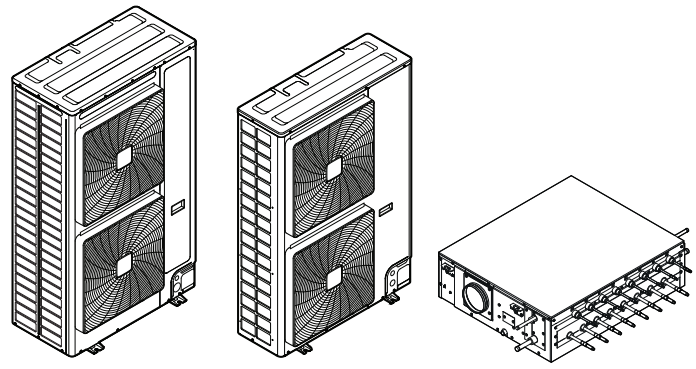
Service manual

VRV 5-S system air conditioner
VRV5 Safety valve box



RXYSA8AMY1B
RXYSA10AMY1B
RXYSA12AMY1B

SV1A25AJV1B
SV4A14AJV1B
SV6A14AJV1B
SV8A14AJV1B

draft – 18/06/2024 10:18

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Version log

Version code	Description	Date
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Table of Contents

1 Safety precautions

The precautions described in this document cover very important topics, follow them carefully.

All activities described in the service manual must be performed by an authorized person.

If you are NOT sure how to install, operate or service the unit, contact your dealer.

In accordance with the applicable legislation, it might be necessary to provide a logbook with the product containing at least:

information on maintenance, repair work, results of tests, stand-by periods, …

Also, at least, following information must be provided at an accessible place at the product:

- Instructions for shutting down the system in case of an emergency
- Name and address of fire department, police and hospital
- Name, address and day and night telephone numbers for obtaining service

In Europe, EN378 provides the necessary guidance for this logbook.

1.1 Meaning of warnings and symbols

DANGER

Indicates a situation that results in death or serious injury.

DANGER: RISK OF ELECTROCUTION

Indicates a situation that could result in electrocution.

DANGER: RISK OF BURNING/SCALDING

Indicates a situation that could result in burning/scalding because of extreme hot or cold temperatures.

DANGER: RISK OF EXPLOSION

Indicates a situation that could result in explosion.

WARNING

Indicates a situation that could result in death or serious injury.

WARNING: FLAMMABLE MATERIAL

CAUTION

Indicates a situation that could result in minor or moderate injury.

NOTICE

Indicates a situation that could result in equipment or property damage.

INFORMATION

Indicates useful tips or additional information.

1.2 Dangers

DANGER: RISK OF BURNING/SCALDING

- Do NOT touch the refrigerant piping, water piping or internal parts during and immediately after operation. It could be too hot or too cold. Give it time to return to normal temperature. If you MUST touch it, wear protective gloves.
- Do NOT touch any accidental leaking refrigerant.

DANGER: RISK OF ELECTROCUTION

- Turn OFF all power supply before removing the switch box cover, connecting electrical wiring or touching electrical parts.
- Where applicable, stop the equipment's operation first and allow (refrigerant) pressure to equalize, before turning OFF the power.
- Disconnect the power supply for more than 10 minutes, and measure the voltage at the terminals of main circuit capacitors or electrical components before servicing. The voltage MUST be less than 50 V DC before you can touch electrical components. For the location of the terminals, see the wiring diagram. If the measured voltage is still higher than 50 V DC, discharge the capacitors in a safe manner by using a dedicated capacitor discharge pen to avoid possibility of sparking.
- Do NOT touch electrical components with wet hands.
- Do NOT leave the unit unattended when the service cover is removed.
- Protect electric componennts from getting wet while the service cover is opened.

1.3 Warnings

WARNING

Improper installation or attachment of equipment or accessories could result in electrical shock, short-circuit, leaks, fire or other damage to the equipment. ONLY use accessories, optional equipment and spare parts made or approved by Daikin unless otherwise specified.

WARNING

Do NOT apply any permanent inductive or capacitance loads to the circuit without ensuring that this will NOT exceed the permissible voltage and current permitted for the equipment in use.

WARNING

If a fault exists that could compromise safety, Do NOT connect electrical supply to the circuit until it is satisfactorily dealt with. If the fault CANNOT be corrected immediately but it is necessary to continue operation, an adequate temporary solution MUST be used. This MUST be reported to the owner of the equipment so all parties are advised.

Initial safety checks MUST include that:

- capacitors are discharged: this MUST be done in a safe manner to avoid possibility of sparking,
- NO live electrical components and wiring are exposed while charging, recovering or purging the system.

WARNING

Make sure that the refrigerating piping and components are installed in a position where they are unlikely to be exposed to any corroding substance.

WARNING

Make sure installation, testing and applied materials comply with applicable legislation (on top of the instructions described in the Daikin documentation).

WARNING

Make sure the work site environment is clean and safe to work in. Beware of spilled fluids, like water, oil or other substances.

Protect bystanders from injury and property from possible damage cause by service works.

WARNING

If any work is to be conducted on the refrigerating equipment or any associated parts which involves brazing, an appropriate dry powder or CO_2 fire extinguisher MUST be present.

When charging the unit, an appropriate dry powder or CO_2 fire extinguisher MUST be present.

WARNING

No person carrying out work in relation to a refrigerating system which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, MUST be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. "No Smoking" signs MUST be displayed.

WARNING

Tear apart and throw away plastic packaging bags so that nobody, especially children, can play with them. **Possible consequence:** suffocation.

WARNING

During tests, NEVER pressurise the product with a pressure higher than the maximum allowable pressure (as indicated on the nameplate of the unit).

WARNING

Make sure the total refrigerant charge is in accordance with the room size in which the unit is installed: please consult the detailed instructions on charging and allowed room sizes in the installation manual.

WARNING

- NEVER mix different refrigerants or allow air to enter the refrigerant system.
- NEVER charge recovered refrigerant from another unit. Use recovered refrigerant only on the same unit where it was recovered from, or have it recycled at a certified facility.

WARNING

When reconnecting a connector to the PCB, make sure to connect it on the correct location and do NOT apply force, as this may damage the connector or connector pins of the PCB.

WARNING

ALWAYS recover the refrigerant. Do NOT release them directly into the environment. Use a vacuum pump to evacuate the installation.

WARNING

Removal of refrigerant MUST be according to the following:

When breaking into the refrigerant circuit to make repairs, be sure to remove the refrigerant from the system first. The refrigerant charge MUST be recovered into the correct recovery cylinders.

WARNING

Take sufficient precautions in case of refrigerant leakage. If refrigerant gas leaks, ventilate the area immediately. Possible risks:

- Excessive refrigerant concentrations in a closed room can lead to oxygen deficiency.
- Toxic gas might be produced if refrigerant gas comes into contact with fire.

WARNING

- Under no circumstances, potential sources of ignition SHALL be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) MUST NOT be used.
- Ensure that the detector is NOT a potential source of ignition and is suitable for the detection of R32.
- If a leak is suspected, all naked flames MUST be removed or extinguished.
- Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine MUST be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work.
- If a leakage of refrigerant is found which requires brazing, all of the refrigerant MUST be recovered from the system, or isolated (by means of shut-off valves) in a part of the system remote from the leak.
- Only use the electronic leak tester for R32. The old flame leak tester CANNOT be used on a system with HFC refrigerant because there is no chlorine component in the refrigerant. In case of R32 (HFC) refrigerant, any flame in contact with (leaking) refrigerant is extremely dangerous.

WARNING

- In order to prevent oxygen deficiency and R32 combustion, keep the room well-ventilated for a healthy work environment. Do NOT work in a confined space. If a refrigerant leak is detected in a confined room or an inadequately ventilated location, do NOT start the work until the area has been ventilated appropriately.
- If the work area is NOT located in the open air, make sure the work area is adequately ventilated before breaking into the system or conducting any brazing. The ventilation MUST continue to operate during the period that the work is carried out to prevent accumulation of refrigerant in the work area. The ventilation should safely disperse any released refrigerant and preferably ventilate to the open air.

WARNING

Ensure that no external live wiring is exposed while charging, recovering or purging the system. Sparks created when live wiring is short-circuited might ignite the refrigerant if it is leaked into the room while charging, recovering or purging the system.

WARNING

Ensure that the unit is properly earthed prior to conducting maintenance or service or charging the system with refrigerant. Do NOT earth the unit to a utility pipe, surge absorber, or telephone earth. Incomplete earthing may cause electrical shock.

WARNING

- ONLY use copper wires.
- Make sure the field wiring complies with the national wiring regulations.
- All field wiring MUST be performed in accordance with the wiring diagram supplied with the product.
- NEVER squeeze bundled cables and make sure they do NOT come in contact with the piping and sharp edges. Make sure no external pressure is applied to the terminal connections.
- Make sure to install earth wiring. Do NOT earth the unit to a utility pipe, surge absorber, or telephone earth. Incomplete earth may cause electrical shock.
- Make sure to use a dedicated power circuit. NEVER use a power supply shared by another appliance.
- Make sure to install the required fuses or circuit breakers.
- Make sure to install an earth leakage protector. Failure to do so may cause electrical shock or fire.
- When installing the earth leakage protector, make sure it is compatible with the inverter (resistant to high frequency electric noise) to avoid unnecessary opening of the earth leakage protector.

WARNING

Make sure the markings on the unit remain visible and legible after inspection or repair work. Markings and signs that are illegible shall be corrected.

WARNING

- After finishing the electrical work, confirm that each electrical component and terminal inside the switch box is connected securely.
- Make sure all covers are closed before starting up the unit.

WARNING

- The area MUST be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres.
- Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.
- Prior to and during work, the area MUST be checked with an appropriate refrigerant detector capable of detecting R32 refrigerant, to ensure a work environment free of refrigerant.

WARNING

- Equipment MUST be labelled stating that it has been de-commissioned and emptied of refrigerant.
- The label MUST be dated and signed.
- For appliances containing flammable refrigerants, ensure that there are labels on the equipment stating the equipment contains flammable refrigerant.

WARNING

Before carrying out refrigerant recovery procedure, it is essential that the technician is completely familiar with the equipment and all its details. It is recommended good practice that all refrigerants are recovered safely. Prior to the task being carried out, an oil and refrigerant sample MUST be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before the task is commenced.

- Become familiar with the equipment and its operation.
- Isolate system electrically.
- Ensure that mechanical handling equipment is available, if required, for handling refrigerant cylinders.
- Ensure that all personal protective equipment is available and is used correctly.
- Ensure that the recovery process is supervised at all times by a competent person.
- Ensure that recovery equipment and cylinders are conform to the appropriate standards.
- If a vacuum is NOT possible, make a manifold so that refrigerant can be removed from various parts of the system.
- Make sure that cylinder is situated on the scales before recovery takes place.
- Start the recovery machine and operate in accordance with instructions.
- Do NOT overfill cylinders (no more than 60% volume liquid charge).
- Do NOT exceed the maximum working pressure of the cylinder, NOT even temporarily.
- When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed.
- Recovered refrigerant MUST NOT be charged into another refrigerating system unless it has been cleaned and checked.

WARNING

All maintenance staff and others working in the local area MUST be instructed on the nature of work being carried out.

WARNING

Provide adequate measures to prevent that the unit can be used as a shelter by small animals. Small animals that make contact with electrical parts can cause malfunctions, smoke or fire.

WARNING

Prior to start working on systems containing flammable refrigerant, safety checks are necessary to ensure that the risk of ignition is minimised. Therefore, some instructions should be followed.

Please refer to the service manual for more information.

WARNING

- In case refrigerant recovery is required, use the appropriate service ports.
- If applicable for your unit, use the appropriate recovery mode or field setting to smoothly recover the refrigerant.
- ONLY use leak free hoses, couplings and manifolds in good working condition.
- ONLY use recovery cylinders designated and labelled to recover R32. Note that thread connection to the cylinder is counter clock.
- Always use a calibrated scale in good condition prior and during the refrigerant recovery process to determine the weight of the recovered refrigerant into the external refrigerant cylinder.
- Read the operation instructions of the recovery unit prior to connecting the recovery unit. Verify the recovery unit is suited for R32 refrigerant, check that it is in good working condition, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.
- Do NOT overfill the refrigerant cylinder, confirm with the supplier of the refrigerant cylinder about maximum filling ratio if NOT mentioned on the refrigerant cylinder itself. Generally the maximum filling amount should be limited to 60% of the maximum volume of the cylinder.
- Do NOT exceed the maximum working pressure of the refrigerant cylinder, NOT even temporarily.
- When the cylinders have been filled correctly, and the refrigerant recovery process is completed, make sure that the cylinders and the equipment are removed from site promptly and all stop valves on the equipment are (kept) closed.
- The recovered refrigerant MUST be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged. Do NOT mix refrigerants in recovery units and especially NOT in cylinders.
- Recovered refrigerant MUST NOT be charged into another refrigerant system unless it has been cleaned and checked.

WARNING

If compressor is to be removed, ensure that the compressor has been evacuated to an acceptable level to make sure that flammable refrigerant does NOT remain within the lubricant. The evacuation process MUST be carried out prior to returning the compressor to the supplier. During the refrigerant recovery, confirm that the crankcase heater of the compressor body is energized to accelerate this process. When oil is drained from a system, it MUST be carried out safely.

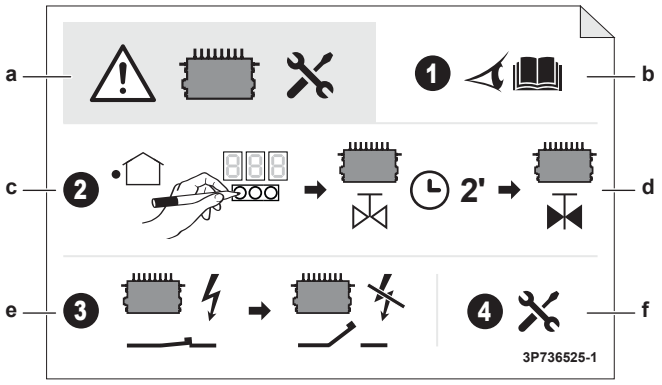
WARNING

Make sure the ventilation machinery and outlets are operating adequately and are NOT obstructed.

Before removing any plate work of the SV box (for checking, maintenance or repair purposes), the following steps MUST be performed:

WARNING

Never power off the unit for maintenance and service before the shut-off valves are closed.



a Caution for maintenance and servicing of SV unit
b Consult the installation manual or service manual
c Apply the field setting on the outdoor unit
d Wait for two minutes to allow the system to close the valves
e Turn off the system power
f Perform maintenance and servicing on the SV unit

1. Consult the installation manual of the SV box.
2. At the outdoor unit, set the field setting 2-45-0 to 1 (default = 0).
3. Wait for at least 2 minutes to enable control to close ALL safety valves.
4. Stop the unit operation via the user interface.
5. Turn OFF the respective circuit breaker.

Once the appropriate checking, maintenance or repair has been finished, and ALL plate work is correctly installed on the SV box, perform the following steps:

1. Turn ON the power to the SV box.
2. At the outdoor unit set the field setting 2-45-1 back to 0.
3. Wait for at least 2 minutes before restarting the system.

1.4 Cautions

CAUTION

Wear adequate personal protective equipment (protective gloves, safety glasses,...) when installing, maintaining or servicing the system.

CAUTION

To avoid injury, do NOT touch the air inlet or aluminium fins of the unit.

CAUTION

- Do NOT place any objects or equipment on top of the unit.
- Do NOT sit, climb or stand on the unit.

1.5 Notices

NOTICE

- Make sure water quality complies with EU directive 2020/2184.
- Check the system for leaks after each repair/modification of the water side.
- Check drainage system(s) after repairs.
- Be careful when tilting units as water may leak.

NOTICE

Make sure refrigerant piping installation complies with applicable legislation. In Europe, EN378 is the applicable standard.

NOTICE

Make sure the field piping and connections are NOT subjected to stress.

2 General operation

The VRV 5-S Heat Pump R32 system consists of 3 types of units:

- Outdoor unit
- Safety valve (SV) unit(s)
- VRV Indoor units

Outdoor units

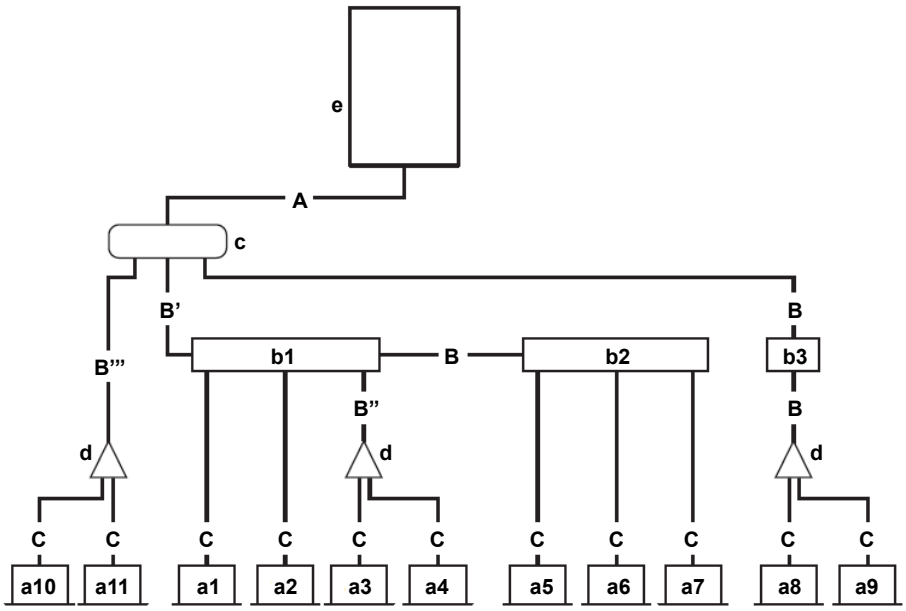
The VRV 5-S Heat Pump R32 outdoor unit has two different types of outdoor unit casing:

Medium casing (8 HP)	Large casing (10/12 HP)
RXYSA8A	RXYSA10+12A

Model name:

- RXYSA8~12A: VRV 5-S Heat Pump R32, Single Module setup

Field piping MUST be thermally insulated copper piping, connected to a combination of Single Circuit SV unit(s) or/and Multi Circuit SV unit(s) or/and indoor units directly.



a1~a11	VRV DX indoor units
b1~b3	SV units
c	First indoor branch kit (header)
d	Indoor branch kit (Refnet joint)
e	VRV 5-S outdoor unit
A~C	Field piping

SV unit offers 1, 4, 6, or 8 refrigerant circuits. Minimum 1 indoor circuit MUST be used on each SV unit.

To split the refrigerant circuit between outdoor unit and different SV units, Daikin Refnet header are used. For details refer to installation manual of the outdoor unit.

After the SV unit, one or more indoor units CAN be connected. To split the refrigerant circuit to the different indoor units to the same port of the SV unit, optional accessory refnet joints are used. For details refer to installation manual of the outdoor unit.

Depending on installation conditions, indoor units might be connected without SV unit. In this case field setting 2-54 MUST be changed. When mode 2 is exit, power reset of outdoor unit is required.

Depending on difference between actual condensation (heating) or evaporation (cooling) temperature to target condensation (heating) and evaporation (cooling) temperature, outdoor control CAN set the outdoor heat exchangers in following status: In Cooling mode condenser (coil 4-way valve 0 V AC), or in Heating mode evaporator (coil 4-way valve 230 V AC).

At time of repair, when power needs to be disconnected, it is required to force the safety valves in SV unit(s) to close by field setting 2-45-1.

Safety valve (SV) units

Safety valve (SV) unit:

- SV1A25AJV1B: single port.
- SV4A14AJV1B: 4 ports.
- SV6A14AJV1B: 6 ports.
- SV8A14AJV1B: 8 ports.

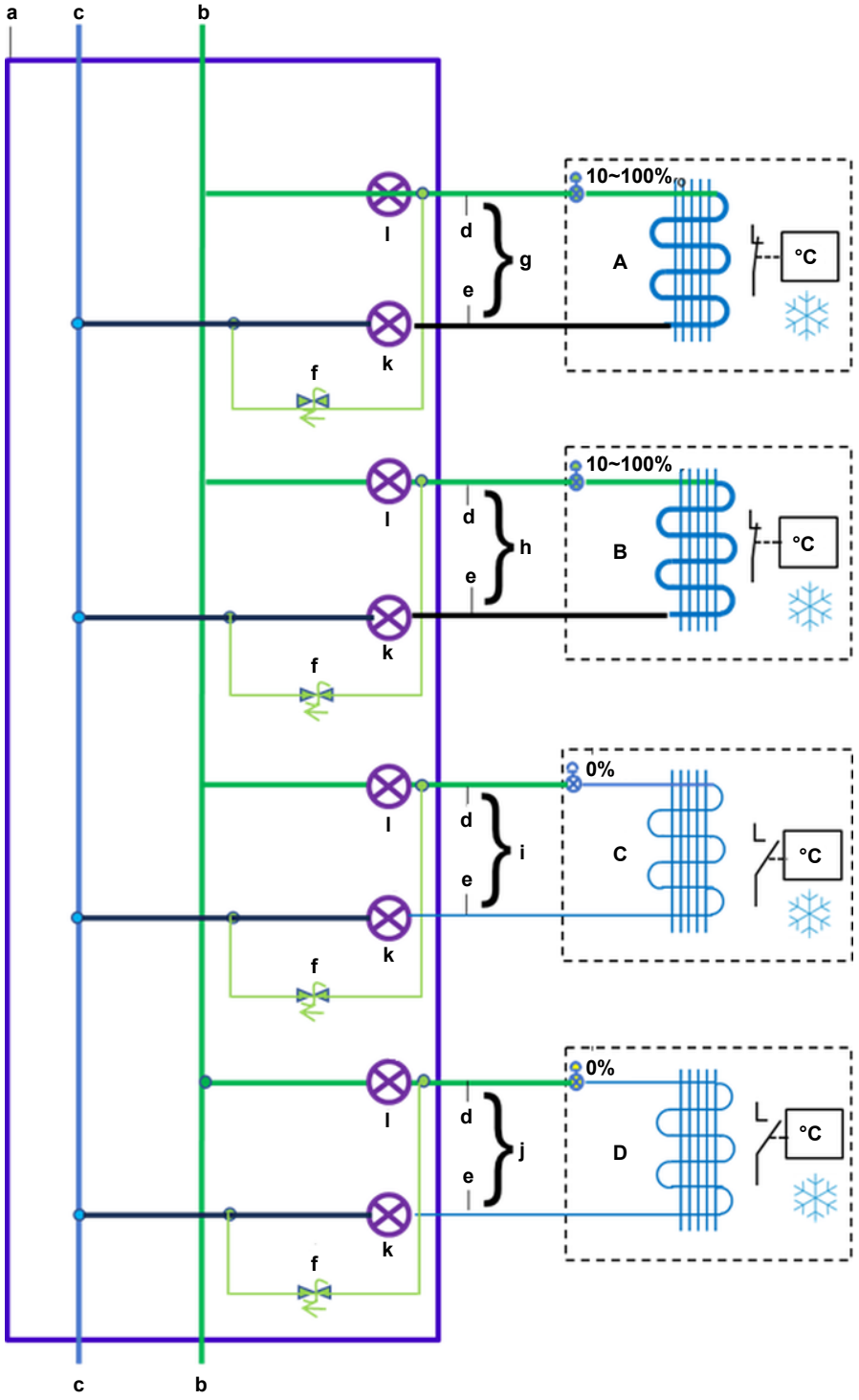
Each indoor circuit CAN have maximum 5 indoor units connected and have maximum index:

- SV1A25AJV1B = maximum index 250 (total index for connected indoor).
- SV4A14AJV1B~SV8A14AJV1B:
  - Each port: 140 (total index for connected indoor).
  - In case indoor index is >140 and ≤250,

    - SV4A14AJV1B~SV8A14AJV1B: circuit A and B or/and C and D MUST be combined by optional refnet EKBSJK.

    - SV6A14AJV1B + SV8A14AJV1B: circuit E and F MUST be combined by optional refnet EKBSJK.

    - SV8A14AJV1B: circuit G and H MUST be combined by optional refnet EKBSJK.



a Multi SV unit
b Liquid pipe (outdoor unit side)
c Gas pressure pipe (outdoor unit side)
d Liquid pipe (indoor unit side)
e Gas pipe (indoor unit side)
f Liquid safety valve internal bypass suction
g Indoor circuit 1 (A)
h Indoor circuit 2 (B)
i Indoor circuit 3 (C)
j Indoor circuit 4 (D)
k Gas safety valve indoor side EVSG
l Liquid safety valve indoor side EVSL

Indoor unit circuit connection:

- Gas pipe to gas port of the SV unit, or if without SV unit to gas stop valve of the outdoor unit:
  - In Cooling mode = low pressure (suction of compressor)
  - In Heating mode = high pressure (discharge of compressor)

- Liquid pipe to liquid port of the SV unit, or if without SV unit to liquid stop valve of the outdoor unit. Liquid pressure is "medium" pressure and varies depending on outdoor condensation temperature and in heating also by opening degree of indoor expansion valve(s), dropping when more indoor units have "bleeding" opening (during thermostat OFF or operation OFF).

In the SV unit, each indoor circuit is equipped with 2 extra shut-off safety valves. The safety valves are closed when;

- R32 leak or fault on R32 sensor is detected in any indoor unit of this port
- R32 leak or fault on R32 sensor is detected in any safety valve unit
- Forced closed by outdoor unit field setting.

After repair of the leak, in case leak occurred at indoor:

- R32 leak sensor MUST be replaced (repair instructions refer to service manual ESIE21-15).
- If through component check, indoor PCB MUST be replaced, ALSO replace the R32 leak sensor.
- Location R32 leak sensor:

Unit	R32 sensor location
FXFA	Drain pan
FXZA	Bell mouth
FXHA	Partition plate coil
FXUA	Below switchbox
FXAA	Front coil
FXDA	Drain pump assembly
FXSA	Drain pump assembly
FXKA	Drain pump assembly
EKVDX	Drain pump assembly
FXMA50~125	Drain pump assembly
FXMA200+250	Side partition plate coil

- After power restore, reset by field setting indoor is required. When disconnect power supply indoor, confirm HAP LED of A1P is OFF.
- Reset by field setting outdoor is required.

Actual sequence when R32 leak detection inside VRV indoor:

- BRC1H52*: error A0-11.
- SV unit individual circuit safety valves EVSG + EVSL close.
- Outdoor keeps operating for other indoor circuits.
- When repair leak:
  - Outdoor setting 2-23-0 to 1 indication "t01".
  - Recover refrigerant except circuit indoor R32 leak (EVSG + EVSL closed).
  - BS3 "t02": outdoor opens all expansion valves.
  - Pressure test to search leak at indoor unit.

- After repair:
  - Outdoor PCB BS3.
  - Power reset indoor: HAP LED OFF!!!
  - Replace R32 leak sensor.
  - Power on: BRC1H52* error CH-10.
  - Reset: BRC1H52* 25-14-1 to 2.
  - Outdoor: UA-55.
  - Outdoor setting reset: 2-24-1 to 0.
  - Resume operation indoor.

After repair of the leak, in case leak occurred at SV unit:

- R32 leak sensor MUST be replaced.
- If through component check, SV unit PCB MUST be replaced, ALSO replace the R32 leak sensor.
- Location R32 leak sensor: left bottom side of switchbox, rear layer.
- After power restore, reset by field setting SV unit is required. To make power reset SV unit:
  - Disconnect circuit breaker to SV unit,
- Reset by field setting outdoor is required.

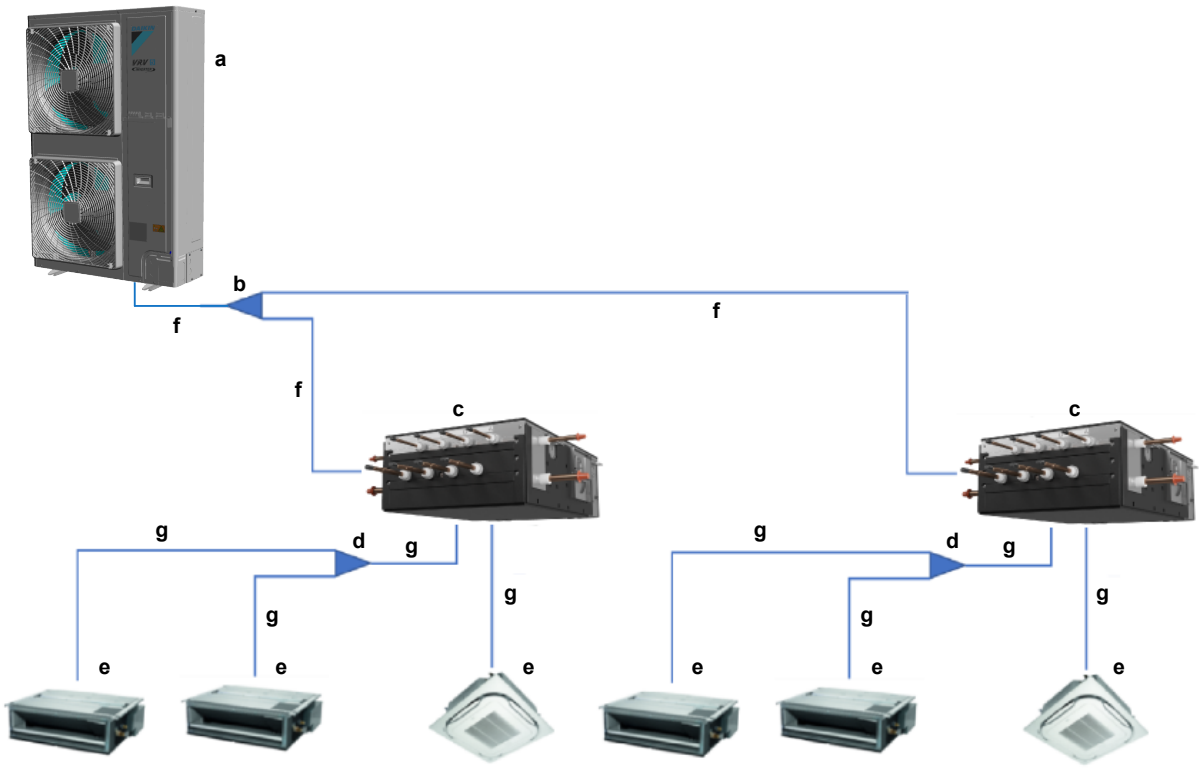
Actual sequence when R32 leak detection inside SV unit:

- BRC1H52* of this SV unit: error A0-20, indoor other SV units: error U9-04.
- All SV units, ALL circuit safety valves EVSG + EVSL close.
- Outdoor stops operation.
- When repair leak:
  - Outdoor setting 2-23-0 to 1 indication "t01".
  - Recover refrigerant except circuit indoor R32 leak (EVSG + EVSL closed).
  - BS3 "t02": outdoor opens all expansion valves.
  - Pressure test to search leak in SV unit.
  - BS3 "t02": outdoor opens all expansion valves (including EVSG + EVSL).
- After repair:
  - Outdoor PCB BS3.
  - Power reset PCB A1P SV unit HAP LED OFF!!!: remove plug X1A.
  - Disconnect power supply to SV unit for repair.
  - Reconnect X1A once HAP LED is OFF.
  - Replace R32 leak sensor.
  - Power on: CH-20 on all indoor units of this SV unit, indoor other SV unit: normal.
  - Reset CH-20: PCB SV unit: 2-5-0 to 1.
  - Outdoor: UA-55 locked state.
  - Outdoor reset: 2-24-1 to 0.
  - Outdoor resume operation.

In the SV unit, each liquid circuit is equipped with an internal liquid safety valve internal bypass to suction. This internal safety valve opens if inlet pressure >4.0 MPa and closes if inlet <3.5 MPa). Abnormal pressure raise, may occur if safety shut off valve liquid and indoor expansion valve are closed, and ambient temperature raised during forced operation-off period.

Indoor units

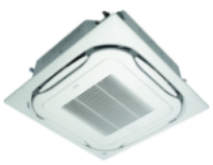
The below illustration does NOT reflect allowed combinations or compatibility. The intention is to give an overview on piping installation for different types of units.

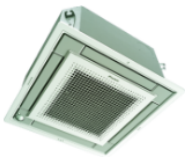
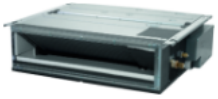
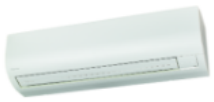
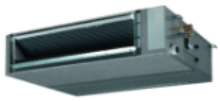
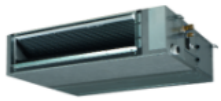
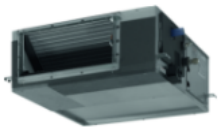
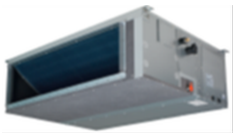


a VRV 5-S Heat Pump outdoor unit
b Refnet KHRQ22M. For actual installation to select correct refnet, see installation manual
c Multi SV unit
d Refnet KHRQ22M. For actual installation to select correct refnet, see installation manual
e VRV indoor unit
f 2 pipes (gas, liquid)
g 2 pipes (gas, liquid)

VRV systems have combination limits for different types of indoor units and also limits for piping length and connection ratio for each indoor unit combination pattern. Refer to the Engineering Databook.

The list below is only for reference of compatible units. Always refer to Engineering Databook for compatibility.

Round flow cassette FXFA		Ceiling suspended FXHA	

Fully flat cassette FXZA		4 Way ceiling suspended – FXUA	
Concealed ceiling FXDA		Wall mounted FXAA	
Concealed ceiling with medium ESP - FXSA		EKVDX-A	
Concealed ceiling with high ESP - FXMA50~125		Corner cassette FXKA	
Concealed ceiling with high ESP - FXMA200+250			

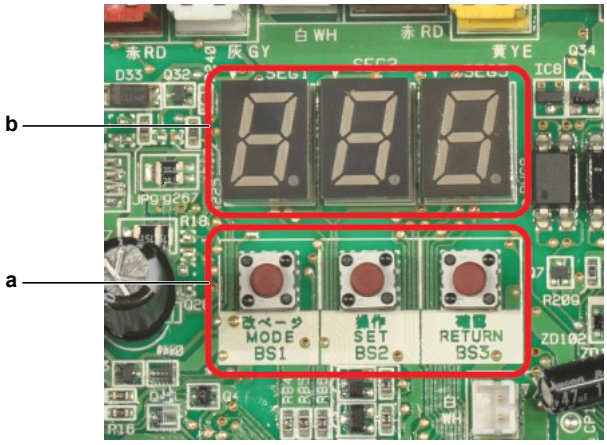
3 Troubleshooting

3.1 To access push buttons and 7-segment display

1 For outdoor unit: Remove the service plate, see "4.10 Plate work" [▸ 191].

2 For SV box: Remove the switch box cover, see "4.10 Plate work" [▸ 191].

Result: The push buttons and 7-segment display are located on A1P.



a Push buttons
b 7-segment display

3 Active error code is highlighted on the 7-segment display.

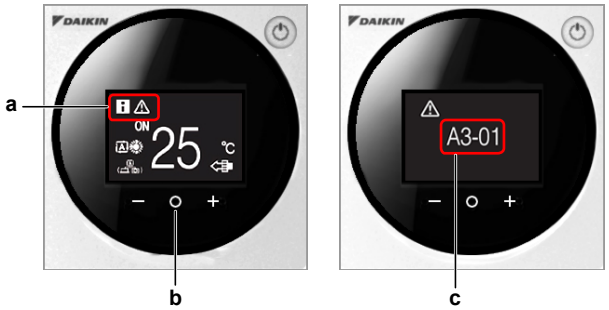
3.2 To retrieve error codes and check error history

3.2.1 Via the indoor unit remote controller BRC1H

> **INFORMATION**
>
> Images are in English and for reference ONLY. For more details on the Madoka Assistant please refer to the BRC1H training course material which is available on the Daikin Business Portal.

To retrieve the error code

To indicate a system error, the controller displays ⚠ on the messages zone of the home screen.



a Messages zone
b Middle button ○
c Error screen

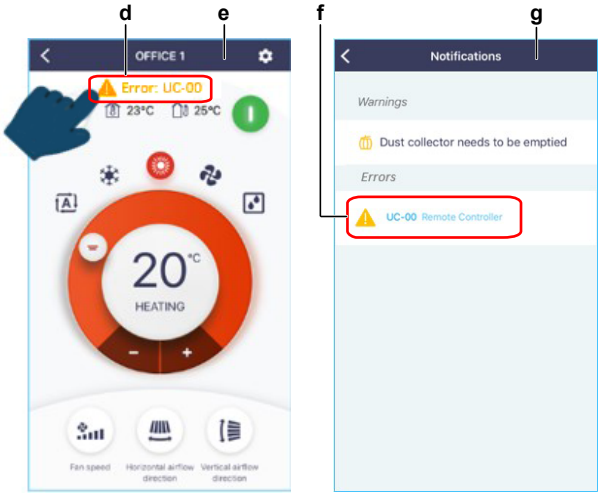
1 Press the middle button ◯ to enter the main menu from the home screen.

Result: An error screen is displayed.

2 Press the middle button ◯ to return to the home screen.

Active error codes are also accessible through the Madoka Assistant for BRC1H.

The active error is shown on the home screen.



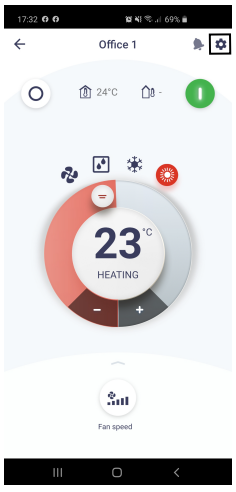
d Active error
e Home screen
f Error(s) details
g Notifications screen

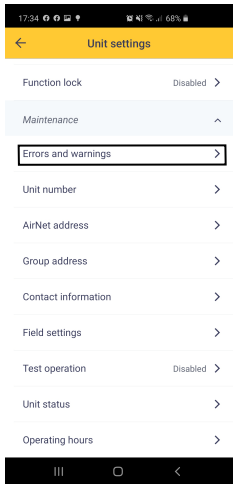
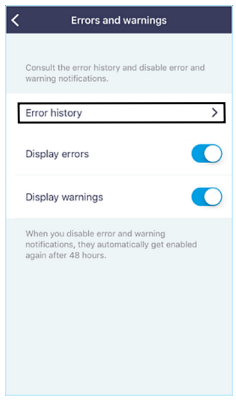
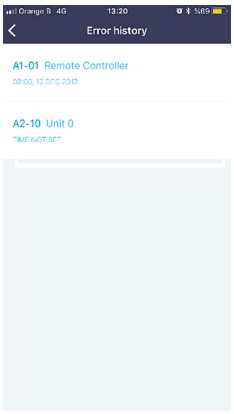
3 Tap the active error.

Result: The detail(s) of the error(s) are shown on the Notifications screen.

To check the error history

To check the error history with the Madoka Assistant for BRC1H:

#	Action	Image for reference	Result
1	Tap the settings icon.		The Unit settings screen is displayed.

#	Action	Image for reference	Result
2	Tap Errors and warnings.		The Errors and warnings screen is displayed.
3	Tap Error history.		 The Error history screen is displayed.

3.2.2 Via the outdoor unit

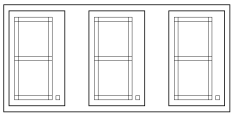
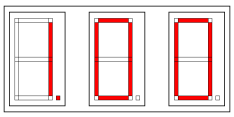
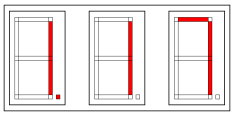
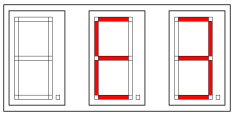
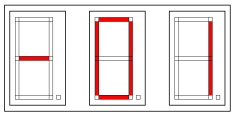
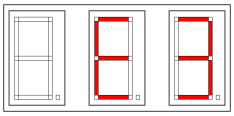
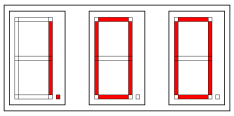
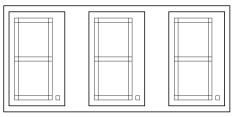
Error codes and/or retry descriptions are accessible on “Mode 1: Monitor Mode”.

The table below shows which setting shows the error codes that led to an outdoor unit forced stop and/or retry.

- When an error is generated, the unit performs a forced off until the error is retrieved.
- On retry, the system attempts to stay in operation. Depending on the type of root cause, after a certain amount of retry attempts, the unit generates an error. Retry cause is also visible as an item on the service monitoring tool.

Mode	Setting	Description
Mode 1: Monitor mode	17	Error code last forced off
	18	Error code 2nd last forced off
	19	Error code 3rd last forced off
	23	Error code last retry
	24	Error code 2nd last retry
	25	Error code 3rd last retry

Please follow the procedure described below to access the regarding error code for outdoor unit forced stop and/or retry description:

Action	Result	Display
Make sure the 7-segment display indication is as during normal operation.		
To enter “Mode 1”, push the (BS1) button one time	Mode 1 is accessed.	
Push the (BS2) button as many times as the setting you want to go to.	The setting is accessed (e.g. 17, Error code last forced off)	
Press the RETURN (BS3) Button.	Malfunction/Retry item will appear on display.	
Press the SET (BS2) Button.	Detailed Malfunction/ Retry sub-code will appear on display.	
Press SET (BS2) once again to return to main Malfunction/Retry display.	Main Malfunction/Retry item will appear on display.	
Press the RETURN (BS3) Button to return to Home Screen for “Monitoring Mode”.	Home Screen for “Monitoring Mode” will appear on display.	
Press the MODE (BS1) Button to return to “Normal Mode”.	Back in normal mode.	

3.2.3 Via service monitoring tool

With the service monitoring tool, it is possible to monitor not only error codes but also some common retries and stepping down controls:

- Unit error
- Error code
- High pressure retry
- Low pressure retry
- Discharge pipe retry
- Inverter retry
- High pressure stepping down control
- Low pressure stepping down control
- Over current stepping down control
- Fin temperature stepping down control
- Compressor discharging stepping down control

3.3 Error based troubleshooting

3.3.1 A0-00 – External protection device activated

Trigger	Effect	Reset
T1-T2 input is ON and field setting 22-1=3.	Unit will stop operating	Auto reset.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check if the field setting 22-1 is correctly set according to the following wiring situations on T1-T2 of X*M terminal of the indoor unit. See "7.9 Field settings" [▸ 292]. Correct as needed.

- No wiring connected: Field setting 22-1=1
- Wiring connected to a window or door contact: Field setting 22-1=1
- Wiring connected to a remote operation switch: Field setting 22-1=2
- Wiring connected to an external protection device (fire alarm, R32 leak detection sensor,…): Field setting 22-1=3
  Possible cause: Incorrect field setting.

2 If wiring connected to T1-T2 of the indoor unit terminal, check correct connection and continuity of the wiring. See Wiring diagram in the service manual of the specific indoor unit.

Possible cause: Faulty or damaged wiring between T1-T2 of the indoor unit terminal and external device.

3 If wiring is connected, measure on T1-T2 of X*M terminal of the indoor unit to check for the correct functioning of the external device:

- Wiring connected to a window or door contact: Open circuit (unit continues previous operation, remote controller enabled) when window / door is closed, short-circuit (forced stop, remote controller buttons disabled) when window / door is open. Replace window / door contact if incorrect measurement.
  Possible cause: Faulty window / door contact.
- Wiring connected to a remote operation switch: Open circuit when OFF command to the unit, short-circuit when ON command to the unit. Replace remote operation switch if incorrect measurement.
  Possible cause: Faulty remote operation switch.
- Wiring connected to an external protection device (fire alarm, R32 leak detection sensor,…): Short-circuit when normal operation, open circuit (forced stop with error code A0-00) when external protection device is active. If open circuit is detected, check and eliminate the root cause why the protection device is activated. Do NOT try to run the unit until the root cause is eliminated. If NO root cause was found, protection device may be faulty. Replace as needed.
  Possible cause: Root cause of external protection device activation or faulty external protection device.

4 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▸ 254].

Possible cause: External source may cause interference.

5 Perform a check of the indoor unit main PCB. See service manual of the specific indoor unit.

Possible cause: Faulty indoor unit main PCB.

> **INFORMATION**
>
> If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.2 A0-11 – R32 leakage detection

Trigger	Effect	Reset
The R32 sensor indoor unit detected a refrigerant leak while fan of indoor unit is switched ON.	▪ In SV box, gas and liquid shut-off expansion valves for the faulty indoor unit completely close. ▪ Outdoor unit continues operating for other indoor circuits of this SV box.	▪ Power reset of the indoor unit. ▪ Indoor unit shows error “CH-10”. Set field setting 25-14-01 to 02 on the remote controller of the faulty indoor unit. ▪ Outdoor unit shows error “UA-55”. Set field setting 2-24-1 to 0 on the outdoor unit.

To solve the error code

> **INFORMATION**
>
> It is recommended to perform the checks in the listed order.

1 Stop the outdoor unit operation for at least 30 minutes.

2 Check the field piping for refrigerant leak. Check saturation pressure of the field piping via the liquid and gas service port and determine the corresponding saturation temperature.

3 If saturation temperature (gas and/or liquid) <outdoor ambient temperature, refrigerant leak is present. Perform as follows to repair the refrigerant leak:

- Recover the refrigerant, see "5.2 Refrigerant circuit" [▶ 245].
- Repair the field piping.
- Perform a pressure test of the field piping.
- Replace the R32 leak detection sensor of the indoor unit with error code A0-11. After replacement, at power ON of indoor unit, outdoor unit will display error code CH-10. Related gas and liquid shut-off expansion valves of the SV box will close again. Other expansion valves keep their position.
- Set field setting 25-14-01 to 02 on the remote controller of the faulty indoor unit. Outdoor unit shows error code UA-55.
- Set outdoor unit field setting 2-21 to 1 + press BS3 1 time on the outdoor unit main PCB. All expansion valves (outdoor unit, SV box and indoor units) will open.
- Vacuum and recharge the refrigerant at the outdoor unit. Consult amount sticker. See installation manual of the outdoor unit for correct refrigerant charge procedure.
- Set outdoor unit field setting 2-24-1 to 0. Error UA-55 is cleared.
- Fill in the logbook.
  Possible cause: Refrigerant leak at indoor unit side.

4 If saturation temperature (gas and/or liquid) = outdoor ambient temperature, NO refrigerant leak is present between the outdoor unit and the SV box. As the related gas and liquid shut-off expansion valves of the SV box are closed, perform as described below to check for refrigerant leak at the indoor unit side.

5 Using a leak tester, check the faulty indoor unit for refrigerant leak. If refrigerant leak is found, repair the leak as described above.

6 If NO refrigerant leak (oil traces) is found, shortly open the related gas and liquid shut-off expansion valves (set field setting 2-23-0 to 1 + press BS3 2 times) of the SV box to equalize the pressure between the system and the faulty indoor unit.

7 Perform a check of the R32 leak detection sensor of the faulty indoor unit. See service manual of the specific indoor unit.

Possible cause: Faulty R32 leak detection sensor.

8 Check if any external (foreign) vapor substance influenced the functioning of the R32 leak detection sensor. Repair as needed.

Possible cause: External (foreign) vapor substance reacted with R32 leak detection sensor.

9 Perform a check of the indoor unit main PCB. See service manual of the specific indoor unit.

Possible cause: Faulty indoor unit main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.3 A0-13 – False R32 leakage detection

Trigger	Effect	Reset
The R32 sensor indoor unit detected a refrigerant leak while fan of indoor unit is switched OFF.	Indoor unit will start forced fan operation to check R32 leak detection.	Automatic reset if NO R32 leak detected during forced fan operation.
		A0-11 error will be displayed when R32 leak detected during forced fan operation.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1. Stop the outdoor unit operation for at least 30 minutes.
2. Check the field piping for refrigerant leak. Check saturation pressure of the field piping via the liquid and gas service port and determine the corresponding saturation temperature.
3. If saturation temperature (gas and/or liquid) <outdoor ambient temperature, refrigerant leak is present. Perform as follows to repair the refrigerant leak:
   - Recover the refrigerant, see "5.2 Refrigerant circuit" [▸ 245].
   - Repair the field piping.
   - Perform a pressure test of the field piping.
   - Replace the R32 leak detection sensor of the indoor unit with error code A0-11. After replacement, at power ON, indoor unit will display error code CH-10.
   - Recharge the refrigerant at the outdoor unit. Consult amount sticker. See installation manual of the outdoor unit for correct refrigerant charge procedure.
   - Fill in the logbook.

   Possible cause: Refrigerant leak at indoor unit side.
4. If saturation temperature (gas and/or liquid) = outdoor ambient temperature, perform as described below.
5. Using a leak tester, check the faulty indoor unit for refrigerant leak. If refrigerant leak is found, repair the leak as described above.
6. If NO refrigerant leak was found, perform as described below.
7. Perform a check of the R32 leak detection sensor of the faulty indoor unit. See service manual of the specific indoor unit.

   Possible cause: Faulty R32 leak detection sensor.
8. Check if any external (foreign) vapor substance influenced the functioning of the R32 leak detection sensor. Repair as needed.

   Possible cause: External (foreign) vapor substance reacted with R32 leak detection sensor.
9. Perform a check of the indoor unit main PCB. See service manual of the specific indoor unit.

   Possible cause: Faulty indoor unit main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.4 A0-20 – R32 leakage detection at safety valve box

Trigger	Effect	Reset
The R32 sensor of the SV box detected a refrigerant leak.	Outdoor unit will stop operating and all valves in all SV boxes fully close.	▪ Power reset of the SV box. ▪ Outdoor unit shows error “CH-20”. Set field setting 2-5-0 to 1 on the main PCB of the faulty SV box. ▪ Outdoor unit shows error “UA-55”. Set field setting 2-24-1 to 0 on the outdoor unit.

INFORMATION

In case the system contains multiple SV boxes and field setting 2-9 "Error handling address" is NOT set uniquely at the different SV boxes, ALL indoor units in the system will show this error.

If field setting 2-9 is set uniquely at the different SV boxes, ONLY the indoor units connected to the faulty SV box will show this error.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Stop the outdoor unit operation for at least 30 minutes.

2 Check the field piping for refrigerant leak. Check saturation pressure of the field piping via the liquid and gas service port and determine the corresponding saturation temperature.

3 If saturation temperature (gas and/or liquid) <outdoor ambient temperature, refrigerant leak is present. Perform as follows to repair the refrigerant leak:

- Recover the refrigerant, see "5.2 Refrigerant circuit" [▸ 245].
- Repair the field piping.
- Perform a pressure test of the field piping.
- Replace the R32 leak detection sensor of the SV box with error code A0-20. After replacement, at power ON of SV box, outdoor unit will display error code CH-20. Safety gas and safety liquid expansion valves of the SV box will close again. Other expansion valves keep their position.
- Set field setting 2-5-0 to 1 on the main PCB of the faulty SV box. Safety gas and safety liquid expansion valves of the SV box will open. Outdoor unit shows error code UA-55.
- Set outdoor unit field setting 2-21 to 1 + press BS3 1 time on the outdoor unit main PCB. All expansion valves (outdoor unit, SV box and indoor units) will open.
- Vacuum and recharge the refrigerant at the outdoor unit. Consult amount sticker. See installation manual of the outdoor unit for correct refrigerant charge procedure.
- Set outdoor unit field setting 2-24-1 to 0. Error UA-55 is cleared.
- Fill in the logbook.

  Possible cause: Refrigerant leak at SV box side.

4 If saturation temperature (gas and/or liquid) = outdoor ambient temperature, perform as described below.

5 Using a leak tester, check the faulty SV box for refrigerant leak. If refrigerant leak is found, repair the leak as described above.

6 If NO refrigerant leak was found, perform as described below.

7 Perform a check of the R32 leak detection sensor of the faulty SV box. See "4.14.6 R32 leak detection sensor" [▸ 229].

Possible cause: Faulty R32 leak detection sensor.

8 Check if any external (foreign) vapor substance influenced the functioning of the R32 leak detection sensor. Repair as needed.

Possible cause: External (foreign) vapor substance reacted with R32 leak detection sensor.

9 Perform a check of the SV box main PCB. See "4.14.4 Safety valve box main PCB" [▸ 220].

Possible cause: Faulty SV box main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.5 A3-01 – Open float switch on optional drain-up kit of safety valve box

Trigger	Effect	Reset
Float switch S2L of optional drain-up kit is open.	Outdoor unit stops operating while output to drain pump (230 VAC) continues.	Auto reset when float switch S2L is closed.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the drain-up kit PCB. See "4.5.2 Drain-up kit PCB" [▸ 169].

Possible cause: Faulty PCB.

2 Perform a check of the float switches of the drain-up kit. See "4.5.3 Float switch" [▸ 169].

Possible cause: Faulty float switch(es).

3 Perform a check of the drain pump of the drain-up kit. See "4.5.1 Drain pump" [▸ 169].

Possible cause: Faulty drain pump.

4 Fill the drain pan of the SV box until float switch S1L opens. Check if the drain outlet of the SV box and the optional drain-up kit is blocked. Check the optional drain-up kit for excessive lift (>1000 mm). Correct as needed

Possible cause: Drain outlet blocked or excessive lift at the drain-up kit.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.6 CH-01 – R32 leak detection sensor failure or disconnected

Trigger	Effect	Reset
The R32 sensor NOT connected to indoor unit main PCB.	Indoor unit will stop operating while other indoor units show error U9-02. Outdoor unit forced stop (without automatic refrigerant recovery operation).	Set field setting 25-14-01 to 02 on the remote controller of the faulty indoor unit.
R32 sensor PCB failure		

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check wiring (insertion and continuity) on connector X41A on the indoor unit main PCB and connector CN1 on the PCB of the R32 leak detection sensor. See Wiring diagram in the service manual of the specific indoor unit.

Possible cause: Faulty or damaged wiring between indoor unit main PCB and R32 leak detection sensor.

2 Check the error history for error code A0-11, see "3 Troubleshooting" [▸ 25]. If A0-11 is found, R32 leak detection sensor was replaced after this error and power reconnected. Check if field setting 25-14=02. Correct if needed, see "7.9 Field settings" [▸ 292].

Possible cause: R32 leak detection sensor was replaced without adjusting field setting 25-14.

3 Perform a check of the R32 leak detection sensor of the faulty indoor unit. See service manual of the specific indoor unit.

Possible cause: Faulty R32 leak detection sensor.

4 Check if any external (foreign) vapor substance influenced the functioning of the R32 leak detection sensor. Repair as needed.

Possible cause: External (foreign) vapor substance reacted with R32 leak detection sensor.

5 Perform a check of the indoor unit main PCB. See service manual of the specific indoor unit.

Possible cause: Faulty indoor unit main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.7 CH-02 – R32 leak detection sensor life time is exceeded

Trigger	Effect	Reset
The R32 sensor detected operation of 10 years or more.	Indoor unit will stop operating. Other indoor units and outdoor unit will continue operating.	▪ Power reset of the indoor unit. ▪ Set field setting 25-14-01 to 02 on the remote controller of the faulty indoor unit. ▪ Outdoor unit shows error “UA-55”. Set field setting 2-24-1 to 0 on the outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check the error history to see if R32 leak detection sensor was replaced, see "3 Troubleshooting" [▸ 25]. If replaced, check if timer was reset during sensor replacement. Reset as needed.

Possible cause: R32 leak detection sensor was replaced without timer reset.

2 Check the operation time of the R32 leak detection sensor of the faulty indoor unit. If operation time is 10 years, replace the R32 leak detection sensor. See service manual of the specific indoor unit.

Possible cause: R32 leak detection sensor operation time reached maximum value (10 years).

3 Perform a check of the R32 leak detection sensor of the faulty indoor unit. See service manual of the specific indoor unit.

Possible cause: Faulty R32 leak detection sensor.

4 Perform a check of the indoor unit main PCB. See service manual of the specific indoor unit.

Possible cause: Faulty indoor unit main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.8 CH-05 – R32 leak detection sensor life time <6 months

Trigger	Effect	Reset
The R32 sensor detected operation of 9.5 years or more.	Unit will continue operating.	Auto reset.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1. Check the error history to see if R32 leak detection sensor was replaced, see "3 Troubleshooting" [▸ 25]. If replaced, check if timer was reset during sensor replacement. Reset as needed.

   Possible cause: R32 leak detection sensor was replaced without timer reset.

2. Check the operation time of the R32 leak detection sensor of the faulty indoor unit. If operation time approaches 10 years, order a new R32 leak detection sensor and replace at the next maintenance interval.

   Possible cause: R32 leak detection sensor operation time approaches maximum value (10 years).

3. Perform a check of the R32 leak detection sensor of the faulty indoor unit. See service manual of the specific indoor unit.

   Possible cause: Faulty R32 leak detection sensor.

4. Perform a check of the indoor unit main PCB. See service manual of the specific indoor unit.

   Possible cause: Faulty indoor unit main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.9 CH-10 – R32 leak detection sensor replacement to confirm

Trigger	Effect	Reset
Power reset after the R32 sensor detected disconnection or malfunction between indoor unit main PCB and R32 sensor (error CH-01).	Outdoor unit stops operating.	▪ Set field setting 25-14-01 to 02 on the remote controller of the faulty indoor unit. ▪ Outdoor unit shows error “UA-55”. Set field setting 2-24-1 to 0 on the outdoor unit.
Power reset after R32 sensor detected a leak (error A0-11).		
Power reset after warning lifetime <6 months (caution CH-02).	Outdoor unit continues operating.	▪ When R32 sensor was replaced, after power reset, set field setting 25-14-01 to 02 on the remote controller of the faulty indoor unit. ▪ Outdoor unit shows error “UA-55”. Set field setting 2-24-1 to 0 on the outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check wiring (insertion and continuity) on connector X41A on the indoor unit main PCB and connector CN1 on the PCB of the R32 leak detection sensor. See Wiring diagram in the service manual of the specific indoor unit.

Possible cause: Faulty or damaged wiring between indoor unit main PCB and R32 leak detection sensor.

2 Check the error history for error code A0-11, see "3 Troubleshooting" [▸ 25]. If A0-11 is found, R32 leak detection sensor was replaced after this error and power reconnected. Check if field setting 25-14=02. Correct if needed, see "7.9 Field settings" [▸ 292].

Possible cause: R32 leak detection sensor was replaced without adjusting field setting 25-14.

3 Perform a check of the R32 leak detection sensor of the faulty indoor unit. See service manual of the specific indoor unit.

Possible cause: Faulty R32 leak detection sensor.

4 Check if any external (foreign) vapor substance influenced the functioning of the R32 leak detection sensor. Repair as needed.

Possible cause: External (foreign) vapor substance reacted with R32 leak detection sensor.

5 Perform a check of the indoor unit main PCB. See service manual of the specific indoor unit.

Possible cause: Faulty indoor unit main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.10 CH-20 – R32 leak detection sensor replacement at safety valve box to confirm

Trigger	Effect	Reset
The R32 sensor detected disconnection between SV box PCB and R32 sensor.	Outdoor unit stops operating.	▪ Set field setting 2-5-0 to 1 on the main PCB of the faulty SV box. ▪ Outdoor units shows error UA-55. Set field setting 2-24-1 to 0 on the outdoor unit.
R32 sensor replaced in SV box and power reset after error A0-20 or CH23.		
Power reset after R32 sensor end lifetime (error CH-23).		▪ When R32 sensor is replaced, after power reset, set field setting 2-5-1 to 2 on the main PCB of the faulty SV box. ▪ Outdoor units shows error UA-55. Set field setting 2-24-1 to 0 on the outdoor unit.
Incorrect setting on sub PCB of SV box.		Reset when setting 2-6-1 (default) on sub PCB of SV box is corrected.
Power reset after warning lifetime <6 months (caution CH-22).	Outdoor unit continues operating.	▪ When R32 sensor is replaced, after power reset, set field setting 2-5-1 to 2 on the main PCB of the faulty SV box. ▪ Outdoor units shows error UA-55. Set field setting 2-24-1 to 0 on the outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check wiring (insertion and continuity) on connector X19A on the SV box PCB and connector CN1 on the PCB of the R32 leak detection sensor. See "7.2 Wiring diagram" [▸ 262].

Possible cause: Faulty or damaged wiring between SV box PCB and R32 leak detection sensor.

2 Check the error history for error code A0-20, see "3 Troubleshooting" [▶ 25]. If A0-20 is found, R32 leak detection sensor was replaced after this error and power reconnected. Check if field setting 2-5=02 on the SV box. Correct if needed, see "7.9 Field settings" [▶ 292].

Possible cause: R32 leak detection sensor was replaced without adjusting field setting 2-5 on the SV box.

3 Perform a check of the R32 leak detection sensor of the faulty SV box. See "4.14.6 R32 leak detection sensor" [▶ 229].

Possible cause: Faulty R32 leak detection sensor.

4 Check if any external (foreign) vapor substance influenced the functioning of the R32 leak detection sensor. Repair as needed.

Possible cause: External (foreign) vapor substance reacted with R32 leak detection sensor.

5 Perform a check of the SV box main PCB. See "4.14.4 Safety valve box main PCB" [▶ 220].

Possible cause: Faulty SV box main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.11 CH-21 – R32 leak detection sensor at safety valve box failure or disconnected

Trigger	Effect	Reset
The R32 sensor not connected to SV box PCB.	Outdoor unit continues operating for indoor circuits of other SV box es.	▪ Set field setting 2-5-0 to 1 on the main PCB of the faulty SV box. ▪ Outdoor units shows error UA-55. Set field setting 2-24-1 to 0 on the outdoor unit.
R32 sensor PCB failure.		

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check wiring (insertion and continuity) on connector X19A on the SV box PCB and connector CN1 on the PCB of the R32 leak detection sensor. See "7.2 Wiring diagram" [▶ 262].

Possible cause: Faulty or damaged wiring between SV box PCB and R32 leak detection sensor.

2 Check the error history for error code A0-20, see "3 Troubleshooting" [▶ 25]. If A0-20 is found, R32 leak detection sensor was replaced after this error and power reconnected. Check if field setting 2-5=02 on the SV box. Correct if needed, see "7.9 Field settings" [▶ 292].

Possible cause: R32 leak detection sensor was replaced without adjusting field setting 2-5 on the SV box.

3 Perform a check of the R32 leak detection sensor of the faulty SV box. See "4.14.6 R32 leak detection sensor" [▸ 229].

Possible cause: Faulty R32 leak detection sensor.

4 Check if any external (foreign) vapor substance influenced the functioning of the R32 leak detection sensor. Repair as needed.

Possible cause: External (foreign) vapor substance reacted with R32 leak detection sensor.

5 Perform a check of the SV box main PCB. See "4.14.4 Safety valve box main PCB" [▸ 220].

Possible cause: Faulty SV box main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.12 CH-22 – R32 leak detection sensor at safety valve box life time <6 months

Trigger	Effect	Reset
The R32 sensor detected operation of 9.5 years or more.	SV box will continue operating. Outdoor unit can operate for ALL indoor units.	▪ Set field setting 2-5-0 to 1 on the main PCB of the faulty SV box. ▪ Outdoor units shows error UA-55. Set field setting 2-24-1 to 0 on the outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check the error history to see if R32 leak detection sensor was replaced, see "3 Troubleshooting" [▸ 25]. If replaced, check if timer was reset during sensor replacement. Reset as needed.

Possible cause: R32 leak detection sensor was replaced without timer reset.

2 Check the operation time of the R32 leak detection sensor of the faulty SV box. If operation time approaches 10 years, order a new R32 leak detection sensor and replace at the next maintenance interval.

Possible cause: R32 leak detection sensor operation time approaches maximum value (10 years).

3 Perform a check of the R32 leak detection sensor of the faulty SV box. See "4.14.6 R32 leak detection sensor" [▸ 229].

Possible cause: Faulty R32 leak detection sensor.

4 Perform a check of the SV box main PCB. See "4.14.4 Safety valve box main PCB" [▸ 220].

Possible cause: Faulty SV box main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.13 CH-23 – R32 leak detection sensor at safety valve box life time is exceeded

Trigger	Effect	Reset
The R32 sensor detected operation of 10 years or more.	Outdoor unit stops operating.	▪ After R32 sensor replacement, power reset of the SV box. ▪ Set field setting 2-5-0 to 1 on the main PCB of the SV box. ▪ Outdoor unit shows error “UA-55”. Set field setting 2-24-1 to 0 on the outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check the error history to see if R32 leak detection sensor was replaced, see "3 Troubleshooting" [▸ 25]. If replaced, check if timer was reset during sensor replacement. Reset as needed.

Possible cause: R32 leak detection sensor was replaced without timer reset.

2 Check the operation time of the R32 leak detection sensor of the faulty SV box. If operation time is 10 years, replace the R32 leak detection sensor. See "4.14.6 R32 leak detection sensor" [▸ 229].

Possible cause: R32 leak detection sensor operation time reached maximum value (10 years).

3 Perform a check of the R32 leak detection sensor of the faulty SV box. See "4.14.6 R32 leak detection sensor" [▸ 229].

Possible cause: Faulty R32 leak detection sensor.

4 Perform a check of the SV box main PCB. See "4.14.4 Safety valve box main PCB" [▸ 220].

Possible cause: Faulty SV box main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.14 E1-01 – Outdoor unit main PCB A1P error

Trigger	Effect	Reset
Main PCB fails reading/ writing memory (EEPROM error).	Unit will stop operating.	Manual reset via user interface.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

2 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

3 Check the F1-F2 transmission line between the indoor units and outdoor unit. See "5.1 Electrical circuit" [▸ 237].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

4 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▸ 254].

Possible cause: External source may cause interference.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.15 E1-05 – Safety valve box main PCB error

Trigger	Effect	Reset
Faulty main PCB of SV box.	Unit will stop operating.	Manual reset via user interface.
Main PCB of SV box fails reading/writing memory (EEPROM error).		

INFORMATION

In case the system contains multiple SV boxes and field setting 2-9 "Error handling address" is NOT set uniquely at the different SV boxes, ALL indoor units in the system will show this error.

If field setting 2-9 is set uniquely at the different SV boxes, ONLY the indoor units connected to the faulty SV box will show this error.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the SV box main PCB. See "4.14.4 Safety valve box main PCB" [▸ 220].

Possible cause: Faulty SV box main PCB.

2 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

3 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▸ 254].

Possible cause: External source may cause interference.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.16 E2-01 – Current leak detection

Trigger	Effect	Reset
Main PCB detects earth leakage through current sensor >safety value, see "7.6 Safety devices" [▸ 287].	Unit will stop operating.	Manual reset via user interface.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the current sensor. See "4.4 Current sensor" [▸ 169].

Possible cause: Faulty current sensor.

2 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

3 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

4 Using a megger device, check the solenoid valve coils, 4-way valve coil, fan motors and compressors if any earth leakage is found. Replace the component(s) that generate earth leakage.

5 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Refrigerant overcharge.

6 Check for the presence of humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▶ 245].

Possible cause: Humidity in the refrigerant circuit.

> **INFORMATION**
>
> If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.17 E2-06 – Open circuit on earth leakage detection core

Trigger	Effect	Reset
Main PCB detects open circuit on connector X101A.	Unit will stop operating.	Manual reset via user interface.

To solve the error code

> **INFORMATION**
>
> It is recommended to perform the checks in the listed order.

1 Check that connector X101A is correctly connected to the main PCB. See Main PCB.

Possible cause: Open circuit on connector X101A.

2 Perform a check of the current sensor. See "4.4 Current sensor" [▶ 169].

Possible cause: Faulty current sensor.

3 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

> **INFORMATION**
>
> If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.18 E3-01 – Actuation of high pressure switch

Trigger	Effect	Reset
High pressure switch opens due to high pressure >safety value, "7.6 Safety devices" [▶ 287].	Unit will stop operating.	If field setting 2-15=1 (default): When pressure drops below the reset value, via the indoor unit remote controller, cycle OFF & ON.
		If field setting 2-15=0: When pressure drops below the reset value, press BS3 on main PCB on outdoor unit, and then via indoor unit remote controller, cycle OFF & ON.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check that all stop valves of the refrigerant circuit are open. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Check the required space around the outdoor unit heat exchanger. See "5.4 External factors" [▸ 254].

Possible cause: Insufficient air flow or air by-pass due to required space specifications not met.

3 Clean the outdoor heat exchanger. See "6 Maintenance" [▸ 256].

Possible cause: Dirty outdoor heat exchanger.

4 Perform a check of the high pressure switch. See "4.7 High pressure switch" [▸ 178].

Possible cause: Faulty high pressure switch.

5 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Refrigerant overcharge.

6 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

7 Check if the refrigerant circuit is clogged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Clogged refrigerant circuit.

8 Perform a check of the condenser side expansion valve. See "4.6 Expansion valve" [▸ 169].

Possible cause: Faulty condenser side expansion valve.

9 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.19 E3-02 – High pressure error

Trigger	Effect	Reset
High pressure control (by sensor) active due to pressure >safety value certain times within certain minutes, see "7.6 Safety devices" [▸ 287].	Unit will stop operating.	If field setting 2-15=1 (default): Via the indoor unit remote controller, cycle OFF & ON.
		If field setting 2-15=0: Press BS3 on main PCB on outdoor unit, and then via indoor unit remote controller, cycle OFF & ON.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check that all stop valves of the refrigerant circuit are open. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Check the required space around the outdoor unit heat exchanger. See "5.4 External factors" [▸ 254].

Possible cause: Insufficient air flow or air by-pass due to required space specifications not met.

3 Clean the outdoor heat exchanger. See "6 Maintenance" [▸ 256].

Possible cause: Dirty outdoor heat exchanger.

4 Perform a check of the refrigerant high pressure sensor. See "4.12 Refrigerant high pressure sensor" [▸ 198].

Possible cause: Faulty refrigerant high pressure sensor.

5 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Refrigerant overcharge.

6 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

7 Check if the refrigerant circuit is clogged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Clogged refrigerant circuit.

8 Perform a check of the condenser side expansion valve. See "4.6 Expansion valve" [▸ 169].

Possible cause: Faulty condenser side expansion valve.

9 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.20 E3-13 – Liquid stop valve check error

Trigger	Effect	Reset
Pressure builds up quickly on test run operation.	Unit will stop test run.	Eliminate the cause, repeat test operation procedure.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1. Check that all stop valves of the refrigerant circuit are open. See "5.2 Refrigerant circuit" [▸ 245].

   Possible cause: Closed stop valve in the refrigerant circuit.

2. Perform a check of the refrigerant high pressure sensor. See "4.12 Refrigerant high pressure sensor" [▸ 198].

   Possible cause: Faulty refrigerant high pressure sensor.

3. Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 245].

   Possible cause: Refrigerant overcharge.

4. Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▸ 245].

   Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

5. Check if the refrigerant circuit is clogged. See "5.2 Refrigerant circuit" [▸ 245].

   Possible cause: Clogged refrigerant circuit.

6. Perform a check of the condenser side expansion valve. See "4.6 Expansion valve" [▸ 169].

   Possible cause: Faulty condenser side expansion valve.

7. Perform a check of the main PCB. See Main PCB.

   Possible cause: Faulty main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.21 E3-18 – Actuation of high pressure switch during test run

Trigger	Effect	Reset
High pressure switch is activated during test run.	Unit will stop test run.	If field setting 2-15=1 (default): Via the indoor unit remote controller, cycle OFF & ON.
		If field setting 2-15=0: Press BS3 on main PCB on outdoor unit, and then via indoor unit remote controller, cycle OFF & ON.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check that all stop valves of the refrigerant circuit are open. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Perform a check of the high pressure switch. See "4.7 High pressure switch" [▸ 178].

Possible cause: Faulty high pressure switch.

3 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Refrigerant overcharge.

4 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

5 Check if the refrigerant circuit is clogged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Clogged refrigerant circuit.

6 Perform a check of the condenser side expansion valve. See "4.6 Expansion valve" [▸ 169].

Possible cause: Faulty condenser side expansion valve.

7 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.22 E4-01 – Low pressure error

Trigger	Effect	Reset
Low pressure control (by sensor) active due to <safety value certain times within certain minutes, see "7.6 Safety devices" [▸ 287].	Unit will stop operating.	Manual reset via user interface.
		Automatic Reset when Low Pressure >reset value, see "7.6 Safety devices" [▸ 287].

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check that all stop valves of the refrigerant circuit are open. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Perform a cross-wiring check of the F1-F2 transmission wiring between the indoor units and outdoor unit. Set field setting 2-5 of the outdoor unit to 1 to start the indoor units connected to that outdoor unit on forced fan operation, see "7.9 Field settings" [▸ 292]. If any other indoor unit (that should be connected to a different outdoor unit) is operating, this indoor unit is connected to the wrong outdoor unit (cross-wired). Correct the wiring between the indoor unit(s) and outdoor unit.

Possible cause: F1-F2 transmission wiring is cross-wired with another outdoor unit system.

3 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Refrigerant shortage.

4 Check for the presence of humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Humidity in the refrigerant circuit.

5 Check if the refrigerant circuit is clogged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Clogged refrigerant circuit.

6 Perform a check of the evaporator side expansion valve. See "4.6 Expansion valve" [▸ 169].

Possible cause: Faulty evaporator side expansion valve.

7 Check the required space around the outdoor unit heat exchanger. See "5.4 External factors" [▸ 254].

Possible cause: Insufficient air flow or air by-pass due to required space specifications not met.

8 Clean the outdoor heat exchanger. See "6 Maintenance" [▸ 256].

Possible cause: Dirty outdoor heat exchanger.

9 Perform a check of the refrigerant low pressure sensor. See "4.13 Refrigerant low pressure sensor" [▸ 202]

Possible cause: Faulty refrigerant low pressure sensor.

10 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

11 Check the F1-F2 transmission line between the indoor units and outdoor unit. See "5.1 Electrical circuit" [▸ 237].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.23 E5-01 – Compressor overload/Motor Lock Error (M1C)

Trigger	Effect	Reset
Compressor overload is detected for M1C.	Unit will stop operating.	Manual reset via user interface.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check that all stop valves of the refrigerant circuit are open. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Check if the refrigerant circuit is clogged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Clogged refrigerant circuit.

3 Check if there are oil traps in the field piping. See installation manual for piping rules.

Possible cause: Compressor running without oil will draw higher current and get locked.

4 Perform a check of the compressor. See "4.2 Compressor" [▸ 153].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

5 Check liquid back issue. Check expansion valve operation. See "4.6 Expansion valve" [▸ 169].

Possible cause: Expansion valve CANNOT keep minimum superheat of 3 K while running as evaporator.

6 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Refrigerant shortage.

7 Perform a check of the discharge pipe thermistor. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty discharge pipe thermistor or connector fault.

8 Perform a check of the inverter PCB. See Inverter PCB.

Possible cause: Faulty inverter PCB.

9 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.24 E6-17 – Inverter overcurrent error

Trigger	Effect	Reset
Overcurrent on Inverter PCB A3P for Compressor M1C.	Unit will stop operating.	Manual reset via user interface.
Actual current value of the compressor is abnormally high compared to nominal current of the compressor for at least 30 minutes.		

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the refrigerant high pressure sensor. See "4.12 Refrigerant high pressure sensor" [▸ 198].

Possible cause: Faulty refrigerant high pressure sensor.

2 Perform a check of the refrigerant low pressure sensor. See "4.13 Refrigerant low pressure sensor" [▸ 202]

Possible cause: Faulty refrigerant low pressure sensor.

3 Connect a pressure gauge to both high and low pressure service ports and read the high and low refrigerant pressure. Connect the service monitoring tool to the unit and compare the pressure values to the pressure read on the pressure gauges. In case the service monitoring tool read-out does NOT correspond with the pressures read through the pressure gauges, the main PCB needs to be replaced, see Main PCB.

4 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

5 Perform a check of the inverter PCB. See Inverter PCB.

Possible cause: Faulty inverter PCB.

6 Perform a check of the compressor. See "4.2 Compressor" [▸ 153].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.25 E7-01 – Outdoor unit fan motor M1F error

Trigger	Effect	Reset
Malfunction of rotation detection for M1F. Careful, there is no rpm detection. Fan judgement is based on logic by current drawn.	Unit will stop operating.	Manual reset via user interface.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the fan inverter PCB A4P. See Fan inverter PCB.

Possible cause: Faulty fan inverter PCB A4P.

2 Check if power supply cable to fan motor is NOT loose. Check connector X1A on fan inverter PCB A4P. See "To check the wiring of the fan inverter PCB" Fan inverter PCB. Check wire to fan motor M1F.

Possible cause: Faulty power supply cable to fan motor M1F.

3 Perform a check of the outdoor unit fan motor M1F. See "4.9 Outdoor unit fan motor" [▸ 186].

Possible cause: Faulty outdoor unit fan motor M1F.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.26 E7-02 – Outdoor unit fan motor M2F error

Trigger	Effect	Reset
Malfunction of rotation detection for M2F. Careful, there is no rpm detection. Fan judgement is based on logic by current drawn.	Unit will stop operating.	Manual reset via user interface.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the fan inverter PCB A5P. See Fan inverter PCB.

Possible cause: Faulty fan inverter PCB A5P.

2 Check if power supply cable to fan motor is NOT loose. Check connector X3A on fan inverter PCB A5P. See "To check the wiring of the fan inverter PCB" Fan inverter PCB. Check wire to fan motor M2F.

Possible cause: Faulty power supply cable to fan motor M2F.

3 Perform a check of the outdoor unit fan motor M2F. See "4.9 Outdoor unit fan motor" [▸ 186].

Possible cause: Faulty outdoor unit fan motor M2F.

> **INFORMATION**
> If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.27 E7-05 – Outdoor unit fan motor M1F overcurrent error

Trigger	Effect	Reset
Overcurrent detected on outdoor unit fan motor M1F.	Unit will stop operating.	Manual reset via user interface.

To solve the error code

> **INFORMATION**
> It is recommended to perform the checks in the listed order.

1 Perform a check of the fan inverter PCB A4P. See Fan inverter PCB.

Possible cause: Faulty fan inverter PCB A4P.

2 Perform a check of the outdoor unit fan motor M1F. See "4.9 Outdoor unit fan motor" [▸ 186].

Possible cause: Faulty outdoor unit fan motor M1F.

> **INFORMATION**
> If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.28 E7-06 – Outdoor unit fan motor M2F overcurrent error

Trigger	Effect	Reset
Overcurrent detected on outdoor unit fan motor M2F.	Unit will stop operating.	Manual reset via user interface.

To solve the error code

> **INFORMATION**
> It is recommended to perform the checks in the listed order.

1 Perform a check of the fan inverter PCB A5P. See Fan inverter PCB.

Possible cause: Faulty fan inverter PCB A5P.

2 Perform a check of the outdoor unit fan motor M2F. See "4.9 Outdoor unit fan motor" [▸ 186].

Possible cause: Faulty outdoor unit fan motor M2F.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.29 E7-09 – Fan inverter PCB A4P (integrated power module) overheated

Trigger	Effect	Reset
Fan inverter PCB A4P is overheated.	Unit will stop operating.	Manual reset via user interface.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the fan inverter PCB A4P. See Fan inverter PCB.

Possible cause: Faulty fan inverter PCB A4P.

2 Check the required space around the outdoor unit heat exchanger. See "5.4 External factors" [▸ 254].

Possible cause: Insufficient air flow or air by-pass due to required space specifications not met.

3 Clean the outdoor heat exchanger. See "6 Maintenance" [▸ 256].

Possible cause: Dirty outdoor heat exchanger.

4 Perform a check of the inverter cooling expansion valve. See "4.6 Expansion valve" [▸ 169].

Possible cause: Faulty inverter cooling expansion valve.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.30 E7-10 – Fan inverter PCB A5P (integrated power module) overheated

Trigger	Effect	Reset
Fan inverter PCB A5P is overheated.	Unit will stop operating.	Manual reset via user interface.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the fan inverter PCB A5P. See Fan inverter PCB.

Possible cause: Faulty fan inverter PCB A5P.

2 Check the required space around the outdoor unit heat exchanger. See "5.4 External factors" [▸ 254].

Possible cause: Insufficient air flow or air by-pass due to required space specifications not met.

3 Clean the outdoor heat exchanger. See "6 Maintenance" [▸ 256].

Possible cause: Dirty outdoor heat exchanger.

4 Perform a check of the inverter cooling expansion valve. See "4.6 Expansion valve" [▸ 169].

Possible cause: Faulty inverter cooling expansion valve.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.31 E9-01 – Electronic expansion valve (Y1E) malfunction

Trigger	Effect	Reset
Main expansion valve Y1E malfunction.	Unit will stop operating.	Power reset at outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

INFORMATION

When the power is switched ON, the outdoor unit main PCB checks all expansion valve coil windings by current check.

1 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

2 Perform a check of the main expansion valve. See "4.6 Expansion valve" [▸ 169].

Possible cause: Faulty main expansion valve.

3 Perform a check of all refrigerant side thermistors. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty refrigerant side thermistor(s).

4 Perform a check of the refrigerant low pressure sensor. See "4.13 Refrigerant low pressure sensor" [▸ 202]

Possible cause: Faulty refrigerant low pressure sensor.

5 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Refrigerant overcharge.

6 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

7 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▶ 254].

Possible cause: External source may cause interference.

> **INFORMATION**
>
> If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.32 E9-04 – Electronic expansion valve (Y3E) malfunction

Trigger	Effect	Reset
Inverter cooling expansion valve Y3E malfunction.	Unit will stop operating.	Power reset at outdoor unit.

To solve the error code

> **INFORMATION**
>
> It is recommended to perform the checks in the listed order.

> **INFORMATION**
>
> When the power is switched ON, the outdoor unit main PCB checks all expansion valve coil windings by current check.

1 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

2 Perform a check of the inverter cooling expansion valve. See "4.6 Expansion valve" [▶ 169].

Possible cause: Faulty inverter cooling expansion valve.

3 Perform a check of all refrigerant side thermistors. See "4.15 Thermistors" [▶ 232].

Possible cause: Faulty refrigerant side thermistor(s).

4 Perform a check of the refrigerant low pressure sensor. See "4.13 Refrigerant low pressure sensor" [▶ 202]

Possible cause: Faulty refrigerant low pressure sensor.

5 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 245].

Possible cause: Refrigerant overcharge.

6 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▶ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

7 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▶ 254].

Possible cause: External source may cause interference.

> **INFORMATION**
>
> If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.33 E9-26 – Electronic expansion valve (Y4E) malfunction

Trigger	Effect	Reset
Liquid injection expansion valve Y4E malfunction.	Unit will stop operating.	Power reset at outdoor unit.

To solve the error code

> **INFORMATION**
>
> It is recommended to perform the checks in the listed order.

> **INFORMATION**
>
> When the power is switched ON, the outdoor unit main PCB checks all expansion valve coil windings by current check.

1 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

2 Perform a check of the liquid injection expansion valve. See "4.6 Expansion valve" [▸ 169].

Possible cause: Faulty expansion valve.

3 Perform a check of all refrigerant side thermistors. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty refrigerant side thermistor(s).

4 Perform a check of the refrigerant low pressure sensor. See "4.13 Refrigerant low pressure sensor" [▸ 202]

Possible cause: Faulty refrigerant low pressure sensor.

5 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Refrigerant overcharge.

6 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

7 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▸ 254].

Possible cause: External source may cause interference.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.34 E9-29 – Electronic expansion valve (Y2E) malfunction

Trigger	Effect	Reset
Subcool expansion valve Y2E malfunction.	Unit will stop operating.	Power reset at outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

INFORMATION

When the power is switched ON, the outdoor unit main PCB checks all expansion valve coil windings by current check.

1 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

2 Perform a check of the subcool expansion valve. See "4.6 Expansion valve" [▸ 169].

Possible cause: Faulty subcool expansion valve.

3 Perform a check of all refrigerant side thermistors. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty refrigerant side thermistor(s).

4 Perform a check of the refrigerant low pressure sensor. See "4.13 Refrigerant low pressure sensor" [▸ 202]

Possible cause: Faulty refrigerant low pressure sensor.

5 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Refrigerant overcharge.

6 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

7 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▸ 254].

Possible cause: External source may cause interference.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.35 E9-48 – Electronic expansion valve overcurrent error

Trigger	Effect	Reset
Expansion valve overcurrent.	Unit will stop operating.	Power reset at outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

INFORMATION

When the power is switched ON, the outdoor unit main PCB checks all expansion valve coil windings by current check.

1 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

2 Perform a check of all expansion valves. See "4.6 Expansion valve" [▸ 169].

Possible cause: Faulty expansion valve.

3 Perform a check of all refrigerant side thermistors. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty refrigerant side thermistor(s).

4 Perform a check of the refrigerant low pressure sensor. See "4.13 Refrigerant low pressure sensor" [▸ 202]

Possible cause: Faulty refrigerant low pressure sensor.

5 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Refrigerant overcharge.

6 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

7 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▸ 254].

Possible cause: External source may cause interference.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.36 E9-51 – Electronic expansion valve thermal cutting error

Trigger	Effect	Reset
Expansion valve thermal cutting error.	Unit will stop operating.	Power reset at outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

INFORMATION

When the power is switched ON, the outdoor unit main PCB checks all expansion valve coil windings by current check.

1 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

2 Perform a check of all expansion valves. See "4.6 Expansion valve" [▸ 169].

Possible cause: Faulty expansion valve.

3 Perform a check of all refrigerant side thermistors. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty refrigerant side thermistor(s).

4 Perform a check of the refrigerant low pressure sensor. See "4.13 Refrigerant low pressure sensor" [▸ 202]

Possible cause: Faulty refrigerant low pressure sensor.

5 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Refrigerant overcharge.

6 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

7 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▸ 254].

Possible cause: External source may cause interference.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.37 E9-54 – Electronic expansion valve defective circuit

Trigger	Effect	Reset
Expansion valve defective circuit.	Unit will stop operating.	Power reset at outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

INFORMATION

When the power is switched ON, the outdoor unit main PCB checks all expansion valve coil windings by current check.

1 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

2 Perform a check of all expansion valves. See "4.6 Expansion valve" [▸ 169].

Possible cause: Faulty expansion valve.

3 Perform a check of all refrigerant side thermistors. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty refrigerant side thermistor(s).

4 Perform a check of the refrigerant low pressure sensor. See "4.13 Refrigerant low pressure sensor" [▸ 202]

Possible cause: Faulty refrigerant low pressure sensor.

5 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Refrigerant overcharge.

6 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

7 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▸ 254].

Possible cause: External source may cause interference.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.38 EA-27 – Safety valve box damper failure

Trigger	Effect	Reset
Limit switch of the SV box damper motor did NOT detect damper movement after motor was energized.	Unit will stop operating.	Power reset at SV box.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 At the faulty SV box, set field setting mode 2 – code 3 – 0 to 1 to activate the damper motor.

2 If the damper motor keeps rotating, perform a check of the SV box limit switch(es), see "4.14.3 Safety valve box limit switch" [▸ 218].

Possible cause: Faulty limit switch(es).

3 If the damper motor does NOT start rotating, perform as described below.

4 Perform a check of the SV box damper motor. See "4.14.1 Safety valve box damper motor" [▸ 207].

Possible cause: Faulty damper motor.

5 Perform a check of the SV box main PCB. See "4.14.4 Safety valve box main PCB" [▸ 220].

Possible cause: Faulty SV box main PCB.

6 Perform a power reset. If the error disappears and is raised again after a while, check for the presence of an external source causing electrical noise. See "5.4 External factors" [▸ 254].

Possible cause: External source may cause interference.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.39 F3-01 – Compressor discharge temperature too high

Trigger	Effect	Reset
Discharge temperature >safety value certain times within certain minutes, see "7.6 Safety devices" [▸ 287].	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when discharge temperature <reset value, see "7.6 Safety devices" [▸ 287].

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check that all stop valves of the refrigerant circuit are open. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Perform a check of the discharge pipe thermistor. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty discharge pipe thermistor or connector fault.

3 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

4 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Refrigerant shortage.

5 Perform a check of the compressor. See "4.2 Compressor" [▸ 153].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

6 Perform a check of the following expansion valves. See "4.6 Expansion valve" [▸ 169]:

- Main expansion valve
- Subcool expansion valve
- Liquid injection expansion valve

Possible cause: Faulty expansion valve.

7 Perform a check of the expansion valve(s) of the indoor unit(s). See service manual of the respective indoor unit(s) for more information.

Possible cause: Faulty indoor unit expansion valve.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.40 F3-20 – Compressor body temperature too high

Trigger	Effect	Reset
Body temperature >safety value certain times within certain minutes, see "7.6 Safety devices" [▸ 287].	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when body temperature <reset value, see "7.6 Safety devices" [▸ 287].

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the compressor body thermistor. See "4.15 Thermistors" [▶ 232].

Possible cause: Faulty compressor body thermistor or connector fault.

2 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

3 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 245].

Possible cause: Refrigerant shortage.

4 Perform a check of the compressor. See "4.2 Compressor" [▶ 153].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

5 Perform a check of the main expansion valve. See "4.6 Expansion valve" [▶ 169].

Possible cause: Faulty main expansion valve.

6 Perform a check of the expansion valve(s) of the indoor unit(s). See service manual of the respective indoor unit(s) for more information.

Possible cause: Faulty indoor unit expansion valve.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.41 F4-01 – Wet operation caution

Trigger	Effect	Reset
Discharge superheat <10℃ ($SH_{Discharge}=T_{Discharge} - T_{condensation}$).	Unit keeps running.	Automatic reset when discharge superheat >10℃.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 245].

Possible cause: Refrigerant overcharge.

2 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▶ 245].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

3 Perform a check of the evaporator side expansion valve. See "4.6 Expansion valve" [▶ 169].

Possible cause: Faulty evaporator side expansion valve.

4 Check for objects near the indoor unit that may block the airflow. See "5.4 External factors" [▶ 254].

Possible cause: Airflow of the indoor unit is blocked.

5 Clean the air filters of the indoor unit(s). See service manual of the respective indoor unit(s).

Possible cause: Faulty or clogged air filter.

6 Adjust external static pressure setting for ducted type indoor units, if necessary.

7 Perform a check of the indoor unit fan motor. See service manual of the respective indoor unit(s).

Possible cause: Faulty indoor unit fan motor.

8 Perform a check of the discharge pipe thermistor. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty discharge pipe thermistor or connector fault.

9 Perform a check of the refrigerant high pressure sensor. See "4.12 Refrigerant high pressure sensor" [▸ 198].

Possible cause: Faulty refrigerant high pressure sensor.

10 Perform a check of the indoor unit air thermistors. See service manual of the respective indoor unit(s) for more information.

Possible cause: Faulty indoor unit air thermistor(s).

11 Check all indoor units operation in heating mode. Check for room temperatures below 20°C. Check if caution disappears once rooms heat-up. If NOT, continue checking the cause of the wet operation.

Possible cause: Indoor room temperature too low when in heating mode. Too cold rooms might create more subcool resulting in wet operation.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.42 F4-02 – Wet alarm for compressor M1C

Trigger	Effect	Reset
Discharge superheat <10℃ for 90 minutes ($SH_{Discharge}=T_{Discharge} - T_{condensation}$).	Unit will stop.	Manual reset via user interface.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the suction pipe thermistor. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty suction pipe thermistor or connector fault.

2 Perform a check of the discharge pipe thermistor. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty discharge pipe thermistor or connector fault.

3 Perform a check of the refrigerant high pressure sensor. See "4.12 Refrigerant high pressure sensor" [▸ 198].

Possible cause: Faulty refrigerant high pressure sensor.

4 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Refrigerant overcharge.

5 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

6 Perform a check of the evaporator side expansion valve. See "4.6 Expansion valve" [▸ 169].

Possible cause: Faulty evaporator side expansion valve.

7 Check for objects near the indoor unit that may block the airflow. See "5.4 External factors" [▸ 254].

Possible cause: Airflow of the indoor unit is blocked.

8 Clean the air filters of the indoor unit(s). See service manual of the respective indoor unit(s).

Possible cause: Faulty or clogged air filter.

9 Adjust external static pressure setting for ducted type indoor units, if necessary.

10 Perform a check of the indoor unit fan motor. See service manual of the respective indoor unit(s).

Possible cause: Faulty indoor unit fan motor.

11 Perform a check of the indoor unit air thermistors. See service manual of the respective indoor unit(s) for more information.

Possible cause: Faulty indoor unit air thermistor(s).

12 Check all indoor units operation in heating mode. Check for room temperatures below 20°C. Check if caution disappears once rooms heat-up. If NOT, continue checking the cause of the wet operation.

Possible cause: Indoor room temperature too low when in heating mode. Too cold rooms might create more subcool resulting in wet operation.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.43 F4-08 – Wet operation error for compressor M1C

Trigger	Effect	Reset
Discharge superheat <10℃ for 90 minutes ($SH_{Discharge}=T_{Discharge} - T_{condensation}$).	Unit will stop.	Manual reset via user interface.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the suction pipe thermistor. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty suction pipe thermistor or connector fault.

2 Perform a check of the discharge pipe thermistor. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty discharge pipe thermistor or connector fault.

3 Perform a check of the refrigerant high pressure sensor. See "4.12 Refrigerant high pressure sensor" [▸ 198].

Possible cause: Faulty refrigerant high pressure sensor.

4 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Refrigerant overcharge.

5 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

6 Perform a check of the evaporator side expansion valve. See "4.6 Expansion valve" [▸ 169].

Possible cause: Faulty evaporator side expansion valve.

7 Check for objects near the indoor unit that may block the airflow. See "5.4 External factors" [▸ 254].

Possible cause: Airflow of the indoor unit is blocked.

8 Clean the air filters of the indoor unit(s). See service manual of the respective indoor unit(s).

Possible cause: Faulty or clogged air filter.

9 Adjust external static pressure setting for ducted type indoor units, if necessary.

10 Perform a check of the indoor unit fan motor. See service manual of the respective indoor unit(s).

Possible cause: Faulty indoor unit fan motor.

11 Perform a check of the indoor unit air thermistors. See service manual of the respective indoor unit(s) for more information.

Possible cause: Faulty indoor unit air thermistor(s).

12 Check all indoor units operation in heating mode. Check for room temperatures below 20°C. Check if caution disappears once rooms heat-up. If NOT, continue checking the cause of the wet operation.

Possible cause: Indoor room temperature too low when in heating mode. Too cold rooms might create more subcool resulting in wet operation.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.44 F4-14 – Indoor unit wet operation alarm

Trigger	Effect	Reset
In cooling mode on indoor Unit: (($T_{Gas\ Pipe}$ – ($T_{Liquid\ Pipe}$) < 2,5 °C while Indoor Expansion Valve opening < 300 pulse AND Outdoor Unit Discharge Superheat = ($T_{Discharge}$ - $T_{condensation}$) < 10 °C for more than 45 minutes	Unit stops Operating.	Manual reset via user interface.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Clean the air filters of the indoor unit(s). See service manual of the respective indoor unit(s).

Possible cause: Faulty or clogged air filter.

2 Use Service Checker to find the indoor units where difference between gas pipe thermistor and liquid pipe thermistor meets the trigger condition and indoor unit expansion valve opening is lower than 300 pulses.

3 Stop these indoor units while some other indoor units are still in operation and system is in Cooling Operation. Check if the liquid pipe temperature read-out is close to evaporation temperature. Or use an expansion valve stethoscope to determine the refrigerant flow on expansion valve while expansion valve is closed.

Possible cause: If liquid pipe temperature is close to evaporation temperature or flow is detected by expansion valve stethoscope then indoor unit expansion valve is bleeding while closed. Faulty indoor unit expansion valve.

4 Perform a check of the indoor unit fan motor. See service manual of the respective indoor unit(s).

Possible cause: Faulty indoor unit fan motor.

5 Perform a check of the indoor unit air and pipe thermistors. See service manual of the respective indoor unit(s) for more information.

Possible cause: Faulty thermistor.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.45 F6-01 – Refrigerant overcharge detection by high pressure sensor S1NPH

Trigger	Effect	Reset
Discharge superheat <10℃ ($SH_{Discharge}$=$T_{Discharge}$ – $T_{condensation}$) during test run.	Unit will stop running.	Manual reset via user interface.
Excessive subcool is detected from comparison of ambient thermistor, liquid thermistor, de-icer thermistor to saturated temperature derived from high pressure sensor S1NPH.		

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the outdoor air thermistor. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty ambient air thermistor.

2 Perform a check of the main refrigerant liquid thermistor. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty main refrigerant liquid thermistor or connector fault.

3 Perform a check of the de–icer thermistor. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty de–icer thermistor or connector fault.

4 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Refrigerant overcharge.

5 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

6 Perform a check of the evaporator side expansion valve. See "4.6 Expansion valve" [▸ 169].

Possible cause: Faulty evaporator side expansion valve.

7 Check for objects near the indoor unit that may block the airflow. See "5.4 External factors" [▸ 254].

Possible cause: Airflow of the indoor unit is blocked.

8 Clean the air filters of the indoor unit(s). See service manual of the respective indoor unit(s).

Possible cause: Faulty or clogged air filter.

9 Adjust external static pressure setting for ducted type indoor units, if necessary.

10 Perform a check of the indoor unit fan motor. See service manual of the respective indoor unit(s).

Possible cause: Faulty indoor unit fan motor.

11 Perform a check of the discharge pipe thermistor. See "4.15 Thermistors" [▶ 232].

Possible cause: Faulty discharge pipe thermistor or connector fault.

12 Perform a check of the refrigerant high pressure sensor. See "4.12 Refrigerant high pressure sensor" [▶ 198].

Possible cause: Faulty refrigerant high pressure sensor.

13 Perform a check of the indoor unit air thermistors. See service manual of the respective indoor unit(s) for more information.

Possible cause: Faulty indoor unit air thermistor(s).

14 Check all indoor units operation in heating mode. Check for room temperatures below 20°C. Check if caution disappears once rooms heat-up. If NOT, continue checking the cause of the wet operation.

Possible cause: Indoor room temperature too low when in heating mode. Too cold rooms might create more subcool resulting in wet operation.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.46 F6-02 – Refrigerant overcharge detection during test-run

Trigger	Effect	Reset
Discharge superheat <10℃ ($SH_{Discharge}=T_{Discharge} - T_{condensation}$) during test run.	Unit will stop test run.	Push BS3 (return) button once.
Excessive subcool is detected from comparison of ambient thermistor, liquid thermistor, de-icer thermistor to saturated temperature derived from high pressure sensor S1NPH.		

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the outdoor air thermistor. See "4.15 Thermistors" [▶ 232].

Possible cause: Faulty ambient air thermistor.

2 Perform a check of the main refrigerant liquid thermistor. See "4.15 Thermistors" [▶ 232].

Possible cause: Faulty main refrigerant liquid thermistor or connector fault.

3 Perform a check of the de–icer thermistor. See "4.15 Thermistors" [▶ 232].

Possible cause: Faulty de–icer thermistor or connector fault.

4 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Refrigerant overcharge.

5 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

6 Perform a check of the evaporator side expansion valve. See "4.6 Expansion valve" [▸ 169].

Possible cause: Faulty evaporator side expansion valve.

7 Check for objects near the indoor unit that may block the airflow. See "5.4 External factors" [▸ 254].

Possible cause: Airflow of the indoor unit is blocked.

8 Clean the air filters of the indoor unit(s). See service manual of the respective indoor unit(s).

Possible cause: Faulty or clogged air filter.

9 Adjust external static pressure setting for ducted type indoor units, if necessary.

10 Perform a check of the indoor unit fan motor. See service manual of the respective indoor unit(s).

Possible cause: Faulty indoor unit fan motor.

11 Perform a check of the discharge pipe thermistor. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty discharge pipe thermistor or connector fault.

12 Perform a check of the refrigerant high pressure sensor. See "4.12 Refrigerant high pressure sensor" [▸ 198].

Possible cause: Faulty refrigerant high pressure sensor.

13 Perform a check of the indoor unit air thermistors. See service manual of the respective indoor unit(s) for more information.

Possible cause: Faulty indoor unit air thermistor(s).

14 Check all indoor units operation in heating mode. Check for room temperatures below 20°C. Check if caution disappears once rooms heat-up. If NOT, continue checking the cause of the wet operation.

Possible cause: Indoor room temperature too low when in heating mode. Too cold rooms might create more subcool resulting in wet operation.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.47 F6-03 – Refrigerant overcharge detection by high subcool value

Trigger	Effect	Reset
Discharge superheat <10℃ ($SH_{Discharge}=T_{Discharge} - T_{condensation}$) during test run.	Unit will stop running.	Manual reset via user interface.
Excessive subcool is detected from comparison of ambient thermistor, liquid thermistor, de-icer thermistor to saturated temperature derived from high pressure sensor S1NPH.		

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the outdoor air thermistor. See "4.15 Thermistors" [▶ 232].

Possible cause: Faulty ambient air thermistor.

2 Perform a check of the main refrigerant liquid thermistor. See "4.15 Thermistors" [▶ 232].

Possible cause: Faulty main refrigerant liquid thermistor or connector fault.

3 Perform a check of the de–icer thermistor. See "4.15 Thermistors" [▶ 232].

Possible cause: Faulty de–icer thermistor or connector fault.

4 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▶ 245].

Possible cause: Refrigerant overcharge.

5 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▶ 245].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

6 Perform a check of the evaporator side expansion valve. See "4.6 Expansion valve" [▶ 169].

Possible cause: Faulty evaporator side expansion valve.

7 Check for objects near the indoor unit that may block the airflow. See "5.4 External factors" [▶ 254].

Possible cause: Airflow of the indoor unit is blocked.

8 Clean the air filters of the indoor unit(s). See service manual of the respective indoor unit(s).

Possible cause: Faulty or clogged air filter.

9 Adjust external static pressure setting for ducted type indoor units, if necessary.

10 Perform a check of the indoor unit fan motor. See service manual of the respective indoor unit(s).

Possible cause: Faulty indoor unit fan motor.

11 Perform a check of the discharge pipe thermistor. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty discharge pipe thermistor or connector fault.

12 Perform a check of the refrigerant high pressure sensor. See "4.12 Refrigerant high pressure sensor" [▸ 198].

Possible cause: Faulty refrigerant high pressure sensor.

13 Perform a check of the indoor unit air thermistors. See service manual of the respective indoor unit(s) for more information.

Possible cause: Faulty indoor unit air thermistor(s).

14 Check all indoor units operation in heating mode. Check for room temperatures below 20°C. Check if caution disappears once rooms heat-up. If NOT, continue checking the cause of the wet operation.

Possible cause: Indoor room temperature too low when in heating mode. Too cold rooms might create more subcool resulting in wet operation.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.48 F9-06 – Safety valve box electronic expansion valve abnormality (safety gas)

Trigger	Effect	Reset
After power is supplied, continuity has not been detected on the coil for expansion valve	Unit will stop running.	Power reset at SV box.

INFORMATION

In case the system contains multiple SV boxes and field setting 2-9 "Error handling address" is NOT set uniquely at the different SV boxes, ALL indoor units in the system will show this error.

If field setting 2-9 is set uniquely at the different SV boxes, ONLY the indoor units connected to the faulty SV box will show this error.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

INFORMATION

When the power is switched ON, the SV box main PCB checks all expansion valve coil windings by current check.

1 Locate the SV box by checking indoor unit remote controllers showing F9 error. SV box that is connected to the indoor unit(s) that show F9 error is subject to further investigation.

NOTICE

Other indoor units in the circuit will show U9 Error. This means "There is an error in the circuit but it is not the unit that shows U9".

2 At the located SV box, turn power supply OFF and then ON. Check if error disappears.

Possible cause: External noise. Check further on how to eliminate external factors.

3 Perform a check of the safety gas expansion valves in the SV box. See "4.14.2 Safety valve box expansion valve" [▸ 212].

Possible cause: Faulty expansion valve, loose connector, faulty expansion valve coil.

4 Perform a check of the SV box main PCB. See "4.14.4 Safety valve box main PCB" [▸ 220].

Possible cause: Faulty SV box main PCB.

5 For SV6~8A box ONLY: Perform a check of the SV box sub PCB. See "4.14.5 Safety valve box sub PCB" [▸ 229].

Possible cause: Faulty SV box sub PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.49 F9-07 – Safety valve box electronic expansion valve abnormality (safety liquid)

Trigger	Effect	Reset
After power is supplied, continuity has not been detected on the coil for expansion valve	Unit will stop running.	Power reset at SV box.

INFORMATION

In case the system contains multiple SV boxes and field setting 2-9 "Error handling address" is NOT set uniquely at the different SV boxes, ALL indoor units in the system will show this error.

If field setting 2-9 is set uniquely at the different SV boxes, ONLY the indoor units connected to the faulty SV box will show this error.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

INFORMATION

When the power is switched ON, the SV box main PCB checks all expansion valve coil windings by current check.

1 Locate the SV box by checking indoor unit remote controllers showing F9 error. SV box that is connected to the indoor unit(s) that show F9 error is subject to further investigation.

NOTICE

Other indoor units in the circuit will show U9 Error. This means "There is an error in the circuit but it is not the unit that shows U9".

2 At the located SV box, turn power supply OFF and then ON. Check if error disappears.

Possible cause: External noise. Check further on how to eliminate external factors.

3 Perform a check of the safety liquid expansion valves in the SV box. See "4.14.2 Safety valve box expansion valve" [▸ 212].

Possible cause: Faulty expansion valve, loose connector, faulty expansion valve coil.

4 Perform a check of the SV box main PCB. See "4.14.4 Safety valve box main PCB" [▸ 220].

Possible cause: Faulty SV box main PCB.

5 For SV6~8A box ONLY: Perform a check of the SV box sub PCB. See "4.14.5 Safety valve box sub PCB" [▸ 229].

Possible cause: Faulty SV box sub PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.50 F9-08 – Safety valve box electronic expansion valve overcurrent error (safety gas/liquid)

Trigger	Effect	Reset
Expansion valve overcurrent.	Unit will stop running.	Power reset at SV box.

INFORMATION

In case the system contains multiple SV boxes and field setting 2-9 "Error handling address" is NOT set uniquely at the different SV boxes, ALL indoor units in the system will show this error.

If field setting 2-9 is set uniquely at the different SV boxes, ONLY the indoor units connected to the faulty SV box will show this error.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

INFORMATION

When the power is switched ON, the SV box main PCB checks all expansion valve coil windings by current check.

1 Locate the SV box by checking indoor unit remote controllers showing F9 error. SV box that is connected to the indoor unit(s) that show F9 error is subject to further investigation.

NOTICE

Other indoor units in the circuit will show U9 Error. This means "There is an error in the circuit but it is not the unit that shows U9".

2 At the located SV box, turn power supply OFF and then ON. Check if error disappears.

Possible cause: External noise. Check further on how to eliminate external factors.

3 Perform a check of the SV box main PCB. See "4.14.4 Safety valve box main PCB" [▸ 220].

Possible cause: Faulty SV box main PCB.

4 For SV6~8A box ONLY: Perform a check of the SV box sub PCB. See "4.14.5 Safety valve box sub PCB" [▸ 229].

Possible cause: Faulty SV box sub PCB.

5 Perform a check of the safety gas expansion valves in the SV box. See "4.14.2 Safety valve box expansion valve" [▸ 212].

Possible cause: Faulty expansion valve, loose connector, faulty expansion valve coil.

6 Perform a check of the safety liquid expansion valves in the SV box. See "4.14.2 Safety valve box expansion valve" [▸ 212].

Possible cause: Faulty expansion valve, loose connector, faulty expansion valve coil.

7 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:

- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.51 H3-02 – Transmission error between main PCB and inverter PCB

Trigger	Effect	Reset
Transmission abnormality between outdoor unit main PCB and inverter PCB A3P.	Unit will stop operating.	Power reset at outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check wiring between main PCB and inverter PCB.

2 Check if connector X40A is correctly inserted. See "7.2 Wiring diagram" [▸ 262].

Possible cause: Incorrect wiring.

3 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

4 Perform a check of the inverter PCB. See Inverter PCB.

Possible cause: Faulty inverter PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.52 H7-01 – Defective fan inverter PCB A4P

Trigger	Effect	Reset
Abnormal current form detected by fan inverter PCB during start-up of fan motor.	Unit will stop operating.	Power reset at outdoor unit.

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the outdoor unit fan motor M1F. See "4.9 Outdoor unit fan motor" [▸ 186].

Possible cause: Faulty outdoor unit fan motor M1F.

2 Perform a check of the fan inverter PCB A4P. See Fan inverter PCB.

Possible cause: Faulty fan inverter PCB A4P.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.53 H7-02 – Defective fan inverter PCB A5P

Trigger	Effect	Reset
Abnormal current form detected by fan inverter PCB during start-up of fan motor.	Unit will stop operating.	Power reset at outdoor unit.

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the outdoor unit fan motor M2F. See "4.9 Outdoor unit fan motor" [▸ 186].

Possible cause: Faulty outdoor unit fan motor M2F.

2 Perform a check of the fan inverter PCB A5P. See Fan inverter PCB.

Possible cause: Faulty fan inverter PCB A5P.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.54 H7-21 – Defective fan inverter PCB A4P

Trigger	Effect	Reset
Abnormal current form detected by fan inverter PCB during start-up of fan motor.	Unit will stop operating.	Power reset at outdoor unit.

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the outdoor unit fan motor M1F. See "4.9 Outdoor unit fan motor" [▸ 186].

Possible cause: Faulty outdoor unit fan motor M1F.

2 Perform a check of the fan inverter PCB A4P. See Fan inverter PCB.

Possible cause: Faulty fan inverter PCB A4P.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.55 H7-22 – Defective fan inverter PCB A5P

Trigger	Effect	Reset
Abnormal current form detected by fan inverter PCB during start-up of fan motor.	Unit will stop operating.	Power reset at outdoor unit.

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the outdoor unit fan motor M2F. See "4.9 Outdoor unit fan motor" [▸ 186].

Possible cause: Faulty outdoor unit fan motor M2F.

2 Perform a check of the fan inverter PCB A5P. See Fan inverter PCB.

Possible cause: Faulty fan inverter PCB A5P.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.56 H9-01 – Ambient temperature thermistor R1T abnormality

Trigger	Effect	Reset
Ambient temperature thermistor R1T read-out is out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when thermistor read-out is within range.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the outdoor air thermistor. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty ambient air thermistor.

2 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.57 HA-01 – Defrost fail alarm

Trigger	Effect	Reset
When outdoor unit judges defrost is not completed.	Unit keeps running.	Auto reset.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check the required space around the outdoor unit heat exchanger. See "5.4 External factors" [▸ 254].

Possible cause: Insufficient air flow or air by-pass due to required space specifications not met.

2 Clean the outdoor heat exchanger. See "6 Maintenance" [▸ 256].

Possible cause: Dirty outdoor heat exchanger.

3 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Refrigerant shortage.

4 Perform a check of the de–icer thermistor. See "4.15 Thermistors" [▶ 232].

Possible cause: Faulty de–icer thermistor or connector fault.

5 Perform a check of the refrigerant high pressure sensor. See "4.12 Refrigerant high pressure sensor" [▶ 198].

Possible cause: Faulty refrigerant high pressure sensor.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.58 J3-16 – Discharge thermistor R21T open circuit

Trigger	Effect	Reset
Compressor (M1C) discharge thermistor R21T open circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when thermistor read-out is within range.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the discharge pipe thermistor. See "4.15 Thermistors" [▶ 232].

Possible cause: Faulty discharge pipe thermistor or connector fault.

2 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.59 J3-17 – Discharge thermistor R21T short circuit

Trigger	Effect	Reset
Compressor (M1C) discharge thermistor R21T short circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when thermistor read-out is within range.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the discharge pipe thermistor. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty discharge pipe thermistor or connector fault.

2 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

> **INFORMATION**
> If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.60 J3-47 – Compressor body thermistor R8T open circuit

Trigger	Effect	Reset
Compressor (M1C) body temperature thermistor R8T open circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when thermistor read-out is within range.

To solve the error code

> **INFORMATION**
> It is recommended to perform the checks in the listed order.

1 Perform a check of the compressor body thermistor. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty compressor body thermistor or connector fault.

2 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

> **INFORMATION**
> If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.61 J3-48 – Compressor body thermistor R8T short circuit

Trigger	Effect	Reset
Compressor (M1C) body temperature thermistor R8T short circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when thermistor read-out is within range.

To solve the error code

> **INFORMATION**
> It is recommended to perform the checks in the listed order.

1 Perform a check of the compressor body thermistors. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty compressor body thermistor or connector fault.

2 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.62 J3-56 – High discharge temperature

Trigger	Effect	Reset
Compressor discharge temperature (R21T) too high.	Unit keeps running.	Auto reset.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the discharge pipe thermistor. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty discharge pipe thermistor or connector fault.

2 Perform a check of the following expansion valves. See "4.6 Expansion valve" [▸ 169]:

- Main expansion valve
- Subcool expansion valve
- Liquid injection expansion valve

Possible cause: Faulty expansion valve.

3 Perform a check of the expansion valve(s) of the indoor unit(s). See service manual of the respective indoor unit(s) for more information.

Possible cause: Faulty indoor unit expansion valve.

4 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

5 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Refrigerant shortage.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.63 J5-18 – Suction temperature thermistor R3T abnormality

Trigger	Effect	Reset
Thermistor read-out is out of range	Unit will stop operating.	Auto-reset when thermistor read-out is within range

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the suction pipe thermistor. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty suction pipe thermistor or connector fault.

2 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.64 J6-01 – De–icer thermistor R7T abnormality

Trigger	Effect	Reset
De-icer temperature thermistor short/open circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when thermistor read-out is within range.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the de–icer thermistor. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty de–icer thermistor or connector fault.

2 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.65 J7-06 – Liquid thermistor R5T abnormality

Trigger	Effect	Reset
Refrigerant liquid thermistor after subcool heat exchanger short/ open circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when thermistor read-out is within range.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the refrigerant liquid thermistor of the subcool heat exchanger. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty refrigerant liquid thermistor of the subcool heat exchanger or connector fault.

2 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.66 J8-01 – Heat exchanger liquid temperature thermistor R4T abnormality

Trigger	Effect	Reset
Refrigerant liquid thermistor R4T short/ open circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when thermistor read-out is within range.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the refrigerant liquid thermistor of the outdoor heat exchanger. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty refrigerant liquid thermistor of the outdoor heat exchanger or connector fault.

2 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.67 J9-01 – Gas thermistor R6T abnormality

Trigger	Effect	Reset
Gas thermistor R6T after subcool heat exchanger short/open circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when thermistor read-out is within range.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the gas pipe thermistor of the subcool heat exchanger. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty gas pipe thermistor of the subcool heat exchanger.

2 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.68 JA-06 – High pressure sensor S1NPH abnormality

Trigger	Effect	Reset
High pressure sensor S1NPH read-out open circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when sensor read-out is within range.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the refrigerant high pressure sensor. See "4.12 Refrigerant high pressure sensor" [▸ 198].

Possible cause: Faulty refrigerant high pressure sensor.

2 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.69 JA-07 – High pressure sensor S1NPH malfunction

Trigger	Effect	Reset
High pressure sensor S1NPH read-out short circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when sensor read-out is within range.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the refrigerant high pressure sensor. See "4.12 Refrigerant high pressure sensor" [▸ 198].

Possible cause: Faulty refrigerant high pressure sensor.

2 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.70 JC-06 – Low pressure sensor S1NPL abnormality

Trigger	Effect	Reset
Low pressure sensor S1NPL read-out open circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when sensor read-out is within range.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the refrigerant low pressure sensor. See "4.13 Refrigerant low pressure sensor" [▸ 202]

Possible cause: Faulty refrigerant low pressure sensor.

2 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.71 JC-07 – Low pressure sensor S1NPL malfunction

Trigger	Effect	Reset
Low pressure sensor S1NPL read-out open circuit or out of range.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when sensor read-out is within range.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the refrigerant low pressure sensor. See "4.13 Refrigerant low pressure sensor" [▸ 202]

Possible cause: Faulty refrigerant low pressure sensor.

2 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.72 L1-01 – Inverter PCB A3P abnormality

Trigger	Effect	Reset
Main PCB detects voltage/ current errors on output waveform or current read-out.	Unit will stop operating.	Manual reset via user interface.
		Power reset at outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB or wrong capacity setting.

2 Perform a check of the inverter PCB A3P. See Inverter PCB.

Possible cause: Faulty inverter PCB A3P or non-compatible inverter PCB.

3 Perform a check of the compressor. See "4.2 Compressor" [▸ 153].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

4 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.73 L1-02 – Inverter PCB A3P current detection primary circuit

Trigger	Effect	Reset
Main PCB detects voltage/ current errors on output waveform or current read-out.	Unit will stop operating.	Manual reset via user interface.
		Power reset at outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB or wrong capacity setting.

2 Perform a check of the inverter PCB A3P. See Inverter PCB.

Possible cause: Faulty inverter PCB A3P or non-compatible inverter PCB.

3 Perform a check of the compressor. See "4.2 Compressor" [▸ 153].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

4 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.74 L1-03 – Inverter PCB A3P current detection secondary circuit

Trigger	Effect	Reset
Main PCB detects voltage/ current errors on output waveform or current read-out.	Unit will stop operating.	Manual reset via user interface.
		Power reset at outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB or wrong capacity setting.

2 Perform a check of the inverter PCB A3P. See Inverter PCB.

Possible cause: Faulty inverter PCB A3P or non-compatible inverter PCB.

3 Perform a check of the compressor. See "4.2 Compressor" [▸ 153].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

4 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.75 L1-04 – Power transistor error on inverter PCB A3P

Trigger	Effect	Reset
Main PCB detects voltage/ current errors on output waveform or current read-out.	Unit will stop operating.	Manual reset via user interface.
		Power reset at outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB or wrong capacity setting.

2 Perform a check of the inverter PCB A3P. See Inverter PCB.

Possible cause: Faulty inverter PCB A3P or non-compatible inverter PCB.

3 Perform a check of the compressor. See "4.2 Compressor" [▸ 153].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

4 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.76 L1-05 – Inverter PCB A3P hardware fault

Trigger	Effect	Reset
Main PCB detects voltage/ current errors on output waveform or current read-out.	Unit will stop operating.	Manual reset via user interface.
		Power reset at outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB or wrong capacity setting.

2 Perform a check of the inverter PCB A3P. See Inverter PCB.

Possible cause: Faulty inverter PCB A3P or non-compatible inverter PCB.

3 Perform a check of the compressor. See "4.2 Compressor" [▸ 153].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

4 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.77 L1-28 – Fan inverter PCB A4P Eeprom error

Trigger	Effect	Reset
Fan inverter PCB A4P fails reading/writing memory (EEPROM error).	Unit will stop operating.	Manual reset via user interface.
		Power reset at outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the fan inverter PCB A4P. See Fan inverter PCB.

Possible cause: Faulty fan inverter PCB A4P.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.78 L1-29 – Fan inverter PCB A5P Eeprom error

Trigger	Effect	Reset
Fan inverter PCB A5P fails reading/writing memory (EEPROM error).	Unit will stop operating.	Manual reset via user interface.
		Power reset at outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the fan inverter PCB A5P. See Fan inverter PCB.

Possible cause: Faulty fan inverter PCB A5P.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.79 L1-36 – Inverter PCB A3P Eeprom error

Trigger	Effect	Reset
Inverter PCB A3P fails reading/writing memory (EEPROM error).	Unit will stop operating.	Manual reset via user interface.
		Power reset at outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the inverter PCB A3P. See Inverter PCB.

Possible cause: Faulty inverter PCB A3P or non-compatible inverter PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.80 L1-47 – Inverter PCB A3P 16 V DC abnormal

Trigger	Effect	Reset
Main PCB detects voltage/ current errors on output waveform or current read-out.	Unit will stop operating.	Manual reset via user interface.
		Power reset at outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB or wrong capacity setting.

2 Perform a check of the inverter PCB A3P. See Inverter PCB.

Possible cause: Faulty inverter PCB A3P or non-compatible inverter PCB.

3 Perform a check of the compressor. See "4.2 Compressor" [▸ 153].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

4 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.81 L2-01 – Power supply abnormality during test run

Trigger	Effect	Reset
Main PCB detects 50 Hz zero-crossing error.	Unit stops and retries after guard timer (3 minutes) - infinite cycle.	Automatic reset when within zero-crossing interval range.
		Power reset at outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

INFORMATION

Main PCB checks L1-N on connector X1A for sinus waveform each time crossing the zero-line. Interval between each zero-crossing is 10 miliseconds when the power supply is 50 Hz.

1 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

2 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

3 Perform a check of the inverter PCB. See Inverter PCB.

Possible cause: Faulty inverter PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.82 L2-04 – Power supply abnormality during normal operation

Trigger	Effect	Reset
Main PCB detects 50 Hz zero-crossing error.	Unit stops and retries after guard timer (3 minutes) - infinite cycle.	Automatic reset when within zero-crossing interval range.
		Power reset at outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

INFORMATION

Main PCB checks L1-N on connector X1A for sinus waveform each time crossing the zero-line. Interval between each zero-crossing is 10 miliseconds when the power supply is 50 Hz.

1 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

2 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

3 Perform a check of the inverter PCB. See Inverter PCB.

Possible cause: Faulty inverter PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.83 L4-01 – Inverter PCB A3P high fin temperature

Trigger	Effect	Reset
Thermistor located inside the power module of the inverter PCB for compressor detects a temperature higher than a certain value.	Unit will stop operating.	Manual reset via remote controller. Outdoor unit power reset.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

1 Wait until the rectifier voltage is below 10 V DC.

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 238].

2 Check that the thermal interface grease is applied properly on the (PCB or refrigerant piping) contact surface of the heat sink. Adjust if needed.

Possible cause: Thermal interface grease NOT applied properly on the heat sink.

3 Check if heat sink plate is correctly fixed with screws.

Possible cause: Heat sink plate not correctly installed.

4 Check (by touching) if refrigerant is flowing through the radiant cooling refrigerant circuit. The radiant cooling refrigerant circuit should be warm if refrigerant is flowing. If no refrigerant flow, perform a check of the liquid cooling expansion valve, see "4.6 Expansion valve" [▸ 169].

Possible cause: No refrigerant flow through the radiant cooling refrigerant circuit.

5 Perform a check of the inverter cooling expansion valve. See "4.6 Expansion valve" [▸ 169].

Possible cause: Faulty inverter cooling expansion valve.

6 Check ambient temperature. Check if outdoor unit location temperature differs drastically.

7 Check if there is discharge air by-pass on installation location.

Possible cause: External noise. Check further on how to eliminate external factors.

8 Perform a check of the inverter PCB. See Inverter PCB.

Possible cause: Faulty inverter PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.84 L4-06 – Fan inverter PCB A4P high fin temperature

Trigger	Effect	Reset
Thermistor located inside the power module of the fan inverter PCB detects a temperature higher than a certain value.	Unit will stop operating.	Manual reset via remote controller. Outdoor unit power reset.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

1 Wait until the rectifier voltage is below 10 V DC.

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 238].

2 Check that the thermal interface grease is applied properly on the (PCB or refrigerant piping) contact surface of the heat sink. Adjust if needed.

Possible cause: Thermal interface grease NOT applied properly on the heat sink.

3 Check if heat sink plate is correctly fixed with screws.

Possible cause: Heat sink plate not correctly installed.

4 Check (by touching) if refrigerant is flowing through the radiant cooling refrigerant circuit. The radiant cooling refrigerant circuit should be warm if refrigerant is flowing. If no refrigerant flow, perform a check of the liquid cooling expansion valve, see "4.6 Expansion valve" [▸ 169].

Possible cause: No refrigerant flow through the radiant cooling refrigerant circuit.

5 Perform a check of the inverter cooling expansion valve. See "4.6 Expansion valve" [▸ 169].

Possible cause: Faulty inverter cooling expansion valve.

6 Check ambient temperature. Check if outdoor unit location temperature differs drastically.

7 Check if there is discharge air by-pass on installation location.

Possible cause: External noise. Check further on how to eliminate external factors.

8 Perform a check of the fan inverter PCB A4P. See Fan inverter PCB.

Possible cause: Faulty fan inverter PCB A4P.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.85 L4-07 – Fan inverter PCB A5P high fin temperature

Trigger	Effect	Reset
Thermistor located inside the power module of the fan inverter PCB detects a temperature higher than a certain value.	Unit will stop operating.	Manual reset via remote controller. Outdoor unit power reset.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

1 Wait until the rectifier voltage is below 10 V DC.

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 238].

2 Check that the thermal interface grease is applied properly on the (PCB or refrigerant piping) contact surface of the heat sink. Adjust if needed.

Possible cause: Thermal interface grease NOT applied properly on the heat sink.

3 Check if heat sink plate is correctly fixed with screws.

Possible cause: Heat sink plate not correctly installed.

4 Check (by touching) if refrigerant is flowing through the radiant cooling refrigerant circuit. The radiant cooling refrigerant circuit should be warm if refrigerant is flowing. If no refrigerant flow, perform a check of the liquid cooling expansion valve, see "4.6 Expansion valve" [▸ 169].

Possible cause: No refrigerant flow through the radiant cooling refrigerant circuit.

5 Perform a check of the inverter cooling expansion valve. See "4.6 Expansion valve" [▸ 169].

Possible cause: Faulty inverter cooling expansion valve.

6 Check ambient temperature. Check if outdoor unit location temperature differs drastically.

7 Check if there is discharge air by-pass on installation location.

Possible cause: External noise. Check further on how to eliminate external factors.

8 Perform a check of the fan inverter PCB A5P. See Fan inverter PCB.

Possible cause: Faulty fan inverter PCB A5P.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.86 L5-03 – Output overcurrent detection on inverter PCB A3P

Trigger	Effect	Reset
Inverter PCB A3P detects overcurrent to power transistor.	Unit will stop operating.	Manual reset via user interface.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

2 Check if the refrigerant circuit is clogged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Clogged refrigerant circuit.

3 Check that all stop valves of the refrigerant circuit are open. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Closed stop valve in the refrigerant circuit.

4 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

5 Perform a check of the inverter PCB. See Inverter PCB.

Possible cause: Faulty inverter PCB.

6 Perform a check of the compressor. See "4.2 Compressor" [▸ 153].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.87 L8-03 – Overcurrent on inverter PCB A3P except start-up

Trigger	Effect	Reset
Inverter PCB A3P detects overcurrent to compressor except on start-up.	Unit will stop operating.	Manual reset via user interface.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

2 Check if the refrigerant circuit is clogged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Clogged refrigerant circuit.

3 Check that all stop valves of the refrigerant circuit are open. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Closed stop valve in the refrigerant circuit.

4 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

5 Perform a check of the inverter PCB. See Inverter PCB.

Possible cause: Faulty inverter PCB.

6 Perform a check of the compressor. See "4.2 Compressor" [▸ 153].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.88 L9-01 – Stall prevention by inverter PCB A3P

Trigger	Effect	Reset
Inverter PCB A3P detects overcurrent or no rotation at start-up.	Unit will stop operating.	Manual reset via user interface.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

2 Check if the refrigerant circuit is clogged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Clogged refrigerant circuit.

3 Perform a check of the inverter PCB. See Inverter PCB.

Possible cause: Faulty inverter PCB.

4 Perform a check of the compressor. See "4.2 Compressor" [▸ 153].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.89 L9-13 – Inverter PCB A3P output phase abnormality

Trigger	Effect	Reset
When inverter PCB A3P detects phase loss to compressor on U, V, W.	Unit will stop operating.	Manual reset via user interface.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

2 Perform a check of the inverter PCB. See Inverter PCB.

Possible cause: Faulty inverter PCB.

3 Perform a check of the compressor. See "4.2 Compressor" [▸ 153].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.90 LC-14 – Transmission abnormality main PCB/inverter PCB A3P

Trigger	Effect	Reset
No transmission between main PCB and inverter PCB A3P.	Unit will stop operating.	Automatic reset.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB or wrong capacity setting.

2 Perform a check of the noise filter PCB. See Noise filter PCB.

Possible cause: Faulty noise filter PCB.

3 Perform a check of the inverter PCB. See Inverter PCB.

Possible cause: Faulty inverter PCB.

4 Check the wiring between the PCB's. See "7.2 Wiring diagram" [▸ 262].

Possible cause: Faulty wiring between PCB's.

5 Check if the correct spare part is installed for all PCB's. See checking procedures of the specific PCB's.

Possible cause: Wrong spare part PCB installed.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.91 LC-19 – Transmission abnormality main PCB/fan inverter PCB A4P

Trigger	Effect	Reset
No transmission between main PCB and fan inverter PCB A4P.	Unit will stop operating.	Automatic reset.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB or wrong capacity setting.

2 Perform a check of the noise filter PCB. See Noise filter PCB.

Possible cause: Faulty noise filter PCB.

3 Perform a check of the inverter PCB. See Inverter PCB.

Possible cause: Faulty inverter PCB.

4 Perform a check of the fan inverter PCB A4P. See Fan inverter PCB.

Possible cause: Faulty fan inverter PCB A4P.

5 Check that the bridge connector X4A of the fan inverter PCB is correctly connected. See Fan inverter PCB.

Possible cause: Open jumper X4A on fan inverter PCB.

6 Check the wiring between the PCB's. See "7.2 Wiring diagram" [▸ 262].

Possible cause: Faulty wiring between PCB's.

7 Check if the correct spare part is installed for all PCB's. See checking procedures of the specific PCB's.

Possible cause: Wrong spare part PCB installed.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.92 LC-24 – Transmission abnormality main PCB/fan inverter PCB A5P

Trigger	Effect	Reset
No transmission between main PCB and fan inverter PCB A5P.	Unit will stop operating.	Automatic reset.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB or wrong capacity setting.

2 Perform a check of the noise filter PCB. See Noise filter PCB.

Possible cause: Faulty noise filter PCB.

3 Perform a check of the inverter PCB. See Inverter PCB.

Possible cause: Faulty inverter PCB.

4 Perform a check of the fan inverter PCB A5P. See Fan inverter PCB.

Possible cause: Faulty fan inverter PCB A5P.

5 Check that the bridge connector X4A of the fan inverter PCB is correctly connected. See Fan inverter PCB.

Possible cause: Open jumper X4A on fan inverter PCB.

6 Check the wiring between the PCB's. See "7.2 Wiring diagram" [▸ 262].

Possible cause: Faulty wiring between PCB's.

7 Check if the correct spare part is installed for all PCB's. See checking procedures of the specific PCB's.

Possible cause: Wrong spare part PCB installed.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.93 P1-01 – Open phase or unbalanced power supply detection by inverter PCB A3P

Trigger	Effect	Reset
Inverter PCB A3P detects power unbalance >4%.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

2 Perform a check of the inverter PCB. See Inverter PCB.

Possible cause: Faulty inverter PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.94 P4-01 – Fin thermistor abnormality on inverter PCB A3P

Trigger	Effect	Reset
Inverter PCB A3P detects open or short circuit or out of range on fin thermistor.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when fin temperature is within range.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the fin thermistor of the PCB. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty fin thermistor of the PCB.

2 Check the required space around the outdoor unit heat exchanger. See "5.4 External factors" [▸ 254].

Possible cause: Insufficient air flow or air by-pass due to required space specifications not met.

3 Perform a check of the inverter cooling expansion valve. See "4.6 Expansion valve" [▸ 169].

Possible cause: Faulty inverter cooling expansion valve.

4 Perform a check of the inverter PCB. See Inverter PCB.

Possible cause: Faulty inverter PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.95 P4-02 – Fin thermistor abnormality on fan inverter PCB A4P

Trigger	Effect	Reset
Fan inverter PCB A4P detects open or short circuit or out of range on fin thermistor.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when fin temperature is within range.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the fin thermistor of the PCB. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty fin thermistor of the PCB.

2 Check the required space around the outdoor unit heat exchanger. See "5.4 External factors" [▶ 254].

Possible cause: Insufficient air flow or air by-pass due to required space specifications not met.

3 Perform a check of the inverter cooling expansion valve. See "4.6 Expansion valve" [▶ 169].

Possible cause: Faulty inverter cooling expansion valve.

4 Perform a check of the fan inverter PCB A4P. See Fan inverter PCB.

Possible cause: Faulty fan inverter PCB A4P.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.96 P4-03 – Fin thermistor abnormality on fan inverter PCB A5P

Trigger	Effect	Reset
Fan inverter PCB A5P detects open or short circuit or out of range on fin thermistor.	Unit will stop operating.	Manual reset via user interface.
		Automatic reset when fin temperature is within range.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Perform a check of the fin thermistor of the PCB. See "4.15 Thermistors" [▶ 232].

Possible cause: Faulty fin thermistor of the PCB.

2 Check the required space around the outdoor unit heat exchanger. See "5.4 External factors" [▶ 254].

Possible cause: Insufficient air flow or air by-pass due to required space specifications not met.

3 Perform a check of the inverter cooling expansion valve. See "4.6 Expansion valve" [▶ 169].

Possible cause: Faulty inverter cooling expansion valve.

4 Perform a check of the fan inverter PCB A5P. See Fan inverter PCB.

Possible cause: Faulty fan inverter PCB A5P.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.97 PJ-04 – Capacity setting mismatch for inverter PCB A3P

Trigger	Effect	Reset
Main PCB detects other type PCB than set in EEPROM or wrong dip switch setting on spare part main PCB.	Unit will stop operating.	Manual reset via user interface.
		Power reset at outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check if the correct spare part is installed for the main PCB. See Main PCB. Check dip switch setting for spare part main PCB.

Possible cause: Incorrect spare part main PCB or incorrect dip switch setting.

2 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

3 Perform a check of the inverter PCB. See Inverter PCB.

Possible cause: Faulty inverter PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.98 PJ-09 – Capacity setting mismatch for fan inverter PCB A4P

Trigger	Effect	Reset
Main PCB detects other type PCB than set in EEPROM or wrong dip switch setting on spare part main PCB.	Unit will stop operating.	Manual reset via user interface.
		Power reset at outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check if the correct spare part is installed for the main PCB. See Main PCB. Check dip switch setting for spare part main PCB.

Possible cause: Incorrect spare part main PCB or incorrect dip switch setting.

2 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

3 Perform a check of the fan inverter PCB A4P. See Fan inverter PCB.

Possible cause: Faulty fan inverter PCB A4P.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.99 PJ-10 – Capacity setting mismatch for fan inverter PCB A5P

Trigger	Effect	Reset
Main PCB detects other type PCB than set in EEPROM or wrong dip switch setting on spare part main PCB.	Unit will stop operating.	Manual reset via user interface.
		Power reset at outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check if the correct spare part is installed for the main PCB. See Main PCB. Check dip switch setting for spare part main PCB.

Possible cause: Incorrect spare part main PCB or incorrect dip switch setting.

2 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

3 Perform a check of the fan inverter PCB A5P. See Fan inverter PCB.

Possible cause: Faulty fan inverter PCB A5P.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.100 U0 – Refrigerant shortage detection (Warning)

Trigger	Effect	Reset
This is not an error but a warning.	Unit keeps running.	Auto reset when trigger is not met.

To solve the error code

1 Refer to U0-05 or U0-06 to proceed.

3.3.101 U0-05 – Refrigerant shortage detection

Trigger	Effect	Reset
Refrigerant shortage detection during cooling.	Unit keeps running.	Auto reset.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check that all stop valves of the refrigerant circuit are open. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Perform a check of all expansion valves. See "4.6 Expansion valve" [▸ 169].

Possible cause: Faulty expansion valve.

3 Perform a check of the refrigerant low pressure sensor. See "4.13 Refrigerant low pressure sensor" [▸ 202]

Possible cause: Faulty refrigerant low pressure sensor.

4 Perform a check of the suction pipe thermistor. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty suction pipe thermistor or connector fault.

5 Perform a check of the discharge pipe thermistor. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty discharge pipe thermistor or connector fault.

6 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

7 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Refrigerant shortage.

8 Perform a check of the refrigerant high pressure sensor. See "4.12 Refrigerant high pressure sensor" [▸ 198].

Possible cause: Faulty refrigerant high pressure sensor.

9 Perform a check of the compressor. See "4.2 Compressor" [▸ 153].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.102 U0-06 – Refrigerant shortage detection

Trigger	Effect	Reset
Refrigerant shortage detection during heating.	Unit keeps running.	Auto reset.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check that all stop valves of the refrigerant circuit are open. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Perform a check of all expansion valves. See "4.6 Expansion valve" [▸ 169].

Possible cause: Faulty expansion valve.

3 Perform a check of the refrigerant low pressure sensor. See "4.13 Refrigerant low pressure sensor" [▸ 202]

Possible cause: Faulty refrigerant low pressure sensor.

4 Perform a check of the suction pipe thermistor. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty suction pipe thermistor or connector fault.

5 Perform a check of the discharge pipe thermistor. See "4.15 Thermistors" [▸ 232].

Possible cause: Faulty discharge pipe thermistor or connector fault.

6 Check for the presence of non-condensables and/or humidity in the refrigerant circuit. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Non-condensables and/or humidity in the refrigerant circuit.

7 Check if the refrigerant circuit is correctly charged. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Refrigerant shortage.

8 Perform a check of the refrigerant high pressure sensor. See "4.12 Refrigerant high pressure sensor" [▸ 198].

Possible cause: Faulty refrigerant high pressure sensor.

9 Perform a check of the compressor. See "4.2 Compressor" [▸ 153].

Possible cause: Faulty compressor or miswiring of the compressor power supply cable.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.103 U1-19 – Hz error detection on Power Supply

Trigger	Effect	Reset
Main PCB does not detect zero-crossing for a certain duration.	Unit will stop operating.	Power reset at outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

INFORMATION

Main PCB checks L1-N on connector X1A for sinus waveform each time crossing the zero-line. Interval between each zero-crossing is 10 miliseconds when the power supply is 50 Hz.

1 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

2 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

3 Perform a check of the noise filter PCB. See Noise filter PCB.

Possible cause: Faulty noise filter PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.104 U2-01 – Inverter circuit power supply abnormality - inverter PCB A3P abnormal voltage

Trigger	Effect	Reset
Inverter PCB A3P detects DC voltage cannot reach or maintain minimum 500 V DC.	Unit will stop operating.	Power reset at outdoor unit.
No zero cross is detected by main PCB through at least 10 seconds.		
Abnormal voltage drop is detected by DC voltage detection circuit.		
Abnormal voltage rise is detected by over voltage detection circuit.		

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check if the power supply wiring is correct. See "5.1 Electrical circuit" [▸ 237].

Possible cause: Incorrect power supply wiring.

2 Perform a check of the noise filter PCB. See Noise filter PCB.

Possible cause: Faulty noise filter PCB.

3 Perform a check of the inverter PCB. See Inverter PCB.

Possible cause: Faulty inverter PCB.

4 Check the wiring between the PCB's. See "7.2 Wiring diagram" [▸ 262].

Possible cause: Faulty wiring between PCB's.

5 Perform a check of the reactor. See "4.11 Reactor" [▸ 195].

Possible cause: Faulty reactor.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.105 U2-02 – Inverter circuit power supply abnormality - inverter PCB A3P phase loss

Trigger	Effect	Reset
Inverter PCB A3P detects DC voltage cannot reach or maintain minimum 500 V DC.	Unit will stop operating.	Power reset at outdoor unit.
No zero cross is detected by main PCB through at least 10 seconds.		
Abnormal voltage drop is detected by DC voltage detection circuit.		
Abnormal voltage rise is detected by over voltage detection circuit.		

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check if the power supply wiring is correct. See "5.1 Electrical circuit" [▸ 237].

Possible cause: Incorrect power supply wiring.

2 Perform a check of the noise filter PCB. See Noise filter PCB.

Possible cause: Faulty noise filter PCB.

3 Perform a check of the inverter PCB. See Inverter PCB.

Possible cause: Faulty inverter PCB.

4 Check the wiring between the PCB's. See "7.2 Wiring diagram" [▸ 262].

Possible cause: Faulty wiring between PCB's.

5 Perform a check of the reactor. See "4.11 Reactor" [▸ 195].

Possible cause: Faulty reactor.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.106 U2-03 – Inverter circuit power supply abnormality - inverter PCB A3P DC circuit not charging

Trigger	Effect	Reset
Inverter PCB A3P detects DC voltage cannot reach or maintain minimum 500 V DC.	Unit will stop operating.	Power reset at outdoor unit.
No zero cross is detected by main PCB through at least 10 seconds.		
Abnormal voltage drop is detected by DC voltage detection circuit.		
Abnormal voltage rise is detected by over voltage detection circuit.		

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check if the power supply wiring is correct. See "5.1 Electrical circuit" [▸ 237].

Possible cause: Incorrect power supply wiring.

2 Perform a check of the noise filter PCB. See Noise filter PCB.

Possible cause: Faulty noise filter PCB.

3 Perform a check of the inverter PCB. See Inverter PCB.

Possible cause: Faulty inverter PCB.

4 Check the wiring between the PCB's. See "7.2 Wiring diagram" [▸ 262].

Possible cause: Faulty wiring between PCB's.

5 Perform a check of the reactor. See "4.11 Reactor" [▸ 195].

Possible cause: Faulty reactor.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.107 U3-03 – Test run not performed yet

Trigger	Effect	Reset
Test run NOT performed.	Unit will NOT operate.	Perform test run.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check if communication between outdoor unit and indoor units is initialised. Check field setting 1-10 for count of indoor units, see "7.9 Field settings" [▸ 292]. If less indoor units shown than expected, communication between 1 or more indoor unit(s) and outdoor unit is NOT correct. Check the F1-F2 transmission line between the indoor unit and outdoor unit, see "5.1 Electrical circuit" [▸ 237].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

2 Perform a test run from the outdoor unit. See installer reference guide for more information.

3 Check the error history, see "3 Troubleshooting" [▸ 25]. Solve the error code(s) using the error based troubleshooting, see "3.3 Error based troubleshooting" [▸ 29].

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.108 U3-04 – Test run ended abnormally

Trigger	Effect	Reset
Test run ended abnormally.	Unit will NOT operate.	Restart test run.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check for an indoor unit related error code. To solve the error, see the service manual of the respective indoor unit(s) for more information.

2 Check the error history, see "3 Troubleshooting" [▸ 25]. Solve the error code(s) using the error based troubleshooting, see "3.3 Error based troubleshooting" [▸ 29].

3 Check if communication between outdoor unit and indoor units is initialised. Check field setting 1-10 for count of indoor units, see "7.9 Field settings" [▸ 292]. If less indoor units shown than expected, communication between 1 or more indoor unit(s) and outdoor unit is NOT correct. Check the F1-F2 transmission line between the indoor unit and outdoor unit, see "5.1 Electrical circuit" [▸ 237].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

4 Perform a test run from the outdoor unit. See installer reference guide for more information.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.109 U3-05 – Test run aborted on initial transmission

Trigger	Effect	Reset
Test run could NOT start or abort due to transmission issues.	Unit will NOT operate.	Restart test run.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check if communication between outdoor unit and indoor units is initialised. Check field setting 1-10 for count of indoor units, see "7.9 Field settings" [▸ 292]. If less indoor units shown than expected, communication between 1 or more indoor unit(s) and outdoor unit is NOT correct. Check the F1-F2 transmission line between the indoor unit and outdoor unit, see "5.1 Electrical circuit" [▸ 237].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

2 Check the F1-F2 transmission line between the indoor units and outdoor unit. See "5.1 Electrical circuit" [▸ 237].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

3 Perform a test run from the outdoor unit. See installer reference guide for more information.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.110 U3-06 – Test run aborted on normal transmission

Trigger	Effect	Reset
Test run could NOT start or abort due to transmission issues.	Unit will NOT operate.	Restart test run.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check if communication between outdoor unit and indoor units is initialised. Check field setting 1-10 for count of indoor units, see "7.9 Field settings" [▸ 292]. If less indoor units shown than expected, communication between 1 or more indoor unit(s) and outdoor unit is NOT correct. Check the F1-F2 transmission line between the indoor unit and outdoor unit, see "5.1 Electrical circuit" [▸ 237].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

2 Check the F1-F2 transmission line between the indoor units and outdoor unit. See "5.1 Electrical circuit" [▸ 237].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

3 Perform a test run from the outdoor unit. See installer reference guide for more information.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.111 U3-07 – Transmission abnormality on test run

Trigger	Effect	Reset
Test run could NOT start or abort due to transmission issues.	Unit will NOT operate.	Restart test run.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check if communication between outdoor unit and indoor units is initialised. Check field setting 1-10 for count of indoor units, see "7.9 Field settings" [▸ 292]. If less indoor units shown than expected, communication between 1 or more indoor unit(s) and outdoor unit is NOT correct. Check the F1-F2 transmission line between the indoor unit and outdoor unit, see "5.1 Electrical circuit" [▸ 237].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

2 Check the F1-F2 transmission line between the indoor units and outdoor unit. See "5.1 Electrical circuit" [▸ 237].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

3 Perform a test run from the outdoor unit. See installer reference guide for more information.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.112 U3-08 – Transmission abnormality on test run

Trigger	Effect	Reset
Test run could NOT start or abort due to transmission issues.	Unit will NOT operate.	Restart test run.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check if communication between outdoor unit and indoor units is initialised. Check field setting 1-10 for count of indoor units, see "7.9 Field settings" [▸ 292]. If less indoor units shown than expected, communication between 1 or more indoor unit(s) and outdoor unit is NOT correct. Check the F1-F2 transmission line between the indoor unit and outdoor unit, see "5.1 Electrical circuit" [▸ 237].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

2 Check the F1-F2 transmission line between the indoor units and outdoor unit. See "5.1 Electrical circuit" [▸ 237].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

3 Perform a test run from the outdoor unit. See installer reference guide for more information.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.113 U3-12 – Commissioning of safety valve box safety system NOT completed

Trigger	Effect	Reset
Safety systems NOT yet confirmed at SV box(es).	Unit will stop operating.	Automatic reset when safety systems are confirmed.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Simulate R32 refrigerant leak (set field setting 2-3-0 to 1 at the SV box main PCB) and check that ALL extra required safety systems function correctly. Extra required safety systems depend on the total refrigerant charge of the system and room surface. See installation manual of the SV box.

Possible cause: Extra required safety systems NOT checked.

2 Check that correct operation of the extra required safety systems is confirmed at ALL SV boxes connected to the same system (set field setting 2-6-0 to 1 at main PCB of ALL SV boxes).

Possible cause: Correct operation of extra required safety systems NOT confirmed at at least 1 SV box in the system.

3 Check that field setting 2-6-1 is ONLY set on main PCB of the SV boxes.

Possible cause: Field setting 2-6-1 set on sub PCB A2P of the SV box.

4 Perform a check of the SV box main PCB. See "4.14.4 Safety valve box main PCB" [▸ 220].

Possible cause: Faulty SV box main PCB.

> **INFORMATION**
>
> If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.114 U4-01 – Communication between indoor units and safety valve box missing

Trigger	Effect	Reset
Communication between SV box and indoor unit(s) disconnected for more than 10 minutes.	Unit will stop operating. Error indication U4-13 on outdoor unit.	Auto reset after communication is restored for more than 1 minute.

To solve the error code

> **INFORMATION**
>
> It is recommended to perform the checks in the listed order.

1 Check if the power supply to the SV box is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

2 Check if the power supply to the indoor unit is compliant with the regulations. See indoor unit service manual.

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

3 Check the F1-F2 transmission line between the indoor unit and SV box. See "5.1 Electrical circuit" [▸ 237]. Check that the wiring is correctly connected to the following terminals:

- At indoor unit: F1-F2 terminal (from SV box).
- At SV box: F1-F2 terminal (to indoor unit).

Possible cause: Faulty or interruption in transmission line between indoor unit and SV box.

> **INFORMATION**
>
> If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.115 U4-03 – Outdoor unit not able to start because of indoor unit malfunction

Trigger	Effect	Reset
Minimum 1 indoor unit detects a malfunction when outdoor unit is set for: ▪ Cross piping check (2-20-02), ▪ Refrigerant containment check.	Unit will stop operating.	Restart test function at outdoor unit.

To solve the error code

1 Check indoor units for error codes starting with A, C or U. See troubleshooting in the service manual of the respective indoor unit(s) to solve the error code(s).

Possible cause: Indoor unit detects a malfunction.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.116 U4-11 – Communication between outdoor unit and safety valve box missing

Trigger	Effect	Reset
Communication between outdoor unit and SV box disconnected for more than 2 minutes.	Unit will stop operating.	Auto reset after communication is restored for more than 1 minute.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check the F1-F2 transmission line between the outdoor unit and SV box. See "5.1 Electrical circuit" [▸ 237]. Check that the wiring is correctly connected to the following terminals:

- At outdoor unit: F1-F2 terminal (to indoor unit).
- At SV box: F1-F2 terminal (from outdoor unit).

Possible cause: Faulty or interruption in transmission line between outdoor unit and SV box.

2 Check the F1-F2 communication voltage on the SV box. See "5.1 Electrical circuit" [▸ 237].

Possible cause: Faulty communication voltage on SV box.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.117 U4-12 – Communication between outdoor unit and all safety valve boxes electric noise

Trigger	Effect	Reset
Communication between outdoor unit and all SV boxes is disturbed by electric noise.	Unit will stop operating.	Auto reset after communication is restored for more than 1 minute.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check the F1-F2 transmission line between the outdoor unit and SV box. See "5.1 Electrical circuit" [▸ 237]. Check that the wiring is correctly connected to the following terminals:

- At outdoor unit: F1-F2 terminal (to indoor unit).
- At SV box: F1-F2 terminal (from outdoor unit).

Possible cause: Faulty or interruption in transmission line between outdoor unit and SV box.

2 Check the F1-F2 transmission line between the SV boxes. See "5.1 Electrical circuit" [▸ 237]. Check that the wiring is correctly connected to the following terminals of ALL SV boxes:

- F1-F2 terminal (from other SV box).
- F1-F2 terminal (to other SV box).

Possible cause: Faulty or interruption in transmission line between SV boxes.

3 Check the F1-F2 communication voltage on ALL SV boxes. See "5.1 Electrical circuit" [▸ 237].

Possible cause: Faulty communication voltage on SV box.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.118 U4-13 – Communication between indoor units and safety valve box missing

Trigger	Effect	Reset
Communication between SV box and indoor unit(s) disconnected for more than 10 minutes.	Unit will stop operating.	Auto reset after communication is restored for more than 1 minute.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check if the power supply to the SV box is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

2 Check if the power supply to the indoor unit is compliant with the regulations. See indoor unit service manual.

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

3 Check the F1-F2 transmission line between the indoor unit and SV box. See "5.1 Electrical circuit" [▸ 237]. Check that the wiring is correctly connected to the following terminals:
- At indoor unit: F1-F2 terminal (from SV box).
- At SV box: F1-F2 terminal (to indoor unit).

Possible cause: Faulty or interruption in transmission line between indoor unit and SV box.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.119 U4-14 – Communication between indoor units and safety valve box electric noise

Trigger	Effect	Reset
Communication between SV box and indoor unit(s) is disturbed by electric noise.	Unit will stop operating.	Auto reset after communication is restored for more than 1 minute.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check the F1-F2 transmission line between the indoor unit and SV box. See "5.1 Electrical circuit" [▸ 237]. Check that the wiring is correctly connected to the following terminals:
- At indoor unit: F1-F2 terminal (from SV box).
- At SV box: F1-F2 terminal (to indoor unit).

Possible cause: Faulty or interruption in transmission line between indoor unit and SV box.

2 Check the F1-F2 communication voltage on the indoor unit. See "5.1 Electrical circuit" [▸ 237].

Possible cause: Faulty communication voltage on indoor unit.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.120 U5-04 – Communication abnormality between indoor unit main PCB and remote controller

Trigger	Effect	Reset
Transmission abnormality between indoor unit main PCB and remote controller.	The indoor unit that has the error will stop operating (fan OFF, expansion valve OFF) while all the other indoor units and outdoor unit will continue operating for indoor units without error.	Auto reset.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check if multiple remote controllers are wired to the same indoor unit. One remote controller needs to be set to main while all other remote controllers need to be set to sub. Also check that the remote controllers are correctly wired. See installer reference guide of the remote controller for detailed information.

Possible cause: No main remote controller set when multiple units are wired to the same indoor unit.

2 Perform a check of the remote controller. See service manual of the specific indoor unit.

Possible cause: Faulty remote controller or faulty transmission wiring between remote controller and indoor unit.

3 If possible, switch the faulty remote controller with a remote controller from another indoor unit.

- If error transfers to the other indoor unit, replace the remote controller. See service manual of the specific indoor unit.
  Possible cause: Faulty remote controller.
- If error is still present on the indoor unit, Perform a check of the indoor unit main PCB. See service manual of the specific indoor unit.
  Possible cause: Faulty indoor unit main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.121 U5-06 – Supervisor remote controller not connected/not set

Trigger	Effect	Reset
Supervisor remote controller NOT connected or NOT set correctly.	Indoor unit continues FAN ONLY operation while other indoor units show error U9-01. Outdoor unit stops operating.	Operation NOT allowed while abnormality continues.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check that the field setting is correctly set on the outdoor unit: [2-60=0] when NO supervisor remote controller connected, [2-60=1] when supervisor remote controller connected. See "7.9 Field settings" [▸ 292].

Possible cause: Faulty field setting for supervisor remote controller.

2 Check that the setting [R2-05=02] is correct and that the supervisor remote controller functions correctly. See Remote controller user interface in the service manual of the respective indoor unit for more information.

Possible cause: Faulty setting or supervisor remote controller.

3 Check the communication wiring between the supervisor remote controller and the indoor unit main PCB. See Remote controller user interface in the service manual of the respective indoor unit for more information.

Possible cause: Faulty communication wiring between remote controller and indoor unit.

4 Perform a check of the indoor unit main PCB. See service manual of the specific indoor unit.

Possible cause: Faulty indoor unit main PCB.

5 Check the F1-F2 transmission line between the indoor units and outdoor unit. See "5.1 Electrical circuit" [▸ 237].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

6 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB or wrong capacity setting.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.122 U7-11 – Excess indoor units detected on test run

Trigger	Effect	Reset
Test run detects more than allowed amount of indoor units or indoor unit total index.	Forced stop.	Auto reset.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check total index and total count for indoor units. See Data book on Business Portal for more information.

Possible cause: Indoor Unit capacity connected is too high.

2 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

3 Check the F1-F2 transmission line between the indoor units and outdoor unit. See "5.1 Electrical circuit" [▸ 237].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.123 U7-24 – Duplication of address setting on multiple DTA104A61,62 installation

Trigger	Effect	Reset
Bad configuration of option DTA104A61,62 PCB.	Forced stop.	DTA104A61,62 power reset.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check wiring and configuration of option DTA104A61, 62. See option handbook on Business Portal for more information.

2 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.124 U9-01 – Other indoor unit has error

Trigger	Effect	Reset
System mismatch, non-compatible indoor units.	Forced stop.	Auto reset.
At least one other indoor unit on same F1-F2 wiring has an error.		

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1. Check the indoor units for error codes other than U9-01. See troubleshooting in the service manual of the respective indoor unit(s) to solve the error code(s).
2. Check for improper combination of units. See the combination table in the Databook for more information. Change the installation with ONLY compatible type units.
3. Check field setting 1-10 to count the indoor units, see "7.9 Field settings" [▸ 292]. If less indoor units detected than it should be, check the indoor unit(s) that have power black-out or malfunctioning PCB. See service manual of the respective indoor unit for more information.

   Possible cause: Power black-out or malfunctioning PCB on indoor unit(s).
4. Set field setting 2-5 of the outdoor unit to 1 to start the indoor units connected to that outdoor unit on forced fan operation, see "7.9 Field settings" [▸ 292]. If any of these indoor units is NOT operating, check the indoor unit(s) that have power black-out or malfunctioning PCB. See service manual of the respective indoor unit for more information.

   Possible cause: Power black-out or malfunctioning PCB on indoor unit(s).
5. Perform a check of the main PCB. See Main PCB.

   Possible cause: Faulty main PCB.
6. Check the F1-F2 transmission line between the indoor units and outdoor unit. See "5.1 Electrical circuit" [▸ 237].

   Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.125 U9-03 – Abnormality of R32 safety system on other indoor unit on same port of safety valve box

Trigger	Effect	Reset
R32 leak detected on other indoor unit connected to the same SV box indoor port without group control (no P1/P2 loop).	Outdoor unit can operate for indoor units connected to other ports of the SV box.	Auto reset.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check other indoor units connected to the same port of the SV box for error code A0-11 or CH-10. See "3.3 Error based troubleshooting" [▸ 29] to solve the error code(s).

2 Check that the F1-F2 transmission line between the indoor unit and SV box is connected to the correct terminal at the SV box.

Possible cause: Indoor unit that has error U9-03 is NOT connected to the same port of the SV box as the indoor unit that has error A0-11 or CH-10, but is NOT wired correctly.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.126 U9-04 – Abnormality of R32 safety system on other safety valve box

Trigger	Effect	Reset
R32 leak detected on other SV box.	Outdoor unit stops operating.	Auto reset.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check indoor units connected to other SV box(es) for error code A0-20 or CH-20. See "3.3 Error based troubleshooting" [▸ 29] to solve the error code(s).

2 Check that the F1-F2 transmission line between the indoor unit and SV box is connected to the correct SV box.

Possible cause: Indoor unit that has error U9-04 is connected to the same SV box as the indoor unit that has error A0-20 or CH-20, but is wired to another SV box.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.127 UA-00 – Combination abnormality

Trigger	Effect	Reset
Combination abnormality.	Forced stop.	Power reset and only allowed combination.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Change the installation with ONLY R32 type indoor units.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.128 UA-03 – Combination abnormality - Mix of R22, R407C, R410A and R32 type units detected

Trigger	Effect	Reset
Mix of R22, R407C, R410A, R32 type units detected.	Forced stop.	Power reset and only allowed combination.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Change the installation with ONLY R32 type indoor units.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.129 UA-16 – Combination abnormality - More than 64 indoor units detected on same system

Trigger	Effect	Reset
Main PCB on main outdoor unit detects more than 64 indoor units on same system.	Forced stop.	Automatic reset after re-initialization detects less than 64 compatible indoor units.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Change the installation to include a maximum of 64 indoor units.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.130 UA-17 – Combination abnormality - Local setting abnormality

Trigger	Effect	Reset
Main PCB on outdoor unit detects compatibility issues.	Forced stop.	Automatic reset after re-initialization detects compatible units and normal field settings.
Main PCB detects field setting abnormality.		

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check for improper combination of units. See the combination table in the Databook for more information. Change the installation with ONLY compatible type units.

2 Check and verify the outdoor unit field settings with the default settings. See "7.9 Field settings" [▸ 292].

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.131 UA-18 – Combination abnormality - Outdoor unit not compatible with indoor units (refrigerant type)

Trigger	Effect	Reset
Main PCB on outdoor unit detects compatibility issues.	Forced stop.	Automatic reset after re-initialization detects compatible units.
Outdoor unit NOT compatible with indoor units (refrigerant type).		

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check for improper combination of units. See the combination table in the Databook for more information. Change the installation with ONLY compatible type units.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.132 UA-19 – Combination abnormality - Local set alarm

Trigger	Effect	Reset
Main PCB on outdoor unit detects compatibility issues.	Forced stop.	Automatic reset after re-initialization detects compatible units and normal field settings.
Main PCB detects field setting abnormality, local set alarm.		

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check for improper combination of units. See the combination table in the Databook for more information. Change the installation with ONLY compatible type units.

2 Check and verify the outdoor unit field settings with the default settings. See "7.9 Field settings" [▸ 292].

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.133 UA-20 – Combination abnormality - Non-compatible outdoor unit in multi-combination

Trigger	Effect	Reset
Main PCB on outdoor unit detects compatibility issues.	Forced stop.	Automatic reset after re-initialization detects compatible units.
Outdoor unit NOT compatible with multi combination.		

3.3.134 UA-23 – Safety valve box Abnormality - Connected Indoor Unit Index too High

Trigger	Effect	Reset
Total indoor unit index connected to SV box is too high.	Alarm status ON.	Power reset at SV box.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check total index and total count for indoor units. See Data book on Business Portal for more information.

Possible cause: Indoor Unit capacity connected is too high.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.135 UA-25 – Safety valve box Abnormality - Transmission Wiring Abnormality between SV Unit and Outdoor Unit

Trigger	Effect	Reset
Transmission abnormality detected between outdoor unit and SV box.	Alarm status ON.	Auto recovery when transmission is normal.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Locate the SV box by checking indoor unit remote controllers showing this error. SV box that is connected to the indoor unit(s) that show this error is subject to further investigation.

NOTICE

Other indoor units in the circuit will show U9 Error. This means "There is an error in the circuit but it is not the unit that shows U9".

2 Check the transmission wiring between SV box and outdoor unit. See "5.1 Electrical circuit" [▸ 237].

Possible cause: Faulty transmission wiring.

3 Perform a check of the SV box main PCB. See "4.14.4 Safety valve box main PCB" [▸ 220].

Possible cause: Faulty SV box main PCB.

4 Perform a check of the main PCB of the main outdoor unit. See Main PCB.

Possible cause: Faulty main PCB of the main outdoor unit.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.136 UA-29 – Safety valve box Abnormality - Minimum 1 indoor unit without safety valve box detected when outdoor setting 2-54-0

Trigger	Effect	Reset
Minimum 1 indoor unit without SV box detected when outdoor unit setting 2-54-0 (default).	Alarm status ON.	Power reset at outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check system layout. If at least 1 indoor unit can be connected directly to the outdoor unit without SV box, outdoor unit field setting 2-54 MUST be set to 1, even if other indoor unit(s) are connected through SV box(es).

Possible cause: Incorrect field setting 2-54-0 (default).

2 Check the transmission wiring between outdoor unit, indoor unit(s) connected without SV box and SV box(es). See "5.1 Electrical circuit" [▸ 237].

Possible cause: Faulty transmission wiring.

3 Check the power supply to the indoor unit that is connected without SV box. See indoor unit service manual.

Possible cause:
- Faulty or disturbance of the power supply (imbalance),
- Phase missing,
- Power drop,
- Short circuit.

4 Perform a check of the main PCB of the main outdoor unit. See Main PCB.

Possible cause: Faulty main PCB of the main outdoor unit.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.137 UA-31 – Combination abnormality - Other outdoor module detected on Q1Q2 terminals

Trigger	Effect	Reset
Other outdoor unit detected on Q1-Q2 terminals.	Unit will stop operating.	Power reset at outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 ONLY a single outdoor unit is allowed in the installation. Multi combination outdoor is NOT possible for this VRV range. Change the installation if needed.

2 Check that NO wiring is connected to the Q1-Q2 terminals of the outdoor unit.

Possible cause: Other VRV outdoor unit connected on Q1-Q2 terminals.

3 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.138 UA-53 – Combination abnormality - Safety valve box Dip Switch Abnormality

Trigger	Effect	Reset
SV box dip switch abnormality is detected.	Forced stop.	Power reset at outdoor unit.

To solve the error code

1 Check dip switch settings for multi SV boxes.

Possible cause: Wrong dipswitch setting.

2 Apply correct dip switch setting while SV box power is OFF. After correcting the dip switch, turn on the power and perform a communication reset on the outdoor unit PCB. See "How to perform a communication reset" [▸ 244].

3 Check all indoor unit connection to the SV box. Correct any wiring or piping fault.

Possible cause: Piping and/or wiring fault of indoor units to SV box.

4 Check power supply to all indoor units. Turn on any indoor unit where power is OFF. After Indoor unit(s) power ON, perform a communication reset on outdoor unit PCB. See "How to perform a communication reset" [▸ 244].

Possible cause: Indoor unit(s) with power OFF.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.139 UA-55 – R32 pump down locked state (outdoor unit setting required)

Trigger	Effect	Reset
After reset of error code CH-10 (by setting field setting 25-14-0 to 1 on indoor unit remote controller).	Outdoor unit forced stop.	Automatic reset when outdoor lock function was reset at outdoor main PCB (set field setting 2-24-1 to 0).
After reset of error code CH-20 (by setting field setting 2-5-0 to 1 on SV box main PCB).		

To solve the error code

1 Check the indoor units for error code A0-11 or CH-01. See "3.3 Error based troubleshooting" [▸ 29] to solve the error code(s).

2 Check the indoor units and outdoor unit for error code A0-20. See "3.3 Error based troubleshooting" [▸ 29] to solve the error code.

3 Reset the outdoor lock function. Set the field setting 2-24-1 to 0 on the outdoor unit. See "7.9 Field settings" [▸ 292].

Possible cause: Outdoor lock function active.

4 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB or wrong capacity setting.

5 Check the F1-F2 transmission line between the indoor units and outdoor unit. See "5.1 Electrical circuit" [▸ 237].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

6 Perform a check of the indoor unit main PCB. See service manual of the specific indoor unit.

Possible cause: Faulty indoor unit main PCB.

7 Perform a check of the SV box main PCB. See "4.14.4 Safety valve box main PCB" [▶ 220].

Possible cause: Faulty SV box main PCB.

> **INFORMATION**
>
> If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.140 UA-57 – Mechanical ventilation abnormality (external input is closed)

Trigger	Effect	Reset
Mechanical ventilation abnormality (external input on outdoor unit terminal is closed).	Forced stop.	Operation NOT allowed while abnormality continues.

To solve the error code

1 Check if the mechanical ventilation functions correctly and repair as needed. See "5.3 Manufacturer components" [▶ 253].

Possible cause: Faulty mechanical ventilation.

2 Check the mechanical ventilation error input signal. See "5.1 Electrical circuit" [▶ 237].

Possible cause: Faulty mechanical ventilation error input signal.

3 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB or wrong capacity setting.

> **INFORMATION**
>
> If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.141 UA-58 – Supervisor remote controller not connected/not set

Trigger	Effect	Reset
Supervisor remote controller NOT connected.	Indoor unit conitnues FAN ONLY operation while other indoor units show error U9-01. Outdoor unit stops operating.	Operation NOT allowed while abnormality continues.

To solve the error code

1 Check that the field setting is correctly set on the outdoor unit: [2-60=0] when NO supervisor remote controller connected, [2-60=1] when supervisor remote controller connected. See "7.9 Field settings" [▶ 292].

Possible cause: Faulty field setting for supervisor remote controller.

2 Check that the setting [R2-05=02] is correct and that the supervisor remote controller functions correctly. See Remote controller user interface in the service manual of the respective indoor unit for more information.

Possible cause: Faulty setting or supervisor remote controller.

3 Check the communication wiring between the supervisor remote controller and the indoor unit main PCB. See Remote controller user interface in the service manual of the respective indoor unit for more information.

Possible cause: Faulty communication wiring between remote controller and indoor unit.

4 Perform a check of the indoor unit main PCB. See service manual of the airconditioning indoor unit.

Possible cause: Faulty indoor unit main PCB.

5 Check the F1-F2 transmission line between the indoor units and outdoor unit. See "5.1 Electrical circuit" [▸ 237].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

6 Perform a check of the main PCB. See Main PCB.

Possible cause: Faulty main PCB or wrong capacity setting.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.142 UA-60 – Incorrect PCB A1P and/or A2P (wrong software / EEPROM data) on safety valve box

Trigger	Effect	Reset
Detected PCB of SV box is NOT the correct type.	Unit will stop operating.	Power reset and correct type SV box.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check that the correct type SV box (SV1~8A) is installed. Change as needed.

Possible cause: Wrong type SV box installed.

2 Check if the correct spare part (EB20062-5) is installed for the main PCB A1P of the SV box See "4.14.4 Safety valve box main PCB" [▸ 220].

Possible cause: Incorrect spare part main PCB A1P.

3 For SV6~8A box ONLY: Check if the correct spare part (EB20062-7) is installed for the sub PCB A2P of the SV box See "4.14.5 Safety valve box sub PCB" [▸ 229].

Possible cause: Incorrect spare part sub PCB A2P.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.143 UF-01 – Wiring and piping mismatch - Excess connection ratio

Trigger	Effect	Reset
Minimum 1 indoor unit fails to perform cross pipe check during test run.	Forced stop.	Perform test run.

INFORMATION

Test run can be initiated by:

- Pushing BS2 button ≥5 seconds.
- Field setting 2-20-2.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check that all stop valves of the refrigerant circuit are open. See "5.2 Refrigerant circuit" [▸ 245].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Check that the refrigerant circuit piping and wiring connections of the system are correctly installed.

Possible cause: Refrigerant piping and/or wiring mismatch.

3 Set field setting 2-5 of the outdoor unit to 1 to start the indoor units connected to that outdoor unit on forced fan operation, see "7.9 Field settings" [▸ 292]. If any of these indoor units is NOT operating, check the indoor unit(s) that have power black-out or malfunctioning PCB. See service manual of the respective indoor unit for more information.

Possible cause: Power black-out or malfunctioning PCB on indoor unit(s).

4 Check field setting 1-10 to count the indoor units, see "7.9 Field settings" [▸ 292]. If less indoor units detected than it should be, check the indoor unit(s) that have power black-out or malfunctioning PCB. See service manual of the respective indoor unit for more information.

Possible cause: Power black-out or malfunctioning PCB on indoor unit(s).

5 Perform a check of the indoor unit pipe thermistors, see service manual of the respective indoor unit(s) for more information.

Possible cause: Faulty indoor unit pipe thermistor.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.144 UF-05 – Wiring and piping mismatch - Stop valves closed or incorrect

Trigger	Effect	Reset
Minimum 1 indoor unit fails to perform cross pipe check during test run.	Forced stop.	Perform test run.

INFORMATION

Test run can be initiated by:

- Pushing BS2 button ≥5 seconds.
- Field setting 2-20-2.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check that all stop valves of the refrigerant circuit are open. See "5.2 Refrigerant circuit" [▶ 245].

Possible cause: Closed stop valve in the refrigerant circuit.

2 Check that the refrigerant circuit piping and wiring connections of the system are correctly installed.

Possible cause: Refrigerant piping and/or wiring mismatch.

3 Set field setting 2-5 of the outdoor unit to 1 to start the indoor units connected to that outdoor unit on forced fan operation, see "7.9 Field settings" [▶ 292]. If any of these indoor units is NOT operating, check the indoor unit(s) that have power black-out or malfunctioning PCB. See service manual of the respective indoor unit for more information.

Possible cause: Power black-out or malfunctioning PCB on indoor unit(s).

4 Check field setting 1-10 to count the indoor units, see "7.9 Field settings" [▶ 292]. If less indoor units detected than it should be, check the indoor unit(s) that have power black-out or malfunctioning PCB. See service manual of the respective indoor unit for more information.

Possible cause: Power black-out or malfunctioning PCB on indoor unit(s).

5 Perform a check of the indoor unit pipe thermistors, see service manual of the respective indoor unit(s) for more information.

Possible cause: Faulty indoor unit pipe thermistor.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.145 UF-18 – Failure test run cross wiring/cross piping (after outdoor set Mode 2-20-2)

Trigger	Effect	Reset
During test run by Mode 2-20-2, if failure of: ▪ Or indoor unit coil sensor NOT dropping while expansion valve open. ▪ Or outdoor low discharge superheat detected.	Unit will stop operating.	Power reset of outdoor unit.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Operate the faulty indoor unit in forced cooling operation (by outdoor test run).

2 Check via service monitoring tool if the indoor unit coil temperature lowers while indoor unit expansion valve is open. Compatible service monitoring tools are:

- Checker type 3: F1-F2 outdoor <-> SV box
- Checker type 4: F1-F2 outdoor <-> SV box
- D-checker: at connector X27A of outdoor unit main PCB.
- Mobile monitoring tool: at connector X27A of outdoor unit main PCB.

3 If indoor unit coil temperature lowers while expansion valve is open, check refrigerant charge of the system. In case of refrigerant shortage or overcharge, discharge temperature at the compressor might be too high (refrigerant shortage) or too low (refrigerant overcharge).

Possible cause: Incorrect refrigerant charge.

4 If indoor unit coil temperature does NOT lower while expansion is open, perform as described below:

5 Check that the indoor unit refrigerant piping is connected to the correct port of the SV box.

Possible cause: Indoor unit refrigerant piping connected to wrong port in accordance with F1-F2 terminals at SV box.

6 Perform a check of the expansion valve(s) of the indoor unit(s). See service manual of the respective indoor unit(s) for more information.

Possible cause: Faulty indoor unit expansion valve.

7 With the faulty indoor unit operating in forced cooling operation (by outdoor test run), check via service monitoring tool the status of the SV box expansion valves of the circuit of the faulty indoor unit. Compatible service monitoring tools are:

- D-checker: at connector X101A of SV box main PCB or sub PCB.
- Mobile monitoring tool: at connector X101A of SV box main PCB or sub PCB.

8 If expansion valve(s) do NOT function correctly:

- Perform a check of the faulty expansion valve of the SV box, see "4.14.2 Safety valve box expansion valve" [▸ 212].
  Possible cause: Faulty SV box expansion valve.
- Perform a check of the SV box main PCB or sub PCB to which the faulty expansion valve is connected, see "4.14.4 Safety valve box main PCB" [▸ 220] or "4.14.5 Safety valve box sub PCB" [▸ 229].
  Possible cause: Faulty SV box main PCB or sub PCB.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.146 UH-01 – Auto-address failure

Trigger	Effect	Reset
Main PCB detects improper combination at indoor unit side.	Forced stop.	Reset communication from main PCB.
Missing auto address of indoor unit(s) after initialization.		

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Set field setting 2-5 of the outdoor unit to 1 to start the indoor units connected to that outdoor unit on forced fan operation, see "7.9 Field settings" [▸ 292]. If any of these indoor units is NOT operating, check the indoor unit(s) that have power black-out or malfunctioning PCB. See service manual of the respective indoor unit for more information.

Possible cause: Power black-out or malfunctioning PCB on indoor unit(s).

2 Perform a communication reset of the F1-F2 transmission, see "5.1 Electrical circuit" [▸ 237].

3 Check field setting 1-10 to count the indoor units, see "7.9 Field settings" [▸ 292]. If less indoor units detected than it should be, check the indoor unit(s) that have power black-out or malfunctioning PCB. See service manual of the respective indoor unit for more information.

Possible cause: Power black-out or malfunctioning PCB on indoor unit(s).

4 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

5 Check the F1-F2 transmission line between the indoor units and outdoor unit. See "5.1 Electrical circuit" [▸ 237].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

6 Check for improper combination of units. See the combination table in the Databook for more information. Change the installation with ONLY compatible type units.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.147 UH-02 – Auto-address failure

Trigger	Effect	Reset
Main PCB detects improper combination at indoor unit side.	Forced stop.	Reset communication from main PCB.
Missing auto address of indoor unit(s) after initialization.		

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Set field setting 2-5 of the outdoor unit to 1 to start the indoor units connected to that outdoor unit on forced fan operation, see "7.9 Field settings" [▸ 292]. If any of these indoor units is NOT operating, check the indoor unit(s) that have power black-out or malfunctioning PCB. See service manual of the respective indoor unit for more information.

Possible cause: Power black-out or malfunctioning PCB on indoor unit(s).

2 Perform a communication reset of the F1-F2 transmission, see "5.1 Electrical circuit" [▸ 237].

3 Check field setting 1-10 to count the indoor units, see "7.9 Field settings" [▸ 292]. If less indoor units detected than it should be, check the indoor unit(s) that have power black-out or malfunctioning PCB. See service manual of the respective indoor unit for more information.

Possible cause: Power black-out or malfunctioning PCB on indoor unit(s).

4 Check if the power supply is compliant with the regulations. See "5.1 Electrical circuit" [▸ 237].

Possible cause:
- Faulty or disturbance of the power supply (power supply MUST be within range of nominal operating voltage ±4%),
- Power drop,
- Short circuit.

5 Check the F1-F2 transmission line between the indoor units and outdoor unit. See "5.1 Electrical circuit" [▸ 237].

Possible cause: Faulty or interruption in transmission line between indoor units and outdoor unit.

6 Check for improper combination of units. See the combination table in the Databook for more information. Change the installation with ONLY compatible type units.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.148 UJ-34 – Capacity mismatch between VAM and DX module

Trigger	Effect	Reset
Incompatible VAM and EKVDX capacities are installed together.	Unit will NOT operate.	Power reset.

To solve the error code

> **INFORMATION**
> It is recommended to perform the checks in the listed order.

1. Check for improper combination of units. See the combination table in the Databook for more information. Change the installation with ONLY compatible type units.
2. Check if the correct spare part is installed for the indoor unit main PCB. See service manual of the specific indoor unit. Check that the correct capacity setting adapter is connected to X23A of the PCB.

   Possible cause: Incorrect spare part PCB or incorrect capacity setting adapter.

> **INFORMATION**
> If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.149 UJ-35 – Abnormality at VAM unit

Trigger	Effect	Reset
Malfunction detected at VAM unit.	Unit will stop operating.	Power reset.

To solve the error code

1. Check the error code at the VAM-J* indoor unit. See "Error based troubleshooting" in the service manual of the specific indoor unit to solve the error code.
2. Check the software and EEPROM version on the user interface and PCB. See "User interface" in the service manual of the specific indoor unit.

   Possible cause: Mismatch between the software ID and EEPROM on the PCB or user interface.

> **INFORMATION**
> If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.150 UJ-36 – Transmission error between VAM and EKVDX

Trigger	Effect	Reset
Error detected in transmission between the units.	Unit will stop operating.	Power reset.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check the transmission wiring between the VAM unit and the DX unit. See "Wiring diagram" in the service manual of the specific indoor unit. Field wiring F1-F2 is ONLY required at DX unit. If F1-F2 wiring is present between VAM unit and DX unit, remove this loop.

Possible cause: Faulty transmission wiring.

2 Check the field settings for VAM unit and DX unit pair application. Make sure to perform the correct settings. See "Field settings" in the service manual of the specific indoor unit.

Possible cause: Incorrect field setting.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.151 UJ-37 – VAM unit has A6-28 error

Trigger	Effect	Reset
VAM unit has A6-28 error.	Unit will stop operating.	Power reset.

To solve the error code

1 Check the VAM-J* indoor unit for error code A6-28. See "Error based troubleshooting" in the service manual of the specific indoor unit to solve the error code.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.3.152 UJ-40 – Maintenance warning (ventilation fan safety valve box)

Trigger	Effect	Reset
When period of power to outdoor unit exceeds the maintenance cycle since last reset (setting 2-58-0 at outdoor unit main PCB).	Unit will stop operating.	Auto reset.

To solve the error code

INFORMATION

It is recommended to perform the checks in the listed order.

1 Check that the ventilation functions correctly (maintenance at SV box). Perform as follows:

- At the SV box main PCB, set field setting 2-3-0 to 1 to activate the safety system.
- Check that the ventilation functions correctly. See "5.3 Manufacturer components" [▶ 253]. Correct as needed.
- Once ventilation functions correctly, set field setting 2-3-1 to 0 to deactivate the safety system.

2 Reset the maintenance cycle timer. Perform as follows:

- At the outdoor unit main PCB, check the current setting of field setting 2-58 (default setting -5 = 5 years).
- Set field setting 2-58 to 0 (timer reset).
- Set field setting 2-58 back to the same value that was originally found.

Possible cause: Period of power to outdoor unit exceeds the maintenance cycle since last reset.

3 Check if ventilation is required at the SV box, see installation manual of the SV box. If NO ventilation is required at SV box, check that field setting 2-4 is set to 0 (default setting = 1) at the SV box main PCB.

Possible cause: No ventilation required at SV box while field setting 2-4 is set to 1.

INFORMATION

If all procedures listed above have been performed and the problem is still present, contact the helpdesk.

3.4 Symptom based troubleshooting

3.4.1 Normal operating conditions

Below items are a guideline on how to check normal operating conditions of the unit. Still, values are for reference ONLY and working conditions outside of this range do NOT necessarily address abnormalities and errors. Operating conditions are a result of several items to check together.

Item	Description	Normal value
Discharge superheat	Discharge pipe temperature – condensation temperature	25 K to 45 K

Discharge superheat = discharge pipe temperature – condensation temperature

- Discharge pipe temperature: Read out from discharge pipe thermistor R21T.
- Condensation temperature: Calculated by main PCB from the pressure read-out of the high pressure sensor.

Higher discharge superheat may result from refrigerant shortage or compressor internal by-pass.

Lower discharge superheat may result from low suction superheat which is caused by wet operation.

Item	Description	Normal value
Suction superheat	Suction temperature – evaporation temperature	5 K

Suction superheat = suction temperature – evaporation temperature

- Suction temperature: Read out from suction thermistor R3T.
- Evaporation temperature: Calculated by main PCB from the pressure read-out of the low pressure sensor.

Suction superheat may be high if difference between [indoor set temperature – indoor air temperature] is too high and will result in high discharge superheat.

Suction superheat may be low if:

- Difference between [indoor set temperature – indoor air temperature] is too low
- Discharge superheat is too low (<20 K)
- Outdoor unit judges wet operation

3.4.2 Symptom: The system does not operate

- The air conditioner does not start immediately after the ON/OFF button on the user interface is pressed. If the operation lamp lights, the system is in normal condition. To prevent overloading of the compressor motor, the air conditioner starts 5 minutes after it is turned ON again in case it was turned OFF just before. The same starting delay occurs after the operation mode selector button was used.
- If "Under Centralised Control" is displayed on the user interface, pressing the operation button causes the display to blink for a few seconds. The blinking display indicates that the user interface cannot be used.
- The system does not start immediately after the power supply is turned on. Wait one minute until the microcomputer is prepared for operation.

3.4.3 Symptom: Cool/Heat cannot be changed over

- When the display shows  (changeover under centralised control), it shows that this is a slave user interface.
- When the cool/heat changeover remote control switch is installed and the display shows  (changeover under centralised control), this is because cool/ heat changeover is controlled by the cool/ heat changeover remote control switch. Ask your dealer where the remote control switch is installed.

3.4.4 Symptom: Fan operation is possible, but cooling and heating do not work

Immediately after the power is turned on. The micro computer is getting ready to operate and is performing a communication check with all indoor units. Please wait 12 minutes maximally until this process is finished.

3.4.5 Symptom: The fan speed does not correspond to the setting

The fan speed does not change even if the fan speed adjustment button is pressed. During heating operation, when the room temperature reaches the set temperature, the outdoor unit goes off and the indoor unit changes to whisper fan speed. This is to prevent cold air blowing directly on occupants of the room. The fan speed will not change even when another indoor unit is in heating operation, if the button is pressed.

3.4.6 Symptom: The fan direction does not correspond to the setting

The fan direction does not correspond with the user interface display. The fan direction does not swing. This is because the unit is being controlled by the micro computer.

3.4.7 Symptom: White mist comes out of a unit (Indoor unit)

- When humidity is high during cooling operation. If the interior of an indoor unit is extremely contaminated, the temperature distribution inside a room becomes uneven. It is necessary to clean the interior of the indoor unit. Ask your dealer for details on cleaning the unit. This operation requires a qualified service person.
- Immediately after the cooling operation stops and if the room temperature and humidity are low. This is because warm refrigerant gas flows back into the indoor unit and generates steam.

3.4.8 Symptom: White mist comes out of a unit (Indoor unit, outdoor unit)

When the system is changed over to heating operation after defrost operation. Moisture generated by defrost becomes steam and is exhausted.

3.4.9 Symptom: The user interface reads "U4" or "U5" and stops, but then restarts after a few minutes

This is because the user interface is intercepting noise from electric appliances other than the air conditioner. The noise prevents communication between the units, causing them to stop. Operation automatically restarts when the noise ceases. A power reset may help to remove this error.

3.4.10 Symptom: Noise of air conditioners (Indoor unit)

- A "zeen" sound is heard immediately after the power supply is turned on. The electronic expansion valve inside an indoor unit starts working and makes the noise. Its volume will reduce in about one minute.
- A continuous low "shah" sound is heard when the system is in cooling operation or at a stop. When the drain pump (optional accessories) is in operation, this noise is heard.
- A "pishi-pishi" squeaking sound is heard when the system stops after heating operation. Expansion and contraction of plastic parts caused by temperature change make this noise.
- A low "sah", "choro-choro" sound is heard while the indoor unit is stopped. When another indoor unit is in operation, this noise is heard. In order to prevent oil and refrigerant from remaining in the system, a small amount of refrigerant is kept flowing.

3.4.11 Symptom: Noise of air conditioners (Indoor unit, outdoor unit)

- A continuous low hissing sound is heard when the system is in cooling or defrost operation. This is the sound of refrigerant gas flowing through both indoor and outdoor units.
- A hissing sound which is heard at the start or immediately after stopping operation or defrost operation. This is the noise of refrigerant caused by flow stop or flow change.

3.4.12 Symptom: Noise of air conditioners (Outdoor unit)

When the tone of operating noise changes. This noise is caused by the change of frequency.

3.4.13 Symptom: Dust comes out of the unit

When the unit is used for the first time in a long time. This is because dust has gotten into the unit.

3.4.14 Symptom: The units can give off odours

The unit can absorb the smell of rooms, furniture, cigarettes, etc., and then emit it again.

3.4.15 Symptom: The outdoor unit fan does not spin

During operation, the speed of the fan is controlled in order to optimise product operation.

3.4.16 Symptom: The display shows "88"

This is the case immediately after the main power supply switch is turned on and means that the user interface is in normal condition. This continues for 1 minute.

3.4.17 Symptom: The compressor in the outdoor unit does not stop after a short heating operation

This is to prevent refrigerant from remaining in the compressor. The unit will stop after 5 to 10 minutes.

3.4.18 Symptom: The inside of an outdoor unit is warm even when the unit has stopped

This is because the crankcase heater is warming the compressor so that the compressor can start smoothly.

3.4.19 Symptom: Hot air can be felt when the indoor unit is stopped

Several different indoor units are being run on the same system. When another unit is running, some refrigerant will still flow through the unit.

3.4.20 Symptom: Unit operation problems

Symptom	Possible failure	Root cause	Repair
Unit(s) do not operate	Unit(s) do not operate	Missing or abnormal power supply (reverse phase, missing phase, abnormal voltage...) to the outdoor unit	Check Power Supply. See "5.1 Electrical circuit" [▶ 237]
		Indoor unit(s) do not receive power supply	Check power supply to the indoor unit(s), check if HAP Led blinks, check fuse(s) on indoor unit board. Also check BPMKs in case indoor unit is of RA type.
		Mismatch of combination of outdoor unit and indoor unit	Check error codes. Check compatibility
		Out of operation range	Check operation range on databook
	All indoor units show icon blinking continuously	No Cool/Heat master is set	Select Cool/Heat Master by pressing Operating Mode button on the desired unit. The symbol will fade-away for Cool/Heat Master and will be fixed (not blinking) for the remaining indoor units
	Indoor unit(s) show icon blinking temporarily when ON button is pressed	The unit(s) are either under Centralized Control and prohibited to operate or under Forced OFF operation by T1/T2 input	Release prohibitions from central controller or check T1/T2 contact status or check indoor unit field setting for forced off
	Indoor units show fan-only mode	Transmission initialization not completed	See "To check F1-F2 transmission" [▶ 240]. Perform transmission re-initialization
			Check transmission wiring
			Check indoor unit PCBs
			Check outdoor unit main PCB, see Main PCB
Operation sometimes stops	Power failure	A power failure consecutively more than 2 cycles may stop the air conditioner operation	Restore power supply. See "5.1 Electrical circuit" [▶ 237]
Operation stops and then restarts after 3 minutes.	Outdoor unit performing 'retry' operation	Retry mode triggered by an error	Check field setting 1-23, 1-24, 1-25 for latest retry content. See "7.9 Field settings" [▶ 292]. Refer to error code found for further troubleshooting.

Symptom	Possible failure	Root cause	Repair
Unit operates but does not cool or does not heat	Piping or wiring mismatch	Tranmission or piping problem	Correct piping, wiring
	Abnormal refrigerant amount	Outdoor unit may be overcharged or lacking refrigerant	Check refrigerant amount. See "5.2 Refrigerant circuit" [▶ 245]
	Incorrect thermistor values	Thermistors not in their location, miswiring or faulty thermistor	Check thermistors, see "4.15 Thermistors" [▶ 232]
	Incorrect expansion valve operation	Expansion valve not operating correctly	Check expansion valves. See "4.6 Expansion valve" [▶ 169]
	Cross piping/wiring among different outdoor unit systems	Indoor unit transmission line and piping is not connected to the same outdoor unit system	Correct piping, wiring
Disturbing operation noise and vibration	Faulty Inverter PCB output	Instable output voltage from inverter PCB to compressor(s)	Check Power Supply, see "5.1 Electrical circuit" [▶ 237]. Restore the power supply in conform with the requirements. Check inverter PCB(s) and perform a power transistor check, see Inverter PCB. Check compressor(s), see "4.2 Compressor" [▶ 153]
	Installation faults	Unit not installed according to installation manual	Check installation manual. Correct necessary items. Leave required space to outdoor unit for operation
	Wet operation	Liquid compression	Check thermistors. See "4.15 Thermistors" [▶ 232]. Check for refrigerant overcharge, see "5.2 Refrigerant circuit" [▶ 245]. Check expansion valves for heat exchanger that run as evaporator. Check superheat. Recover refrigerant and weigh. Charge refrigerant to the correct amount
	Flash gas on liquid piping	Expansion valve fault of refrigerant shortage	Check expansion valves for heat exchangers that run as evaporator. Check superheat. Recover refrigerant and weigh. Charge refrigerant to the correct amount

3.4.21 Other symptoms

Mode: Cooling	Low pressure	High pressure	Running current
Dirty air filters	Lower than normal	Lower than normal	Lower than normal
Air by-pass between air inlet/outlet @indoor unit	Lower than normal	Lower than normal	Lower than normal
Non condensables (i.e air) in refrigerant	Higher than normal	Higher than normal	Higher than normal
Moisture in refrigerant *1	Lower than normal	Lower than normal	Lower than normal
Impurities (dust, burr, …) in refrigerant *2	Lower than normal	Lower than normal	Lower than normal
Refrigerant shortage	Lower than normal	Lower than normal	Lower than normal
Insufficient compression *3	Higher than normal	Lower than normal	Lower than normal

Mode: Heating	Low pressure	High pressure	Running current
Dirty air filters	Higher than normal	Higher than normal	Higher than normal
Air by-pass between air inlet/outlet @indoor unit	Higher than normal	Higher than normal	Higher than normal
Non condensables (i.e air) in refrigerant	Higher than normal	Higher than normal	Higher than normal
Moisture in refrigerant *1	Lower than normal	Lower than normal	Lower than normal
Impurities (dust, burr, …) in refrigerant *2	Lower than normal	Lower than normal	Lower than normal
Refrigerant shortage	Lower than normal	Lower than normal	Lower than normal
Insufficient compression *3	Higher than normal	Lower than normal	Lower than normal

*1 Water in the refrigerant freezes inside the electronic expansion valve and is basically the same phenomenon as pump-down.

*2 Dust, burr in refrigerant clogs refrigerant filters and results with symptoms of pump-down operation.

*3 Pressure difference between high and low pressure decreases.

4 Components

CAUTION

When replacing a component ALWAYS make sure the correct spare part for your unit is installed.

4.1 4-way valve

4.1.1 Checking procedures

INFORMATION

It is recommended to perform the checks in the listed order.

To perform a mechanical check of the 4-way valve

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1 If applicable, remove the insulation from the 4-way valve.

DANGER: RISK OF BURNING/SCALDING

The coil gets hot while energized. Wait for it to cool down.

2 Verify that the screw is firmly fixing the coil to the valve body.

3 Check if any damage or burst is present.

Is the 4-way valve coil firmly fixed and not visually damaged?	Action
Yes	Perform an electrical check of the 4-way valve, see "4.1.1 Checking procedures" [▸ 149].
No	Fix or replace the 4-way valve coil, see "4.1.2 Repair procedures" [▸ 149].

4.1.2 Repair procedures

To remove the 4-way valve coil

Prerequisite: Stop the unit operation via the central controller.

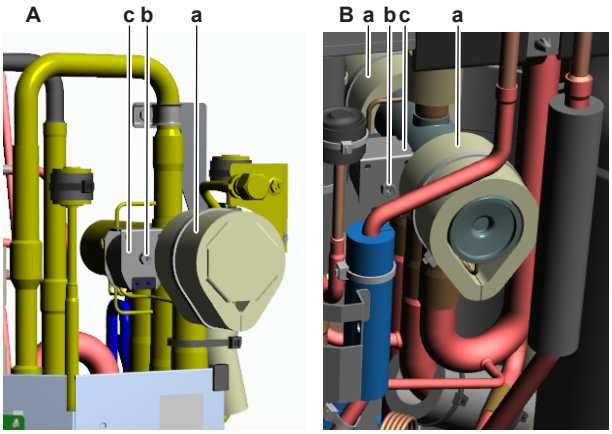
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

Prerequisite: If needed, remove any parts to create more space for the removal of the 4-way valve coil.

Prerequisite: If applicable, remove the insulation from the 4-way valve.

1 Remove the screw and remove the 4-way valve coil from the 4-way valve body.



A 8 HP unit
B 10+12 HP unit
a Insulation
b Screw
c 4-way valve coil

2 Cut all tie straps that fix the 4-way valve coil harness.

3 Unplug the 4-way valve connector from the appropriate PCB.

4 To install the 4-way valve coil, see "4.1.2 Repair procedures" [▸ 149].

To remove the 4-way valve body

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 250].

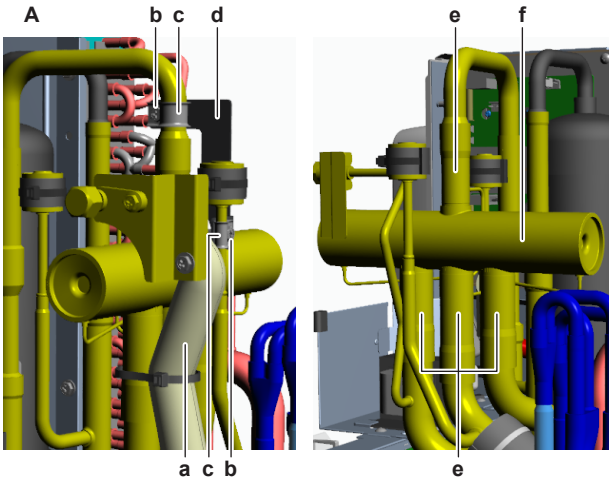
1 Remove the 4-way valve coil from the 4-way valve body, see "4.1.2 Repair procedures" [▸ 149].

2 Remove and keep the putty (if installed) and the insulation (if installed) for re-use.

3 For 8 HP units ONLY: Remove the 2 screws and remove the 2 clips and support plate.

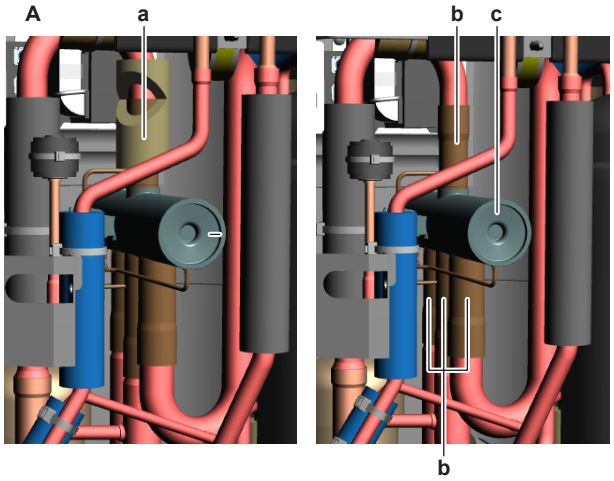
4 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

5 Wrap a wet rag around the components near the 4-way valve pipes. Heat the brazing points of the 4-way valve pipes using an oxygen acetylene torch and remove the 4-way valve pipes from the refrigerant pipes using pliers.



A 8 HP unit
a Insulation
b Screw
c Clip

d Support plate
e 4-way valve pipe
f 4-way valve



A 10+12 HP unit
a insulation
b 4-way valve pipe
c 4-way valve

6 Stop the nitrogen supply when the piping has cooled down.

7 Remove the 4-way valve.

> **INFORMATION**
>
> It is ALSO possible to cut the component pipe(s) using a pipe cutter. Make sure to remove the remaining component pipe end(s) from the refrigerant pipes by heating the brazing point(s) of the component pipe(s) using an oxygen acetylene torch.

8 Install plugs or caps on the open pipe ends of the refrigerant piping to avoid dirt or impurities from entering the piping.

9 To install the 4-way valve body, see "4.1.2 Repair procedures" [▸ 149].

To install the 4-way valve body

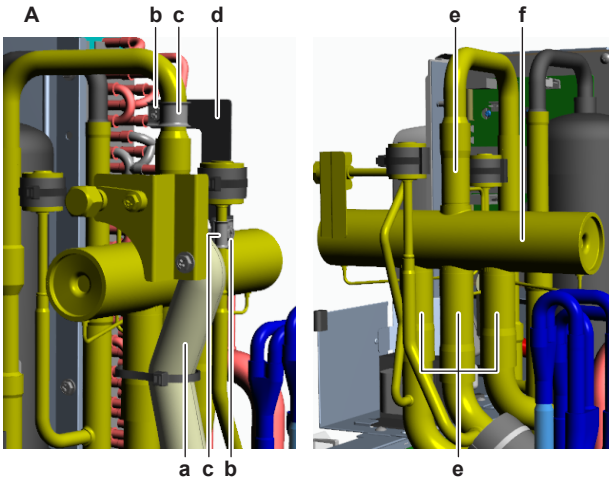
1 Remove the plugs or caps from the refrigerant piping and make sure they are clean.

2 Remove the 4-way valve coil from the spare part 4-way valve body.

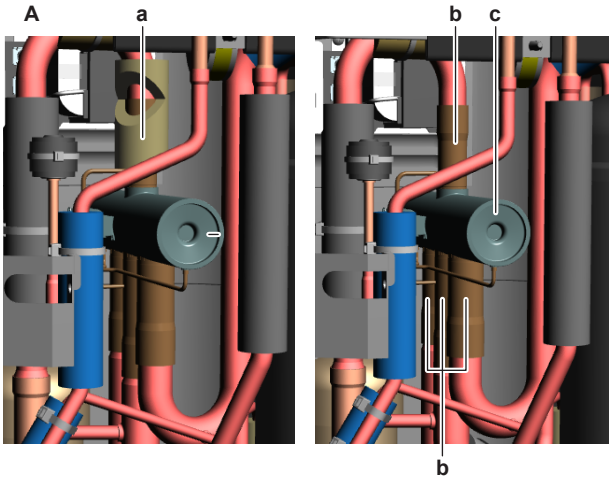
3 Install the 4-way valve body in the correct location and correctly oriented. Insert the pipe ends in the pipe expansions.

4 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

5 Wrap a wet rag around the 4-way valve body and any other components near the 4-way valve and solder the 4-way valve pipes to the refrigerant pipes.



A 8 HP unit
a Insulation
b Screw
c Clip
d Support plate
e 4-way valve pipe
f 4-way valve



A 10+12 HP unit
a insulation
b 4-way valve pipe
c 4-way valve

CAUTION

Overheating the valve will damage or destroy it.

6 After soldering is done, stop the nitrogen supply after the component has cooled-down.

7 For 8 HP units ONLY: Install the support plate and 2 clips in the correct location on the pipes. Install and tighten the 2 screws to fix the clips and support plate.

8 Install the putty (if available) and the insulation (if available) in their original location.

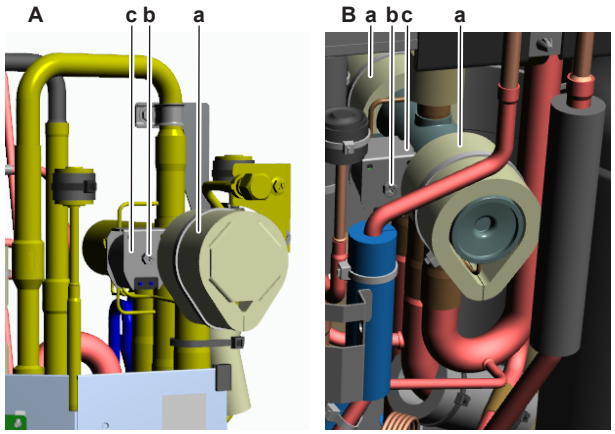
9 Install the 4-way valve coil on the 4-way valve body, see "4.1.2 Repair procedures" [▸ 149].

10 Perform a pressure test, see "5.2.1 Checking procedures" [▸ 245].

11 Add refrigerant to the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 250].

To install the 4-way valve coil

1 Install the 4-way valve coil on the 4-way valve body.



A 8 HP unit
B 10+12 HP unit
a Insulation
b Screw
c 4-way valve coil

2 Install and tighten the screw to fix the 4-way valve coil.

3 Route the 4-way valve coil harness towards the appropriate PCB.

4 Connect the 4-way valve connector to the appropriate PCB.

WARNING

When reconnecting a connector to the PCB, make sure to connect it on the correct location and do NOT apply force, as this may damage the connector or connector pins of the PCB.

5 Fix the 4-way valve coil harness using new tie straps.

6 If applicable, install the insulation on the 4-way valve.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.2 Compressor

4.2.1 Checking procedures

INFORMATION

It is recommended to perform the checks in the listed order.

To perform an auditive check of the compressor

Prerequisite: First perform a power transistor check of the inverter PCB, see Inverter PCB. If power transistor is OK, proceed as follows:

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1 Open the compressor insulation.

2 Turn ON the power using the respective circuit breaker.

3 Start the unit operation via the central controller.

CAUTION

NEVER operate the compressor with the compressor wire terminals cover removed.

4 Wait for - or create condition to operate the compressor.

5 Listen to the compressor when it tries to operate. Judge if a mechanical lock is present.

INFORMATION

If you have a multimeter with data logging functionality, record the current in 1 of the U-V-W wires at compressor start-up. ALWAYS measure at the PCB side. If mechanical lock is present, logged current will drastically increase to a peak value and the unit will trigger an error.

INFORMATION

If a mechanical lock is present, also check and eliminate the root cause. Mechanical lock is most likely caused by lack of lubrication (which might be related to overheat or wet operation), failing crankcase heater (if available), impurities in the refrigerant, ...

A mechanical lock is present on the compressor?	Action
Yes	Replace the compressor, see "4.2.2 Repair procedures" [▸ 159].
No	Perform an mechanical check of the compressor, see "4.2.1 Checking procedures" [▸ 153].

To perform a mechanical check of the compressor

INFORMATION

The transportation stay at the front of the compressor should be removed. Otherwise vibration is not absorbed, which can lead to pipe crack. See "4.2.2 Repair procedures" [▸ 159].

Prerequisite: First perform an auditive check of the compressor, see "4.2.1 Checking procedures" [▸ 153].

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

1 Before proceeding:

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 238].

2 Visually check:

- For oil drops around the compressor. Locate and fix as needed.
- Pipes for signs of damage. Replace pipes as needed.

3 Check that the compressor bolts are correctly fixed. Fix as needed.

4 Check that the compressor wire terminals cover is correctly installed and fixed. Correct as needed.

5 Check the compressor dampers for any damage.

a Damper

INFORMATION

The compressor dampers may look different.

Compressor dampers are in a good condition?	Action
Yes	Perform an electrical check of the compressor, see "4.2.1 Checking procedures" [▸ 153].
No	Replace the compressor and/or damaged dampers, see "4.2.2 Repair procedures" [▸ 159].

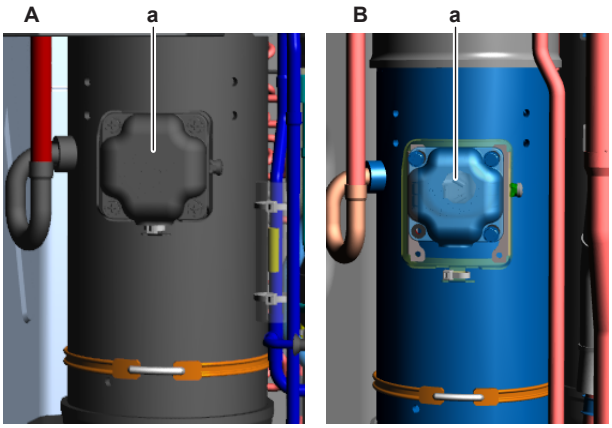
To perform an electrical check of the compressor

1 First perform a mechanical check of the compressor, see "4.2.1 Checking procedures" [▸ 153].

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 238].

2 Remove the cover of the compressor wire terminals.

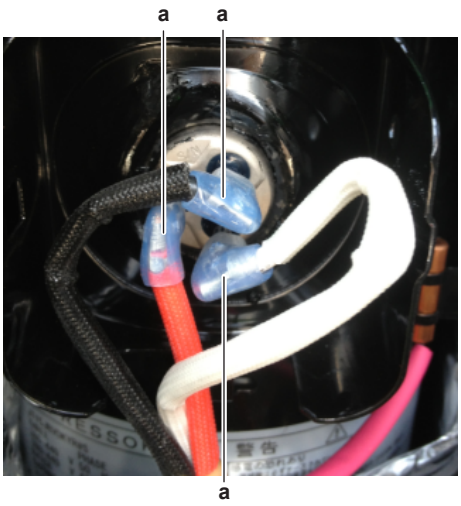


A 8 HP unit
B 10+12 HP unit
a Compressor wire terminals cover

3 Disconnect the Faston connectors from the compressor wire terminals U, V and W.

INFORMATION

Note the position of the Faston connectors on the compressor wire terminals to allow correct connection during installation.



a Faston connector

CAUTION

Before measuring the compressor motor windings resistance, measure the resistance of the multimeter probes by holding the probes against each other. If the measured resistance is NOT 0 Ω, this value MUST be subtracted from the measured winding resistance.

4 Measure the resistance between the compressor motor windings U-V, V-W and U-W.

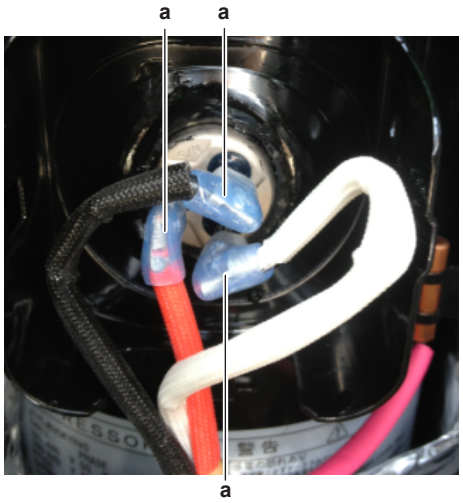
Result: All measurements MUST be approximately the same.

Unit	Winding resistance value (at temperature of 20°C)
8 HP	0.54 Ω±5%
10+12 HP	0.299 Ω±5%

Compressor motor winding measurements are correct?	Action
Yes	Continue with the next step.
No	Replace the compressor, see "4.2.2 Repair procedures" [▸ 159].

5 Measure the continuity of the U, V and W wires between the compressor and the PCB. If no continuity, correct as needed, see "7.2 Wiring diagram" [▸ 262].

6 Connect the Faston connectors to the compressor wire terminals U, V and W



a Faston connector

7 Install the compressor wire terminals cover.

8 Install the compressor insulation.

9 Turn ON the power using the respective circuit breaker.

10 Start the unit operation via the central controller.

CAUTION

NEVER operate the compressor with the compressor wire terminals cover removed.

11 Wait for – or create condition to operate the compressor.

12 Once the compressor operates, measure the U-V-W inverter voltages. ALWAYS measure at the PCB side.

Result: All measurements MUST be the same.

Inverter voltage measurements are correct?	Action
Yes	Continue with the next step.
No	Perform a check of the appropriate PCB, see "4 Components" [▸ 149].

13 While compressor is operating, measure the current in each phase U, V and W. ALWAYS measure at the PCB side.

Result: All measurements MUST be the same.

Compressor motor winding current measurements are correct?	Action
Yes	Perform an insulation check of the compressor, see "4.2.1 Checking procedures" [▸ 153].
No	Preventively replace the compressor, see "4.2.2 Repair procedures" [▸ 159].

To perform an insulation check of the compressor

Prerequisite: First perform an electrical check of the compressor, see "4.2.1 Checking procedures" [▸ 153].

Prerequisite: Stop the unit operation via the central controller.

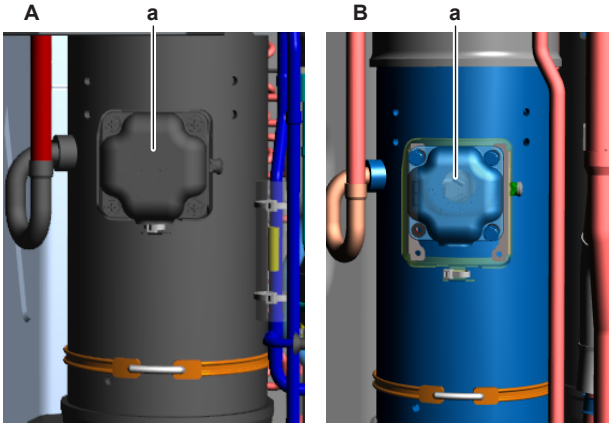
Prerequisite: Turn OFF the respective circuit breaker.

1 Before proceeding:

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 238].

2 Remove the cover of the compressor wire terminals.

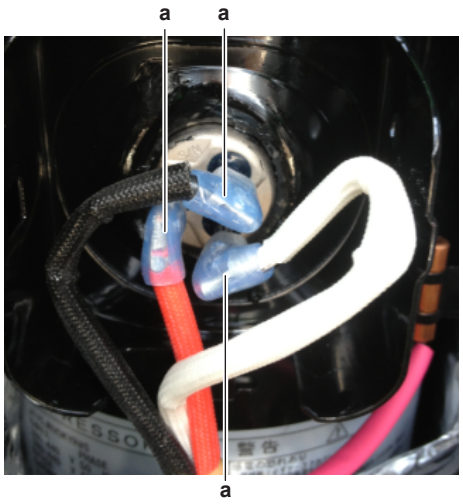


A 8 HP unit
B 10+12 HP unit
a Compressor wire terminals cover

3 Disconnect the Faston connectors from the compressor wire terminals U, V and W.

INFORMATION

Note the position of the Faston connectors on the compressor wire terminals to allow correct connection during installation.



a Faston connector

4 Set the Megger voltage to 500 V DC or 1000 V DC.

5 Measure the insulation resistance between the following terminals. The measured insulation resistance MUST be >3 MΩ.

- U–ground,
- V–ground,
- W–ground.

6 If compressor is OK, completely assemble the compressor.

CAUTION

NEVER operate the compressor with the compressor wire terminals cover removed.

Compressor insulation measurements are correct?	Action
Yes	Compressor is OK. Return to troubleshooting of the specific error and continue with the next procedure.
No	Replace the compressor, see "4.2.2 Repair procedures" [▸ 159].

4.2.2 Repair procedures

To remove the transportation stay

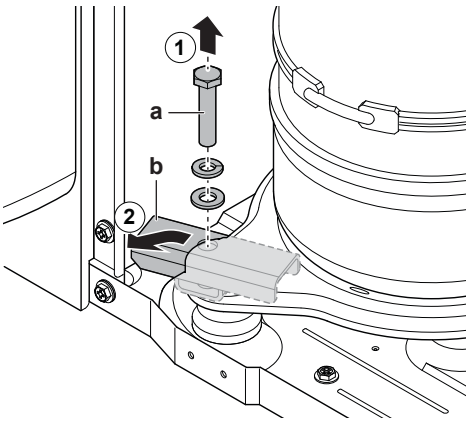
NOTICE

If the unit is operated with the transportation stay attached, abnormal vibration or noise may be generated.

The transportation stay for protecting the unit during transport must be removed. Proceed as shown in the figure and procedure below.

1 Remove the bolt (a) and washers.

2 Remove the transportation stay (b) as shown in the figure below.



a Bolt
b Transportation stay

To remove the compressor insulation

1 To install the compressor insulation, see "4.2.2 Repair procedures" [▸ 159].

To remove the compressor

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

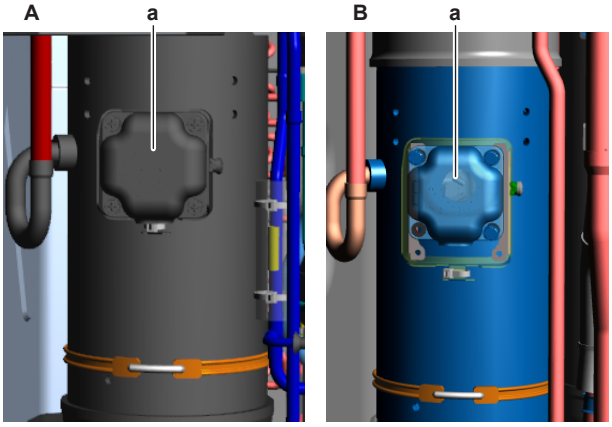
Prerequisite: Remove the compressor insulation.

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 250].

1 If needed, remove any parts to create more space for the removal of the compressor.

> **DANGER: RISK OF ELECTROCUTION**
>
> Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 238].

2 Remove the cover of the compressor wire terminals.

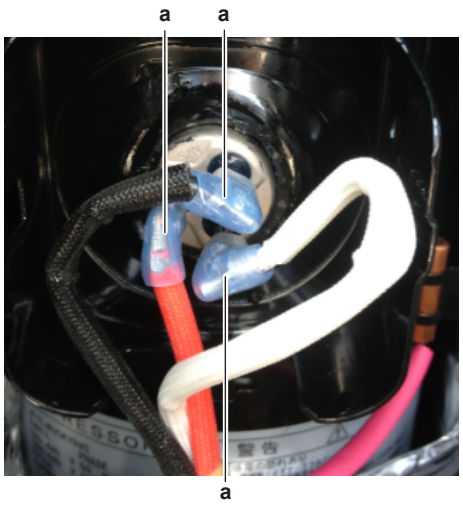


A 8 HP unit
B 10+12 HP unit
a Compressor wire terminals cover

3 Disconnect the Faston connectors from the compressor wire terminals U, V and W.

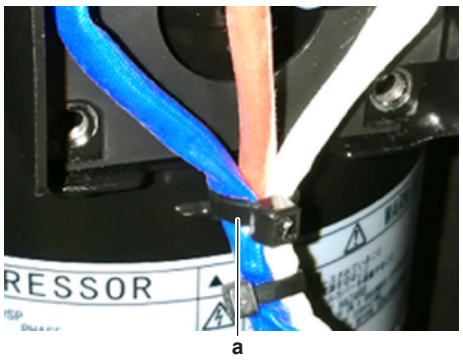
INFORMATION

Note the position of the Faston connectors on the compressor wire terminals to allow correct connection during installation.



a Faston connector

4 Cut the tie strap and remove the compressor wiring from the compressor body.



a Tie strap

5 If applicable, remove the screw and disconnect the ground wire from the compressor.

6 Remove the crankcase heater, see "To remove the crankcase heater" [▸ 167].

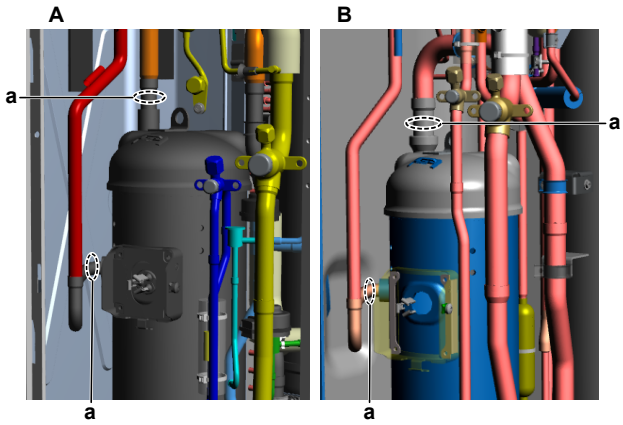
7 Remove the following thermistors from their holder:

- Suction thermistor
- Discharge pipe thermistor
- Compressor body thermistor (if applicable)

8 Remove the stop valve mounting plate.

9 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

10 Wrap a wet rag around the components near the compressor pipes. Heat the brazing points of the compressor pipes using an oxygen acetylene torch and remove the refrigerant pipes from the compressor pipes using pliers.



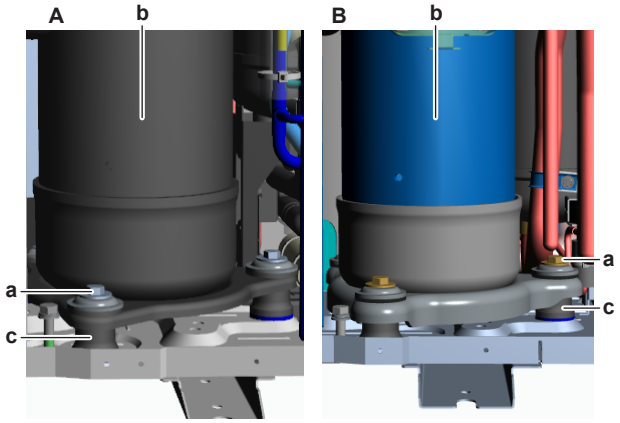
A 8 HP unit
B 10+12 HP unit
a Compressor pipe

11 Stop the nitrogen supply when the piping has cooled down.

INFORMATION

It is ALSO possible to cut the component pipe(s) using a pipe cutter. Make sure to remove the remaining component pipe end(s) from the refrigerant pipes by heating the brazing point(s) of the component pipe(s) using an oxygen acetylene torch.

12 Remove the nuts and bolts and remove the compressor from the unit.



A 8 HP unit
B 10+12 HP unit
a Nut
b Compressor
c Damper

13 Remove the 3 dampers from the compressor.

INFORMATION

The compressor dampers may look different.

14 Remove the bushings and keep them for re-use.

15 Install plugs or caps on the open pipe ends of the refrigerant piping to avoid dirt or impurities from entering the piping.

INFORMATION

If the pipes that were removed together with the compressor are NOT included in the spare part compressor and are NOT damaged, heat the brazing points and remove the pipes from the compressor to reuse them on the spare part compressor. It is ALSO possible to order and install new pipes on the spare part compressor.

16 To install the compressor, see "4.2.2 Repair procedures" [▶ 159].

To install the compressor

INFORMATION

If the pipes that were removed together with the compressor are NOT included in the spare part compressor, install and solder the reused or new pipes to the spare part compressor before installing the compressor.

1 Check the state of the dampers. Replace if worn.

2 Install the 3 dampers in the correct location on the unit.

3 Remove the plugs or caps from the refrigerant piping and make sure they are clean.

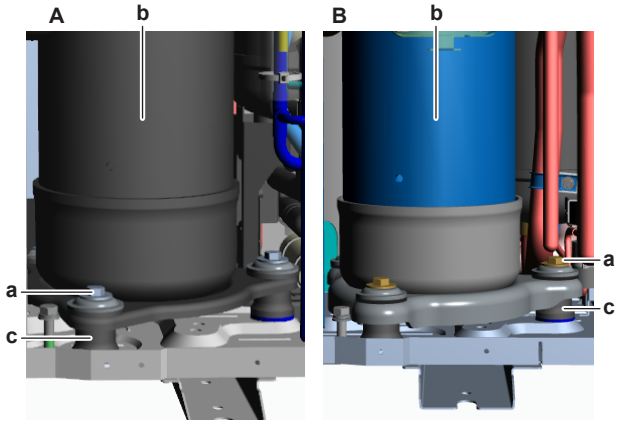
4 Remove the caps from the compressor pipes (of the new compressor).

CAUTION

The oil in the compressor is hygroscopic. Therefore remove the caps from the compressor pipes as late as possible.

5 Install the compressor on the correct location on the dampers. Properly insert the refrigerant pipes in the pipe expansions of the compressor pipes.

6 Install and tighten the bolts and nuts to fix the compressor to the dampers.



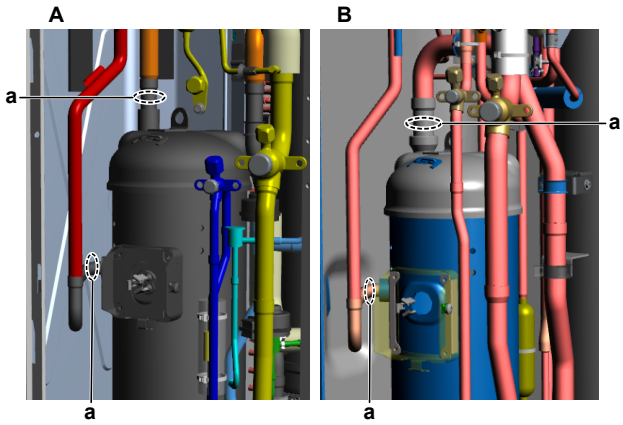
A 8 HP unit
B 10+12 HP unit
a Nut
b Compressor
c Damper

INFORMATION

The compressor dampers may look different.

7 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

8 Wrap a wet rag around the compressor pipes and any other components near the compressor and solder the compressor pipes to the refrigerant pipes.



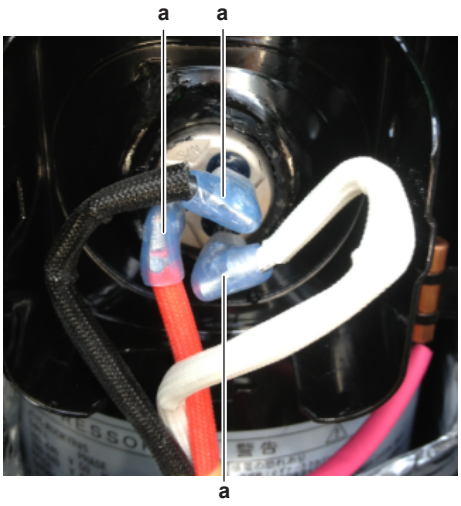
A 8 HP unit
B 10+12 HP unit
a Compressor pipe

CAUTION

Overheating the compressor pipes (and the oil inside the compressor pipes) will damage or destroy the compressor.

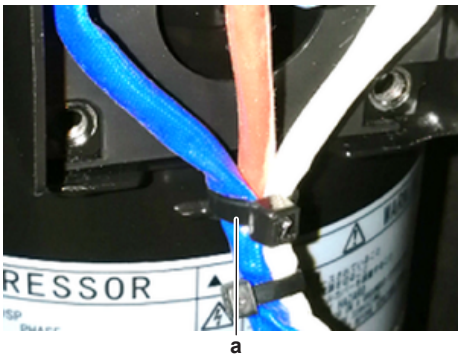
9 After soldering is done, stop the nitrogen supply after the component has cooled-down.

10 Connect the Faston connectors to the compressor wire terminals U, V and W



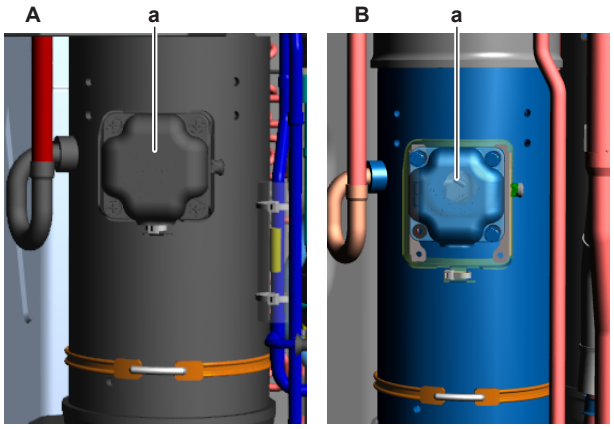
a Faston connector

11 Fix the compressor wiring to the protrusion on the compressor body using a new tie strap.



a Tie strap

12 Install the cover of the compressor wire terminals.



A 8 HP unit
B 10+12 HP unit
a Compressor wire terminals cover

13 If applicable, connect the ground wire to the compressor. Install and tighten the screw to fix the ground wire.

14 Install the crankcase heater, see "To install the crankcase heater" [▸ 168]

15 Install the following thermistors in their holder:

- Suction thermistor
- Discharge pipe thermistor
- Compressor body thermistor (if applicable)

16 Install the compressor insulation, see "4.2.2 Repair procedures" [▸ 159].

17 Install the stop valve mounting plate.

18 Perform a pressure test, see "5.2.1 Checking procedures" [▸ 245].

19 Add refrigerant to the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 250].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To install the compressor insulation

4.3 Crankcase heater

4.3.1 Checking procedures

> **INFORMATION**
> It is recommended to perform the checks in the listed order.

To perform an electrical check of the crankcase heater

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

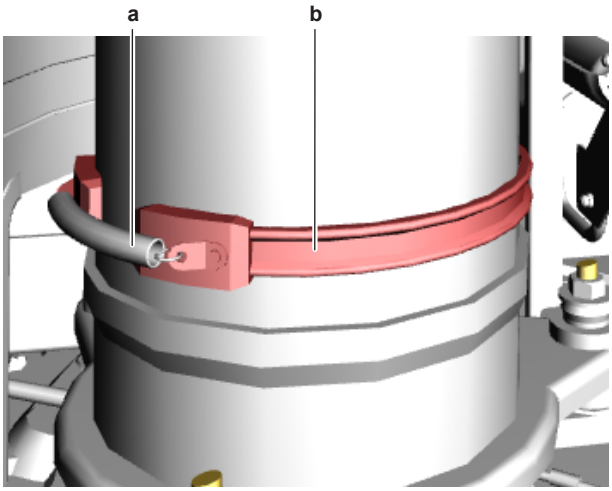
1 Remove the required plate work, see "4.10 Plate work" [▸ 191].

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 238].

2 Open the compressor insulation.

3 Detach the spring that fixes the crankcase heater on the compressor.



a Spring
b Crankcase heater

4 Remove the crankcase heater from the compressor and wait for 5 minutes (until the heater element reaches ambient temperature).

5 Disconnect the crankcase heater connector from the appropriate PCB.

Is the measured resistance correct?	Action
Yes	Continue with the next step.
No	Replace the crankcase heater, see "4.3.2 Repair procedures" [▸ 167].

CAUTION

If the crankcase heater is found short-circuit, do NOT connect its connector to the PCB. When the crankcase heater gets energized, it will damage the PCB.

6 Connect the crankcase heater connector to the appropriate PCB.

7 Turn ON the power using the respective circuit breaker.

8 Start the unit operation via the central controller.

INFORMATION

Verify that the read-out of the outdoor air thermistor, discharge thermistor and compressor body thermistor (if available) is correct.

- Measure the outdoor temperature. Use a contact thermometer to measure the other thermistor temperatures.
- Compare with the read-out via the service monitoring tool or field settings.

9 With the crankcase heater energised (compressor OFF and discharge temperature <70°C), measure the voltage on the crankcase heater connector on the PCB.

Result: The measured voltage MUST be 230 V AC.

INFORMATION

The compressor body temperature MUST raise at least 5°C before the crankcase heater is deactivated.

Is the measured voltage correct?	Action
Yes	Perform an insulation check of the crankcase heater, see "4.3.1 Checking procedures" [▸ 165].
No	Perform a check of the main PCB, see Main PCB.

To perform an insulation check of the crankcase heater

Prerequisite: First perform an electrical check of the crankcase heater, see "4.3.1 Checking procedures" [▸ 165].

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

1 Before proceeding:

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 238].

2 Disconnect the crankcase heater connector from the appropriate PCB.

3 Set the Megger voltage to at least 500 V DC.

4 Connect the Megger ground test lead directly to the crankcase heater ground wire.

CAUTION

Do NOT connect the Megger ground test lead to any other ground wire.

5 Measure the insulation resistance between the phase and ground wire. The measured insulation resistance MUST be >1 MΩ.

Is the measured insulation resistance correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Replace the crankcase heater, see "4.3.2 Repair procedures" [▸ 167].

4.3.2 Repair procedures

To remove the crankcase heater

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

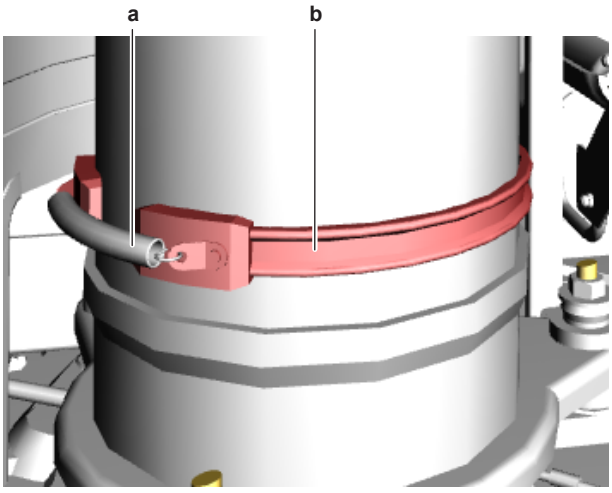
1 Remove the required plate work, see "4.10 Plate work" [▸ 191].

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 238].

2 Open the compressor insulation.

3 Detach the spring that fixes the crankcase heater on the compressor.



a Spring
b Crankcase heater

4 Cut all tie straps that fix the crankcase heater harness.

5 Disconnect the crankcase heater connector from the appropriate PCB.

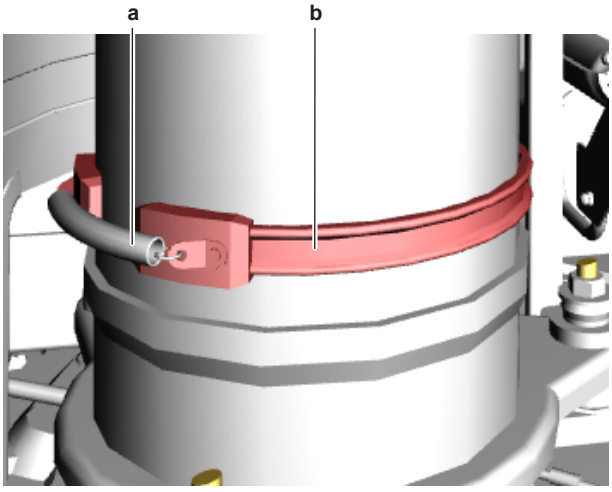
6 Remove the crankcase heater from the unit.

7 To install the crankcase heater, see "4.3.2 Repair procedures" [▸ 167].

To install the crankcase heater

1 Install the crankcase heater on the compressor.

2 Attach the spring to fix the crankcase heater.



a Spring
b Crankcase heater

3 Route the crankcase heater harness towards the switch box.

4 Connect the crankcase heater connector to the appropriate PCB.

WARNING

When reconnecting a connector to the PCB, make sure to connect it on the correct location and do NOT apply force, as this may damage the connector or connector pins of the PCB.

5 Fix the crankcase heater harness using new tie straps.

INFORMATION

Replace all cable ties that were cut during removal.

6 Install the compressor insulation.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.4 Current sensor

4.4.1 Checking procedures

4.4.2 Repair procedures

4.5 Drain-up kit

4.5.1 Drain pump

Not available yet

4.5.2 Drain-up kit PCB

Not available yet

4.5.3 Float switch

Not available yet

4.6 Expansion valve

4.6.1 Checking procedures

INFORMATION

It is recommended to perform the checks in the listed order.

To perform a mechanical check of the expansion valve

Prerequisite: Power OFF the unit for 3 minutes. Then turn ON the unit and listen to the expansion valve assembly. If the expansion valve does NOT make a latching sound, continue with the electrical check of the expansion valve, see "4.6.1 Checking procedures" [▸ 169].

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

1. Remove the required plate work (see "4.10 Plate work" [▸ 191]).
2. Remove the expansion valve insulation (if applicable) and visually check:
   - For oil drops around the expansion valve. Locate and fix as necessary.
   - Pipes for signs of damage. Replace pipes as needed.
   - Coil wires for signs of damage. Replace expansion valve coil as needed. See "4.6.2 Repair procedures" [▸ 173].
3. Remove the expansion valve coil from the expansion valve body, see "4.6.2 Repair procedures" [▸ 173].
4. Slide the expansion valve magnet over the expansion valve body and gently rotate the magnet clockwise/counterclockwise to manually close/open the expansion valve. Listen to check if the valve is closing/opening and manually close the valve when check is done.

INFORMATION

After the check, remove the magnet from the expansion valve body and install the expansion valve coil on the expansion valve body. Make sure that the expansion valve coil is correctly installed on the expansion valve body.

INFORMATION

It is highly recommended to perform a power reset after checking the valve using a magnet.

Does the expansion valve open?	Action
Yes	Perform an electrical check of the expansion valve, see "4.6.1 Checking procedures" [▸ 169].
No	Replace the expansion valve body, see "4.6.2 Repair procedures" [▸ 173].

To perform an electrical check of the expansion valve

1. First perform a mechanical check of the expansion valve, see "4.6.1 Checking procedures" [▸ 169].
2. Disconnect the electrical connector of the expansion valve coil from the appropriate PCB and measure the resistance of all windings (between the pins of each phase (wire) and the common wire) using a multi meter. All measurements MUST be approximately the same.

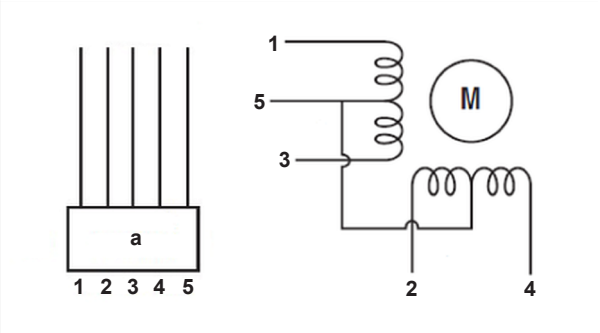
Name	Symbol	Location (PCB)	Connector	Winding resistance
Main expansion valve	Y1E	Main	X21A	43~49 Ω

Name	Symbol	Location (PCB)	Connector	Winding resistance
Sub-cool expansion valve	Y2E	Main	X26A	43~49 Ω
Inverter cooling expansion valve	Y3E	Main	X23A	43~49 Ω
Liquid injection expansion valve	Y4E	Main	X25A	43~49 Ω

INFORMATION

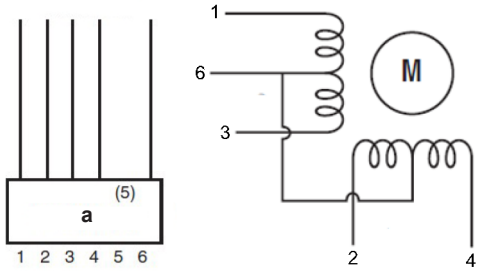
Below are shown examples of the resistance measurements in which the common wire is connected to pin 5 or to pin 6 of the expansion valve coil connector. Connections may differ according to the type of expansion valve.

- Connector pin 1-5,
- Connector pin 2-5,
- Connector pin 3-5,
- Connector pin 4-5.



a Connector

- Connector pin 1-6,
- Connector pin 2-6,
- Connector pin 3-6,
- Connector pin 4-6.



a Connector

3 Check the insulation resistance of the coil by measuring the resistance between the pins of each phase (1, 2, 3, 4) and GND on the unit.

Result: None of the measurements should be short-circuit.

WARNING

When reconnecting a connector to the PCB, make sure to connect it on the correct location and do NOT apply force, as this may damage the connector or connector pins of the PCB.

Is the measured resistance correct?	Action
Yes	Perform an operation check of the expansion valve, see "4.6.1 Checking procedures" [▸ 169].
No	Replace the expansion valve coil, "4.6.2 Repair procedures" [▸ 173].

To perform an operation check of the expansion valve

Prerequisite: First perform an electrical check of the expansion valve, see "4.6.1 Checking procedures" [▸ 169].

1 Turn ON the power of the unit.

INFORMATION

When power is switched ON, PCB checks all expansion valve coil windings by current check. If winding is short or open, expansion valve error is triggered.

2 Start the unit operation via the central controller.

3 With the unit operating, connect the service monitoring tool to the unit.

4 When the expansion valve is closed according to the service monitoring tool, check the inlet and outlet of the valve with a contact thermometer or use an expansion valve stethoscope to see if refrigerant flows through the expansion valve. Check that the valve is NOT bleeding.

Result: There MUST be NO flow through the expansion valve.

5 When the expansion valve is open according to the service monitoring tool, check the inlet and outlet of the valve with a contact thermometer or use an expansion valve stethoscope to see if refrigerant flows through the expansion valve.

Result: Refrigerant MUST flow through the expansion valve.

6 Wait for the PCB to command the expansion valve to open (when closed) or to close (when open) (pulse output to expansion valve visible on service monitoring tool).

INFORMATION

If the PCB does NOT command the expansion valve to open or close (when it is supposed to), perform a check of the appropriate thermistors and pressure sensors (as their measurements control the operation of the expansion valve(s)).

7 While in opening or closing sequence each expansion valve winding (Φ1, 2, 3, 4) is supplied with 12 V DC from the PCB. You will need a good multimeter, where its range is set to about 20 V DC, and during opening or closing sequence you may be able to measure the supply voltage for a short time. If you set the multimeter range to Auto, then most likely you may NOT read a value between switching ranges. The best way to check is to feel the movement of the valve by touching, rather than trying to measure the driving voltage.

8 When the expansion valve was commanded to close, check the inlet and outlet of the valve with a contact thermometer or use an expansion valve stethoscope to see if refrigerant flows through the expansion valve. Check that the valve is NOT bleeding.

Result: There MUST be NO flow through the expansion valve.

9 When the expansion valve was commanded to open, check the inlet and outlet of the valve with a contact thermometer or use an expansion valve stethoscope to see if refrigerant flows through the expansion valve.

Result: Refrigerant MUST flow through the expansion valve.

Is the flow through the expansion valve correct?	Action
Yes	Component is OK. Return to the troubleshooting of the specific error and continue with the next step.
No	Replace the expansion valve, see "4.6.2 Repair procedures" [▸ 173].

Problem solved?

After all checking procedures listed above have been performed:

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.6.2 Repair procedures

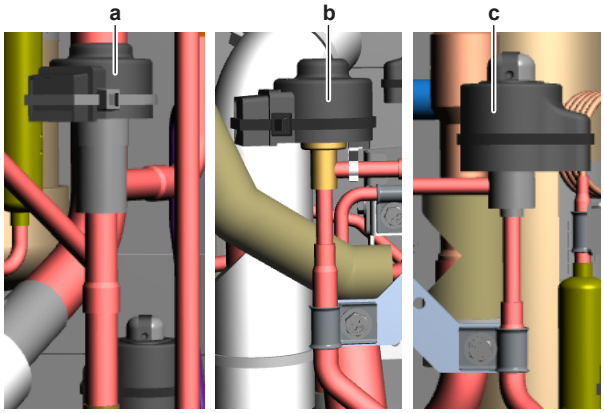
To remove the expansion valve coil

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1 If needed, remove any parts or insulation to create more space for the removal.



a Expansion valve coil (for Y1E)
b Expansion valve coil with clip (for Y2E)
c Expansion valve coil with bracket (for Y3E and Y4E)

2 Pull the expansion valve coil to remove it from the expansion valve body.

INFORMATION

It may be needed to turn the expansion valve coil 1/8 turn counter clockwise to unlock it. Make sure to note the correct orientation (position) of the expansion valve coil before removal.

3 Cut all tie straps that fix the expansion valve coil harness.

4 Disconnect the expansion valve coil connector from the appropriate PCB. See "To perform an electrical check of the expansion valve" [▸ 170] for an overview of the expansion valve connectors and their locations.

5 To install the expansion valve coil, see "4.6.2 Repair procedures" [▸ 173].

To remove the expansion valve body

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 250].

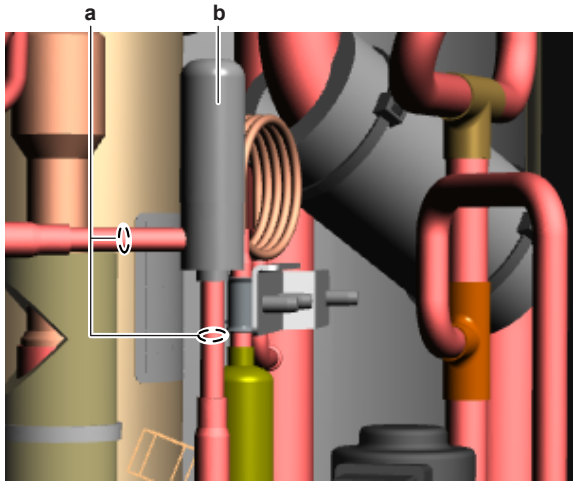
Prerequisite: If needed, remove any parts or insulation to create more space for the removal.

1 Remove the expansion valve coil, see "4.6.2 Repair procedures" [▸ 173].

2 Using a valve magnet, open the expansion valve.

3 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

4 Wrap a wet rag around the components near the expansion valve pipes. Heat the brazing points of the expansion valve pipes using an oxygen acetylene torch and remove the expansion valve pipes from the refrigerant pipes using pliers.



a Expansion valve pipe
b Expansion valve body

INFORMATION

The expansion valve and coil can have a different configuration / layout.

5 Stop the nitrogen supply when the piping has cooled down.

6 Remove the expansion valve body.

INFORMATION

It is ALSO possible to cut the component pipe(s) using a pipe cutter. Make sure to remove the remaining component pipe end(s) from the refrigerant pipes by heating the brazing point(s) of the component pipe(s) using an oxygen acetylene torch.

7 Install plugs or caps on the open pipe ends of the refrigerant piping to avoid dirt or impurities from entering the piping.

8 To install the expansion valve body, see "4.6.2 Repair procedures" [▸ 173].

To install the expansion valve body

1 Remove the plugs or caps from the refrigerant piping and make sure they are clean.

2 Remove the expansion valve coil from the spare part expansion valve body.

3 Install the expansion valve body in the correct location and correctly oriented. Insert the pipe ends in the pipe expansions.

4 Open the expansion valve using a valve magnet.

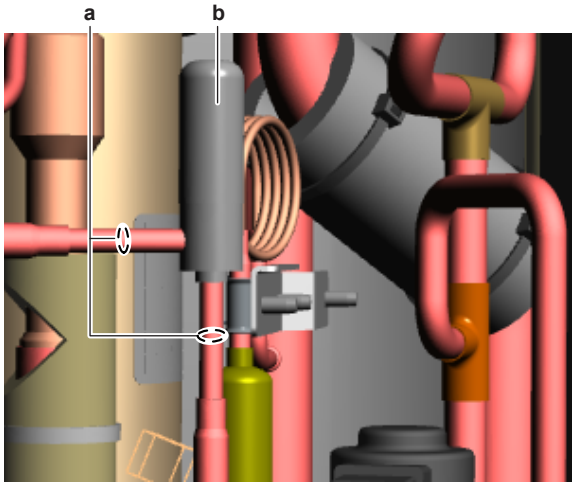
5 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

6 Wrap a wet rag around the expansion valve body and any other components near the expansion valve and solder the expansion valve pipes to the refrigerant pipes.

CAUTION

Overheating the valve will damage or destroy it.

7 After soldering is done, stop the nitrogen supply after the component has cooled-down.



a Expansion valve pipe
b Expansion valve body

8 To install the expansion valve coil, see "4.6.2 Repair procedures" [▸ 173].

9 Perform a pressure test, see "5.2.1 Checking procedures" [▸ 245].

10 Add refrigerant to the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 250].

To install the expansion valve coil

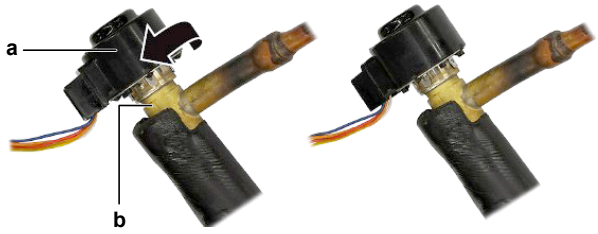
1 Install the expansion valve coil on the expansion valve body.

INFORMATION

Turn the expansion valve coil 1/8 turn clockwise to lock it on the expansion valve body.

INFORMATION

The correct alignment of the expansion valve coil is ensured by dimples.



a Expansion valve coil
b Pipe

2 Route the expansion valve coil harness towards the appropriate PCB.

3 Connect the expansion valve coil connector to the appropriate PCB.

WARNING

When reconnecting a connector to the PCB, make sure to connect it on the correct location and do NOT apply force, as this may damage the connector or connector pins of the PCB.

4 Fix the expansion valve coil harness using new tie straps.

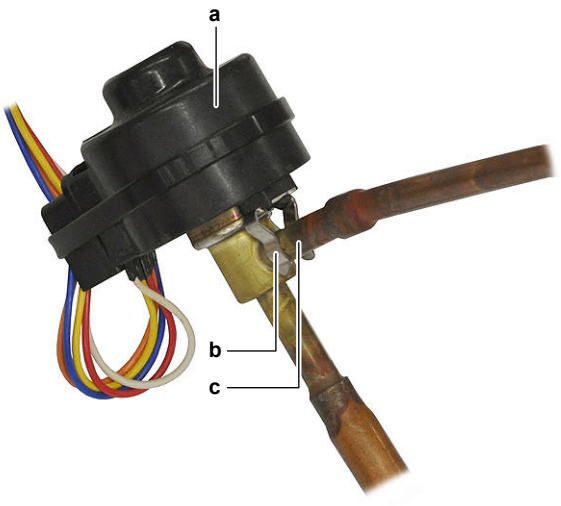
Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.6.1 Checking procedures" [▸ 169] of the expansion valve and continue with the next procedure.

To install the expansion valve coil with clip

1 Install the expansion valve coil on the expansion valve body.

INFORMATION

The expansion valve coil is equipped with a pipe retention clip. Install the pipe retention clip over the pipe to lock the expansion valve coil.



a Expansion valve coil

b Pipe retention clip
c Pipe

2 Route the expansion valve coil harness towards the appropriate PCB.

3 Connect the expansion valve coil connector to the appropriate PCB.

WARNING

When reconnecting a connector to the PCB, make sure to connect it on the correct location and do NOT apply force, as this may damage the connector or connector pins of the PCB.

4 Fix the expansion valve coil harness using new tie straps.

5 Install the insulation cap on the expansion valve coil (if applicable).

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.6.1 Checking procedures" [▶ 169] of the expansion valve and continue with the next procedure.

To install the expansion valve coil with bracket

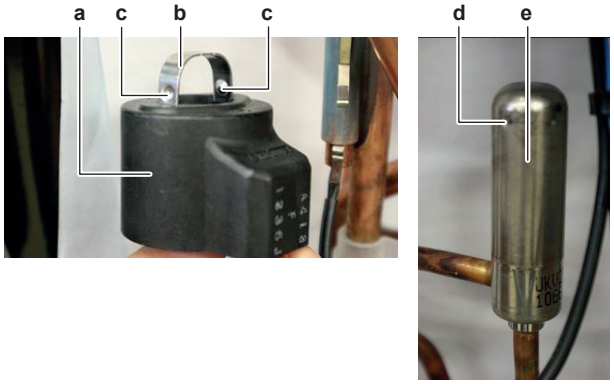
1 Install the expansion valve coil on the expansion valve body.

INFORMATION

The expansion valve coil is equipped with a metal bracket. Fit the nipples of the metal bracket into the notches of the expansion valve body.

CAUTION

Make sure to install the expansion valve coil in the correct position (orientation).



a Expansion valve coil
b Metal bracket
c Nipple
d Notch
e Expansion valve body

2 Route the expansion valve coil harness towards the appropriate PCB.

3 Connect the expansion valve coil connector to the appropriate PCB.

WARNING

When reconnecting a connector to the PCB, make sure to connect it on the correct location and do NOT apply force, as this may damage the connector or connector pins of the PCB.

4 Fix the expansion valve coil harness using new tie straps.

5 Install the insulation cap on the expansion valve coil (if applicable).

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.6.1 Checking procedures" [▸ 169] of the expansion valve and continue with the next procedure.

4.7 High pressure switch

4.7.1 Checking procedures

To perform an electrical check of the high pressure switch

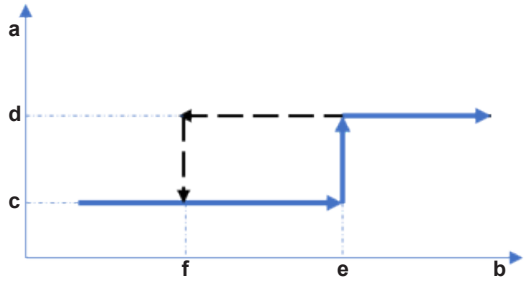
Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1 Recuperate the refrigerant from the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 250].

2 Fill the refrigerant circuit with nitrogen until pressurized just below operating pressure of the high pressure switch.



a High pressure switch protection control
b Pressure
c High pressure switch closed
d High pressure switch open
e High pressure switch operating pressure
f High pressure switch reset pressure

3 Disconnect the high pressure switch connector from the PCB.

4 Measure the resistance between the pins 1-2 of the high pressure switch connector.

Result: The switch MUST be closed.

5 Fill the refrigerant circuit with nitrogen until pressurized just above operating pressure of the high pressure switch.

6 Measure the resistance between the pins 1-2 of the high pressure switch connector.

Result: The switch MUST be open.

INFORMATION

If the high pressure switch was triggered open, it will stay open until the refrigerant pressure drops below the reset pressure of the high pressure switch.

7 Lower the pressure of the nitrogen in the refrigerant circuit just above reset pressure of the high pressure switch.

8 Measure the resistance between the pins 1-2 of the high pressure switch connector.

Result: The switch MUST be open.

9 Lower the pressure of the nitrogen in the refrigerant circuit just below reset pressure of the high pressure switch.

10 Measure the resistance between the pins 1-2 of the high pressure switch connector.

Result: The switch MUST be closed.

High pressure switch connector measurements are correct?	Then
Yes	High pressure switch is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Replace the high pressure switch, see "4.7.2 Repair procedures" [▸ 179].

4.7.2 Repair procedures

To remove the high pressure switch

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 250].

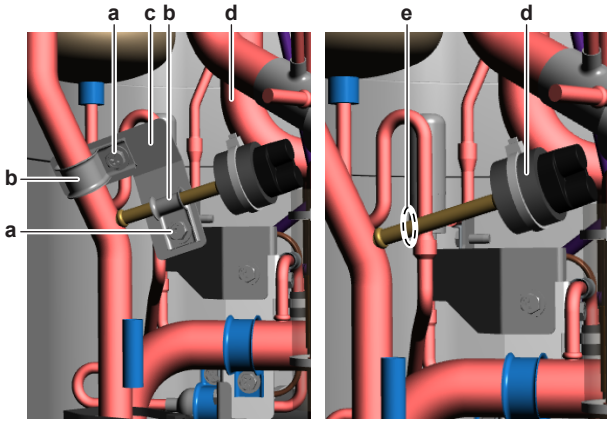
1 If needed, remove any parts or putty (if installed) to create more space for the removal of the high pressure switch.

2 Remove nearby thermistors from their holder.

3 Disconnect the high pressure switch connector from the PCB.

4 Cut all tie straps that fix the high pressure switch harness.

5 Remove the 2 screws and remove the 2 clips and support plate from the refrigerant piping.



a Screw
b Clip
c Support plate
d High pressure switch

e High pressure switch pipe

6 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

7 Wrap a wet rag around the components near the high pressure switch. Heat the brazing point of the high pressure switch pipe using an oxygen acetylene torch and remove the high pressure switch pipe from the refrigerant pipe using pliers.

8 Stop the nitrogen supply when the piping has cooled down.

9 Remove the high pressure switch.

INFORMATION

It is ALSO possible to cut the component pipe(s) using a pipe cutter. Make sure to remove the remaining component pipe end(s) from the refrigerant pipes by heating the brazing point(s) of the component pipe(s) using an oxygen acetylene torch.

10 Install a plug or cap on the refrigerant piping to avoid dirt or impurities from entering the piping.

11 To install the high pressure switch, see "4.7.2 Repair procedures" [▸ 179].

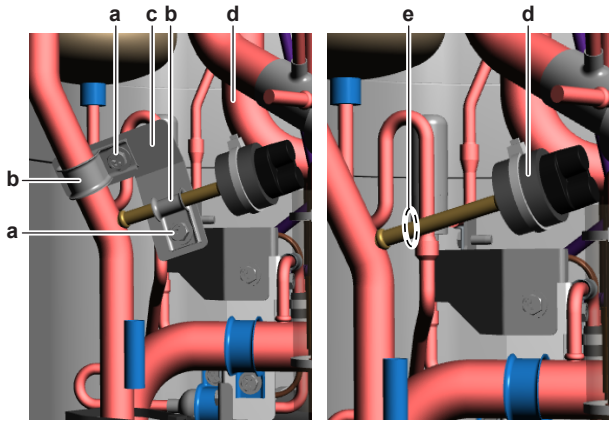
To install the high pressure switch

1 Remove the plug or cap from the refrigerant piping and make sure it is clean.

2 Install the high pressure switch in the correct location.

3 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

4 Wrap a wet rag around the high pressure switch and any other components near the high pressure switch and solder the high pressure switch pipe to the refrigerant pipe.



a Screw
b Clip
c Support plate
d High pressure switch
e High pressure switch pipe

CAUTION

Overheating the pressure switch will damage or destroy it.

5 After soldering is done, stop the nitrogen supply after the component has cooled-down.

6 Install the support plate on the refrigerant piping using the 2 clips. Install and tighten the 2 screws.

7 Re-install nearby thermistors in their holder.

8 Route the high pressure switch harness towards the appropriate PCB.

9 Connect the high pressure switch connector to the PCB.

10 Install new tie straps to fix the high pressure switch harness.

11 Install all removed parts or putty (as needed) that were removed for space creation purposes.

12 Perform a pressure test, see "5.2.1 Checking procedures" [▸ 245].

13 Add refrigerant to the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 250].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.8 Oil return valve

4.8.1 Checking procedures

INFORMATION

It is recommended to perform the checks in the listed order.

To perform a mechanical check of the oil return valve

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1 Verify that the screw is firmly fixing the coil to the valve body.

2 Check if any damage or burst is present.

Is the oil return valve coil firmly fixed and not visually damaged?	Action
Yes	Perform an electrical check of the oil return valve, see "4.8.1 Checking procedures" [▸ 181].
No	Fix or replace the oil return valve coil, see "4.8.2 Repair procedures" [▸ 183].

To perform an electrical check of the oil return valve

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1 Unplug the oil return valve connector from the appropriate PCB.

2 Measure the resistance of the oil return valve coil.

Is the measured value correct?	Action
Yes	Continue with the next step.

Is the measured value correct?	Action
No	Replace the oil return valve coil, see "4.8.2 Repair procedures" [▸ 183].

3 Turn ON the power using the respective circuit breaker.

4 Turn ON an indoor unit via remote controller or central controller.

5 Measure the voltage on the oil return valve connection on the PCB.

Result: The measured voltage MUST be 0 V AC. Oil return valve is NOT energized when compressor is OFF and the pressure difference between the high and low pressure <0.3 MPa.

6 Connect the service monitoring tool to the unit and check the pressure difference between the high and low pressure. Once the pressure difference between the high and low pressure exceeds 0.3 MPa and the compressor is running, oil return valve is energized.

7 With the oil return valve connector connected to the PCB, measure the voltage on the valve connection of the PCB.

Result: The measured voltage MUST be 230 V AC.

Are the measured voltages correct?	Action
Yes	Perform an operation check of the oil return valve, see "4.8.1 Checking procedures" [▸ 181].
No	Check the main PCB, see Checking procedures.

To perform an operation check of the oil return valve

1 Turn ON the power using the respective circuit breaker.

2 Turn ON an indoor unit via remote controller or central controller.

3 Connect the service monitoring tool to the unit and check the pressure difference between the high and low pressure. Once the pressure difference between the high and low pressure exceeds 0,3 MPa and the compressor is running, oil return valve is energized.

4 Check with a contact thermometer if the flow through the oil return valve corresponds with the flow shown in the flow diagram. (See "7.3 Piping diagram" [▸ 275]).

Is the flow correct?	Action
Yes	Oil return valve is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Replace the body of the oil return valve, see "4.8.2 Repair procedures" [▸ 183].

Problem solved?

After all checking procedures listed above have been performed:

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.8.2 Repair procedures

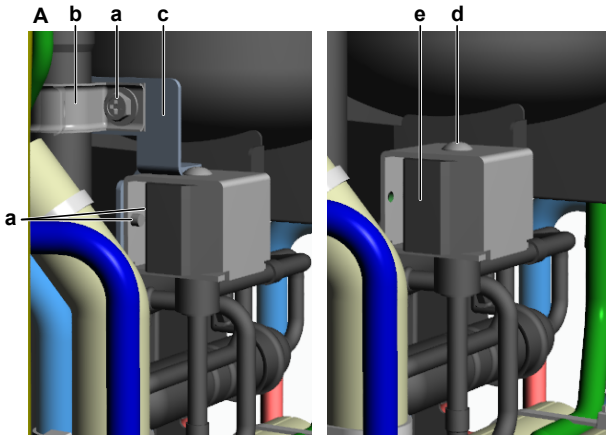
To remove the oil return valve coil

Prerequisite: Stop the unit operation via the central controller.

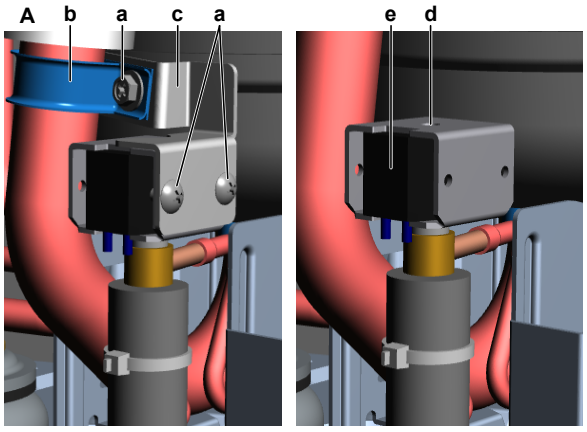
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1. If needed, remove any parts to create more space for the removal of the oil return valve coil.
2. Remove the screws and remove the clip and support plate. Keep for reuse.
3. Remove the screw and remove the oil return valve coil from the oil return valve body.



A 8 HP unit
a Screw (support plate)
b Clip
c Support plate
d Screw (coil)
e Valve coil



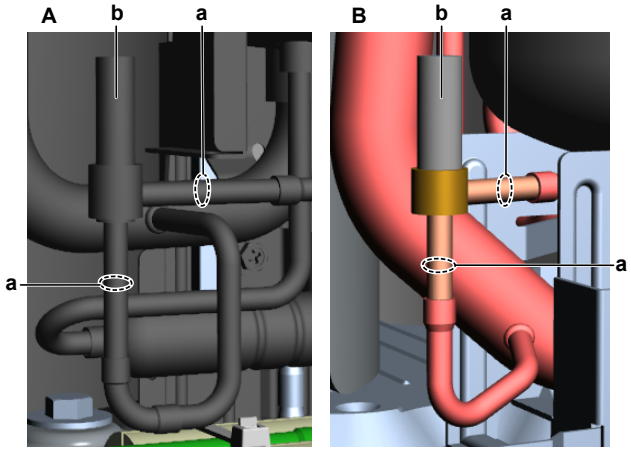
A 10+12 HP unit
a Screw (support plate)
b Clip
c Support plate
d Screw (coil)
e Valve coil

4. Cut all tie straps that fix the oil return valve coil harness.
5. Disconnect the oil return valve coil connector from the appropriate PCB.
6. To install the oil return valve coil, see "4.8.2 Repair procedures" [▸ 183].

To remove the oil return valve body

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 250].

1. Remove the oil return valve coil from the oil return valve body, see "4.8.2 Repair procedures" [▸ 183].
2. Remove the insulation from the oil return valve pipes. Keep for reuse.
3. Using a valve magnet, open the oil return valve.
4. Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.
5. Wrap a wet rag around the components near the oil return valve pipes. Heat the brazing points of the oil return valve pipes using an oxygen acetylene torch and remove the oil return valve pipes from the refrigerant pipes using pliers.



A 8 HP unit
B 10+12 HP unit
a Oil return valve pipe
b Oil return valve body

6. Stop the nitrogen supply when the piping has cooled down.
7. Remove the oil return valve body.

> **INFORMATION**
>
> It is ALSO possible to cut the component pipe(s) using a pipe cutter. Make sure to remove the remaining component pipe end(s) from the refrigerant pipes by heating the brazing point(s) of the component pipe(s) using an oxygen acetylene torch.

8. Install plugs or caps on the open pipe ends of the refrigerant piping to avoid dirt or impurities from entering the piping.
9. To install the oil return valve body, see "4.8.2 Repair procedures" [▸ 183].

To install the oil return valve body

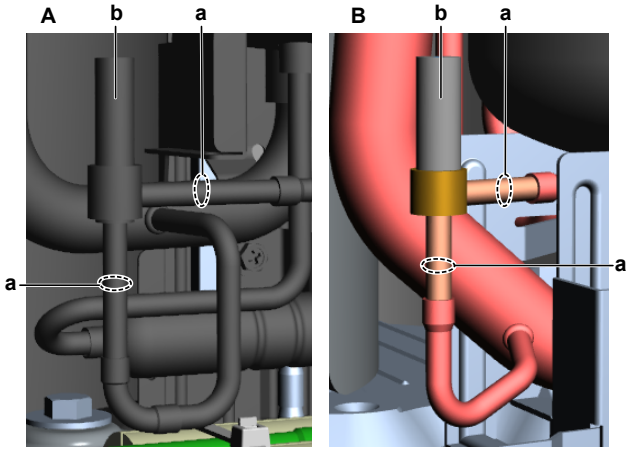
1. Remove the plugs or caps from the refrigerant piping and make sure they are clean.
2. Remove the oil return valve coil from the spare part oil return valve body.
3. Install the oil return valve body in the correct location and correctly oriented. Insert the pipe ends in the pipe expansions.
4. Open the oil return valve using a valve magnet.
5. Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

6 Wrap a wet rag around the oil return valve body and any other components near the oil return valve and solder the oil return valve pipes to the refrigerant pipes.

CAUTION

Overheating the valve will damage or destroy it.

7 After soldering is done, stop the nitrogen supply after the component has cooled-down.



A 8 HP unit
B 10+12 HP unit
a Oil return valve pipe
b Oil return valve body

8 Install the insulation in the original location on the oil return valve pipes.

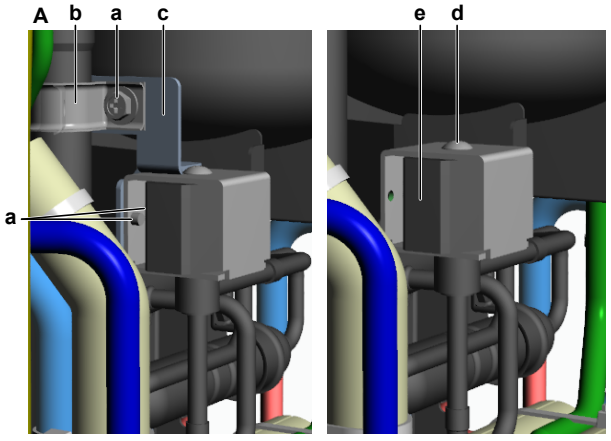
9 Install the oil return valve coil on the oil return valve body, see "4.8.2 Repair procedures" [▸ 183].

10 Perform a pressure test, see "5.2.1 Checking procedures" [▸ 245].

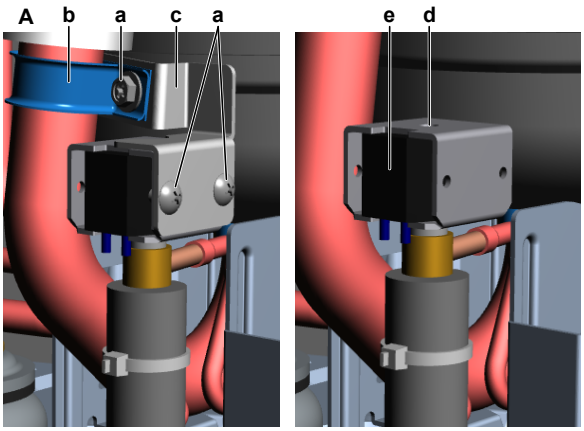
11 Add refrigerant to the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 250].

To install the oil return valve coil

1 Install the oil return valve coil on the oil return valve body.



A 8 HP unit
a Screw (support plate)
b Clip
c Support plate
d Screw (coil)
e Valve coil



A 10+12 HP unit
a Screw (support plate)
b Clip
c Support plate
d Screw (coil)
e Valve coil

2 Install and tighten the screw to fix the oil return valve coil.

3 Install the support plate and clip in the correct location. Install and tighten the screws.

4 Route the oil return valve coil harness towards the appropriate PCB.

5 Connect the oil return valve coil connector to the PCB.

WARNING

When reconnecting a connector to the PCB, make sure to connect it on the correct location and do NOT apply force, as this may damage the connector or connector pins of the PCB.

6 Fix the oil return valve coil harness using new tie straps.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.8.1 Checking procedures" [▸ 181] of the oil return valve and continue with the next procedure.

4.9 Outdoor unit fan motor

4.9.1 Checking procedures

INFORMATION

It is recommended to perform the checks in the listed order.

To perform a mechanical check of the propeller fan blade assemblies

Prerequisite: First perform a power transistor check of the fan inverter PCB, see Fan inverter PCB. If power transistor is OK, proceed as follows:

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1 If propeller fan blade touches the bell mouth, check if the fan motor is correctly mounted on its base, see "4.9.2 Repair procedures" [▸ 188].

2 Check the state of the propeller fan blade assemblies for damage, deformations and cracks.

One or both propeller fan blade assemblies are damaged?	Action
Yes	Replace the damaged propeller fan blade assembly, see "4.9.2 Repair procedures" [▸ 188].
No	Perform a mechanical check of the DC fan motor assembly, see "4.9.1 Checking procedures" [▸ 186].

To perform a mechanical check of the DC fan motor assembly

Prerequisite: First perform a mechanical check of the propeller fan blade assembly, see "4.9.1 Checking procedures" [▸ 186].

1 Visually check:

- For any burnt-out part or wire. If found, replace the fan motor, see "4.9.2 Repair procedures" [▸ 188].
- That fan motor fixation bolts are correctly installed and fixed. Correct as needed.

2 Manually rotate the fan motor shaft. Check that it rotates smoothly.

3 Check the friction of the DC fan motor shaft bearing.

Is the DC fan motor shaft friction normal?	Action
Yes	Perform an electrical check of the DC fan motor assembly, see "4.9.1 Checking procedures" [▸ 186].
No	Replace the DC fan motor assembly, see "4.9.2 Repair procedures" [▸ 188].

To perform an electrical check of the DC fan motor assembly

1 First perform a mechanical check of both DC fan motor assemblies, see "4.9.1 Checking procedures" [▸ 186].

INFORMATION

Check the DC fan motor power supply (voltage) circuit on the PCB.

2 Turn ON the power of the unit.

3 Activate `Cooling` or `Heating` operation via the Cool/Heat master user interface.

4 Check the functioning of the outdoor unit fan.

Outdoor unit fan ...	Action
Rotates continuously (without interruption)	DC fan motor assembly is OK. Return to the troubleshooting of the specific error and continue with the next procedure.

Outdoor unit fan ...	Action
Does not rotate or rotates for a short time	Continue with the next step.

5 Stop the unit via the central controller.

6 Turn OFF the respective circuit breaker.

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 238].

7 Check that the DC fan motor connectors (X1A on A4P for M1F and X1A on A5P for M2F) are properly connected to the PCB.

8 Unplug the DC fan motor connectors (X1A for M1F and X2A for M2F) of both fans and measure the resistance between the pins 1–2, 1–3, and 2–3 of the DC fan motor connectors.

Result: All measurements MUST be 32.2°Ω±5% at 20°C.

INFORMATION

Make sure that the wiring between the DC fan motor connector and the connector on the PCB is properly connected and NOT damaged (check continuity), see "7.2 Wiring diagram" [▸ 262].

INFORMATION

Winding resistance values above are given for reference. You should NOT be reading a value in kΩ or a short-circuit. Make sure that the propeller fan blade does NOT rotate, as this could affect resistance measurements.

9 Set the Megger voltage to 500 V DC or 1000 V DC.

10 Measure the insulation resistance for the motor terminals. Measurements between each phase and fan motor body (e.g. axle) MUST be >1000 MΩ.

Are the measured resistance values correct?	Action
Yes	Perform a check of the fan inverter PCB, see Checking procedures.
No	Replace the DC fan motor assembly, see "4.9.2 Repair procedures" [▸ 188].

Problem solved?

After all checking procedures listed above have been performed:

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.9.2 Repair procedures

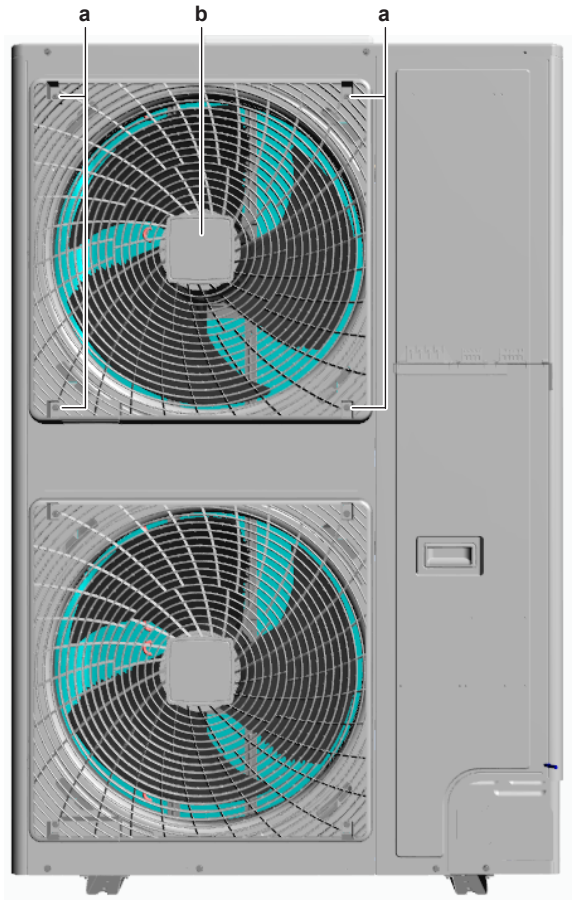
To remove the propeller fan blade assembly

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

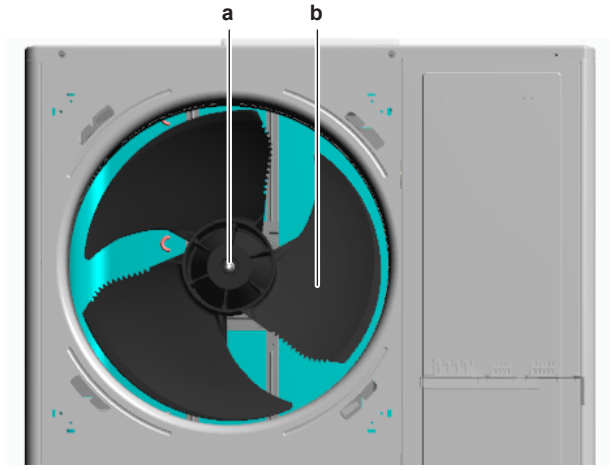
1 Remove the required plate work, see "4.10 Plate work" [▸ 191].

2 Remove the nuts that fix the air discharge grill and remove the air discharge grill.



a Nut
b Air discharge grill

3 Remove the nut that fixes the propeller fan blade assembly.



a Nut
b Propeller fan blade assembly

4 Pull and remove the propeller fan blade assembly from the DC fan motor assembly.

INFORMATION

Use a pulley remover if the propeller cannot be removed manually.

5 To install the propeller fan blade assembly, see "4.9.2 Repair procedures" [▸ 188].

To remove the DC fan motor assembly

1 Remove the propeller fan blade assembly from the DC fan motor assembly, see "4.9.2 Repair procedures" [▸ 188].

2 Remove the 4 screws that fix the DC fan motor assembly.

3 Remove the DC fan motor assembly from the unit.

4 To install the DC fan motor assembly, see "4.9.2 Repair procedures" [▸ 188].

To install the DC fan motor assembly

1 Install the DC fan motor assembly in the correct location.

2 Install and tighten the 4 screws.

3 Install the propeller fan blade assembly, see "4.9.2 Repair procedures" [▸ 188].

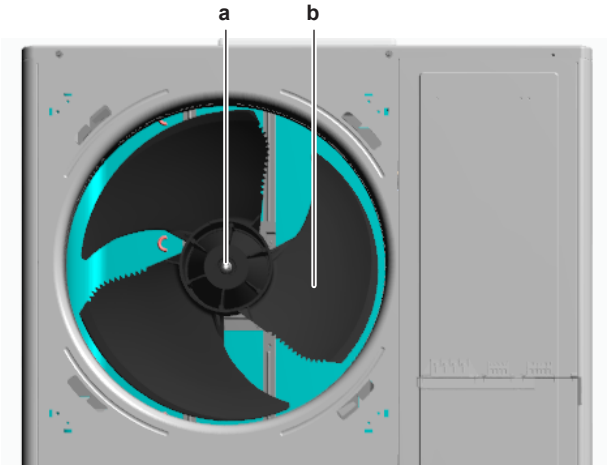
To install the propeller fan blade assembly

1 Install the propeller fan blade assembly on the DC fan motor assembly.

CAUTION

Do NOT install a damaged propeller fan blade assembly.

2 Install and tighten the nut to fix the propeller fan blade assembly.



a Nut
b Propeller fan blade assembly

3 Install the air discharge grill and fix it by tightening the nuts.

a Nut
b Air discharge grill

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "4.9.1 Checking procedures" [▸ 186] of the outdoor unit fan motor and continue with the next procedure.

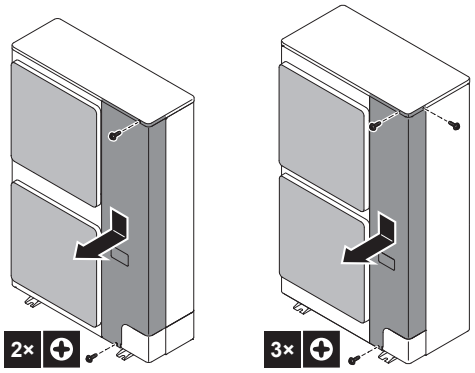
4.10 Plate work

4.10.1 Outdoor unit

To open the outdoor unit

DANGER: RISK OF ELECTROCUTION

DANGER: RISK OF BURNING/SCALDING



To remove the top plate

INFORMATION

This procedure is just an example and may differ on some details for your actual unit.

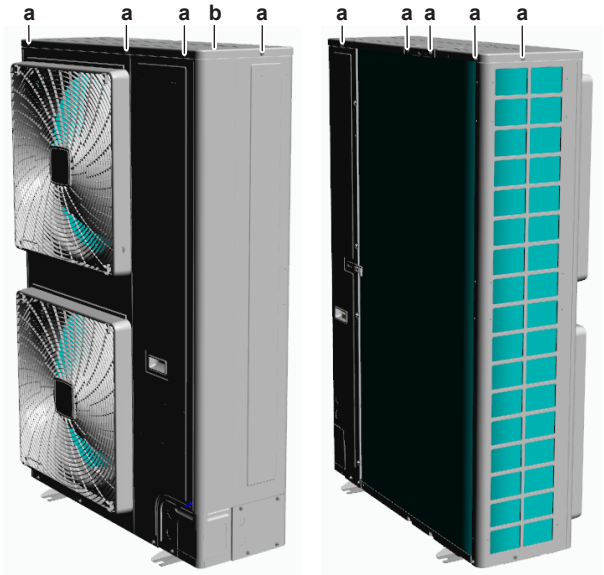
Prerequisite: Stop the unit operation via the central controller.

1 Turn OFF the respective circuit breaker.

DANGER: RISK OF ELECTROCUTION

Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

2 Loosen and remove the screws that fix the top plate.



a Screw
b Top plate

3 Remove the top plate.

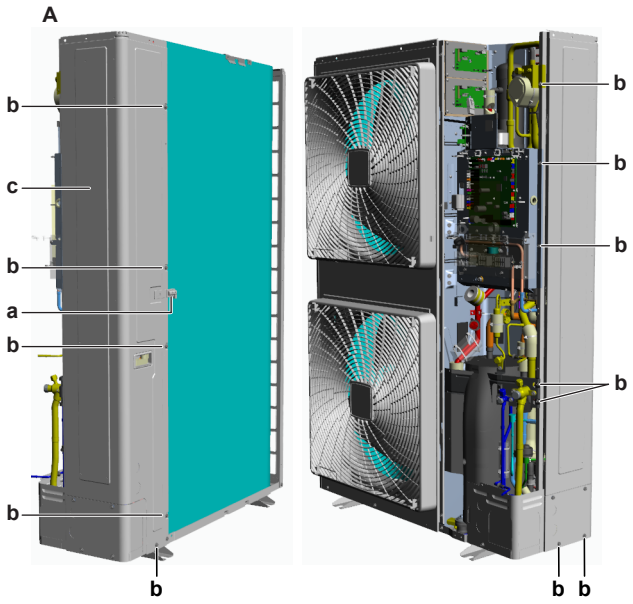
To remove the side plate

Prerequisite: Stop the unit operation via the central controller.

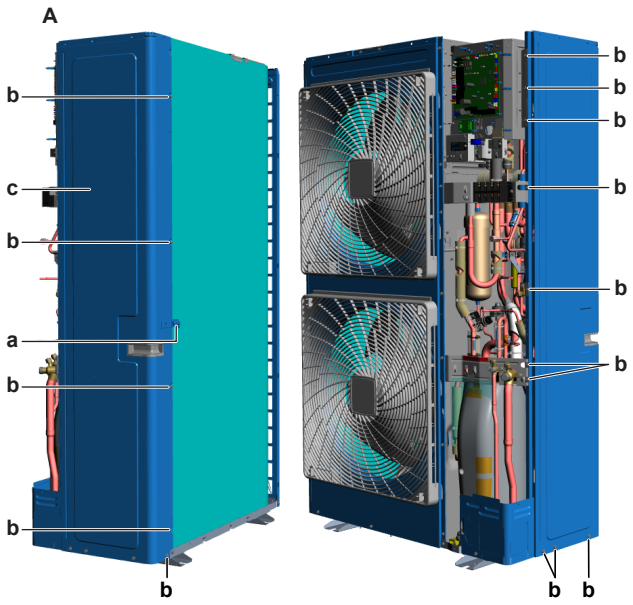
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Open the outdoor unit and remove the top plate, see "4.10 Plate work" [▸ 191].

1 Remove the air thermistor from its holder. Detach the air thermistor wiring from the side plate.



A 8 HP unit
a Air thermistor holder
b Screw
c Side plate



A 10+12 HP unit
a Air thermistor holder
b Screw
c Side plate

2 Remove the screws that fix the side plate assembly.

3 Remove the side plate assembly.

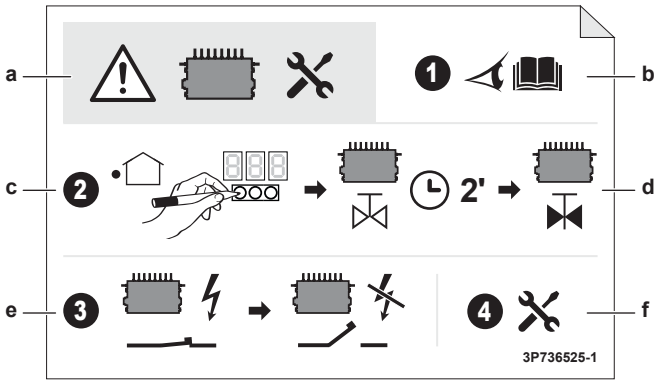
4.10.2 Safety valve box

To remove the plate work on the safety valve box

Before removing any plate work of the SV box (for checking, maintenance or repair purposes), the following steps MUST be performed:

WARNING

Never power off the unit for maintenance and service before the shut-off valves are closed.



a Caution for maintenance and servicing of SV unit
b Consult the installation manual or service manual
c Apply the field setting on the outdoor unit
d Wait for two minutes to allow the system to close the valves
e Turn off the system power
f Perform maintenance and servicing on the SV unit

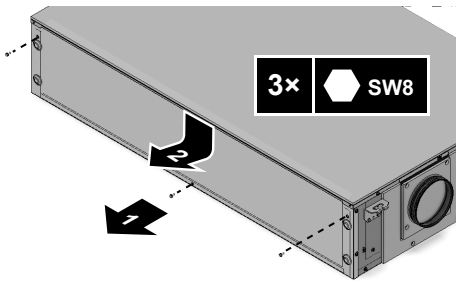
1. Consult the installation manual of the SV box.
2. At the outdoor unit, set the field setting 2-45-0 to 1 (default = 0).
3. Wait for at least 2 minutes to enable control to close ALL safety valves.
4. Stop the unit operation via the user interface.
5. Turn OFF the respective circuit breaker.

Once the appropriate checking, maintenance or repair has been finished, and ALL plate work is correctly installed on the SV box, perform the following steps:

1. Turn ON the power to the SV box.
2. At the outdoor unit set the field setting 2-45-1 back to 0.
3. Wait for at least 2 minutes before restarting the system.

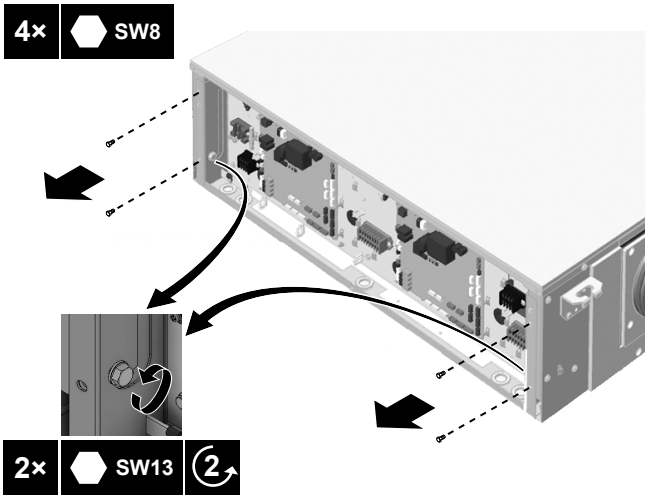
To remove the switch box cover

1. Loosen and remove the screws that fix the switchbox cover.
2. Remove the switchbox cover to access the PCB.

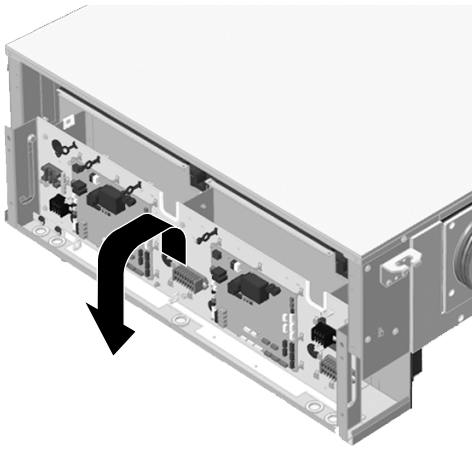


To lower the switch box

1. Remove the switch box cover.
2. Remove the 4 screws.
3. Store the screws in a safe place.
4. Loosen the M8 bolts 2 turns without removing them.



5 Lift the switch box, pull it forward and lower it.



4.11 Reactor

4.11.1 Checking procedures

To perform an electrical check of the reactor

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

1 Remove the required plate work, see "4.10 Plate work" [▸ 191].

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 238].

2 For 10+12 HP units ONLY: Access the back side of the switch box, see "4.10 Plate work" [▸ 191].

3 Visually check the reactor for any damage or burnt-out components. If any damage is found, replace the reactor, see "4.11.2 Repair procedures" [▸ 196].

4 Check the connections of the reactor on the inverter PCB and check continuity of the wires, see "7.2 Wiring diagram" [▸ 262].

5 For 8 HP units: Disconnect the Faston connectors from the reactor.

6 For 10+12 HP units: Loosen the screws and disconnect the wiring from the reactor.

7 Using a megger device of 500 V DC, check the insulation resistance. Make sure there is no earth leakage.

Is the measured insulation resistance correct?	Action
Yes	Continue with the next step.
No	Replace the reactor, see "4.11.2 Repair procedures" [▸ 196].

8 Measure the inductance of the reactor using an LCR meter.

Result: The inductance MUST be:

Unit	Measured inductance
8 HP	0.40~0.60 mH
10+12 HP	0.224~0.336 mH

Is the inductance measurement correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next step.
No	Replace the reactor, see "4.11.2 Repair procedures" [▸ 196].

4.11.2 Repair procedures

To remove the reactor

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

1 Remove the required plate work, see "4.10 Plate work" [▸ 191].

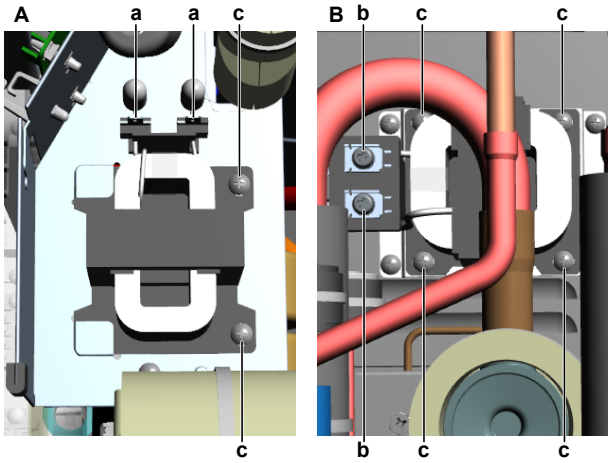
DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 238].

2 For 10+12 HP units ONLY: Access the back side of the switch box, see "4.10 Plate work" [▸ 191].

3 For 8 HP units: Disconnect the Faston connectors from the reactor.

4 For 10+12 HP units: Remove the screws and disconnect the wires from the reactor.



A 8 HP unit
B 10+12 HP unit
a Faston connector
b Screw (wiring)
c Screw (reactor)

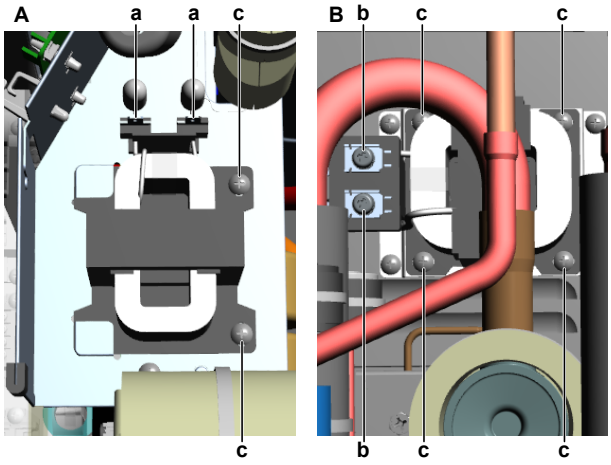
5 Remove the screws that fix the reactor to the switch box.

6 To install the reactor, see "4.11.2 Repair procedures" [▸ 196].

To install the reactor

1 Install the reactor on the correct location in the switch box.

2 Install the screws that fix the reactor to the switch box.



A 8 HP unit
B 10+12 HP unit
a Faston connector
b Screw (wiring)
c Screw (reactor)

3 For 8 HP units: Connect the wiring to the reactor using the Faston connectors.

4 For 10+12 HP units: Connect the wiring to the reactor. Install and tighten the screws to fix the wiring.

5 For 10+12 HP units ONLY: Assemble the switch box.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.12 Refrigerant high pressure sensor

4.12.1 Checking procedures

To perform an electrical check of the refrigerant pressure sensor

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1 Connect a pressure gauge to the high pressure service port.

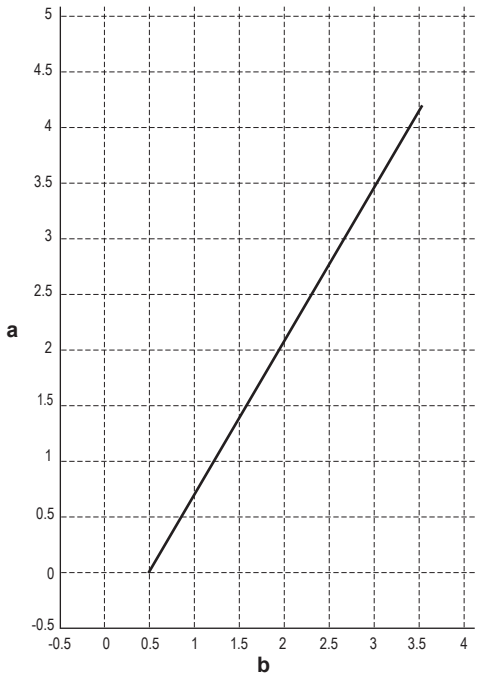
> **INFORMATION**
>
> When the unit is operating in heating mode, the high pressure port is the gas service port. When the unit is operating in cooling (defrost) mode, the high pressure port is the service port which is connected to the refrigerant pipe between the 4-way valve and the heat exchanger.

2 Turn ON the power of the unit.

3 Start the unit operation and let it operate for a while in stable conditions.

4 Read the pressure from the pressure gauge.

5 Using the graphic below, determine the expected sensor output voltage based on the pressure obtained in the previous step.



a Detected pressure (MPa)
b Output voltage (V)

V (DC)	Detected pressure MPa
0.5	0.01
0.6	0.15
0.7	0.29
0.8	0.42
0.9	0.56

V (DC)	Detected pressure MPa
1.0	0.70
1.1	0.84
1.2	0.98
1.3	1.11
1.4	1.25
1.5	1.39
1.6	1.53
1.7	1.67
1.8	1.80
1.9	1.94
2.0	2.08
2.1	2.22
2.2	2.36
2.3	2.49
2.4	2.63
2.5	2.77
2.6	2.91
2.7	3.05
2.8	3.18
2.9	3.32
3.0	3.46
3.1	3.60
3.2	3.74
3.3	3.87
3.4	4.01
3.5	4.15
3.6	4.29

6 Measure the voltage on X32A: pins 2–3 (= refrigerant pressure sensor output signal).

7 Check that the measured voltage is in line with the expected voltage through the read refrigerant pressure.

INFORMATION

Connect the service monitoring tool to the unit or use field settings mode 1 (see "7.9 Field settings" [▶ 292]) to monitor the high pressure.

If the measured output voltage value matches the voltage determined through the measured pressure, but the pressure via the service monitoring tool is NOT correct, replace the appropriate PCB.

The measured voltage is inside the expected range?	Action
Yes	Refrigerant pressure sensor is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Continue with the next step.

8 Unplug the refrigerant pressure sensor connector X32A and measure the voltage (power supply) between pins 1–3 on main PCB.

Result: The measured voltage MUST be +5 V DC.

Is the measured voltage +5 V DC?	Then
Yes	Replace the refrigerant pressure sensor, see "4.12.2 Repair procedures" [▸ 200].
No	Perform a check of the main PCB, see Main PCB.

4.12.2 Repair procedures

To remove the refrigerant pressure sensor

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 250].

Prerequisite: If needed, remove any parts or insulation to create more space for the removal.

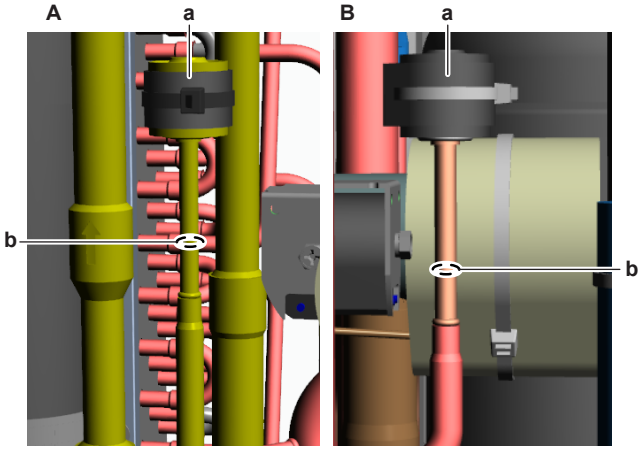
1 Cut all tie straps that fix the refrigerant pressure sensor harness.

2 Disconnect the refrigerant pressure sensor connector from the PCB.

3 Remove nearby thermistors from their holder.

4 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

5 Wrap a wet rag around the components near the refrigerant pressure sensor. Heat the brazing point of the refrigerant pressure sensor pipe using an oxygen acetylene torch and remove the refrigerant pressure sensor pipe from the refrigerant pipe using pliers.



A 8 HP unit
B 10+12 HP unit
a Refrigerant pressure sensor
b Refrigerant pressure sensor pipe

6 Stop the nitrogen supply when the piping has cooled down.

7 Remove the refrigerant pressure sensor.

INFORMATION

It is ALSO possible to cut the component pipe(s) using a pipe cutter. Make sure to remove the remaining component pipe end(s) from the refrigerant pipes by heating the brazing point(s) of the component pipe(s) using an oxygen acetylene torch.

8 Install a plug or cap on the refrigerant piping to avoid dirt or impurities from entering the piping.

9 To install the refrigerant pressure sensor, see "4.12.2 Repair procedures" [▸ 200].

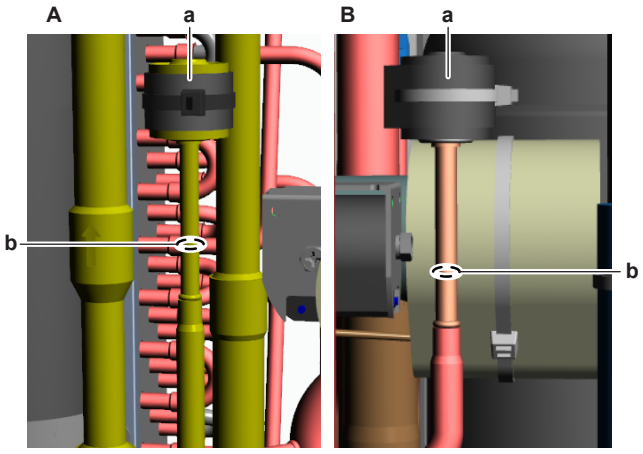
To install the refrigerant pressure sensor

1 Remove the plug or cap from the refrigerant piping and make sure it is clean.

2 Install the refrigerant pressure sensor in the correct location.

3 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

4 Wrap a wet rag around the refrigerant pressure sensor and any other components near the pressure sensor and solder the refrigerant pressure sensor pipe to the refrigerant pipe.



A 8 HP unit
B 10+12 HP unit
a Refrigerant pressure sensor
b Refrigerant pressure sensor pipe

CAUTION

Overheating the pressure sensor will damage or destroy it.

5 After soldering is done, stop the nitrogen supply after the component has cooled-down.

6 Re-install nearby thermistors in their holder.

7 Route the refrigerant pressure sensor harness towards the appropriate PCB.

8 Connect the refrigerant pressure sensor connector to the appropriate PCB.

9 Fix the refrigerant pressure sensor harness using new tie straps.

10 Perform a pressure test, see "5.2.1 Checking procedures" [▸ 245].

11 Add refrigerant to the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 250].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.13 Refrigerant low pressure sensor

4.13.1 Checking procedures

To perform an electrical check of the refrigerant pressure sensor

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1 Connect a pressure gauge to the low pressure service port.

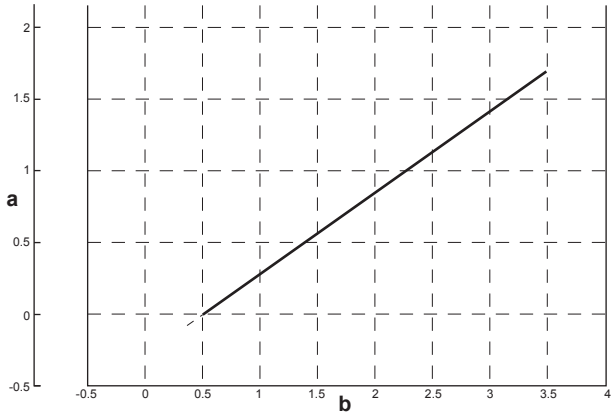
> **INFORMATION**
>
> When the unit is operating in heating mode, the low pressure port is the service port which is connected to the refrigerant pipe between the 4-way valve and the heat exchanger. When the unit is operating in cooling (defrost) mode, the low pressure port is the refrigerant charge port.

2 Turn ON the power of the unit.

3 Start the unit operation and let it operate for a while in stable conditions.

4 Read the pressure on the pressure gauge.

5 Using the graphic below, determine the expected sensor output voltage based on the pressure obtained in the previous step.



a Detected pressure (MPa)
b Output voltage (V)

V (DC)	Detected pressure (MPa)
0.3	–0.12
0.4	–0.07

V (DC)	Detected pressure (MPa)
0.5	–0.01
0.6	0.05
0.7	0.10
0.8	0.16
0.9	0.22
1.0	0.28
1.1	0.33
1.2	0.39
1.3	0.45
1.4	0.50
1.5	0.56
1.6	0.62
1.7	0.67
1.8	0.73
1.9	0.79
2.0	0.85
2.1	0.90
2.2	0.96
2.3	1.02
2.4	1.07
2.5	1.13
2.6	1.19
2.7	1.24
2.8	1.30
2.9	1.36
3.0	1.42
3.1	1.47
3.2	1.53
3.3	1.59
3.4	1.64
3.5	1.70

INFORMATION

The refrigerant pressure sensor connector MUST be plugged into the appropriate PCB.

6 Measure the voltage on X31A: pins 2–3 (= refrigerant pressure output signal) on the main PCB.

7 Check that the measured voltage is in line with the expected voltage through the read refrigerant pressure.

INFORMATION

Connect the service monitoring tool to the unit or use field settings mode 1-43 (see "7.9 Field settings" [▸ 292]) to monitor the low pressure.

If the measured output voltage value matches the voltage determined through the measured pressure, but the pressure via the service monitoring tool is NOT correct, replace the applicable PCB.

The measured voltage is inside the expected range?	Action
Yes	Refrigerant pressure sensor is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Continue with the next step.

8 Unplug the refrigerant pressure sensor connector X31A and measure the voltage (power supply) between pins 1–3 on main PCB.

Result: The measured voltage MUST be +5 V DC.

Is the measured voltage +5 V DC?	Then
Yes	Replace the refrigerant pressure sensor, see "4.13.2 Repair procedures" [▸ 204].
No	Perform a check of the main PCB, see Main PCB.

4.13.2 Repair procedures

To remove the refrigerant pressure sensor

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

Prerequisite: Recuperate the refrigerant from the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 250].

Prerequisite: If needed, remove any parts or insulation to create more space for the removal.

1 Cut all tie straps that fix the refrigerant pressure sensor harness.

2 Disconnect the refrigerant pressure sensor connector from the PCB.

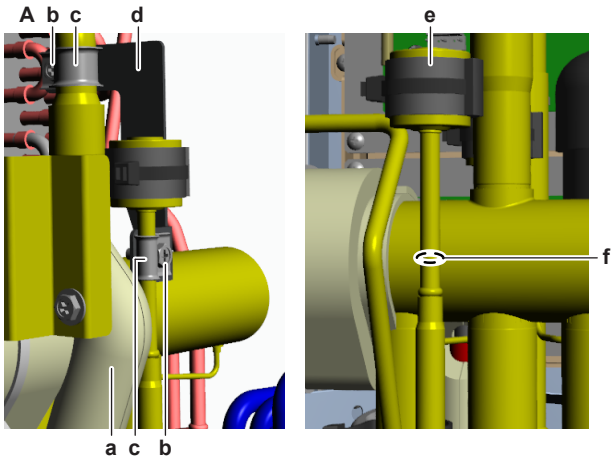
3 Remove nearby thermistors from their holder.

4 For 8 HP units ONLY:

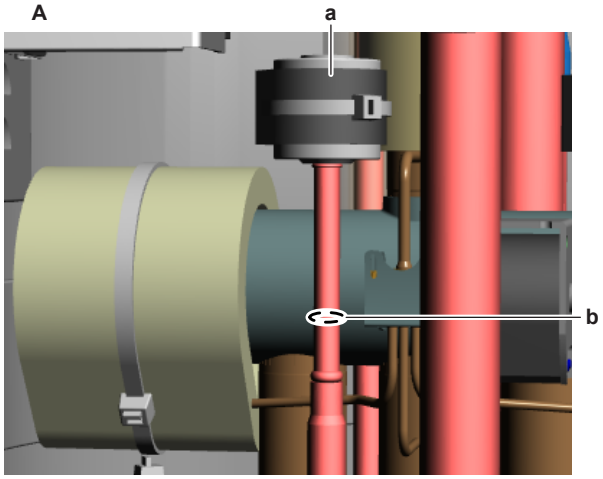
- Remove the insulation from the refrigerant piping.
- Remove the 2 screws and remove the 2 clips and support plate.

5 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

6 Wrap a wet rag around the components near the refrigerant pressure sensor. Heat the brazing point of the refrigerant pressure sensor pipe using an oxygen acetylene torch and remove the refrigerant pressure sensor pipe from the refrigerant pipe using pliers.



A 8 HP unit
a Insulation
b Screw
c Clip
d Support plate
e Refrigerant pressure sensor
f Refrigerant pressure sensor pipe



A 10+12 HP unit
a Refrigerant pressure sensor
b Refrigerant pressure sensor pipe

7 Stop the nitrogen supply when the piping has cooled down.

8 Remove the refrigerant pressure sensor.

> **INFORMATION**
>
> It is ALSO possible to cut the component pipe(s) using a pipe cutter. Make sure to remove the remaining component pipe end(s) from the refrigerant pipes by heating the brazing point(s) of the component pipe(s) using an oxygen acetylene torch.

9 Install a plug or cap on the refrigerant piping to avoid dirt or impurities from entering the piping.

10 To install the refrigerant pressure sensor, see "4.13.2 Repair procedures" [▸ 204].

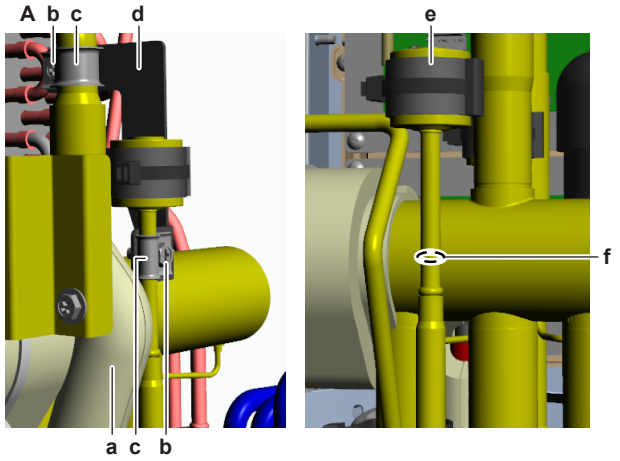
To install the refrigerant pressure sensor

1 Remove the plug or cap from the refrigerant piping and make sure it is clean.

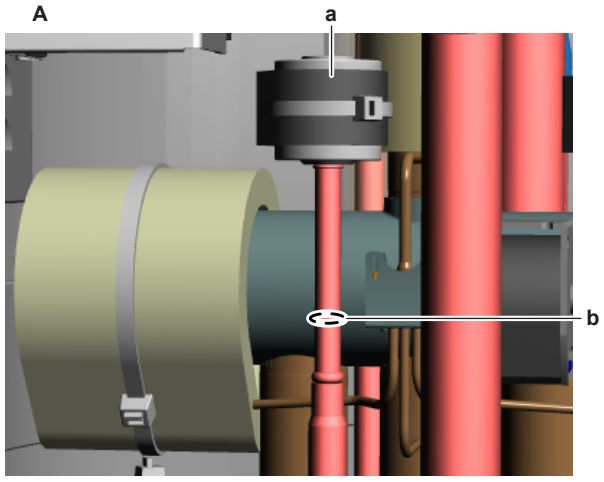
2 Install the refrigerant pressure sensor in the correct location.

3 Supply nitrogen to the refrigerant circuit. The nitrogen pressure MUST NOT exceed 0.02 MPa.

4 Wrap a wet rag around the refrigerant pressure sensor and any other components near the pressure sensor and solder the refrigerant pressure sensor pipe to the refrigerant pipe.



A 8 HP unit
a Insulation
b Screw
c Clip
d Support plate
e Refrigerant pressure sensor
f Refrigerant pressure sensor pipe



A 10+12 HP unit
a Refrigerant pressure sensor
b Refrigerant pressure sensor pipe

CAUTION

Overheating the pressure sensor will damage or destroy it.

5 After soldering is done, stop the nitrogen supply after the component has cooled-down.

6 For 8 HP units ONLY:

- Install the support plate and 2 clips in the correct location on the pipes. Install and tighten the 2 screws to fix the clips and support plate.
- Install the insulation on the refrigerant piping.

7 Route the refrigerant pressure sensor harness towards the appropriate PCB.

8 Connect the refrigerant pressure sensor connector to the appropriate PCB.

9 Fix the refrigerant pressure sensor harness using new tie straps.

10 Perform a pressure test, see "5.2.1 Checking procedures" [▸ 245].

11 Add refrigerant to the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 250].

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.14 Safety valve box

4.14.1 Safety valve box damper motor

Checking procedures

To perform an electrical check of the damper motor

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1 Disconnect the damper motor connector X11A from the SV box main PCB.

2 Measure the resistance between the wires of the damper motor connector.

Result: The measured resistance MUST be 12.7 kΩ ± 10%.

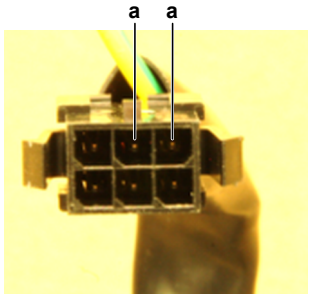
Damper motor resistance measurement is correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Continue with the next step.

3 Lower the switch box, see "4.10 Plate work" [▸ 191].

4 Disconnect the intermediate connector X1Y of the damper assembly.

5 Measure the resistance between the damper motor (white) wires of the intermediate connector.

Result: The measured resistance MUST be 12.7 kΩ ± 10%.



a Pins for damper motor measurement

Damper motor resistance measurement is correct?	Action
Yes	Replace the damper assembly wiring harness, see "Repair procedures" [▸ 208].
No	Replace the damper assembly, see "Repair procedures" [▸ 208].

Repair procedures

As the damper motor, limit switches and their wiring harness to intermediate connector X1Y are ALL part of the damper assembly, replace the complete damper assembly when any of these parts need to be replaced.

To remove the damper assembly

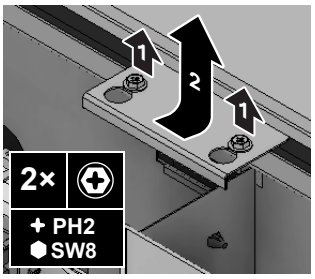
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

Prerequisite: Lower the switch box, see "4.10 Plate work" [▸ 191].

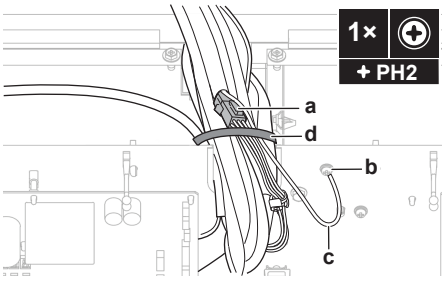
1 Remove the leftmost wire fixing plate. It holds the damper wire in place.

- Loosen the screws lightly without removing them.
- Slide and lift the plate.



2 Cut the cable tie that fixes the intermediate connector X1Y.

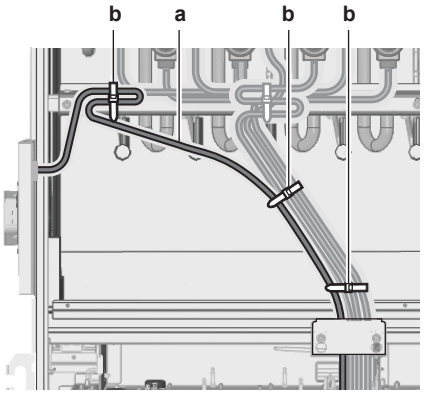
3 Disconnect the intermediate connector X1Y of the damper assembly.



a Intermediate connector X1Y
b Earth wire screw
c Damper assembly earth wire
d Cable tie

4 Loosen and remove the damper earth wire screw and detach the damper assembly earth wire.

5 Cut the cable ties that fix the damper assembly wire, and the one that bundles the damper assembly wire.

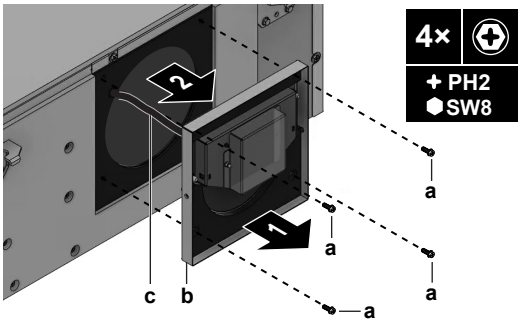


a Damper assembly wire
b Tie strap

6 Remove the 4 screws from the damper assembly.

7 Pull the damper assembly from the unit. Do NOT use excessive force, as the wires on the back of the damper assembly can get stuck inside the unit.

8 Carefully guide the wires from the inside to the outside through the small hole in the unit's metal plate. Take care NOT to damage the connector and the earth wire connection.

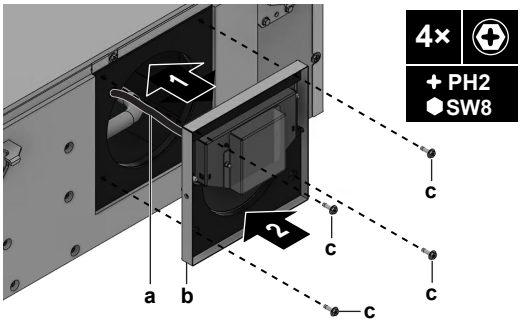


a Screw
b Damper assembly
c Damper assembly wire

9 To install the damper assembly, see "Repair procedures" [▸ 208].

To install the damper assembly

1 Carefully guide the damper assembly wires from the outside to the inside through the small hole in the unit's metal plate. Take care NOT to damage the connector and the earth wire connection.



a Damper assy wire
b Screw
c Damper assy

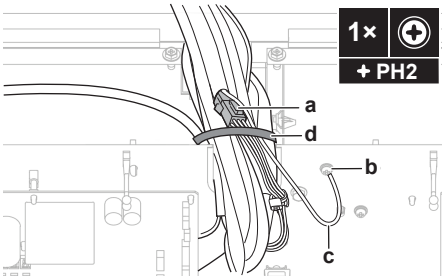
2 Position the damper assembly onto the unit. Take care NOT to pinch and damage the wires between the damper and the unit.

3 Pull the wires through until the foam insulation fits properly in the small hole in the unit's metal plate. This makes the connection airtight.

4 Install and tighten the 4 screws to fix the damper assembly.

5 Connect the damper assembly wire to the intermediate connector X1Y.

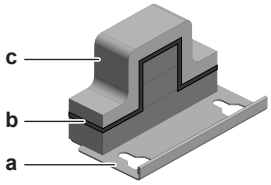
6 Position the damper assembly earth wire and tighten the damper earth wire screw.



a Intermediate connector X1Y
b Earth wire screw
c Damper assembly earth wire
d Cable tie

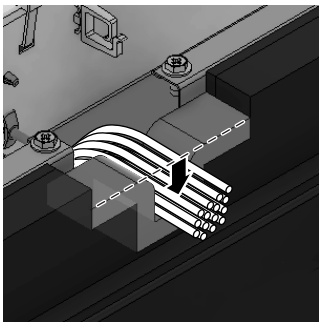
7 Install a cable tie to fix the intermediate connector X1Y. Make sure the wire and connector do NOT touch any sharp edges.

8 Restore the insulation of the wiring fixing plate by applying the small accessory insulation piece on top of the old, flattened insulation.



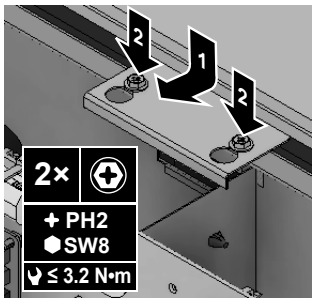
a Wire fixing plate
b Old insulation
c New insulation (accessory)

9 Position the wires as far down as possible in the opening on top of which the wire fixing plate will be installed.

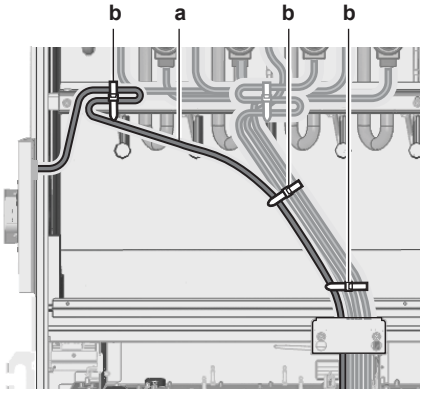


10 Position the wire fixing plate over the screws and slide it in place. Make sure the backside is aligned properly with the insulation of the switch box, in order to make it airtight.

11 Tighten the 2 screws to fix the wire fixing plate.



12 Attach the damper assembly wire in the indicated places using new tie straps. Make sure the wire is tight, but do not pull on it excessively.



a Damper assembly wire
b Tie strap

13 Leave 20 cm of wire between the fixation (tie strap) and the entry into the switch box in order to be able to put back the switch box.

14 Bundle the damper assembly wire if needed using a new tie strap.

15 Install the switch box back in position.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To remove the damper assembly wiring harness

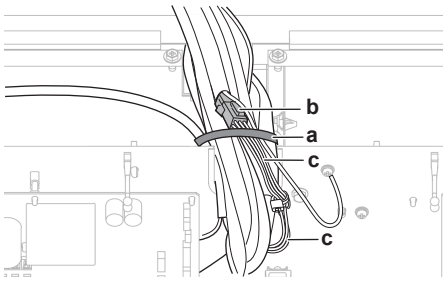
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

Prerequisite: Lower the switch box of the SV box, see "4.10 Plate work" [▸ 191].

1 Cut the cable tie that fixes the intermediate connector X1Y.

2 Disconnect the intermediate connector X1Y of the damper assembly.



a Cable tie
b Connector X1Y
c Damper assembly wiring harness

3 Disconnect the connectors of the damper motor and both limit switches from the SV box main PCB.

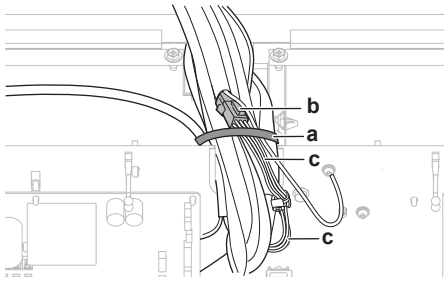
4 Cut all tie straps that fix the damper assembly wiring harness.

5 Remove the damper assembly wiring harness from the unit.

6 To install the damper assembly wiring harness, see "Repair procedures" [▸ 208].

To install the damper assembly wiring harness

1 Connect the damper assembly wiring harness to the intermediate connector X1Y of the damper assembly.



a Cable tie
b Connector X1Y
c Damper assembly wiring harness

2 Route the other end of the wiring harness towards the SV box main PCB.

3 Connect the wiring harness to the damper motor and limit switch connectors on the main PCB.

INFORMATION

Use the wiring diagram and connection diagram for correct installation of the connectors, see "7.2 Wiring diagram" [▸ 262].

WARNING

When reconnecting a connector to the PCB, make sure to connect it on the correct location and do NOT apply force, as this may damage the connector or connector pins of the PCB.

4 Install new tie straps to fix the damper assembly wiring harness.

5 Install a cable tie to fix the intermediate connector X1Y. Make sure the wire and connector do NOT touch any sharp edges.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.14.2 Safety valve box expansion valve

Checking procedures

INFORMATION

It is recommended to perform the checks in the listed order.

To perform a mechanical check of the expansion valve

Prerequisite: Power OFF the unit for 3 minutes. Then turn ON the unit and listen to the expansion valve assembly. If the expansion valve does NOT make a latching sound, continue with the electrical check of the expansion valve, see "Checking procedures" [▸ 212].

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1 Remove the expansion valve coil from the expansion valve body, see "Repair procedures" [▸ 216].

2 Slide the expansion valve magnet over the expansion valve body and gently rotate the magnet clockwise/counterclockwise to manually close/open the expansion valve.

INFORMATION

After the check, remove the magnet from the expansion valve body and install the expansion valve coil on the expansion valve body. Make sure that the expansion valve coil is correctly installed on the expansion valve body.

INFORMATION

It is highly recommended to perform a power reset after checking the valve using a magnet.

Does the expansion valve open?	Action
Yes	Perform an electrical check of the expansion valve, see "Checking procedures" [▸ 212].
No	Replace the SV box, see Installation manual of the SV box.

To perform an electrical check of the expansion valve

Prerequisite: First perform a mechanical check of the expansion valve, see "Checking procedures" [▸ 212].

1 Make sure that the valve coil is firmly slid onto the valve body.

2 Disconnect the electrical connector of the expansion valve coil from the appropriate PCB and measure the resistance of all windings (between the pins of each phase (wire) and the common wire) using a multi meter. All measurements MUST be approximately the same.

A1P

Expansion valve name	Symbol	Connector	Winding resistance	SV1A	SV4A	SV6A	SV8A
Safety gas	Y4E	X33A	150±15 Ω	X	X	X	X
Safety liquid	Y5E	X34A	150±15 Ω				
Safety gas	Y9E	X35A	150±15 Ω		X	X	X
Safety liquid	Y10E	X36A	150±15 Ω				

Expansion valve name	Symbol	Connector	Winding resistance	SV1A	SV4A	SV6A	SV8A
Safety gas	Y14E	X37A	150±15 Ω		X	X	X
Safety liquid	Y15E	X38A	150±15 Ω				
Safety gas	Y19E	X39A	150±15 Ω		X	X	X
Safety liquid	Y20E	X40A	150±15 Ω				

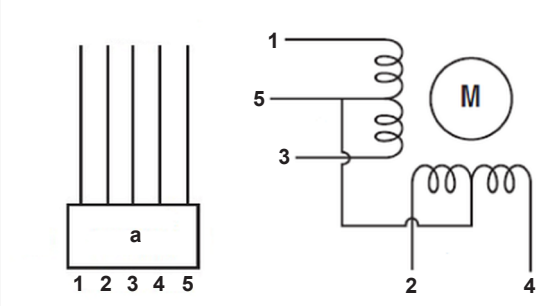
A2P

Expansion valve name	Symbol	Connector	Winding resistance	SV1A	SV4A	SV6A	SV8A
Safety gas	Y24E	X33A	150±15 Ω			X	X
Safety liquid	Y25E	X34A	150±15 Ω				
Safety gas	Y29E	X35A	150±15 Ω			X	X
Safety liquid	Y30E	X36A	150±15 Ω				
Safety gas	Y34E	X37A	150±15 Ω				X
Safety liquid	Y35E	X38A	150±15 Ω				
Safety gas	Y39E	X39A	150±15 Ω				X
Safety liquid	Y40E	X40A	150±15 Ω				

INFORMATION

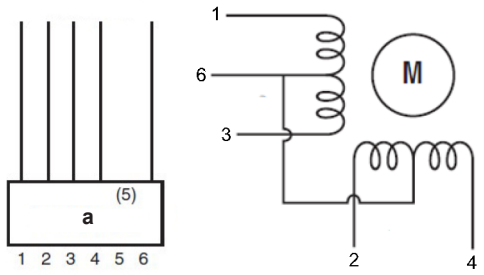
Below are shown examples of the resistance measurements in which the common wire is connected to pin 5 or to pin 6 of the expansion valve coil connector. Connections may differ according to the type of expansion valve.

- Connector pin 1-5,
- Connector pin 2-5,
- Connector pin 3-5,
- Connector pin 4-5.



a Connector

- Connector pin 1-6,
- Connector pin 2-6,
- Connector pin 3-6,
- Connector pin 4-6.



a Connector

3 Check the insulation resistance of the coil by measuring the resistance between the pins of each phase (1, 2, 3, 4) and GND on the unit.

Result: None of the measurements should be short-circuit.

WARNING

When reconnecting a connector to the PCB, make sure to connect it on the correct location and do NOT apply force, as this may damage the connector or connector pins of the PCB.

Is the measured resistance correct?	Action
Yes	Perform an operation check of the expansion valve, see "4.6.1 Checking procedures" [▸ 169].
No	Replace the expansion valve coil, "4.6.2 Repair procedures" [▸ 173].

To perform an operation check of the expansion valve

Prerequisite: First perform an electrical check of the expansion valve, see "Checking procedures" [▸ 212].

1 Turn ON the power of the unit.

INFORMATION

When power is switched ON, PCB checks all expansion valve coil windings by current check. If winding is short or open, expansion valve error is triggered.

2 Start the unit operation via the central controller.

3 With the unit operating, connect the service monitoring tool to the unit.

4 When the expansion valve is closed, check the valve inlet and outlet for any leaks. Replace the SV box if any leaks are found, see SV box Installation manual.

5 Wait for the PCB to command the expansion valve to open (pulse output to expansion valve visible on service monitoring tool).

INFORMATION

If the PCB does NOT command the expansion valve to open or close (when it is supposed to), perform a check of the appropriate thermistors and pressure sensors (as their measurements control the operation of the expansion valve(s)).

6 While in opening or closing sequence each expansion valve winding (Φ1, 2, 3, 4) is supplied with 12 V DC from the PCB. You will need a good multimeter, where its range is set to about 20 V DC, and during opening or closing

sequence you may be able to measure the supply voltage for a short time. If you set the multimeter range to Auto, then most likely you may NOT read a value between switching ranges. The best way to check is to feel the movement of the valve by touching, rather than trying to measure the driving voltage.

- Opening sequence for safety gas expansion valves and safety liquid expansion valves:
  Valve closing: 1 > 2 > 3 > 4 > 1
  Valve opening: 4 > 3 > 2 > 1 > 4

Phase	Energizing status			
	1	2	3	4
Φ1	ON	OFF	OFF	ON
Φ2	ON	ON	OFF	OFF
Φ3	OFF	ON	ON	OFF
Φ4	OFF	OFF	ON	ON

7 Check if the expansion valve is open. Check with a contact thermometer (or by touching) if refrigerant flows through the expansion valve.

Is the expansion valve open?	Action
Yes	Component is OK. Return to the troubleshooting of the specific error and continue with the next step.
No	Replace the SV box, see SV box Installation manual.

Problem solved?

After all checking procedures listed above have been performed:

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

Repair procedures

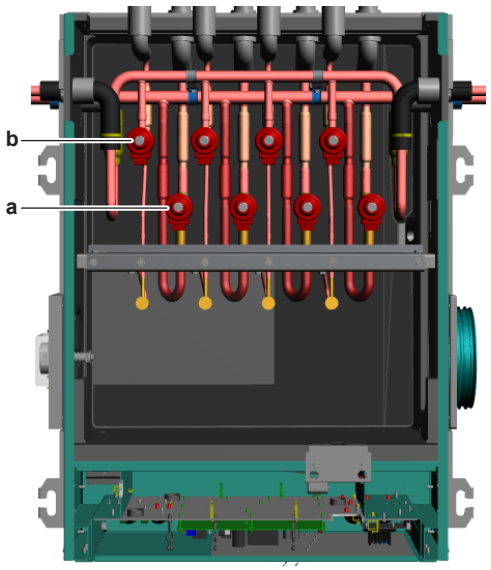
To remove the expansion valve coil

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1 If needed, remove any parts or insulation to create more space for the removal.



a Safety gas expansion valve coil
b Safety liquid expansion valve coil

2 Pull the expansion valve coil to remove it from the expansion valve body.

> **INFORMATION**
>
> It may be needed to turn the expansion valve coil 1/8 turn counter clockwise to unlock it. Make sure to note the correct orientation (position) of the expansion valve coil before removal.

3 Cut all tie straps that fix the expansion valve coil harness.

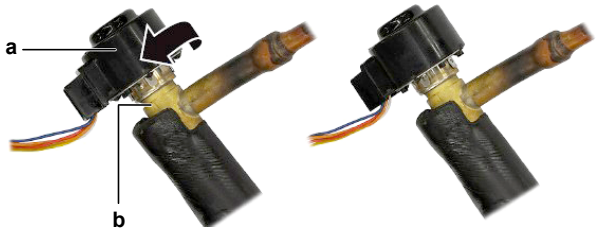
4 Disconnect the expansion valve coil connector from the appropriate PCB. See "To perform an electrical check of the expansion valve" [▸ 212] for an overview of the expansion valve connectors and their locations.

5 To install the expansion valve coil, see "Repair procedures" [▸ 216].

To install the expansion valve coil

1 Install the expansion valve coil on the expansion valve body.

> **INFORMATION**
>
> Turn the expansion valve coil 1/8 turn clockwise to lock it on the expansion valve body.



a Expansion valve coil
b Pipe

2 Route the expansion valve coil harness towards the appropriate PCB.

3 Connect the expansion valve coil connector to the appropriate PCB.

WARNING

When reconnecting a connector to the PCB, make sure to connect it on the correct location and do NOT apply force, as this may damage the connector or connector pins of the PCB.

4 Fix the expansion valve coil harness using new tie straps.

5 Install the insulation cap on the expansion valve coil (if applicable).

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "Checking procedures" [▸ 212] of the expansion valve and continue with the next procedure.

4.14.3 Safety valve box limit switch

Checking procedures

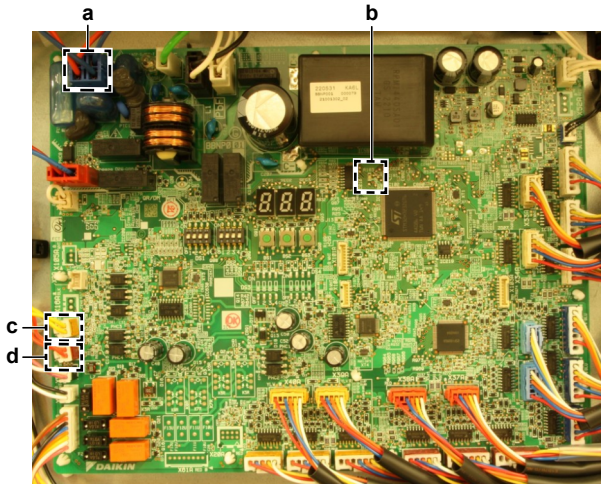
To perform an electrical check of the limit switch

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1 Turn ON the power of the unit.

2 Disconnect the connector X1A from the SV box main PCB.



a Connector X1A
b HAP LED
c Limit switch K1 connector on terminal X17A
d Limit switch K2 connector on terminal X18A

3 Confirm that the HAP LED of the main PCB is OFF.

4 Disconnect both limit switch connectors from the terminals X17A (K1) and X18A (K2) on the SV box main PCB.

5 Connect the connector of the limit switch K1 (yellow wires) to the terminal X18A on the main PCB.

6 Measure the resistance between the pins of the (disconnected) limit switch K2 connector (red wires).

Result: The measured resistance MUST be 0 Ω (limit switch closed).

7 Reconnect the connector X1A to the SV box main PCB.

Result: HAP LED of the main PCB starts blinking and the damper motor turns 2 revolutions.

8 While the damper motor is rotating, measure the resistance between the pins of the (disconnected) limit switch K2 connector (red wires).

Result: The measured resistance MUST change from 0 Ω (limit switch closed) to OL (limit switch open) and back for 2 times.

9 Once damper motor has stopped rotating, again disconnect the connector X1A from the SV box main PCB.

10 Confirm that the HAP LED of the main PCB is OFF.

11 Disconnect the connector of the limit switch K1 (yellow wires) from the terminal X18A on the main PCB.

12 Connect the connector of the limit switch K2 (red wires) to the terminal X17A on the main PCB.

13 Measure the resistance between the pins of the (disconnected) limit switch K1 connector (yellow wires).

Result: The measured resistance MUST be OL (limit switch open).

14 Reconnect the connector X1A to the SV box main PCB.

Result: HAP LED of the main PCB starts blinking and the damper motor turns 2 revolutions.

15 While the damper motor is rotating, measure the resistance between the pins of the (disconnected) limit switch K1 connector (yellow wires).

Result: The measured resistance MUST change from OL (limit switch open) to 0 Ω (limit switch closed) and back for 2 times.

16 Once damper motor has stopped rotating, again disconnect the connector X1A from the SV box main PCB.

17 Confirm that the HAP LED of the main PCB is OFF.

18 Reconnect the connector of the limit switch K1 (yellow wires) to the terminal X17A and the connector of the limit switch K2 (red wires) to the terminal X18A on the main PCB.

19 Reconnect the connector X1A to the SV box main PCB.

Result: HAP LED of the main PCB starts blinking and the damper motor does NOT rotate (normal state).

Limit switch resistance measurements are correct?	Action
Yes	Limit switches is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Continue with the next step.

20 Lower the switch box of the SV box, see "4.10 Plate work" [▸ 191].

21 Disconnect the intermediate connector X1Y from the damper assembly.

22 Disconnect both limit switch connectors from the terminals X17A (K1) and X18A (K2) on the SV box main PCB.

23 On the damper assembly wiring harness, check that ALL wiring is correctly installed and measure the continuity between the intermediate connector X1Y and the limit switch connectors (disconnected from the main PCB).

Damper assembly wiring harness is OK?	Action
Yes	Replace the damper assembly, see "Repair procedures" [▸ 208].
No	Replace the damper assembly wiring harness, see "Repair procedures" [▸ 208].

Repair procedures

As the limit switches are part of the damper assembly, replace the complete damper assembly when a limit switch needs to be replaced, see "Repair procedures" [▸ 208].

4.14.4 Safety valve box main PCB

Checking procedures

> **INFORMATION**
> It is recommended to perform the checks in the listed order.

To perform a power check of the main PCB

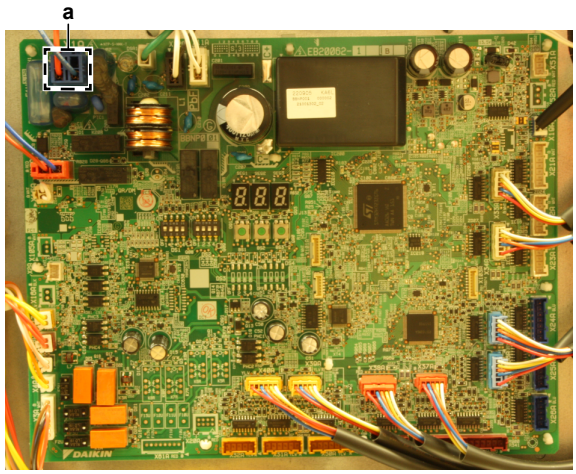
Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1. Turn ON the power of the SV box.
2. Measure the voltage on connector X1A of the SV box main PCB.

   Result: The measured voltage MUST be 230 V AC±10%.



a Connector X1A

Does the SV box main PCB receive power?	Action
Yes	Return to "Checking procedures" [▸ 220] of the SV boxx main PCB and continue with the next procedure.
No	Continue with the next step.

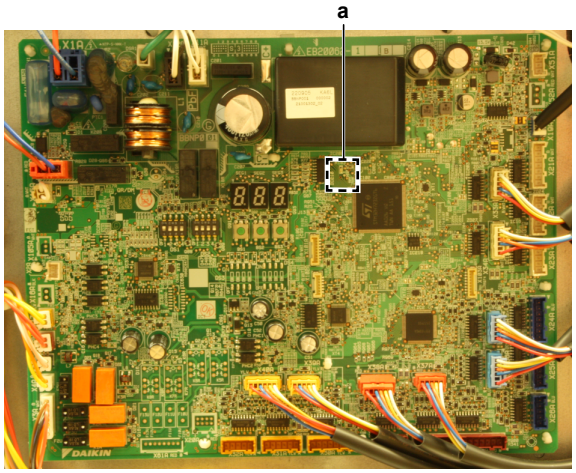
3 Check the power supply to the SV box, see "5.1.1 Checking procedures" [▸ 237].

Does the SV box receive power?	Action
Yes	Correct the wiring from the main power supply terminal to the SV box main PCB, see "5.1.2 Repair procedures" [▸ 243].
No	Adjust the power supply to the SV boxx, see "5.1.2 Repair procedures" [▸ 243].

To check the HAP LED of the main PCB

Prerequisite: First perform a power check of the SV box main PCB, see "Checking procedures" [▸ 220].

1 Locate the HAP LED on the SV box main PCB.



a HAP LED

Does the HAP LED blink in regular intervals (approximately 1 Hz)?	Action
Yes	Return to "Checking procedures" [▸ 220] of the SV box main PCB and continue with the next procedure.
No	Replace the SV box main PCB, see "Repair procedures" [▸ 226].

To check if the correct spare part is installed

Prerequisite: First perform all earlier checks of the SV box main PCB, see "Checking procedures" [▸ 220].

1 Visit your local spare parts webbank.

2 Enter the model name of your unit and check if the installed spare part number corresponds with the spare part number indicated in the webbank.

Is the correct spare part for the SV box main PCB installed?	Action
Yes	Return to "Checking procedures" [▸ 220] of the SV box main PCB and continue with the next procedure.
No	Replace the SV box main PCB, see "Repair procedures" [▸ 226].

To check the wiring of the main PCB

Prerequisite: First perform all earlier checks of the SV box main PCB, see "Checking procedures" [▸ 220].

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

1. Check that all wires are properly connected and that all connectors are fully plugged-in.
2. Check that no connectors or wires are damaged.
3. Check that the wiring corresponds with the wiring diagram, see "7.2 Wiring diagram" [▸ 262].

INFORMATION

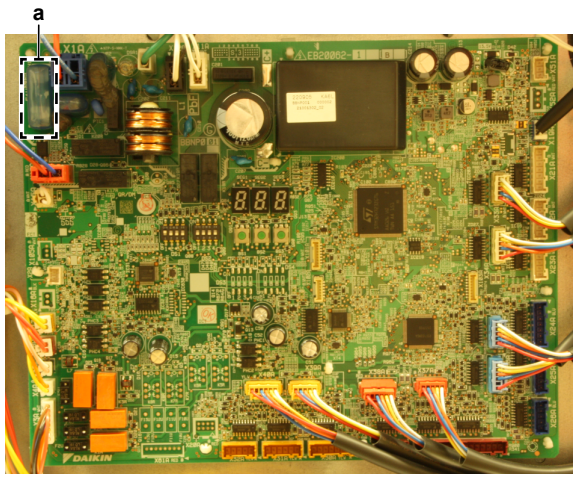
Correct the wiring as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "Checking procedures" [▸ 220] of the SV box main PCB and continue with the next procedure.

To check the fuse of the main PCB

Prerequisite: First perform all earlier checks of the SV box main PCB, see "Checking procedures" [▸ 220].

1. Measure the continuity of the fuse. If no continuity is measured, the fuse has blown.



a Fuse

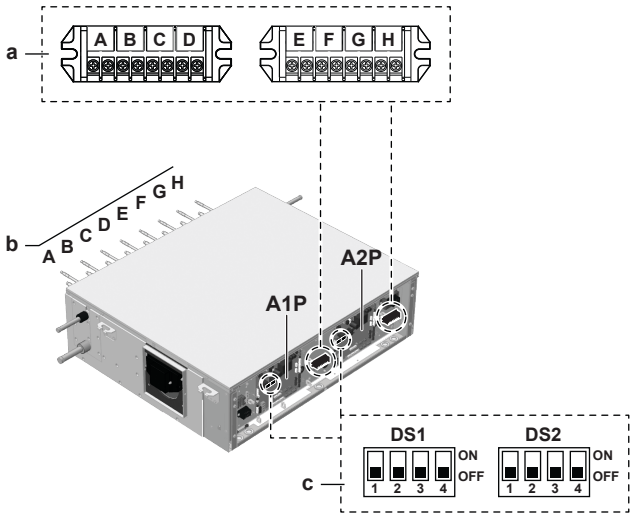
Blown fuse on the SV box main PCB?	Action
Yes	Replace the blown fuse, see "Repair procedures" [▸ 226].
No	Return to "Checking procedures" [▸ 220] of the SV box main PCB and continue with the next procedure.

To check the DIP switches of the main PCB

1 Check the correct position of the DIP switches as described below. Correct as needed.

DIP switch location

The DIP switches are located on the PCBs A1P, A2P (SV6~8A).



a Terminal for interconnection wiring to indoor unit
b Branch pipe port (A, B, C, ...)
c DIP switches

To set the DIP switches for branch pipe ports to which NO indoor unit is connected

Change position of the DIP switch at power OFF (HAP LED OFF). Disconnect connector X1A on the appropriate PCB.

Setting for branch pipe ports to which NO indoor unit is connected[a]								
	DS1 (A1P)				DS1 (A2P)			
	1	2	3	4	1	2	3	4
SV1A	A							
SV4A		B	C	D				
SV6A					E	F		
SV8A							G	H
	Target branch pipe port							

[a] **ON**=NOT connected / **OFF**=connected (factory default)

Note: The SV1A unit requires no DIP switch setting. The factory default setting can be used for any indoor unit connected to the branch port.

Example	When connecting an indoor unit to branch pipe ports A and B, but NOT connecting an indoor unit to branch pipe ports C and D.	

To set the DIP switches when joining branch pipe ports

This is required for connection with e.g. FXMA200 and FXMA250.

Change position of the DIP switch at power OFF (HAP LED OFF). Disconnect connector X1A on the appropriate PCB.

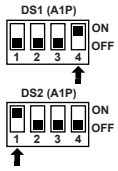
Setting when joining branch pipe ports[a]				
	DS2 (A1P)		DS2 (A2P)	
	1	2	1	2
SV1A				
SV4A	A+B	C+D		
SV6A			E+F	
SV8A				G+H
	Target branch pipe ports			

[a] **ON**=joined / **OFF**=NOT joined (factory default)

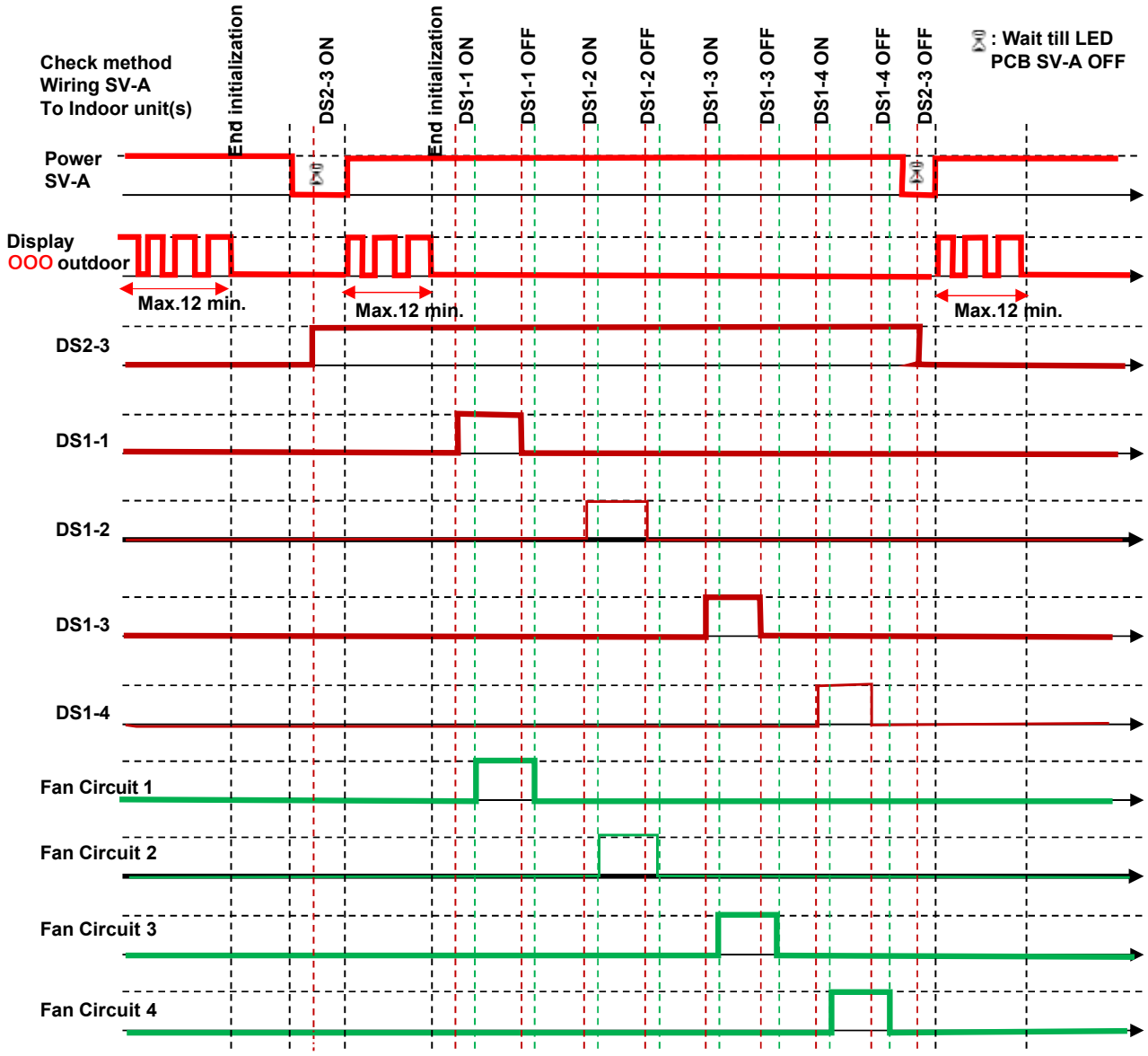
Note: When joining branch pipe ports, ONLY the combinations in above table are possible. E.g.: it is NOT possible to join ports B and C.

Example	When joining branch pipe ports A and B.	

Examples

1.	When connecting an indoor unit to branch pipe ports A, B, and D, but NOT connecting an indoor unit to branch pipe port C.	
2.	When joining branch pipe ports A and B. Connecting an indoor unit to the joined branch pipe ports A and B, also to branch pipe port C, but NOT connecting an indoor unit to branch pipe port D.	

Function description when changing DIP switch DS2-3



Circuit 1 = circuit A, E. Circuit 2 = circuit B, F. Circuit 3 = circuit C, G. Circuit 4 = circuit D, H (respectively for A1P, A2P).

To power OFF A1P, A2P: disconnect connector X1A.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "Checking procedures" [▶ 220] of the SV box main PCB and continue with the next procedure.

Problem solved?

After all checking procedures listed above have been performed:

Is the problem solved?	Action
Yes	No further actions required.

Is the problem solved?	Action
No	Return to the troubleshooting of the specific error and continue with the next procedure.

Repair procedures

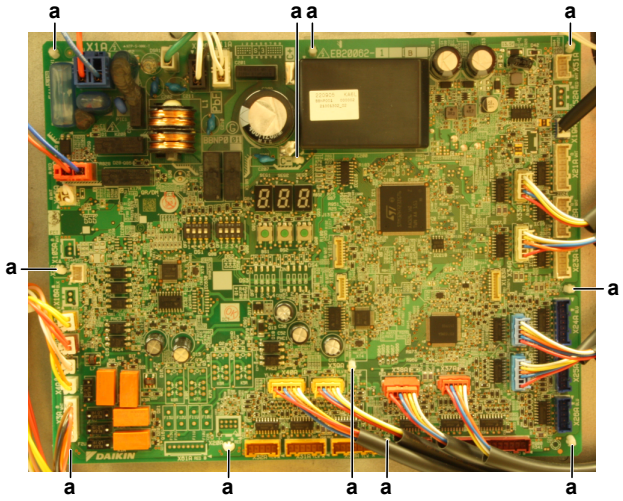
To remove the main PCB

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1. Disconnect all connectors from the SV box main PCB.
2. Remove the bridged connector X15A. Keep for reuse.
3. Remove the screw and disconnect the ground wire from the SV box.
4. Carefully pull the SV box main PCB at the side and unlatch the PCB supports one by one using a small pair of pliers.



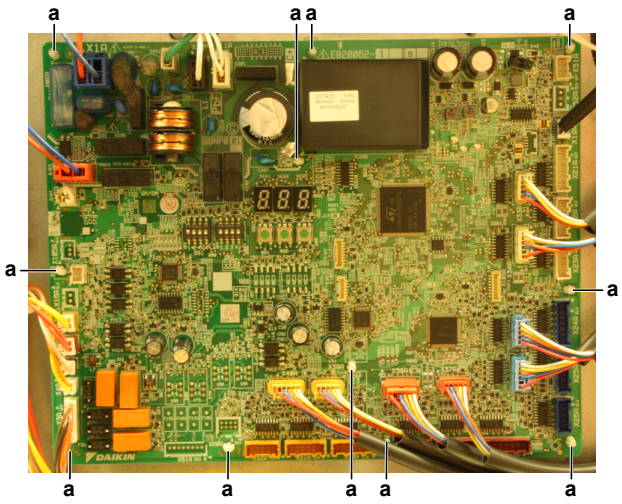
a PCB support

5. Remove the SV box main PCB from the SV box.
6. To install the SV box main PCB, see "Repair procedures" [▸ 226].

To install the main PCB

> **INFORMATION**
>
> When replacing the SV box main PCB, R32 leak detection sensor PCB ALSO MUST be replaced. See "Repair procedures" [▸ 230] and replace R32 leak detection sensor.

1. Install the SV box main PCB on the correct location in the SV box.
2. Correctly install the SV box main PCB on the PCB supports.



a PCB support

3 Connect the ground wire to the SV box. Install and tighten the screw to fix the ground wire.

4 Install the bridged connector X15A.

5 Connect all connectors to the SV box main PCB.

INFORMATION

Use the wiring diagram and connection diagram for correct installation of the connectors, see "7.2 Wiring diagram" [▸ 262].

WARNING

When reconnecting a connector to the PCB, make sure to connect it on the correct location and do NOT apply force, as this may damage the connector or connector pins of the PCB.

6 Check DIP switches and adjust as required, see "Checking procedures" [▸ 220].

7 Check the field settings and adjust as required, see "7.9 Field settings" [▸ 292].

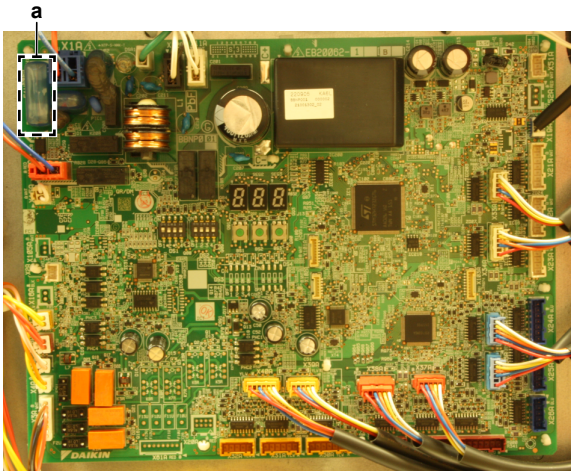
Is the problem solved?	Action
Yes	No further actions required.
No	Return to "Checking procedures" [▸ 220] of the SV box main PCB and continue with the next procedure.

To remove a fuse of the main PCB

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1 Remove the fuse from the PCB.



a Fuse

2 To install a fuse on the SV box main PCB, see "Repair procedures" [▸ 226].

To install a fuse on the main PCB

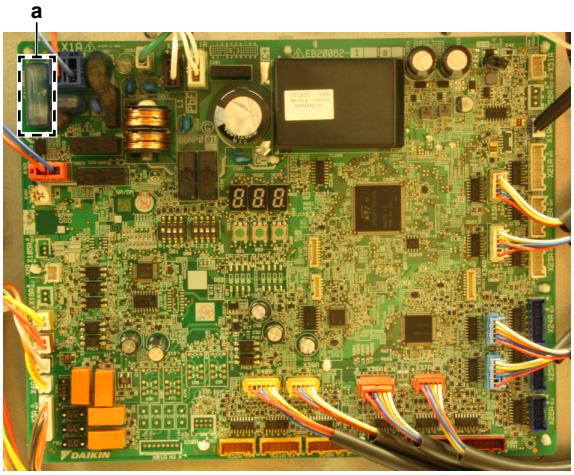
WARNING

- For continued protection against risk of fire, replace ONLY with same type and rating of fuse.
- Before replacing the fuse, check and eliminate the cause of the blown fuse.

1 Install the fuse on the correct location on the PCB.

CAUTION

Make sure the fuse is plugged-in correctly (contact with the fuse holder).



a Fuse

Is the problem solved?	Action
Yes	No further actions required.
No	Return to "Checking procedures" [▸ 220] of the SV box main PCB and continue with the next procedure.

4.14.5 Safety valve box sub PCB

The SV boxes have the following sub PCB's:

- SV6~8A boxes: A2P.

These sub PCB's are identical to the SV box main PCB.

Perform as described in the check and repair procedures of the SV box main PCB (see "4.14.4 Safety valve box main PCB" [▸ 220]) and apply to the appropriate sub PCB.

4.14.6 R32 leak detection sensor

Checking procedures

To perform an electrical check of the R32 leak detection sensor

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

1 Remove the required plate work, see "4.10 Plate work" [▸ 191].

DANGER: RISK OF ELECTROCUTION

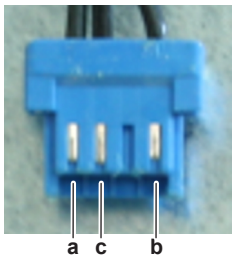
Wait for at least 10 minutes after the circuit breaker has been turned OFF, to be sure the rectifier voltage is below 10 V DC before proceeding.

2 Disconnect the R32 leak detection sensor connector X19A from the SV box main PCB.

INFORMATION

Make sure that the wiring between the sensor connector and the connector on the PCB is properly connected and NOT damaged (check continuity), see "7.2 Wiring diagram" [▸ 262].

3 Using a multimeter in diode check, measure in reference with the image and the table below.



a Measuring point
b Measuring point
c Measuring point

VDC	COM	REF	VDC	COM	REF
a	b	1.269~1.551 V	b	a	0.414~0.506 V
a	c	OL	c	a	OL
b	c	1.053~1.287 V	c	b	OL

Measured values are correct?	Action
Yes	Continue with the next step.
No	Replace the R32 leak detection sensor, see "Repair procedures" [▸ 230].

4 Connect the R32 leak detection sensor connector to the SV box main PCB.

5 Turn ON the power using the respective circuit breaker.

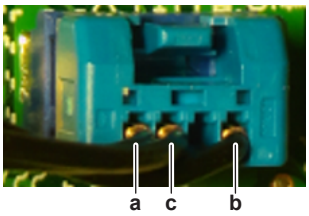
6 Start the unit operation via the central controller.

7 Activate Cooling operation via the user interface.

8 Wait until the unit is operating properly and make sure NO R32 leak is present.

9 Measure the voltage between N wire and power supply wire on connector X19A on the SV box main PCB.

Result: The measured voltage MUST be 5 V DC.



a Power supply
b N
c R32 leak detection

Is the measured voltage correct?	Action
Yes	Continue with the next step.
No	Perform a check of the SV box main PCB, see "Checking procedures" [▸ 220].

10 Measure the voltage between N wire and R32 leak detection wire on connector X19A on the SV box main PCB.

Result: The measured voltage MUST be 0.5~4.5 V DC.

Does the leak detection sensor function correctly?	Action
Yes	Return to troubleshooting of the specific error code and continue with the next procedure.
No	Replace the leak detection sensor, see "Repair procedures" [▸ 230].

Repair procedures

To remove the R32 leak detection sensor

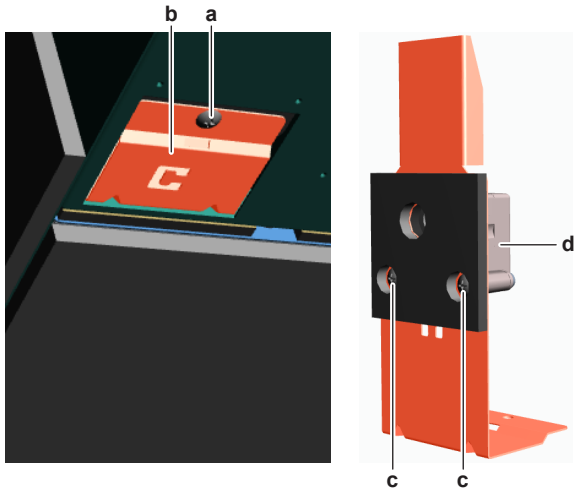
Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1 Disconnect the R32 leak detection sensor connector.

2 At the bottom of the SV box, remove the screw and pull the R32 leak detection sensor assembly out of the SV box. Take care NOT to damage the wiring harness.



a Screw
b R32 leak detection sensor assy
c Screw (R32 leak detection sensor)
d R32 leak detection sensor

3 Remove the 2 screws from the R32 leak detection sensor.

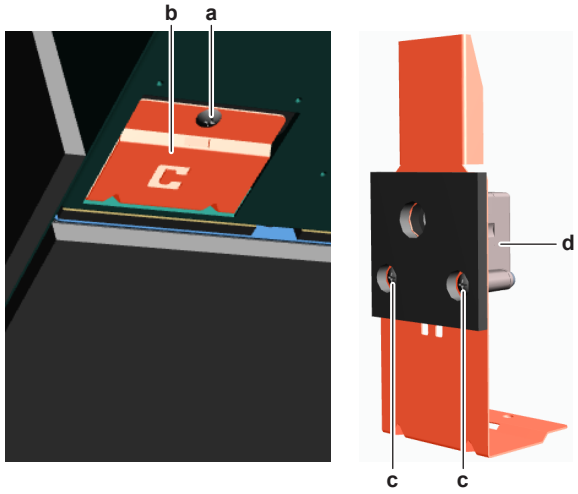
4 Remove the R32 leak detection sensor from its mounting bracket.

5 To install the R32 leak detection sensor, see "Repair procedures" [▸ 230].

To install the R32 leak detection sensor

1 Install the R32 leak detection sensor in the correct location on mounting bracket.

2 Install and tighten the 2 screws to fix the R32 leak detection sensor.



a Screw
b R32 leak detection sensor assy
c Screw (R32 leak detection sensor)
d R32 leak detection sensor

3 While guiding the R32 leak detection sensor wiring harness, install the R32 leak detection sensor assembly in the correct location on the SV box.

4 Install and tighten the screw to fix the R32 leak detection sensor assembly.

5 Route the wiring harness to the correct location and connect the R32 leak detection sensor connector.

INFORMATION

Replace all cable ties that were cut during removal.

INFORMATION

Upon power supply to the SV box, set the field setting 2-5 = 1 to reset the timer of the R32 leak detection sensor.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.15 Thermistors

4.15.1 Refrigerant side thermistors

Checking procedures

INFORMATION

It is recommended to perform the checks in the listed order.

To perform a mechanical check of the specific thermistor

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1 Locate the thermistor and remove the insulation if needed. Check that the thermistor is correctly installed and that there is thermal contact between the thermistor and the piping or ambient (for air thermistor).

Is the thermistor correctly installed (thermal contact between the thermistor and the piping)?	Action
Yes	Perform an electrical check of the specific thermistor, see "Checking procedures" [▸ 232].
No	Correctly install the thermistor, see "Repair procedures" [▸ 234].

To perform an electrical check of the specific thermistor

1 First perform a mechanical check of the thermistor, see "Checking procedures" [▸ 232].

2 Locate the thermistor.

INFORMATION

Remove the thermistor from its holder if not reachable with a contact thermometer.

3 Measure the temperature using a contact thermometer.

Name	Symbol	Location (PCB)	Connector (pins)	Reference (table)
Air thermistor	R1T	Main	X18A:1-2	

Name	Symbol	Location (PCB)	Connector (pins)	Reference (table)
Suction pipe thermistor	R3T	Main	X30A:1-2	
Refrigerant liquid thermistor of outdoor heat exchanger	R4T	Main	X30A:3-4	
Refrigerant liquid thermistor of Subcool heat exchanger	R5T	Main	X30A:5-6	
Gas pipe thermistor of Subcool heat exchanger	R6T	Main	X30A:7-8	
De-icer thermistor	R7T	Main	X30A:9-10	
Compressor body thermistor	R8T	Main	X33A:3-4	
Discharge pipe thermistor	R21T	Main	X33A:1-2	

4 Determine the thermistor resistance that matches the measured temperature.

5 Disconnect the thermistor connector from the appropriate PCB.

6 Measure the resistance between the appropriate pins of the thermistor connector.

7 Check that the measured resistance value matches the resistance determined through the measured temperature (earlier step in the procedure).

INFORMATION

All thermistors have a resistance tolerance of 3%.

INFORMATION

Connect the service monitoring tool to the unit or use field settings mode 1 (see "7.9 Field settings" [▶ 292]) to monitor the thermistors.

If the measured resistance value matches the resistance determined through the measured temperature, but the temperature for the corresponding thermistor via service monitoring tool or field settings mode 1 is NOT correct, replace the applicable PCB.

Does the measured resistance of the thermistor match with the temperature determined resistance?	Action
Yes	Thermistor is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Replace the specific thermistor, see "Repair procedures" [▸ 234].

Repair procedures

To remove the thermistor

Prerequisite: Stop the unit operation via the central controller.

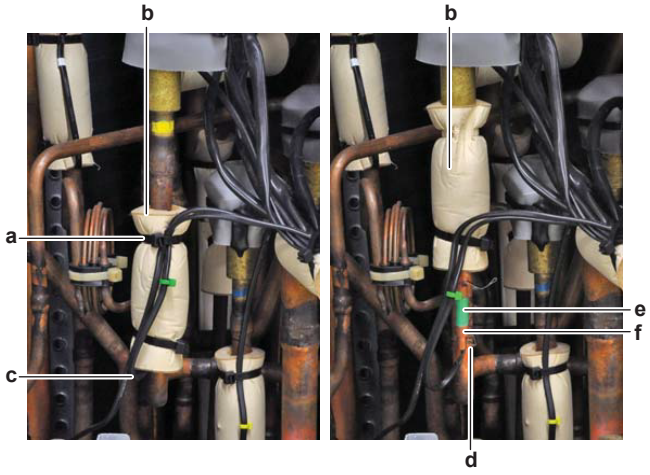
Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1 Locate the thermistor that needs to be removed.

2 Remove the thermistor from the thermistor holder as follows:

- For air (ambient) thermistor:
  Open the thermistor holder and remove the thermistor from the holder.
- For refrigerant piping thermistors:
  - Cut the tie straps that fix the insulation and the thermistor wire.
  - Slide the insulation aside.
  - Pull the clip that fixes the thermistor.
  - Remove the thermistor from the thermistor holder.



a Tie strap
b Insulation
c Thermistor wire
d Clip
e Thermistor holder
f Thermistor

3 Cut all tie straps that fix the thermistor harness.

4 Disconnect the thermistor connector from the appropriate PCB.

INFORMATION

Some of the thermistors are wired to the same connector. See connector and pin information of the thermistors at the start of the electrical check procedure and "7.2 Wiring diagram" [▸ 262]. ALWAYS replace the complete set of thermistors wired to the same connector.

5 When removing the complete set of thermistors wired to the same connector:

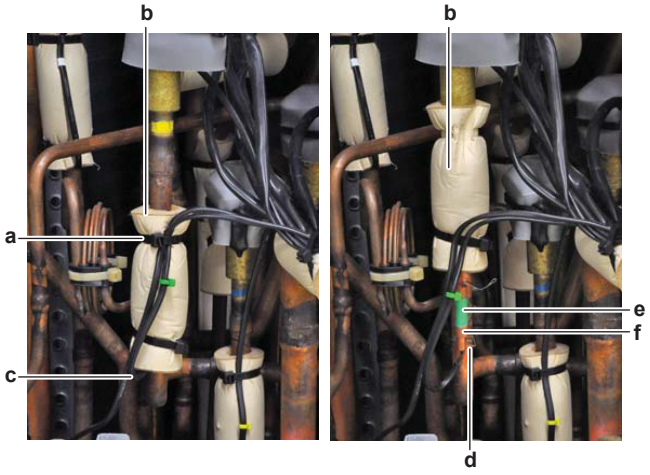
- Remove all other thermistors wired to the connector from their thermistor holder,
- Cut all tie straps that fix the thermistor wiring harness,
- Disconnect the thermistor connector,
- Remove the complete set of thermistors.

6 To install the thermistor, see "Repair procedures" [▸ 234].

To install the thermistor

1 Install the thermistor in the thermistor holder as follows:

- For air (ambient) thermistor:
  Correctly install the thermistor in the holder and close the thermistor holder.
- For refrigerant piping thermistors:
  Pull the clip and install the thermistor in the specific thermistor holder. Make sure the clip is in the correct position (blocking the thermistor).



a Tie strap
b Insulation
c Thermistor wire
d Clip
e Thermistor holder
f Thermistor

2 Route the thermistor harness towards the appropriate PCB.

3 Connect the thermistor connector to the appropriate PCB.

INFORMATION

Some of the thermistors are wired to the same connector. See connector and pin information of the thermistors at the start of the electrical check procedure and "7.2 Wiring diagram" [▸ 262]. ALWAYS replace the complete set of thermistors wired to the same connector.

4 When installing the complete set of thermistors wired to the same connector:

- Install all other thermistors wired to the connector in their thermistor holder,
- Route the thermistor harness of all thermistors towards the appropriate PCB or intermediate connector,
- Connect the thermistor connector.

WARNING

When reconnecting a connector to the PCB, make sure to connect it on the correct location and do NOT apply force, as this may damage the connector or connector pins of the PCB.

5 Fix the thermistor harness using new tie straps.

6 Install the insulation around the thermistor.

7 Fix the insulation and the thermistor wire using new tie straps.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

4.15.2 Other thermistors

Checking procedures

To perform an electrical check of the fin thermistor

1 Stop operation of the outdoor unit and wait for at least 30 minutes.

2 Measure the ambient temperature close to the outdoor unit.

3 Connect the service checker tool to the outdoor unit.

4 Read the temperature of the specific PCB fin thermistor. The read temperature MUST correspond to the measured ambient temperature.

Does the temperature of the fin thermistor match with the ambient temperature?	Action
Yes	Thermistor is OK. Return to the troubleshooting of the specific error and continue with the next procedure.
No	Replace the specific PCB, see "4 Components" [▸ 149].

5 Third party components

5.1 Electrical circuit

5.1.1 Checking procedures

To check the power supply of the unit

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1. Check that the power supply cables and earth connection are firmly fixed to the power supply terminal X1M.
2. Measure the insulation resistance between each power supply terminal and the ground using a megger device of 500 V DC. All measurements MUST be >1MΩ. If insulation resistance is <1MΩ, earth leakage is present.
3. Turn ON the power of the unit.
4. Measure the voltage between the phases L1-L2-L3 on the power supply terminal X1M.

   Result: The voltage MUST be 400 V AC ± 10%.
5. Measure the voltage between each phase and N on the power supply terminal X1M.

   Result: The voltage MUST be 230 V AC ± 10%.
6. Unbalance between the phases MUST NOT exceed 2%.

Is the measured voltage (power supply) correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Adjust the power supply, see "5.1.2 Repair procedures" [▸ 243].

To check the power supply to the safety valve box

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1. Check that the power supply cables and earth connection are firmly fixed to the indoor unit power supply terminal X1M.
2. Measure the insulation resistance between each power supply terminal and the ground using a megger device of 500 V DC. All measurements MUST be >1MΩ. If insulation resistance is <1MΩ, earth leakage is present.
3. Turn ON the power using the respective circuit breaker.
4. Measure the voltage between L and N on the indoor unit power supply terminal X1M.

   Result: The voltage MUST be 230 V AC ± 10%.

Is the measured voltage (power supply) correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Adjust the power supply, see "5.1.2 Repair procedures" [▶ 243].

To check if the power supply is compliant with the regulations

1 Check that the power source is in line with the requirements described in the databook.

Is the power supply compliant with the regulations?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Adjust the power supply, see "5.1.2 Repair procedures" [▶ 243].

To prevent electrical hazards

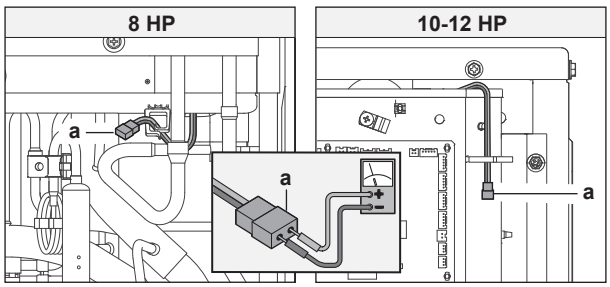
To check the rectifier voltage

1 Stop the unit operation (via the central controller).

2 Turn OFF the respective circuit breaker.

3 Measure the voltage on the rectifier voltage check connector X3A.

Result: The measured voltage should be below 10 V DC.



Additional information

1 To prevent damaging the PCB, touch a non-coated metal part to eliminate static electricity before pulling out or plugging in connectors.

2 Pull out junction connectors X1A, X2A for the fan motors in the outdoor unit before starting service operation on the inverter equipment. Be careful NOT to touch the live parts. (If a fan rotates due to strong wind, it may store electricity in the capacitor or in the main circuit and cause electrical shock.)

3 After the service is finished, plug the junction connector back in. Otherwise the malfunction code E7 will be displayed on the user interface or on the outdoor unit 7-segment display and normal operation will NOT be performed.

For details refer to the wiring diagram labelled on the back of the switch box/ service cover.

Pay attention to the fan. It is dangerous to inspect the unit while the fan is running. Make sure to turn off the main switch and to remove the fuses from the control circuit located in the outdoor unit.

To check the F1-F2 communication voltage on safety valve box

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1. Turn ON the power using the respective circuit breaker.
2. Start the unit operation via the central controller.
3. Let the system operate for a while.
4. Check that the connector X5A is correctly connected to the SV box main PCB A1P and is NOT damaged.
5. Measure the communication voltage between pins 1-2 on the connector X5A.

   Result: The measured voltage MUST be 16 V DC.

Is the measured communication voltage correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Continue with the next step.

6. Measure the communication voltage between F1-F2 (to which transmission wiring from outdoor unit or from other SV box is connected) on the terminal X2M of the SV box.

   Result: The measured voltage MUST be 16 V DC.

Is the measured communication voltage correct?	Action
Yes	Correct the wiring between the terminal X2M and the SV box main PCB A1P, see "7.2 Wiring diagram" [▸ 262].
No	Check the F1-F2 transmission between outdoor units and SV box or between SV boxes, see "5.1.1 Checking procedures" [▸ 237].

To check the F1-F2 communication voltage on indoor unit

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1. Turn ON the power using the respective circuit breaker.
2. Start the unit operation via the central controller.
3. Let the system operate for a while.
4. Check that the connector X30A is correctly connected to the indoor unit main PCB and is NOT damaged.
5. Measure the communication voltage between pins 3-4 on the connector X30A.

   Result: The measured voltage MUST be 16 V DC.

Is the measured communication voltage correct?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Continue with the next step.

6 Measure the communication voltage between F1-F2 on the terminal (X2M or X1M depending on the indoor unit).

Result: The measured voltage MUST be 16 V DC.

Is the measured communication voltage correct?	Action
Yes	Correct the wiring between the terminal (X2M or X1M depending on the indoor unit) and the indoor unit main PCB, see Wiring diagram in the indoor unit service manual.
No	Check the F1-F2 transmission between indoor units and SV box, see "5.1.1 Checking procedures" [▸ 237].

To check F1-F2 transmission

To check the F1-F2 wiring

1 Check that the wiring:

- is within installation length limits,
- is within installation length limits,
- is of the proper wire thickness,
- is properly fixed to the terminals,
- is executed according to the installation manual, with no star connections.

2 Check that no shielded cables are used or that shielded cables are grounded only on one side of the cable.

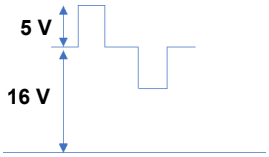
3 Check that F1-F2 wiring has continuity all over.

4 Check that the minimum distance between the power cables and communication cables outside the units is respected (see table below).

Power supply cable current (X)	Distance between power and communication cables
X ≤10 A	≥300 mm
10 A <X ≤50 A	≥500 mm
50 A <X ≤100 A	≥1000 mm
X >100 A	≥1500 mm
Is the wiring correctly executed, as indicated in the installation manual?	Action
Yes	Continue with the next step in this checking procedure.
No	Modify the wiring, see the installation manual.

To measure the F1-F2 transmission

F1-F2 transmission is a D3Net rectangular waveform, 16 VDC ± 5 V with 16-5V amplitude that appears on the 16V base line:



F1-F2 terminals on indoor units, SV boxes, outdoor unit(s) and central controllers are all possible measurement points. Use as many points as you can and take the time necessary for measurement if analyzing with an oscilloscope.

On outdoor units, measurement should be done either at F1-F2 IN or F1-F2 OUT. If the F1-F2 OUT terminal is not used, then measure at the F1-F2 IN terminal.

You can conduct the measuring with a multimeter or an oscilloscope.

To measure the F1-F2 transmission with a multimeter:

1 Set the multimeter to DC Voltage measurement.

2 Measure on the F1 and F2 terminals.

Result: 16 V DC should be read.

To measure the F1-F2 transmission with an oscilloscope:

INFORMATION

Ensure that probes are securely connected to F1-F2 terminals. Otherwise, distortions will be generated resulting in misinterpretation of data. It is recommended to connect temporary cables to the probes and then connect the cables to the terminals securely.

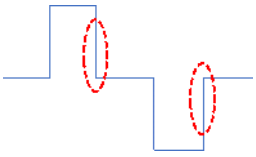
1 Measure at as many points as you can, this can help to determinate the problem.

For example: if the measurements at the indoor unit side are distorted while central controller and outdoor unit seem OK, you can suppose that the failure in transmission is related to the indoor unit side.

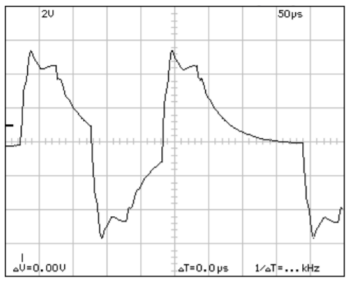
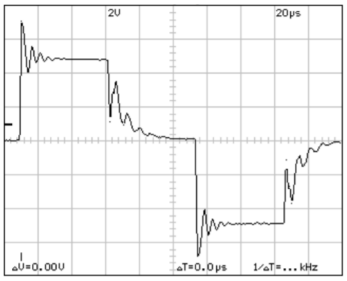
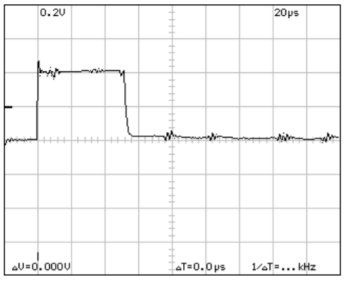
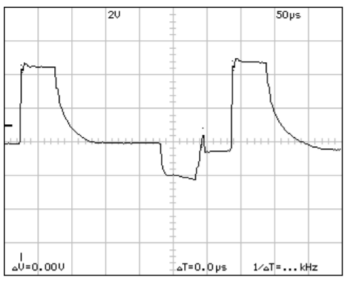
2 Set time base (horizontal) to 50 µs/div to 100 µs. Voltage axis (vertical) should be set to 2V/div to 5V. Set position properly, otherwise the data may appear outside the screen. In AC mode, which is a sampling mode in oscilloscopes, waveforms appear in the middle of the screen. So, it is recommended to use AC mode if possible.

3 Set the triggering mode of the oscilloscope to "Normal". If "Auto" mode is selected, observed waveforms may be cleared instantaneously leading to misinterpretation of data.

4 Ignore very short-time pulses of 1V amplitude or less, or overshooting at the rising edge may be ignored. Focus on the shown points of the waveform below:



Examples of waveform distortions on D3Net and possible causes:

	**Rounded waveforms at falling edges.** Possible reasons: ▪ Excessive wire length, ▪ Excessive number of connected devices, ▪ Branching (star connections).
	**Ringing.** Possible reasons: ▪ Transmission wiring very close to high voltage cables, ▪ Use of multi-conductor type wires.
	**Noise.** Possible reasons: ▪ Transmission wiring very close to high voltage cables, ▪ Transmission wiring effected from external equipment causing noise.
	**Faulty Waveform.** Possible reasons: ▪ Transmission circuit failure on a PCB.

After checking and correcting possible causes of F1-F2 transmission problems, perform a communication reset (see "5.1.2 Repair procedures" [▸ 243]).

To check the mechanical ventilation error input

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1. Turn ON the power using the respective circuit breaker.
2. Start the unit operation via the central controller.
3. Let the system operate for a while.
4. Check that the mechanical ventilation functions correctly. Repair as needed.
5. Disconnect the connector X36A from the main PCB and measure the resistance between pins 1-2 on wired connector. Resistance MUST be:

- OL (switch SFB=open) when mechanical ventilation functions correctly (=normal operation).
- 0 Ω (switch SFB=closed) when faulty mechanical ventilation detected.

INFORMATION

Make sure that the wiring between the switch SFB and connector X36A is correctly connected and NOT damaged (check continuity). "7.2 Wiring diagram" [▸ 262].

Is the measured resistance 0 Ω (switch SFB=closed)?	Action
Yes	Continue with the next step.
No	Mechanical ventilation error input is OK.

6 Again check that the mechanical ventilation functions correctly. Repair as needed.

7 If mechanical ventilation functions correctly, check if the option PCB drives the switch SFB to the closed position.

Does the option PCB drive the switch SFB to closed position?	Action
Yes	Check for the reason why the option PCB drives the switch SFB to closed position (faulty option PCB, ...).
No	Replace the switch SFB, see "5.3.2 Repair procedures" [▸ 253].

To check the wiring between the outdoor unit and the indoor unit

1 Check that all wires are properly connected and that all connectors are fully plugged-in.

2 Check that no connectors or wires are damaged.

3 Check that the wiring corresponds with the wiring diagram, see "7.2 Wiring diagram" [▸ 262].

INFORMATION

Correct the wiring as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

5.1.2 Repair procedures

To adjust the power supply

1 Make sure that the power source is in line with the requirements described in the databook.

2 Adjust the power supply within 50 Hz ± 3%.

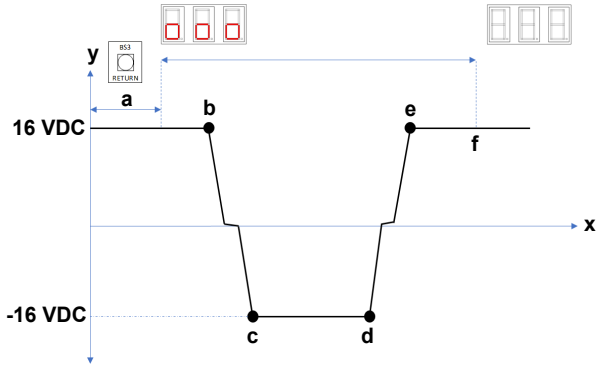
Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To perform a communication reset

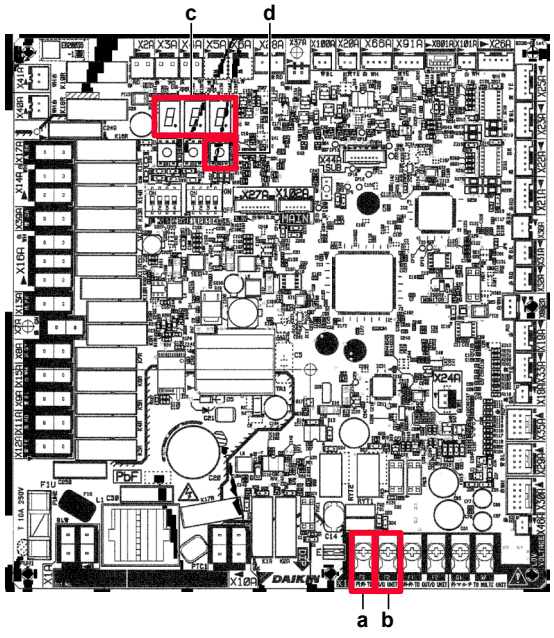
NOTICE

If an indoor unit and/or SV box is/are powered OFF when communication reset is performed, the outdoor unit will delete the indoor unit/SV box information since this/these unit will not be identified during re-initialization. If a SV box is Power OFF, all the indoor units connected to the SV box will not be identified no matter if they have power or not. If so, these units will not be recognized by the outdoor unit upon power restore to this indoor unit.

1 Set multimeter to V DC measurement. The example below is performed while COM-F1 and V DC-F2, the polarity will be opposite than the graph below if connected otherwise (which is not a problem).



a Y: Voltage (VDC)
b X: Time



a Terminal F1
b Terminal F2
c 7-segment display
d Push button BS3

2 Push BS3 (RETURN) and hold it for 5 seconds until the 7-segment display shows "000". Then release BS3.

Result: After a while, voltage will drop to almost 0 V DC. At this stage it means that re-initialization has started.

Result: Depending on the system size, voltage will rise to 16 V DC and hit 0 V back again several times.

Result: When finished, 7-Segment Display will turn OFF. This indicates that re-initialization has completed.

The time this procedure takes, depends on the amount of indoor units.

To correct the wiring between PCB's

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1 Make sure that all wires are firmly and correctly connected, see "7.2 Wiring diagram" [▸ 262].

2 Check the continuity of all wires.

3 Replace any damaged or broken wires.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

5.2 Refrigerant circuit

5.2.1 Checking procedures

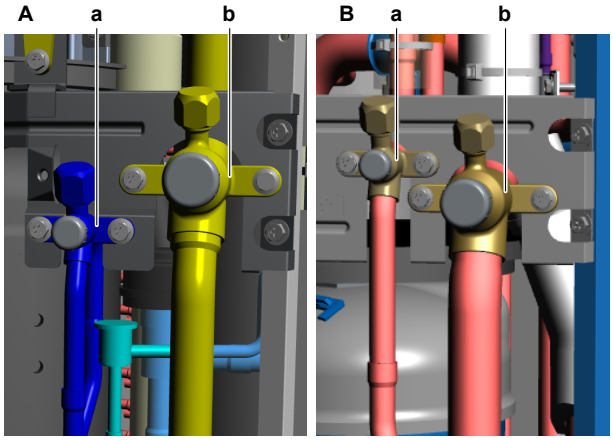
INFORMATION

It is recommended to perform the checks in the listed order.

To check if the stop valves are open

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1 Remove the caps.



A 8 HP outdoor unit
B 10+12 HP outdoor unit
a Liquid stop valve
b Gas stop valve

2 Check if the stop valves are completely open.

The refrigerant circuit stop valves are open?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Open the stop valves of the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 250].

To check if the refrigerant circuit is clogged

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

1 Wait for the refrigerant to reach the outdoor temperature.

2 Check that all field piping is done according to the refrigeration practice and installation manual:

- Correct piping diameters
- Piping distance limits are followed
- NO pipes are squeezed
- NO short radius bends

3 Connect a manometer to the high pressure and low pressure service ports.

4 Turn ON the power of the unit.

5 Activate `Heating` operation via the Cool/Heat master user interface.

6 Read the pressure on the high and low pressure gauges. If the difference between high and low pressure >0.2 MPa, the refrigerant circuit might be clogged.

7 On the refrigerant liquid piping (between the indoor unit heat exchanger and the outdoor unit heat exchanger (coil)), using a contact thermometer, measure the temperature before and after every restricting device. If a big temperature difference is measured (>2.5~4K), an internal pipe obstruction may be present at this location.

INFORMATION

Focus on positions with a potential risk for clogging such as:

- Filters
- Valves
- Brazing points
- ...

INFORMATION

A bigger temperature drop before and after the expansion valve can be normal, however excessive ice is indicating a malfunction of the expansion valve or internal obstruction of the valve (dirt or ice build up in case of humidity in the system).

Temperature drop found?	Action
Yes	Replace the clogged part, see "5.2.2 Repair procedures" [▶ 250].
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To check if the refrigerant circuit is correctly charged

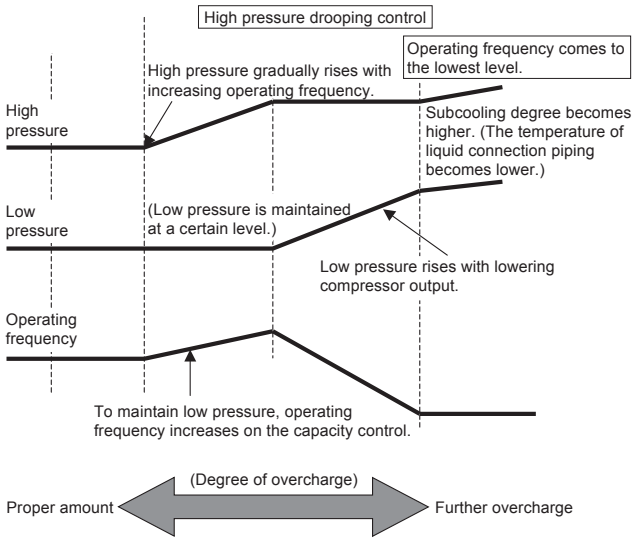
Due to the relationship to pressure control and electronic expansion valve control, the amount of refrigerant needs to be examined according to operating conditions.

Refer to the procedures shown below for correct examination.

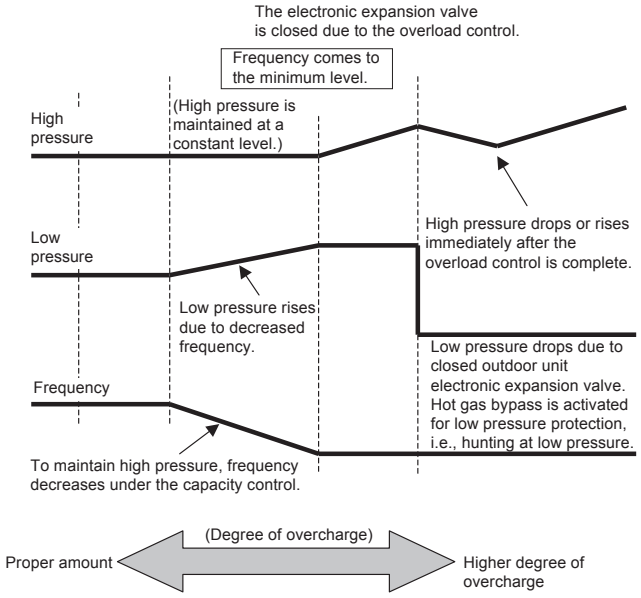
Refrigerant overcharge diagnosis

1. High pressure rises. Consequently, overload control is conducted to cause insufficient cooling capacity.
2. The superheated degree of suction gas lowers (or the wet operation is performed). Consequently, the compressor consumes more power and is noisy (before over-current relay trips).
3. The subcooling degree of refrigerant in liquid form rises (values >4~5K are NOT normal). Consequently, in heating, the temperature of discharge air through the subcooled section becomes lower.

Cooling



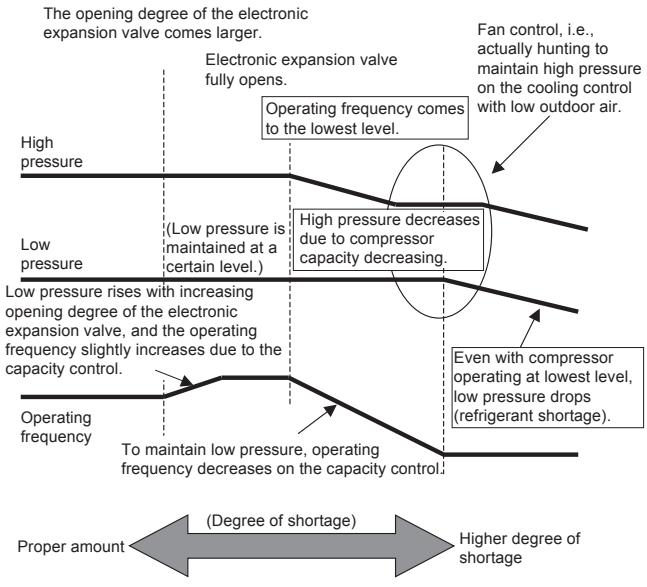
Heating



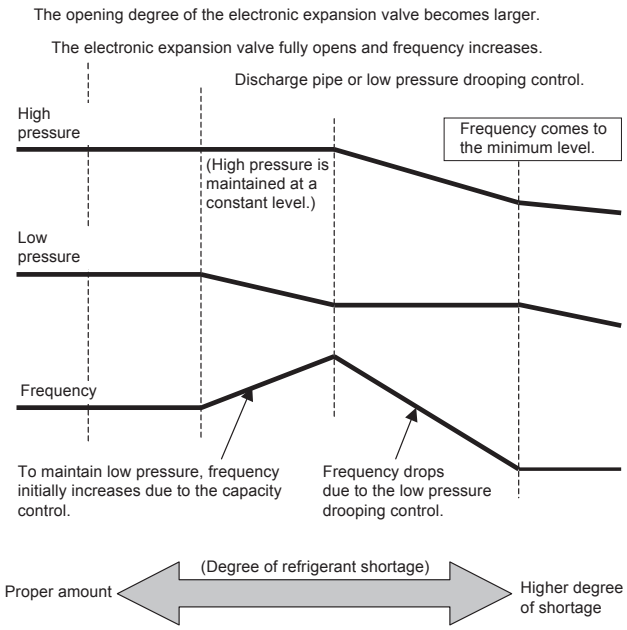
Refrigerant shortage diagnosis

1. The superheated degree of suction gas rises. Consequently, the compressor discharge gas temperature becomes higher than normal.
2. The superheated degree of suction gas rises. Consequently, the electronic expansion valve turns open more than normal or completely open for average output.
3. Low pressure drops to cause the unit not to reach cooling capacity (or heating capacity).

Cooling



Heating



Is the refrigerant circuit charged correctly?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Add or recuperate refrigerant until correctly charged, see "5.2.2 Repair procedures" [▸ 250].

To check for non-condensables in the refrigerant circuit

Prerequisite: Stop the unit operation via the central controller.

Prerequisite: Turn OFF the respective circuit breaker.

1. Wait for the refrigerant to reach the outdoor temperature.
2. Connect a manometer to the service port.
3. Measure the pressure of the refrigerant. The measured pressure converted into saturated temperature MUST be in line with the expected pressure / saturated temperature at current ambient temperature.
4. If the measured pressure is significantly higher (>5K), non-condensables gasses are most likely present in the refrigerant.

Any non-condensables found in the refrigerant circuit?	Action
Yes	To replace the refrigerant, see "5.2.2 Repair procedures" [▸ 250].
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To perform a leak test

The leak test must satisfy the specifications of EN378-2.

1. Perform the two leaks tests below.

Vacuum leak test

1 Evacuate the system from the liquid and gas piping to a gauge pressure of –100.7 kPa (–1.007 bar) for more than 2 hours.

2 Once reached, turn off the vacuum pump and check that the pressure does not rise for at least 1 minute.

3 Should the pressure rise, the system may either contain moisture (see vacuum drying below) or have leaks.

Pressure leak test

1 Break the vacuum by pressurising with nitrogen gas to a minimum gauge pressure of 0.2 MPa (2 bar). Never set the gauge pressure higher than the maximum operation pressure of the unit, i.e. 4.0 MPa (40 bar).

2 Test for leaks by applying a bubble test solution to all piping connections.

3 Discharge all nitrogen gas.

NOTICE

ALWAYS use a recommended bubble test solution from your wholesaler.

NEVER use soap water:

- Soap water may cause cracking of components, such as flare nuts or stop valve caps.
- Soap water may contain salt, which absorbs moisture that will freeze when the piping gets cold.
- Soap water contains ammonia which may lead to corrosion of flared joints (between the brass flare nut and the copper flare).

Problem solved?

Any leaks found in the refrigerant circuit?	Action
Yes	Replace the leaking part of the refrigerant circuit, see "5.2.2 Repair procedures" [▸ 250].
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To check if the refrigerant field piping is compliant with the regulations

1 Check if the refrigerant field piping is compliant with the regulations. Adjust as needed. See installation manual for field piping specifications.

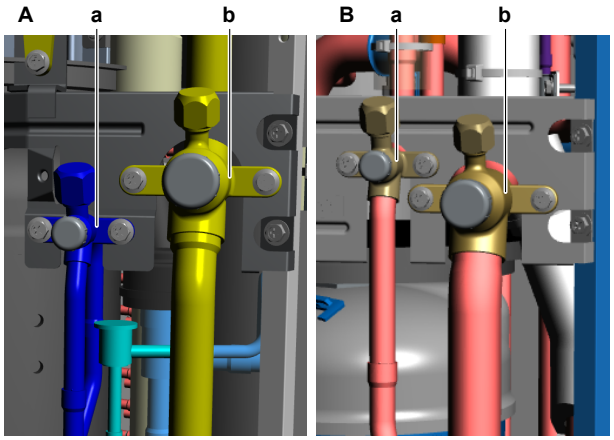
Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

5.2.2 Repair procedures

To open the stop valves of the refrigerant circuit

Prerequisite: Remove the required plate work, see "4.10 Plate work" [▸ 191].

1 Remove the caps.



A 8 HP outdoor unit
B 10+12 HP outdoor unit
a Liquid stop valve
b Gas stop valve

2 Completely open the stop valves by screwing the stop valve screw counterclockwise.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To replace the clogged/leaking part of the refrigerant circuit

1 See the correct procedure for the component that needs to be repaired. See also "Repair information" [▸ 251] for more details.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To recuperate the refrigerant

SV unit

See procedure for the appropriate outdoor unit.

To add refrigerant

1 See the installer reference guide for the correct procedure.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to troubleshooting of the specific error and continue with the next procedure.

Repair information

Refrigerant piping handling

- Make sure that the applied pressure is never higher than the unit design pressure indicated on the nameplate (PS).

- Work according to the F-gas regulation and/or local regulations.
- Make sure the correct amount of refrigerant is charged after repair according to the F-gas regulation label on the unit (factory + additional where required).
- Make sure to use the appropriate equipment and tools according to the refrigerant and unit type.
- R32 can be charged in gas phase.
- Make sure to use a digital scale (no charging cylinder).
- Execute correct vacuum drying procedure after repair:
  - When using an electronic vacuum gauge with an absolute pressure readout, a pressure of minimal 2000 micron / 2 Torr / 266 Pa MUST be reached. This pressure should stay stable for 30 minutes when vacuum pump is NOT running. If vacuum pressure CANNOT be held, most likely there is still moisture in the system. Again run the vacuum pump for 1~2 hours to a pressure (absolute pressure readout) lower than 2000 micron / 2 torr / 266 Pa. If target pressure CANNOT be reached, again check for leaks.
  - Connect the unit according to the available service ports.
  - Use related field setting where necessary to open expansion valve / solenoid valve.

Refrigerant piping repair

- Make sure to cover open pipe ends during repair so no dust or moisture can enter.
- Make sure to re-apply insulation removed during repair.
- Pipe expansion / flare making:
  - Remove any burrs on the cut surface using the correct tool such as reamer or scraper (note that excessive deburring can thin the pipe walls and cause cracking of the pipe).
  - Make sure the flare has the correct size (use a flare gauge).
  - Make sure no particles remain in the piping.
  - Apply just a drop of refrigerant oil on the inner surface of the flare.
  - Make sure the flare connection is tightened with the correct torque (torque values refer to installation manual).
- Brazing:
  - Use the correct brazing tool.
  - Use a phosphor copper filler metal (silver composition of 0 to 2%). Do not use flux material.
  - Flush the piping before brazing with nitrogen to avoid oxidation of the inside of the copper tubes (nitrogen purity ≥99.99%).

Additional refrigerant charge amount

Refrigerant circuit vacuuming - general advice

The effectiveness of the vacuum drying depends on many factors. Besides following the correct procedures and using equipment that is well maintained, the ambient conditions at which the vacuum is done MUST be considered. If there is moisture in the refrigerant and the ambient temperature is lower, the vacuum pressure that MUST be reached to allow the evaporation of the moisture will need to be lower. In some cases the vacuum pump may NOT be able to achieve these pressures. If possible, heat the locations where moisture is expected.

As a general target, the values below CAN be used as reference to achieve a proper vacuum on the unit:

- Absolute pressure below 270 Pa MUST be reached. The time needed for the pressure to lower is also depending on the moisture amount. If it takes very long or it is hard to reach the pressure, this MIGHT be an indication of moisture presence, so the vacuum pump will need to run longer.
- After stopping the vacuum pump, the absolute pressure MUST be kept below 270 Pa for at least 30 minutes, without a significant increase of pressure. If pressure increases significantly, this is an indication of the presence of moisture in the system.
- If multiple vacuum cycles need to be performed, break the vacuum between the cycles using dry nitrogen.

Depending on the site conditions, as mentioned above, lower pressure values MIGHT be needed to allow the boiling of the moisture in the system. The table below shows the boiling point of water for different absolute pressures.

Pressure (absolute)		Boiling point
Micron / Torr	**Mbar / Pa**	**°C**
760000 / 760	1013 / 101325	100
50000 / 50	66 / 6666	38
10000 / 10	13 / 1333	11
2000 / 2	2.6 / 266	−10
1000 / 1	1.33 / 133	−18
500 / 0.5	0.66 / 66	−24

5.3 Manufacturer components

5.3.1 Checking procedures

To check the correct operation / setting of the manufacturer component

1 See the specific dealer manual to check for the correct installation, operation or setting of your component.

Does the component function correctly?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Adjust the specific component, see "5.3.2 Repair procedures" [▶ 253].

5.3.2 Repair procedures

To adjust the manufacturer component

1 See the specific dealer manual to adjust your component.

Is the problem solved?	Action
Yes	No further actions required.

Is the problem solved?	Action
No	Return to the troubleshooting of the specific error and continue with the next procedure.

5.4 External factors

5.4.1 Checking procedures

To check the outdoor temperature

1 The temperature ranges for the different operation modes of the unit can be found in the databook on Business Portal.

INFORMATION

If the outdoor temperature is outside the range of operation, the unit may NOT operate or may NOT deliver the required capacity.

INFORMATION

If difference between the ambient temperature and temperature at air inlet of the outdoor unit heat exchanger is >5 K, consider mounting an air guide at the air discharge outlet of the outdoor unit heat exchanger.

Is the outdoor temperature within the operating range?	Action
Yes	Return to the troubleshooting of the specific error and continue with the next procedure.
No	Wait for the outdoor temperature to return within the operating range.

To check for objects that may block the airflow

1 Check for the presence of object(s) near the indoor unit that may block the airflow. Remove the object(s) as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To check the required space around the outdoor unit heat exchanger

1 Check if the space around the outdoor unit heat exchanger is sufficient. See the installation manual for the required space specifications. Adjust as needed.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

To check for an external power source

1 Check for the presence of an external power source. This might cause electrical interference (electrical noise disturbance).

2 If an external power source was found, remove it.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

6 Maintenance

NOTICE

General maintenance/inspection checklist. Next to the maintenance instructions in this chapter, a general maintenance/inspection checklist is also available on the Daikin Business Portal (authentication required).

The general maintenance/inspection checklist is complementary to the instructions in this chapter and can be used as a guideline and reporting template during maintenance.

6.1 Maintenance schedule

To ensure optimal availability of the unit, certain checks and inspections on the unit and the field wiring have to be carried out at regular intervals. See the checking procedures in this manual for inspection of the components mentioned below.

The intervals depend on:

- Local legislation,
- the conditions at the installation site (presence of dust, sea salt, harmful gas, oil mist, power supply fluctuation, bumps, vibration etc.),
- how the unit is operated (frequent stop and start, longer operation hours etc.),
- total running hours of the unit,
- ambient conditions (high heat and humidity load etc.)

Depending on the above mentioned factors, maintenance may be required sooner than the mentioned interval here below.

The table below also assumes a unit operation of 10 hours/day and 2500 hours/year.
Normal use of the unit is considered when a unit is not performing the stop/start cycle (Thermo OFF and then ON) more than 6 times/hour.

Component	Inspection	Maintenance
Electric Motor	1 year	20.000 hours
PCB		25.000 hours
Heat Exchanger		5 years
Sensor, Thermistor		5 years
User Interface, Switches		25.000 hours
Drain Pan		8 years
Expansion Valve		20.000 hours
Solenoid Valve		20.000 hours
Air Filter		5 years
High Efficiency Filter		1 year
Fuse		10 years
Crankcase Heater		8 years
Components under pressure		In case of corrosion
R32 leak sensor (indoor + SV box)		10 years

Also, the cleaning of air filters, heat exchangers, fan propellers, drain pans etc. has to be carried out at regular intervals, see "6.2 Maintenance procedures for outdoor units" [▸ 257], Maintenance procedures for indoor units (see indoor units service manual) and "6.3 Maintenance procedures for Safety Valve Boxes" [▸ 260].

6.2 Maintenance procedures for outdoor units

6.2.1 To check the general status of the unit

Prerequisite: Switch off all the indoor units.

Prerequisite: Stop the unit operation via the central controller.

1 Turn OFF the respective circuit breaker.

DANGER: RISK OF ELECTROCUTION

Confirm the rectifier voltage is below 10 V DC before proceeding, see "To prevent electrical hazards" [▸ 238].

2 Clean the cover plates, see "6.2.2 To clean the cover plates" [▸ 258].

3 Check if any other equipment interferes with the operation of the outdoor unit (other device exhaust to outdoor unit heat exchanger, chimney exhaust to outdoor unit, corrosive or explosive ambient, electrical equipment such as antennas, GSM towers, etc...). Refer to the installation manual.

4 Make sure that there is sufficient air flow or no air by-pass on outdoor unit heat exchanger in cooling mode. Refer to installation manual for required space. Even after outdoor unit heat exchanger is cleaned by maintenance, if difference between ambient temperature and air inlet of outdoor unit heat exchanger is 5K or more, consider mounting an air guide at air discharge outlet of the outdoor unit.

5 Prior to cleaning, check for oil drips on the bottom plate. If found, check system for signs of refrigerant shortage, check possible leaking points and repair when necessary. Refer to Repair instructions of the component when necessary.

6 Clean the bottom plate.

7 Clean the inside of the unit.

NOTICE

To clean the inside of the unit:

- Use water or compressed air, not warmer than 50° C.
- Do not use any cleaning agents or chemicals.
- Do not use pressurized water.

8 Check the general status inside the cover plates.

9 Check the visual appearance of all the components, including PCBs. Refer to component check methods if any irregularity is found.

10 Check the electrical connections. Tighten and secure the connections when necessary.

11 Check if power supply is in conform with legislation. See "To check if the power supply is compliant with the regulations" [▸ 238].

12 Check and tighten the power supply wiring on the dedicated terminal.

13 Check insulation on piping and refrigerant branches. Replace or fix insulation where necessary.

14 Make sure that the water drain works properly and is not clogged or does not cause any accumulation of water.

15 Clean outdoor unit heat exchanger see "6.2.3 To clean the outdoor unit heat exchanger" [▸ 259].

16 Clean outdoor unit fan propellers.

17 Check latest error codes and latest retries, see "3.2 To retrieve error codes and check error history" [▸ 25].

18 Log the maintenance in the log-book.

After outdoor unit maintenance, indoor unit maintenance (see service manual of the indoor unit) and SV box maintenance (see "6.3 Maintenance procedures for Safety Valve Boxes" [▸ 260]) is performed, check the system via the service monitoring tool for normal operation. See "3.4 Symptom based troubleshooting" [▸ 142].

6.2.2 To clean the cover plates

1 Clean the cover plates with a wet cloth.

NOTICE

To clean the plate work:

- Use water or compressed air, not warmer than 50° C.
- Do not use any cleaning agents or chemicals.
- Do not use pressurized water.

6.2.3 To clean the outdoor unit heat exchanger

1. Straighten the air fins.
2. Clear the outdoor unit heat exchanger from dust, leaves,... using a fin-comb or compressed air/N_2.

CAUTION

Avoid bending or damaging the air fins of the outdoor unit heat exchanger during the cleaning process.

Do NOT use a high-pressure washer.

Is the problem solved?	Action
Yes	No further actions required.
No	Return to the troubleshooting of the specific error and continue with the next procedure.

6.3 Maintenance procedures for Safety Valve Boxes

6.3.1 To check the general status of the Safety Valve Box

Prerequisite: Stop indoor unit operation via user interface, central controller, ...

Prerequisite: Turn OFF the power of the SV box.

Prerequisite: Turn OFF the respective circuit breaker.

1. Prior to cleaning, check installation space for oil drips. If found, check system for signs of refrigerant shortage, check possible leaking points and repair as needed.
2. Check if any other equipment interferes with the operation of the SV box.
3. Clean the cover plates with a piece of wet cloth, see "6.3.2 To clean the cover plates" [▸ 260].
4. Open the SV box, see "4.10 Plate work" [▸ 191].
5. Check the general status inside the cover plates.
6. Check the status of drain piping in case multi SV.
7. Check the visual appearance of all components. Refer to component checks if any irregularity is found.
8. Check the electrical connections. Tighten and secure the connections as needed.
9. Check if power supply is in conform with legislation. See ""To check if the power supply is conform with the regulations" [▸ 238]".
10. Check and tighten the power supply wiring on the dedicated terminal.
11. Check the insulation on piping. Replace or fix insulation where necessary.
12. Check the DIP switch settings. See the installation manual for more information.
13. Log the maintenance in the log-book.
14. After outdoor unit maintenance (see "6.2 Maintenance procedures for outdoor units" [▸ 257]), indoor unit maintenance (see service manual of the indoor unit) and SV box maintenance is performed, check the system via the service monitoring tool for normal operation. See "3.4 Symptom based troubleshooting" [▸ 142].

6.3.2 To clean the cover plates

1. Clean the cover plates with a wet cloth.

NOTICE

To clean the plate work:

- Use water or compressed air, not warmer than 50° C.
- Do not use any cleaning agents or chemicals.
- Do not use pressurized water.

7 Technical data

7.1 Detailed information setting mode

7.1.1 Detailed information setting mode: Outdoor unit

See the installer reference guide on business portal for more information.

7.1.2 Detailed information setting mode: Remote controller

See the installer reference guide on business portal for more information.

7.2 Wiring diagram

7.2.1 Wiring diagram: Outdoor unit

The wiring diagram is delivered with the unit, located at the inside of the service cover.

Notes:

1 Symbols (see below).

2 Refer to the installation or service manual on how to use the BS1~BS3 push buttons and DS1~DS2 switches.

3 Do not operate the unit by short-circuiting protection device S1PH.

4 Refer to the installation manual for indoor-outdoor transmission F1-F2 wiring.

5 When using the central control system, connect outdoor-outdoor transmission F1-F2.

6 The capacity of the contact is 220~240 VAC – 0.5 A. (Rush current needs 3 A or less)

7 Use dry contact for micro-current (1 mA or less 12VDC).

Symbols:

X1M	Main terminal
	Earth wiring
15	Wire number 15
	Field wire
	Field cable
→ **/12.2	Connection ** continues on page 12 column 2
①	Several wiring possibilities
	Option
	Not mounted in switch box
	Wiring depending on model
	PCB

Colours:

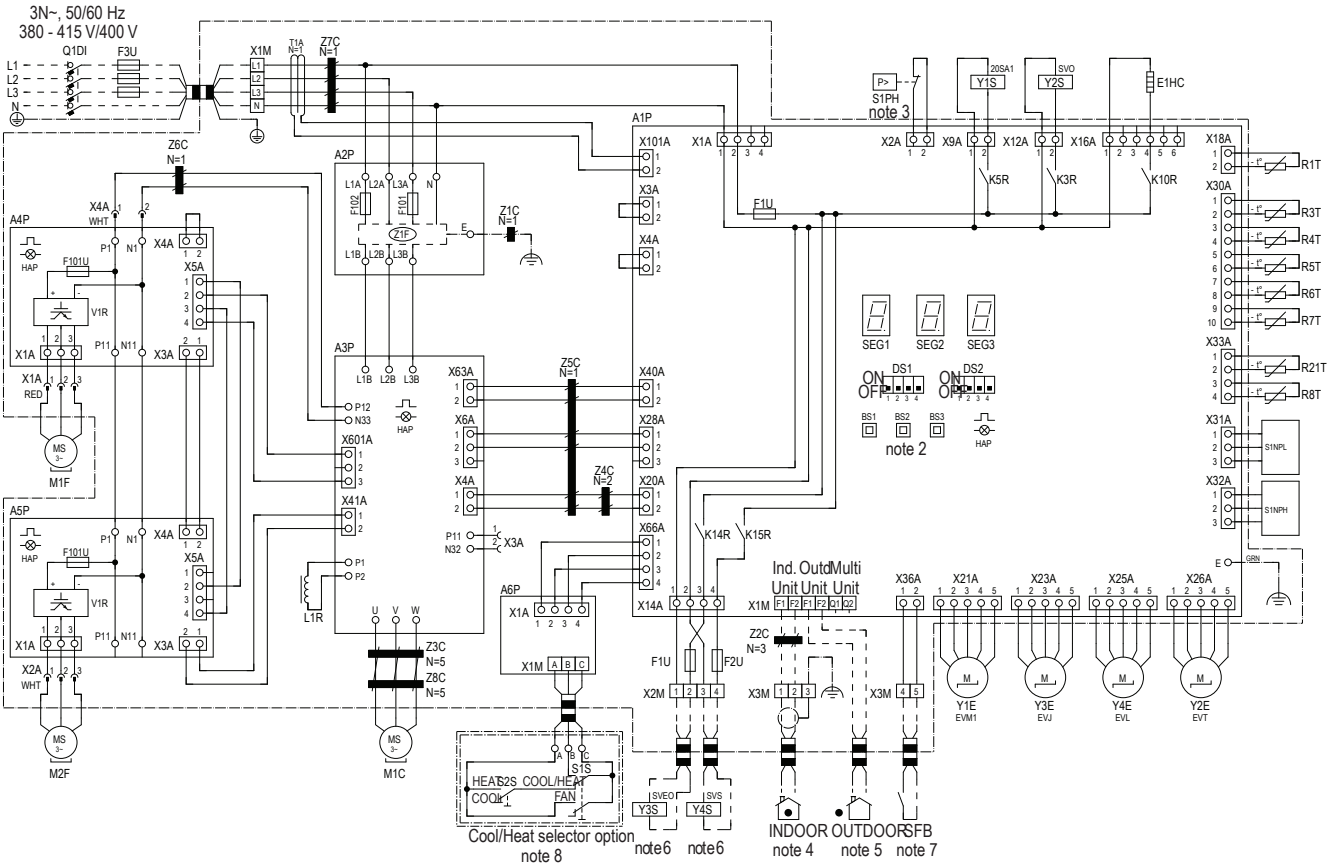
BLK	Black
BLU	Blue
BRN	Brown
GRN	Green
ORG	Orange
RED	Red
WHT	White
YLW	Yellow

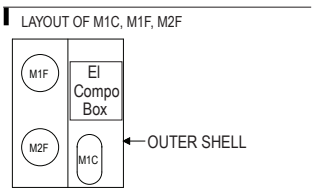
Legend for wiring diagram:

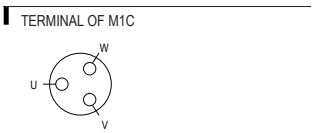
A1P	Printed circuit board (main)
A2P	Printed circuit board (noise filter)
A3P	Printed circuit board (inverter)
A4P	Printed circuit board (fan 1)
A5P	Printed circuit board (fan 2)
A6P	Printed circuit board (cool/heat selector)
BS* (A1P)	Push button switch
DS* (A1P)	DIP switch
E1HC	Crankcase heater
F1U (A1P)	Fuse (T 10 A / 250 V)
F1U, F2U	Fuse (T 1 A / 250 V)
F3U	Field fuse (field supply)
HAP (A1P)	Light-emitting diode (service monitor is green)
K*R (A*P)	Relay on PCB
L1R	Reactor
M1C	Motor (compressor)
M1F, M2F	Motor (upper and lower fan)
Q1DI	Earth leakage circuit breaker (field supply)
R1T	Thermistor (air)
R3T	Thermistor (suction accumulator)
R4T	Thermistor (heat exchanger liquid)
R5T	Thermistor (liquid)
R6T	Thermistor (subcool heat exchanger gas)
R7T	Thermistor (de-icer)
R8T	Thermistor (M1C body)
R21T	Thermistor (M1C discharge pipe)
S1NPH	High pressure sensor
S1NPL	Low pressure sensor
S1PH	High pressure switch
S1S	Air control switch (optional)
S2S	Cool/heat switch (optional)
SEG* (A1P)	7-segment display
SFB	Mechanical ventilation error input (field supply)
T1A	Current sensor
X*A	Connector
X*M	Terminal strip
Y1E	Electronic expansion valve (heat exchanger)

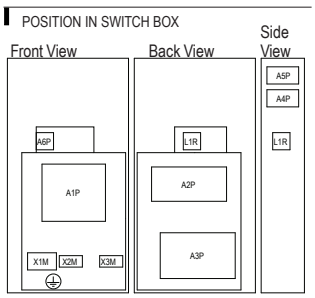
Y2E	Electronic expansion valve (subcool heat exchanger)
Y3E	Electronic expansion valve (inverter cooling)
Y4E	Electronic expansion valve (liquid injection)
Y1S	Solenoid valve (4-way valve)
Y2S	Solenoid valve (accumulator oil return)
Y3S	Error operation output (SVEO)(field supply)
Y4S	Leak sensor output (SVS)(field supply)
Z*C	Noise filter (ferrite core)

RXYSA8A



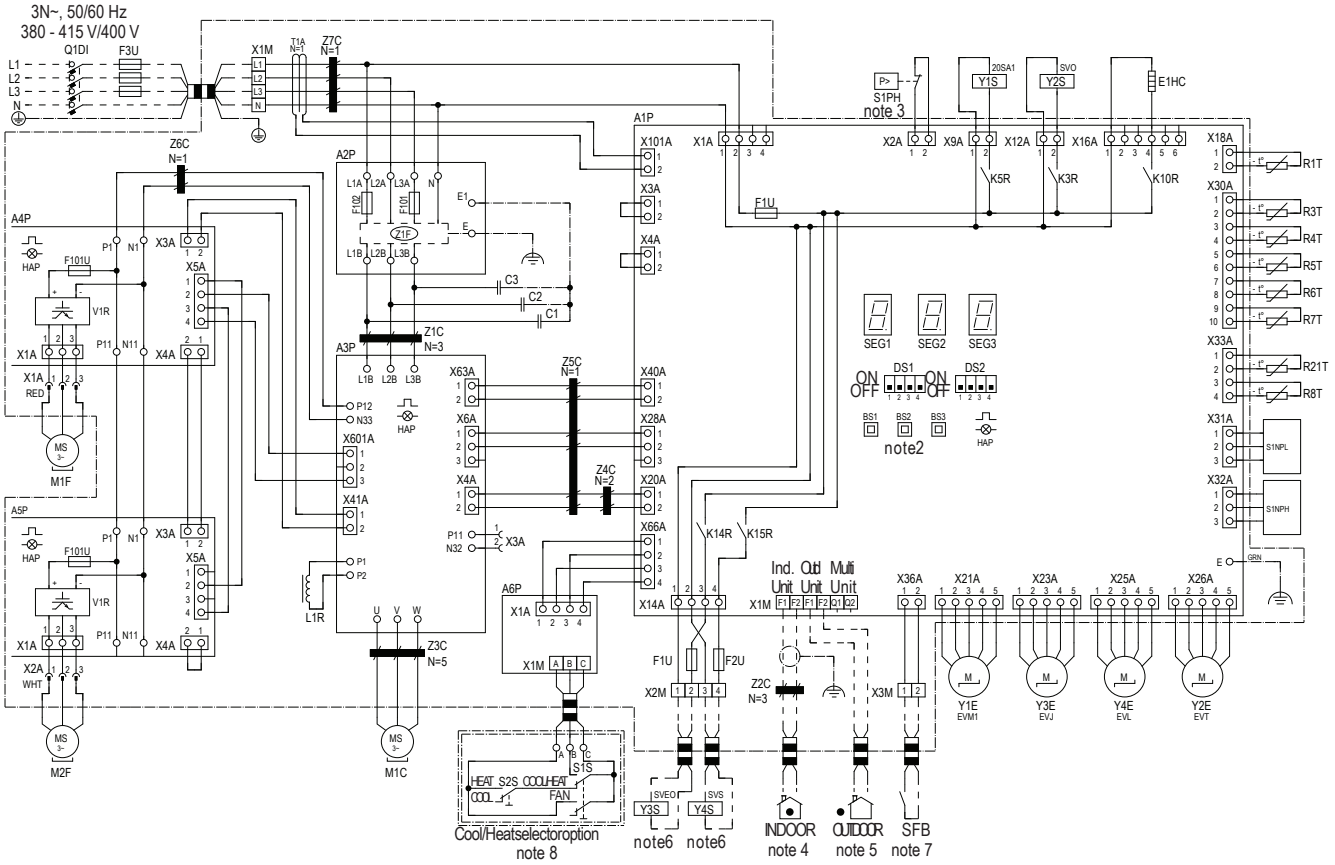


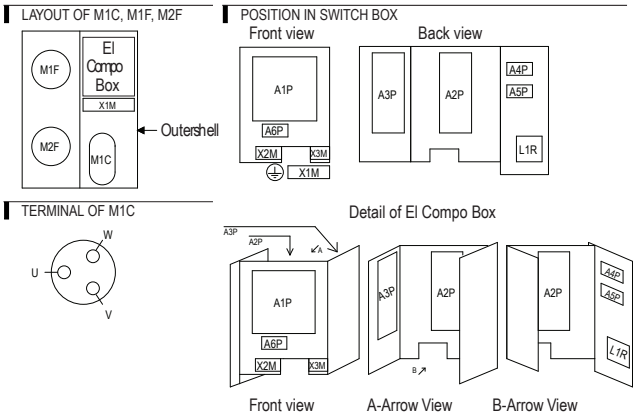




4D148025B

RXYSA10+12A



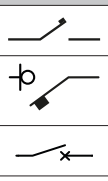
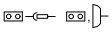


4D148026A

7.2.2 Wiring diagram: Safety valve box

The wiring diagram is delivered with the unit, located at the inside of the service cover.

For applied parts and numbering, see the wiring diagram on the unit. Part numbering is by Arabic numbers in ascending order for each part and is represented in the overview below by "*" in the part code.

Symbol	Meaning	Symbol	Meaning
	Circuit breaker		Protective earth
	Connection		Protective earth (screw)
	Connector		Rectifier
	Earth		Relay connector
	Field wiring		Short-circuit connector
	Fuse		Terminal
	Indoor unit		Terminal strip
	Outdoor unit		Wire clamp
	Residual current device		

Symbol	Colour	Symbol	Colour
BLK	Black	ORG	Orange
BLU	Blue	PNK	Pink
BRN	Brown	PRP, PPL	Purple
GRN	Green	RED	Red
GRY	Grey	WHT	White
		YLW	Yellow

Symbol	Meaning
A*P	Printed circuit board (PCB)
BS*	Pushbutton ON/OFF, operation switch
BZ, H*O	Buzzer
C*	Capacitor
AC*, CN*, E*, HA*, HE*, HL*, HN*, HR*, MR*_A, MR*_B, S*, U, V, W, X*A, K*R_*, NE	Connection, connector
D*, V*D	Diode
DB*	Diode bridge
DS*	DIP switch
E*H	Heater

Symbol	Meaning
FU*, F*U, (for characteristics, see PCB inside your unit)	Fuse
FG*	Connector (frame ground)
H*	Harness
H*P, LED*, V*L	Pilot lamp, light emitting diode
HAP	Light emitting diode (service monitor green)
HIGH VOLTAGE	High voltage
IES	Intelligent eye sensor
IPM*	Intelligent power module
K*	Contact
K*R, KCR, KFR, KHuR, K*M	Magnetic relay
L	Live
L*	Coil
L*R	Reactor
M*	Stepper motor
M*C	Compressor motor
M*D	Damper motor
M*F	Fan motor
M*P	Drain pump motor
M*S	Swing motor
MR*, MRCW*, MRM*, MRN*	Magnetic relay
N	Neutral
n=*, N=*	Number of passes through ferrite core
NE*	Functional earth
PAM	Pulse-amplitude modulation
PCB*	Printed circuit board
PM*	Power module
PS	Switching power supply
PTC*	PTC thermistor
Q*	Insulated gate bipolar transistor (IGBT)
Q*C	Circuit breaker
Q*DI, KLM	Earth leak circuit breaker
Q*L	Overload protector
Q*M	Thermo switch
Q*R	Residual current device

Symbol	Meaning
R*	Resistor
R*T	Thermistor
RC	Receiver
S*C	Limit switch
S*L	Float switch
S*NG	Refrigerant leak detector
S*NPH	Pressure sensor (high)
S*NPL	Pressure sensor (low)
S*PH, HPS*	Pressure switch (high)
S*PL	Pressure switch (low)
S*T	Thermostat
S*RH	Humidity sensor
S*W, SW*	Operation switch
SA*, F1S	Surge arrester
SEG*	7-segment display
SR*, WLU	Signal receiver
SS*	Selector switch
SHEET METAL	Terminal strip fixed plate
T*R	Transformer
TC, TRC	Transmitter
V*, R*V	Varistor
V*R	Diode bridge, Insulated-gate bipolar transistor (IGBT) power module
WRC	Wireless remote controller
X*	Terminal
X*M	Terminal strip (block)
X*Y	Connector
Y*E	Electronic expansion valve coil
Y*R, Y*S	Reversing solenoid valve coil
Z*C	Ferrite core
ZF, Z*F	Noise filter

Specific SV unit wiring diagram legend

Symbol	Meaning
EVSG	Electronic expansion valve (gas shut-off valve)
EVSL	Electronic expansion valve (liquid shut-off valve)
X15A	Connector (drain up kit abnormal signal)

Notes

1 This wiring diagram applies to the SV unit only.

2 Symbols:

□□□□: terminal block

⌀⌀: connector

: field wiring

⏚: earth terminal

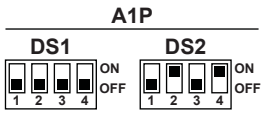
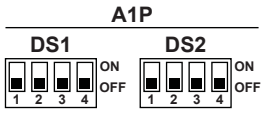
3 For wiring for the terminal block on X2M ~ X6M (operation), see the installation manual attached to the product.

4 For X15A (A1P), remove the short circuit connector and connect the air conditioner stop signal (optional product) when using the drain up kit (optional product). For details, see the operation manual attached to the kit.

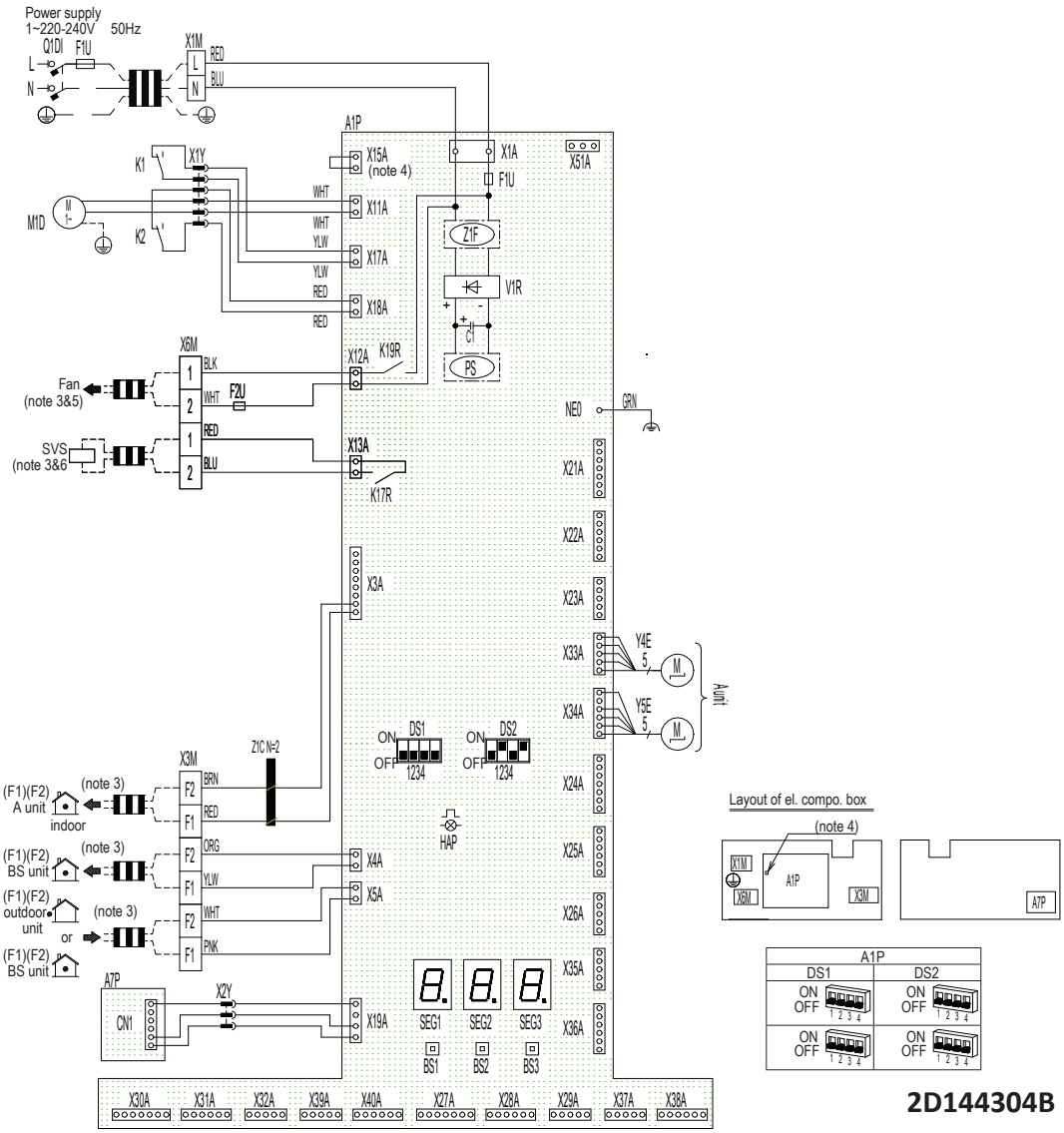
5 The capacity of the contact is 220~240V AC-0.5A.

6 Digital output: max 220~240V AC-0.5A. To use this output, see the installation manual.

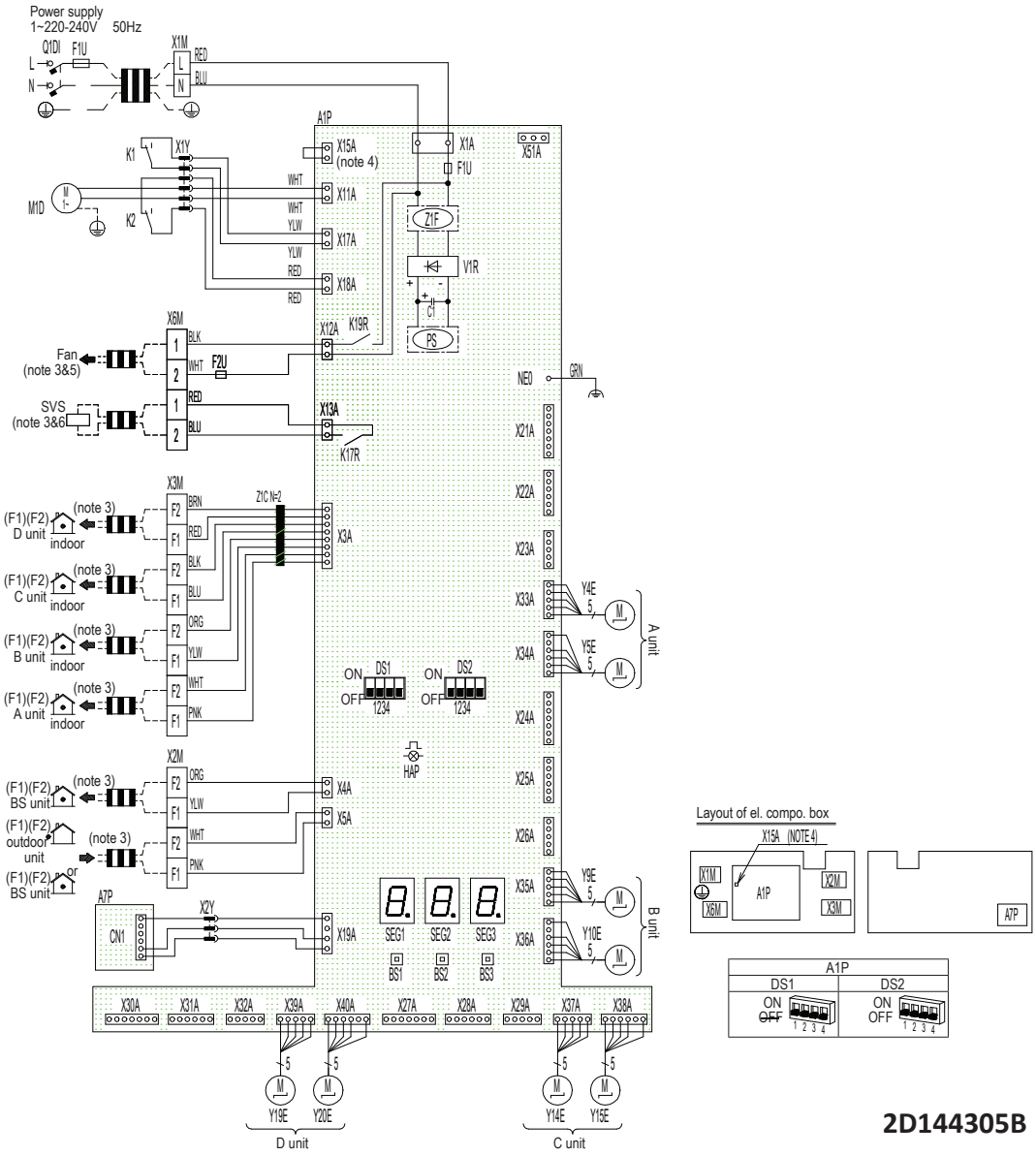
7 The factory settings of DIP switch (DS1, DS2) are as follows:

Model	DS1, DS2 factory settings
SV1A	
SV4A	
SV6A	
SV8A	
To set the DIP switches (DS1~2) and push buttons (BS1~3), see the installation manual	

SV box SV1A

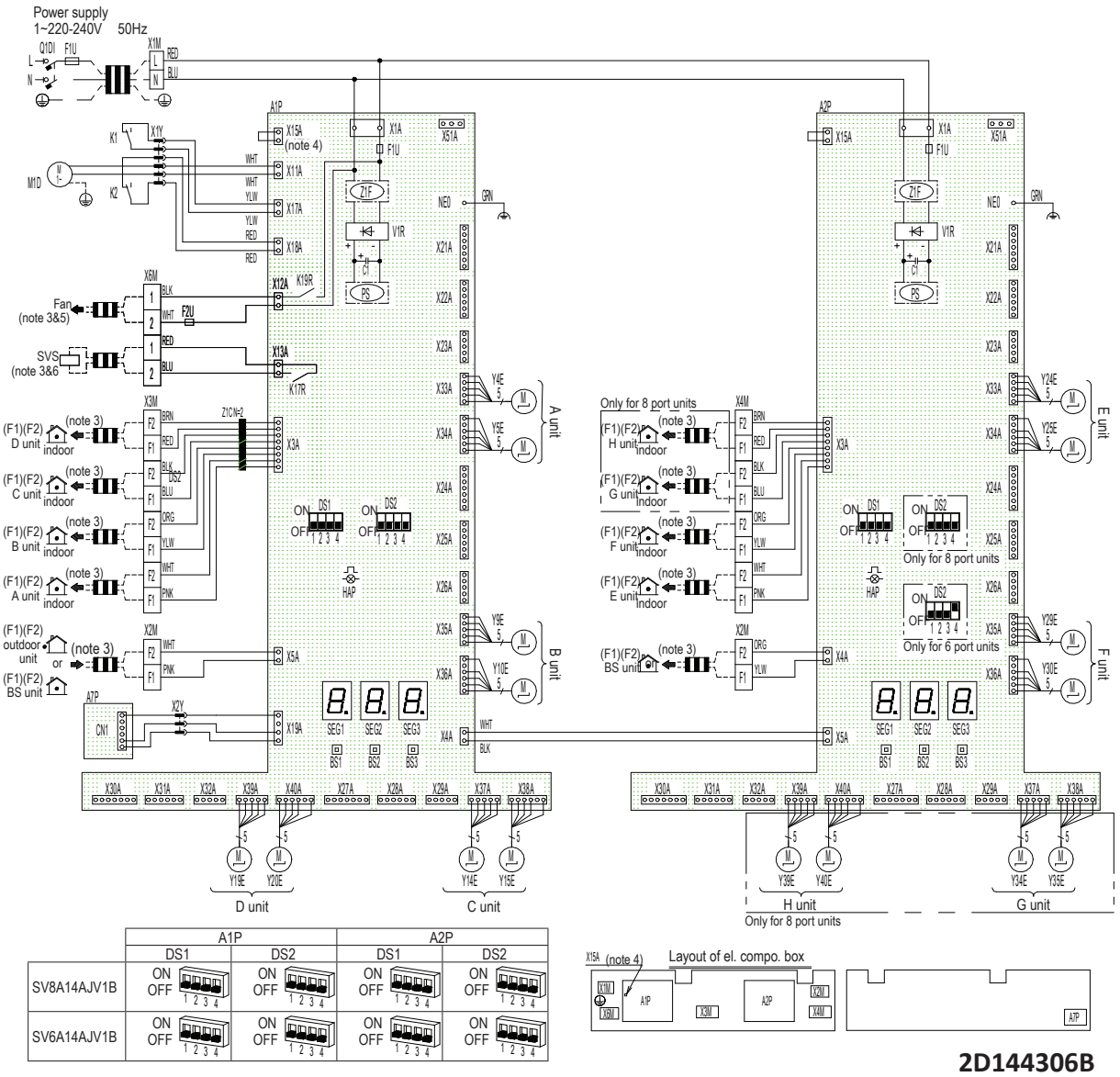

Power supply
1~220-240V 50Hz
Q1DI F1U
X1M
RED
BLU
A1P
X15A (note 4)
X1A
X51A
F1U
X11A
X17A
X18A
Z1F
V1R
C1
PS
X12A K19R
X6M
Fan (note 3&5)
SVS (note 3&6)
F2U
X13A
K17R
NEO
GRN
X21A
X22A
X23A
X33A
X34A
Y4E
Y5E
Unit
X3A
X3M
Z1C N=2
DS1
DS2
ON
OFF
1234
HAP
(F1)(F2) A unit
indoor
(F1)(F2) BS unit
(F1)(F2) outdoor unit
or
(note 3)
X4A
X5A
X24A
X25A
X26A
X35A
X36A
A7P
CN1
X2Y
X19A
SEG1
SEG2
SEG3
BS1
BS2
BS3
X30A
X31A
X32A
X39A
X40A
X27A
X28A
X29A
X37A
X38A
Layout of el. compo. box
(note 4)
A1P
DS1
DS2
2D144304B

SV box SV4A



2D144305B

SV box SV6~8A



	A1P		A2P	
	DS1	DS2	DS1	DS2
SV8A14AJV1B	ON OFF 1 2 3 4	ON OFF 1 2 3 4	ON OFF 1 2 3 4	ON OFF 1 2 3 4
SV6A14AJV1B	ON OFF 1 2 3 4	ON OFF 1 2 3 4	ON OFF 1 2 3 4	ON OFF 1 2 3 4

7.2.3 Wiring diagram: Drain-up kit

(1) Wiring diagram

English	Translation
Wiring diagram	Wiring diagram
Drain up kit	Drain up kit
Circuit board	Circuit board
Float switch (For operation)	Float switch (For operation)
Float switch (For abnormalities)	Float switch (For abnormalities)
Air conditioner stop signal	Air conditioner stop signal
Drain up	Drain up
Relay harness	Relay harness
BS/SV	BS/SV unit
leftmost PCB	Leftmost PCB
Power terminal	Power terminal
Power supply wire	Power supply wire

(2) Notes

English	Translation
NOTE	NOTE
⏚	Protective earth
⊗	Screw connection

NOTES:

1 Be sure to turn on the drain up kit power supply. If the power supply is not turned on, the air conditioner will stop abnormally and operation will not be possible.

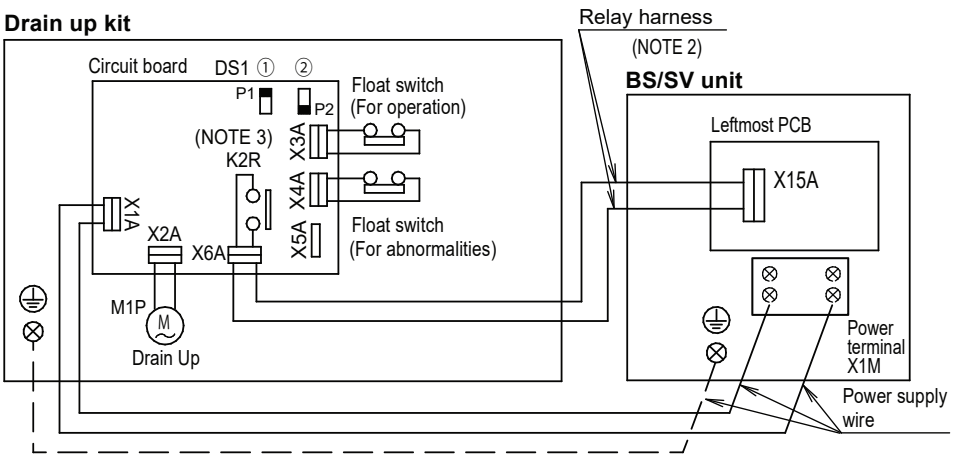
2 The relay harness cannot be extended. (It may malfunction due to noise)

3 When the power supply is turned on, the K2R contact closes and becomes a non-voltage constant B contact.

(3) Legend

DS1	DIP switch
K2R	Contact
M1P	Drain pump
P1, P2	DIP switch position
X1A~X15A	Connector
Z*C	Noise filter (ferrite core)

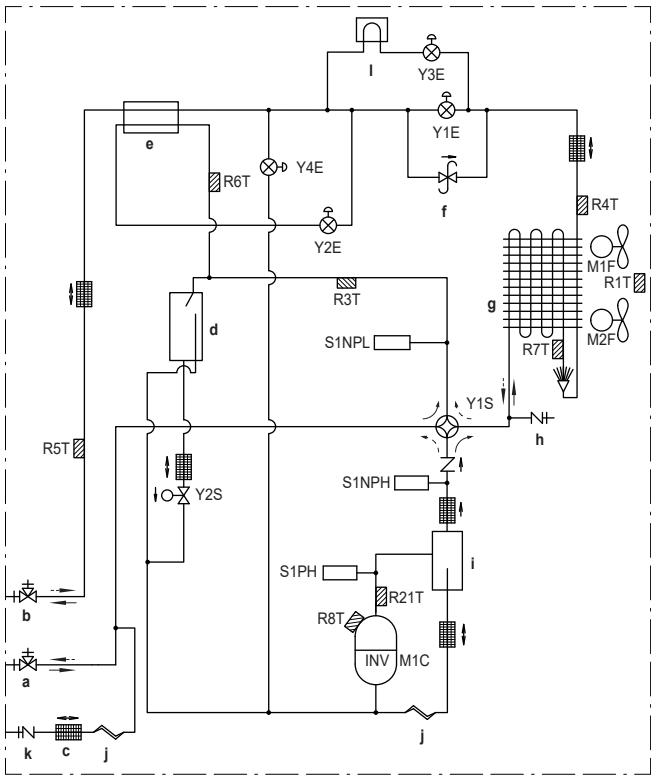
Wiring diagram



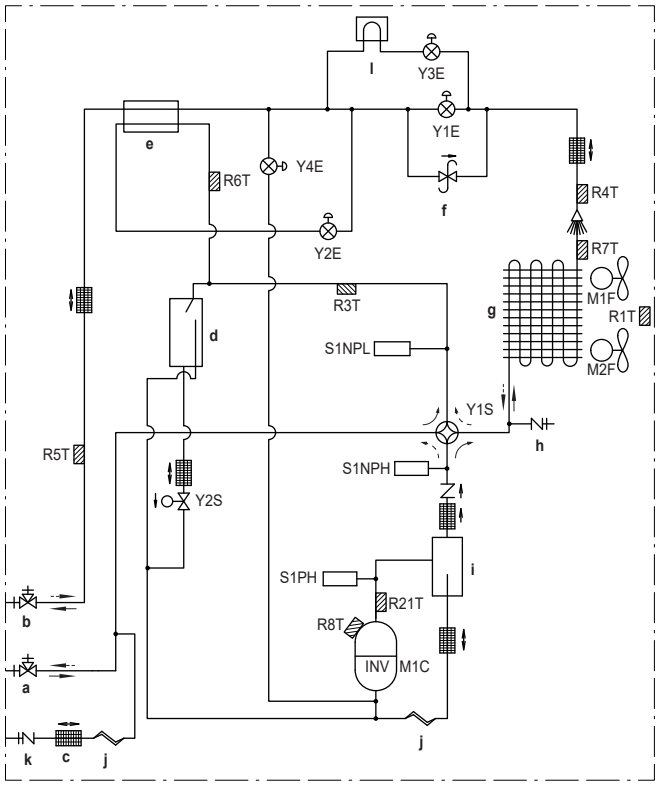
7.3 Piping diagram

7.3.1 Piping diagram: Outdoor unit

Piping diagram: 8 HP



Piping diagram: 10+12 HP



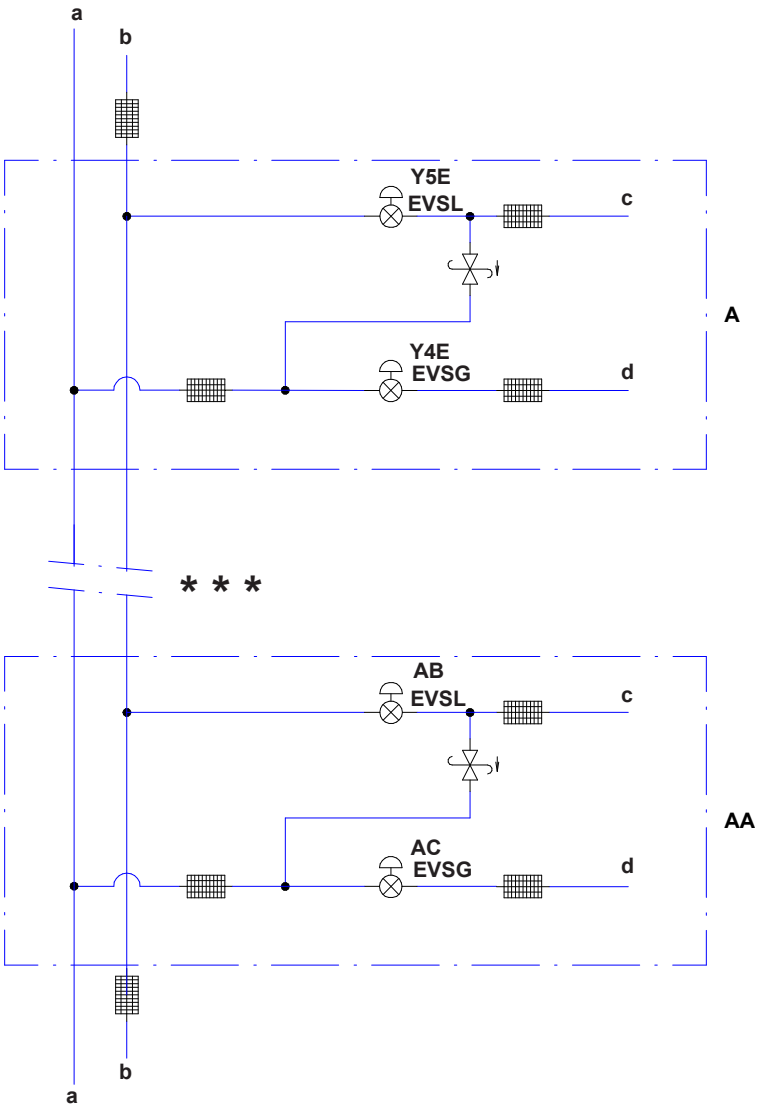
Legend:

a Stop valve (gas)
b Stop valve (liquid)

c	Filter (6×)
d	Accumulator
e	Subcool tube heat exchanger
f	Pressure regulating valve
g	Heat exchanger
h	Service port
i	Oil separator
j	Capillary tube (2×)
k	Charge port
l	Heat sink
M1C	Compressor
M1F-M2F	Fan motor
R1T	Thermistor (air)
R3T	Thermistor (suction accumulator)
R4T	Thermistor (heat exchanger, liquid)
R5T	Thermistor (liquid)
R6T	Thermistor (subcool heat exchanger, gas)
R7T	Thermistor (de-icer)
R8T	Thermistor (M1C body)
R21T	Thermistor (M1C discharge pipe)
S1NPH	High pressure sensor
S1NPL	Low pressure sensor
S1PH	High pressure switch
Y1E	Electronic expansion valve (main)
Y2E	Electronic expansion valve (subcool heat exchanger)
Y3E	Electronic expansion valve (inverter cooling)
Y4E	Electronic expansion valve (liquid injection)
Y1S	Solenoid valve (4-way valve)
Y2S	Solenoid valve (accumulator oil return)
—►	Cooling
- -►	Heating

Component functionalities

7.3.2 Piping diagram: Safety valve box



a Gas pipe
b Liquid pipe
c Liquid pipe to indoor unit
d Gas pipe to indoor unit
EVSG Electronic expansion valve (gas shut-off valve)
EVSL Electronic expansion valve (liquid shut-off valve)
Y*E Electronic expansion valve
A Branch pipe port (to indoor unit A)
AA See table below
AB See table below
AC See table below
*** * *** This pattern is repeated AD times (see below) in total

SV box	AA	AB	AC	AD
SV1A	A	Y4E	Y5E	1
SV4A	D	Y19E	Y20E	4
SV6A	F	Y29E	Y30E	6
SV8A	H	Y39E	Y40E	8

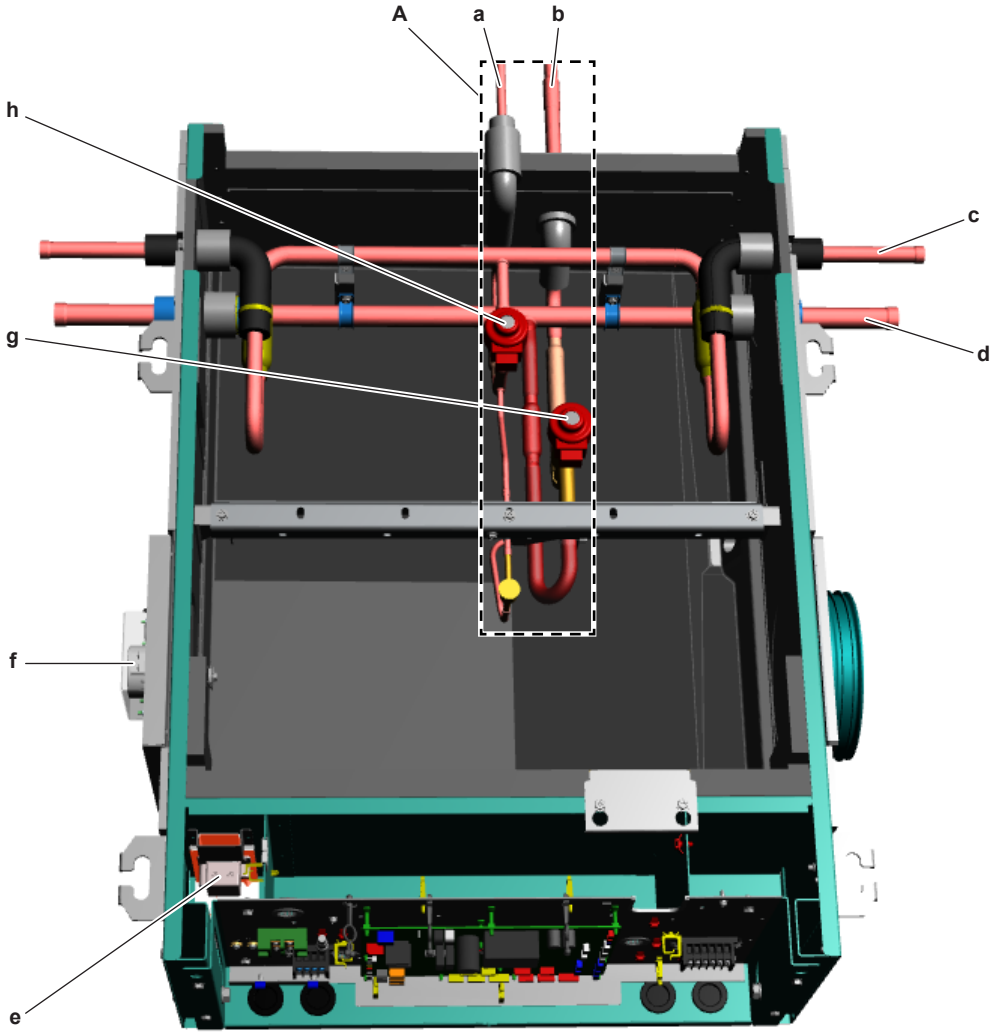

Filter


Pressure relief valve

7.4 Component overview

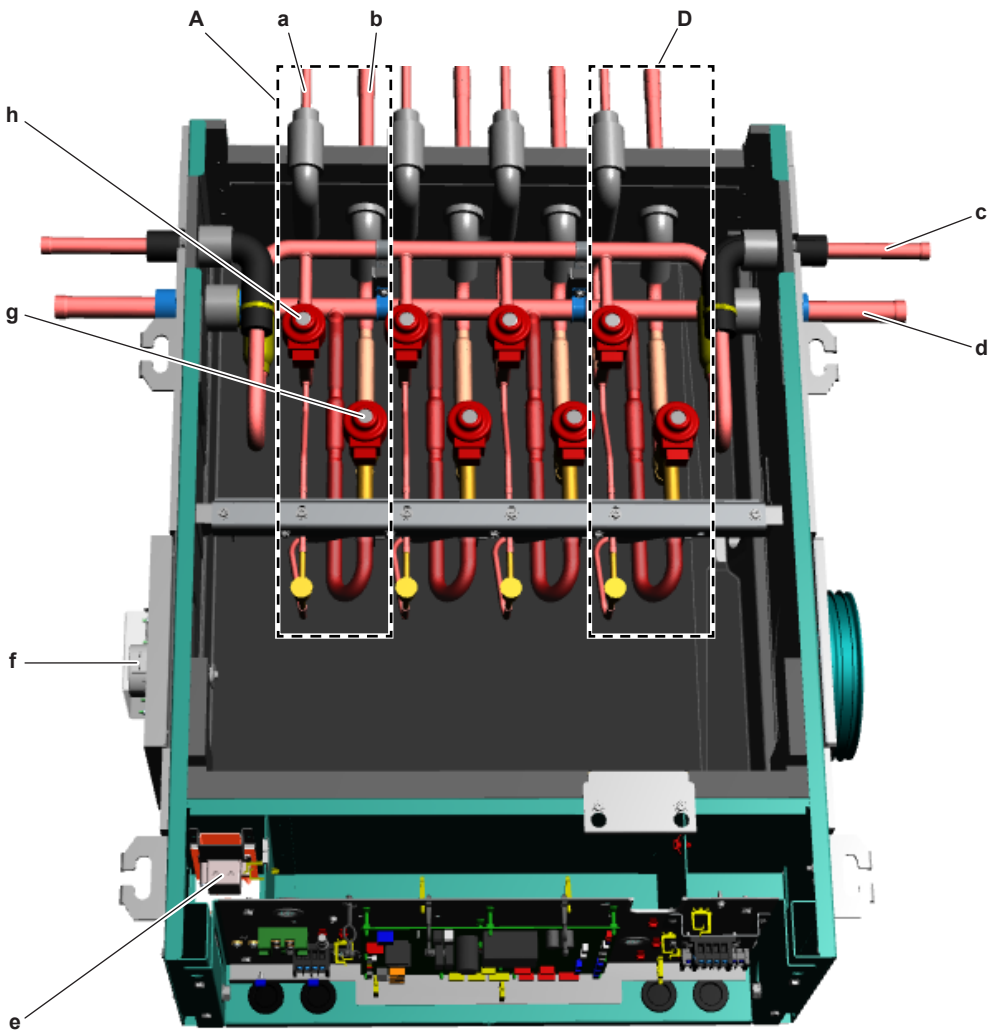
7.4.1 Component overview: Safety valve box

SV1A



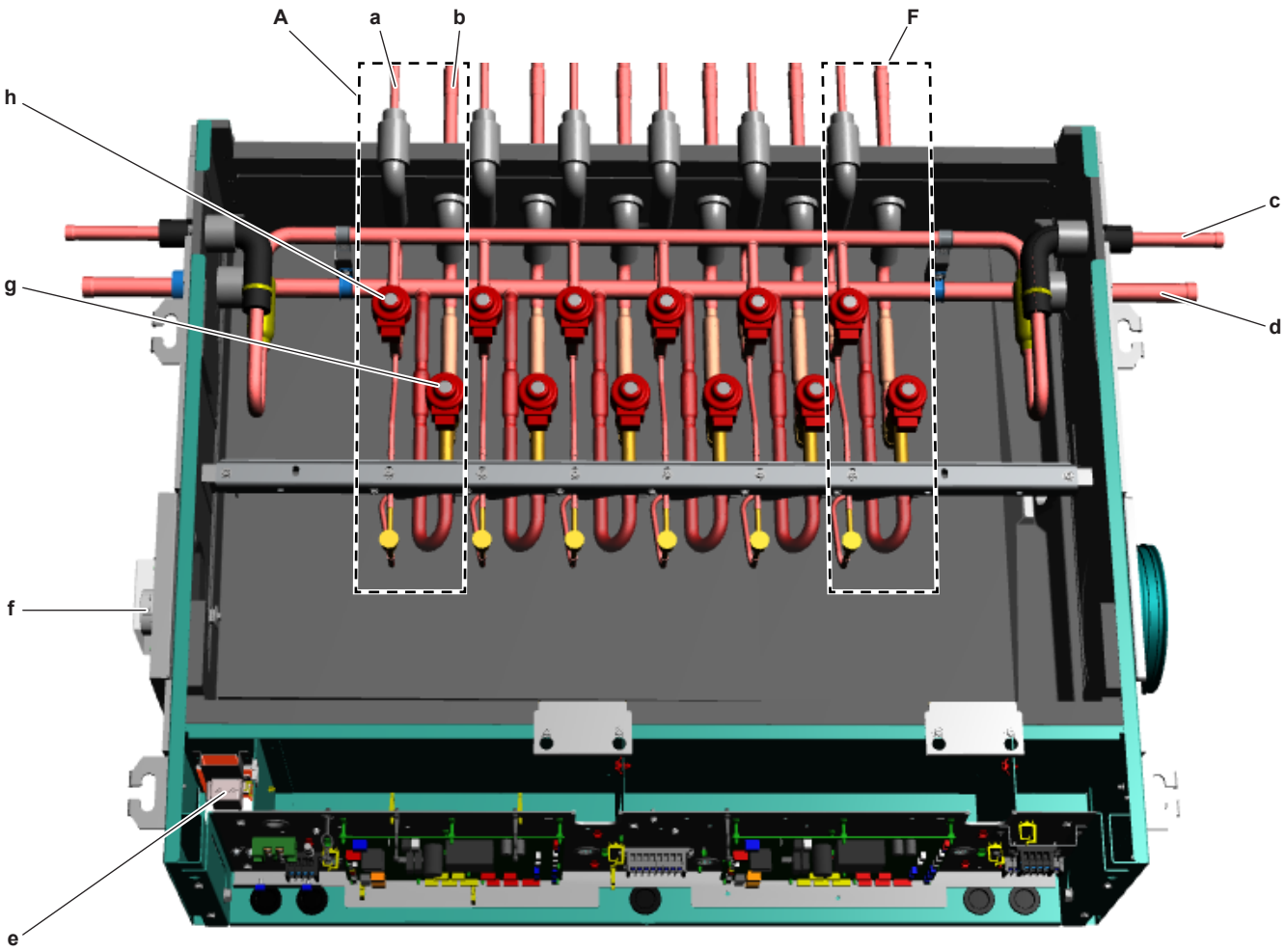
A For indoor units of circuit A
a Liquid pipe to indoor units
b Gas pipe to indoor units
c Liquid pipe (to outdoor unit)
d Gas pipe (to outdoor unit)
e R32 leak detection sensor
f Damper motor M1D + limit switches (K1 and K2)
g Safety gas expansion valve EVSG
h Safety liquid expansion valve EVSL

SV4A



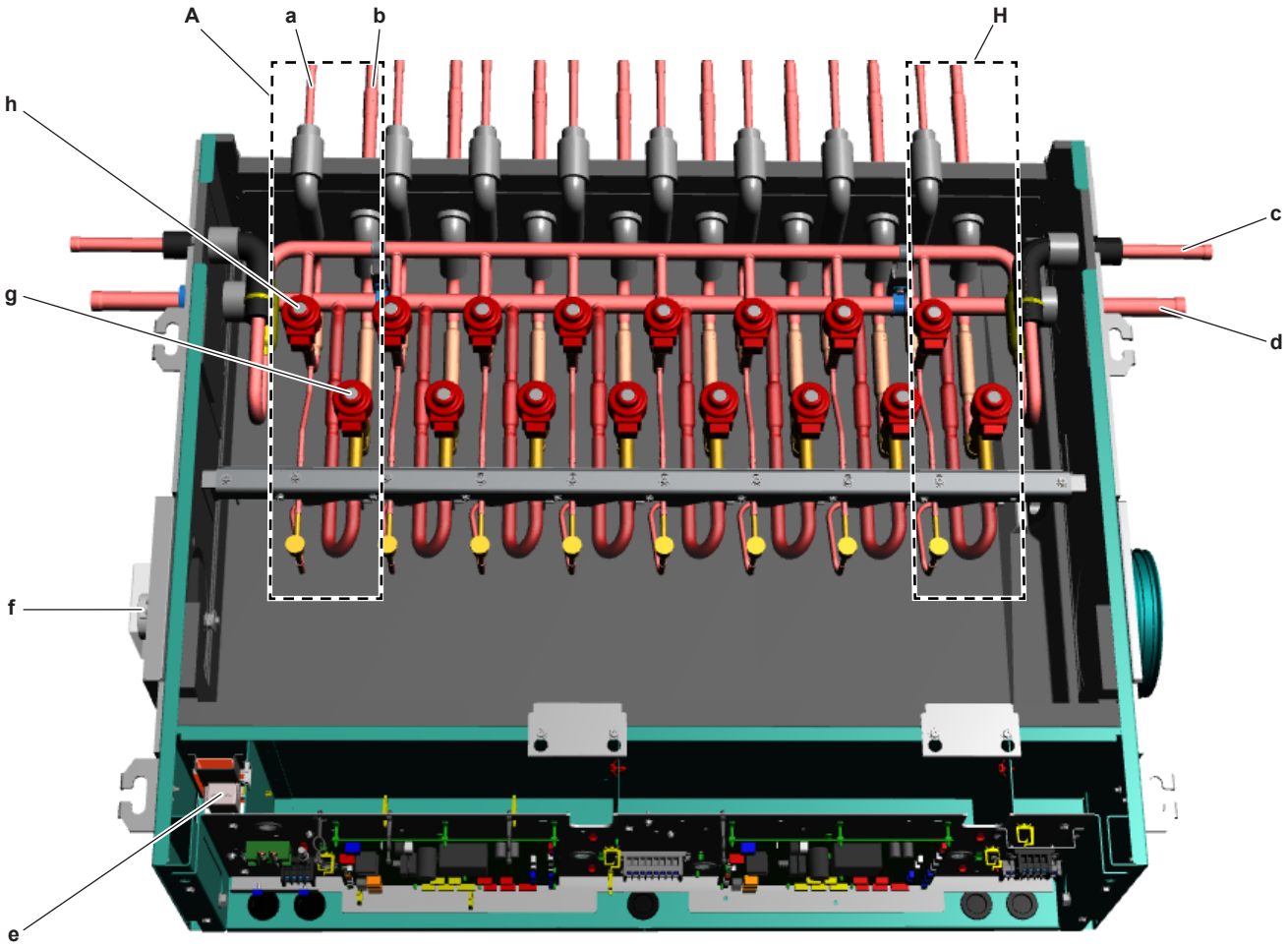
A For indoor units of circuit A
D For indoor units of circuit D
a Liquid pipe to indoor units
b Gas pipe to indoor units
c Liquid pipe (to outdoor unit)
d Gas pipe (to outdoor unit)
e R32 leak detection sensor
f Damper motor M1D + limit switches (K1 and K2)
g Safety gas expansion valve EVSG
h Safety liquid expansion valve EVSL

SV6A



A For indoor units of circuit A
F For indoor units of circuit F
a Liquid pipe to indoor units
b Gas pipe to indoor units
c Liquid pipe (to outdoor unit)
d Gas pipe (to outdoor unit)
e R32 leak detection sensor
f Damper motor M1D + limit switches (K1 and K2)
g Safety gas expansion valve EVSG
h Safety liquid expansion valve EVSL

SV8A

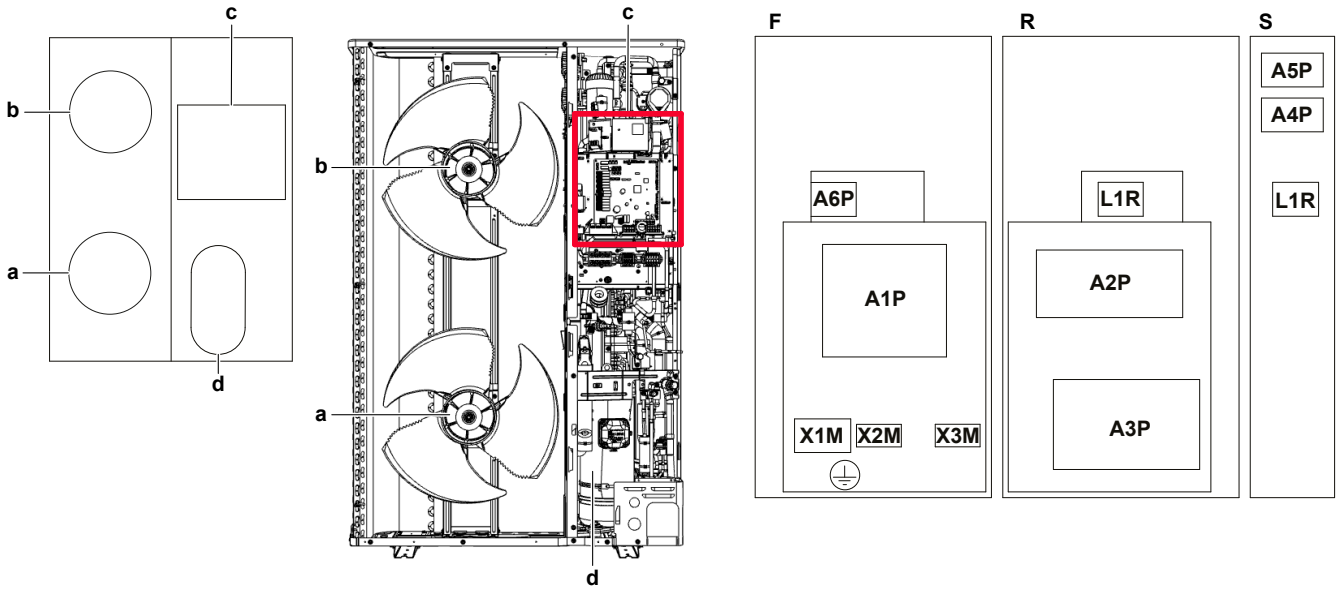


A For indoor units of circuit A
H For indoor units of circuit H
a Liquid pipe to indoor units
b Gas pipe to indoor units
c Liquid pipe (to outdoor unit)
d Gas pipe (to outdoor unit)
e R32 leak detection sensor
f Damper motor M1D + limit switches (K1 and K2)
g Safety gas expansion valve EVSG
h Safety liquid expansion valve EVSL

7.5 Switchbox overview

7.5.1 Outdoor unit

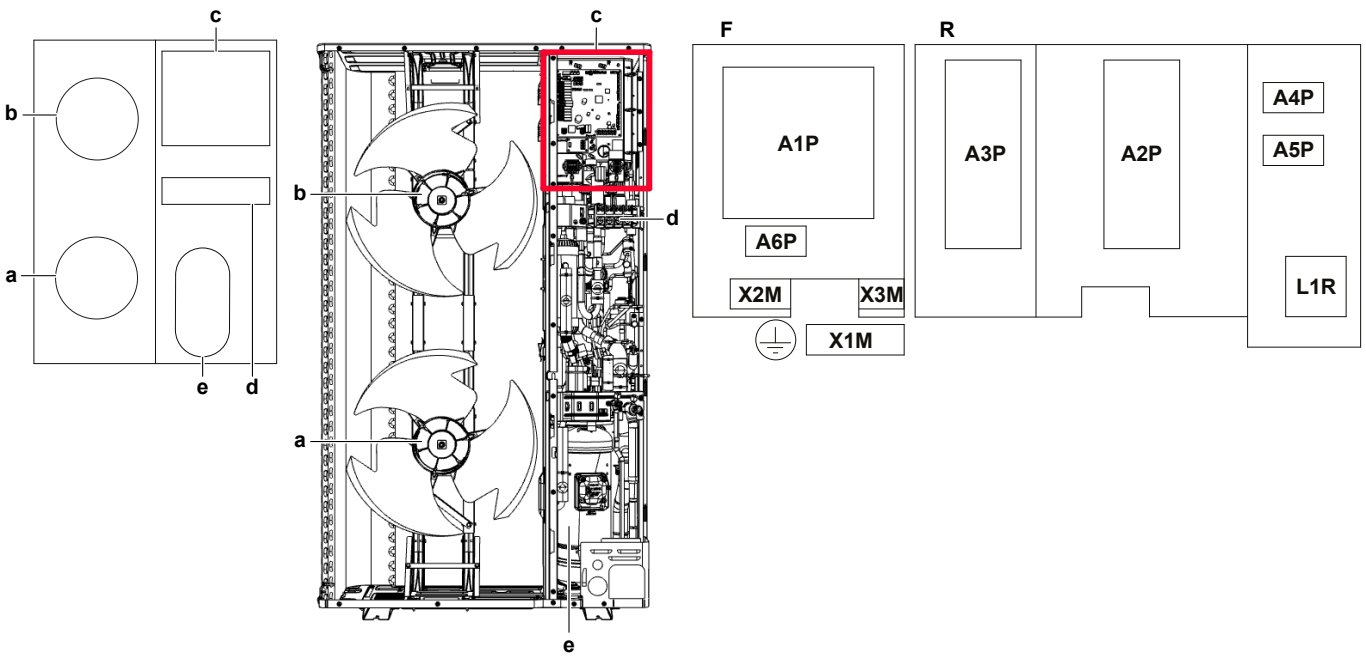
8 HP outdoor unit



a Fan motor (M2F)
b Fan motor (M1F)
c Switchbox
d Compressor (M1C)

F Front view
R Rear view
S Side view
A1P Main PCB
A2P Noise filter PCB
A3P Inverter PCB
A4P Fan inverter PCB for M1F
A5P Fan inverter PCB for M2F
A6P Cool/heat selector PCB
L1R Reactor
X1M Power supply wire terminal
X2M Wire terminal (error operation output and leak sensor output)
X3M Wire terminal (F1/F2 communication and mechanical ventilation error input)

10+12 HP outdoor unit

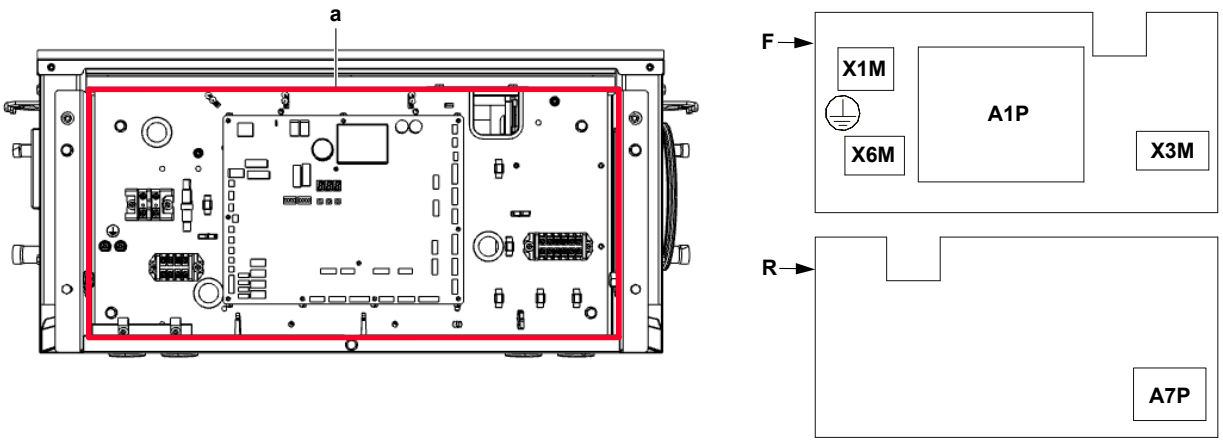


a Fan motor (M2F)
b Fan motor (M1F)
c Switchbox
d Power supply wire terminal (X1M)
e Compressor (M1C)

F Front view
R Rear view
A1P Main PCB
A2P Noise filter PCB
A3P Inverter PCB
A4P Fan inverter PCB for M1F
A5P Fan inverter PCB for M2F
A6P Cool/heat selector PCB
L1R Reactor
X1M Power supply wire terminal
X2M Wire terminal (error operation output and leak sensor output)
X3M Wire terminal (mechanical ventilation error input)

7.5.2 Safety valve box

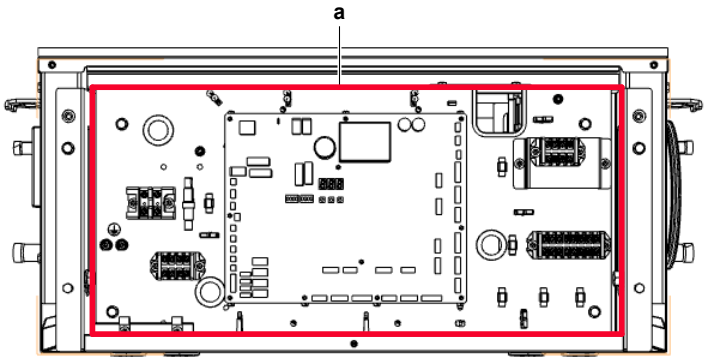
SV1A

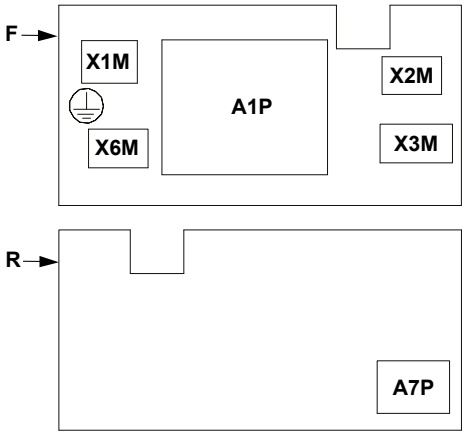


a Switchbox

F Front view
R Rear view
A1P Main PCB
A7P R32 leak detection sensor
X1M Terminal strip (power)
X3M Terminal strip (transmission)
X6M Terminal strip (external output)

SV4A

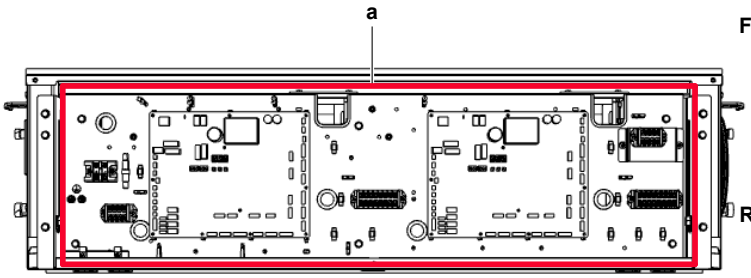


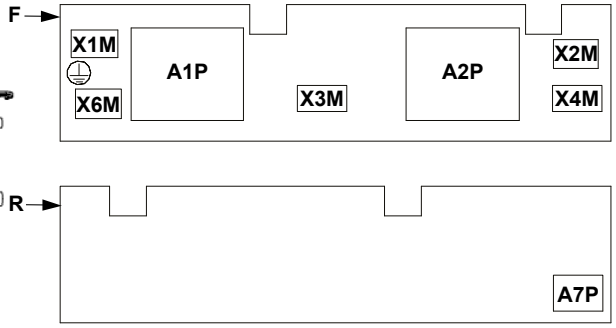


a Switchbox

F Front view
R Rear view
A1P Main PCB
A7P R32 leak detection sensor
X1M Terminal strip (power)
X2M Terminal strip (transmission)
X3M Terminal strip (transmission)
X6M Terminal strip (external output)

SV6~8A



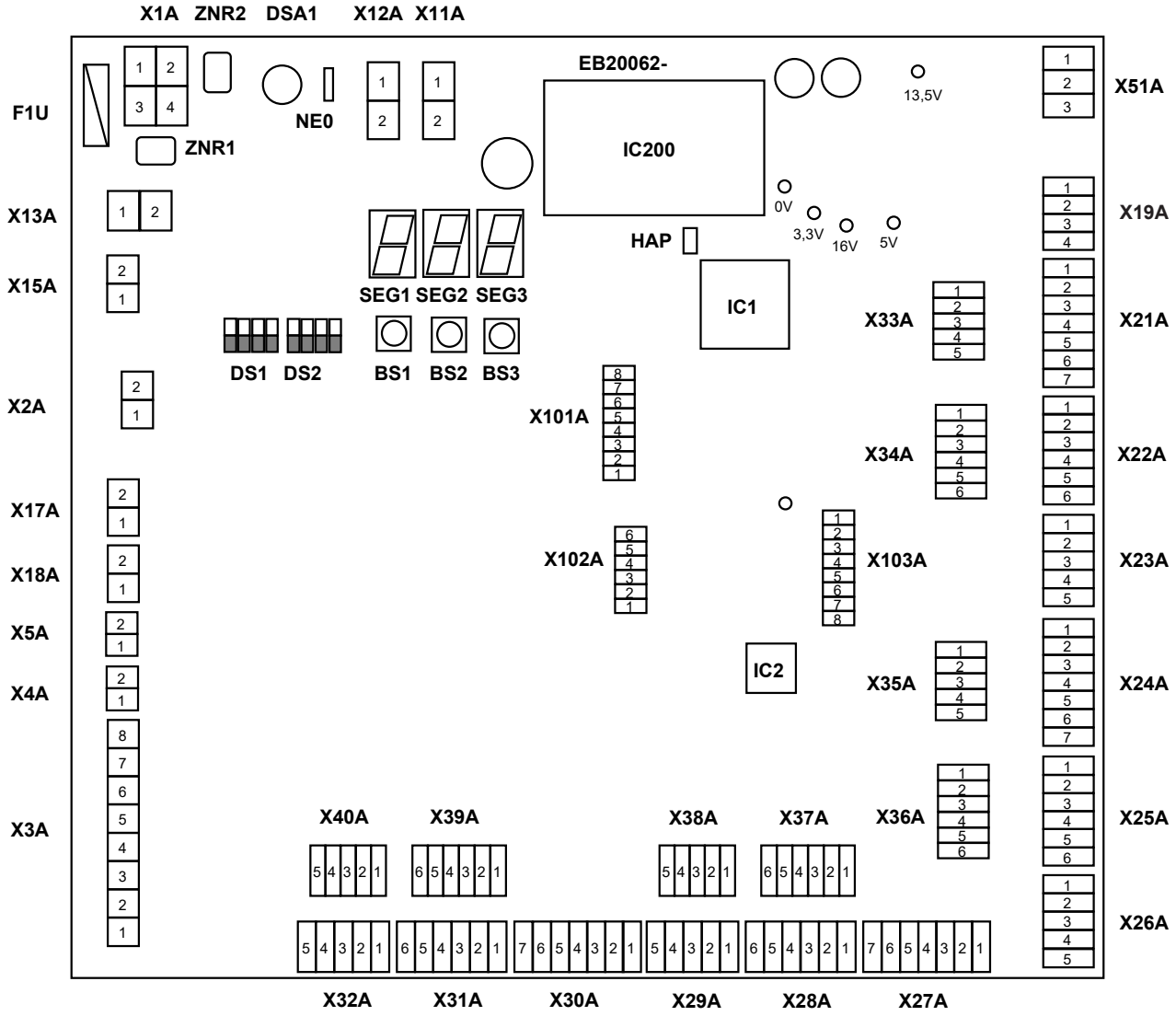


a Switchbox

F Front view
R Rear view
A1P Main PCB
A2P Sub PCB
A7P R32 leak detection sensor
X1M Terminal strip (power)
X2M Terminal strip (transmission)
X3M Terminal strip (transmission)
X4M Terminal strip (transmission)
X6M Terminal strip (external output)

7.5.3 PCB Overview

SV box main and sub PCB



Reference	Color	Description	Wiring symbol		Pins
			A1P	A2P[a]	
DS1	-	Disable indoor circuit	DS1		-
DS2	-	Combination setting	DS2		-
DSA1	Glass	Surge arrestor	-		-
F1U	Glass	Fuse 230 V AC T3.15 A	F1U		-
HAP	Green	Service monitor LED	HAP		-
NE0	-	Earth terminal Faston connection	NE0		-
SEG1	-	7-segment indication left	SEG1		-
SEG2	-	7-segment indication middle	SEG2		-
SEG3	-	7-segment indication right	SEG3		-
X1A	Blue	Power 230 V AC L	-		1+3
		Power 230 V AC N	-		2+4

Reference	Color	Description	Wiring symbol		Pins
			A1P	A2P[a]	
X2A	White	16 V DC output	-		1+2
X3A	White	F1/F2 communication indoor circuits 1	A	E	1+2
		F1/F2 communication indoor circuits 2	B[b]	F	3+4
		F1/F2 communication indoor circuits 3	C[b]	G[c]	5+6
		F1/F2 communication indoor circuits 4	D[b]	H[c]	7+8
X4A	White	F1/F2 communication other SV box	F1/F2 SV box		1+2
X5A	Black	F1/F2 communication outdoor <-> SV box	F1/F2 outdoor unit		1+2
X11A	White	Output damper motor M1D 230 V AC	M1D		2 (L)+1 (N)
X12A	Black	Fan output 230 V AC	Fan		2 (L)+1 (N)
X13A	Red	SVS output (voltage free)	SVS		1+2
X15A	White	default jumper, Float-switch (option K-KDU303KVE)	X6A (option K-KDU303KVE)		1+2
X17A	Orange	Limit switch K1 damper	K1		1+2
X18A	Red	Limit switch K2 damper	K2		1+2
X19A	Blue	R32 leak sensor SV box	A7P		-
X21A	White	NOT used	-		-
X22A	White	NOT used	-		-
X23A	White	NOT used	-		-
X24A	Blue	NOT used	-		-
X25A	Blue	NOT used	-		-
X26A	Blue	NOT used	-		-
X27A	Red	NOT used	-		-
X28A	Red	NOT used	-		-
X29A	Red	NOT used	-		-
X30A	Black	NOT used	-		-
X31A	Orange	NOT used	-		-
X32A	Orange	NOT used	-		-
X33A	White	12 V DC expansion valve EVSG circuit 1	Y4E	Y24E	1~5
X34A	White	12 V DC expansion valve EVSL circuit 1	Y5E	Y25E	1~6
X35A	White	12 V DC expansion valve EVSG circuit 2	Y9E[b]	Y29E	1~5
X36A	White	12 V DC expansion valve EVSL circuit 2	Y10E[b]	Y30E	1~6
X37A	White	12 V DC expansion valve EVSG circuit 3	Y14E[b]	Y34E[c]	1~5
X38A	White	12 V DC expansion valve EVSL circuit 3	Y15E[b]	Y35E[c]	1~6
X39A	White	12 V DC expansion valve EVSG circuit 4	Y19E[b]	Y39E[c]	1~5
X40A	White	12 V DC expansion valve EVSL circuit 4	Y20E[b]	Y40E[c]	1~6
X51A	Red	NOT used	-		-

Reference	Color	Description	Wiring symbol		Pins
			A1P	A2P[a]	
X101A	White	EEPROM writing	-		-
X102A	White	Write software main processor	-		-
X103A	White	Write software sub processor	-		1~8
ZNR2	Black	Varistor	Z1F		-

[a] ONLY for SV6~8A SV boxes.
[b] ONLY for SV4~8A SV boxes.
[c] ONLY for SV8A SV boxes.

7.6 Safety devices

SV box

Wiring symbol	Component	Description	Trigger	Error	Action type
F1U	Fuse A1P, A2P	Fuse (holder)	T 3.15 A	UA-62	Forced stop

7.7 Field information report

See next page.

In case a problem occurred on the unit which could not be resolved by using the content of this service manual or in case you have a problem which could be resolved but of which the manufacturer should be notified, we advise you to contact your distributor.
To facilitate the investigation, additional information is required. Please fill out the following form before contacting your distributor.

FIELD INFORMATION REPORT	
Key person information	
Name:	Company name:
Your contact details Phone number:	E-mail address:
Site address:	
Your reference:	Date of visit:
Claim information	
Title:	
Problem description:	
Error code:	Trouble date:
Problem frequency:	
Investigation steps done:	
Insert picture of the trouble.	
Current situation (solved, not solved,…):	
Countermeasures taken:	
Comments and proposals:	
Part available for return (if applicable):	

Application information
Application (house, apartment, office,…):
New project or reimbursement:
Piping layout / Wiring layout (simple schematic):

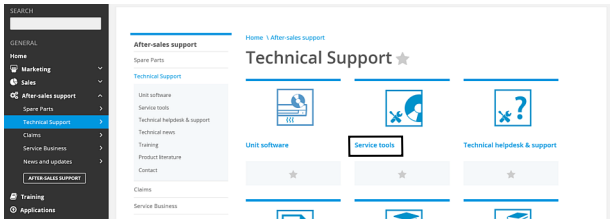
Unit / Installation information	
Model name:	Serial number:
Installation / commissioning date:	Software version user interface:
Software version outdoor PCB:	

Provide pictures of the field settings overview (viewable on the user interface).

7.8 Service tools

1 For an overview of the available service tools, check the Daikin Business Portal (authentication required).

2 Go to the tab After-sales support on the left navigation pane and select Technical support.



3 Click the button Service tools. An overview of the available service tools for the different products is shown. Also additional information on the service tools (instruction, latest software) can be found here.

7.9 Field settings

7.9.1 To access mode 1 or 2

1 Check if the unit is in normal mode. If NOT in normal mode, push BS1 to return to normal mode. 7-segment display indication state will be as shown:

Result: 

2 7-segment display indications:

Off

Blinking

On

3 BS1 is used to change the mode you want to access.

Access	Action
Mode 1	Push BS1 one time. 7-segment display indication changes to: 
Mode 2	Push BS1 for at least 5 seconds. 7-segment display indication changes to: 

INFORMATION

To access the field settings on BRC1H controller, see the installer reference guide of the specific controller and the indoor unit installer reference guide for more information.

7.9.2 To use mode 1

Outdoor units

Mode 1 is used to monitor the status of the unit.

What	How
Changing and accessing the setting in mode 1	Once mode 1 is selected (push BS1 one time), you can select the wanted setting. It is done by pushing BS2. Accessing the selected setting's value is done by pushing BS3 one time.
To quit and return to the initial status	Press BS1.

Example:

Checking the content of parameter [1-10] (to know how many indoor units are connected to the system).

[A-B]=C in this case defined as: A=1; B=10; C=the value we want to know/monitor:

1 Make sure the 7-segment display indication is as during normal operation (default situation when shipped from factory). 7-segment display indications:

Off

Blinking

On

2 Push BS1 one time.

Result: Mode 1 is accessed: 

3 Push BS2 10 times.

Result: Mode 1 setting 10 is addressed: 

4 Push BS3 one time; the value which is returned (depending on the actual field situation), is the amount of indoor units which are connected to the system.

Result: Mode 1 setting 10 is addressed and selected, return value (e.g. 15) is monitored information (15 indoor units connected to the system).

5 To leave the monitoring function, push BS1 one time.

SV box

Mode 1 is used to set basic settings and to monitor the status of the unit.

What	How
Changing and accessing the setting in mode 1	1 Push BS1 one time to select mode 1. 2 Push BS2 to select the required setting. 3 Push BS3 one time to access the selected setting's value.
To quit and return to the initial status	Push BS1.

Example:

Checking the content of parameter [1-2] (to know the software version).

[Mode-Setting]=Value in this case defined as: Mode=1; Setting=2; Value=the value we want to know/monitor:

1 Make sure the 7-segment display indication is in the default situation (normal operation).

2 Push BS1 one time.

Result: Mode 1 is accessed: 

3 Push BS2 two times.

Result: Mode 1 setting 2 is addressed: 

4 Push BS3 one time. The displays shows the software version.

Result: Mode 1 setting 2 is addressed and selected, return value is monitored information.

5 Push BS1 one time to quit mode 1.

7.9.3 To use mode 2

Outdoor units

Mode 2 is used to set field settings of the outdoor unit and system.

What	How
Changing and accessing the setting in mode 2	Once mode 2 is selected (push BS1 for more than 5 seconds), you can select the wanted setting. It is done by pushing BS2. Accessing the selected setting's value is done by pushing BS3 1 time.
To quit and return to the initial status	Press BS1.
Changing the value of the selected setting in mode 2	▪ Once mode 2 is selected (push BS1 for more than 5 seconds) you can select the wanted setting. It is done by pushing BS2. ▪ Accessing the selected setting's value is done by pushing BS3 1 time. ▪ Now BS2 is used to select the required value of the selected setting. ▪ When the required value is selected, you can define the change of value by pushing BS3 1 time. ▪ Press BS3 again to start operation according to the chosen value.

Example:

Checking the content of parameter [2-18] (to define the high static pressure setting of the outdoor unit's fan).

[A-B]=C in this case defined as: A=2; B=18; C=the value we want to know/change

1 Make sure the 7-segment display indication is as during normal operation (default situation when shipped from factory). 7-segment display indications:

   Off

   Blinking

   On

2 Push BS1 for over 5 seconds.

   Result: Mode 2 is accessed: 

3 Push BS2 18 times.

   Result: Mode 2 setting 18 is addressed: 

4 Push BS3 1 time; the value which is returned (depending on the actual field situation), is the status of the setting. In the case of [2-18], default value is "0", which means the function is not active.

   Result: Mode 2 setting 18 is addressed and selected, return value (e.g. 0) is the current setting situation.

5 To change the value of the setting, push BS2 till the required value appears on the 7-segment display indication. When achieved, define the setting value by pushing BS3 1 time. To start operation according to the chosen setting, confirm again by pushing BS3.

6 To leave the monitoring function, push BS1 1 time.

SV box

Mode 2 is used to set field settings of the SV unit.

What	How
Changing and accessing the setting in mode 2	▪ Push BS1 for more than five seconds to select mode 2. ▪ Push BS2 to select the required setting. ▪ Push BS3 one time to access the selected setting's value.
To quit and return to the initial status	Push BS1.
Changing the value of the selected setting in mode 2	▪ Push BS1 for more than five seconds to select mode 2. ▪ Push BS2 to select the required setting. ▪ Push BS3 one time to access the selected setting's value. ▪ Push BS2 to select the required value of the selected setting. ▪ Push BS3 one time to validate the change. ▪ Push BS3 again to start operation with the chosen value.

Example:

Checking the content of parameter [2-7] (to enable or disable the ventilated enclosure function).

[Mode-Setting]=Value in this case is defined as: Mode=2; Setting=7; Value=the value we want to know/change.

1 Make sure the 7-segment display indication is in the default situation (normal operation).

2 Push BS1 for more than five seconds.

Result: Mode 2 is accessed: 

3 Push BS2 seven times (or push BS2 until seven appears on the 7-segment display).

Result: Mode 2 setting 7 is addressed: 

4 Push BS3 one time. The display shows the status of the setting (depending on the actual field situation). In the case of [2-7], the default value is "1", which means the ventilated enclosure function is enabled.

Result: Mode 2 setting 7 is addressed and selected, return value is the current setting situation.

5 To change the value of the setting, push BS2 until the required value appears on the 7-segment display.

6 Push BS3 one time to validate the change.

7 Push BS3 to start operation according to the chosen setting.

8 Push BS1 one time to quit mode 2.

7.9.4 Mode 1: Field settings

SV box

In mode 1 you can monitor operation of the unit. The LEDs give a binary representation of the setting/value number.
(*) This column shows the number of times you have to push the SET button (BS2) to access the field setting.

N°(*)	Description	Data
0	Remaining lifetime (months) of R32 sensor	0~120
1	Display the micon ID	01~999
2	Software number	01~999

7.9.5 Mode 2: Field settings

SV box

In mode 2 you can make field settings to configure the SV box. The LEDs give a binary representation of the setting/value number.
(*) This column shows the number of times you have to push the SET button (BS2) to access the field setting.

N°(*)	Description	Field setting			Default	
		0	1	2	-1 (A1P)	-3 (A2P)
0	SV box part of cluster	No	Yes	-	0	0
1	SV box cluster number	0~63			0	0
2	SV box type cluster	Parallel	Serial	-	0	0
3	Simulate R32 leak	No	Yes	-	0	0
4	Extra safety measures	No	Yes	No ≤24 hours	1	0
5	R32 sensor replacement completed	Normal	Reset	-	0	0
6	Test safety measure confirmed	No	Yes	-	0	1
7	Ventilation enclosure	No	Yes	-	1	0
8	Address supervisor user interface	00~FF			0	0
9	Address error handling	0~63			0	0
10	Disable output Error	No	Yes	-	0	0

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

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