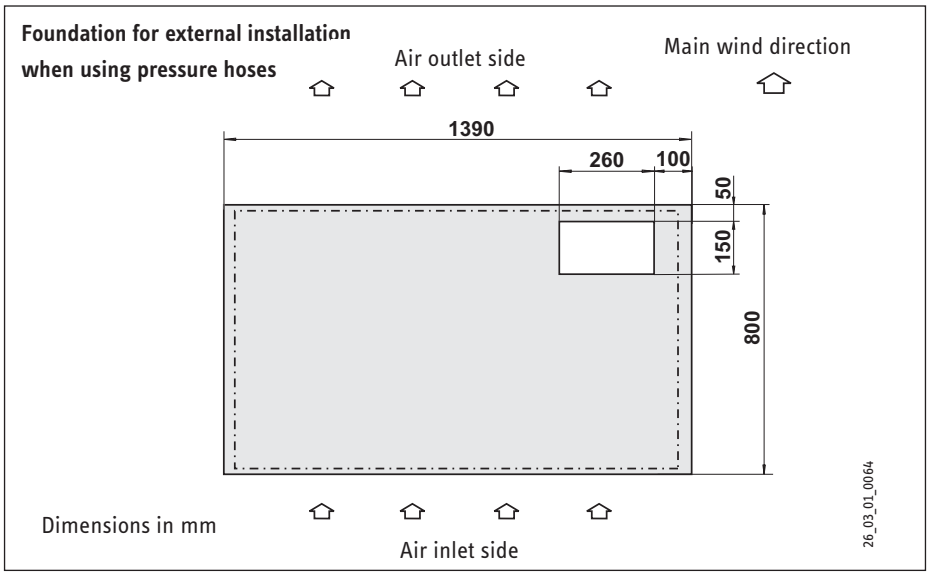


Fig. 4

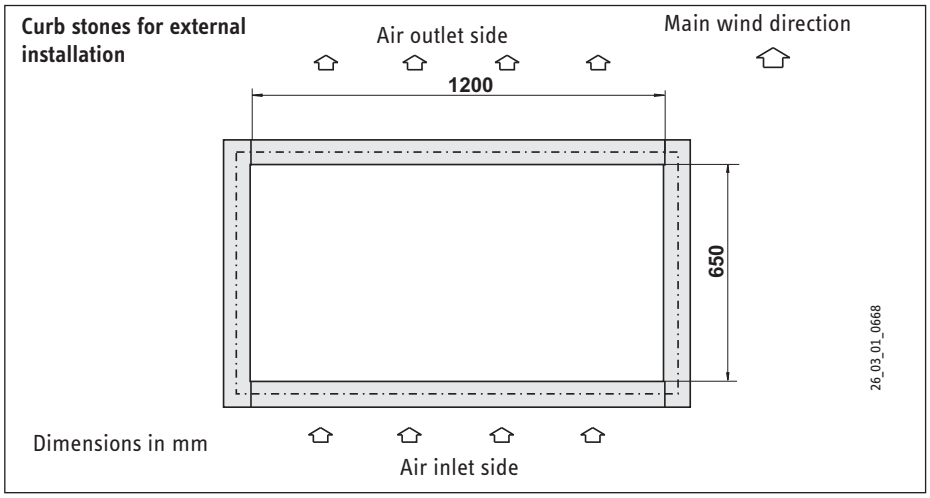


Fig. 5

Where the heat pump is installed on strip foundations, seal off the open sides of the foundation.

3.3.2 Noise emissions in case of internal installation

Where possible, install the heat pump in a cellar or on the first floor, but never immediately below or adjacent to living rooms or bedrooms. Never install the heat pump on joists. The sound power level in internal installations is 58 dB(A) inside the installation room and 62 dB(A) at the air inlet and outlet openings. Connect the heating flow and return pipes using flexible pressure hoses (anti-vibration measure) (part no. see section 1.6). Protect all pipe fixings and wall transitions with anti-vibration insulation. Never direct the air inlet and outlet apertures in external walls towards neighbouring windows or living rooms/bedrooms.

3.4 Installing the base unit

The heat pump must be accessible from all sides.

Position the base unit on the substrate prepared in accordance with section 3.2. Observe the required air outlet direction. After installing the heat pump, tighten the pipe fittings on the pressure and inlet lines of the compressor with a torque of 100 Nm (Fig. 8, item 10/11).

3.5 Base unit installation

With external installations, water and electrical pipes/cables can be routed into the heat pump through the bottom, i.e. through the knock-outs in the floor of the refrigeration drive.

Water and electrical pipes/cables are routed into the heat pump from the top (see Fig. 8). When water pipes are routed through the top, cut out the caps in the cover (Fig. 8, item 8). Observe section 4 „Electrical connection“ when routing the electrical cables.

3.6 Heating water connection

3.6.1 The heat pump heating system must be installed by a qualified contractor in accordance with the water installation drawings, which are part of the engineering documents. With regard to the safety equipment of the heating system, observe
DIN EN 12828 plus TRD 721 safety equipment. In dual-mode operation, the return water of the second heat source can flow through the heat pump. The return water temperature may be a max. of 60 °C.

3.6.2 Protection of heating water pipes against frost and moisture

(only for external installation)

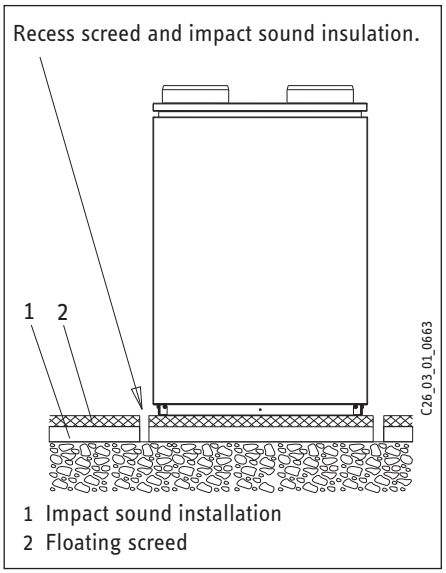


Fig. 6

Protect the flow and return pipes in external installation against frost by means of adequate thermal insulation, and by routing them inside conduit against moisture (Fig. 7).
Maintain the required insulation thickness in accordance with the Heating System Order [or local regulations].
The integral frost protection control (inside the heat pump), which automatically starts the circulation pump in the heat pump circuit at + 8 °C and thereby safeguards circulation in all water-bearing components, offers additional frost protection. The heat pump is started automatically no later than from +5 °C onwards, if the temperature inside the buffer cylinder drops.

3.6.3 Flow and return connection

Connect the heating water side of the heat pump in accordance with Fig. 7 (external installation) or Fig. 8 (internal installation). Check for leaks. For external and internal installations, first connect the pipe bend (item 8, Fig. 7 and 8), which is supplied as part of the casing accessories, to the connector from the heating flow or return (item 9, Fig. 7 and 8). Connect anti-vibration pipes of at least 1 m length to the connector G 1¼“ (male). Structure-borne noise is substantially prevented by the anti-vibration construction of the heat pump and by the flexible pressure hoses, which act as anti-vibration mounts. .

For internal installation, connect the pipe bend (item 4 in Fig. 8), which is supplied as part of the casing accessories, to the heating return connector (item 5).

Connect anti-vibration mounts of at least 1 m length to the connector G 1¼“ (male). Structure-borne noise is substantially prevented by the anti-vibration construction of the heat pump and by the flexible pressure hoses, which act as anti-vibration mounts.

3.6.4 Flushing the heating system

Thoroughly flush the pipework before connecting the heat pump. Debris, such as welding pearls, rust, sand, sealant etc. can impair the

operational reliability of the heat pump, and can lead to a blocking of the evaporator.

3.6.5 Venting the heating system

Air pockets in the system are detrimental to the heat pump function.
Vent the pipework thoroughly. For this, also activate the air vent valve integrated into the heating flow.

Water quality

To prevent equipment damage through scaling, observe the following when filling the system with heating water:

- The total water hardness must be < 7° dH.
- The total alkaline earths in the water must be < 1.2 mol/m³.
- VDI 2035 sheet 1

Please note! Fully desalinated/softened water or natural rainwater must not be used, as that would result in increased corrosion. Suitable appliances for softening as well as filling and flushing heating systems can be hired from our customer service department or can be obtained from the trade.

3.6.6 Oxygen diffusion

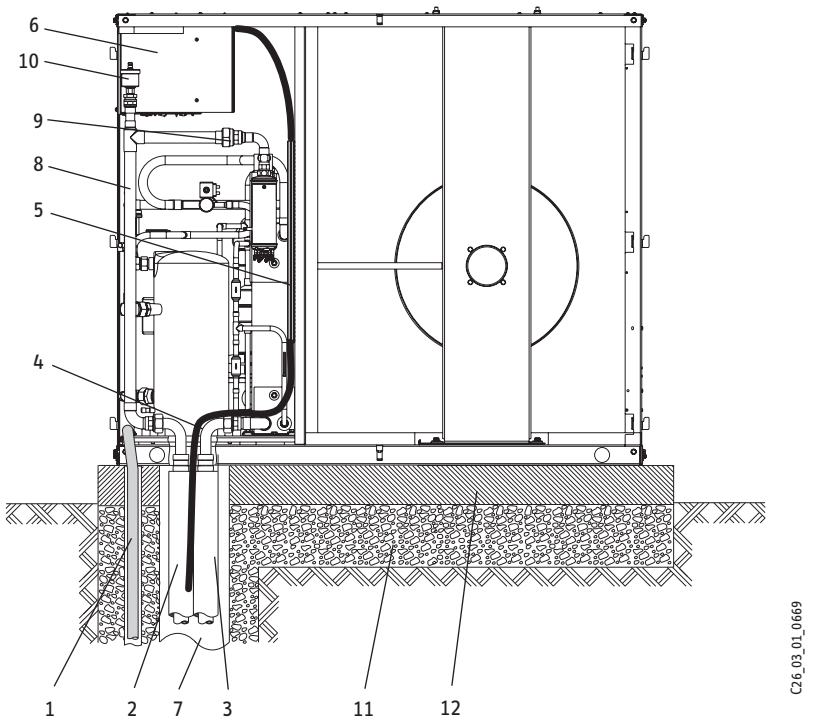
Corrosion can result on steel components, when plastic underfloor heating system pipes are used, which are not impermeable to oxygen or in open heating systems.
The product of corrosion, i.e. rusty sludge, can settle inside the heat pump evaporator and can result in output reduction through reduction of cross-section or in a shutdown being activated by the high pressure limiter.
Therefore it is advisable to avoid open heating systems or the installation of steel pipes in conjunction with plastic pipes in underfloor heating systems, which are not impermeable to oxygen.

3.6.7 Scaling

Water quality, operating conditions and the water volume are decisive factors to the extent of scaling. To prevent damage to valves, heat exchanger and heating elements, check the water condition and assess it in accordance with VDI 2035 [or local regulations].

Note: An awareness of hardness in accordance with the Detergent Act [Germany] is insufficient. Decisive for scaling is the concentration of calcium hydrogen carbonate, which can be supplied by your water supply company.

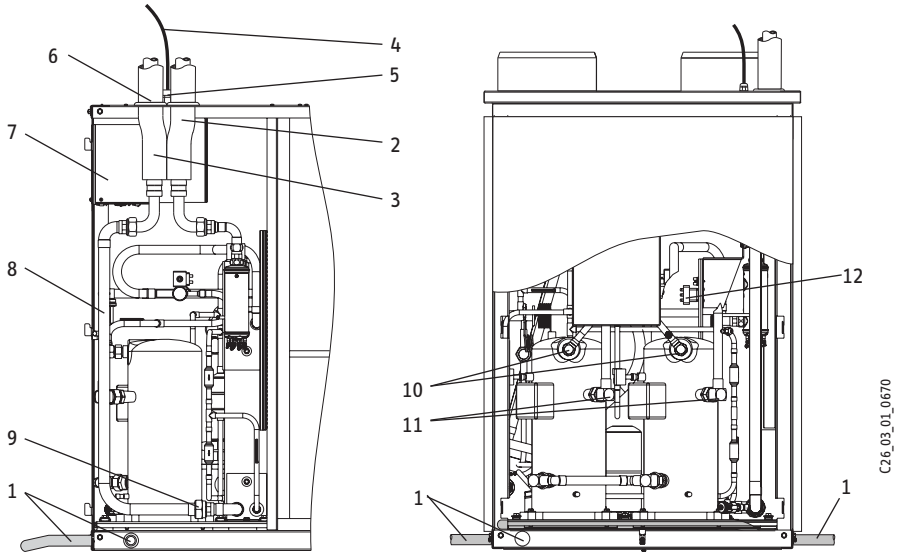
Water and electrical connections in external installations



1	Condensate drain hose	7	Installation conduit for electrical cables
2	Heating flow (flexible pressure hose)	8	Pipe-bow (supplementary)
3	Heating return (flexible pressure hose)	9	Flow connection
4	Electrical cables	10	Air-vent
5	Cable duct for electrical cables	11	Coarse gravel back filling
6	Control panel with strain relief for electrical cables	12	Concrete foundation

Fig. 7

Water and electrical connections for internal installations



1	Condensate drain hose, optionally on the r.h. or l.h. side	7	Control panel with strain relief for electrical cables
2	Flexible pressure hose (heating flow)	8	Pipe bend (included in the accessories)
3	Flexible pressure hose (heating return)	9	Heating return connection
4	Electrical cables	10	Screw-connect pressure-pipe
5	PG fitting with strain relief	11	Screw-connect suction pipe
6	Pipe duct	12	High limit safety cut-out for DHC

Fig. 8

3.7 Circulation pump

3.7.1 Circulation pump in the heat pump circuit (buffer cylinder loading pump)
Determine the pressure drop for the interconnecting line between WPKI 5 and the heat pump, if you are using the cylinders SBP 200 or SBP 700 (buffer cylinders) and the heat pump Compact Installation WPKI 5 (see table).

The total pressure drop is the sum of the pressure drop for the interconnecting line, the heat pump and the WPKI 5. Base the sizing of the circulation pump on the nominal volume flow and the total pressure drop.

Heat pump	**WPL**	**33**
Nominal volume flow	m³/h	1,4
Pressure drop		
Heat pump	hPa	190
SBP 700 + WPKI 5	hPa	55
Pressure hose 1¼“	hPa/m	4

3.8 Condensate drain

3.8.1 At the factory, a ¾“ hose is fitted to the defrost pan as condensate drain hose, which terminates near the knock-out on the floor plate to the right of the refrigeration drive.
In case of external installation, route this hose downwards out of equipment through the aperture in base unit (Fig. 7). For internal installations route the defrost water into a public sewer. The condensate hose can be routed to the right, front or to the left out of the equipment. For this, break out the knock-outs in the side panel or in the floor plate of the refrigeration drive and either at the front door or the side panel (Fig. 8).
Ensure that the condensate drain hose is not kinked anywhere over its entire length and is routed with a slope.
Check after routing the hose that the condensate drains correctly. For this, slowly pour approx. 10 l water into the defrost pan. The water must completely drain out of the defrost pan.

Use a condensate pump if there is insufficient fall.
Install the heat pump approx. 100 mm higher, if the condensate pump PK 9 (part no. see section 1.6) is used for draining the condensate.

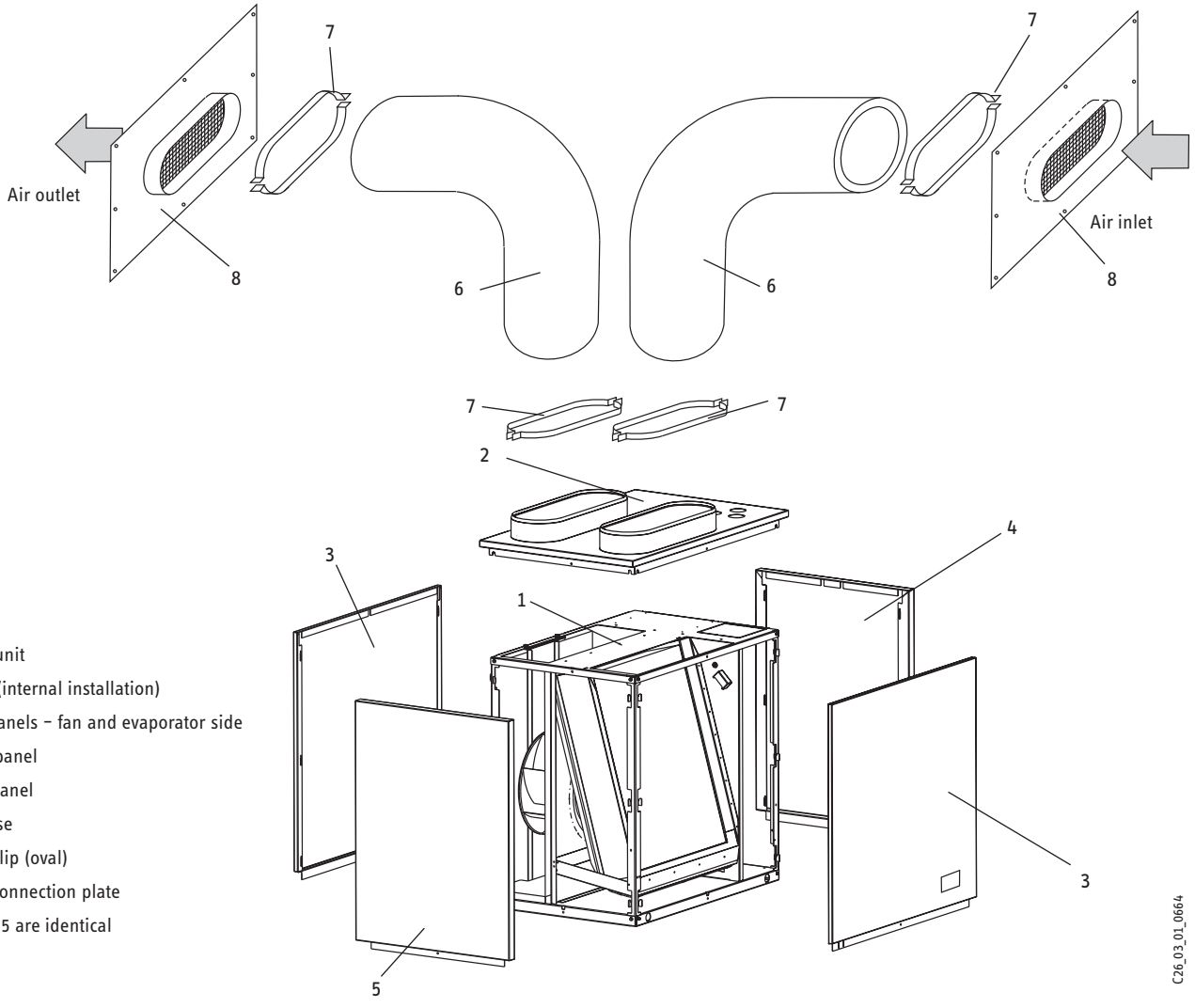
3.9 Buffer cylinder

A buffer cylinder is required to ensure trouble-free heat pump operation. The buffer cylinder (cylinder SBP) is not only installed as hydraulic de-coupler for volume flow in the heat pump circuit and the heating circuit, but primarily as energy source for defrosting the evaporator.

3.10 Second heat source

For dual-mode systems, always connect the heat pump into the return of the second heat source (e.g. oil fired boiler).

Installation of casing and ventilation hoses (internal installation)



1 Basic unit
2 Cover (internal installation)
3 Side panels – fan and evaporator side
4 Front panel
5 Back panel
6 Air hose
7 Hose clip (oval)
8 Hose connection plate
Item 4 and 5 are identical

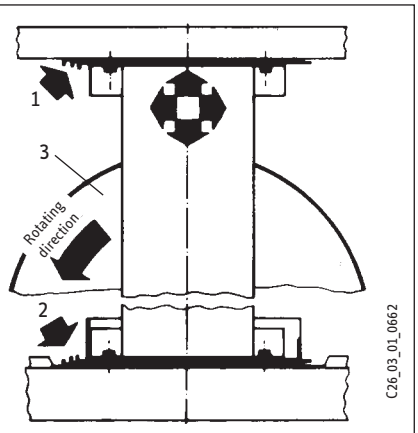
Fig. 9

3.11 Checking the fan

The fan must rotate in the correct direction. Incorrect transport can slightly shift the fan, resulting in the fan impeller dragging on the inlet nozzle. If required, the fan retainer can be moved to the left or to the right in its slots. The height can be adjusted by a corresponding rearrangement of the spacer brackets from the top to the bottom of the retainer or vice-versa.

3.12 Casing installation

1. On the base unit, remove eight quick-release fittings (at each point one at the top and bottom centre) and keep safe for later use.



1 Spacer brackets, top
2 Spacer brackets, bottom
3 Fan

Fig. 10

2. Position the lid onto the equipment and secure with one quick-release fitting at each side.
3. Make all water and electrical connections to the equipment.
4. Hook the side panels, the front and back panel into the base unit, and secure with respectively one quick-release fitting on each side.

3.13 Fitting the air hoses (only internal installation)

3.13.1 Air hoses guide the inlet air from the outside to the heat pump and exhaust air from the heat pump to the outdoors. These hoses are highly flexible, thermally insulated and are self-extinguishing in case of fire in accordance with ASTMD 1692-67 T.
Thermally insulated air hoses are available in lengths of 3 and 4 m (part no. see section 1.6).

3.13.2 Information about air hose routing
Use a sharp knife for trimming the hoses to size; use a wire cutter for cutting through the Bowden core.
Hoses can be extended by turning the Bowden cores into each other (approx. 30 cm).
The total length of hoses on the air inlet and outlet side must not exceed 8 m.

A maximum of four 90° bends with a radius of at least 600 mm, relative to the hose centre line, should be installed.

The air hose will tend to sag because of its flexibility; therefore secure its length approx. every 1 m.

3.13.3 Air hose connections on the heat pump and the external wall of the building match the air hose ends to the shape of the oval connectors at the cover and the hose connection plates. Hose connection plates are available as accessory (part no. see section 1.6).
Initially withdraw the internal hoses slightly, push over the connectors and seal with adhesive tape (supplied with the cover). Then pull the exterior hose forward, and secure the hoses well with the oval hose clips, which are also supplied with the cover (Fig. 3 and 9).

Always cover the air inlet and outlet openings using a wire grille, and secure the hoses against slippage.

Installation and casing (external installation)

1 Basic unit
2 Cover (external installation)
3 Side panels – fan and evaporator side
4 Front panel
5 Back panel
(Item 4 and 5 are identical)

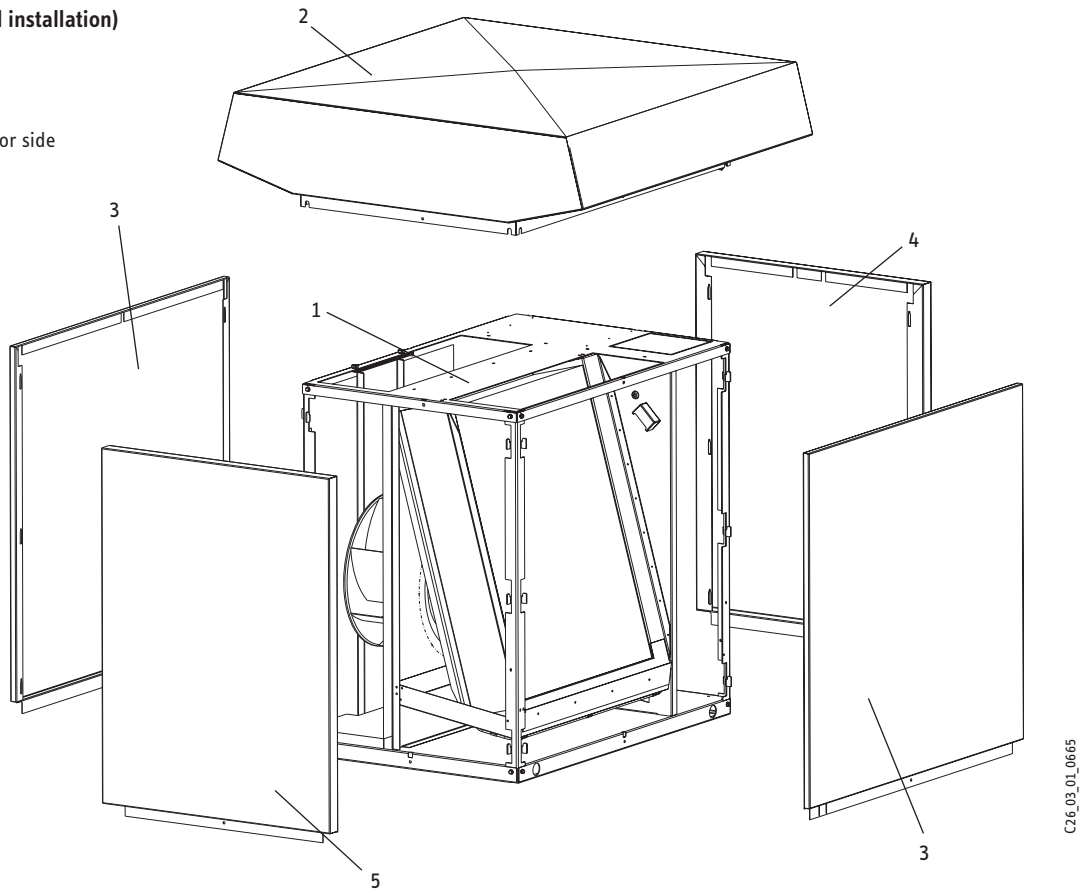


Fig. 11

4 Electrical connection

4.1 Power supply company

Notify your local power supply company of the electrical connection.
Only qualified electricians must carry out the installation in accordance with these instructions.
This equipment must only be connected to a mains power supply with an impedance of Zmax ≤ 290 mΩ.
Before any work, isolate the equipment from the power supply at the control panel.

Observe VDE 0100 and the regulations of your local power supply company.

VDE 0298-4 specifies that, in accordance with the relevant fuse protection, the following cable cross-sections are to be used:

Fuse	Cable cross-section
16 A	2,5 mm² 1,5 mm² in case of two cores under load and routing over a wall or inside a wall mounted conduit.
25 A	6,0 mm² when routing the cable through a wall. 4,0 mm² when routing a multi-core cable over a wall or inside a wall mounted conduit.

For fuse ratings, see specification

4.2 Power switch

The heat pump must be able to be separated from the mains power supply by an additional isolator, which disconnects all poles with at least 3 mm contact separation. For this purpose, use contactors, mains isolators, fuses, etc. on site.

4.3 Terminals inside the HP

Terminals are inside the WPL control panel (Fig. 13). The terminals become accessible by removing the front panel.
During the installation, the control panel can be withdrawn from the housing towards the front.

The following are connected inside the panel:
- the power supply of the IWS heat pump control unit
- the power supply of the compressor
- the power supply of the secondary heater DHC (internal heat source 2)
- the BUS cable
  Ensure that High, Low and Ground are correctly connected.
- the enabling signal for stand alone operation on terminal 5

The frost protection sensor on terminal X31/1 & 2 is already connected to the IWS.

4.4 IWS

The IWS (abbreviation for Integrated heat pump control unit [German]) is a PCB fitted as standard into the heat pump control panel. The IWS controls the contactors for the compressors and the soft start, accommodates the signal inputs for high pressure, low pressure and central faults and contains the BUS interface to the WPM.
Use cables in accordance with regulations for all connections (Fig. 12).
Check the strain relief function.
Observe the operating instructions for the heat pump manager WPM.

4.5 Circulation pump

Connect the circulation pump for the heat utilisation side in accordance with the electrical connection diagram (Fig. 15) or the engineering documents.

4.6 Stand alone operation

In emergencies, this heat pump can also operate without the heat pump manager (see page 17). However, under such circumstances the system is no longer frost protected and the system may freeze up.

4.7 For external installation

use only cables suitable for outdoor use to VDE 0100. Route such cables through a conduit (protective pipe); entry into the heat pump can be arranged from below (Fig. 7).
Route the electrical cables inside the heat pump in the cable channel provided (Fig. 7, item 5).

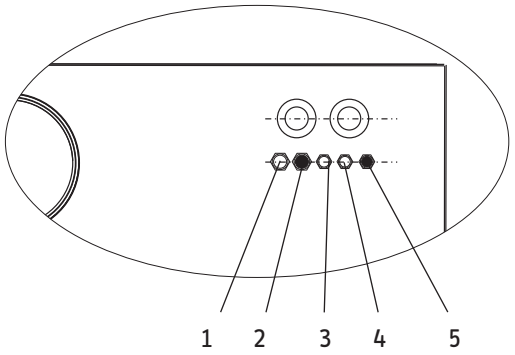
4.8 For internal installation

route the electrical cables through the cable entry at the top into the heat pump, and secure with strain relief (PG fittings) (Fig. 3 and 8).
For this observe, that the open PG fittings are used (Fig. 12) for mains supply cable (compressor), control cable and BUS cable.

The compressor in the appliance can only turn in one direction.
If the appliance is not connected correctly, the compressor remains in operation for 10 seconds then switches OFF.

In this case the heat pump manager displays the fault message "no output". Two phases should then be interchanged to alter the direction of rotation.

After connecting all electrical cables, refit and seal the cover over the mains terminal (X3) (Fig. 13).



1 Mains power supply cable – compressor)
2 Mains power supply cable (DHC)
3 Control cable – mains)
4 BUS cable: J-Y (St) 2x2x0.8 mm²
5 Control cable (HS 2 [DHC])

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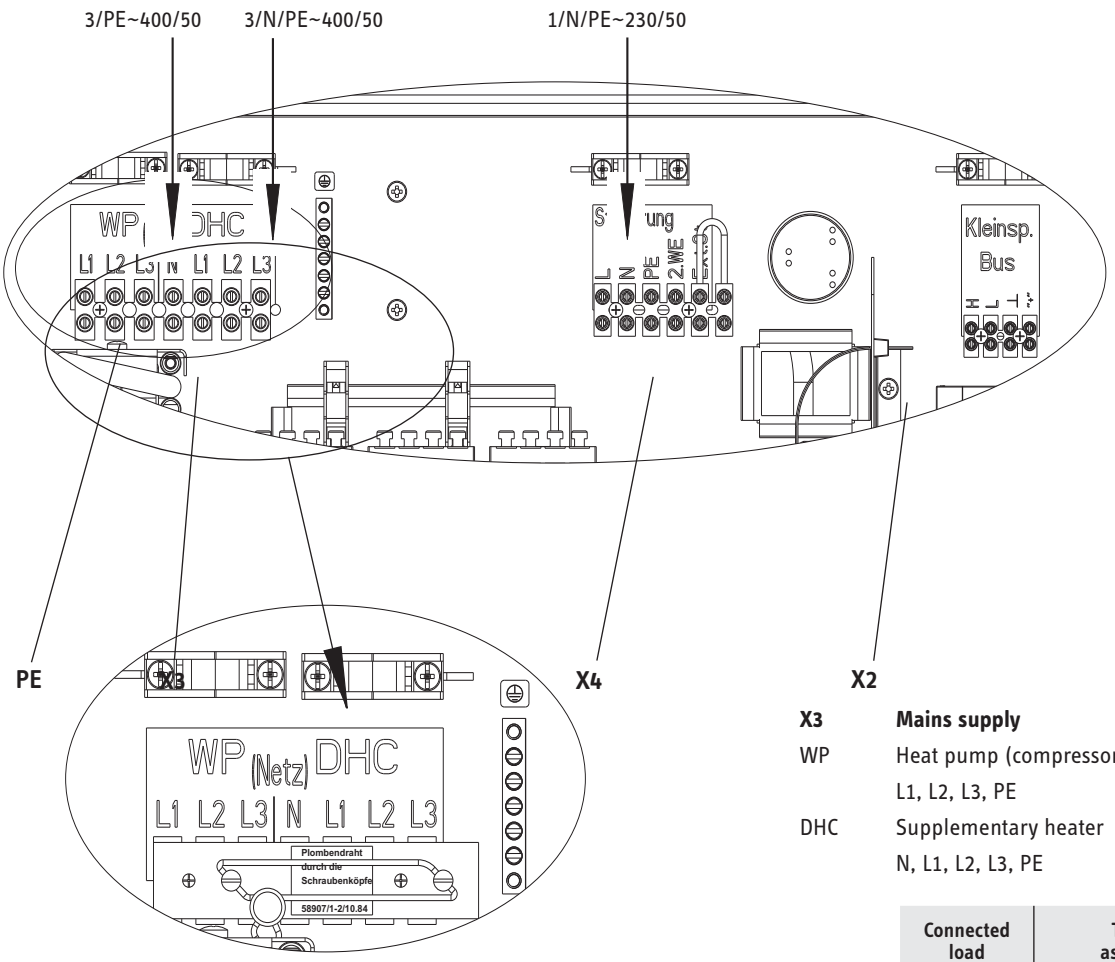
Fig. 12

Mains impedance: Zmax ≤ 0.296 Ω



X3 **Mains supply**

WP Heat pump (compressor)
L1, L2, L3, PE

DHC Supplementary heater
N, L1, L2, L3, PE

Connected load	Terminal assignment				
2,6 kW	L1			N	PE
3,0 kW		L2		N	PE
3,2 kW			L3	N	PE
5,6 kW	L1	L2		N	PE
5,8 kW	L1		L3	N	PE
6,2 kW		L2	L3	N	PE
8,8 kW	L1	L2	L3	N	PE

X4 **Terminal - control**

Mains supply: L, N, PE

Control inputs:

2. HS internal heat source (DHC)

Ext. ST Stand alone operation

X2 **Terminal LV**

H BUS high

L Bus Low

⊥ BUS Ground ⊥

" + " BUS " + " (not connected)

Provide separate fuses for the three power circuits WP, DHC and control.

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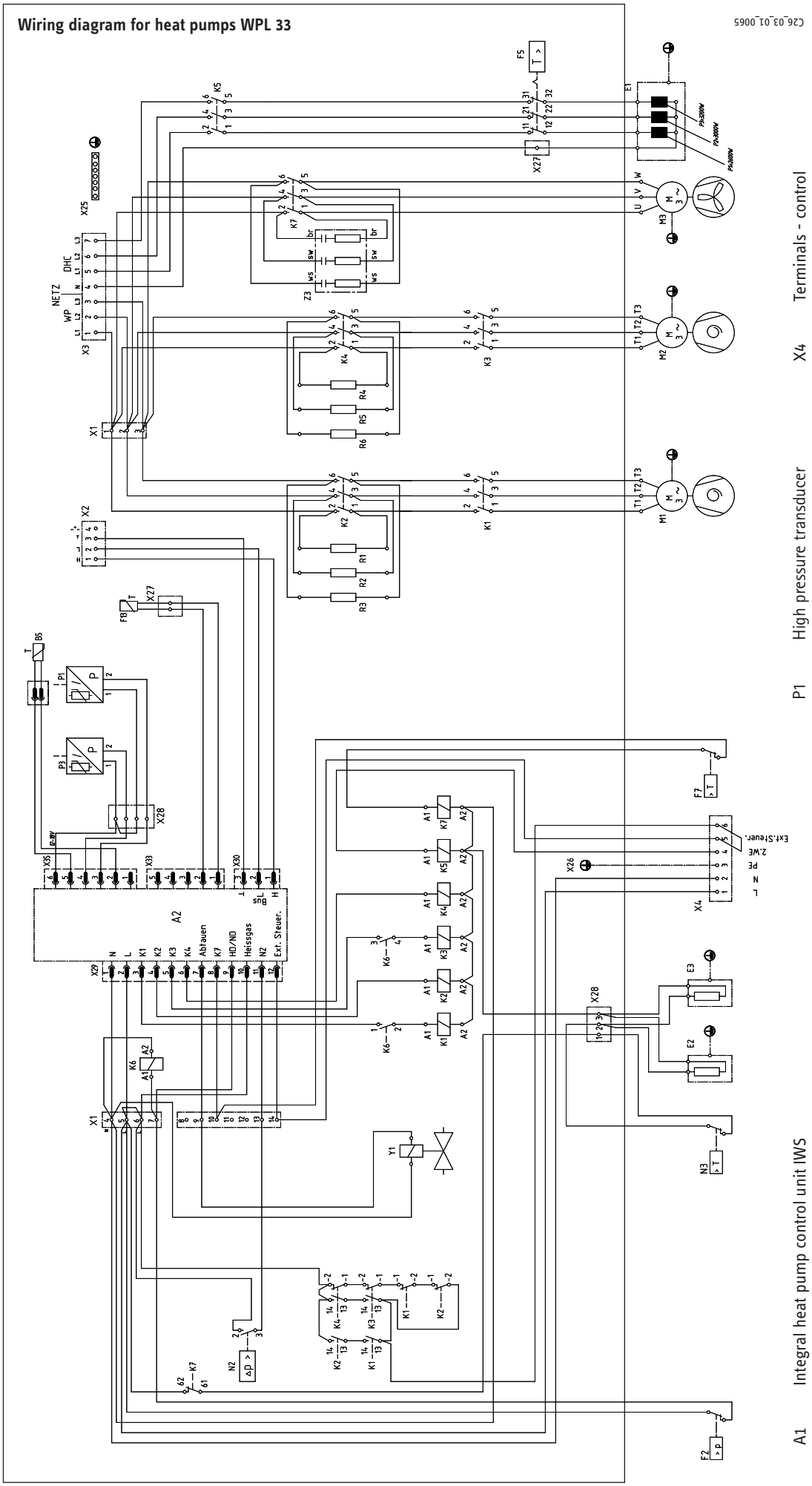
Fig. 13

Wiring diagram for heat pumps WPL 33



A1	Integral heat pump control unit IWS	K3	Contactor – resistance start Comp. 2
B5	Temperature sensor Heißgas	K4	Contactor – compressor start Comp. 3
E1	Instantaneous water heater (DHC)	K5	Contactor - instantaneous water heater
E2	Oil sump heater Comp. 1	K6	Safety Contactor
E3	Oil sump heater Comp. 2	K7	Contactor - fan
F2	High pressure limiter	M1	Motor - compressor 2
F5	High limit safety cut-out for DHC	M2	Motor - compressor 2
F7	Fan temperature limiter	M3	Motor - fan
F13	Frost protection temperature sensor	N2	Defrost – pressure differential switch
K1	Contactor – resistance start Comp. 1	N3	Oil sump thermostat
K2	Contactor – compressor start Comp. 1		

P1	High pressure transducer	X4	Terminals - control
P3	Low pressure transducer	X25	Earth block – mains supply
R1	Start-up resistance Comp. 1	X26	Earth plug-in block
R2	Start-up resistance Comp. 1	X27	Socket terminal strip 2-pole
R3	Start-up resistance Comp. 1	X28	Socket terminal strip 4-pole
R4	Start-up resistance Comp. 2	X29	Socket plug IWS 12-pole
R5	Start-up resistance Comp. 2	X30	Socket plug IWS 3-pole
R6	Start-up resistance Comp. 2	X31	Socket plug IWS 5-pole
X1	Terminals	Y1	Changeover valve - defrost
X2	Terminal LV	Z3	Supressor
X3	Mains supply		

Fig. 14

Electrical connection diagram for heat pumps WPL 33 with heat pump manager WPM II

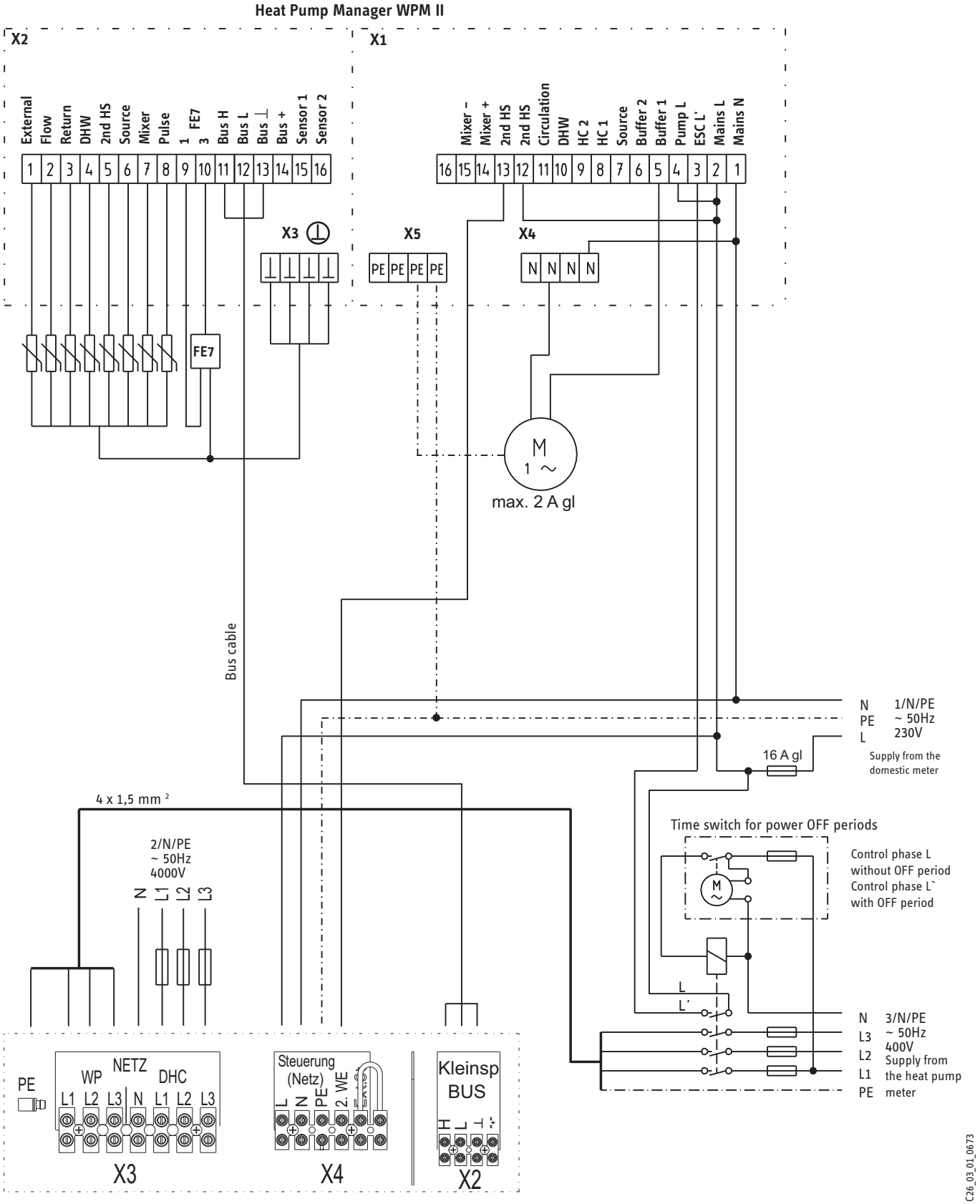


Fig. 15

5 Commissioning

See the operating instructions for the heat pump manager WPM II.

Set parameter 35 HEAT PUMP DHW STAGES either to 01 or to 02 if DHW heating/loading is required.

6 Operation and control

A WPM heat pump manager is required to operate the heat pump. It regulates the entire heating system and all required adjustments are made on this control unit.

See the operating instructions for the WPM II heat pump manager.

Only qualified contractors must make adjustments on the WPM heat pump manager.

Never isolate the heat pump from the mains power supply, even outside the heating season, otherwise the system will not be protected against frost. Generally, the system must not be shut down during summer, as the WPM is provided with an automatic summer/ winter changeover facility. Set the WPM to standby when the system is taken out of use. This retains the safety functions designed to protect the system (e.g. frost protection).

Drain the water side of the heat pump if there is a risk of frost, and the heat pump has been completely shut down.

7 Maintenance and cleaning

7.1 Maintenance

The heat pump operates under automatic control and requires no specific maintenance.

Keep the air inlet and outlet openings of the heat pump free from snow and leaves.

7.2 Cleaning

7.2.1 Remove all leaves and accumulated dirt from the evaporator fins, which are accessible after the casing parts on the condenser side have been removed.

7.2.2 Regularly check the condenser drain . Remove dirt and blockages.

7.2.3 When the heat pump operation is impaired through deposits of corrosion byproducts (rust sludge) inside the condenser, the customer service can only use solvents and a flushing pump to dissolve such deposits.

8 Troubleshooting

8.1 See operating and installation instructions WPMW

8.2 Checking the settings on the IWS

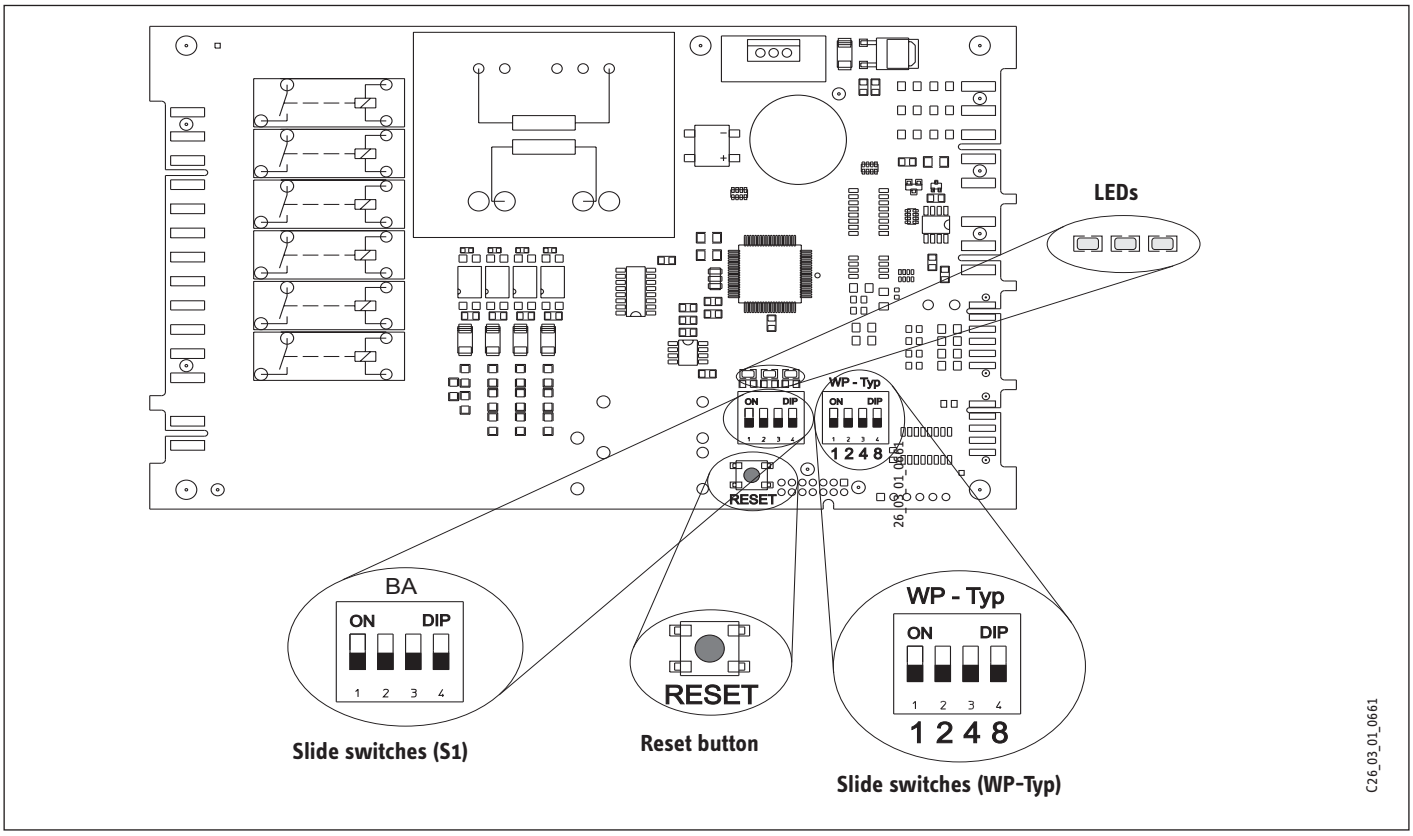


Fig. 16

⚠ If a fault cannot be located using the WPM II, in emergencies the control panel needs to be opened to check the IWS adjustments. These checks must only be carried out by a qualified contractor:

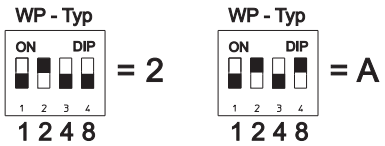
Slide switches (WP-Typ)
You can select various compressor systems with the slide switches (WP-Typ) to. In the factory, this was set to 2, subject to the heat pump type WPL 33.

2 Dual-compressor with internal HS 2 (DHC)

If the WPL is to be operated in dual-mode together with a second heat source other than the DHC, or alternatively as module with another WPL, then set the slide switches (WP-Typ) to

10 In that case, never connect the internal HS 2 (DHC) (control and supply).

Check that the slide switches (WP-Typ) is set correctly.



Slide switches (S3))
The switches 1 and 2 have no effect for WPL.

Switch 3 position
Switch ON: SERVICE mode
Corresponding compressors (defaulted by setting the slide switches (WP-Typ)) are started in one second intervals.

Switch 4 position
Switch ON: STAND ALONE operation
Should the WPM develop a fault, the heat pump can, in emergencies, be operated in stand alone operation. In this operating mode there is no communication with the WPM II heat pump manager. The heat pump regulates to a fixed temperature. The heat pump starts at 50 °C and stops at 55 °C. The frost protection sensor connected to the IWS at terminals sensor 1,2 is no used to sense the control magnitude, i.e. frost protection and protection against freezing up during defrosting of an externally installed heat pump are now lost.

⚠ In addition, remove the jumper between terminal X4/5 and X4/6, and connect 230 V to terminal X4/5. The operating mode is indicated by the r.h. green LED.

LEDs
Red LED: Flashing or static:
The LED flashes if the heat pump fault occurs once.
The system will be shut down.
The red LED becomes static, if more than two heat pump faults occur within five hours. The system will be shut down permanently.
In both cases, the fault will be entered into the error list (parameter 46) of WPM. Operation can recommence 10 minutes after the fault has been removed; the LED goes out.
To delete the fault on the IWS, select parameter 52, then press PRG to reset the IWS. The internal counter will then be returned to zero.
Heat pump faults indicated by the LED: High pressure, low pressure, central and hardware faults on the IWS. (see parameter 46)

Green LED centre: Flashes during initialisation, and becomes steady after the BUS address has been allocated successfully. Only then is the communication with WPM possible.

Green LED right: Illuminates constantly, when stand alone operation has been selected.

Reset button
In case of incorrect initialisation, see section 5.4.1 of the WPM II operating and installation instructions.

1. Customer's address:

_____

_____

_____

_____

2. Installer:

_____

_____

_____

_____

3. Building type:

Detached house ☐
Appartment block ☐
Apartment block/Commercial ☐
Industrial/Commercial ☐
Public building ☐

Single heat pump ☐
Cascade ☐

4. Equipment type: _____

ID No: _____

Serial No. _____

Production No. _____

5. Heat pump location:

External ☐
Internal ☐ Cellar ☐
First floor ☐
Second floor ☐
Top floor ☐

On concrete base ☐
On base plate ☐
On level ground ☐

Horizontal: yes ☐ no ☐

Anti-vibration mounts: yes ☐ no ☐

6. Installation conditions according to Stiebel Eltron installation and operating instructions:

Installation room volume: _____ m³

7. Operating mode

mono mode ☐
dual-mode - parallel ☐
- part parallel ☐
- alternative ☐

Dual-mode heat source

Gas fired boiler ☐
Oil fired boiler ☐
Solid fuel boiler ☐
District heating ☐
Electric heating ☐

8. Hydraulic connection of the heat pump with buffer cylinder

yes ☐ no ☐

Buffer cylinder content _____

9. DHW heating:

independent of HP
yes ☐ no ☐

with external heat exchanger
yes ☐ no ☐

with internal heat exchanger
yes ☐ no ☐

STE products: types: _____

_____

Third party products types: _____

_____

10. Heat source:

Air Outside air ☐
Extract air ☐

Temperature min: _____ °C

max: _____ °C

Ground

Ground probe ☐ **No.** _____

Internal pipe diameter: _____

Distributor: yes ☐ no ☐

Depth of hole: _____

Hydraulic connections as per Tichelmann
yes ☐ no ☐

Ground collector ☐

Pipe length: _____

Diameter: _____

Area: _____

Distributor: yes ☐ no ☐

Hydraulic connections as per Tichelmann
yes ☐ no ☐

Process medium:

Type: _____

Concentration: _____

Frost protection: _____

Water Well ☐
Surface water ☐

Others: _____

_____

_____

11. Heating system:

Underfloor heating ☐
Convectors ☐
Panels ☐
Radiators ☐

Design temperature: FL ____ °C/ RE ___ °C

12. System periphery:

Circulation pump source

Manufacture / type _____ / _____

Circulation pump heating

Manufacture / type _____ / _____

Circulation pump
Heat pump/heat exchanger

Manufacture / type _____ / _____

Circulation pump
Heat exchanger / cylinder

Manufacture / type _____ / _____

Circulation pump heat pump/
buffer cylinder

Manufacture / type _____ / _____

Circulation pump DHW
circulation

Manufacture / type _____ / _____

Circulation pump heat pump/
DHW cylinder

Manufacture / type _____ / _____

Mixing valve

Manufacture / type _____ / _____

Mixing valve servomotor

Manufacture / type _____ / _____

13. Control unit

STIEBEL-ELTRON product/type _____

Third party: type _____

Parameters set in acc. with the control unit commissioning report

14. Power supply:

Cable type: _____

No. of conductors _____

Cross-section _____

Installed acc. to VDE yes ☐ no ☐

Control cable heat pump:

Cable type _____

No. of conductors _____

Cross-section: _____

15. Actual data:

Actual at the heat pump after 10 min. operation:

Brine inlet/water/air: _____ **°C**

Brine outlet/water/air: _____ **°C**

Heat pump flow temp.: _____ **°C**

Heat pump return temp: _____ **°C**

16. Tested to VDE 0701

Implemented: **yes** ☐ **no** ☐

Values OK: **yes** ☐ **no** ☐

17. System layout

_____ _____

Place, date **Installer's signature**

Guarantee

For guarantees please refer to the respective terms and conditions of supply for your country.

The installation, electrical connection and first operation of this appliance should be carried out by a qualified installer.

The company does not accept liability for failure of any goods supplied which have not been installed and operated in accordance with the manufacturer's instructions.

Environment and recycling

Please help us to protect the environment by disposing of the packaging in accordance with the national regulations for waste processing.

KYOTO | R407C

This device is filled with refrigerant R407C.

Refrigerant R407C is a CFC greenhouse gas mentioned in the Kyoto protocol with a global greenhouse potential (GWP) = 1653.

Never release refrigerant R407C to atmosphere.

Note

Note

Note

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STIEBEL ELTRON

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Stand 07/09

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