INSTALLATION MANUAL

Daikin Altherma indoor unit

EKHVMRD50ABV1
EKHVMRD80ABV1

EKHVMYD50ABV1
EKHVMYD80ABV1

CE - DECLARATION-OF-CONFORMITY
CE - KONFORMITÄTSERKLÄRUNG
CE - DECLARATION-DE-CONFORMITE
CE - CONFORMITEITSVERKLARING

CE - DECLARACION-DE-CONFORMIDAD
CE - DICHIARAZIONE-DI-CONFORMITA
CE - ΔΗΛΩΣΗ ΣΥΜΜΟΡΦΩΣΗΣ

CE - DECLARAÇÃO-DE-CONFORMIDADE
CE - ЗАЯВЛЕНИЕ-О-СООТВЕТСТВИИ
CE - OPFYLDELSESERKLÆRING
CE - FÖRSÄKRAN-OM-ÖVERENSTÄMMELSE

CE - ERKLÆRING OM-SAMSVAR
CE - ILMOITUS-YHDENMUKAISUUDESTA
CE - PROHLÁŠENÍ-O-SHODĚ

CE - IZJAVA-O-USKLAĐENOSTI
CE - MEGFELELŐSÉGI-NYILATKOZAT
CE - DEKLARACJA-ZGODNOŚCI
CE - DECLARAŢIE-DE-CONFORMITATE

CE - IZJAVA O SKLADNOSTI
CE - VASTAVUSDEKLARATSIOON
CE - ДЕКЛАРАЦИЯ-ЗА-СЪОТВЕТСТВИЕ

CE - ATITIKTIES-DEKLARACIJA
CE - ATBILSTĪBAS-DEKLARĀCIJA
CE - VYHLÁSENIE-ZHODY
CE - UYUMLULUK-BEYANI

Daikin Europe N.V.

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23 (LV) ar pilnu atbildību apliecina, ka tālāk aprakstītās iekārtas, uz kurām attiecas šī deklarācija:
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EKHVMYD50ABV1, EKHVMYD80ABV1,
EKHVMRD50ABV1, EKHVMRD80ABV1,

01 are in conformity with the following standard(s) or other normative document(s), provided that these are used in accordance with our instructions:
02 der/den folgenden Norm(en) oder einem anderen Normdokument oder -dokumenten entspricht/entsprechen, unter der Voraussetzung, daß sie gemäß unseren Anweisungen eingesetzt werden:
03 sont conformes à la/aux norme(s) ou autre(s) document(s) normatif(s), pour autant qu'ils soient utilisés conformément à nos instructions:
04 conform de volgende norm(en) of één of meer andere bindende documenten zijn, op voorwaarde dat ze worden gebruikt overeenkomstig onze instructies:
05 están en conformidad con la(s) siguiente(s) norma(s) u otro(s) documento(s) normativo(s), siempre que sean utilizados de acuerdo con nuestras instrucciones:
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10 overholder følgende standard(er) eller andet/andre retningsgivende dokument(er), forudsat at disse anvendes i henhold til vore instrukser:
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15 u skladu sa slijedećim standardom(ima) ili drugim normativnim dokumentom(ima), uz uvjet da se oni koriste u skladu s našim uputama:
16 megfelelnek az alábbi szabvány(ok)nak vagy egyéb irányadó dokumentum(ok)nak, ha azokat előírás szerint használják:
17 spełniają wymogi następujących norm i innych dokumentów normalizacyjnych, pod warunkiem że używane są zgodnie z naszymi instrukcjami:
18 sunt în conformitate cu următorul (următoarele) standard(e) sau alt(e) document(e) normativ(e), cu condiţia ca acestea să fie utilizate în conformitate cu instrucţiunile noastre
19 skladni z naslednjimi standardi in drugimi normativi, pod pogojem, da se uporabljajo v skladu z našimi navodili:
20 on vastavuses järgmis(t)e standardi(te)ga või teiste normatiivsete dokumentidega, kui neid kasutatakse vastavalt meie juhenditele:
21 съответстват на следните стандарти или други нормативни документи, при условие, че се използват съгласно нашите инструкции:
22 atitinka žemiau nurodytus standartus ir (arba) kitus norminius dokumentus su sąlyga, kad yra naudojami pagal mūsų nurodymus:
23 tad, ja lietoti atbilstoši ražotāja norādījumiem, atbilst sekojošiem standartiem un citiem normatīviem dokumentiem:
24 sú v zhode s nasledovnou(ými) normou(ami) alebo iným(i) normatívnym(i) dokumentom(ami), za predpokladu, že sa používajú v súlade s našim návodom:
25 ürünün, talimatlarımıza göre kullanılması koşuluyla aşağıdaki standartlar ve norm belirten belgelerle uyumludur:

EN60335-2-40,

01 following the provisions of:
02 gemäß den Vorschriften der:
03 conformément aux stipulations des:
04 overeenkomstig de bepalingen van:
05 siguiendo las disposiciones de:
06 secondo le prescrizioni per:
07 με τήρηση των διατάξεων των:
08 de acordo com o previsto em:
09 в соответствии с положениями:
10 under iagttagelse af bestemmelserne i:
11 enligt villkoren i:
12 gitt i henhold til bestemmelsene i:
13 noudattaen määräyksiä:
14 za dodržení ustanovení předpisu:
15 prema odredbama:
16 követi a(z):
17 zgodnie z postanowieniami Dyrektyw:
18 în urma prevederilor:
19 ob upoštevanju določb:
20 vastavalt nõuetele:
21 следвайки клаузите на:
22 laikantis nuostatų, pateikiamų:
23 ievērojot prasības, kas noteiktas:
24 održiavajúc ustanovenia:
25 bunun koşullarına uygun olarak:

Low Voltage 2006/95/EC
Machinery 2006/42/EC **
Electromagnetic Compatibility 2004/108/EC *

01 Directives, as amended.
02 Direktiven, gemäß Änderung.
03 Directives, telles que modifiées.
04 Richtlijnen, zoals geamendeerd.
05 Directivas, según lo enmendado.
06 Direttive, come da modifica.
07 Οδηγιών, όπως έχουν τροποποιηθεί.
08 Directivas, conforme alteração em.
09 Директив со всеми поправками.
10 Direktiver, med senere ændringer.
11 Direktiv, med företagna ändringar.
12 Direktiver, med foretatte endringer.
13 Direktiivejä, sellaisina kuin ne ovat muutettuina.
14 v platném znění.
15 Smjernice, kako je izmijenjeno.
16 irányelv(ek) és módosításaik rendelkezéseit.
17 z późniejszymi poprawkami.
18 Directivelor, cu amendamentele respective.
19 Direktive z vsemi spremembami.
20 Direktiivid koos muudatustega.
21 Директиви, с техните изменения.
22 Direktyvose su papildymais.
23 Direktīvās un to papildinājumos.
24 Smernice, v platnom znení.
25 Değiştirilmiş halleriyle Yönetmelikler.

01 Note * as set out in **<A>** and judged positively by **<B>** according to the **Certificate <C>**.
02 Hinweis * wie in der **<A>** aufgeführt und von **<B>** positiv beurteilt gemäß **Zertifikat <C>**.
03 Remarque * tel que défini dans **<A>** et évalué positivement par **<B>** conformément au **Certificat <C>**.
04 Bemerk * zoals vermeld in **<A>** en positief beoordeeld door **<B>** overeenkomstig **Certificaat <C>**.
05 Nota * como se establece en **<A>** y es valorado positivamente por **<B>** de acuerdo con el **Certificado <C>**.
06 Nota * delineato nel **<A>** e giudicato positivamente da **<B>** secondo il **Certificato <C>**.
07 Σημείωση * όπως καθορίζεται στο **<A>** και κρίνεται θετικά από το **<B>** σύμφωνα με το **Πιστοποιητικό <C>**.
08 Nota * tal como estabelecido em **<A>** e com o parecer positivo de **<B>** de acordo com o **Certificado <C>**.
09 Примечание * как указано в **<A>** и в соответствии с положительным решением **<B>** согласно **Свидетельству <C>**.
10 Bemærk * som anført i **<A>** og positivt vurderet af **<B>** i henhold til **Certifikat <C>**.
11 Information * enligt **<A>** och godkänts av **<B>** enligt **Certifikatet <C>**.
12 Merk * som det fremkommer i **<A>** og gjennom positiv bedømmelse av **<B>** ifølge **Sertifikat <C>**.
13 Huom * jotka on esitetty asiakirjassa **<A>** ja jotka **<B>** on hyväksynyt **Sertifikaatin <C>** mukaisesti.
14 Poznámka * jak bylo uvedeno v **<A>** a pozitivně zjištěno **<B>** v souladu s **osvědčením <C>**.
15 Napomena * kako je izloženo u **<A>** i pozitivno ocijenjeno od strane **<B>** prema **Certifikatu <C>**.
16 Megjegyzés * a(z) **<A>** alapján, a(z) **<B>** igazolta a megfelelést, a(z) **<C>** **tanúsítvány** szerint.
17 Uwaga * zgodnie z dokumentacją **<A>**, pozytywną opinią **<B>** i **Świadectwem <C>**.
18 Notă * aşa cum este stabilit în **<A>** şi apreciat pozitiv de **<B>** în conformitate cu **Certificatul <C>**.
19 Opomba * kot je določeno v **<A>** in odobreno s strani **<B>** v skladu s **certifikatom <C>**.
20 Märkus * nagu on näidatud dokumendis **<A>** ja heaks kiidetud **<B>** järgi vastavalt **sertifikaadile <C>**.
21 Забележка * както е изложено в **<A>** и оценено положително от **<B>** съгласно **Сертификата <C>**.
22 Pastaba * kaip nustatyta **<A>** ir kaip teigiamai nuspręsta **<B>** pagal **Sertifikatą <C>**.
23 Piezīmes * kā norādīts **<A>** un atbilstoši **<B>** pozitīvajam vērtējumam saskaņā ar **sertifikātu <C>**.
24 Poznámka * ako bolo uvedené v **<A>** a pozitívne zistené **<B>** v súlade s **osvedčením <C>**.
25 Not * **<A>**'da belirtildiği gibi ve **<B>** tarafından olumlu olarak değerlendirildiği gibi. **<C>** **Sertifikasına** göre

<A>	**DAIKIN.TCF.025H7/03-2015**
<B>	**DEKRA (NB0344)**
<C>	**2082543.0551-QUA/EMC**

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02 ** Daikin Europe N.V. hat die Berechtigung die Technische Konstruktionsakte zusammenzustellen.
03 ** Daikin Europe N.V. est autorisé à compiler le Dossier de Construction Technique.
04 ** Daikin Europe N.V. is bevoegd om het Technisch Constructiedossier samen te stellen.
05 ** Daikin Europe N.V. está autorizado a compilar el Archivo de Construcción Técnica.
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07 ** Η Daikin Europe N.V. είναι εξουσιοδοτημένη να συντάξει τον Τεχνικό φάκελο κατασκευής.
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13 ** Daikin Europe N.V. on valtuutettu laatimaan Teknisen asiakirjan.
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15 ** Daikin Europe N.V. je ovlašten za izradu Datoteke o tehničkoj konstrukciji.
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25 ** Daikin Europe N.V. Teknik Yapı Dosyasını derlemeye yetkilidir.

3P402254-4

DAIKIN

Shigeki Morita
Director
Ostend, 1st of June 2015

DAIKIN EUROPE N.V.
Zandvoordestraat 300, B-8400 Oostende, Belgium

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Thank you for purchasing this product.

The original instructions are written in English. All other languages are translations of the original instructions.

CAREFULLY READ THESE INSTRUCTIONS BEFORE INSTALLATION. THEY WILL TELL YOU HOW TO INSTALL AND HOW TO CONFIGURE THE UNIT PROPERLY. KEEP THIS MANUAL IN A HANDY PLACE FOR FUTURE REFERENCE.

1. Definitions

Installation manual:

Instruction manual specified for a certain product or application, explaining how to install, configure and maintain it.

Danger:

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

Warning:

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

Caution:

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

Note:

Indicates situations that may result in equipment or property-damage accidents only.

Dealer:

Sales distributor for products as per the subject of this manual.

Installer:

Technical skilled person who is qualified to install products as per the subject of this manual.

Service agent:

Qualified person who can perform or coordinate the required service to the unit.

Legislation:

All international, European, national and local directives, laws, regulations and/or codes which are relevant and applicable for a certain product or domain.

Accessories:

Equipment which is delivered with the unit and which needs to be installed according to instructions in the documentation.

Optional equipment:

Equipment which can optionally be combined to the products as per the subject of this manual.

Field supply:

Equipment which needs to be installed according to instructions in this manual, but which are not supplied by Daikin.

2. General safety precautions

All activities described in this manual shall be carried out by an installer.

Be sure to wear adequate personal protection equipment (protection gloves, safety glasses, …) when performing installation, maintenance or service to the unit.

If not sure of installation procedures or operation of the unit, always contact your local dealer for advice and information.

Improper installation or attachment of equipment or accessories could result in electric shock, short-circuit, leaks, fire or other damage to the equipment. Be sure only to use accessories, optional equipment and spare parts made by Daikin which are specially designed for use with the products as of subject in this manual and have them installed by an installer.

This appliance is intended to be used by expert or trained users in shops, in light industry and on farms, or for commercial and household use by lay persons.



DANGER: ELECTRICAL SHOCK

Switch off all power supply before removing the switchbox service panel or before making any connections or touching electrical parts.

To avoid electric shock, be sure to disconnect the power supply 1 minute or more before servicing the electrical parts. Even after 1 minute, always measure the voltage at the terminals of main circuit capacitors or electrical parts and, before touching, be sure that those voltages are 50 V DC or less.

When service panels are removed, live parts can easily be touched by accident. Never leave the unit unattended during installation or servicing when the service panel is removed.



DANGER: DO NOT TOUCH PIPING AND INTERNAL PARTS

Do not touch the refrigerant piping, water piping or internal parts during and immediately after operation. The piping and internal parts may be hot or cold depending on the working condition of the unit.

Your hand may suffer burns or frostbite if you touch the piping or internal parts. To avoid injury, give the piping and internal parts time to return to normal temperature or, if you must touch them, be sure to wear protective gloves.

3. Introduction

3.1. General information

This installation manual concerns Daikin Altherma air to water inverter heat pump units of the Daikin EKHVMRD and EKHVMYD series.

These units are intended for indoor installation and aimed for apartment or other multi user buildings.

The unit is designed for floor standing heating operation. The EKHVMYD units can also perform cooling operation. The heat taken from the indoors' during cooling operation can be stored in the domestic hot water tank (=heat recovery operation).

EKHVMRD units can only perform heating operation.

EKHVMRD units have heating capacity ranges of 5.6 kW and 9 kW.

EKHVMYD units have heating capacity ranges of 5.6 kW and 9 kW and cooling capacities of 5 kW and 8 kW.

The indoor units are designed to work in heating and cooling mode at indoor ambient temperatures from 5°C to 30°C.

During heating operation, the unit can heat up the water to temperatures of 25°C to 80°C.

During cooling operation (only for EKHVMYD) the unit can cool down the water to temperatures of 5°C to 20°C.

3.2. Combination and options

The EKHVMRD and EKHVMYD units can only be combined with an outdoor EMRQ unit.

During heating operation, the unit can be combined with space heating radiators (field supply), fan coil units (option or field supply) or floor heating (field supply).

During cooling operation, the unit can be combined with fan coils (option or field supply).

The remote controller with room thermostat functionality is standard supplied with this unit to control your installation.

Domestic hot water tank (option)

An optional EKHTS* or EKHWP* domestic hot water tank can be connected to the indoor unit. The EKHTS* domestic hot water tank is available in two different water capacities: 200 and 260 litre, the EKHWP* domestic hot water tank is available in two different water capacities: 300 and 500 litre.

Refer to the domestic hot water tank installation manual for further details.

Heat pump convector (option)

An optional FWXV convector for cooling or heating operation can be connected to this indoor unit.

Refer to the heat pump convector installation manual for further details.

Remote controller (option)

An optional secondary EKRUAHT remote controller (with room thermostat functionality) can be connected to the indoor unit. Purpose is to provide the possibility to install the standard remote controller near the unit (for service reasons), and install another remote controller in another place (e.g. living room) to operate your installation.

Refer to "Installation and connection of the remote controller" on page 31 for further details.

Room thermostat (option)

An optional room thermostat EKRTR or EKRTW can be connected to the indoor unit.

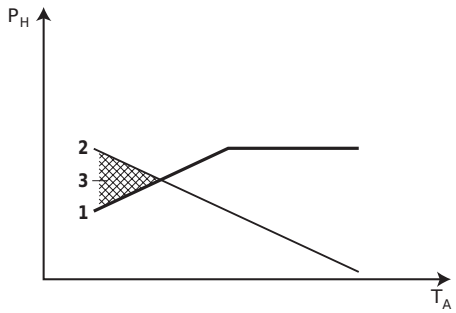
Refer to the room thermostat installation manual for further details.

If this option is installed it is not possible to use the remote controller thermostat function.

Heater kit (option)

An optional EKBUH heater kit can be combined with the indoor unit. Purpose is to provide an additional heating capacity during cold outdoor temperatures. The heater kit has a heating capacity of 6 kW, and available for both 1-phase and 3-phase power supply specifications. When using this heater kit, installation of the optional demand PCB is required as well.

Refer to the heater kit installation manual for further details.



1	Heat pump capacity
2	Required heating capacity (site dependent)
3	Additional heating capacity provided by the heater kit
T_A	Ambient (outdoor) temperature
P_H	Heating capacity

Digital I/O PCB (option)

An optional EKRP1HBAA digital I/O PCB can be connected to the indoor unit and be used to remotely monitor your system. This address card offers 2 voltage free outputs and 1 high voltage (230 V AC) output.

Refer to the operation manual of the indoor unit and to the digital I/O PCB installation manual for more information.

Refer to the wiring diagram or connection diagram for connecting this PCB to the unit.

Demand PCB (option)

An optional EKRP1AHTA demand PCB can be connected to the indoor unit. This PCB is needed when the optional heater kit EKBUH or Daikin room thermostat EKRTR or EKRTW is installed or when multiple set point control is used, and provides the communication with the indoor unit.

Refer to the demand PCB installation manual for further details.

Refer to the wiring diagram or connection diagram for connecting this PCB to the unit.

Individual billing system (field supply)

The Daikin Altherma system uses a common outdoor unit for the different indoor units. Depending of local regulations, the customer is free to choose the allocation method of the common electrical power consumption costs of the outdoor unit.

Daikin advises an allocation method based on the measurements of consumed heat of each indoor unit. In other words, the outdoor unit energy input is allocated according the indoor unit energy output. An individual billing system calculation tool is available on demand. Contact your local dealer.

Refer to "6. Design of the water circuit" on page 11 for further details.

Cooling output (field supply) (only for EKHVMYD)

This is a 230 V AC output (maximum 0.3 A) which is on during cooling operation. This can be used to connect a valve which shuts off radiators to avoid sweat during cooling operation. Refer to "6.4. Application examples for reversible units" on page 15.

3.3. Scope of the manual

This manual does NOT include the selection procedure and the water system design procedure. Only some precautions and tips and tricks about the design of the water circuit are given in a separate chapter of this manual. Also included in this separate chapter are the guidelines for installation of the meters for billing purposes.

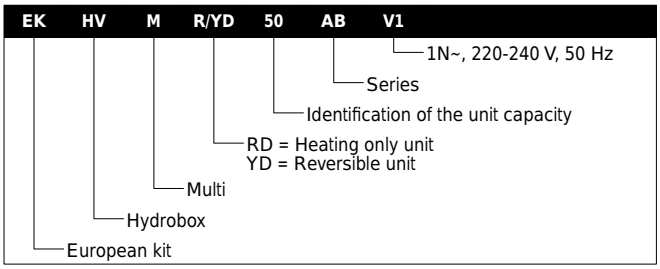
Once the selection is done and the water system is designed, this manual describes the procedures for handling, installing and connecting the EKHVMYD and EKHVMRD units. This manual has been prepared to ensure adequate maintenance of the unit, and it will provide help if problems occur.

NOTE

Refer to the installation manual of the outdoor unit for items not described in this manual.

The operation of the indoor unit is described in the indoor unit operation manual.

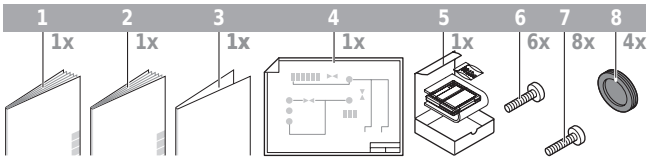
3.4. Model identification

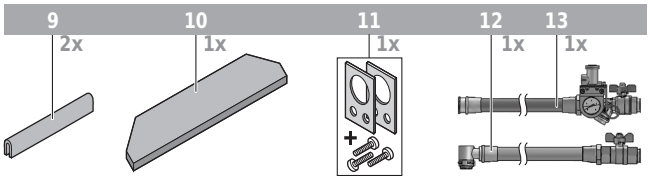


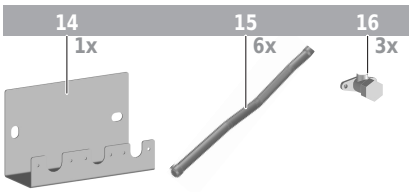
4. Accessories

4.1. Accessories supplied with this unit

Following accessories can be found in the unit.





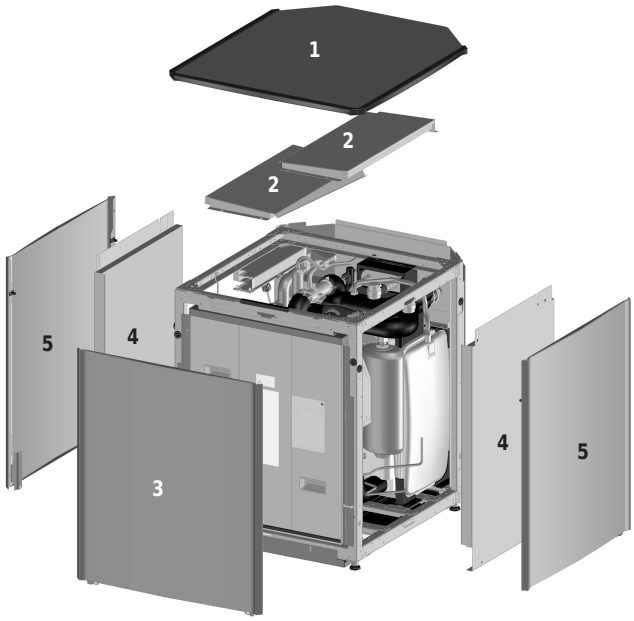


1	Installation manual
2	Operation manual
3	Addendum installation manual
4	Wiring diagram
5	User interface kit (remote controller, 4 fixing screws, 2 plugs)
6	Top plate fixing screws + sound bottom plate fixing screws + lifting fixing screws (8 screws)
7	Stop valve fixing screws (6 screws)
8	Grommet (small)
9	Grommet (large)
10	Top plate insulation
11	Kit for lifting the unit
12	Flexible water outlet piping
13	Flexible water inlet piping (with manometer)
14	Support plate
15	Piping
16	Stop valves

5. Overview of unit

5.1. Opening the unit

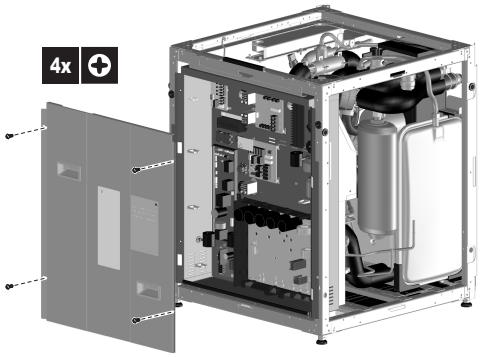
To gain access to the unit, top plate, the drip plates and the front plate need to be opened.



1	Top plate
2	Drip plate
3	Front plate
4	Sound plate
5	Side plate

Once the unit is opened, access is possible to the main components.

To gain access to the electrical components, switch box needs to be opened:



DANGER: ELECTRICAL SHOCK

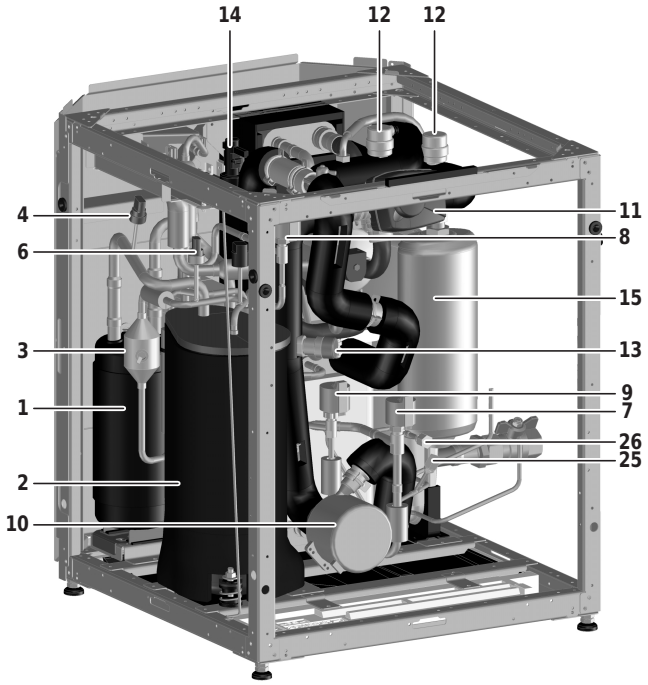
See "2. General safety precautions" on page 2.

DANGER: DO NOT TOUCH PIPING AND INTERNAL PARTS

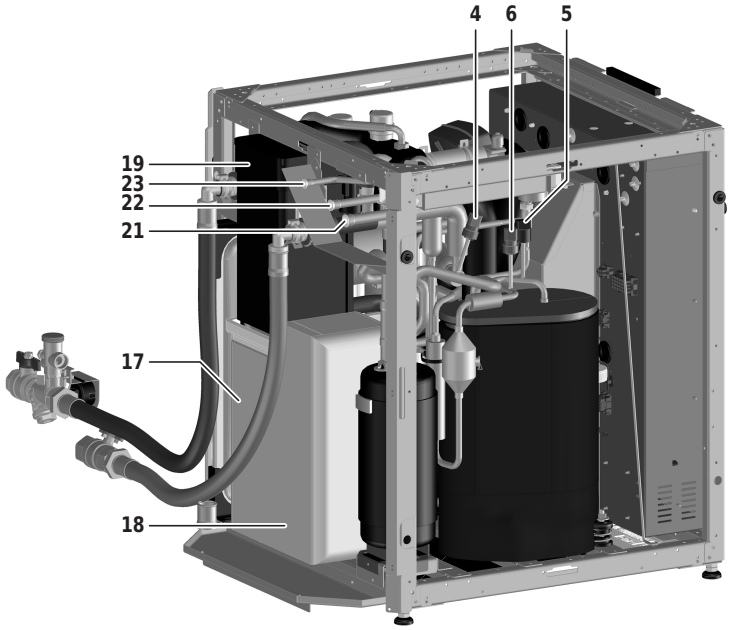
See "2. General safety precautions" on page 2.

5.2. Main components in the unit

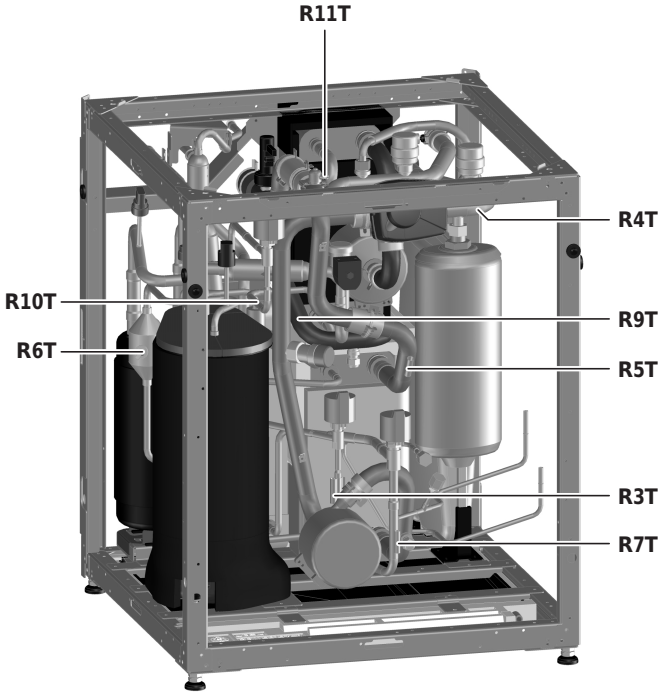
Reversible unit (EKHVMYD)





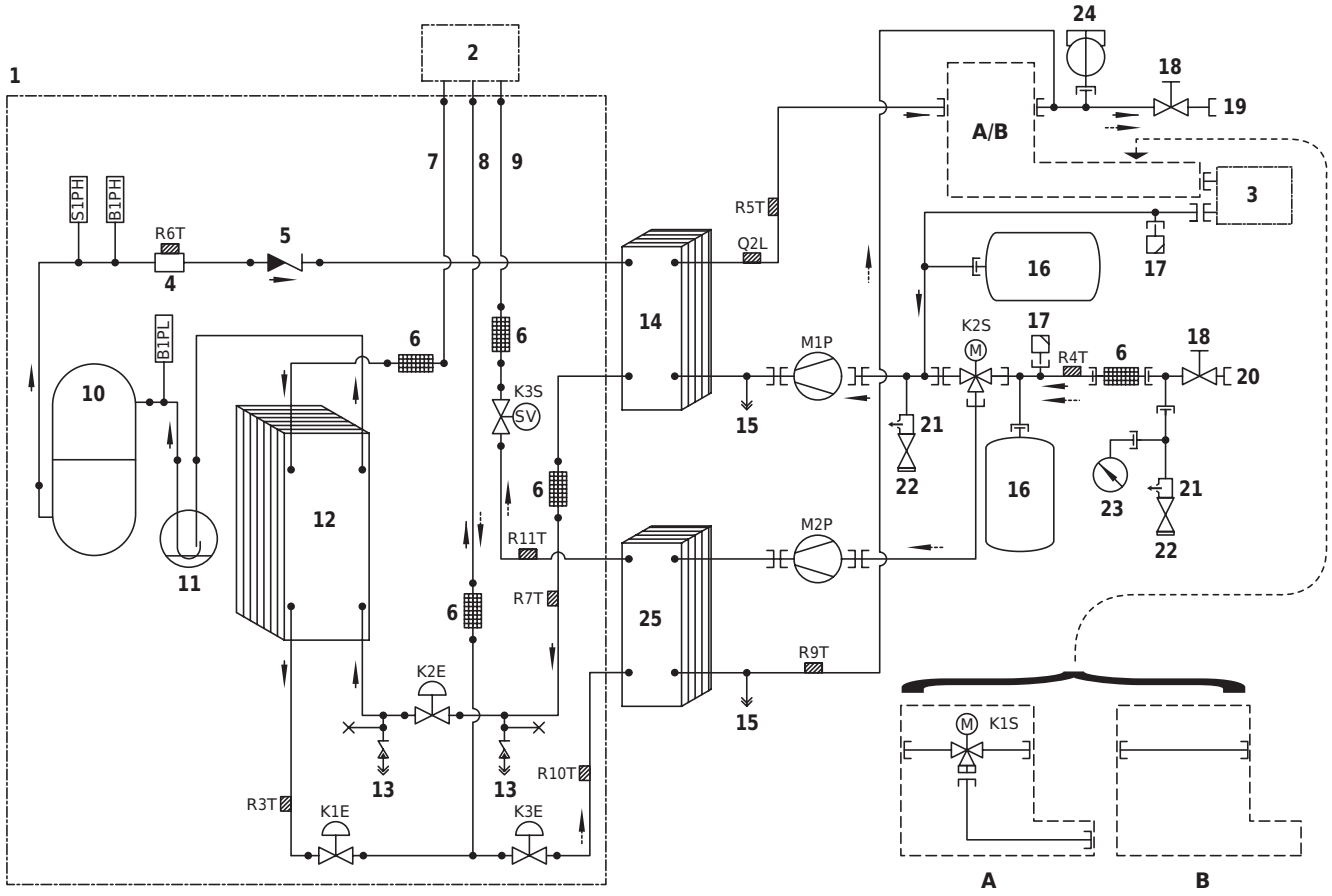


1	R134a accumulator	**14**	Flow switch
2	R134a compressor	**15**	Expansion vessel (cooling/heating)
3	R134a discharge muffler	**16**	Expansion vessel (heating/domestic hot water heating)
4	R134a low pressure sensor	**17**	Heating plate heat exchanger
5	R134a high pressure switch	**18**	Cascade plate heat exchanger
6	R134a high pressure sensor	**19**	Cooling plate heat exchanger
7	R134a expansion valve	**20**	Cooling pump
8	R410A cooling expansion valve	**21**	R410A suction connection
9	R410A heating expansion valve	**22**	R410A discharge gas connection
10	Heating pump	**23**	R410A liquid connection
11	Cooling/heating 3-way valve	**24**	Switchbox
12	Air purge	**25**	Service port R134a high
13	Safety valve	**26**	Service port R134a low

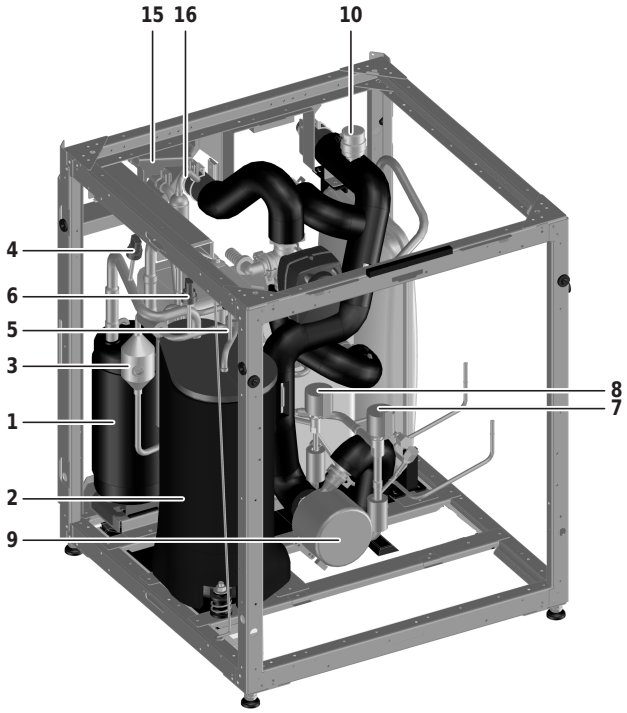


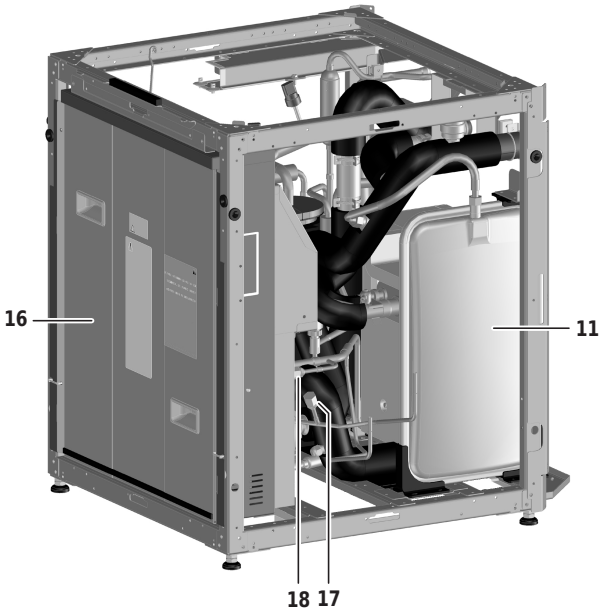
Sensor information:

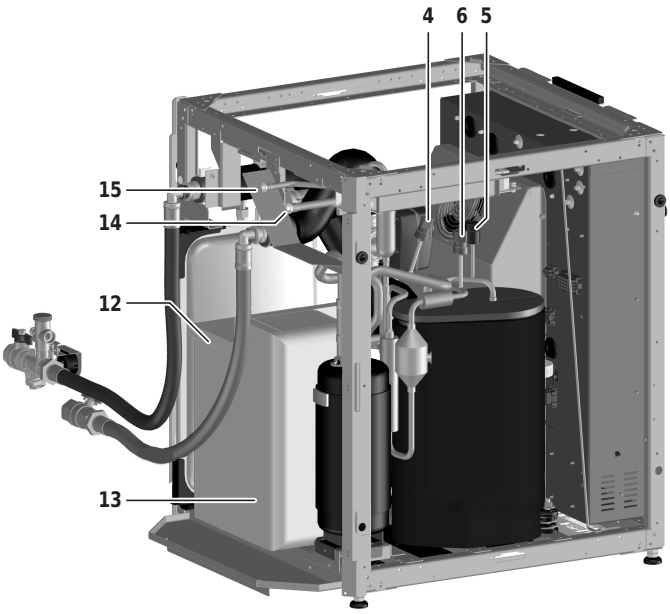
- R3T = R410A liquid temperature
- R4T = Water return temperature
- R5T = Heating leaving water temperature
- R6T = R134a discharge temperature
- R7T = R134a liquid temperature
- R9T = Cooling leaving water temperature
- R10T = R410A liquid temperature (cooling)
- R11T = R410A suction temperature



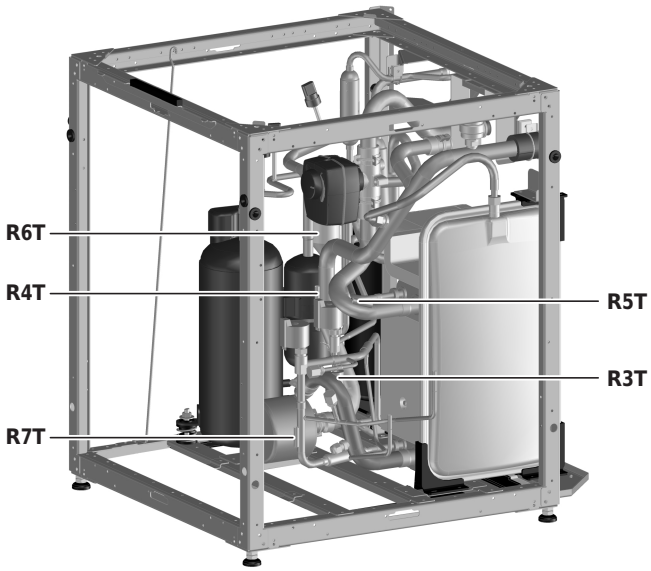
1	Refrigerant side
2	Outdoor unit (EMRQ)
3	Option domestic hot water tank
4	Muffler
5	Check valve
6	Filter
7	Field piping Ø12.7
8	Field piping Ø9.52
9	Field piping Ø15.9
10	Compressor
11	Accumulator
12	Cascade heat exchanger
13	Service port
14	Heating heat exchanger
15	Drain port
16	Expansion vessel
17	Air purge
18	Shut-off valve
19	Water outlet
20	Water inlet
21	Blow off
22	Safety valve
23	Pressure gauge
24	Flowswitch
25	Cooling heat exchanger
A	Install the 3-way valve in case of domestic hot water tank
B	Standard
S1PH	High pressure switch
B1PL	Low pressure sensor
B1PH	High pressure sensor
K1E	Electronic expansion valve (R410A; heating)
K2E	Electronic expansion valve (R134a)
K3E	Electronic expansion valve (R410A; cooling)
Q2L	Thermistor protector water piping
K1S	3-way valve
K2S	3-way valve (cooling/heating)
K3S	Solenoid valve
M1P	Pump (heating)
M2P	Pump (cooling)
→	Heating
- - →	Cooling





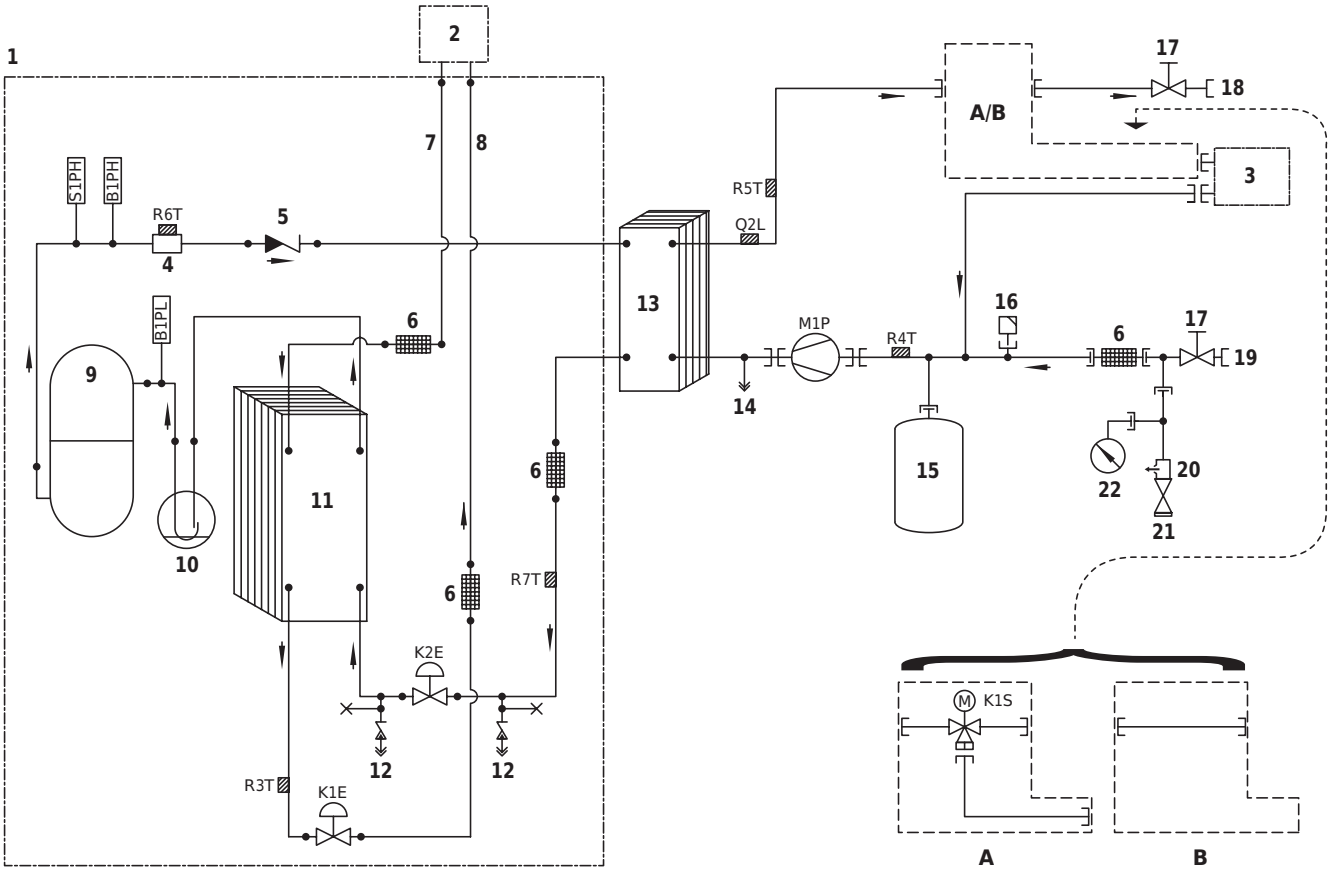


1	R134a accumulator
2	R134a compressor
3	R134a discharge muffler
4	R134a low pressure sensor
5	R134a high pressure switch
6	R134a high pressure sensor
7	R134a expansion valve
8	R410A heating expansion valve
9	Heating pump
10	Air purge
11	Expansion vessel
12	Heating plate heat exchanger
13	Cascade plate heat exchanger
14	R410A discharge gas connection
15	R410A liquid connection
16	Switchbox
17	Service port R134a high
18	Service port R134a low



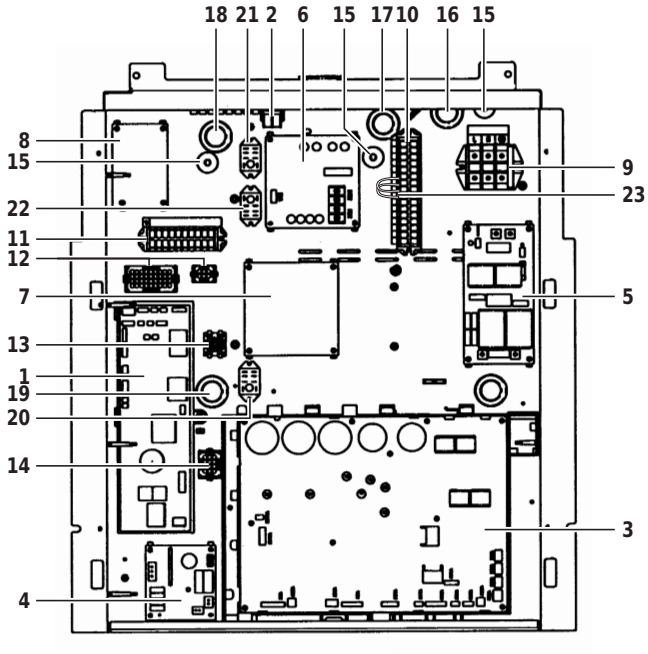
Sensor information:

- R3T = R410A liquid temperature
- R4T = Water return temperature
- R5T = Heating leaving water temperature
- R6T = R134a discharge temperature
- R7T = R134a liquid temperature



1	Refrigerant side
2	Outdoor unit (EMRQ)
3	Option domestic hot water tank
4	Muffler
5	Check valve
6	Filter
7	Field piping Ø12.7
8	Field piping Ø9.52
9	Compressor
10	Accumulator
11	Cascade heat exchanger
12	Service port
13	Heating heat exchanger
14	Drain port
15	Expansion vessel
16	Air purge
17	Shut-off valve
18	Water outlet
19	Water inlet
20	Blow off
21	Safety valve
22	Pressure gauge
A	Install the 3-way valve in case of domestic hot water tank
B	Standard
S1PH	High pressure switch
B1PL	Low pressure sensor
B1PH	High pressure sensor
K1E	Electronic expansion valve (R410A)
K2E	Electronic expansion valve (R134a)
K1S	3-way valve
Q2L	Thermistor protector water piping
M1P	Pump

5.3. Switch box main components



1. Main PCB
2. Control PCB
3. Inverter PCB
4. QA PCB
5. Filter PCB
6. Multi tenant PCB
7. Digital I/O PCB (optional)
8. Demand PCB (optional)
9. Terminal block X1M
   Main terminal block which allows easy connection of field wiring for power supply.
10. Terminal block X2M
    Field wiring terminal block for high voltage connections.
11. Terminal block X3M
    Field wiring terminal block for low voltage connections.
12. DC connector X1Y/X4Y
13. AC connector X3Y
14. Pump connector X2Y
15. Cable tie mountings
    The cable tie mountings allow to fix the field wiring with cable ties to the switch box to ensure strain relief.
16. Power wiring entry
17. High voltage field wiring entry
18. Low voltage field wiring entry
19. Compressor cable entry
20. Interface relay K1A
21. Interface relay K2A
22. Interface relay K3A
23. Wiring bridges

6. Design of the water circuit

The purpose of this chapter is to give guidelines for the design of the water circuit.

Precautions and guidelines that have impact to the unit prescribed in this manual are included into this chapter.

Actions needed during the installation of the unit prescribed in this manual are described in the chapter "7.6. Water piping" on page 25.

WARNING

It is strongly recommended to install an additional filter on the heating water circuit. Especially to remove metallic particles from the field heating piping, it is advised to use a magnetic or cyclone filter which can remove small particles. Small particles can damage the unit and will not be removed by the standard filter of the heat pump unit.

6.1. Selection of the type of heat emitters

The selection of the heat emitter is the choice of the end customer. The choice of the heat emitter will define the needed water temperature from the unit.

For heating mode

Based on the needed water temperature for the heat emitters, following range can be defined:

1. Low temperature (Leaving water temperature range from 25°C to 40°C).
   Typical example: floor heating.
2. Medium temperature (Leaving water temperature range from 40°C to 55°C).
   Typical example: low temperature radiators or convectors.
3. High temperature (Leaving water temperature range from 55°C to 75°C).
   Typical example: radiators.

For cooling mode

Fan coil units are advised as heat emitters.

NOTE

- If floor cooling is used, it is the responsibility of the installer to take the needed precautions to avoid floor sweating.
- The draining of the fancoil units are the responsibility of the installers.
- When radiators are used, a shut-off valve must be installed to avoid sweating of the radiators. (Refer to "6.3. Application examples for heating only units" on page 13).

In a house a combination of the above mentioned heat emitters is possible.

Once the heat emitters are chosen, the capacity of these heat emitters should be defined and from this the dimensioning and position of the heat emitters in the different rooms should be decided.

An important parameter of the heat emitters is the temperature difference between entering water and leaving water.

This will define the water flow in the system.

Finally, the piping layout from the heat source to the different heat emitters needs to be drawn.

This will finally define following important parameters:

- Minimal water volume in the system.
- Maximal water volume in the system.
- Minimal and maximal water flow in system.
- Maximal pressure drop in the system.

NOTE

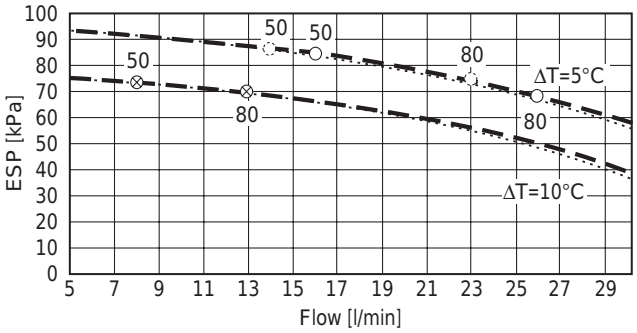
In refurbishment applications, the water system will already be fixed. It is utmost important for these kind of installations to know the parameters mentioned above.

6.2. General precautions concerning water circuit

Before continuing the installation of the unit, check the following points:

- The maximum water pressure is 4 bar.
- The maximum water temperature is 80°C.
- Provide adequate safeguards in the water circuit to be sure that the water pressure will never exceed the maximum allowable working pressure (4 bar).
- Shut-off valves from flexible hoses delivered with the unit should be installed so that normal servicing can be accomplished without draining the system.
- Drain taps must be provided at all low points of the system to permit complete drainage of the circuit during maintenance or service to the unit. A drain valve is provided in the unit to drain the water from the unit water system.
- Be sure to provide a proper drain for the pressure relief valve to avoid any water coming into contact with electrical parts.
- Air vents must be provided at all high points of the system. The vents shall be located at points which are easily accessible for servicing. An automatic air purge is provided inside the indoor unit. Check that this air purge valve is not tightened too much so that automatic release of air in the water circuit remains possible.
- Take care that the components installed in the field piping can withstand the water pressure and temperature.
- Always use materials which are compatible with the water used in the system and with the materials used on the unit.
- Select piping diameter in relation to required water flow and available ESP of the pump.

When designing the hydraulic system always consider the available static pressure of the indoor unit.



ESP (kPa)	External static pressure (kPa)
flow (l/min)	Flow (l/min)
— — —	Without 3-way valve
.....	Including 3-way valve
⊗	Maximum external static pressure if ΔT=10°C (heating)
○	Maximum external static pressure if ΔT=5°C (heating)
◌	Maximum external static pressure if ΔT=5°C (cooling)
50/80	Identification of the unit capacity

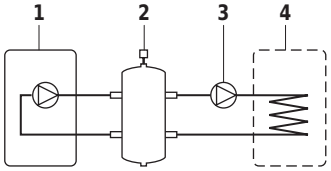
NOTE

- The ESP curves are the maximum ESP curves for different ΔT types (pump rpm=4000 for ΔT=5°C; pump rpm=3600 for ΔT=10°C). The pump of the indoor module is inverter controlled and controls to have a fixed ΔT between return and leaving water temperature.
- In case of installing a domestic hot water tank there is an additional pressure drop over the 3-way valve (delivered as accessory with the tank).

NOTE

When replacing an old gas or oil boiler by an air to water pump system:

- please always check the specifications of the pump of the old unit;
- if the external static pressure of that pump is higher than the external static pressure of the air to water pump system, please install an additional pump with higher external static pressure in combination with a balancing bottle.



1	Air to water pump system
2	Balancing bottle
3	High external static pressure pump
4	High external static pressure system

Check that the total water volume in the installation, excluding the internal water volume of the unit, is 20 l minimum.

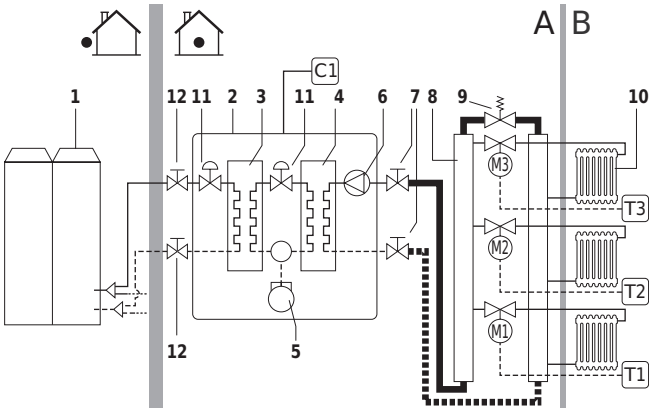
WARNING

In most applications this miminum water volume will have a satisfying result.

In critical processes or in rooms with a high heat load though, extra water volume might be required

When circulation in each space heating/radiator loop is controlled by remotely controlled valves, it is important that this minimum water volume is kept even if all the valves are closed.

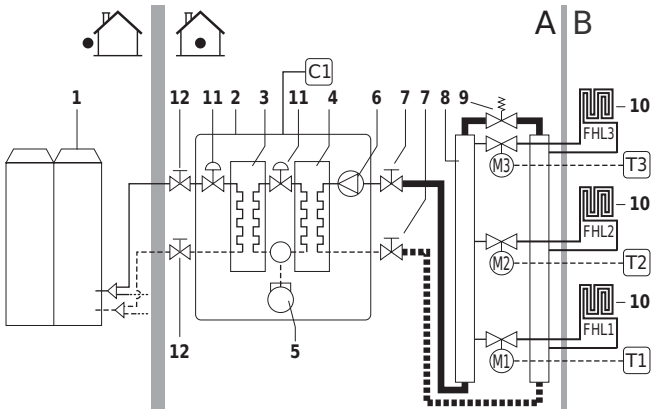
Example (See "6.3. Application examples for heating only units" on page 13.)



1	Outdoor unit	**10**	Radiator (field supply)
2	Indoor unit	**11**	Electronic expansion valve
3	Refrigerant heat exchanger	**12**	Indoor unit refrigerant stop valve
4	Water heat exchanger	**C1**	Remote controller
5	Compressor	**M1...M3**	Individual motorized valve to control loop radiators (field supply)
6	Pump		
7	Shut-off valve	**T1...T3**	Individual room thermostat (field supply)
8	Collector (field supply)		
9	By-pass valve (field supply)	**A**	Installation space
		B	Living room

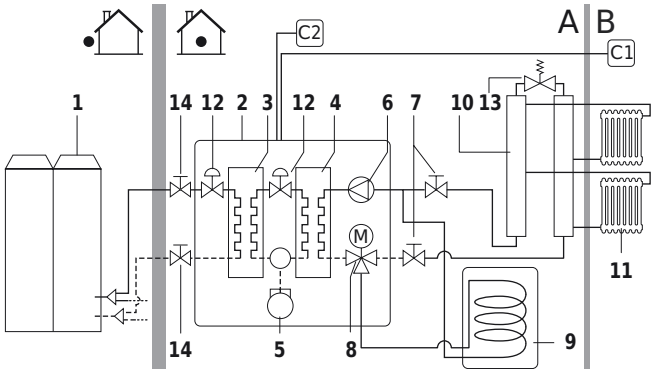
6.3. Application examples for heating only units

Floor heating without tank



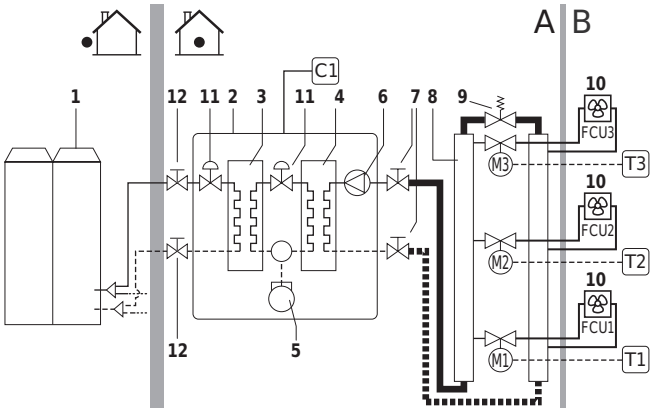
1	Outdoor unit	**11**	Electronic expansion valve
2	Indoor unit	**12**	Indoor unit refrigerant stop valve
3	Refrigerant heat exchanger		
4	Water heat exchanger	**C1**	Remote controller
5	Compressor	**M1...M3**	Individual motorized valve to control loop radiators (field supply)
6	Pump		
7	Shut-off valve	**T1...T3**	Individual room thermostat (field supply)
8	Collector (field supply)		
9	By-pass valve (field supply)	**A**	Installation place
10	FHL: Floor heating loop (field supply)	**B**	Living room

Radiator with tank



1	Outdoor unit	**11**	Radiator (field supply)
2	Indoor unit	**12**	Electronic expansion valve
3	Refrigerant heat exchanger		
4	Water heat exchanger	**13**	By-pass valve (field supply)
5	Compressor		
6	Pump	**14**	Indoor unit refrigerant stop valve
7	Shut-off valve		
8	Motorized 3-way valve (optional)	**C1**	Remote controller (master)
9	Domestic hot water tank (optional)	**C2**	Remote controller (slave)
		A	Installation place
10	Collector (field supply)	**B**	Living room

Fan coils without tank

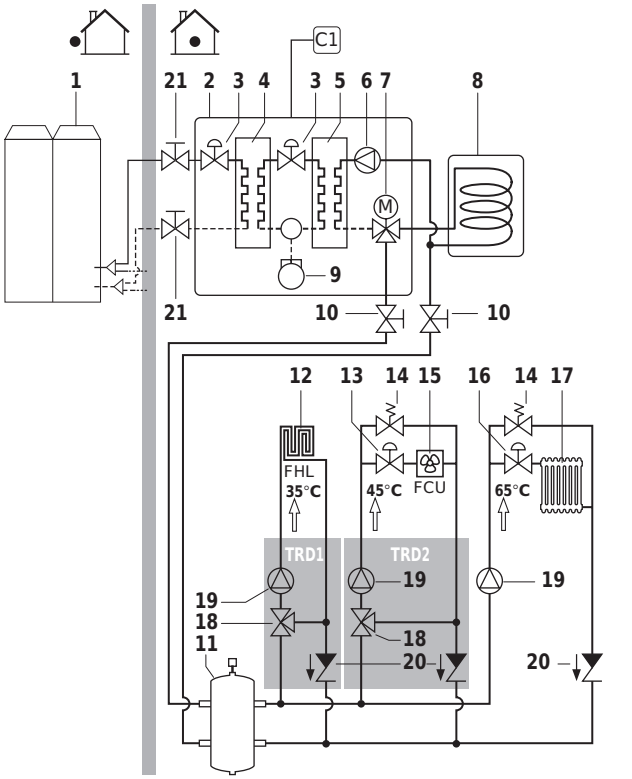


1	Outdoor unit	**11**	Electronic expansion valve
2	Indoor unit	**12**	Indoor unit refrigerant stop valve
3	Refrigerant heat exchanger		
4	Water heat exchanger	**C1**	Remote controller
5	Compressor	**A**	Installation place
6	Pump	**B**	Living room
7	Shut-off valve	**M1...M3**	Individual motorized valve to control loop fan coils (field supply)
8	Collector (field supply)		
9	By-pass valve (field supply		
10	FCU: Fan coil unit (field supply)	**T1...T3**	Individual room thermostat (field supply)

Application examples with several heat emitters

Using different heat emitters means using different water set points for the system.

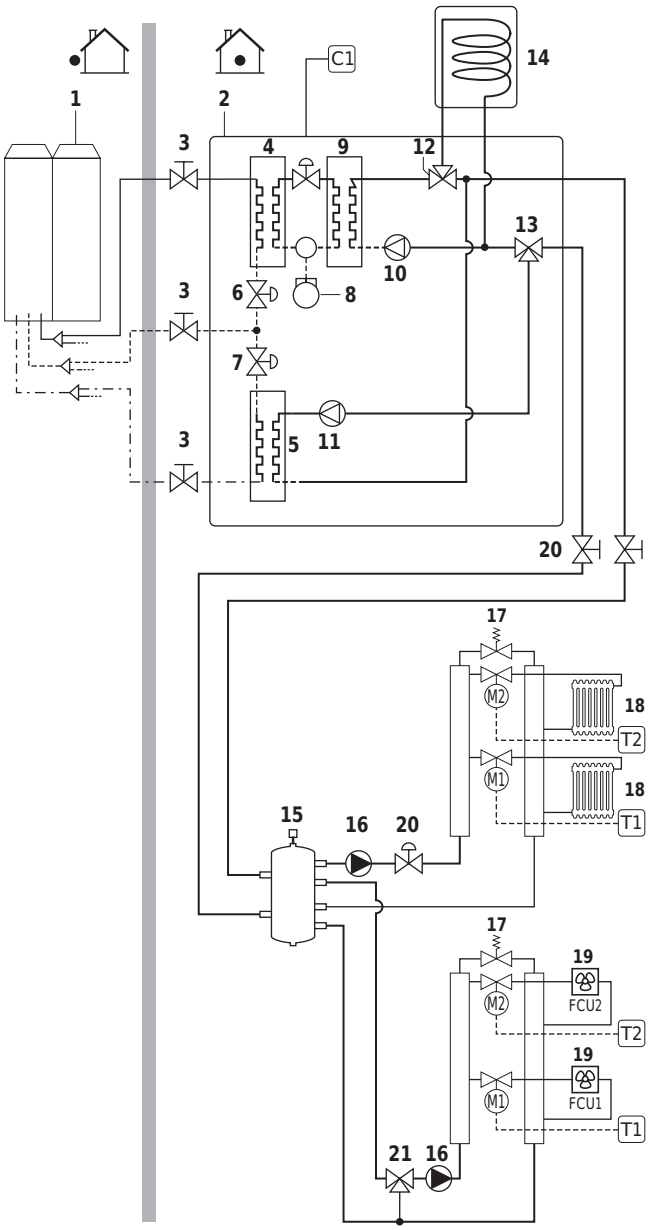
Such installations must be done using a balancing bottle and each kind of heat emitter should have a specific pump.



1	Outdoor unit	**13**	Shut-off valve (field supply)
2	Indoor unit	**14**	By-pass valve (field supply)
3	Electronic expansion valve	**15**	FCU: Fan coil unit (field supply)
4	Refrigerant heat exchanger	**16**	Shut-off valve (field supply)
5	Water heat exchanger	**17**	Radiator (field supply)
6	Pump	**18**	Mixing valve (field supply)
7	Motorized 3-way valve (optional)	**19**	Pump (field supply)
8	Domestic hot water tank (optional)	**20**	Non-return valve (field supply)
9	Compressor	**C1**	Remote controller
10	Shut-off valve	**TRD1**	Temperature reducing device 1 (field supply)
11	Balancing bottle (field supply)		
12	FHL: Floor heating loop (field supply)	**TRD2**	Temperature reducing device 2 (field supply)

Refer to chapter "9.8. Multiple set point control" on page 46 for more information about the configuration of your system.

6.4. Application examples for reversible units



1	Outdoor unit	**14**	Domestic hot water tank (optional)
2	Indoor unit	**15**	Balancing bottle (field supply)
3	Indoor unit refrigerant stop valves	**16**	Pump (field supply)
4	Cascade heat exchanger	**17**	By-pass valve (field supply)
5	Cooling heat exchanger	**18**	Radiator (field supply)
6	Heating expansion valve	**19**	FCU: Fan coil unit (field supply)
7	Cooling expansion valve		
8	R134a compressor	**20**	Shut-off valve (field supply)
9	Heating heat exchanger	**21**	Temperature reducing valve (field supply)
10	Heating pump		
11	Cooling pump	**C1**	Remote controller
12	Heating - domestic hot water 3-way valve (optional)	**M1...M2**	Individual motorized valve to control loop (field supply)
13	Cool/heat 3-way valve	**T1...T2**	Individual room thermostat (field supply)

NOTE

In order to avoid radiator sweating during cooling operation, shut-off valve (20) should be installed. This shut-off valve can be controled from the indoor unit by connecting to X2M position 17 and 18 (refer to wiring diagram for further details).

6.5. Selection of meters for billing purpose

Daikin advises an allocation method based on the measurements of consumed heat of each indoor unit. Following measurements are required:

- the outdoor unit power consumption: by means of an electrical power meter
- the indoor unit energy consumption:
  - EKHVMYD by means of a heat and cooling meter
  - EKHVMRD by means of a heat meter
- the indoor unit energy consumption during domestic hot water operation (if installed): by means of a heat meter.

The selection of the meters for billing purpose is the choice of the end customer.

Refer to databook for specifications to be used for meter selection.

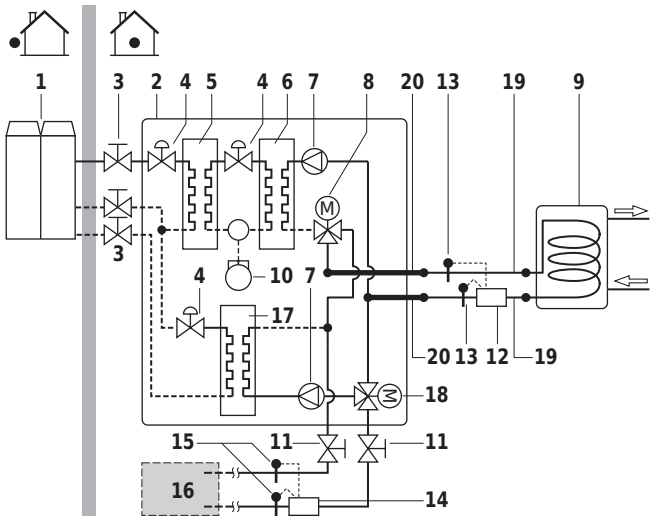
WARNING

Selection and installation of the meters should be done in accordance with applicable legislation.

Check the meter supplier documentation for detailed installation instructions. Before installation of the meters, check the following points:

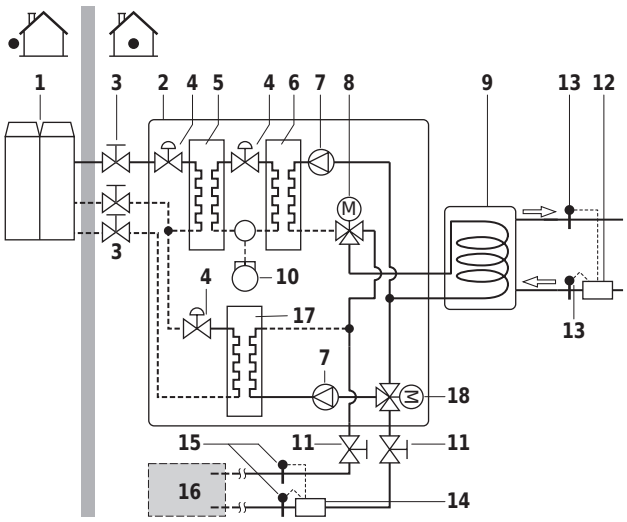
- install separate watt-hour meter for each outdoor unit
- all heat meters in the apartment are to be supplied by the same supplier
- to facilitate readout and service work, heat meters should be easily accessible. Choose a mounting location with sufficient clearance for data read-out.
- avoid installation of meters inside the indoor unit service space in order to guarantee indoor unit servicing.
- all heat meters and heating and cooling meters in the apartment building are to be installed at identical piping distance from the indoor unit.

EKHVMYD – Tank heat meter between tank and indoor unit



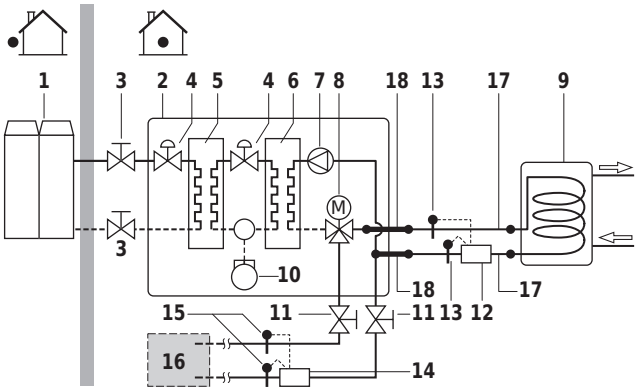
1	Outdoor unit	**14**	Flow measuring unit of space heat and cooling meter (field supply)
2	Indoor unit	**15**	Temperature sensor space heat and cooling meter (field supply)
3	Indoor unit refrigerant stop valves	**16**	Space heating and cooling applications
4	Electronic expansion valve	**17**	Cooling heat exchanger
5	Refrigerant heat exchanger	**18**	Cool/heat 3-way valve
6	Heating heat exchanger	**19**	Field piping
7	Pump	**20**	Tank billing kit (optional) in case the domestic hot water tank is mounted on top of the indoor unit OR Floor mounted tank kit (optional) in case the domestic hot water tank is installed on the floor next to the indoor unit
8	Motorized 3-way valve (optional)		
9	Domestic hot water tank (optional)		
10	Compressor		
11	Shut-off valve		
12	Flow measuring unit of heat meter (field supply)		
13	Temperature sensors heat meter (field supply)		

EKHVMYD – Tank heat meter on tapping side



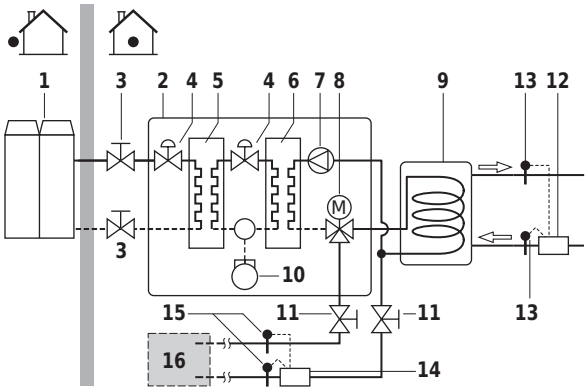
1	Outdoor unit	**13**	Temperature sensors heat meter (field supply)
2	Indoor unit	**14**	Flow measuring unit of space heat and cooling meter (field supply)
3	Indoor unit refrigerant stop valves	**15**	Temperature sensor space heat and cooling meter (field supply)
4	Electronic expansion valve	**16**	Space heating and cooling applications
5	Refrigerant heat exchanger	**17**	Cooling heat exchanger
6	Heating heat exchanger	**18**	Cool/heat 3-way valve
7	Pump		
8	Motorized 3-way valve (optional)		
9	Domestic hot water tank (optional)		
10	Compressor		
11	Shut-off valve		
12	Flow measuring unit of heat meter (field supply)		

EKHVMRD – Tank heat meter between tank and indoor unit



1	Outdoor unit
2	Indoor unit
3	Indoor unit refrigerant stop valves
4	Electronic expansion valve
5	Refrigerant heat exchanger
6	Heating heat exchanger
7	Pump
8	Motorized 3-way valve (optional)
9	Domestic hot water tank (optional)
10	Compressor
11	Shut-off valve
12	Flow measuring unit of heat meter (field supply)
13	Temperature sensors heat meter (field supply)
14	Flow measuring unit of space heat meter (field supply)
15	Temperature sensor space heat meter (field supply)
16	Space heating applications
17	Field piping
18	Tank billing kit (optional) in case the domestic hot water tank is mounted on top of the indoor unit OR Floor mounted tank kit (optional) in case the domestic hot water tank is installed on the floor next to the indoor unit

EKHVMRD – Tank heat meter on tapping side



1	Outdoor unit
2	Indoor unit
3	Indoor unit refrigerant stop valves
4	Electronic expansion valve
5	Refrigerant heat exchanger
6	Heating heat exchanger
7	Pump
8	Motorized 3-way valve (optional)
9	Domestic hot water tank (optional)
10	Compressor
11	Shut-off valve
12	Flow measuring unit of heat meter (field supply)
13	Temperature sensors heat meter (field supply)
14	Flow measuring unit of space heat meter (field supply)
15	Temperature sensor space heat meter (field supply)
16	Space heating applications

7. INSTALLATION OF THE UNIT

7.1. Selecting an installation location

WARNING

Be sure to provide for adequate measures in order to prevent that the unit be used as a shelter by small animals.

Small animals making contact with electrical parts can cause malfunctions, smoke or fire. Please instruct the customer to keep the area around the unit clean and clear.

General precautions on installation location

Select an installation site that meets the following requirements:

- The foundation must be strong enough to support the weight of the unit. The floor is flat to prevent vibrations and noise generation and to have sufficient stability.
  This is especially of importance when the optional domestic hot water tank is installed on top of the unit.
- The space around the unit is adequate for maintenance and servicing (refer to "Service space of the unit" on page 21).
- The space around the unit allows for sufficient air circulation.
- There is no danger of fire due to leakage of inflammable gas.
- The equipment is not intended for use in a potentially explosive atmosphere.
- Select the location of the unit in such a way that the sound generated by the unit does not disturb anyone, and the location is selected according the applicable legislation.
  If the sound is measured under actual installation conditions, the measured value will be higher than the sound pressure level mentioned in "13. Unit specifications" on page 58 due to environmental noise and sound reflections.
  Choose the installation location carefully and do not install in a sound sensitive environment (e.g. living room, bedroom, …)
- All piping lengths and distances have been taken into consideration (For requirements of piping length for the refrigerant piping, refer to the outdoor unit installation manual).

Requirement	Value
Maximum allowable distance between the domestic hot water tank and the indoor unit (only for installations with domestic hot water tank).	10 m

NOTE

If the installation is equipped with a domestic hot water tank (optional), please refer to the domestic hot water tank installation manual.

- Take care that in the event of a water leak, water cannot cause any damage to the installation space and surroundings.
- The installation location is frost-free.
- Be sure that sufficient precautions are taken, in accordance with the applicable legislation, in case of refrigerant leakage.
- When installing the unit in a small room, take measures in order to keep the refrigerant concentration from exceeding allowable safety limits in the event of a refrigerant leak.

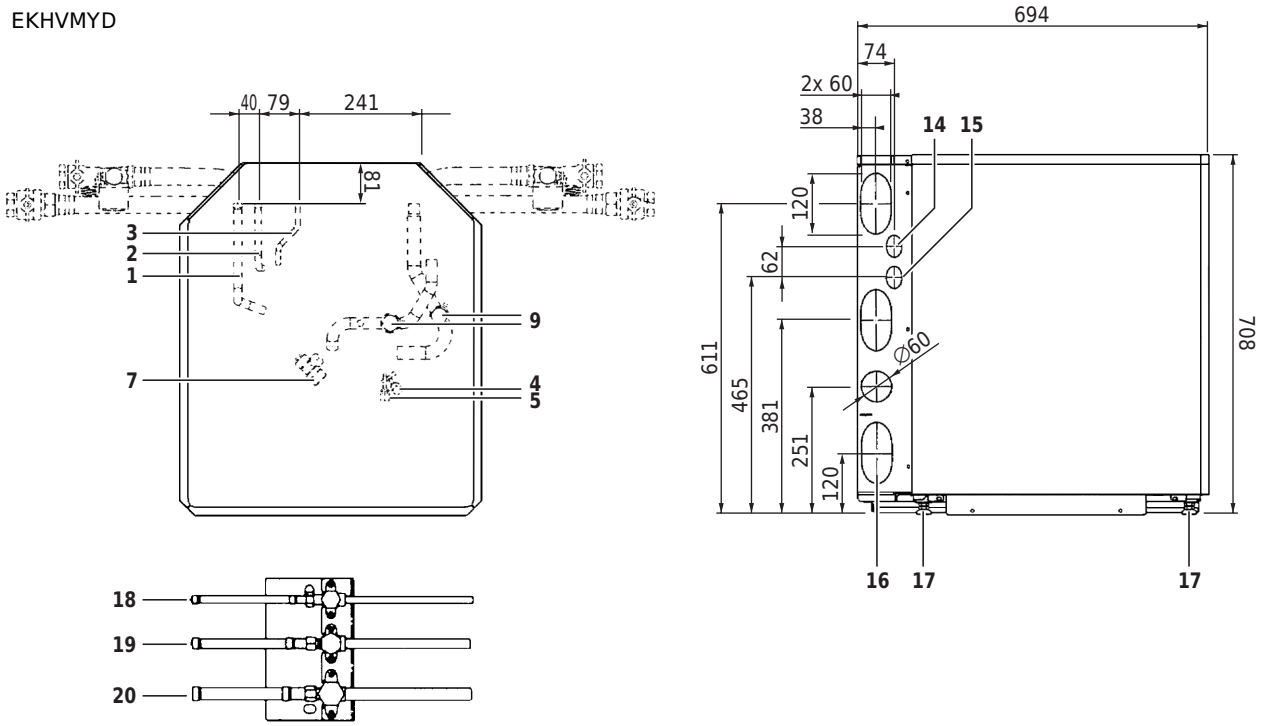
Excessive refrigerant concentrations in a closed room can lead to oxygen deficiency.

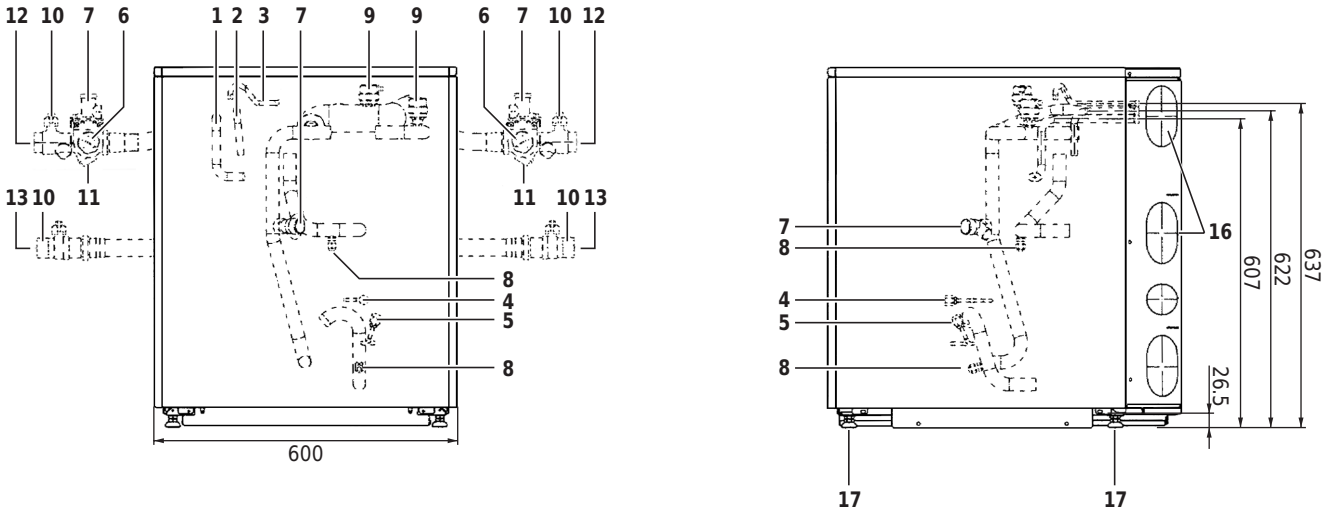
- Do not climb, sit or stand on top of the unit.
- Do not place any objects or equipment on top of the unit (top plate).
- Do not install the unit in places often used as workplace. In case of construction works, where a lot of dust is created, the unit must be covered.
- Do not install the unit in places with high humidity (e.g. bathroom) (max humidity (RH)=85%).

7.2. Dimensions and service space

Dimensions of unit

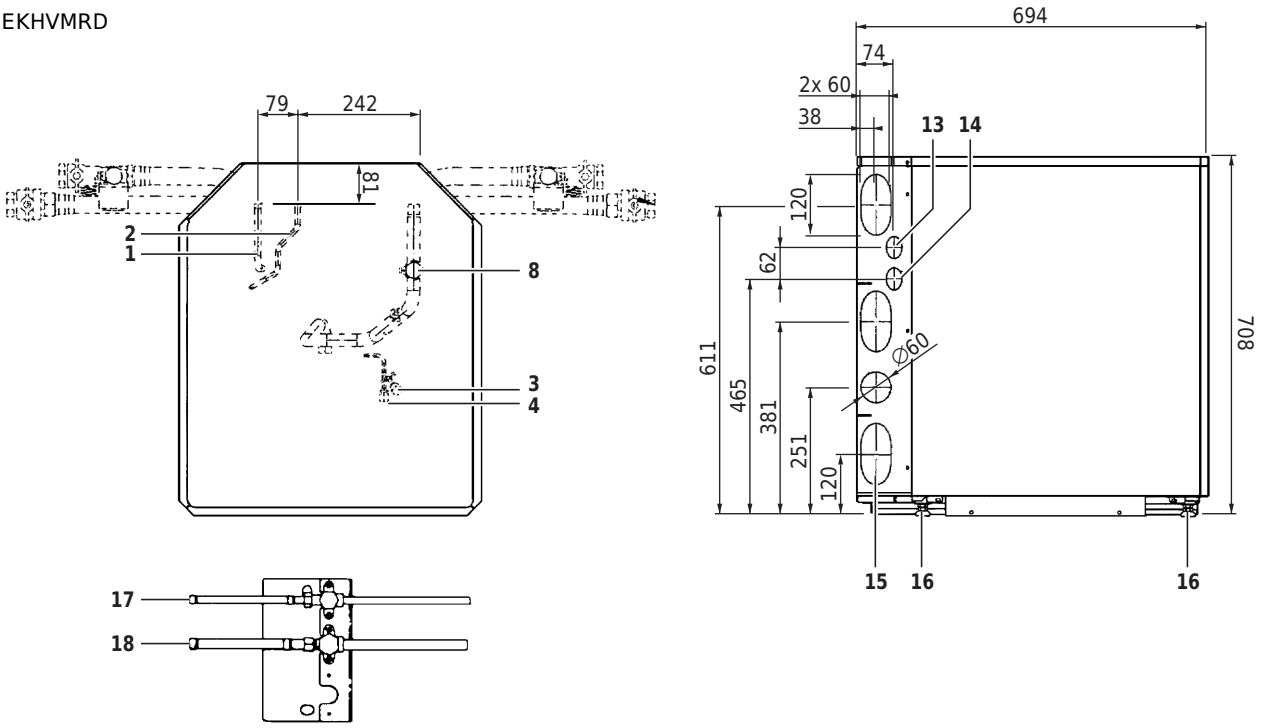
EKHVMYD

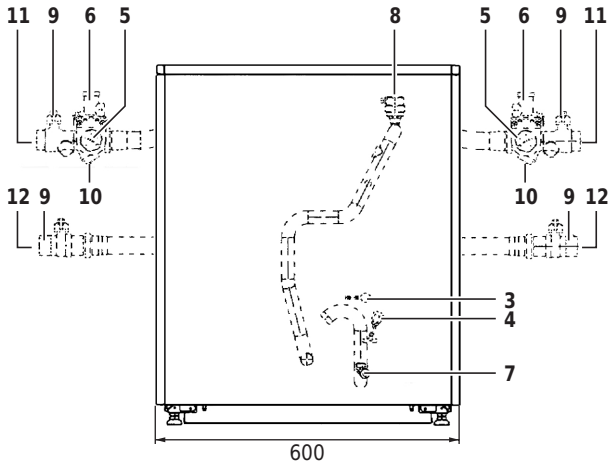


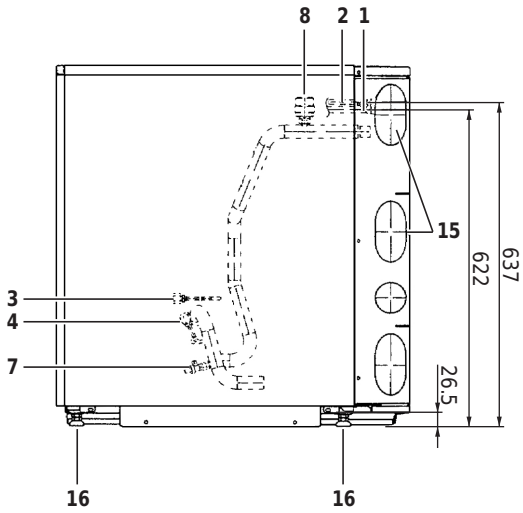


1	Suction pipe connection Ø15.9 solder (R410A)	**11**	Water filter
2	Discharge pipe connection Ø12.7 solder (R410A)	**12**	Water in connection G1" (female)
3	Liquid pipe connection Ø9.52 solder (R410A)	**13**	Water out connection G1" (female)
4	R134a service ports 5/16" flare (low)	**14**	Control wiring intake (knock-out hole Ø37)
5	R134a service ports 5/16" flare (high)	**15**	Power supply wiring intake (knock-out hole Ø37)
6	Pressure gauge	**16**	Knock-out hole for refrigerant piping and water piping
7	Blow off valve	**17**	Levelling feet
8	Drain valve water circuit	**18**	Liquid stop valve Ø9.52 solder (R410A)
9	Air purge	**19**	Discharge stop valve Ø12.7 solder (R410A)
10	Shut-off valves	**20**	Suction stop valve Ø15.9 solder (R410A)

EKHVMRD

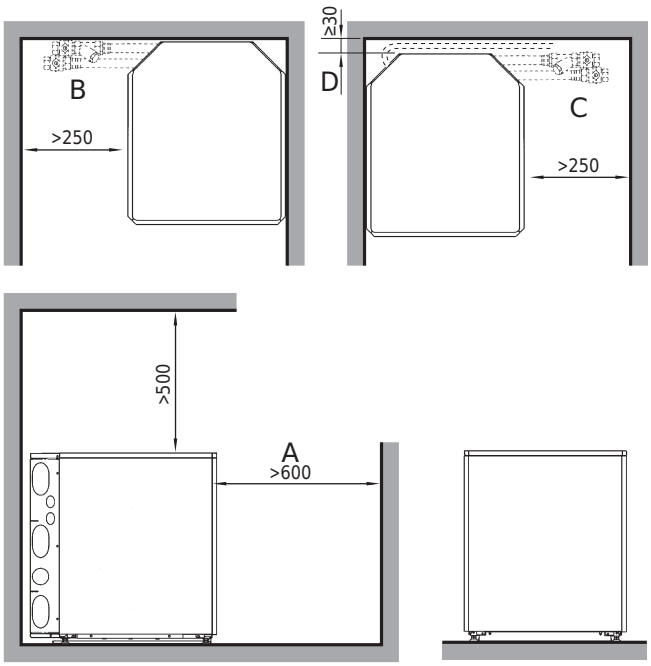






1	Discharge pipe connection Ø12.7 solder (R410A)
2	Liquid pipe connection Ø9.52 solder (R410A)
3	R134a service ports 5/16" flare (low)
4	R134a service ports 5/16" flare (high)
5	Pressure gauge
6	Blow off valve
7	Drain valve water circuit
8	Air purge
9	Shut-off valves
10	Water filter
11	Water in connection G1" (female)
12	Water out connection G1" (female)
13	Control wiring intake (knock-out hole Ø37)
14	Power supply wiring intake (knock-out hole Ø37)
15	Knock-out hole for refrigerant piping and water piping
16	Levelling feet
17	Liquid stop valve Ø9.52 solder (R410A)
18	Discharge stop valve Ø12.7 solder (R410A)

Service space of the unit



A Space required for switch box removal

B Left installation (top view)

C Right installation (top view)

D Space required for wiring (in case of right installation)

7.3. Inspecting, handling and unpacking the unit

- At delivery, the unit must be checked and any damage must be reported immediately to the carrier's claims agent.
- Bring the unit as close as possible to its final installation position in its original package to prevent damage during transport.
- Unpack the indoor unit completely according to the instructions mentioned on the unpacking instructions sheet.
- Check if all indoor unit accessories (see "4. Accessories" on page 4) are enclosed.

WARNING

Tear apart and throw away plastic packaging bags so that children will not play with them. Children playing with plastic bags face danger of death by suffocation.

7.4. Installing the unit

NOTE

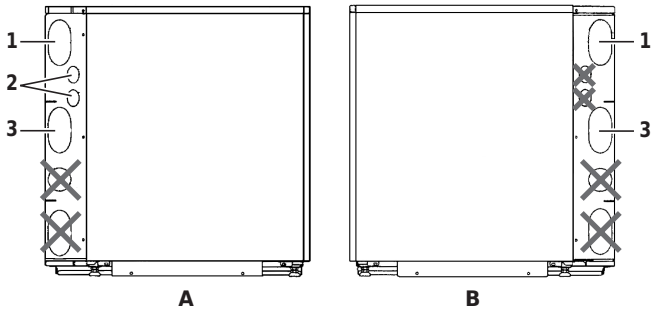
Installation shall be done by an installer, the choice of materials and installation shall comply with the applicable legislation. In Europe the EN378 is the applicable standard that shall be used.

Preparation before installation on final installation place

After unpacking the unit and before installing the unit on its final installation position, following preparations need to be done:

- Open the unit
  Refer to the "5.1. Opening the unit" on page 4.
- Knock out the needed knockout holes.
  This installation instruction consists of installation of
  - refrigerant piping,
  - water piping and
  - electrical wiring.

  For each of these a dedicated knock out hole is foreseen at the backside of the unit:



1 Knock out hole for refrigerant piping

2 Knock out hole for electrical wiring

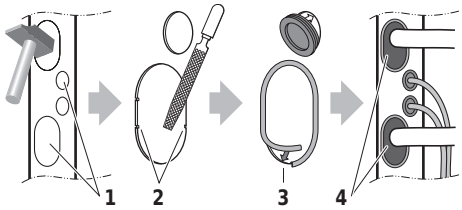
3 Knock out hole for water piping

A Left installation

B Right installation

- Knockout holes are foreseen at both sides of the unit. Pay attention to knock out the correct holes depending on your installation location.
- Refrigerant piping and water piping must go through different knockout holes.
- The electrical wiring must always enter the unit at the upper knockout holes at the left side of the unit (see the figure above).
- Do NOT use the lower knockout holes.

To punch a knockout hole, punch it with a hammer, remove all burrs and install the supplied grommets (see "4. Accessories" on page 4).



1 Knockout hole

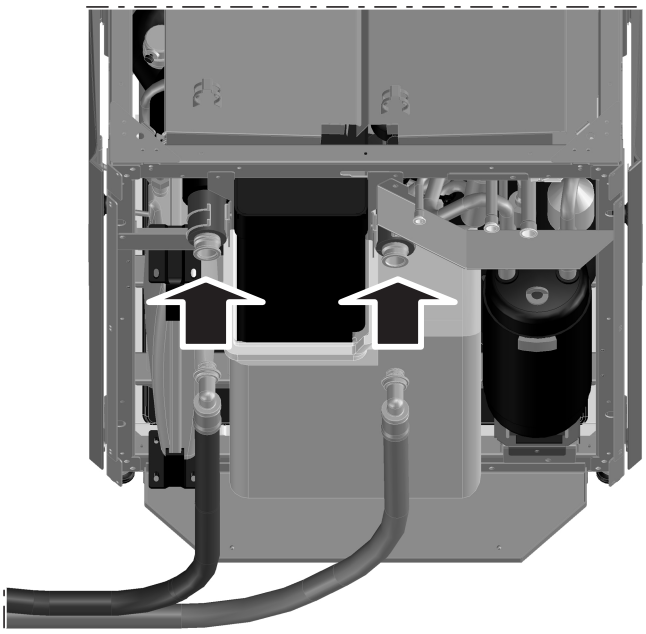
2 Burr

3 Grommet

4 Putty or insulation materials (field supply)

- Before installation of the unit to its final position, it is advised to connect the water flexible pipes and refrigerant pipes to the unit (delivered as accessory).

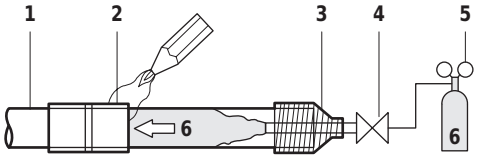
- Take out all accessories from the indoor unit.
- Connect the flexible pipes to the indoor unit connection.



- Installation of accessory pipes for refrigerant piping.
  Depending on left or right connection, different accessory pipes are delivered with the unit (refer to "4. Accessories" on page 4).
  The refrigerant piping needs to be brazed.

Caution for brazing.

- Make sure to blow through with nitrogen when brazing.
  Blowing through with nitrogen prevents the creation of large quantities of oxidized film on the inside of the piping. An oxidized film adversely affects valves and compressors in the refrigerating system and prevents proper operation.
- The nitrogen pressure should be set to 0.02 MPa (i.e., just enough so it can be felt on the skin) with a pressure-reducing valve.

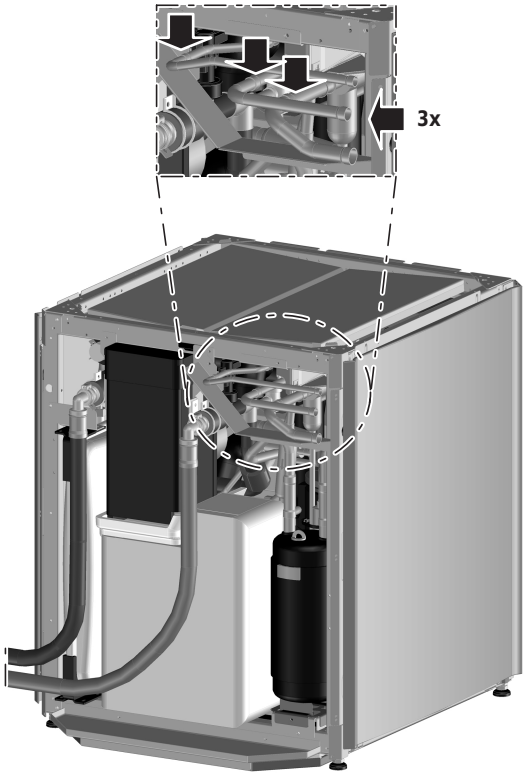


1	Refrigerant piping
2	Part to be brazed
3	Taping
4	Hands valve
5	Pressure-reducing valve
6	Nitrogen

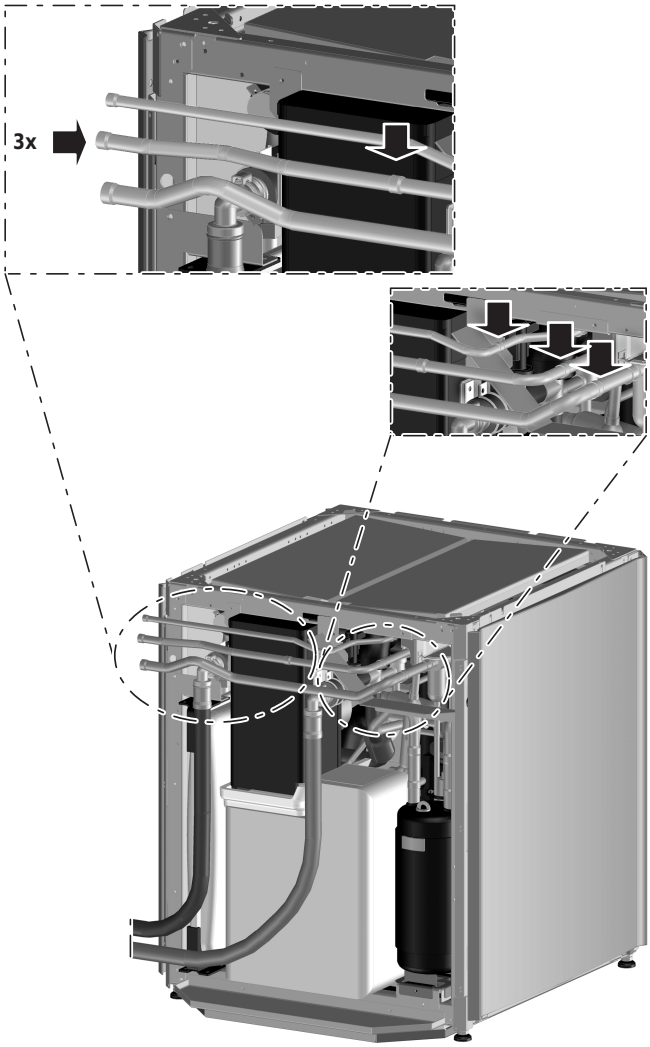
- Do not use anti-oxidants when brazing the pipe joints. Residue can clog pipes and break equipment.
- Do not use flux when brazing copper-to-copper refrigerant piping. Use phosphor copper brazing filler alloy (BCuP) which does not require flux.
- Flux has an extremely harmful influence on refrigerant piping systems. For instance, if chlorine based flux is used, it will cause pipe corrosion or, in particular, if the flux contains fluorine, it will deteriorate the refrigerant oil.

NOTE The back plate is not shown on the illustration, but it is not needed to take out the back plate for the installation.

Fixation of piping in case of left connection



Fixation of piping in case of right connection

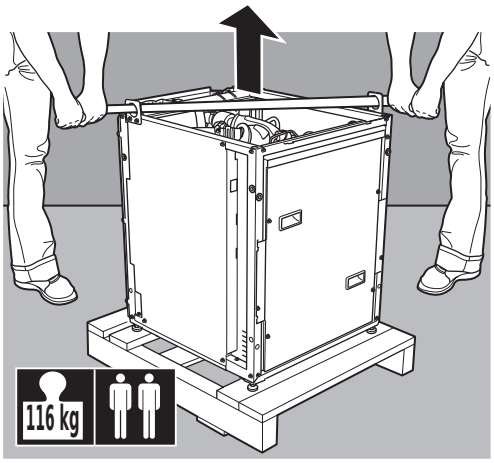


Installation on final installation position

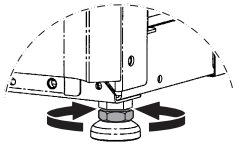
- Place the unit in the appropriate installation location.

The weight of the unit is approximately 116 kg. At least two persons are required to lift the unit.

Use the plates delivered with the unit to lift the unit.



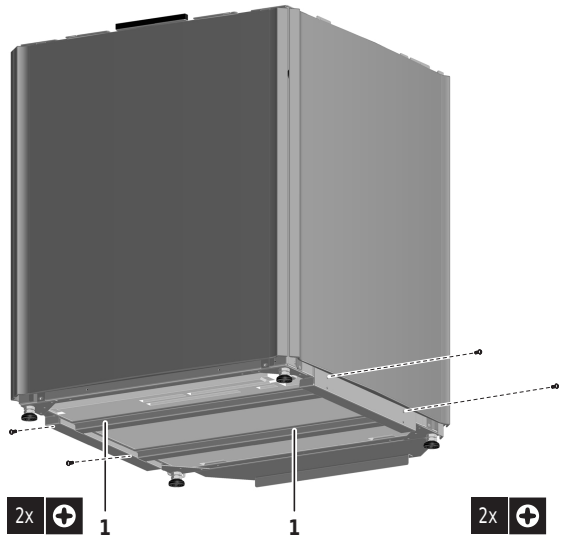
- Level the unit to a stable position using the levelling feet.



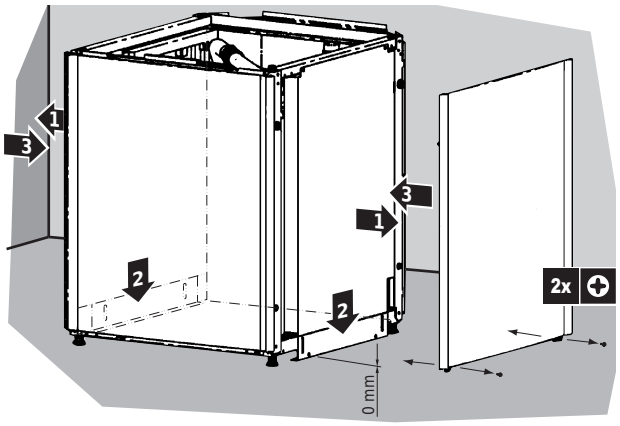
- Standard installation location of the optional domestic hot water tank is on top of the indoor unit.

  If available service space to left and/or right side is limited, carefully consider all tank module installation steps first.

- **Only for EKHVMYD:**
  Unscrew and remove the 2 beams (1) that protect the drain pan during transport.



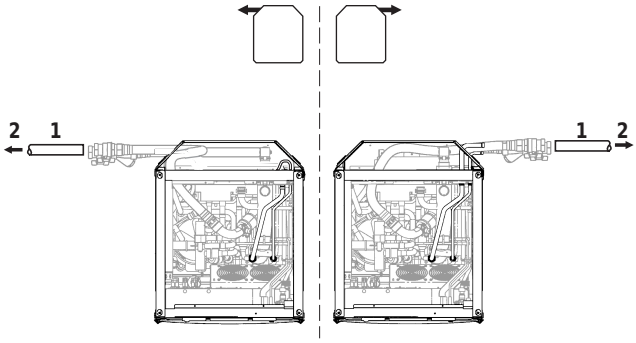
- Push the sound strips against the ground and fix the side plates with the appropriate screws.



- Close the sound panel(s) and decoration panel(s) which will be on the wall side and for which fixation is not possible anymore after the unit is put on its final location.

Connecting the water circuit

Water connections must be made. The connected flexible pipes need to be connected to the piping that leads to the heat emitters as follows:



1 Field piping

2 To heat emitters

Be careful not to deform the unit piping by using excessive force when connecting the piping. Deformation of the piping can cause the unit to malfunction.

If air, moisture or dust gets in the water circuit, problems may occur. Therefore, always take into account the following when connecting the water circuit:

- Use clean pipes only.
- Hold the pipe end downwards when removing burrs.
- Cover the pipe end when inserting it through a wall so that no dust and dirt enter.
- Use a good thread sealant for the sealing of the connections.
- When using non-brass metallic piping, make sure to insulate both materials from each other to prevent galvanic corrosion.
- Because brass is a soft material, use appropriate tooling for connecting the water circuit. Inappropriate tooling will cause damage to the pipes.

- The unit is only to be used in a closed water system. Application in an open water circuit can lead to excessive corrosion of the water piping.
- Never use Zn-coated parts in the water circuit. Excessive corrosion of these parts may occur as copper piping is used in the unit's internal water circuit.

NOTE

When using a 3-way valve or a 2-way valve in the water circuit, the maximum changeover time of the valve shall be less than 60 seconds.

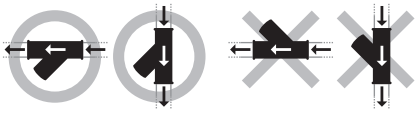
Precautions when connecting field piping and regarding insulation

The complete water circuit, inclusive all piping, must be insulated to prevent reduction of the heating capacity.

If the indoor ambient temperature is higher than 30°C and the humidity is higher than RH 80% then the thickness of the insulation materials should be at least 20 mm in order to avoid condensation on the surface of the insulation.

NOTE

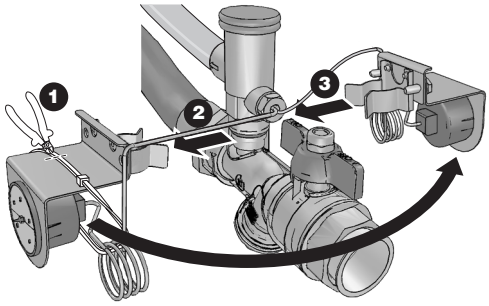
- Consider carefully the installation location of the flexible water inlet pipe.
- According to the direction of the water flow, the water filter must be positioned as shown in the figure.



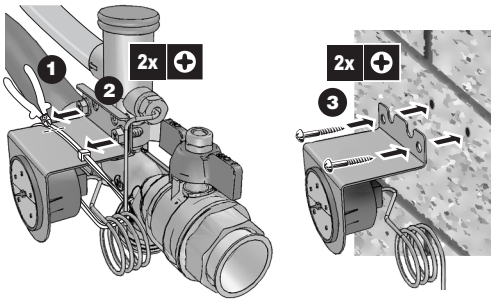
- Provide sufficient space allowing easy access to clean the water filter and regular operation check of the safety valve.
- Provide a flexible hose for pressure relief valve blow-off (field supply).
- Consider to support the water inlet pipe and water outlet pipe so not to stress the field piping.

It is very important to keep good visibility of the manometer. The position of the manometer can be changed as shown in the figure below. Make sure that the capillary tube does not come in contact with sharp edges and prevent bending of the capillary tube as much as possible.

- Change the position of the manometer when piping is on the left side of the unit



- Mounting of the manometer against a wall (the 2 screws are field supply).



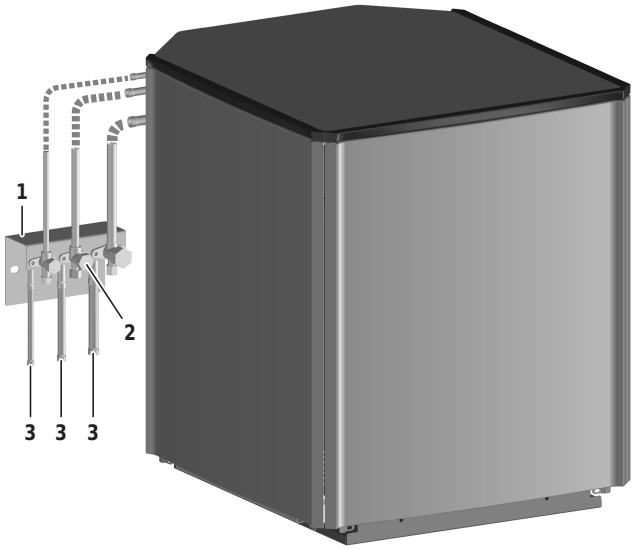
Fix the indoor unit refrigerant connections

NOTE

For servicing purposes, it is needed to be able to evacuate the refrigerant circuit. Therefore, stop valves are foreseen as accessories.

These stop valves must be installed near to the unit, and on an accessible place (when service is needed the stop valves need to be closed and equipment for recovery/vacuuming has to be connected).

Decide where to install the stop valves and position the stop valves on the wall by using the support plate.



1 Support plate

2 Stop valve

3 To outdoor unit

- Finalise the refrigerant piping work (connect the prepared refrigerant piping to the piping coming from the outdoor unit). Refer to the above cautions for brazing and to the outdoor unit installation manual.

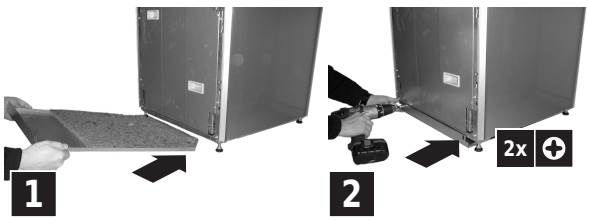
NOTE

Above instruction is for an EKHVMYD unit.

For the heating only unit EKHVMRD only 2 pipes (liquid and discharge pipe) need to be connected.

Close the unit

1 Put the sound bottom plate at the bottom of the unit and fix it with the appropriate screws.

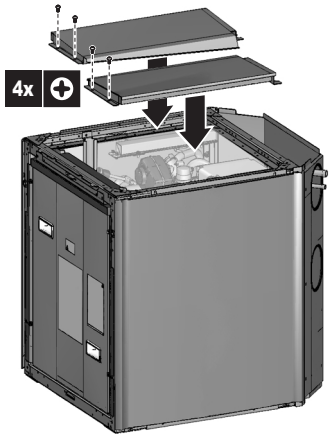


NOTE

Only for EKHVMYD:

If the 2 beams that protect the drain pan during transport were not removed before attempting to put the sound bottom plate in place, the sound bottom plate cannot be mounted. Refer to "Installation on final installation position" on page 23.

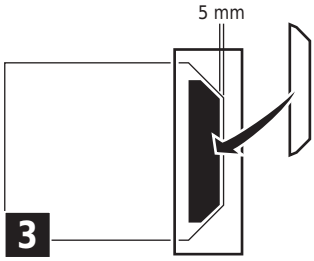
2 Fix the top panel on the unit with the appropriate screws.



3 Stick the top plate insulation (accessory) at the inside of the top decoration panel according to the figure below.





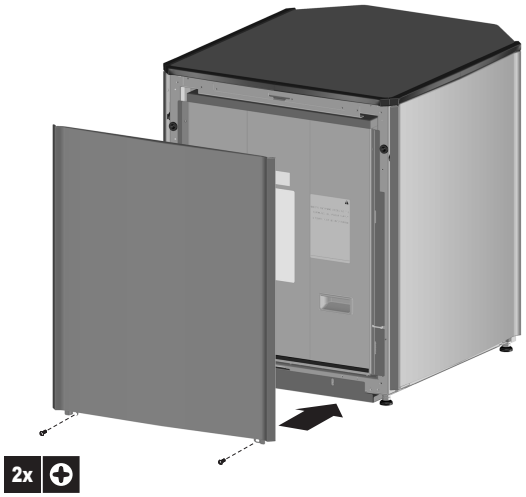




4 Fix the top decoration panel on top of the unit using the appropriate screws. In case a domestic hot water tank (optional) is installed, refer to the domestic hot water tank installation manual.



5 Fix the front and remaining side decoration panel(s) back to the unit using the appropriate screws.



7.5. Leak test and vacuuming drying R410A circuit

When the indoor unit was powered on before all brazing and refrigerant piping work was finished on R410A side, a special setting needs to be applied to open all valves before vacuuming can start. See also the installation manual of the outdoor unit for furter details and "11.3. Vacuuming/recovery and maintenance on refrigerant side" on page 54.

7.6. Water piping

The unit is equipped with a water inlet and water outlet for connection to a water circuit. This circuit must be provided by an installer and must comply with the applicable legislation.

NOTE

The unit is only to be used in a closed water system. Application in an open water circuit can lead to excessive corrosion of the water piping.

For precautions about the design of the water circuit, refer to "6. Design of the water circuit" on page 11.

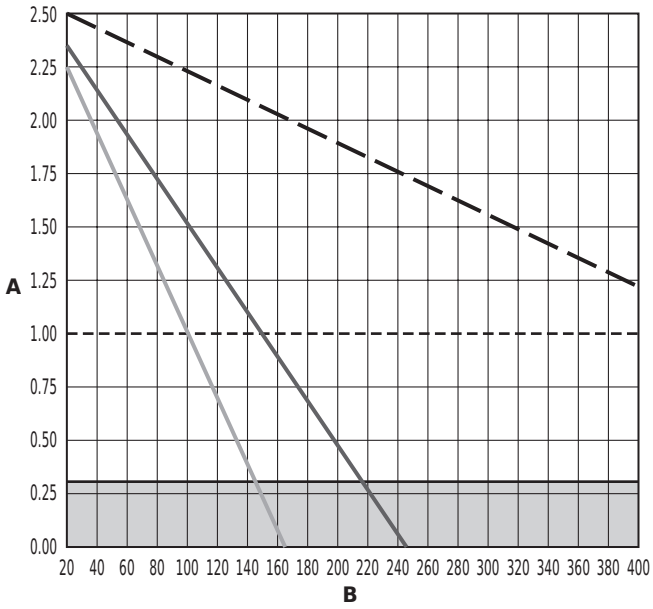
Checking the water volume and expansion vessel pre-pressure

The expansion vessel in the unit avoids that the pressure in the system increases due to temperature differences.

The unit is equipped with a 7 l expansion vessel for which the pre-pressure can be changed (default pre-pressure is 1 bar).

Changing the pre-pressure of the expansion vessel might be needed if the water volume of the system is too big in relation with the needed leaving water temperature.

Refer to the graph below.



80°C water temperature

65°C water temperature

35°C water temperature

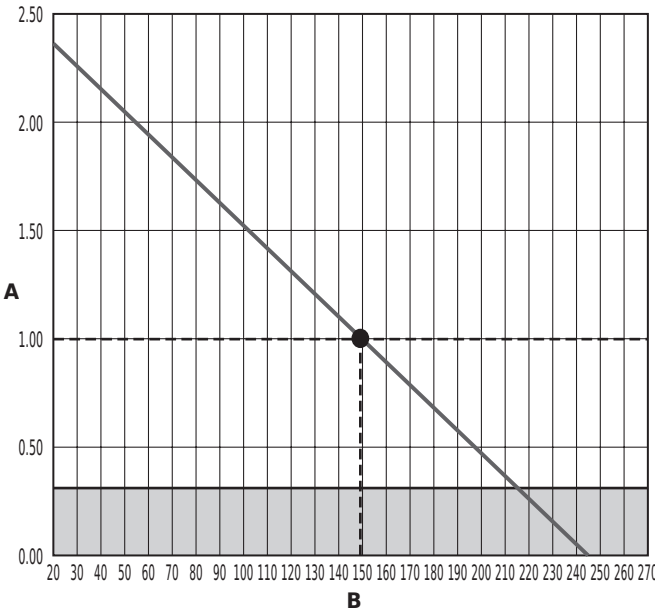
Never change the pre-pressure of the system to a value lower than 0.3 bar

A Pre-pressure (bar)

B System water volume (l)

How to check if the pre-pressure of the system needs to be changed:

- Step 1: define the needed leaving water temperature in the system: e.g. 65°C
- Step 2: define the maximal water volume in the system with the default pre-pressure of 1 bar



	65°C water temperature
A	Pre-pressure (bar)
B	System water volume (l)

- If the total water volume of the system is <150 l: no change of pre-pressure needed.
- If the total water volume of the system is >150 l: change of pre-pressure needed.

NOTE

Never change the pre-pressure of the system to a value lower than 0.3 bar.

In this example (when the needed water temperature is 65°C) the maximal water volume is 215 l.

Setting the pre-pressure of the expansion vessel

When it is required to change the default pre-pressure of the expansion vessel (1 bar), keep in mind the following guidelines:

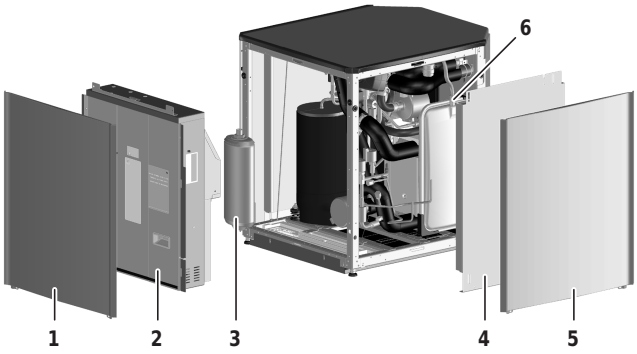
- Use only dry nitrogen to set the expansion vessel pre-pressure.
- Inappropriate setting of the expansion vessel pre-pressure will lead to malfunction of the system. Therefore, the pre-pressure should only be adjusted by a licensed installer.

NOTE

To set the pre-pressure, the expansion vessel needs to be accessed from the front or the right.

Accessing the expansion vessel from the front:

- Remove the front decoration panel.
- Remove the switch box.
- Remove the small expansion vessel (2 l) only in case of EKHVMYD.



1	Front decoration panel
2	Switch box
3	Small expansion vessel (2 l)
4	Sound panel
5	Right decoration panel
6	Pre-charge valve

Charging water

1 Connect the water supply to a fill valve (field supply).

2 For EKHVMRD unit, make sure to open the automatic air purge.

3 For EKHVMYD unit, the unit has 2 automatic air purge valves. Make sure to open both of them for these units.

4 When a tank is used, a 3-way valve needs to be installed (refer to the manual of the domestic hot water tank for details).

5 Fill with water until the manometer indicates a pressure of approximately 2.0 bar.

Remove air in the circuit as much as possible using the air purge valves. Air present in the water circuit might cause malfunctioning of the heater kit (if installed).

6 For units with optional heater kit: remove air in the heater vessel using the heater kit air purge valve.

NOTE

- During filling, it might not be possible to remove all air in the system. Remaining air will be removed through the automatic air purge valves during first operating hours of the system. Additional filling with water afterwards might be required.
  Pump only operation in order to purge the air of the system is possible through field settings. Refer to field settings "[E-04] Pump only operation" on page 41 for further details.
- The water pressure indicated on the manometer will vary depending on the water temperature (higher pressure at higher water temperature).
  However, at all times water pressure shall remain above 1 bar to avoid air entering the circuit.
- The unit might dispose some excessive water through the pressure relief valve.
- Water quality must be according to EU directive 98/83 EC.

For final purging of the unit, operation of the pump is needed. Therefore, the unit needs to be finally installed.

8. Electrical wiring work

8.1. Precautions on electrical wiring work

WARNING: Electrical installation

All field wiring and components must be installed by an installer and must comply with the applicable legislation

NOTE

Electrical wiring work recommendations.

To persons in charge of electrical wiring work:
Do not operate the unit until the refrigerant piping is complete. Running the unit before the piping is ready will break the compressor.

DANGER: ELECTRICAL SHOCK

See "2. General safety precautions" on page 2.

WARNING

- A main switch or other means for disconnection, having a contact separation in all poles, must be incorporated in the fixed wiring in accordance with the applicable legislation.
- Use only copper wires.
- All field wiring must be carried out in accordance with the wiring diagram supplied with the unit and the instructions given below.
- Never squeeze bundled cables and be sure that it does not come in contact with the non-insulated piping and sharp edges. Be sure no external pressure is applied to the terminal connections.
- Power supply wires must be attached securely.
- If the power supply has a missing or wrong N-phase, equipment will break down.
- Be sure to establish an earth. Do not earth the unit to a utility pipe, surge absorber, or telephone earth. Incomplete earth may cause electrical shock.
- Be sure to install an earth leakage protector in accordance with the applicable legislation. Failure to do so may cause electric shock or fire.
- Be sure to use a dedicated power circuit, never use a power supply shared by another appliance.
- When installing the earth leakage protector be sure that it is compatible with the inverter (resistant to high frequency electric noise) to avoid unnecessary opening of the earth leakage protector.
- As this unit is equipped with an inverter, installing a phase advancing capacitor not only will deteriorate power factor improvement effect, but also may cause a capacitor abnormal heating accident due to high-frequency waves. Therefore, never install a phase advancing capacitor.
- Be sure to install the required fuses or circuit breakers.

ATTENTION

The equipment described in this manual may cause electronic noise generated from radio-frequency energy. The equipment complies to specifications that are designed to provide reasonable protection against such interference. However, there is no guarantee that interference will not occur in a particular installation.

It is therefore recommended to install the equipment and electric wires keeping proper distances away from stereo equipment, personal computers, etc....

In extreme circumstances you shall keep distances of 3m or more and use conduit tubes for power and transmission lines.

WARNING

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

Point of attention regarding quality of the public electric power supply.

This equipment complies with respectively:

- EN/IEC 61000-3-11(1) provided that the system impedance Z_{sys} is less then or equal to Z_{max}.
- EN/IEC 61000-3-12(2) provided that the short-circuit power S_{sc} is greater than or equal to the minimum S_{sc} value

at the interface point between the user's supply and the public system. It is the responsibility of the installer or user of the equipment to ensure, by consultation with the distribution network operator if necessary, that the equipment is connected only to a supply with respectively:

- Z_{sys} less than or equal to Z_{max}
- S_{sc} greater than or equal to the minimum S_{sc} value.

	Z_{max} (Ω)	Minimum S_{sc} value
EKHVMYD50A	0.46	1459 kVA
EKHVMYD80A	0.46	1459 kVA
EKHVMRD50A	0.46	1459 kVA
EKHVMRD80A	0.46	1459 kVA

(1) European/International Technical Standard setting the limits for voltage changes, voltage fluctuations and flicker in public low-voltage supply systems for equipment with rated current ≤75 A.

(2) European/International Technical Standard setting the limits for harmonic currents produced by equipment connected to public low-voltage systems with input current >16 A and ≤75 A per phase.

8.2. Internal wiring – Parts table

Refer to the wiring diagram sticker on the unit. The abbreviations used are listed below:

A1P..... Main PCB
A2P..... User interface PCB
A3P..... Control PCB
A4P..... Inverter PCB
A5P..... QA PCB
A6P..... Filter PCB
A7P.....*.... Digital I/O PCB
A8P.....*.... Demand PCB
A9P..... Multi tenant PCB
A10P.....*.... Thermostat PCB
A11P.....*.... Receiver PCB
A12P.....*.... Solar pump station PCB (EKSRPS3)
B1PH..... High pressure sensor
B1PL..... Low pressure sensor
BSK.....*.... Solar pump station relay (EKSRPS3)
C1~C3..... Filter capacitor
C1~C3 (A4P)..... PCB capacitor
DS1 (A*P)..... Dip switch
F1U..... Fuse (T, 3.2 A, 250 V)
F1U (A1P,A3P,A9P)... Fuse (T, 3.15 A, 250 V)
F1U (A6P)..... Fuse (T, 6.3 A, 250 V)
F1U,F2U (A7P)....*.... Fuse (5 A, 250 V)
F3U,F4U.....*.... Fuse (T, 6.3 A, 250 V)
HAP (A*P)..... PCB LED
IPM1..... Integrated power module
K1A~K3A..... Interface relay
K1E~K3E..... Electronic expansion valve
K*R (A*P)..... PCB relay
K1S~K3S..... 3-way valve
K4S..... #.... 2-way valve
M1C..... Compressor
M1F..... Switch box cooling fan
M1P,M2P..... DC inverter pump
PC (A11P).....*.... Power circuit
PHC1.....*.... Optocoupler input circuit
PS (A*P)..... Switching power supply
Q1DI,Q2DI..... #.... Earth leakage protector
Q2L..... Thermal protector water piping
R1,R2 (A4P)..... Resistance
R1L..... Reactor
R1H (A10P).....*.... Humidity sensor
R1T (R10P).....*.... Ambient sensor
R2T.....*.... Domestic hot water tank thermistor
R2T.....*.... External sensor (floor or ambient)
R3T..... Liquid thermistor R410A
R4T..... Returning water thermistor
R5T..... Leaving water thermistor (heating)
R6T..... Discharge thermistor
R7T..... Liquid thermistor R134a
R8T..... Fin thermistor
R9T..... Leaving water thermistor (cooling)

R10T..... Liquid thermistor (cooling)
R11T..... Suction thermistor (cooling)
RC (A*P)..... Receiver circuit
S1PH ..... High pressure switch
S1S..... #.... Benefit kWh rate power supply contact
S3S..... #.... Input multiple setpoint 1
S4S..... #.... Input multiple setpoint 2
SS1 (A1P)..... Selector switch (emergency)
SS1 (A2P)..... Selector switch (master/slave)
SS1 (A7P).....*.... Selector switch
TC (A*P) ..... Transmitter circuit
T1R,T2R (A*P) ..... Diode bridge
T3R..... Power module
V1C~V8C ..... Ferrite core noise filter
X1M~X3M..... Terminal strip
X1Y~X4Y ..... Connector
X*M (A*P) .....*.... PCB terminal strip
Z1F~Z5F (A*P) ..... Noise filter
*.... Included in option kit
#.... field supplied

NOTE The wiring diagram on the indoor unit is only for the indoor unit.

For the outdoor unit refer to the wiring diagram of the outdoor unit.

8.3. System overview of field wiring

Field wiring consists out of power supply, multi tenant power supply, indoor-outdoor communication (=transmission) wiring, wiring of the user interface, wiring for connection of options and field supply accessories.

NOTE

- Carefully install multi tenant power supply.
  This power supply will guarantee correct outdoor unit operation if one tenant shuts of power supply.
  If the multi tenant power supply is not installed, the outdoor unit will stop operating if one tenant shuts off the main power supply.
- If during service the main power supply is cut off for safety of electric shock, make sure that also the multi tenant power supply is cut off.

8.4. Requirements

A power supply (see table below) must be provided for connection of the unit. The power supply must be protected with the required safety devices, i.e. a main switch, a slow blow fuse on each phase and an earth leakage protector in accordance with applicable legislation.

Selection and sizing of the wiring should be done in accordance with the applicable legislation based on the information mentioned in the table below:

Item	Cable bundle	Description	Required number of conductors	Maximum running current
In case of normal kWh rate power supply installation				
1	HV	Multi tenant power supply	2	1
2	PS	Normal kWh rate power supply	2+GND	(b)
In case of benefit kWh rate power supply installation				
1	HV	Multi tenant power supply	2	1
2	PS	Normal kWh rate power supply	2+GND	1.25
3	PS	Benefit kWh rate power supply	2+GND	(b)–1.25
4	LV	Transmission wiring (F1/F2)	2	(c)
5	LV	Standard remote controller (P1/P2)	2	(c)
6	LV	Secondary remote controller (P1/P2)(a)	2	(c)
7	LV	Domestic hot water tank thermistor (R2T)(a)	2	(d)
8	LV	External room thermostat signal ON/OFF(a)	2	100 mA(c)
9	LV	Benefit kWh rate power supply switch (S1S)(a)	2	100 mA(c)
10	LV	Multiple set point signal 1(a)	2	100 mA(c)
11	LV	Multiple set point signal 2(a)	2	100 mA(c)
12	LV	Heater kit signal(a)	Refer to the installation manual of the heater kit	
13	HV	3-way valve (K1S)(a)	3	(d)
14	HV	Digital I/O PCB outputs(a)	2	300 mA(c)
15	HV	Cooling on/off output	2	300 mA(c) (e)
16	HV	Heater kit control(a)	Refer to the installation manual of the heater kit	
17	HV	Solar pump station relay(a)	2	100 mA(c)

PS = Power supply
LV = Low voltage
HV = High voltage

(a) Optional
(b) Refer to the nameplate on the indoor unit.
(c) Minimum cable section 0.75 mm^2.
(d) This device and connection cable is delivered with the domestic hot water tank.
(e) Only for EKHVMYD models.

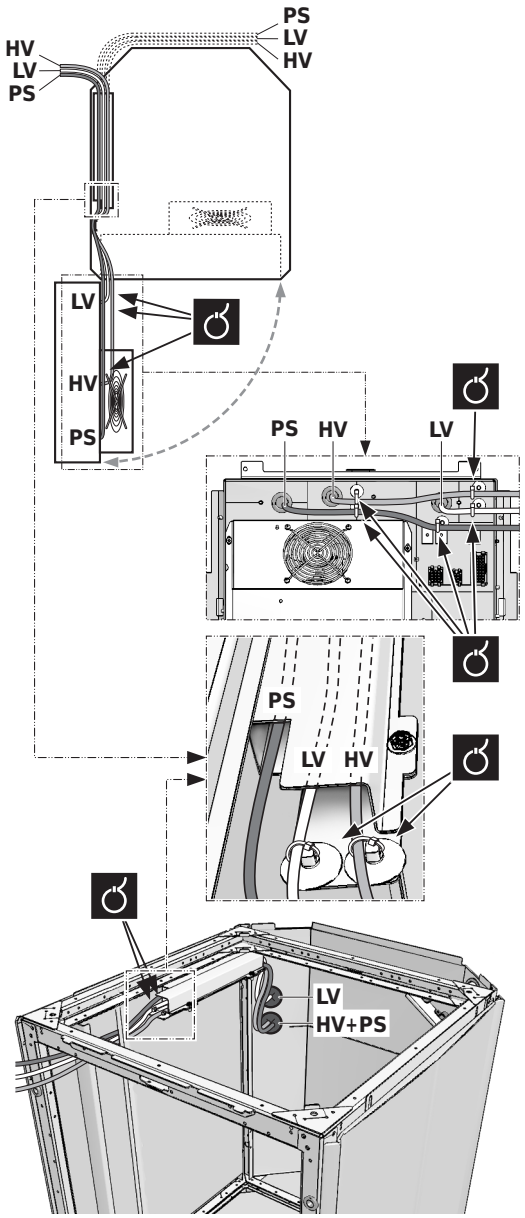
8.5. Routing

Take out the switchbox and put it in front of the unit and open the switchbox cover. Refer to "7.1. Selecting an installation location" on page 18.

NOTE

When installing field supply or option cables, always make sure that the switchbox is placed before the unit. This will make it possible to remove the switchbox easily during service.

Route the wires into the unit as follows:



To avoid electric noise problems, be sure that cables are put in the correct bundle as mentioned on the figure.

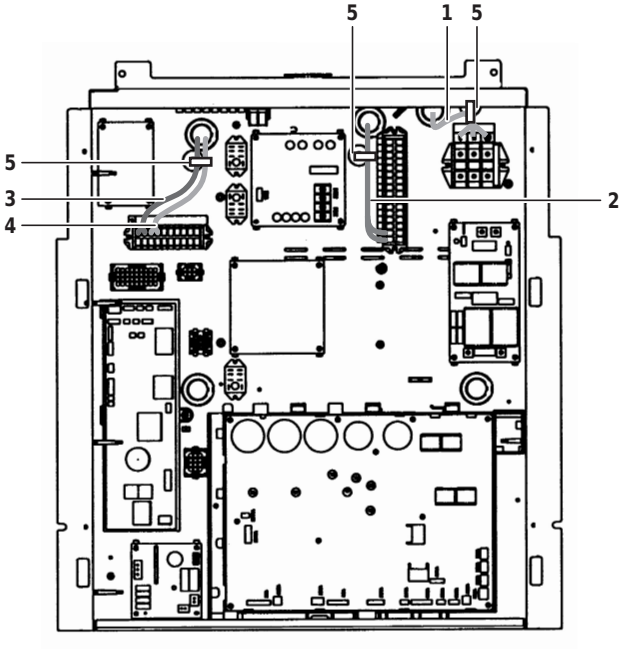
Be sure to fix the cable with cable ties to the cable tie mountings to ensure strain relief and to make sure that it does not come in contact with the piping and sharp edges.

CAUTION

Do not push or place redundant cable length in the unit.

8.6. Connection

Use the appropriate cables, connect the power supply, multi tenant power supply, and communication cable(s) to the appropriate terminals as shown below.



1	Power supply
2	Multi tenant power supply
3	Transmission wiring
4	User interface wiring
5	Stress relief

Refer also to the wiring diagram for further details.

For the connections of optional PCB's please refer to the respective installation manual.

WARNING

The length of the conductors between the power supply stress relief and the terminal block itself must be such that the current-carrying wires are tautened before the earth wire is in case the power supply is pulled loose from the stress relief.

Installation and connection of the remote controller

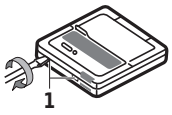
The unit is equipped with a remote controller offering user-friendly way to set up, use and maintain the unit. Before operating the remote controller, follow this installation procedure.

NOTE The wiring for connection is not included.

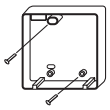
- The remote controller, delivered in a kit, has to be mounted indoors.
- When the remote controller thermostat function is used, select the installation location considering it should be a place:
  - where the average temperature in the room can be detected,
  - that is not exposed to direct sunlight,
  - that is not near a heat source,
  - that is not affected by outside air or air draught due to e.g. door opening/closing,
  - where the display is kept clean,
  - where the temperature is between 0°C and 50°C,
  - where the relative humidity is maximum 80%.

1 Remove the front part of the remote controller.

Insert a slotted screwdriver into the slots (1) in the rear part of the remote controller, and remove the front part of the remote controller.



2 Fasten the remote controller on a flat surface.

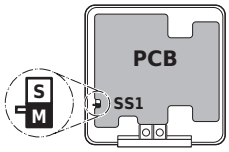


NOTE Be careful not to distort the shape of the lower part of the remote controller by over tightening the mounting screws.

3 Wire the unit.

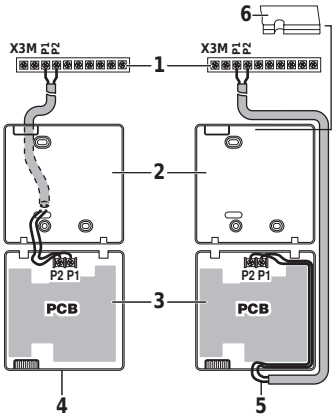
NOTE If next to the standard remote controller the optional remote controller is installed as well:

- Connect the electrical wires of both remote controllers in the same way like described below.
- Select a master and a slave remote controller by switching the SS1 selector switch.



S Slave
M Master

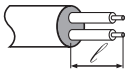
- Only the remote controller set as master can work as room thermostat.



1 Unit
2 Rear part of the remote controller
3 Front part of the remote controller
4 Wired from the rear
5 Wired from the top
6 Notch the part for the wiring to pass through with nippers, etc.

Connect the terminals on top of the front part of the remote controller and the terminals inside the unit (P1 to X3M: P1, P2 to X3M: P2).

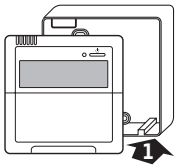
NOTE Peel the shield for the part that has to pass through the inside of the remote controller case ( ).



4 Reattach the upper part of the remote controller.

Be careful not to pinch the wiring when attaching.

First begin fitting from the clips at the bottom.



Connection to a benefit kWh rate power supply

WARNING

A benefit kWh rate power supply is only possible for the indoor unit. For compressor reliability reasons it is not allowed to connect the outdoor unit to such a power supply.

Electricity companies throughout the world work hard to provide reliable electric service at competitive prices and are often authorized to bill clients at benefit rates. E.g. time-of-use rates, seasonal rates, Wärmepumpentarif in Germany and Austria, ...

This equipment allows for connection to such benefit rate power supply delivery systems.

Consult with the electricity company acting as provider at the site where this equipment is to be installed to know whether it is appropriate to connect the equipment in one of the benefit kWh rate power supply delivery systems available, if any.

When the equipment is connected to such benefit kWh rate power supply, the electricity company is allowed to:

- interrupt power supply to the equipment for certain periods of time;
- demand that the equipment only consumes a limited amount of electricity during certain periods of time.

The indoor unit is designed to receive an input signal by which the unit switches into forced off mode. At that moment, the unit compressors will not operate.

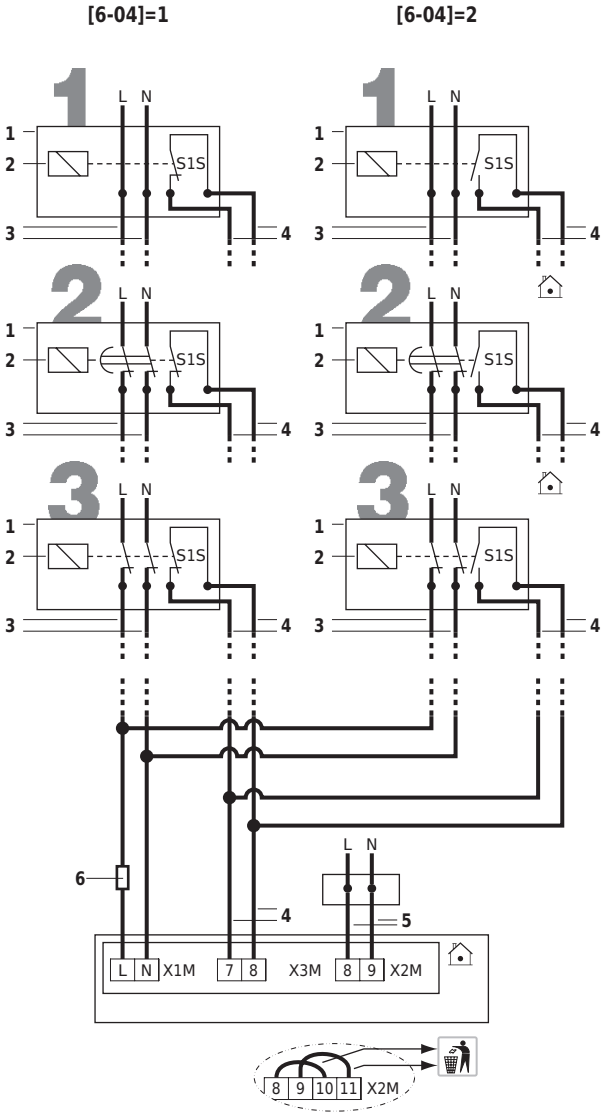
WARNING

For a benefit kWh rate power supply like illustrated below as type 1

During the period that the benefit kWh rate is active and power supply is continuous, then stand-by power consumption of the inverter PCB is possible.

Possible types of benefit kWh rate power supply

Possible connections and requirements to connect the equipment to such power supply are illustrated in the figures below:



1	Benefit kWh rate power supply box
2	Receiver controlling the signal of the electricity company
3	Benefit kWh rate power supply
4	Voltage free contact to indoor unit
5	Normal kWh rate power supply
6	Fuse (field supply)

In case of benefit kWh rate power supply installation, remove the wiring bridges on X2M before installing the normal kWh rate power supply.

Type 1

The benefit kWh rate power supply is of the type that power supply is not interrupted.

Type 2

The benefit kWh rate power supply is of the type that power supply will be interrupted after elapse of time.

Type 3

The benefit kWh rate power supply is of the type that power supply is interrupted immediately.

When parameter [6-04]=1 at the moment that the benefit kWh rate signal is sent by the electricity company, that contact will open and the unit will go in forced off mode(1).

When parameter [6-04]=2 at the moment that the benefit kWh rate signal is sent by the electricity company, that contact will close and the unit will go in forced off mode(2).

(1) When the signal is released again, the voltage free contact will close and the unit will restart operation. It is therefore important to leave the auto restart function enabled. Refer to field setting "[8] Option setup, "[8-01]" on page 39 in the chapter "9.3. Field settings" on page 34.

(2) When the signal is released again, the voltage free contact will open and the unit will restart operation. It is therefore important to leave the auto restart function enabled. Refer to field setting "[8] Option setup, "[8-01]" on page 39 in the chapter "9.3. Field settings" on page 34.

9. START-UP AND CONFIGURATION

The indoor unit should be configured by the installer to match the installation environment (outdoor climate, installed options, etc.) and user expertise.

ATTENTION

It is important that all information in this chapter is read sequentially by the installer and that the system is configured as applicable.

9.1. Pre-operation checks

Switch off the power supply before making any connections.

After the installation of the unit, check the following:

1 Field wiring

Make sure that the field wiring has been carried out according to the instructions described in the chapter "8. Electrical wiring work" on page 27, according to the wiring diagrams and according to European and national regulations.

2 Fuses and protection devices

Check that the fuses and other locally installed protection devices are of the size and type specified in the chapter "Electrical specifications: power supply" on page 58. Make sure that neither a fuse nor a protection device has been bypassed.

3 Earth wiring

Make sure that the earth wires have been connected properly and that the earth terminals are tightened.

4 Internal wiring

Visually check the switch box and the inside of the unit on loose connections or damaged electrical components.

5 Installation

Check that the unit is properly installed, to avoid abnormal noises and vibrations when starting up the unit.

6 Damaged equipment

Check the inside of the unit on damaged components or squeezed pipes.

7 Refrigerant leak

Check the inside of the unit on refrigerant leakage. If there is a refrigerant leak try to repair the leak (recovery, repair, and vacuuming needed). If it is impossible to repair by yourself, perform a recovery operation as mentioned in chapter "11.3. Vacuuming/recovery and maintenance on refrigerant side" on page 54 and call your local dealer.
Do not touch any refrigerant which has leaked out of refrigerant piping connections.
This may result in frostbite.

8 Vacuuming and refrigerant charging

Refer to the outdoor unit manual for more details.

9 Water leak

Check the inside of the unit on water leakage. In case there is a water leakage try to repair the leak. If it is impossible to repair by yourself, close the water inlet and water outlet shut-off valves and call your local dealer.

10 Power supply voltage

Check the power supply voltage on the local supply panel. The voltage must correspond to the voltage on the identification label of the unit.

11 Air purge valve

Make sure the air purge valve of the heat pump is open (at least 2 turns).

Make sure the air purge valve of the heater kit is open (at least 2 turns). See installation manual of the heater kit.

12 Shut-off valves

Make sure that the shut-off valves are correctly installed and fully open.

Operating the system with closed valves will damage the pump!

Once all checks are fulfilled, the unit must be closed, only then can the unit be powered up. When the power supply to the indoor unit is turned on, "88" is displayed on the remote controller during its initialization, which might take up to 30 seconds. During this process the remote controller can not be operated.

9.2. Final air purging

To get rid of all the air in the system, the pump should be operated.

Therefore, change the field setting [E-04] as explained in the chapter "9.3. Field settings" on page 34. More details about setting "[E-04] Pump only operation" can be found on page 41.

In case of an optional tank installed with the EKHVMYD units the system includes two 3-way valves (cool/heat and heat/domestic hot water). If no tank is installed, only 1 3-way valve is included.

In case of an optional tank installed with the EKHVMRD units the system includes one 3-way valves (heat/domestic hot water).

9.3. Field settings

The indoor unit should be configured by the installer to match the installation environment (outdoor climate, installed options, etc.) and user demand. Therefore, a number of so called field settings are available. These field settings are accessible and programmable through the user interface on the indoor unit.

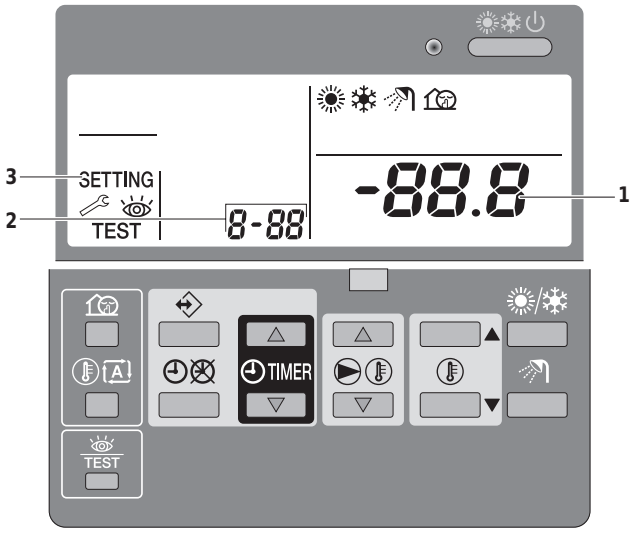
Each field setting is assigned a 3-digit number or code, for example [5-03], which is indicated on the user interface display. The first digit [5] indicates the 'first code' or field setting group. The second and third digit [03] together indicate the 'second code'.

A list of all field settings and default values is given in the "9.9. Field setting table" on page 49. In this list we provided for 2 columns to register the date and value of altered field settings at variance with the default value.

A detailed description of each field setting is given under "9.5. Detailed description" on page 35.

9.4. Procedure

To change one or more field settings, proceed as follows.



1 Press the TEST button for a minimum of 5 seconds to enter FIELD SET MODE.
The SETTING icon (3) will be displayed. The current selected field setting code is indicated *8-88* (2), with the set value displayed to the right *-88.8* (1).

2 Press the ▶ / ▲ button to select the appropriate field setting first code.

3 Press the ▶ / ▼ button to select the appropriate field setting second code.

4 Press the TIMER ▲ button and TIMER ▼ button to change the set value of the select field setting.

5 Save the new value by pressing the ⊗ button.

6 Repeat step 2 through 4 to change other field settings as required.

7 When finished, press the TEST button to exit FIELD SET MODE.

NOTE

- Changes made to a specific field setting are only stored when the ⊗ button is pressed. Navigating to a new field setting code or pressing the TEST button will discard the change made.
- The field settings are grouped by their field setting first code.
  For example, field settings [0-00]; [0-01]; [0-02]; [0-03] are defined as "Group 0".
  When different values are changed within the same group, pressing the ⊗ button will save all the values changed within this group.
  Be aware of this when changing field settings within the same group and pressing on the ⊗ button.

NOTE

- Before shipping, the set values have been set as shown under "9.9. Field setting table" on page 49.
- When exiting FIELD SET MODE, "88" may be displayed on the remote controller LCD while the unit initializes itself.

NOTE

When running through the field settings you may notice that there are some more field settings as there are mentioned in the "9.9. Field setting table" on page 49. **These field settings are not applicable and may not be changed**!

9.5. Detailed description

For a summary of all field settings refer to "9.9. Field setting table" on page 49.

[0] Remote control setup

- **[0-00]** User permission level
  The remote controller can be programmed to make certain buttons and functions unavailable for the user. There are 2 permission levels defined. Both levels (level 2 and level 3) are basically the same, the only difference is that for level 3 no water temperature settings are possible (see table below).

	Permission	
	level 2	level 3
Operation ON/OFF	Operable	Operable
Domestic water heating operation ON/OFF	Operable	Operable
Setting the leaving water temperature	Operable	—
Setting the room temperature	Operable	Operable
Quiet mode ON/OFF	—	—
Weather dependent set point operation ON/OFF	Operable	—
Setting the clock	—	—
Programming the schedule timer	—	—
Schedule timer operation ON/OFF	Operable	Operable
Field settings	—	—
Error code display	Operable	Operable
Test operation	—	—

  By default no level is defined so all buttons and functions are operable.
  The actual permission level is determined by field setting. For permission level 2, set field setting [0-00] to 2, for permission level 3, set field setting [0-00] to 3.
  Once the field setting is set, the chosen permission level is not yet active. Enabling the selected permission level is done by simultaneously pressing buttons ⏲▲ and ⏲▼ immediately followed by simultaneously pressing buttons 🏠 and Ⓕ🄰, and keeping all 4 buttons pressed for at least 5 seconds. Note that no indication on the remote controller is given. After the procedure the blocked buttons will not be available anymore.
  Deactivating the selected permission level is done in the same way.
- **[0-01]** Room temperature compensation value
  If needed, it is possible to adjust some thermistor value of the unit by a correction value. This can be used as countermeasure for thermistor tolerances or capacity shortage.
  The compensated temperature (= measured temperature plus compensation value) is then used for controlling the system and will be displayed in the temperature read-out mode. See also "[9] Automatic temperature compensation" on page 39 for compensation values for leaving water temperature and domestic hot water temperature.
- **[0-02]** Setting not available
- **[0-03]** Status: defines whether the ON/OFF instruction can be used in the schedule timer for space heating.
  Refer to the operation manual for details how to program the schedule timer.
  The schedule timer for space heating can be programmed in 2 different ways: based on the temperature set point (both leaving water temperature and room temperature) and based on the ON/OFF instruction.

NOTE

By default space heating based on temperature set point (method 1) is enabled, so only temperature shifts are possible (no ON/OFF instruction).

Advantage of this method is that you can simply switch off the space heating operation by pushing the button without disabling the automatic domestic hot water storage operation (e.g. during summertime when no space heating is required).

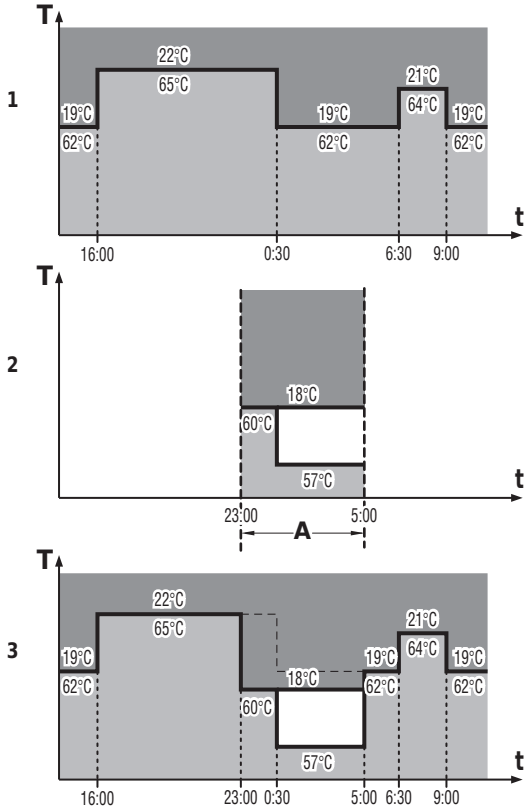
In the following tables both methods on how to interpret the schedule timer are shown.

Method 1	Space heating based on temperature set point[(a)]
During operation	During schedule timer operation the operation LED is lit continuously.
When pushing the button	The schedule timer for space heating will stop and will not start again. The controller will be switched off (operation LED will stop working). However, the schedule timer icon will stay displayed which means that the domestic water heating stays enabled.
When pushing the ⊗/⏲ button	The schedule timer for space heating **and** domestic water heating along with the quiet mode will be stopped and will not start again. The schedule timer icon will not be displayed anymore.

(a) For leaving water temperature and/or room temperature

Operation example: Schedule timer based on temperature set points.

When setback function is enabled, the setback operation will have priority over the scheduled action in the schedule timer.

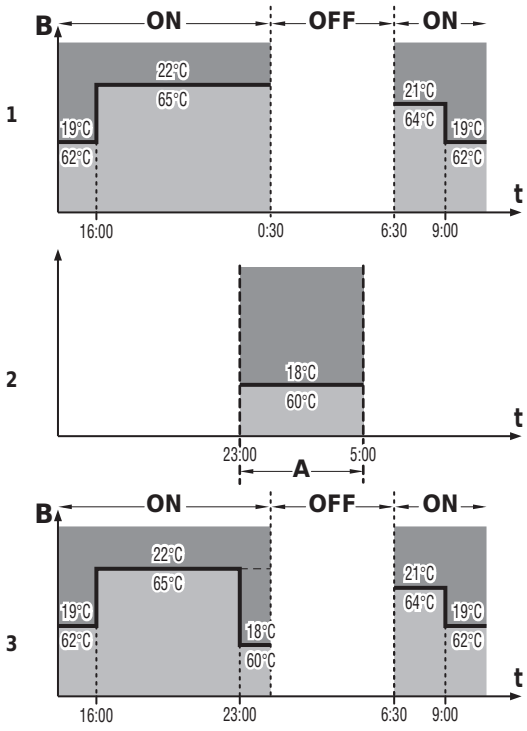


1 Schedule timer
2 Setback function
3 When both setback function and schedule timer are enabled
A Setback function
t Time
T Temperature set point
Room temperature
Leaving water temperature

Method 2	Space heating based on ON/OFF instruction
During operation	When the schedule timer switches space heating OFF, the controller will be switched off (operation LED will stop working). Note that this has no influence on the domestic water heating.
When pushing the button	The schedule timer for space heating will stop (when active at that moment) and will start again at the next scheduled ON function. The "last" programmed command overrules the "preceding" programmed command and will remain active until the "next" programmed command occurs. Example: imagine the actual time is 17:30 and actions are programmed at 13:00, 16:00 and 19:00. The "last" programmed command (16:00) overruled the "previous" programmed command (13:00) and will remain active until the "next" programmed command (19:00) occurs. So in order to know the actual setting, one should consult the last programmed command. It is clear that the "last" programmed command may date from the day before. Refer to the operation manual. The controller will be switched off (operation LED will stop working). However the schedule timer icon will stay displayed which means that the domestic heating stays enabled.
When pushing the ⊗/⊕ button	The schedule timer for space heating **and** domestic water heating along with the quiet mode will be stopped and will not start again. The schedule timer icon will not be displayed anymore.

Operation example: Schedule timer based on ON/OFF instruction.

When setback function is enabled, the setback operation will have priority over the scheduled action in the schedule timer if ON instruction is active. If OFF instruction is active this will have priority over the setback function. At any time the OFF instruction will have the highest priority.



1 Schedule timer

2 Setback function

3 When both setback function and schedule timer are enabled

A Setback function

B ON/OFF instruction

t Time

T Temperature set point

Room temperature

Leaving water temperature

- **[0-04]** Status: defines whether the ON/OFF instruction can be used in the schedule timer for cooling.
  Same as for [0-03] but for cooling schedule timer.

For cooling, no setback function is available.

[1] Automatic storage timing for domestic water heating

In this mode, the indoor unit will deliver hot water to the domestic hot water tank based on the daily fixed pattern. This mode will continue until storage temperature is reached.

Automatic storage is the advised domestic hot water mode. In this mode water heats up during the night (when space heating requirements are lower) until the storage set point. The heated water is stored in the domestic hot water tank at a higher temperature so it can fulfil the domestic hot water requirements throughout the day.

The storage temperature set point and timing are field settings.

- **[1-00]** Status: defines whether the domestic water heating (storage mode) during night is enabled (1) or not (0).
- **[1-01]** Start time: time of the night at which the domestic water should be heated.
- **[1-02]** Status: defines whether the domestic water heating (storage mode) during daytime is enabled (1) or not (0).
- **[1-03]** Start time: time of the day at which the domestic water should be heated.

NOTE

- Make sure the domestic hot water is only heated up to the domestic hot water temperature you require. Start with a low domestic hot water storage temperature set point, and only increase if you feel that the domestic hot water supply temperature is not sufficient for your needs (this depends on your water using pattern).
- Make sure the domestic hot water is not heated unnecessary. Start with activating automatic storage during night (default setting). If it seems that the domestic hot water night storage operation is not sufficient for your needs, an additional storage during daytime can be set.
- For energy-saving purposes, it is advised to enable the weather dependent domestic water heating. Refer to setting "[b-02]" on page 40.

Refer to "[b] Domestic hot water set points" on page 40 for temperature set points.

[2] Automatic setback function

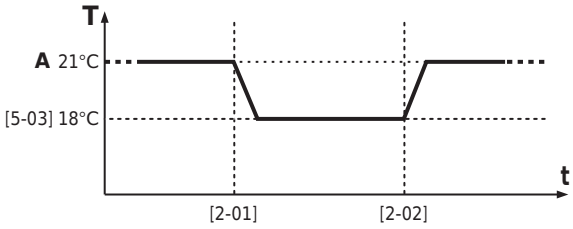
Setback function provides the possibility to lower the room temperature. The setback function can for instance be activated during the night because the temperature demands during night and day are not the same.

NOTE

- By default the setback function is enabled.
- The setback function can be combined with the automatic weather dependent set point operation.
- Setback function is an automatic daily scheduled function.

- **[2-00]** Status: defines whether the setback function is turned ON (1) or OFF (0)
- **[2-01]** Start time: time at which setback is started
- **[2-02]** Stop time: time at which setback is stopped

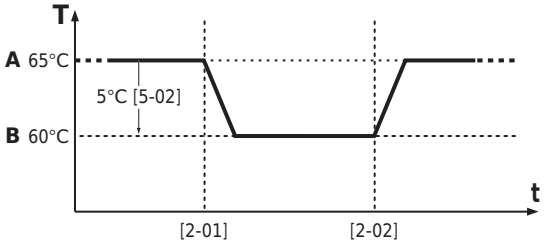
Setback can be configured for both room temperature control and leaving water temperature control.



A Normal room temperature set point

t Time

T Temperature



A Normal leaving water temperature set point

B Leaving water setback temperature

t Time

T Temperature

It is advised to set the start time of automatic storage during night [1-01] on the moment that the setback function starts [2-01].

Refer to "[5] Automatic setback and disinfection set point" on page 38 for temperature set points.

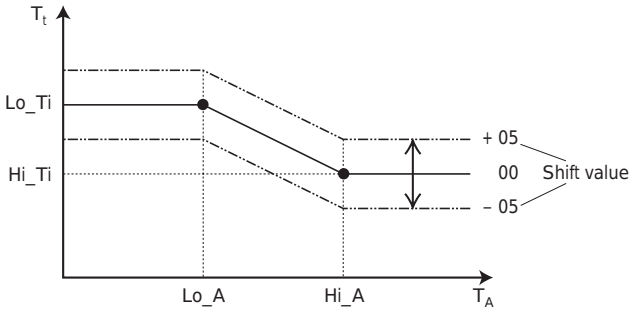
NOTE Setback function for cooling does not exist.

[3] Weather dependent set point

When weather dependent operation is active, the leaving water temperature is determined automatically depending on the outdoor temperature: colder outdoor temperatures will result in warmer water and vice versa. The unit has a floating set point. Activating this operation will result in a lower power consumption than use with a manually fixed leaving water set point.

During weather dependent operation, the user has the possibility to shift up or down the target water temperature by a maximum of 5°C. This "Shift value" is the temperature difference between the temperature set point calculated by the controller and the real set point. E.g. a positive shift value means that the real temperature set point will be higher than the calculated set point.

It is advised to use the weather dependent set point because it adjusts the water temperature to the actual needs for space heating. It will prevent the unit from switching too much between thermo ON operation and thermo OFF operation when using the remote controller room thermostat or external room thermostat.



T_t Target water temperature

T_A Ambient (outdoor) temperature

Shift value = Shift value

- **[3-00]** Low ambient temperature (Lo_A): low outdoor temperature.
- **[3-01]** High ambient temperature (Hi_A): high outdoor temperature.
- **[3-02]** Set point at low ambient temperature (Lo_Ti): the target outgoing water temperature when the outdoor temperature equals or drops below the low ambient temperature (Lo_A).
  Note that the Lo_Ti value should be higher than Hi_Ti, as for colder outdoor temperatures (i.e. Lo_A) warmer water is required.
- **[3-03]** Set point at high ambient temperature (Hi_Ti): the target outgoing water temperature when the outdoor temperature equals or rises above the high ambient temperature (Hi_A).
  Note that the Hi_Ti value should be lower than Lo_Ti, as for warmer outdoor temperatures (i.e. Hi_A) less warm water suffices.

NOTE If by mistake the value of [3-03] is set higher than the value of [3-02], the value of [3-03] will always be used.

[4] Disinfection function

This mode will disinfect the domestic hot water tank by periodically heating the domestic water to a specific temperature.

NOTE If a domestic hot water tank is installed, the disinfection function is enabled by default.

- **[4-00]** Status: defines whether the disinfection function is turned ON (1) or OFF (0).
- **[4-01]** Operation interval: day of the week at which the domestic water should be heated.
- **[4-02]** Start time: time at which the disinfection operation is started

Even if all schedule timers are de-activated and there is no reheat function active, the disinfection function will operate if a domestic hot water tank is installed and field setting [4-00] is set to ON.

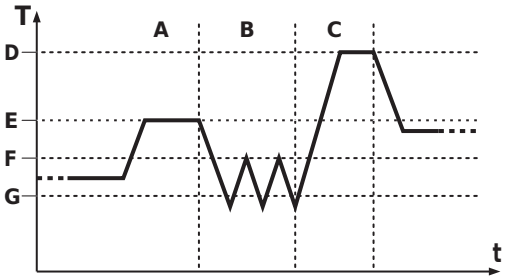
The disinfection function field settings must be configured by the installer according to national and local regulations.

Refer to "[5] Automatic setback and disinfection set point" for temperature set points.

[5] Automatic setback and disinfection set point

See also "[4] Disinfection function" on page 38 for more information about the disinfection operation.

- **[5-00]** Set point: disinfection water temperature to be reached
- **[5-01]** Interval: time period defining how long the disinfection temperature set point should be maintained



A Storage operation (if activated)

B Reheat operation (if activated)

C Disinfection operation (if activated)

Field settings

D Disinfection operation temperature [5-00] (e.g. 70°C)

E Hot water storage temperature [b-03] (e.g. 60°C)

F Reheat maximum water temperature [b-01] (e.g. 45°C)

G Reheat minimum water temperature [b-00] (e.g. 35°C)

t Time

T Domestic hot water tank temperature

See also "[2] Automatic setback function" on page 37 for more information about setback operation.

- **[5-02]** Leaving water setback temperature.
- **[5-03]** Room setback temperature.
- **[5-04]** Setting not available

[6] Option setup

- **[6-00]** Domestic hot water tank option
  If the domestic hot water tank is installed, its operation must be enabled by field setting. Default [6-00]=0 which means no tank is installed. Set [6-00] to 1 if the optional domestic hot water tank is installed.

  NOTE When enabling the domestic hot water tank option be aware that the advised default settings become active:
  - **[1-00]**=1=automatic night storage
  - **[4-00]**=1=disinfection function

- **[6-01]** External room thermostat option
  If the optional external room thermostat is installed, its operation must be enabled by field setting. Default [6-01]=0, which means no external room thermostat is installed. Set [6-01] to 1 if the optional external room thermostat is installed.
  The external room thermostat only gives an ON/OFF signal to the heat pump based on the room temperature. Because it does not give continuous feedback information to the heat pump, it is supplementary to the remote controller room thermostat function. To have a good control of the system and avoiding frequent ON/OFF it is advised to use the automatic weather dependent set point operation.
- **[6-02]** Heater kit

  Once installed, you can activate the heater kit by changing field setting [6-02]=1.

  From that moment on, the heat pump system will take the heater kit into account whilst deciding operation. When the heater is actually operating, the heater symbol is shown on the remote controller. There is no step 1-2 indication.

  For more information, see installation manual of the heater kit, especially concerning the test run for the heater kit.
- **[6-03]** Solar support
  For more information refer to the EKHWP installation manual.
- **[6-04]** Benefit kWh rate power supply mode
  If benefit kWh rate power supply is used, the mode must be selected. Default [6-04]=0 which means no benefit kWh rate power supply is used.
  Set [6-04] to 1 to use benefit kWh rate power supply mode 1 (normally closed contact which will open when the power supply is interrupted), or set [6-04] to 2 to use benefit kWh rate power supply mode 2 (normally opened contact which will close when the power supply is interrupted).

See "Connection to a benefit kWh rate power supply" on page 32 for more information.

[7] Option setup

- **[7-00]** Setting not available.
- **[7-01]** Setting not available.
- **[7-02]** See chapter "9.8. Multiple set point control" on page 46.
- **[7-03]** See chapter "9.8. Multiple set point control" on page 46.
- **[7-04]** See chapter "9.8. Multiple set point control" on page 46.

[8] Option setup

- **[8-00]** Remote controller temperature control
  When using the remote control delivered with the unit, 2 types of temperature control are possible. Default [8-00]=1 which means that the remote controller is used as room thermostat, so the remote controller can be placed in the living room to control the room temperature. Set [8-00] to 0 to use the unit in leaving water temperature control.
- **[8-01]** Backup heater optional setting

  This setting applies to installations with a backup heater installed (refer to "[6-02] Heater kit" on page 38).

  - **[8-01]**=0 (default)
    During benefit kWh rate power supply mode the backup heater will not operate. No automatic heat pump operation stop is performed at lower ambient temperatures.
  - **[8-01]**=1
    During benefit kWh rate power supply mode the backup heater will operate automatically in emergency mode. If the ambient temperature is lower than –25°C, the heat pump operation will stop and the unit will automatically change to emergency operation.

  For more information about connections to the backup heater, refer to the backup heater installation manual.
- **[8-02]** Emergency operation

  During emergency mode, heating is only done by the heater kit, not by the heat pump.

  Activation of emergency mode is done by changing field setting [8-02]=1.

  Activating the emergency mode will stop the heat pump operation. The pump of the indoor unit will be started, but heating itself is done by the heater kit. If there are no error conditions in leaving or returning water thermistors, the heater kit can start to follow emergency operation.

  NOTE Before activating emergency operation, be sure to activate the heater kit. The heater will stay in emergency mode until the field setting is set back to default [8-02]=0.

- **[8-03]** Quiet mode
  The unit has a quiet mode functionality for which 3 levels can be selected:
  - **[8-03]**=1 low noise level 1 (default)
  - **[8-03]**=2 low noise level 2
  - **[8-03]**=3 low noise level 3

  Activating this quiet mode is done by pushing the QUIET MODE button on the remote controller or through the schedule timer.
- **[8-04]** Freeze-up prevention
  The unit has a freeze-up prevention functionality for which 3 levels can be selected:
  - **[8-04]**=0 prevention level 0 (default: no prevention)
  - **[8-04]**=1 prevention level 1
  - **[8-04]**=2 prevention level 2

  The freeze-up prevention is only active when the unit is in thermo OFF condition. If prevention level 1 is enabled, the freeze-up prevention will start if the outdoor ambient temperature <4°C and if leaving or return water temperature <7°C. For prevention level 2, the freeze-up prevention will start as soon as the ambient temperature <4°C.
  For both cases the pump will operate and if leaving or return water <5°C for 5 minutes the unit will start up to prevent too low temperatures.
  It is advised to enable freeze-up prevention if the indoor unit is located in a colder ambient room (e.g. garage, ...) to prevent water freeze-up.

[9] Automatic temperature compensation

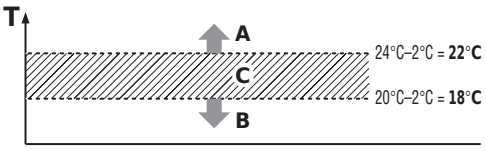
If needed, it is possible to adjust some thermistor value of the unit by a correction value. This can be used as countermeasure for thermistor tolerances or capacity shortage.

The compensated temperature (= measured temperature plus compensation value) is then used for controlling the system and will be displayed in the temperature read-out mode.

- **[9-00]** Leaving water temperature compensation value for heating operation.
- **[9-01]** Domestic hot water tank compensation value.
- **[9-02]** Thermo ON/OFF admission
  By changing this value the operation range for space heating operation can be modified.
  If the ambient temperature becomes higher than (24°C + the value of [9-02]) no space heating is possible.
  Space heating can be requested as long as the ambient temperature is lower than (20°C + the value of [9-02]).

Example:

[9-02]=–2°C



A	No space heating operation possible
B	Request for space heating possible
C	Hysteresis area
T	Ambient temperature

- **[9-03]** Leaving water temperature compensation value for cooling operation. Not available for heating only model.
- **[9-04]** Setting not available.

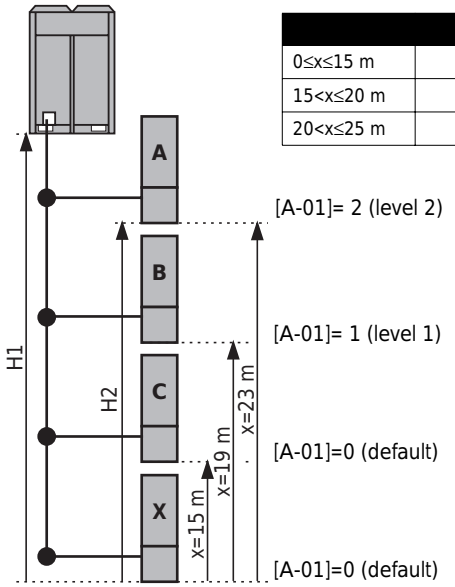
[A] Option setup

- **[A-00]** Current limitation.
  This setting provides the possibility to limit the power consumption of the indoor unit as follows:
  - **[A-00]**=0 16.5 A (default)
  - **[A-00]**=1 13.2 A (±80%)
  - **[A-00]**=2 10.7 A (±65%)

  The indoor unit current is limited, the outdoor unit is slave and will also reduce its power consumption consequently (if other indoor units loads correspond). However, transient conditions with higher power consumption are possible.
- **[A-01]** Change setting for allowable height difference between the highest and lowest installed indoor units.
  Difference in height between outdoor and indoor units H1≤40 m
  Difference in height between lowest and heighest indoor unit H2≤15 m.
  If setting [A-01] is changed, maximum H2 difference can be increased to 25 m. Depending on H2 level, use the settings in the table for designated indoor units.

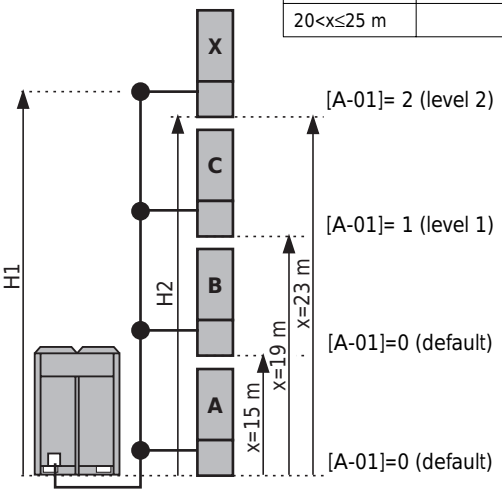
Example 1:

	[A-01] setting
0≤x≤15 m	0
15<x≤20 m	1
20<x≤25 m	2



Example 2:

	[A-01] setting
0≤x≤15 m	0
15<x≤20 m	1
20<x≤25 m	2

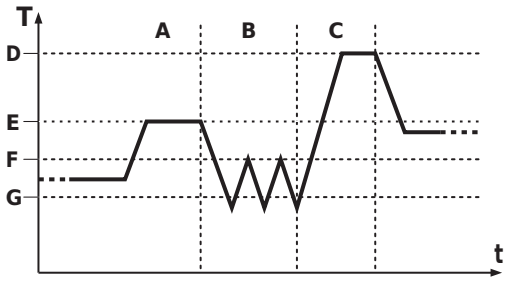


- **[A-02]** Temperature difference for leaving and returning water in heating mode.
  The unit is designed to support radiator operation. The advised leaving water temperature (set by the remote controller) for radiators is 65°C. In such a case the unit will be controlled to realize a temperature difference (ΔT) of 10°C, which means that the returning water to the unit is around 55°C.
  Depending on the installed application (radiators, fan coil units, ...) or situation, it can be required to change the ΔT. This can be done by changing field setting [A-02].
- **[A-03]** See chapter "9.8. Multiple set point control" on page 46.
- **[A-04]** See chapter "9.8. Multiple set point control" on page 46.

[b] Domestic hot water set points

The reheat mode will prevent the domestic hot water from cooling down lower than a certain temperature. When enabled the indoor unit will deliver hot water to the domestic hot water tank if the reheat minimum value is reached. The domestic water heating will continue until the reheat maximum temperature is reached. In this way always a minimum of domestic hot water is available.

- **[b-00]** Set point: reheat minimum temperature (see figure below).
- **[b-01]** Set point: reheat maximum temperature (see figure below).

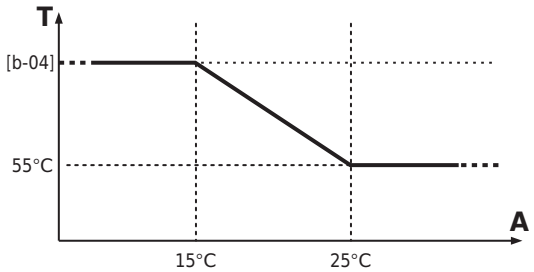


A Storage operation (if activated)
B Reheat operation (if activated)
C Disinfection operation (if activated)

Field settings

D Disinfection operation temperature [5-00] (e.g. 70°C)
E Hot water storage temperature [b-03] (e.g. 60°C)
F Reheat maximum water temperature [b-01] (e.g. 45°C)
G Reheat minimum water temperature [b-00] (e.g. 35°C)
t Time
T Domestic hot water tank temperature

- **[b-02]** Status: defines whether the weather dependent domestic water heating is turned ON (1) or OFF (0).
  If enabled, the storage set point will be set weather dependent.
  In case of a higher ambient temperature (e.g. during summer-time), the cold supply water to the mixing tap (e.g. shower, bath) will also have a higher temperature. This makes that the temperature of the hot water from the domestic hot water tank may be lower to reach the same water mixing temperature from the shower or bath mixing tap. In this way, with a lower domestic hot water tank temperature setting the comfort level can be kept the same but with a lower energy consumption.



A Ambient temperature
T Domestic hot water storage temperature

NOTE The maximum setting temperature for domestic hot water can be changed with field setting [b-04]. Other settings are fixed

- **[b-03]** Set point: storage temperature (see figure above)

> **NOTE** If weather dependent domestic water heating is enabled [b-02], the storage temperature will be set automatically and the field setting [b-03] will be of no importance.

- **[b-04]** Maximal domestic hot water setting during weather depending domestic hot water setpoint.
  Refer to the figure above.

[C] Leaving water temperature limits

To prevent misuse concerning leaving water temperatures, it is possible to limit the set points.

- **[C-00]** Maximum leaving water setpoint in heating operation.
- **[C-01]** Minimum leaving water setpoint in heating operation.
- **[C-02]** Maximum leaving water setpoint in cooling operation.
- **[C-03]** Minimum leaving water setpoint in cooling operation.
- **[C-04]** Field setting not available.

[d] Domestic water heating retention times

The heat pump can only work in either space heating operation or domestic water heating operation. No simultaneous operation is possible, except when using multiple set point control (see chapter "9.8. Multiple set point control" on page 46 for more information).

- **[d-00]** Set point: minimum operation time for domestic water heating
- **[d-01]** Set point: maximum operation time for domestic water heating
- **[d-02]** Set point: interval minimum stop time of domestic water heating

Changing the timer values can have an impact on space heating and domestic water heating heat up timers. The default values are proposed but can be changed depending on the complete system installation.

For a detailed explanation about simultaneous request of space heating and domestic water heating, see chapter "9.6. Simultaneous demand of space heating and domestic water heating" on page 42.

- **[d-03]** Setting not available.
- **[d-04]** Setting not available.

[E] Service mode

- **[E-00]** Vacuum mode
  When recovering/vacuuming of the indoor unit is needed, field setting [E-00] can be activated. It will force the unit into thermo OFF and will open the expansion valve of the indoor unit R134a circuit so full vacuuming is possible.
  By default [E-00]=0, set to 1 to enable the vacuum mode.

> **NOTE** Do not forget to restore the field setting [E-00] to the default value when vacuuming is finished! See also "11.3. Vacuuming/recovery and maintenance on refrigerant side" on page 54.

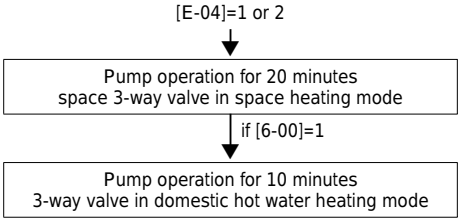
- **[E-01]** Setting not available.
- **[E-02]** Setting not available.
- **[E-03]** Setting not available.
- **[E-04]** Pump only operation

  When commissioning and installing the unit it is very important to get all air out of the water circuit.

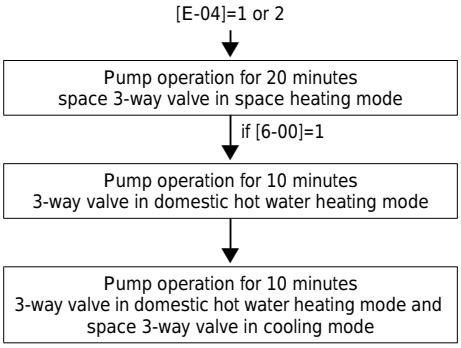
  Through this field setting the pump can be operated without actual operation of the unit. By doing so this will enhance the air removal from the circuit. The pump can operate at different speed:

  - **[E-04]**=0 normal operation of the unit (default)
  - **[E-04]**=1 low pump speed operation
  - **[E-04]**=2 high pump speed operation

    If you select [E-04]=1 or 2 and [6-00]=1, the unit will activate the domestic hot water 3-way valve and heat/cool 3-way valve. This function is a helpful feature to get all air removed out of the system (as well in space heating/cooling as in domestic hot water heating).
    For EKHVMRD:



    For EKHVMYD:



See chapter "10. Final check and test run" on page 51 for more information.

[F] Option setup

- **[F-00]** Temperature difference for leaving and returning water in cooling mode.
  Depending on the type of heat emitter in cooling mode (fan coil, floor heating, etc) the difference in temperature between entering and leaving water in cooling mode can be modified by changing setting [F-00]
  This setting is only applicable for EKHVMYD-units.
- **[F-01]**: Setting not available
- **[F-02]**: Heat recovery setting.
  Unit heat recovery = heat recovery within 1 indoor unit (the energy recovered in cooling mode will be used to warm-up the domestic hot water)
  - **[F-02]**=1 unit heat recovery is allowed for this unit (default)
  - **[F-02]**=2 no heat recovery is allowed for this unit

> **NOTE** Cooling to heating heat recovery is judged by the outdoor unit logic.

- **[F-03]**: Setting not available
- **[F-04]**: Setting not available

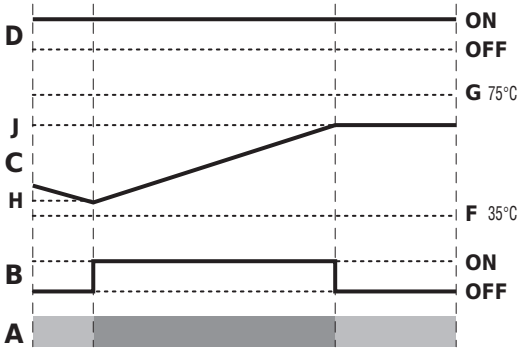
9.6. Simultaneous demand of space heating and domestic water heating

Remote controller leaving water temperature control

When the reheat temperature is reached, the further heat up till storage temperature of the domestic hot water tank will be decided by the running timers which are programmed by the installer.

1 Reheat operation

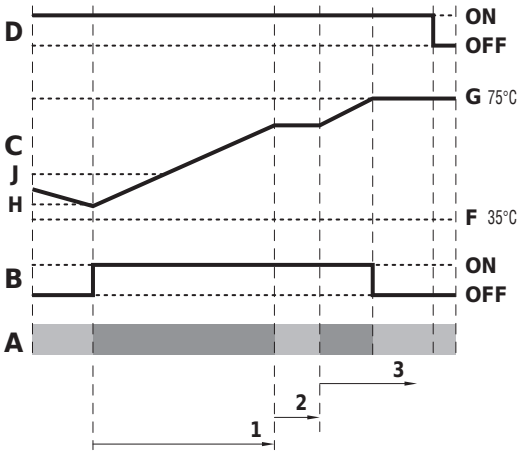
When requesting space heating and domestic water heating (reheat) at the same time, the domestic water will be heated till maximum reheat temperature, then space heating will start again.



A	Operation
	Space heating
	Domestic water heating
B	Domestic hot water reheat thermo-on request
C	Domestic hot water tank temperature
D	Leaving water thermo-on request
F	Domestic hot water lower limit temperature
G	Domestic hot water upper limit temperature (maximum possible storage temperature) [b-03]
H	Domestic hot water reheat minimum temperature [b-00]
J	Domestic hot water reheat maximum temperature [b-01]
ON	ON
OFF	OFF

2 Storage operation

When requesting space heating and domestic water heating (storage) at the same time, domestic water will be heated according to running timer, then space heating will start again according to running timer, then domestic water heating will start again according to running timer, this will continue till storage set point is reached.



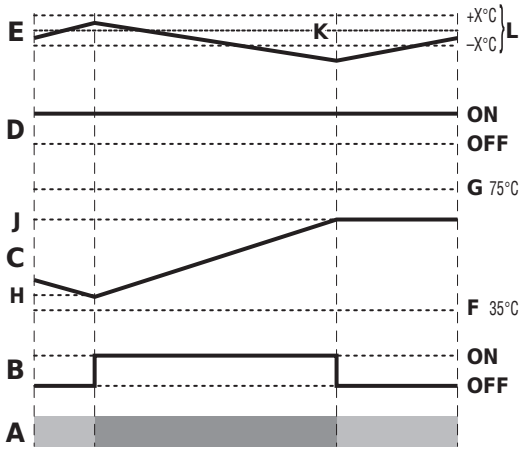
A	Operation
	Space heating
	Domestic water heating
B	Domestic hot water storage thermo-on request
C	Domestic hot water tank temperature
D	Leaving water thermo-on request
F	Domestic hot water lower limit temperature
G	Domestic hot water upper limit temperature (maximum possible storage temperature) [b-03]
H	Domestic hot water reheat minimum temperature [b-00]
J	Domestic hot water reheat maximum temperature [b-01]
ON	ON
OFF	OFF
1	Maximum operation time for domestic water heating (initial 30 minutes [d-01])
2	Interval minimum stop time for domestic water heating (initial 15 minutes [d-02])
3	Maximum operation time for domestic water heating (initial 30 minutes [d-01])

External room thermostat

When the reheat temperature is reached, the further heat up of the domestic hot water tank will be decided by the external room thermostat thermo conditions and running timers which are programmed by the installer.

1 Reheat operation

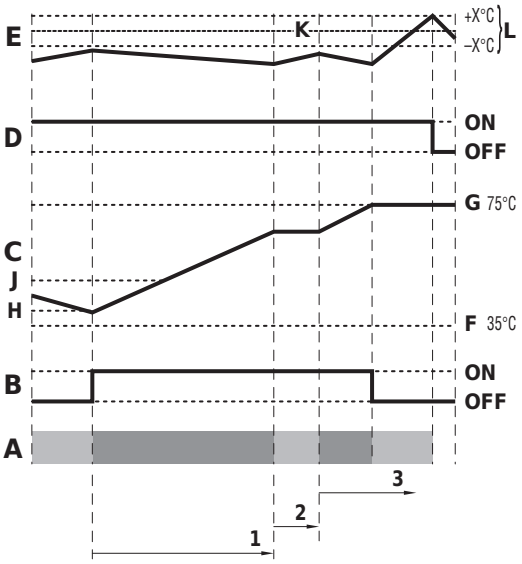
When requesting space heating and domestic water heating (reheat) at the same time, the domestic water will be heated till maximum reheat temperature, then space heating will start again.



A	Operation
	Space heating
	Domestic water heating
B	Domestic hot water reheat thermo-on request
C	Domestic hot water tank temperature
D	Room temperature thermo-on request
E	Remote controller room temperature
F	Domestic hot water lower limit temperature
G	Domestic hot water upper limit temperature (maximum possible storage temperature) [b-03]
H	Domestic hot water reheat minimum temperature [b-00]
J	Domestic hot water reheat maximum temperature [b-01]
K	External room thermostat set point
L	External room thermostat ON/OFF hysteresis
ON	ON
OFF	OFF

2 Storage operation

When requesting space heating and domestic water heating (storage) at the same time, domestic water will be heated according to running timer, then space heating will start again according to running timer, then domestic water heating will start again according to running timer, this will continue till storage set point is reached.



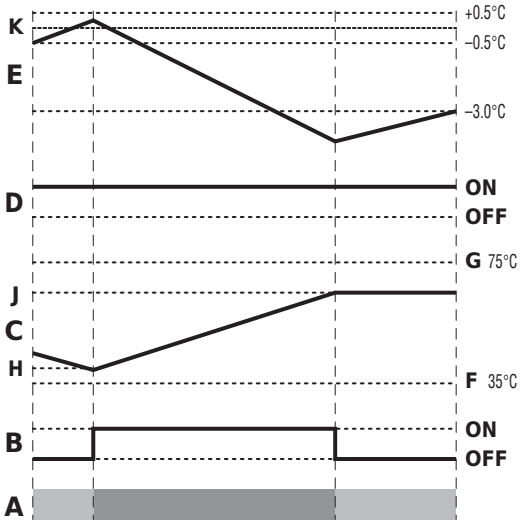
A	Operation
	Space heating
	Domestic water heating
B	Domestic hot water storage thermo-on request
C	Domestic hot water tank temperature
D	Room temperature thermo-on request
E	Remote controller room temperature
F	Domestic hot water lower limit temperature
G	Domestic hot water upper limit temperature (maximum possible storage temperature) [b-03]
H	Domestic hot water reheat minimum temperature [b-00]
J	Domestic hot water reheat maximum temperature [b-01]
K	External room thermostat set point
L	External room thermostat ON/OFF hysteresis
ON	ON
OFF	OFF
1	Maximum operation time for domestic water heating (initial 30 minutes [d-01])
2	Interval minimum stop time for domestic water heating (initial 15 minutes [d-02])
3	Maximum operation time for domestic water heating (initial 30 minutes [d-01])

Remote controller room temperature control

When the reheat temperature is reached, the further heat up till storage temperature of the domestic hot water tank will be decided by the remote controller room thermostat in order to prevent the room temperature to drop too much.

1 Reheat operation

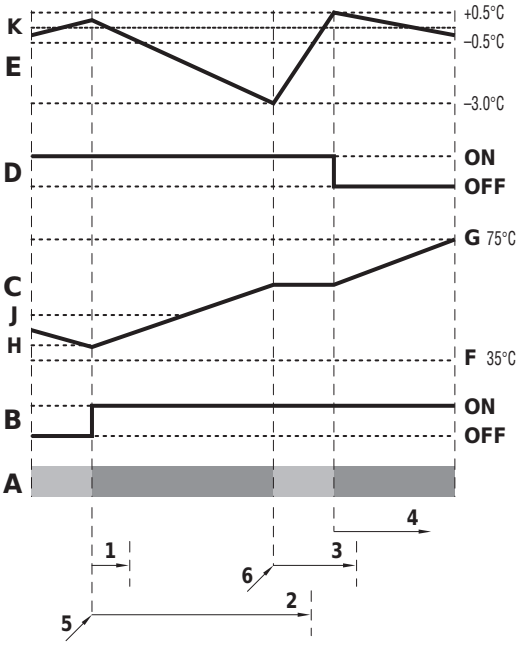
When requesting space heating and domestic water heating (reheat) at the same time, the domestic water will be heated till maximum reheat temperature, then space heating will start again.



A	Operation
	Space heating
	Domestic water heating
B	Domestic hot water reheat thermo-on request
C	Domestic hot water tank temperature
D	Room temperature thermo-on request
E	Remote controller room temperature
F	Domestic hot water lower limit temperature
G	Domestic hot water upper limit temperature (maximum possible storage temperature) [b-03]
H	Domestic hot water reheat minimum temperature [b-00]
J	Domestic hot water reheat maximum temperature [b-01]
K	Remote controller thermostat set point
ON	ON
OFF	OFF

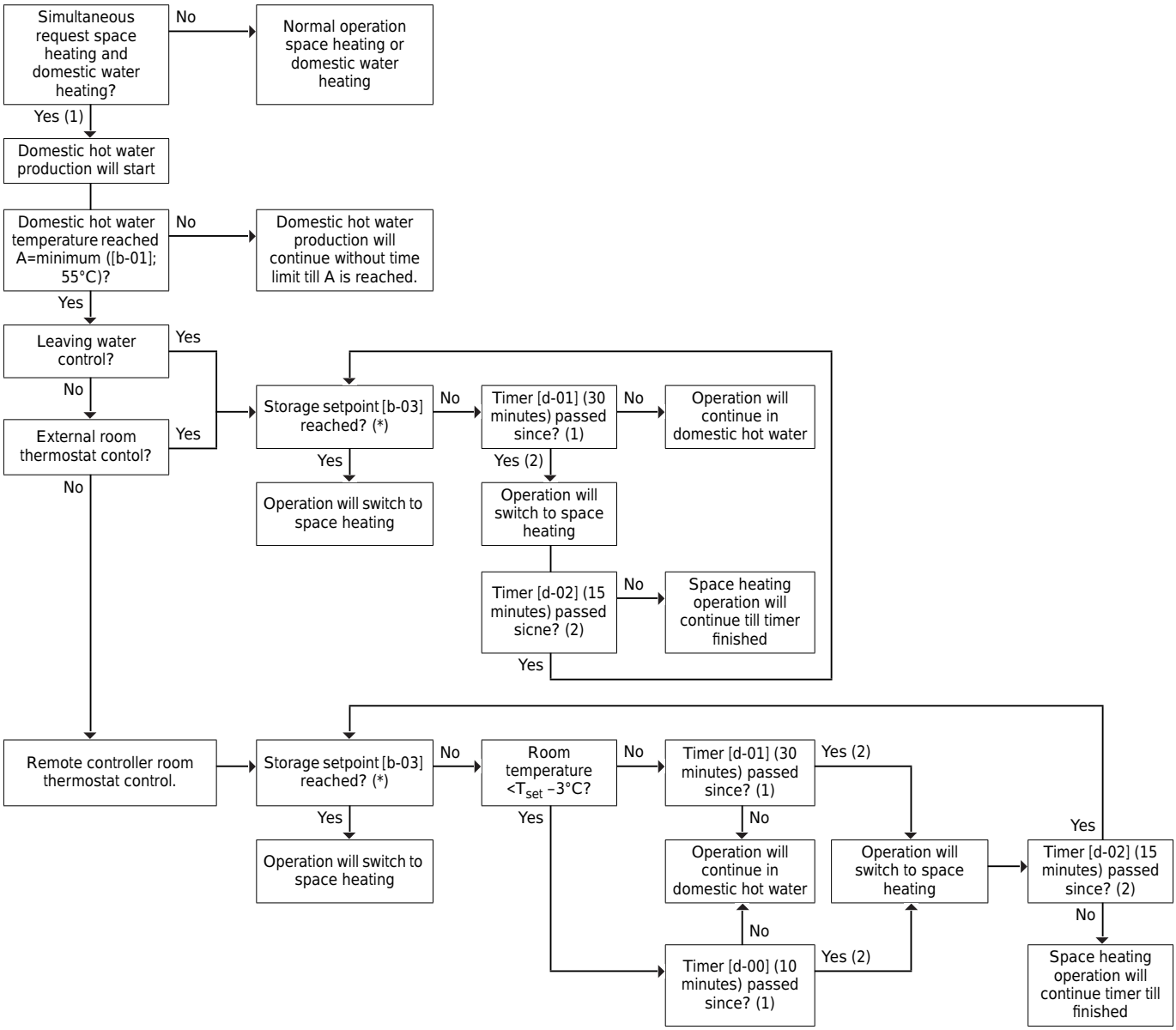
2 Storage operation

When requesting space heating and domestic water heating (storage) at the same time, domestic water will be heated, but as soon as the room temperature drops 3°C from set point, space heating will start till 0.5°C above set point, then domestic water will be heated again till storage set point.



A	Operation
	Space heating
	Domestic water heating
B	Domestic hot water storage thermo-on request
C	Domestic hot water tank temperature
D	Room temperature thermo-on request
E	Remote controller room temperature
F	Domestic hot water lower limit temperature
G	Domestic hot water upper limit temperature (maximum possible storage temperature) [b-03]
H	Domestic hot water reheat minimum temperature [b-00]
J	Domestic hot water reheat maximum temperature [b-01]
K	Remote controller thermostat set point
ON	ON
OFF	OFF
1	Minimum operation time for domestic water heating (initial 10 minutes [d-00])(a)
2	Maximum operation time for domestic water heating (initial 30 minutes [d-01])(b)
3	Interval minimum stop time for domestic water heating (initial 15 minutes [d-02])
4	No simultaneous operation
5	Timers for domestic water heating start
6	Timer for space heating start

(a) The minimum operation time is only valid when room temperature is more than 3°C lower as set point and set point J is reached.
(b) The maximum operation time is only valid when room temperature is more than 0.5°C lower as set point and set point J is reached.



(1) are in relation with each other

(2) are in relation with each other

(*) Storage set point can be automatic value if [b-02]=1

9.7. Simultaneous demand of space cooling and domestic water heating

The unit can perform simultaneous operation of cooling and domestic water heating.

During cooling operation, the energy taken from the cooled motor will be transferred into energy to heat up the domestic water. It is a recovery function and is controlled automatically by the system.

This heat recovery is only possible if heat recovery operation is permitted (it is an installation related setting).

9.8. Multiple set point control

If you want to use multiple set point control, a temperature reducing device (TRD) is needed. The temperature reducing device converts the high inlet water temperature to a reduced water outlet temperature which will be delivered to the appliance(s).

When temperature reducing devices are installed, the system can be configured to use multiple water set points.

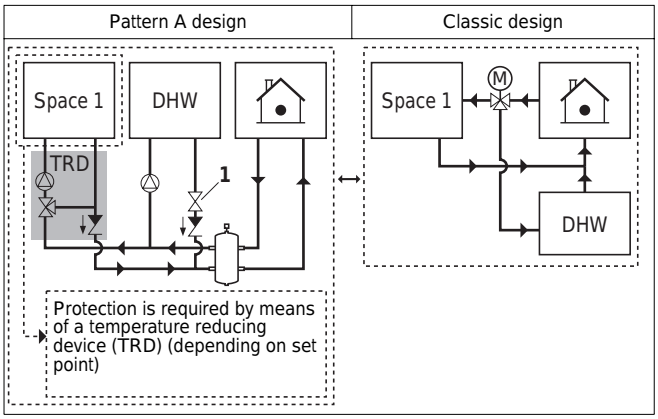
The water set points can be selected in function of multiple set point operation patterns.

Below the 2 possible patterns are explained in detail.

Multiple set point control according to pattern A

During normal operation, domestic water heating and space heating modes are separated and activated intermittent to fulfil a simultaneous request. Therefor multiple set point pattern A can be configured to allow simultaneous domestic water heating and space heating operation without intermission.

Schematic overview:



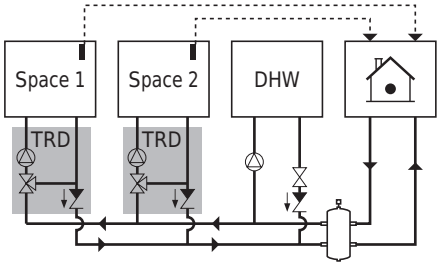
	Indoor unit
1	Domestic hot water shut-off valve (field supply)
DHW	Domestic hot water tank
TRD	Temperature reducing device
Space 1	Space 1
	Balancing bottle

- During space heating operation, water is provided based on the selected water temperature set point for space heating. A shut-off valve (field supply) must be installed in the domestic hot water tank coil circuit. The valve must be closed to protect the domestic hot water tank from cooling down by lower temperature water going through the coil during space heating. Connection and control of this shut-off valve is the reponsability of the installer.
- During domestic water heating operation, the water temperature set point is normally higher than the set point requested during space heating operation. The valve allowing water to enter the domestic hot water tank coil is open. The heat pump will deliver water with a higher temperature which is needed for production of the domestic hot water. At that time, the lower temperature appliances have to be protected against the higher water temperature by a temperature reducing valve.

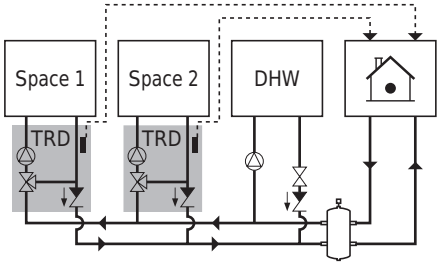
The configuration of pattern A allows 2 space heating set points and one (same as in the classic design) domestic hot water set point.

The request signals for space heating can be implemented in 2 different ways (installer choice):

- thermo ON/OFF signal (from external room thermostat)



- status signal (active/not active) from the corresponding temperature reducing device (TRD)



	Indoor unit
DHW	Domestic hot water tank
TRD	Temperature reducing device
Space 1	Space 1
Space 2	Space 2
	Balancing bottle

The electrical connections on the unit should be done on the optional demand PCB.

The configuration of pattern A is done by field settings:

1 Select the appropriate pattern: [7-02]=0

2 Turn on multiple set point 1: [7-03]=0 → [7-03]=1
Turn on multiple set point 2: [7-04]=0 → [7-04]=1

3 Enter the temperature multiple set point 1: [A-03] (see below)
Enter the temperature multiple set point 2: [A-04] (see below)
Configuration example:

	Set point	Field setting	Thermo status				
Domestic hot water	70°C(a)	[b-03]	OFF	ON	OFF	OFF	OFF
Space 1	65°C	[A-03]	OFF	ON/OFF	ON	ON	OFF
Space 2	35°C	[A-04]	OFF	ON/OFF	ON	OFF	ON
Resulting heat pump water			OFF	>70°C	65°C	65°C	35°C

(a) The water temperature needed to reach this set point of course is higher than 70°C.

NOTE

- If the system is configured according to pattern A, nor the remote controller room thermostat function (default OFF if multiple set point is selected) nor the external room thermostat (as replacement of the remote controller room thermostat function) may be used.
- The remote controller water temperature value is ignored when pattern A is active.
- It is the installers responsibility to make sure no unwanted situations can occur (e.g. too high water temperatures towards floor heating loops, etc.).
- It is the installers responsibility to make sure the water circuit is well balanced (e.g. when a domestic hot water request occurs, there will be sufficient flow towards other appliances as well, etc.)
- Daikin does not offer any temperature reducing device (TRD). This system only provides the possibility to use multiple set points.
- It is advised to only use the automatic storage functionality for domestic water heating when applying pattern A (with a high set point temperature).

Multiple set point control according to pattern B

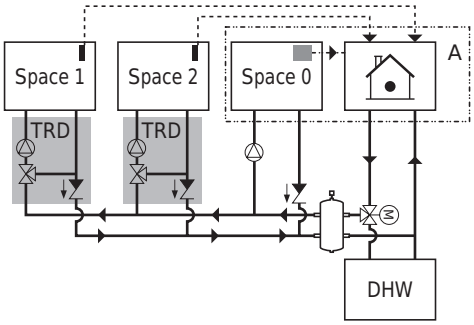
The basic setup of multiple set point pattern B is the same as a normal classic design, so again no domestic water heating and space heating is possible simultaneously.

Multiple set point pattern B is focussed on space heating operation and allows using multiple water set points in combination with the remote controller or external room thermostat.

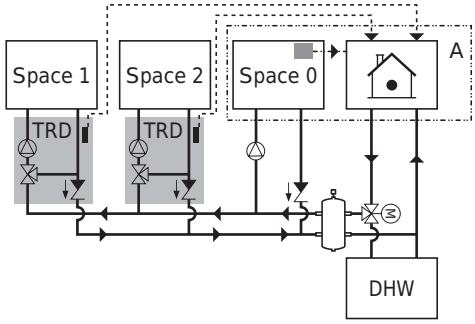
The configuration of pattern B allows 3 space heating set points and 1 domestic hot water set point.

The request signals for space heating can be implemented in 2 different ways (installer choice):

- thermo ON/OFF signal (from external room thermostat)



- status signal (active/not active) from the corresponding temperature reducing device



	Indoor unit
DHW	Domestic hot water tank
TRD	Temperature reducing device
Space 0	Space 0
Space 1	Space 1
Space 2	Space 2
	Balancing bottle
A	Classic room thermostat control with remote controller room thermostat function and external room thermostat

Space 0, not using a temperature reducing device (TRD), always needs to be linked with the highest water temperature set point and can be controlled by the remote controller room thermostat function or by the external room thermostat. Settings for space 0 can be made on the remote controller (same as during normal operation(1)).

The electrical connections on the unit should be done on the optional demand PCB.

The configuration of pattern B is done by field settings:

1 Select the appropriate pattern: [7-02]=1

2 Turn on multiple set point 1: [7-03]=0 → [7-03]=1
Turn on multiple set point 2: [7-04]=0 → [7-04]=1

3 Enter the temperature multiple set point 1: [A-03] (see below)
Enter the temperature multiple set point 2: [A-04] (see below)
Configuration example:

	Set point	Field setting	Thermo status				
Space 0	65°C	Remote controller	OFF	ON	OFF	OFF	OFF
Space 1	45°C	[A-03]	OFF	ON/OFF	ON	ON	OFF
Space 2	35°C	[A-04]	OFF	ON/OFF	OFF	ON	ON
Resulting heat pump water			OFF	65°C	45°C	45°C	35°C

Pattern B can also be used to do some primary multi zoning (if all set point temperatures are selected the same, no temperature reducing device (TRD) is required).

Multiple thermo ON signals for 3 rooms can be generated. Thermo OFF signals are only valid if all requests are OFF.

(1) When using the automatic weather dependent function for setting of space 0, you have to make sure that the lowest possible temperature of the space 0 floating set point (including the possible negative shift value) is higher than the temperature set point of spaces 1 and 2.
This means that field setting [3-03] of space 0 needs to be higher than temperature set point of spaces 1 and 2.

NOTE

- Leaving water control is not allowed for pattern B.
- It is the installers responsibility to make sure no unwanted situations can occur (e.g. too high water temperatures towards floor heating loops, etc.).
- It is the installers responsibility to make sure the water circuit is well balanced (e.g. when a domestic hot water request occurs, there will be sufficient flow towards other appliances as well, etc.)
- Daikin does not offer any temperature reducing device (TRD). This system only provides the possibility to use multiple set points.
- When space 0 is in thermo OFF, but space 1 or 2 are active, space 0 will be fed with water at a temperature equal to the highest set point of spaces 1 and 2.
  This can lead to unwanted heating of space 0.

9.9. Field setting table

First code	Second code	Setting name	Installer setting at variance with default value				Default value	Range	Step	Unit
			Date	Value	Date	Value				
0	**Remote control setup**									
	00	User permission level					2	2~3	1	—
	01	Room temperature compensation value					0	–5~5	0.5	°C
	02	Not applicable. Do not change the default value.					1	—	—	—
	03	Status: space heating schedule timer mode Method 1=1 / Method 2=0					1 (ON)	0/1	—	—
	04	Status: space cooling schedule timer mode Method 1=1 / Method 2=0					1 (ON)	0/1	—	—
1	**Automatic storage timing for domestic water heating**									
	00	Status: night time storage					1 (ON)	0/1	—	—
	01	Night time storage start time					1:00	0:00~23:00	1:00	hour
	02	Status: day time storage					0 (OFF)	0/1	—	—
	03	Day time storage start time					15:00	0:00~23:00	1:00	hour
2	**Automatic setback function**									
	00	Status: setback operation					1 (ON)	0/1	—	—
	01	Setback operation start time					23:00	0:00~23:00	1:00	hour
	02	Setback operation stop time					5:00	0:00~23:00	1:00	hour
3	**Weather dependent set point**									
	00	Low ambient temperature (Lo_A)					–10	–20~5	1	°C
	01	High ambient temperature (Hi_A)					15	10~20	1	°C
	02	Set point at low ambient temperature (Lo_Ti)					70	25~80	1	°C
	03	Set point at high ambient temperature (Hi_Ti)					45	25~80	1	°C
4	**Disinfection function**									
	00	Status: disinfection operation					1 (ON)	0/1	—	—
	01	Disinfection operation day selection					Fri	Mon~Sun	—	—
	02	Disinfection operation start time					23:00	0:00~23:00	1:00	hour
5	**Automatic setback and disinfection set point**									
	00	Set point: disinfection operation temperature					70	60~75	5	°C
	01	Disinfection operation time duration					10	5~60	5	min
	02	Leaving water setback temperature					5	0~10	1	°C
	03	Room setback temperature					18	17~23	1	°C
	04	Not applicable. Do not change the default value.					0	—	—	—
6	**Option setup**									
	00	Domestic hot water tank installed					0 (OFF)	0/1	—	—
	01	Optional room thermostat installed					0 (OFF)	0/1	—	—
	02	Optional backup heater installed					0 (OFF)	0/1	—	—
	03	Optional solar kit installed					0 (OFF)	0/1	—	—
	04	Benefit kWh power supply mode					0	0/2	1	—
7	**Option setup**									
	00	Not applicable. Do not change the default value.					0	—	—	—
	01	Not applicable. Do not change the default value.					0	—	—	—
	02	Multiple set point pattern					0 (A)	0/1	—	—
	03	Multiple set point 1					0 (OFF)	0/1	—	—
	04	Multiple set point 2					0 (OFF)	0/1	—	—
8	**Option setup**									
	00	Remote controller temperature control					1 (ON)	0/1	—	—
	01	Backup heater kit optional setting					1 (ON)	0/1	—	—
	02	Emergency mode					0 (OFF)	0/1	—	—
	03	Status: low noise level					1	1~3	1	—
	04	Status: freeze-up prevention					0	0~2	1	—

First code	Second code	Setting name	Installer setting at variance with default value				Default value	Range	Step	Unit
			Date	Value	Date	Value				
9	**Automatic temperature compensation**									
	00	Leaving water temperature compensation value (heating)					0	–2~2	0.2	°C
	01	Domestic hot water tank compensation value					0	–5~5	0.5	°C
	02	Thermo ON/OFF admission					0	–5~5	0.5	°C
	03	Leaving water temperature compensation value (cooling)					0	–2~2	0.2	°C
	04	Not applicable. Do not change the default value.					0	—	—	—
A	**Option setup**									
	00	Current limitation.					0	0~2	1	—
	01	Indoor unit height difference setting					0	0~2	1	—
	02	Set point: heating required temperature difference for leaving and returning water					10	5~15	1	°C
	03	Set point: multiple set point 1 required temperature value					35	25~80	1	°C
	04	Set point: multiple set point 2 required temperature value					65	25~80	1	°C
b	**Domestic hot water set points**									
	00	Set point: reheat minimum temperature					35	35~65	1	°C
	01	Set point: reheat maximum temperature					45	35~75	1	°C
	02	Status: weather dependent domestic water heating					1 (ON)	0/1	—	—
	03	Set point: storage temperature					70	45~75	1	°C
	04	Automatic maximum domestic hot water storage temperature					70	55~75	1	°C
C	**Leaving water temperature limits**									
	00	Set point: heating leaving water maximum temperature					80	37~80	1	°C
	01	Set point: heating leaving water minimum temperature					25	25~37	1	°C
	02	Set point: cooling leaving water maximum temperature					20	18~22	1	°C
	03	Set point: cooling leaving water minimum temperature					5	5~18	1	°C
	04	Not applicable. Do not change the default value.					0	—	—	—
d	**Domestic water heating retention times**									
	00	Set point: minimum time for domestic water heating					10	5~20	1	—
	01	Set point: maximum time for domestic water heating					30	10~60	5	—
	02	Set point: interval minimum stop time of domestic water heating					15	5~30	5	—
	03	Not applicable. Do not change the default value.					15	—	—	—
	04	Not applicable. Do not change the default value.					40	—	—	—
E	**Service mode**									
	00	Vacuum mode R134a					0	0/1	—	—
	01	Not applicable. Do not change the default value.					0	—	—	—
	02	Not applicable. Do not change the default value.					0	—	—	—
	03	Not applicable. Do not change the default value.					1	—	—	—
	04	Pump only operation					0	0~2	1	—
F	**Option setup continued**									
	00	Set point: cooling required temperature difference for leaving and returning water					5	5~15	1	°C
	01	Not applicable. Do not change the default value.					0	—	—	—
	02	Heat recovery allowance					1	0~2	1	—
	03	Not applicable. Do not change the default value.					10	—	—	—
	04	Not applicable. Do not change the default value.					50	—	—	—

10. Final check and test run

10.1. Final check

Before switching on the unit, read the following:

- When the complete installation and all necessary settings have been carried out, be sure that all panels of the unit are closed. If this is not the case, inserting your hand through the remaining openings can cause serious injury due to electrical and hot parts inside the unit.
- The service panel of the switch box may only be opened by a licensed electrician for maintenance purposes.

In order to purge most of the air out of the system perform a pump operation as described below:

1 Change field setting [E-04]

The default value is 0.

- When changing the setting to 1, the pump will operate at low speed (pump only, the unit will not operate).
- When changing the field setting to 2, the pump will operate at high speed.

2 When air purging is finished, change the field setting back to 0.

It is the responsibility of the installer to make sure that the air is purged out of the unit and system.

NOTE When using thermostatic radiator valves, make sure to open all valves during air purging operation.

- Be sure that all stop valves are open. (Refer to vacuuming procedure of the outdoor unit)
- Be sure that all water valves are open.

Multi tenant power supply check

Cut off the power supply to the indoor unit. If the multi tenant power supply is installed, the remote controller will keep operating. Confirm that the remote controller still operates for more than 15 seconds after the power supply was cutt off.

10.2. System test run

Before you can check test operation of each indoor unit separately, you have to do the system test run. System test run is explained in the installation manual of the outdoor unit. This is an automatic test run which can take up to more than 1 hour.

When the system test run is finished, it is possible to do an individual test run as described in "10.3. Indoor unit individual test run" on page 51. During this test run, the installer should check indicated items.

10.3. Indoor unit individual test run

NOTE When the indoor units and outdoor unit are powered on for the first time, an initialisation takes place. This will take maximum 12 minutes.

When using the remote controller during the initialisation, an error code (UH) can be displayed.

The installer is obliged to verify correct operation of the indoor and outdoor unit after installation. Therefor a test run must be performed according to the procedures described below. At any time it is possible to check correct operation of space heating and domestic water heating.

NOTE

- During the first start up of the unit (the first 48 hours of compressor running), it might happen that the noise level of the unit is higher than mentioned in the technical specifications. This is not an abnormal event.
- Start up of the unit in space heating mode is only possible when the outdoor ambient temperature is lower than 20°C. Refer to "[9-02] Thermo ON/OFF admission" on page 39 how to increase this temperature limit.

Temperature read-out mode

On the remote controller, the actual temperatures can be displayed.

1 Push and hold the button for 5 seconds.

The leaving water temperature is displayed (icons and and are blinking).

2 Use the and buttons to display:

- The entering water temperature (icons and and are blinking and the icon is flashing slowly).
- The indoor temperature (icons and and are blinking).
- The outdoor temperature (icons and and are blinking).
- The hot water supply tank temperature (icons and and are blinking).

3 Push the button again to leave this mode. If no button is pressed, the remote controller leaves the display mode after 10 seconds.

Procedure for space heating/cooling

1 Check the leaving water and entering water temperature through the remote controller read-out mode and write down the displayed values. See "Temperature read-out mode" on page 51.

2 Select the operation mode: heating or cooling.

3 Push the button 4 times so the TEST icon will be displayed.

4 Perform the test as follows (when no action is performed, the user interface will return to normal mode after 10 seconds or by pressing the button once):

To test the space heating/cooling operation push the button to start the test run operation.

5 The test run operation will end automatically after 30 minutes or when reaching the set temperature. The test run operation can be stopped manually by pressing the button once. If there are misconnections or malfunctions, an error code will be displayed on the user interface. Otherwise, the user interface will return to normal operation.

6 To resolve the error codes, see "12.5. Error codes" on page 57.

7 Check the leaving water and entering water temperature through the remote controller read-out mode and compare them with the values noted with step 1. After 20 minutes of operation an increase/decrease of the values should confirm the space heating/cooling operation.

NOTE To display the last resolved error code, push the TEST button 1 time. Push the TEST button again 4 times to return to normal mode.

NOTE It is not possible to perform a test run if a forced operation from the outdoor unit is in progress. Should forced operation be started during a test run, the test run will be aborted.

Procedure for domestic water heating

1 Check the domestic hot water tank temperature through the remote controller read-out mode. See "Temperature read-out mode" on page 51.

2 Push the button for 5 seconds.

The icon will start blinking with 1 second intervals.

3 Keep the unit operating for 20 minutes and check the domestic hot water tank temperature through the remote controller again.

An increase of the value with 5°C should confirm the domestic water heating operation.

4 The operation will stop if the tank storage temperature has been reached.

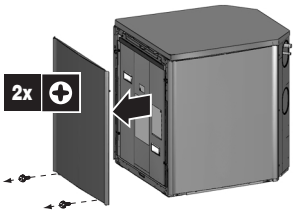
11. Maintenance and service

In order to ensure optimal availability of the unit, a number of checks and inspections on the unit and the field wiring have to be carried out at regular intervals.

This maintenance should be carried out by your local installer.

To execute the maintenance activities as mentioned below, it is only required to remove the front decoration panel.

To take away the front decoration panel, remove the 2 bottom screws and then unhitch the panel.



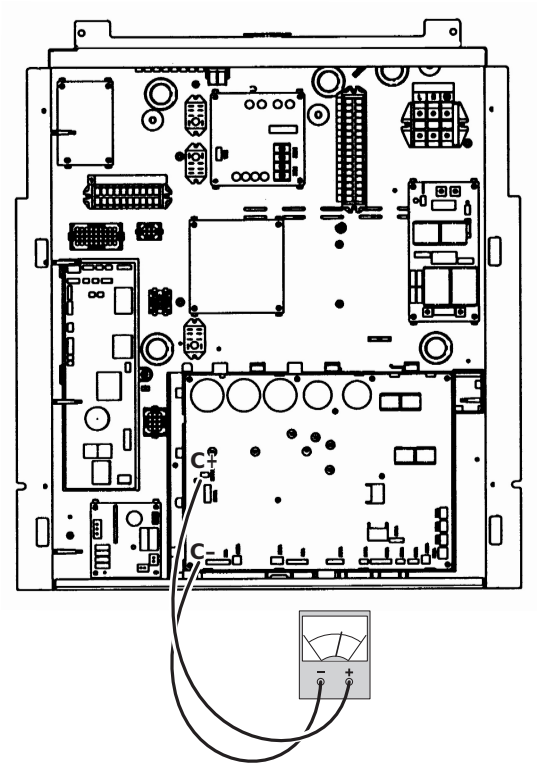
11.1. Maintenance activities

DANGER: ELECTRICAL SHOCK

See "2. General safety precautions" on page 2.

WARNING: ELECTRIC SHOCK

- Before carrying out any maintenance or repair activity, always switch off the circuit breaker on the supply panel, remove the fuses or open the protection devices of the unit.
- Make sure that before starting any maintenance or repair activity, also the power supply to the outdoor unit is switched off.
- Before carrying out any maintenance or repair activity, always switch off the multi tenant power supply.
- Do not touch live parts for 10 minutes after the power supply is turned off because of high voltage risk.
- Additionally, measure the points as shown in the figure below with a tester and confirm that the voltage of the capacitor in the main circuit is no more than 50 V DC.



- Please note that some sections of the electric component box are hot.
- Make sure you do not touch a conductive section.
- Do not rinse the indoor unit. This may cause electric shocks or fire.

Play it safe!

Touch a metal part by hand (such as the stop valve) in order to eliminate static electricity and to protect the PCB before performing service.

The described checks must be executed at least **once a year** by qualified personnel.

1 Pressure relief valve hose

Check that the pressure relief valve hose is positioned appropriately to drain the water.

2 Water pressure relief valve

Check for correct operation of the pressure relief valve by turning the red knob on the valve counter-clockwise:

- If you do not hear a clacking sound, contact your local dealer.
- In case the water keeps running out of the unit, close both the water inlet and outlet shut-off valves first and then contact your local dealer.

3 Indoor unit switch box

Carry out a thorough visual inspection of the switch box and look for obvious defects such as loose connections or defective wiring.

4 Water pressure

Check if the water pressure is above 1 bar.
If necessary add water.

5 Water filter

Clean the water filter.

11.2. Important information regarding the refrigerant used

This product contains fluorinated greenhouse gases. Do not vent gases into the atmosphere.

Refrigerant type: R134a
GWP(1) value: 1430

(1) GWP = global warming potential

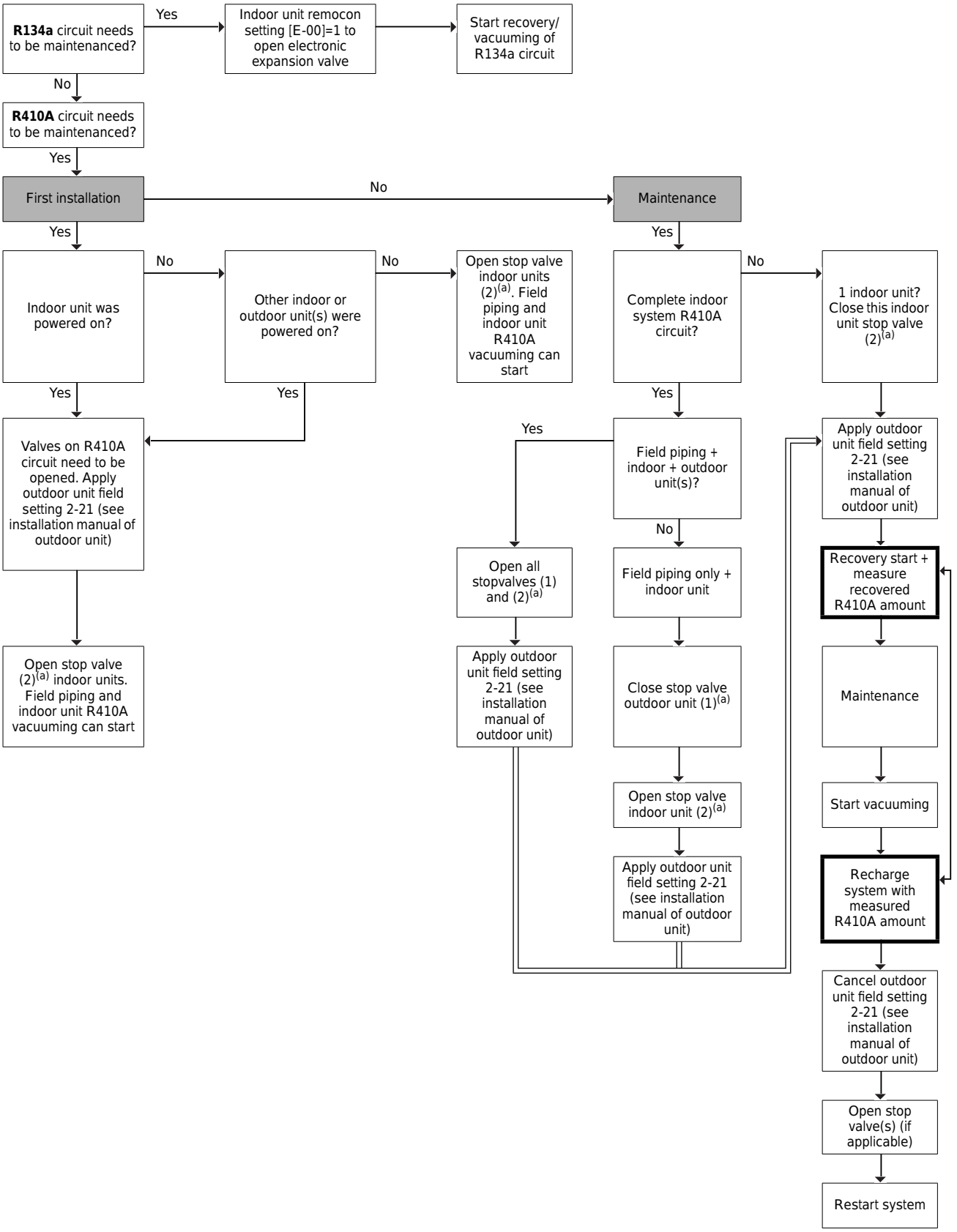
NOTE

National implementation of EU regulation on certain fluorinated greenhouse gases may require to provide the appropriate official national language on the unit. Therefore, an additional multilingual fluorinated greenhouse gases label is supplied with the unit.

Sticking instructions are illustrated on the backside of that label.

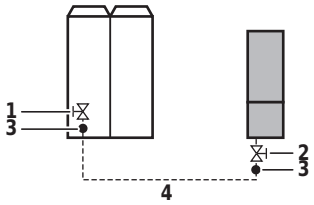
11.3. Vacuuming/recovery and maintenance on refrigerant side

This flow chart indicates the main items and actions which have to be considered during vacuuming/recovery operations on the system. When certain settings and operations explained in the flow chart are not followed this can be improper operation of the unit due to bad vacuuming/recovery. In case of problems, please contact your local dealer.



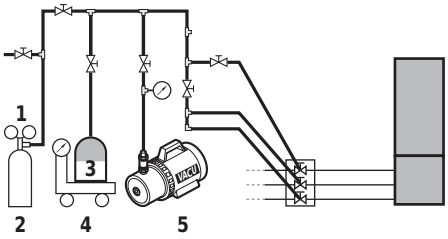
(a) (1) and (2) refers to the legend of the figure in next chapter "System overview" on page 55.

System overview



1 Stop valve outdoor unit
2 Stop valve indoor unit
3 Brazing point
4 Field piping

Recovery/vacuuming overview for 1 indoor unit maintenance (R410A circuit connections)



1 Pressure reducing valve
2 Nitrogen
3 Refrigerant R410A tank (siphon system)
4 Measuring instrument
5 Vacuum pump

12. TROUBLESHOOTING

This section provides useful information for diagnosing and correcting certain troubles which may occur in the unit.

This troubleshooting and related corrective actions may only be carried out by your local installer.

12.1. General guidelines

Before starting the troubleshooting procedure, carry out a thorough visual inspection of the unit and look for obvious defects such as loose connections or defective wiring.

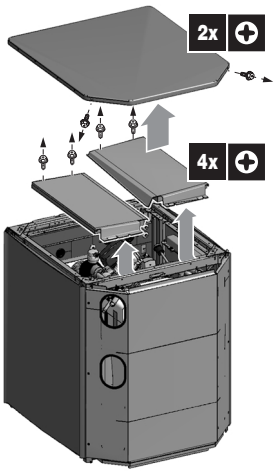
When carrying out an inspection on the switch box of the unit, always make sure that the main switch of the unit is switched off.

When a safety device was activated, stop the unit and find out why the safety device was activated before resetting it. Under no circumstances safety devices may be bridged or changed to a value other than the factory setting. If the cause of the problem can not be found, call your local dealer.

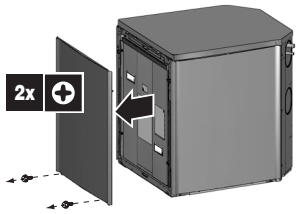
If the pressure relief valve is not working correctly and is to be replaced, always reconnect the flexible hose attached to the pressure relief valve, to avoid water dripping out of the unit!

12.2. Opening the unit

- To facilitate access to the air purge valve, thermal cut-out, 3-way valve, thermistors, field wiring duct, ..., the top decoration panel of the unit can be removed by removing the 2 screws at the rear and then unhitch the panel. Both the drain plates can be removed.
- To gain access to the indoor unit at the front side, the total switch box can be removed from the unit.



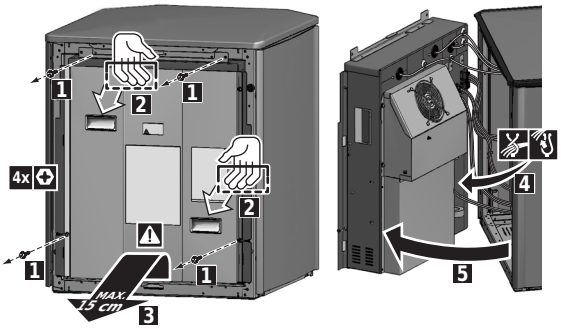
1 To remove the front decoration panel, remove the 2 bottom screws and then unhitch the panel.



2 Loosen the front screws and unhitch the total switch box.

Switch off all power supply – also outdoor unit power supply, etc., ... – before removing the switch box service cover.

The switch box can now be placed just before the indoor unit. The compressor cable located at the backside of the unit can be untied to place the switch box further away from the unit.

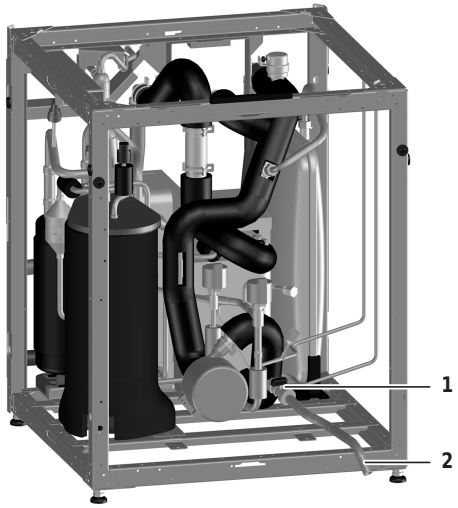


- Make sure to always fix the cover with the screws when removing the switch box.
- Parts inside the unit can be hot and burning is possible.
- Make sure to switch off all power supplies before removing the switch box from the unit.

12.3. Draining the system

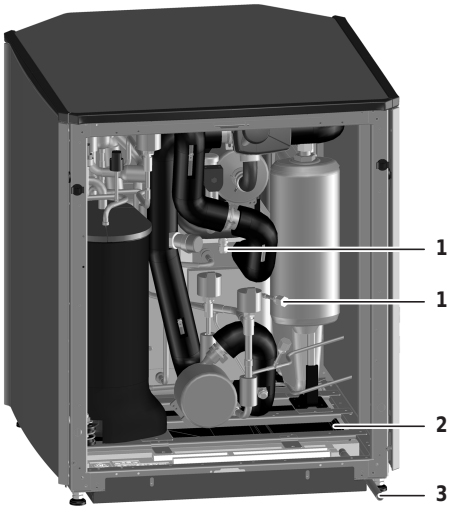
For EKHVMRD

If draining is needed, connect the drain hose (2) to the drain valve (1) as described in the figure below and open the drain valve (1).



For EKHVMYD

For draining of the system, connect the drain hose (3) to the drain pan (2) as described in the figure below. Open the drain taps (1) and let the water flow into the drain pan (2).



12.4. General symptoms

Symptom 1: The unit is turned on (LED is lit) but the unit is not heating as expected

POSSIBLE CAUSES	CORRECTIVE ACTION
The temperature setting is not correct.	Check the controller set point.
The water flow is too low.	• Check that all shut-off valves of the water circuit are completely open. • Check if the water filter needs cleaning. • Make sure there is no air in the system (purge air). • Check on the manometer that there is sufficient water pressure. The water pressure must be >0.3 bar (water is cold), >>0.3 bar (water is hot). • Make sure that the expansion vessel is not broken.
The water volume in the installation is too low.	Make sure that the water volume in the installation is above the minimum required value (refer to "Checking the water volume and expansion vessel pre-pressure" on page 25).
Capacity shortage	• Check if the cooling fan at the rear of the switch box is working properly. • Check if the unit is not installed in a too hot location (>30°C).

Symptom 2: Pump is making noise (cavitation)

POSSIBLE CAUSES	CORRECTIVE ACTION
There is air in the system.	Purge air.
Water pressure at pump inlet is too low.	• Check on the manometer that there is sufficient water pressure. The water pressure must be >0.3 bar (water is cold), >>0.3 bar (water is hot). • Check that the manometer is not broken. • Check that the expansion vessel is not broken. • Check that the setting of the pre-pressure of the expansion vessel is correct (refer to "Setting the pre-pressure of the expansion vessel" on page 26).

Symptom 3: The water pressure relief valve opens

POSSIBLE CAUSES	CORRECTIVE ACTION
The expansion vessel is broken.	Replace the expansion vessel.
The water volume in the installation is too high.	Make sure that the water volume in the installation is under the maximum allowed value (refer to "Checking the water volume and expansion vessel pre-pressure" on page 25).

Symptom 4: The water pressure relief valve leaks

POSSIBLE CAUSES	CORRECTIVE ACTION
Dirt is blocking the water pressure relief valve outlet.	Check for correct operation of the pressure relief valve by turning the red knob on the valve counter clockwise: • If you do not hear a clacking sound, contact your local dealer. • In case the water keeps running out of the unit, close both the water inlet and outlet shut-off valves first and then contact your local dealer.

Symptom 5: The user interface displays "NOT AVAILABLE" when pressing certain buttons

POSSIBLE CAUSES	CORRECTIVE ACTION
The current permission level is set to a level that prevents using the pressed button.	Change the "user permission level" field setting [0-00], see "Field settings" in the operation manual.

Symptom 6: Space heating capacity shortage at low outdoor temperatures

POSSIBLE CAUSES	CORRECTIVE ACTION
The heater kit is not activated.	Check that the "heater kit operation status" field setting [6-02] is turned on, see "Field settings" in the operation manual of the indoor unit.

12.5. Error codes

When a safety device is activated, the user interface LED will be flashing, and an error code will be displayed.

A list of errors and corrective actions can be found in the table below.

Reset the safety by pushing the button.

In case this procedure for resetting the safety is not successful, contact your local dealer.

For other error codes which may be displayed during the system test run or operation, see the installation manual of the outdoor unit.

Error code	Failure cause	Corrective action
A1	Failure of writing memory (EEPROM error)	Contact your local dealer.
A6	Malfunction of pump in water circuit (M1P+M2P)	• Make sure waterflow is possible (open all valves in the circuit). • Force clean water through the unit.
A9	R410A expansion valve error (K1E)	• Check wiring connections. • Contact your local dealer.
AA	Heater kit thermal cut out error (if the heater kit option installed)	• Make sure the circuit is filled with water (no air inside). • Make sure waterflow is possible (open all valves in the circuit).
	Heater kit connected to the benefit kWh rate power supply	Make sure the heater kit is connected to a normal power supply.
AE	Water system warning low flow is expected by the unit.	• Check filter. • Make sure all valves are open.
AJ	Capacity error	Contact your local dealer.
C1	Bad ACS communication	Contact your local dealer.
C4	R410A liquid thermistor error (R3T)	• Check wiring connections. • Contact your local dealer.
C5	Domestic hot water tank thermistor error (R2T)	• Check wiring connections. • Check if the domestic hot water option is turned active (refer to field setting [6-00]). • Contact your local dealer.
C9	Returning water thermistor error (R4T)	• Check wiring connections. • Contact your local dealer.
CA	Heating leaving water thermistor error (R5T)	• Check wiring connections. • Contact your local dealer.
CE	Cooling leaving water thermistor error (R9T)	• Check wiring connections. • Contact your local dealer.
CJ	Remote controller thermostat thermistor error	Contact your local dealer.
E1	Compressor PCB error	Contact your local dealer.
E3	High pressure error (S1PH)	• Check wiring connections on outdoor unit and indoor unit. • Make sure the circuit is filled with water (no air inside, e.g. is the air purge open?) • Make sure the domestic hot water tank is filled with water. • Make sure water flow is possible (open all valves in the circuit). • Make sure the water filter is not blocked. • Make sure all refrigerant stop valves are open. • Contact your local dealer.
E3	Thermal cut-out error (Q2L)	• Reset the thermal cut-out. • Contact your local dealer.
E4	Low pressure error (B1PL)	• Check wiring connections on outdoor unit and indoor unit. • Contact your local dealer.
E5	Overload activation of compressor (M1C)	Contact your local dealer.
E9	R134a expansion valve error (K2E) or R410A expansion valve error (K3E)	• Check wiring connections. • Contact your local dealer.
F3	Discharge temperature error	Contact your local dealer.
J3	Discharge thermistor error (R6T)	• Check wiring connections. • Contact your local dealer.
J5	R134a liquid thermistor error	• Check wiring connections. • Contact your local dealer.
J6	R410A liquid thermistor error (R10T)	• Check wiring connections. • Contact your local dealer.
J7	R410A suction thermistor error (R11T)	• Check wiring connections. • Contact your local dealer.
JA	R134a high pressure sensor error (B1PH)	• Check wiring connections. • Contact your local dealer.
JC	R134a low pressure sensor error (B1PL)	• Check wiring connections. • Contact your local dealer.
L1	Compressor inverter PCB error	Contact your local dealer.
L4	Fin thermistor error	• Check wiring connections. • Contact your local dealer.
L5	Compressor inverter PCB error	Contact your local dealer.
L8	Compressor inverter PCB error	Contact your local dealer.
L9	Compressor inverter PCB error	Contact your local dealer.
LC	Inverter communication problem	Contact your local dealer.
LH	Converter error	Contact your local dealer.
P1	Main compressor PCB error	Contact your local dealer.
PJ	Bad combination inverter components	Contact your local dealer.
U2	Power supply error	• Check wiring connections. • Contact your local dealer.
U4	QA transmission problem	Contact your local dealer.
U5	Remote controller error	Contact your local dealer.
UA	Type connection problem	• Wait till initialisation between outdoor unit and indoor unit is finished (after power ON, wait at least 12 minutes). • Contact your local dealer.
UC	Address duplication error	Contact your local dealer.
UF	Transmission problem with outdoor unit	Contact your local dealer.
UF	QA wiring problem	Contact your local dealer.
UH	Address error	Contact your local dealer.

13. UNIT SPECIFICATIONS

Technical specifications

		EKHVMRD50ABV1	EKHVMRD80ABV1	EKHVMYD50ABV1	EKHVMYD80ABV1
Nominal capacity (heating)	(kW)	5.6	9	5.6	9
Nominal capacity (cooling)	(kW)	—	—	5	8
Casing material		Pre-coated sheet metal			
Dimensions HxWxD	(mm)	705x600x695			
Weight					
• with packaging	(kg)	110.8	100.8	115.8	115.8
• without packaging	(kg)	92	92	107	107
Water connections					
• water inlet/outlet		G 1" (female)			
• water inlet/outlet material		brass			
• piping diameter	(inch)	1			
• maximum working pressure	(bar)	4			
Refrigerant connections					
• discharge side diameter	(mm)	12.7			
• suction side diameter	(mm)	15.9			
• liquid side diameter	(mm)	9.52			
Heating water system volume	(l)	20~200			
Refrigerant type		R134a			
Pump					
• type		DC motor			
• no. of speed		inverter controlled			
Sound pressure level[a]	(dBa)	40	42	40	42
Pressure relief valve water circuit	(bar)	3			
Operation range - water side (heating)	(°C)	25~80			
Operation range - water side (cooling)	(°C)	5~20			
Operation range - outdoor					
• space heating	(°C)	–20~20			
• domestic hot water	(°C)	–20~35			
Operation range - indoor					
• Ambient temperature	(°C)	5~30			

(a) Sound pressure level is less than 70 dB(A).
Water conditions: entering water 55°C/leaving water 65°C. For more information, see data book.

Electrical specifications: power supply

		EKHVMRD50ABV1	EKHVMRD80ABV1	EKHVMYD50ABV1	EKHVMYD80ABV1
Phase		1N~			
Frequency	(Hz)	50			
Voltage range					
• minimum	(V)	220			
• maximum	(V)	240			
Voltage tolerance		–10%/+6%			
Maximum running current	(A)	16.5			
Recommended field fuse	(A)	20			

Electrical specifications: multi tenant power supply

		EKHVMRD50ABV1	EKHVMRD80ABV1	EKHVMYD50ABV1	EKHVMYD80ABV1
Phase		1N~			
Frequency	(Hz)	50			
Voltage	(V)	24			
Voltage tolerance		–20%/+20%			
Maximum running current	(A)	1			
Recommended field fuse	(A)	3.15			







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