



SANDEN

Maintenance guide

CDU-S (CDU-R02A1A & CDU-R02A1B)

CDU-M (CDU-R04A1B)

CDU-L (CDU-R06A2A & CDU-R06A2B)

IMPORTANT

Please keep this document.

Thank you for choosing a SANDEN refrigerating unit.

This maintenance guide is intended for installers, repair technicians and daily operators working with the equipment. It provides essential information to complete the required installation work, in order to ensure the equipment's optimum and safe operation.

After completing the installation, please provide users with instructions for use and safety guidelines to be followed..

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1. Introduction

- This product is a condensing unit for refrigerating applications, intended for the European market.
- This maintenance manual is part of the product. It must be given to the maintainer and kept by the user.
- Carefully read the written warnings in the booklet. It contains important information about safety and product handling. Keep this manual handy.
- The maintenance must be performed by a qualified person only in accordance with the standards and the instructions of the manufacturer.

2. Safety guidelines

This section contains instructions that are rated as «WARNING» or «IMPORTANT».

Failure to follow these instructions or incorrect use of the equipment may result in serious physical injury or death.

To ensure all staff's utmost security, please follow all the safety guidelines provided herein.

2.1 Meaning of symbols



WARNING. Serious danger liable to cause serious physical injury or death in the event where these guidelines are not followed.



IMPORTANT. Risk of physical injury or damage to the equipment.



Prohibited use



Observation



Mandatory grounding

2.2 To the attention of maintainers

Please read this entire manual carefully before proceeding to the maintenance of the condensing unit.

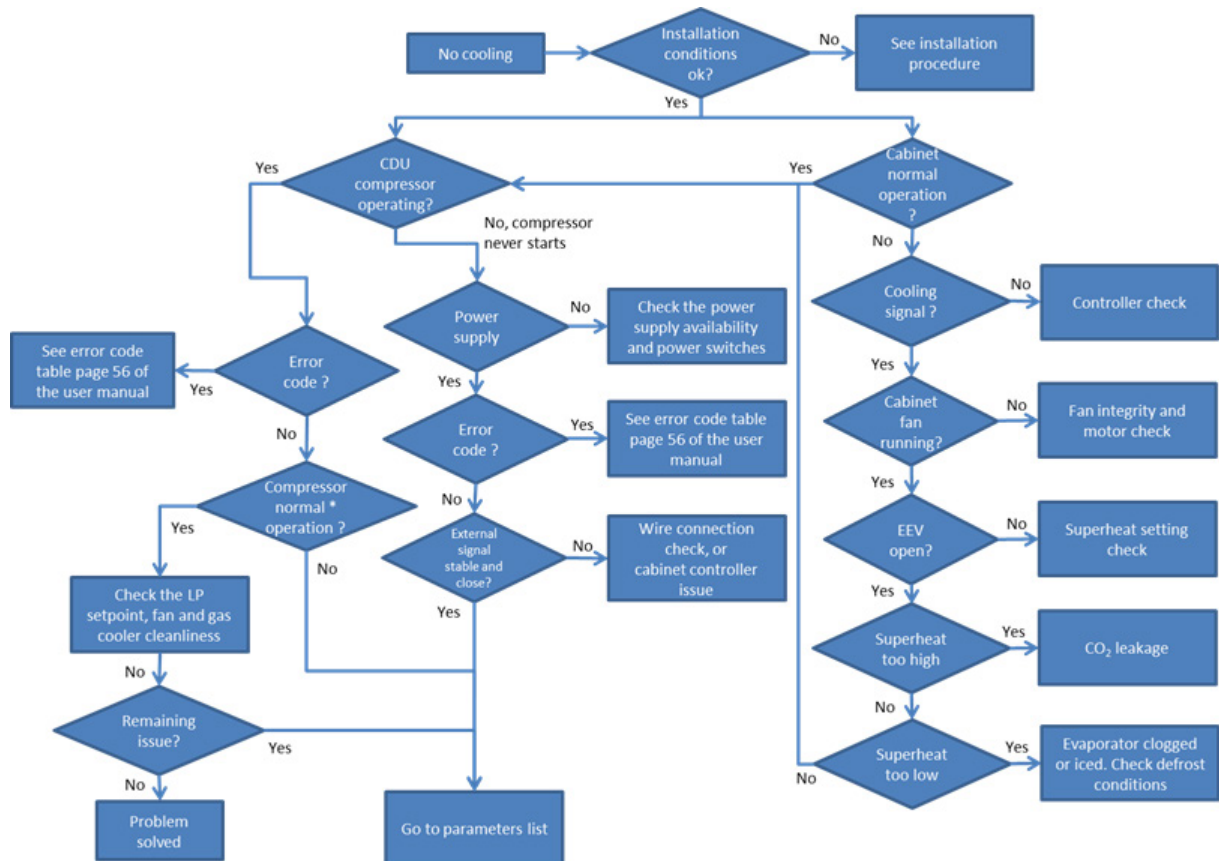
All handling operation must be performed by certified professionals.

WARNING

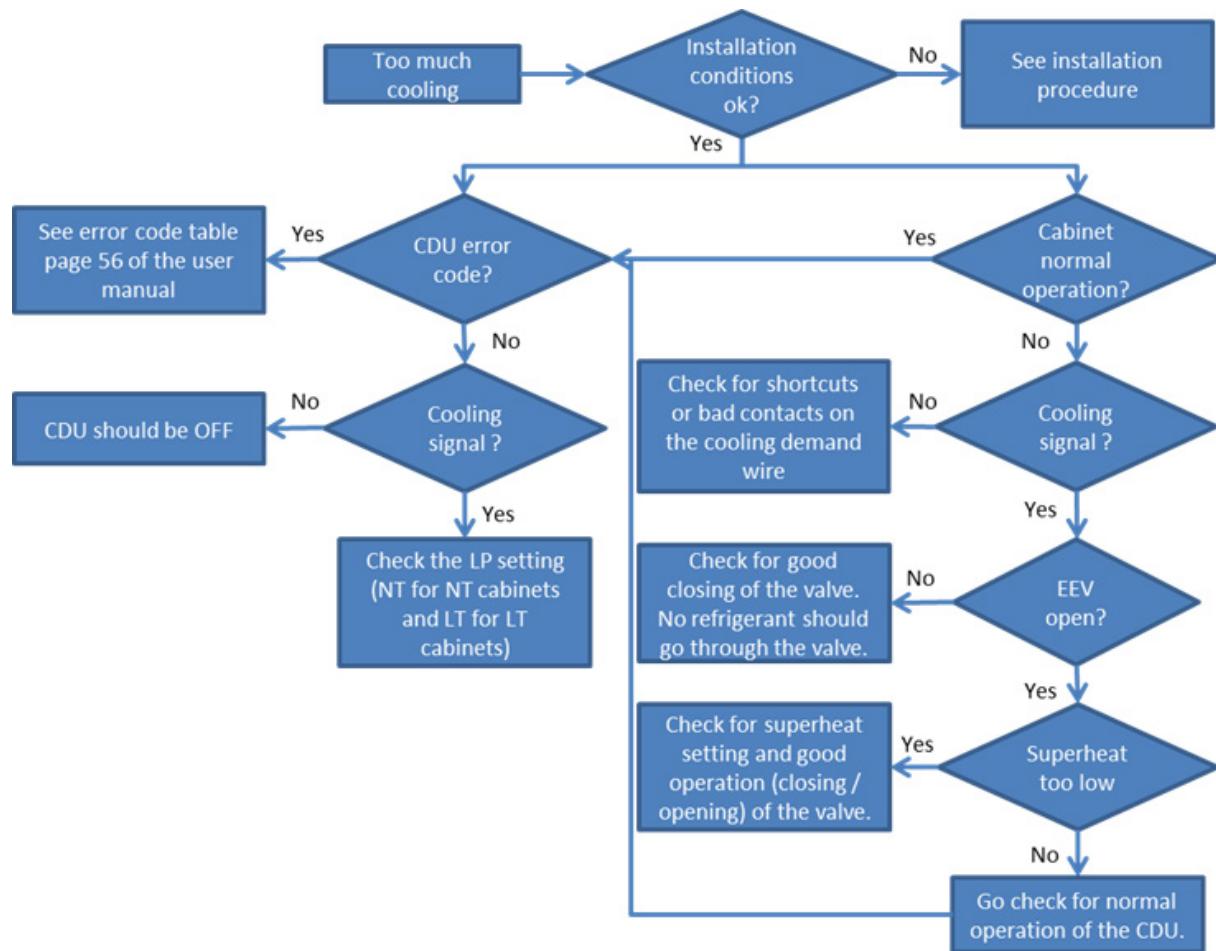
- ⚡ The maintenance must be performed by certified professionals.
Specific certification is required to perform electrical work. Please ensure that your electrician has all required clearances.
- ⚡ During the maintenance, carefully follow the indications provided in this installation guide.
Any maintenance work not performed in compliance with the service maintenance manual's instructions may result in water leaks, electric shocks or fire.
- ⚡ All electrical work must be performed in compliance with all applicable laws, as well as state of the art regulations.
- ⚡ Before any intervention, make sure that no gas remains in the piping.
- ⚡ When using a burner, protect from overheating every components, such as the oil return tube located in the lower section of the compressor, the soundproofing cover and other components.
- ⚡ Leakage tests must be performed.
- ⚡ Ensure that service valves are opened to avoid any damage caused by high-pressure.
- ⚡ Wearing gloves is recommended during installation and maintenance of the condensing unit.
Direct contact of the refrigerant with the user's skin may result in burns.
- ⚡ This condensing unit exclusively uses R744 (CO₂) refrigerant, which is natural, non-toxic and non-flammable. When installing or repairing the equipment or performing any other intervention, never add any substance other than R744.
- ⚡ Do not alter the settings of safety and protective devices. Incorrect settings may result in an explosion or fire.
- ⚡ If the condensing unit does not stop after being shut off, immediately shut off its main power supply. Failure to comply with this instruction may result in electric shocks, fire or an explosion. In this event, immediately contact the reseller or the manufacturer's after-sales service.
- ⚡ In the event of a refrigerant leak, immediately shut off the equipment, shut off the main power supply, and contact the reseller or the manufacturer's after-sales service.
- ⚡ In the event of any abnormal situation (e.g. smell of burning material, etc.), shut off the condensing unit and the main power supply.
- ⚡ If the equipment's protective device is triggered repeatedly, or if you are unsure of how to operate the circuit breaker, immediately shut off the main power supply.
- ⚡ A short-circuit or a power surge may result in electric shocks, fire or an explosion.
- ⚡ Ensure good ventilation. A refrigerant leak can lead to oxygen deprivation.
- ⚡ Always ensure that refrigerating cycles occur within the specified range.

3. Fault Tree Analysis

3.1 No cooling -



3.2 Too much cooling



4. Installation check-up

4.1 CDU-S / CDU-M /CDU-L

Item	Check-up	Result
Installation	Falling risks prevented with anchor bolts or other attachment systems?	
	300 mm space around the heat exchanger's air intake surface ?	
	500 mm space in front of the unit ?	
	Height difference between CDU and evaporator cabinet/chamber ?	
	Less than 30 m Distance between CDU and evaporator ?	
Electrical wiring	Differential circuit breaker installed?	
	Suitable earth fault differential circuit breaker power rating?	
	Rated current	
	Rated sensitivity?	
	Ground wiring correctly connected?	
	Screws correctly tightened?	
	Power supply insulation (230V circuit), ground earth capacity 10 MΩ minimum	
	Suitable wiring power capacity?	
	Power supply equal to 230 V ?	
Piping	Service valves opened	
	Leakage observed (oil mark on pipe) ?	
	Piping clogged (too much brazing material) ?	
	Piping insulation (suction and discharge pipe)?	
CO₂	Quantity of refrigerant fluid introduced? [R744 refrigerant]	
	Refrigeration circuit A [quantity: kg] - Circuit B [quantity: kg]	
	Refrigerant fluid leak?	

5. Code error list

Error	Error type	Alarm conditions	CDU status	In case of master controller	Recovery Conditions
EEE	Microprocessor error	Microprocessor failure	no operate	Alarm activation no operate	Repair
Err	EEPROM error	Parameters have been set out of range	no operate	Alarm activation no operate	Repair
E01	Maximum discharge temperature triggered	$T_d \geq (\text{Parameter P01})^{\circ}\text{C}$ during (Parameter P02) sec. Default value: P01=120 and P02=60	no operate	No alarm	Automatic recovery if : $T_d \leq (\text{Parameter P03})^{\circ}\text{C}$ after (Parameter P30) x10sec. Default: P03=100 and P30=30
E02	Maximum discharge pressure triggered	$P_d \geq 14 \text{ MPa}$	no operate	No alarm	Automatic recovery if: $P_d \leq 10 \text{ MPa}$ after (Parameter P30) x10sec. Default: P30=30
E10	Inverter compressor error	Next page E10-H...	Next page E10-H....	Next page E10-H....	
E16	Gas cooler (top) fan speed error	$FF2 \leq (\text{Parameter P64}) \times 10 \text{rpm} \times (\text{Parameter P65}) \text{ time.}$ Default value: P64=30 and P65=2	no operate	Alarm activation CDU no operate	Repair
E17	Gas cooler (bottom) fan speed error	$FF1 \leq (\text{Parameter P66}) \times 10 \text{rpm} \times (\text{Parameter P67}) \text{ time.}$ Default value: P64=30 and P65=2	no operate	Alarm activation CDU no operate	Repair
E20	High-pressure sensor error	$0 \text{ MPa} \geq P_d \geq 15 \text{ MPa}$ during 3 seconds 0MPa=0,17V 15MPa=4,90V	no operate	Alarm activation CDU no operate	Automatic recovery if : $0 \text{ MPa} \leq P_d \leq 15 \text{ MPa}$
E21	Low-pressure sensor error	$0 \text{ MPa} \geq P_s \geq 15 \text{ MPa}$ during 3 seconds 0MPa=0,17V 15MPa=4,90V	no operate	Alarm activation CDU no operate	Automatic recovery if : $0 \text{ MPa} \leq P_s \leq 15 \text{ MPa}$

Error	Error type	Alarm conditions	CDU status	In case of master controller	Recovery Conditions
E23	Ambient air temperature sensor error	-30°C ≥ TAR ≥ 100°C during 3 seconds -30°C = 129,3kΩ 100°C=1,02kΩ	operate EEV =(A10parameter) pls Default value=480	Alarm activation CDU operate	Automatic recovery if : -30°C ≤ TAR ≤ 100°C
E24	Discharge temperature sensor error	-15°C ≥ Td ≥ 200°C during 3 seconds -15°C = 162kΩ 200°C=892Ω	no operate	Alarm activation CDU no operate	Automatic recovery if : -15°C ≤ Td ≤ 200°C
E26	Heat exchanger inlet temperature sensor error	-30°C ≥ Ti ≥ 100°C during 3 seconds -30°C = kΩ 100°C=Ω	operate	Alarm activation CDU operate	Automatic recovery if : -30°C ≤ Ti ≤ 100°C
E27	Heat exchanger outlet temperature sensor error	-30°C ≥ TU ≥ 100°C during 3 seconds -30°C = kΩ 100°C=Ω	operate	Alarm activation CDU operate	Automatic recovery if : -30°C ≤ TU ≤ 100°C
E40	Communications error with master controller (if using an external communication system)	No communication during 10 minutes	operate with local target value	Alarm activation CDU operate	Automatic recovery if : communication restart with master
E42	Inverter communications error	No communication during 30 seconds	no operate	Alarm activation CDU no operate	Automatic recovery if : communication restart
E50	EEV control error 1	Calculation error	no operate	Alarm activation CDU no operate	Automatic recovery if : calculation is OK
E51	EEV control error 2	Calculation error	no operate	Alarm activation CDU no operate	Automatic recovery if : calculation is OK
E70	Inverter control error 1	Calculation error	no operate	Alarm activation CDU no operate	Automatic recovery if : calculation is OK
E71	Inverter control error 2	Calculation error	no operate	Alarm activation CDU no operate	Automatic recovery if : calculation is OK

Error	Error type	Alarm conditions	CDU status	In case of master controller	Recovery Conditions
E10-H04 E10-H08 E10-H0A E10-H20	Inverter overcurrent error	compressor overload	no operate	No alarm	Automatic recovery after (Parameter P30) x10sec.
E10-H0C	Heat sink high level temperature error	$\geq 90^{\circ}\text{C}$	no operate	No alarm	Automatic recovery after (Parameter P30) x10sec and $\leq 80^{\circ}\text{C}$
E10-H10	Inverter overload error	compressor overload	no operate	No alarm	Automatic recovery after (Parameter P30) x10sec.
E10-H14	Inverter low input voltage error	Inverter input $\leq 194\text{ V}$ or $\leq 220\text{V}$ with variation of $\geq 50\text{ V}$ during 1s	no operate	No alarm	Automatic recovery after (Parameter P30) x10sec and $\geq 194\text{ V}$
E10-H18	Inverter high input voltage error	$\geq 380\text{ V}$	no operate	No alarm	Automatic recovery after (Parameter P30) x10sec and $\leq 380\text{ V}$
E10-H1C	Inverter controller communication error	No connection during 30 sec	no operate	No alarm	Automatic recovery after (Parameter P30) x10sec and communication restart
E10-H24 E10-H28 E10-H30	Inverter voltage drop detection	Inverter input $\leq 140\text{ V}$	no operate	No alarm	Automatic recovery after (Parameter P30) x10sec. And $\geq 140\text{ V}$
E10-H2C	Control PCB power supply error	no signal on controller	no operate	No alarm	Automatic recovery after (Parameter P30) x10sec. And signal receive from controller
E10-H38	Inverter phase shift error	Rotor and stator phase shift	no operate	No alarm	Automatic recovery after (Parameter P30) x10sec.
E10-H40	Heat sink thermistor error	$-20^{\circ}\text{C} > T > 130^{\circ}\text{C}$	no operate	Alarm Activation	Automatic recovery after (Parameter P30) x10sec. And $-20^{\circ}\text{C} < T < 130^{\circ}\text{C}$
E10-H44 E10-H46 E10-H48 E10-H4C	Converter overcurrent error	compressor overload	no operate	No alarm	Automatic recovery after (Parameter P30) x10sec.
E10-H50 E10-H52 E10-H54 E10-H56	Compressor operation error	compressor do not start	no operate	Alarm Activation	Automatic recovery after (Parameter P30) x10sec.

6. Troubleshooting

EEE: Microcomputer error		
Likely cause	Check points	Solution
Control PCB failure	ON / OFF operation switch	Replace the control PCB
Err: EEPROM error		
Likely cause	Check points	Solution
Control PCB failure Parameters out of range	Confirm setting adjustment value	Reintegrate the 7 segments' values
E01: Maximum discharge temperature triggered		
Likely cause	Check points	Solution
Dust and dirt clogging the gas cooler fins	Confirm clogging (e.g. dust) in the gas cooler.	Clean the gas cooler
EEV failure	Switch OFF and back ON Check if a pulsating initialisation noise is heard inside the EEV	If no pulsating noise is heard, take the following corrective measures: ① Replace the EEV coil ② Replace the control PCB ③ Replace the expansion valve
CO2 load	Check HP/LP and superheat conditions	If an anomaly is found, adapt CO2 amount
Inlet air short circuit on the gas cooler	Refer to installation conditions	Avoid air short-circuit
E02: Maximum discharge pressure triggered		
Likely cause	Check points	Solution
Dust and dirt clogging the gas cooler fins	Confirm clogging (e.g. dust) in the gas cooler.	Clean the gas cooler
EEV failure	Switch OFF and back ON Check if a pulsating initialisation noise is heard inside the EEV	If no pulsating noise is heard, take the following corrective measures: ① Replace the EEV coil ② Replace the control PCB ③ Replace the expansion valve
CO2 load	Check HP/LP and superheat conditions	If an anomaly is found, adapt CO2 amount
Inlet air short circuit on the gas cooler	Refer to installation conditions	Avoid air short-circuit
E10: Inverter error		
Likely cause	Check points	Solution
EEV failure	Switch OFF and back ON Check if a pulsating initialisation noise is heard inside the EEV	If no pulsating noise is heard, take the following corrective measures: ① Replace the EEV coil ② Replace the control PCB ③ Replace the expansion valve
Inlet air short circuit on the gas cooler	Refer to installation conditions	Avoid air short-circuit

E16: Gas cooler (top) fan speed error		
E17: Gas cooler (bottom) fan speed error		
Likely cause	Check points	Solution
Propeller Fan locked	Check for any object blocking the fan	Remove object
Fan motor failure	Fan motor connector input signal	Replace fan motor
Fan motor wire failure	Wiring connection and conductivity	1. Plug and unplug the connector 2. Replace wire
Fan motor PCB failure	Fan motor PCB input and output signal	Replace fan motor PCB
Control PCB failure	Control PCB output signal sent to FM PCB	Replace control PCB
E20: High-pressure sensor error		
E21: Low-pressure sensor error		
Likely cause	Check points	Solution
Sensor connection	Wiring connection and conductivity	1. Plug and unplug the connector 2. Replace wire
Control PCB failure	Control PCB output signal sent to pressure sensor	Replace control PCB
Pressure sensor failure	Pressure sensor output signal	Replace the pressure sensor
E23: Ambient air temperature sensor error		
Likely cause	Check points	Solution
Sensor connection	Wiring connection and conductivity	1. Plug and unplug the connector 2. Replace wire
Control PCB failure	Control PCB output signal sent to pressure sensor	Replace control PCB
Sensor failure	Check sensor resistance	Replace the temperature sensor
E24: Discharge temperature sensor error		
Likely cause	Check points	Solution
Sensor connection	Wiring connection and conductivity	1. Plug and unplug the connector 2. Replace wire
Control PCB failure	Control PCB output signal sent to pressure sensor	Replace control PCB
Sensor failure	Check sensor resistance	Replace the temperature sensor
E26: HEX inlet temperature sensor 1 error		
E27: HEX outlet temperature sensor 1 error		
Likely cause	Check points	Solution
Sensor connection	Wiring connection and conductivity	1. Plug and unplug the connector 2. Replace wire
Control PCB failure	Control PCB output signal sent to pressure sensor	Replace control PCB
Sensor failure	Check sensor resistance	Replace the temperature sensor

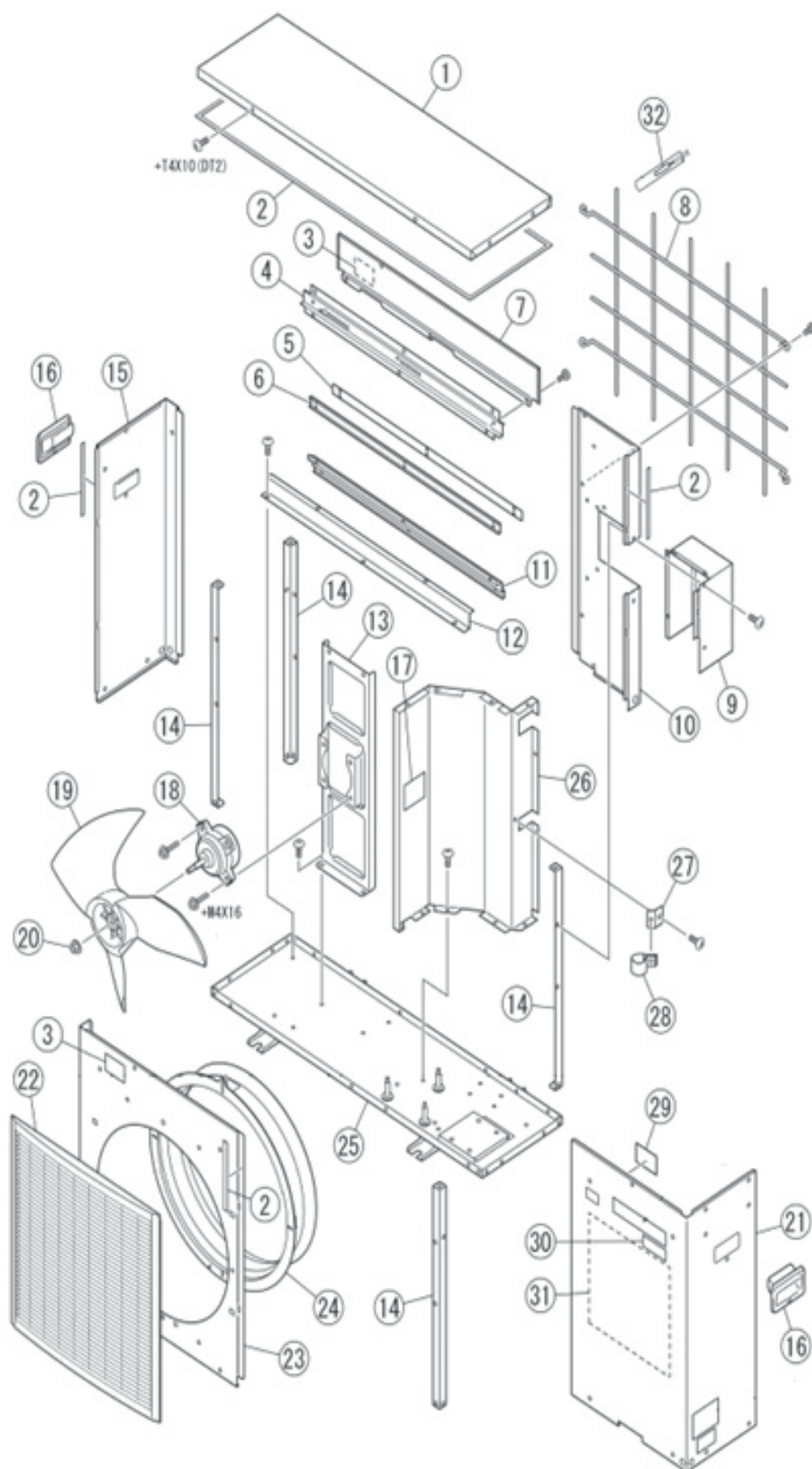
E40: Communications error with master controller (if using an external communication system)		
Likely cause	Check points	Solution
Bad contact on communication wire Communications cable disconnected	Wiring connection and conductivity	1. Plug and unplug the connector 2. Replace wire
Control PCB failure	Control PCB output signal sent to master controller	Replace control PCB
E42: Inverter communications error		
Likely cause	Check points	Solution
Bad contact on communication wire between inverter and control PCB	Wiring connection and conductivity	1. Plug and unplug the connector 2. Replace wire
Inverter power supply input problem	Reactor resistance Filter PCB input and output Bridge Diode input and output	1. Replace reactor 2. Replace bridge diode 3. Replace Filter PCB check details measurement point point on annexes page
Control PCB failure	PCB control input and output	Replace the control PCB
Inverter board failure	Inverter board input and output	Replace the inverter board
E50: EEV PID calculation error 1		
E51: EEV PID calculation error 2		
Likely cause	Check points	Solution
EEV coil connection problem	Wiring connection and conductivity	1. Plug and unplug the connector 2. Replace EEV coil
control PCB failure	PCB control input and output	Replace the control PCB
E70: Inverter PID calculation error 1		
E71: Inverter PID calculation error 2		
Likely cause	Check points	Solution
PID bad parameters	PID parameters	change parameter (default value)
Inverter connection problem	Wiring connection and conductivity	1. Plug and unplug the connector 2. Replace wire
control PCB failure	PCB control input and output	Replace the control PCB
Inverter board failure	Wear and tear on panel, traces of humidity, etc.	Replace the inverter

7. Product BOM and spare parts list

7.1 CDU-S Triple Phase 230V

Part 1

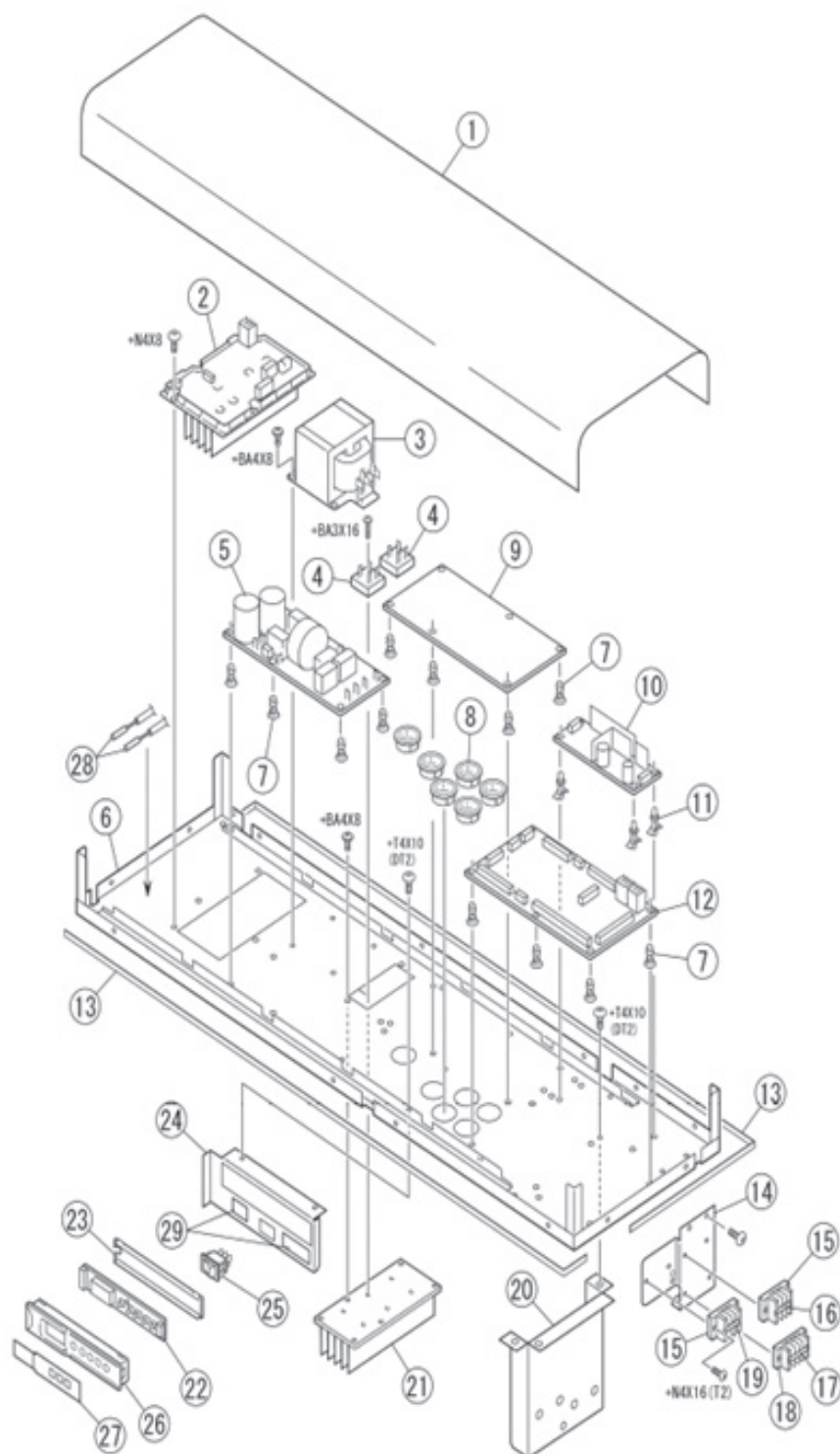
N°	Part	Qty	Reference	«Spare Y/N»
1	Top Board	1	23101-45670-A	Y
2	Sticker packaging 55B	4	6100-3460	N
3	PL display plate CS	2	21619-40890	N
4	Angle A	1	25270-70700	N
5	Heat exchanger connecting plate	1	24990-87880	N
6	Angle BD	1	25270-68330	N
7	Upper rear panel	1	24013-46760-A	N
8	Heat exchanger guard assembly	1	23790-10510-A	N
9	Electrical cover	1	24013-46500-A	Y
10	Rear panel right	1	24013-46770-A	Y
11	Angle B	1	25270-70980	N
12	Angle C	1	25270-70990	N
13	Fan motor mounting bracket	1	24332-43160	N
14	Frame B	4	24906-44570	N
15	Side plate left	1	24010-42590-A	Y
16	Handle assembly	2	40317-10240	N
17	Error display plate	1	21670-55640	N
18	Fan motor SIC-65FV-F515-2	1	93501-54220	Y
19	Propeller fan HP	1	42815-40280	N
20	Washer nut M6 left-hand thread	1	92101-F4100	N
21	Front panel right	1	23720-40670-A	Y
22	Fan guard	1	44004-42850	Y
23	Front panel left	1	23720-40660-A	N
24	Shroud	1	40307-43220	N
25	Lower bottom plate assembly	1	24014-11880	N
26	Divider	1	24680-40180	N
27	Sensor fixing plate	1	24990-89210	N
28	Cable holder BR	1	8910-0263	N
29	Operation window cover	1	24031-44430	N
30	CO2 mark label	1	37770-50860	N
31	Wiring display board	1	21602-59181	N
32	Thermistor EOUR assembly	1	91101-52060	Y



7.1.a CDU-S Triple Phase 230V

Part 2

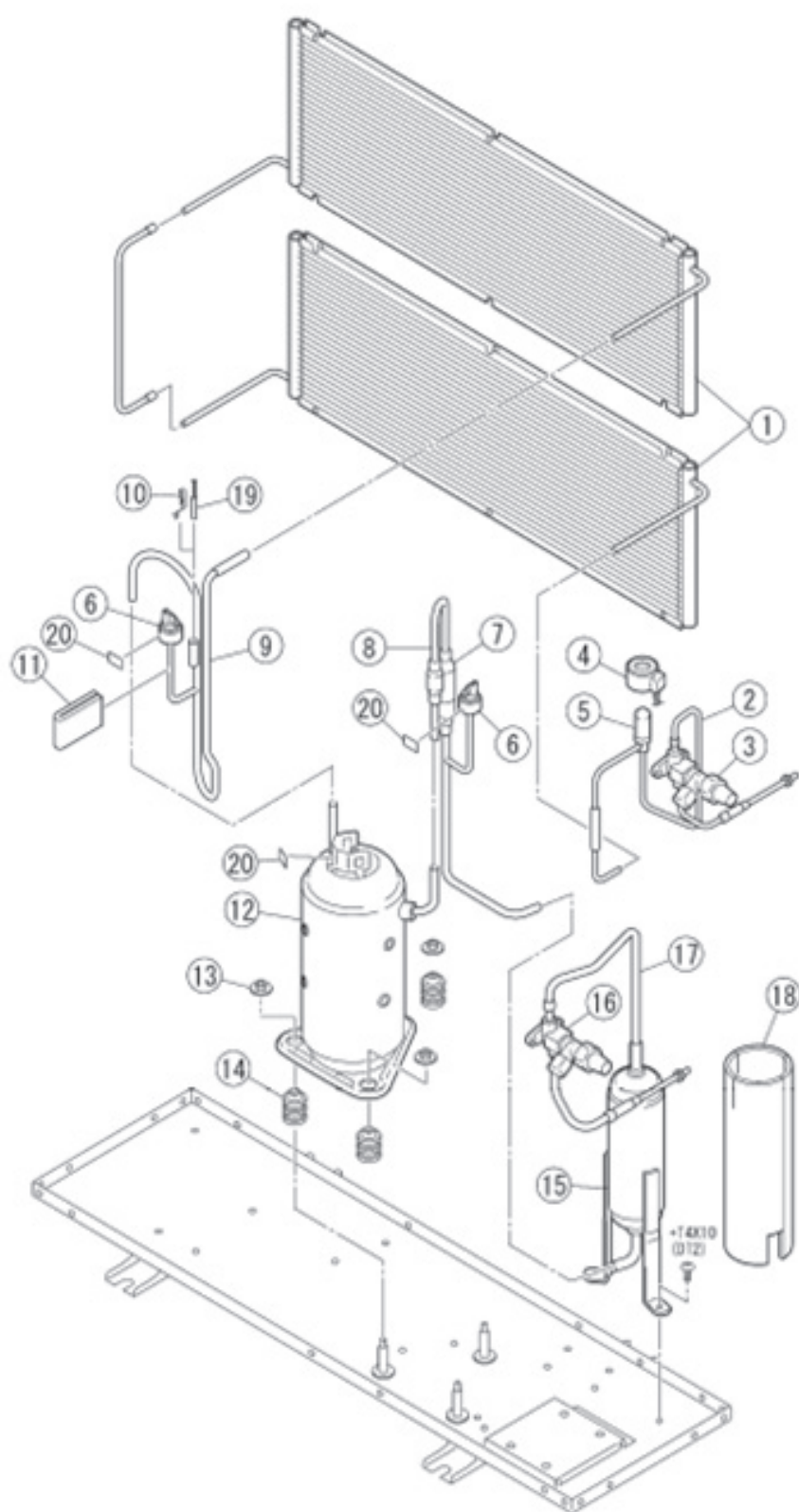
N°	Part	Qty	Reference	«Spare Y/N»
1	Water-proof sheet	1	24990-89240	N
2	INV board high-stage assembly C90A	1	40105-10570	N
3	Reactor HPDR-25A-4.0MH-CU	1	91002-54050	Y
4	Diode bridge S25VB60	2	91602-53050	Y
5	PCB filter NFU-2RS	1	NFU-2RS	Y
6	Upper bottom plate assembly	1	24990-13752	N
7	Board holder KGLS-10RT	17	91004-47190	N
8	Cable bush TB-2533	6	8928-0154	N
9	PCB fan motor FMU-32801	1	FMU-32801	Y
10	AC-DC CONVERTOR LFA75F-24-J1Y	1	91903-42410	Y
11	Board holder LCBS-6-19	4	91004-44120	N
12	System controller SCU-8B1MRT5-B	1	20725-13470	Y
13	Sticker packaging 55B	3	6100-3460	N
14	Terminal block fixing plate C	1	24926-40420	N
15	3P terminal block BTB30C3-B	2	91604-92130	Y
16	Communication control terminal display board	1	21604-41890	N
17	Defrosting signal terminal display board	1	21604-42020	N
18	4P terminal block BTB15LC4	1	92604-A2290	Y
19	Power supply display board	1	21604-42030	N
20	Charge valve mounting bracket	1	25270-70710	N
21	Heat sink BD6	1	20730-40171	N
22	SCU-4B1MSP1	1	SCU-4B1MSP1	Y
23	Operation panel rear cover	1	23190-48630	N
24	Assembled operation panel plate	1	24990-88510	N
25	Waveform switch HLS208N	1	8913-0467	Y
26	Operation panel case	1	23190-48610	Y
27	Operation display panel	1	21607-42080	N
28	Thermistor EOUR assembly	1	91101-52060	Y
29	Indication mark plate	1	21670-55670	N



7.1.b CDU-S Triple Phase 230V

Part3

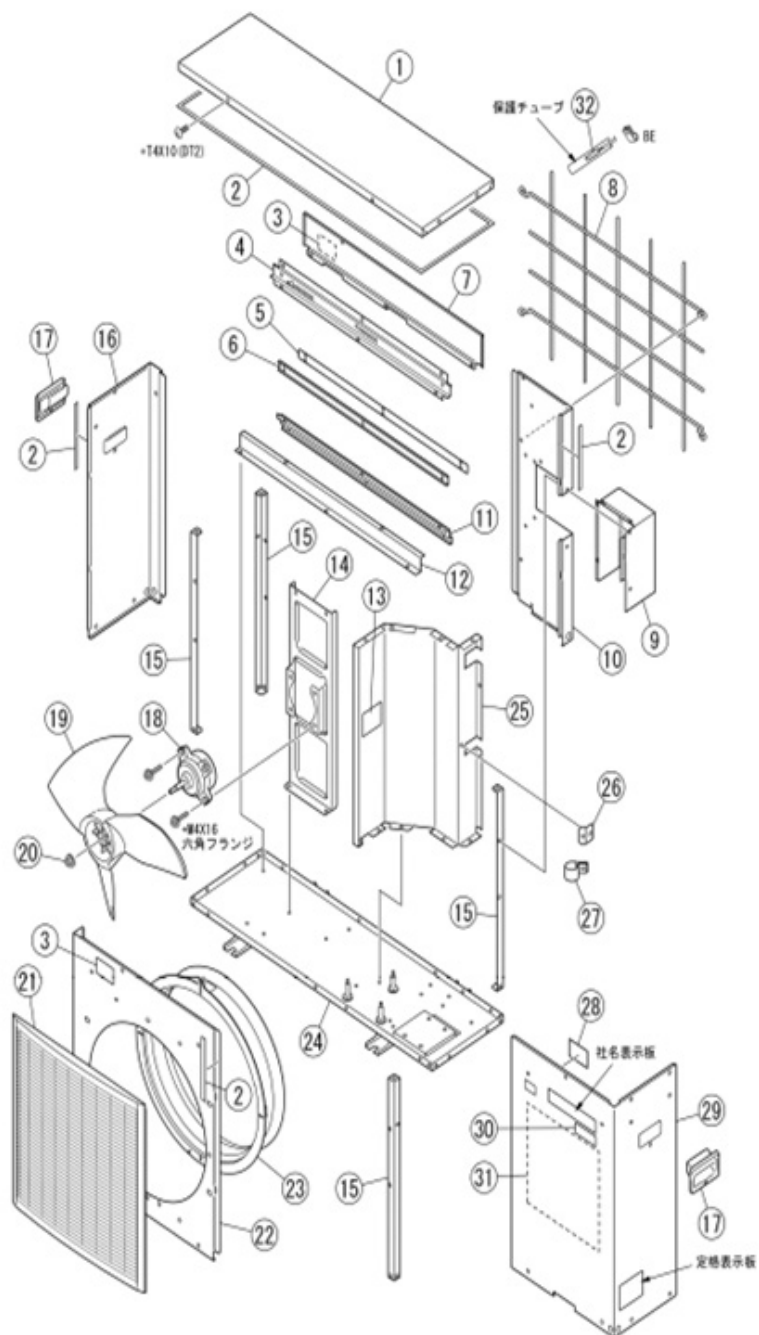
N°	Part	Qty	Reference	«Spare Y/N»
1	AL heat exchanger N5792316A68A	2	90707-84070	N
2	Expansion valve pipe assembly	1	25219-10090	N
3	Charge valve FCV-JY2	1	92605-C2040	Y
4	EX valve coil CKM-MD24SD-1	1	92605-62130	Y
5	EX valve CPM-B12YCSD-1	1	92605-54060	Y
6	Pressure sensor HSK	2	91406-C2010	Y
7	Check valve CAV-10Y3C	1	92605-B2110	N
8	Suction pipe assembly	1	25217-14780	N
9	Discharge pipe assembly	1	25211-11230	N
10	Thermistor fixing bracket	1	41105-43710	N
11	Vibration-proof rubber A	1	24924-40470	N
12	Compressor SHC040B2403	1	91001-72030	N
13	Flange nut M6	3	92101-F4110	N
14	Compressor vibration-proof rubber	3	40580-41910	N
15	Accumulator	1	43103-40020	Y
16	Charge valve FCV-JY3	1	92605-C2050	Y
17	Accumulation pipe assembly	1	25219-10120	N
18	Foamed polyethylene 05	1	21906-99301	N
19	Thermistor EOUR	1	91101-52070	Y
20	Indication mark plate	1	21670-55670	N



7.2 CDU-S Single Phase

Part 1

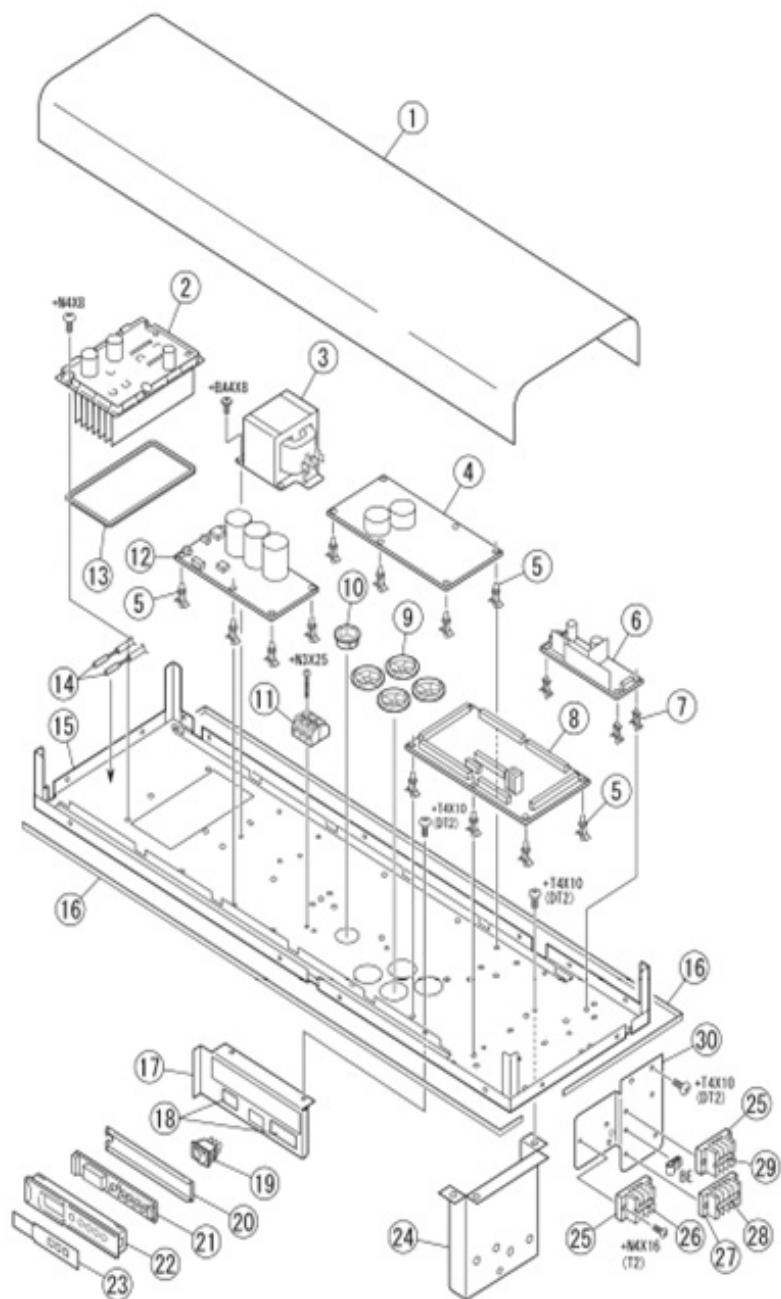
N°	Part	Qty	Reference	Spare Y/N
1	Top Board	1	23101-45670-A	Y
2	Sticker packaging 55B	4	6100-3460	N
3	PL display plate CS	2	21619-40890	N
4	Angle A	1	25270-70700	N
5	Heat exchanger connecting plate	1	24990-87880	N
6	Angle BD	1	25270-68330	N
7	Upper rear panel	1	24013-46760-A	N
8	Heat exchanger guard assembly	1	23790-10510-A	N
9	Electrical cover	1	24013-46500-A	Y
10	Rear panel right	1	24013-46770-A	Y
11	Angle B	1	25270-70980	N
12	Angle C	1	25270-70990	N
13	Error display plate	1	21670-55640	N
14	Fan motor mounting bracket	1	24332-43160	N
15	Frame B	4	24906-44570	N
16	Side plate left	1	24010-42590-A	Y
17	Handle assembly	2	40317-10240	N
18	Fan motor SIC-65FV-F515-2	1	93501-54220	Y
19	Propeller fan HP	1	42815-40280	N
20	Washer nut M6 left-hand thread	1	92101-F4100	N
21	Fan guard	1	44004-42851-A	Y
22	Front panel left	1	23720-40660-A	Y
23	Shroud	1	40307-43221-A	N
24	Lower bottom plate assembly	1	24014-11880	N
25	Divider	1	24680-40180	N
26	Sensor fixing plate	1	24990-89210	N
27	Cable holder BR	1	8910-0263	N
28	Operation window cover	1	24031-44430	N
29	Front panel right	1	23720-40670-A	Y
30	CO2 mark label	1	37770-50860	N
31	Wiring display board	1	21602-59350	N
32	Thermistor EOUR assembly	1	91101-52060	Y



7.2.a CDU-S single phase-

2nd part

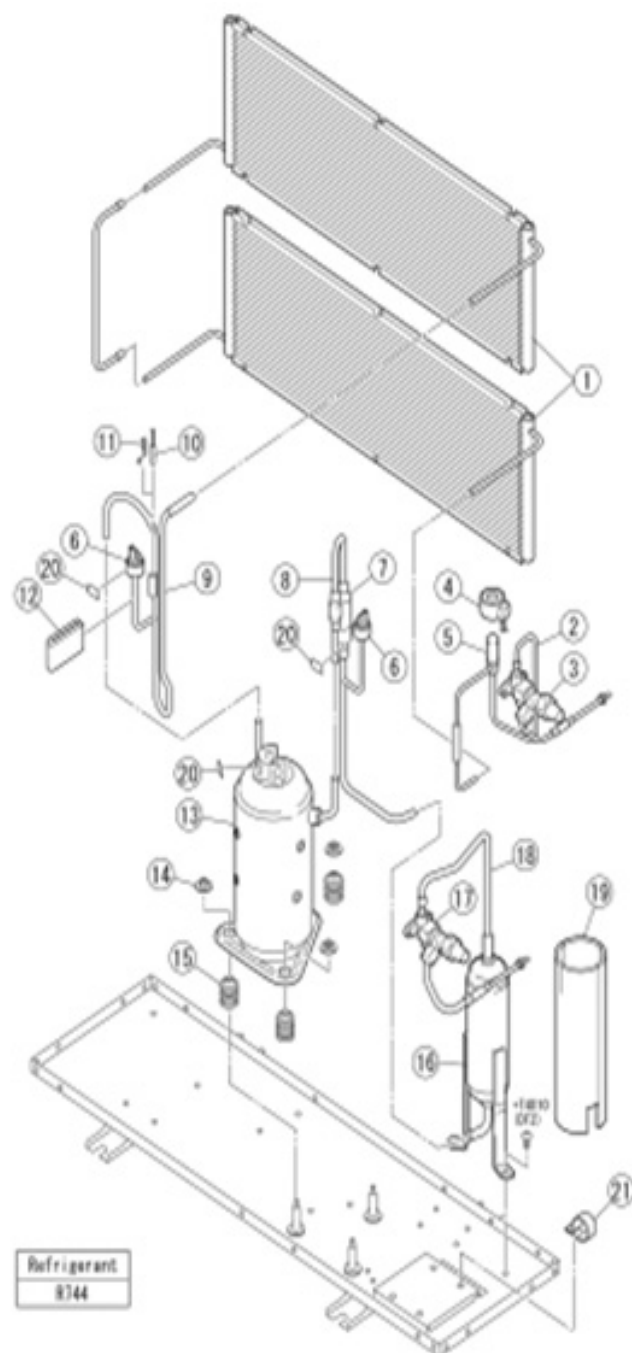
N°	Part	Qty	Reference	Spare Y/N
1	Water-proof sheet	1	24990-89240	N
2	INV board high-stage assembly C90A-2	1	20725-13490	Y
3	Reactor HPDR-25A-4.0MH-CU	1	91002-54050	Y
4	PCB fan motor FMU-32801	1	FMU-32801	Y
5	Board holder LCBS-6-19	18	91004-44120	N
6	AC-DC CONVERTOR LFA75F-24-J1Y	1	91903-42410	Y
7	Board holder MSPL-6	4	91004-43110	N
8	System controller SCU-8B2MRTH-E	1	20725-13770	Y
9	Cable bush 40A	4	8928-0284	N
10	Cable bush TB-2533	1	8928-0154	N
11	3P terminal block 862-2503	1	91604-92120	Y
12	PCB filter	1	20725-13570	Y
13	Sealing 53B	1	6100-1110	N
14	Thermistor EOUR assembly	1	91101-52060	Y
15	Upper bottom plate assembly	1	24990-13890	N
16	Sticker packaging 55B	2	6100-3460	N
17	Assembled operation panel plate	1	24990-88510	N
18	Indication mark plate	1	21670-55670	N
19	Waveform switch HLS208N	1	8913-0467	Y
20	Operation panel rear cover	1	23190-48630	N
21	System controller SCU-8B1MRT5-B	1	SCU-4B1MSP1	Y
22	Operation panel case	1	23190-48610	N
23	Operation display panel	1	21607-42080	N
24	Charge valve mounting bracket	1	25270-70710	N
25	3P terminal block BTB30C3-B	2	91604-92130	Y
26	Power supply display board RN	1	21604-42050	N
27	4P terminal block BTB15LC4	1	91604-A2290	Y
28	Defrosting signal terminal display board	1	21604-42020	N
29	Communication control terminal display board	1	21604-41890	N
30	Terminal block fixing plate	1	24926-40422	N



7.2.b CDU-S single phase-

3rd part

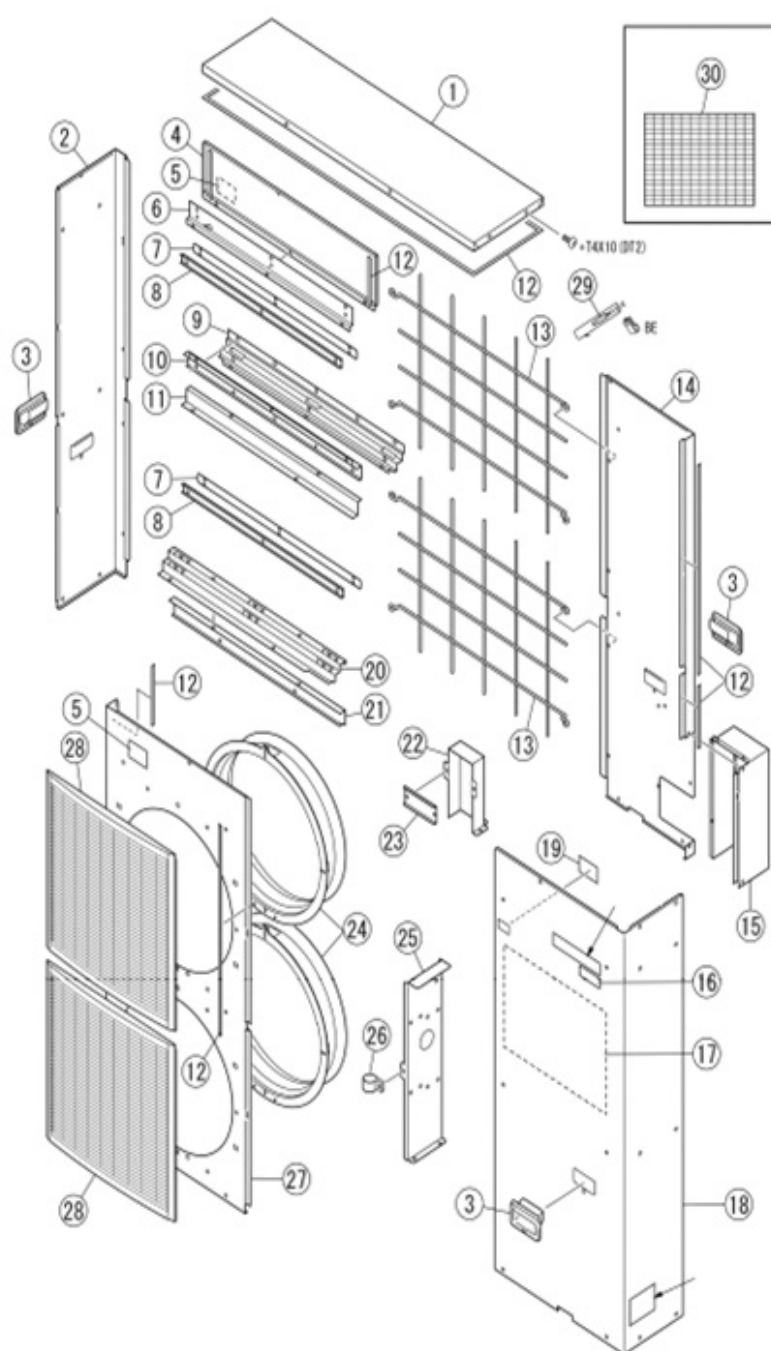
N°	Part	Qty	Reference	Spare Y/N
1	AL heat exchanger N5792316A68A	2	90707-84070	N
2	Expansion valve pipe assembly	1	25219-10090	N
3	Charge valve FCV-JY2	1	92605-C2040	Y
4	EX valve coil CKM-MD24SD-1	1	92605-62130	Y
5	EX valve CPM-B12YCSD-1	1	92605-54060	Y
6	Pressure sensor HSK	2	91406-C2010	Y
7	Check valve CAV-10Y3C	1	92605-B2110	N
8	Suction pipe assembly	1	25217-14780	N
9	Discharge pipe assembly	1	25211-11230	N
10	Thermistor EOUR	1	91101-52070	Y
11	Thermistor fixing bracket	1	41105-43710	N
12	Vibration-proof rubber A	1	24924-40470	N
13	Compressor SHC040B2403	1	91001-72030	N
14	Flange nut M6	3	92101-F4110	N
15	Compressor vibration-proof rubber	3	40580-41910	N
16	Accumulator	1	43103-40020	Y
17	Charge valve FCV-JY3	1	92605-C2050	Y
18	Accumulation pipe assembly	1	25219-10120	N
19	Foamed polyethylene 05	1	21906-99301	N
20	Indication mark plate	1	21670-55670	N
21	Cable clamp DB	1	8910-0299	N



7.3 Product BOM CDU-M and spare parts list

1st part

N°	Part	Qty	Reference	Spare Y/N
1	Top Board	1	23101-45660-A	Y
2	Side plate left	1	24010-42580-A	Y
3	Handle assembly	3	40317-10240	N
4	Upper rear panel	1	24013-46730-A	Y
5	PL display plate CS	2	21619-40890	N
6	Upper angle A	1	25270-70300	N
7	Heat Exchanger connecting plate	1	24990-87880	N
8	Angle BD	1	25270-68330	N
9	Lower angle A	1	25270-70330	N
10	Upper angle B	1	25270-70310	N
11	Upper angle C	1	25270-70320	N
12	Sticker packaging 55B	3	6100-3460	N
13	Heat exchanger guard assembly	2	23790-10510-A	N
14	Rear panel right	1	24013-46820-A	Y
15	Electrical cover	1	24912-44901-A	Y
16	CO2 mark label	1	37770-50860	N
17	Wiring display board	1	21602-59280	N
18	Front panel right	1	23720-40650-A	Y
19	Operation window cover	1	24031-44430	N
20	Lower angle C	1	25270-70350	N
21	Lower angle B	1	25270-70340	N
22	Heat exchanger fixing plate A	1	24990-89530	N
23	Heat exchanger fixing plate B	1	25270-70370	N
24	Shroud	2	40307-43221-A	N
25	Charge valve mounting bracket	1	25270-70380	N
26	Cable holder BR	1	8910-0263	N
27	Front panel left	1	23720-40640-A	N
28	Fan guard	2	44004-42851-A	Y
29	Thermistor EOUR assembly	1	91101-52060	Y
30	Error display plate	1	21670-55670	N



7.3.a CDU-M

2nd part

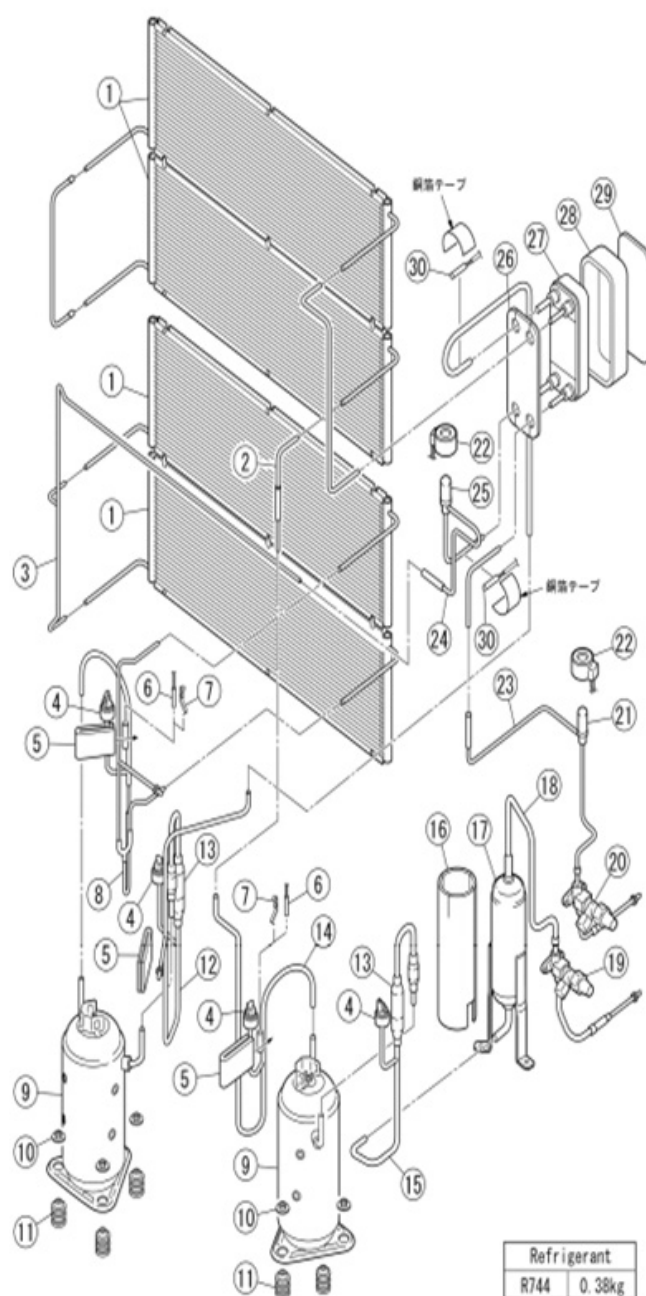
N°	Part	Qty	Reference	Spare Y/N
1	Water-proof sheet	1	24990-89230	N
2	Reactor HPDR-25A-4.0MH-CU	2	91002-54050	Y
3	PCB filter NFU-2RS	2	20725-13570	Y
4	AC-DC CONVERTOR LFA75F-24-J1Y	1	91903-42410	Y
5	Board holder MSPLS-6	4	91004-43110	N
6	System controller SCU-8B1MRT5-B	1	20725-13480	Y
7	PCB fan motor FMU-32801	1	FMU-32801	Y
8	Board holder LCBS-6-19	24	91004-44120	Y
9	Cable bush TB-2533	1	8928-0154	N
10	Frame assy	1	24906-10990	N
11	Sticker packaging 55B	2	6100-3460	N
12	Terminal block 3P862-250	1	91604-92120	N
13	Cable bush 40A	20	8928-0284	N
14	Upper bottom plate assembly	1	24990-13900	N
15	Upper partition plate	1	24990-89520	N
16	Side case B	1	24911-52470	N
17	Sticker packaging 55B	1	6100-1110	N
18	INV board high-stage assembly C90A	2	20725-13490	Y
19	Fan motor mounting bracket	2	24332-43160	N
20	Fan motor SIC-65FV-F515-2	2	93501-54220	Y
21	Propeller fan HP	2	42815-40280	N
22	Washer nut M6 left-hand thread	2	92101-F4100	N
23	Waveform switch HLS208N	2	8913-0467	Y
24	Operation display panel	1	21607-42080	N
25	Operation panel case	1	23190-48610	Y
26	Operation panel rear cover	1	23190-48630	N
27	SCU-4B1MSP1	1	SCU-4B1MSP1	Y
28	Indication mark plate	1	21670-55640	N
29	Front case A	1	24911-51550	N
30	Terminal block fixing plate C	1	24926-40422	N
31	3P terminal block BTB30C3-B	2	91604-92130	Y
32	Communication control terminal display board	1	21604-41890	N
33	Defrosting signal terminal display board	1	21604-42020	N
34	Terminal block BTB15LC4	1	91604-A2290	Y
35	Power supply display board	1	21604-42050	N
36	Cable holder BR	1	8910-0263	N



7.3.b CDU-M

3rd part

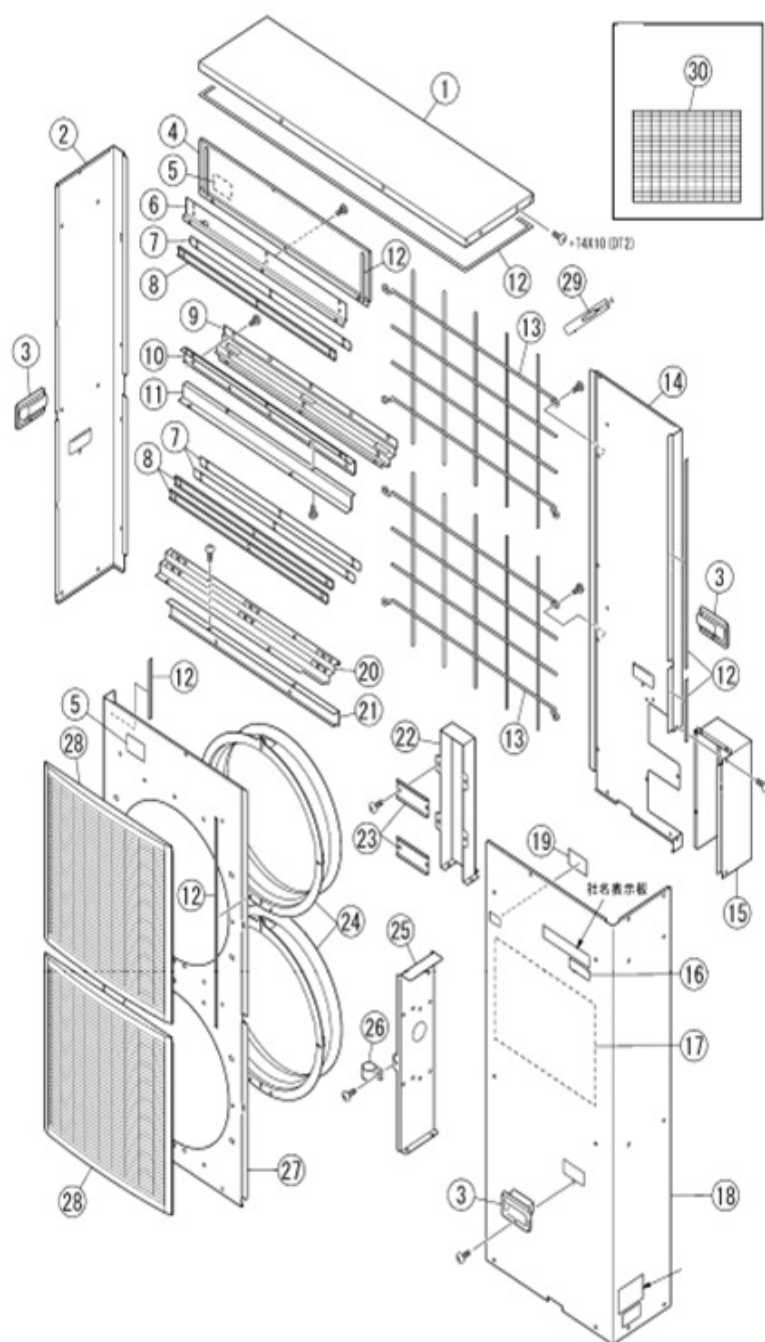
N°	Part	Qty	Reference	Spare Y/N
1	AL heat exchanger N5792316A68A	4	90707-84070	N
2	Low stage discharge pipe B assembly	1	25211-11320	N
3	High-stage GC outlet pipe assembly	1	25219-10071	N
4	Pressure sensor HSK	4	91406-C2010	Y
5	Vibration-proof rubber A	3	24924-40470	N
6	Discharge thermistor	2	91101-52070	Y
7	Thermistor fixing bracket	2	41105-43710	N
8	High-stage discharge pipe assembly	1	25211-11191	N
9	Compressor SHC040B2403	2	91001-72030	Y
10	Flange nut M6	6	92101-F4110	N
11	Compressor vibration-proof rubber	6	40580-41910	N
12	High-stage suction pipe assembly	1	25217-14760	N
13	Check valve CAV-10Y3C	2	92605-B2110	N
14	Low stage Discharge pipe A assembly	1	25211-11310	N
15	Low stage Suction pipe assembly	1	25217-14750	N
16	Foamed polyethylene 05	1	21906-99301	N
17	Accumulator	1	43103-40020	N
18	Low stage Accumulation pipe B assembly	1	25219-10140	N
19	Charge valve FCV-JY3	1	92605-C2050	Y
20	Charge valve FCV-JY2	1	92605-C2040	Y
21	EX valve CPM-B12YCSD-1	1	92605-54060	Y
22	EX valve coil CKM-MD24SD-1	2	92605-62130	Y
23	Low stage EEV pipe B assembly	1	25219-10060	N
24	High stage EEV pipe assembly	1	25219-10080	N
25	EX valve CPM-B06YCSD	1	92605-53020	Y
26	Thermal insulation A	1	21906-98860	N
27	Plate heat exchanger	1	25205-10050	N
28	Thermal insulation 10x32x540	1	21906-98961	N
29	Thermal insulation B	1	21906-98870	N
30	Thermistor assembly	1	91101-52060	Y



7.4 Product BOM CDU-L triple phase 230V and spare parts list

1st part

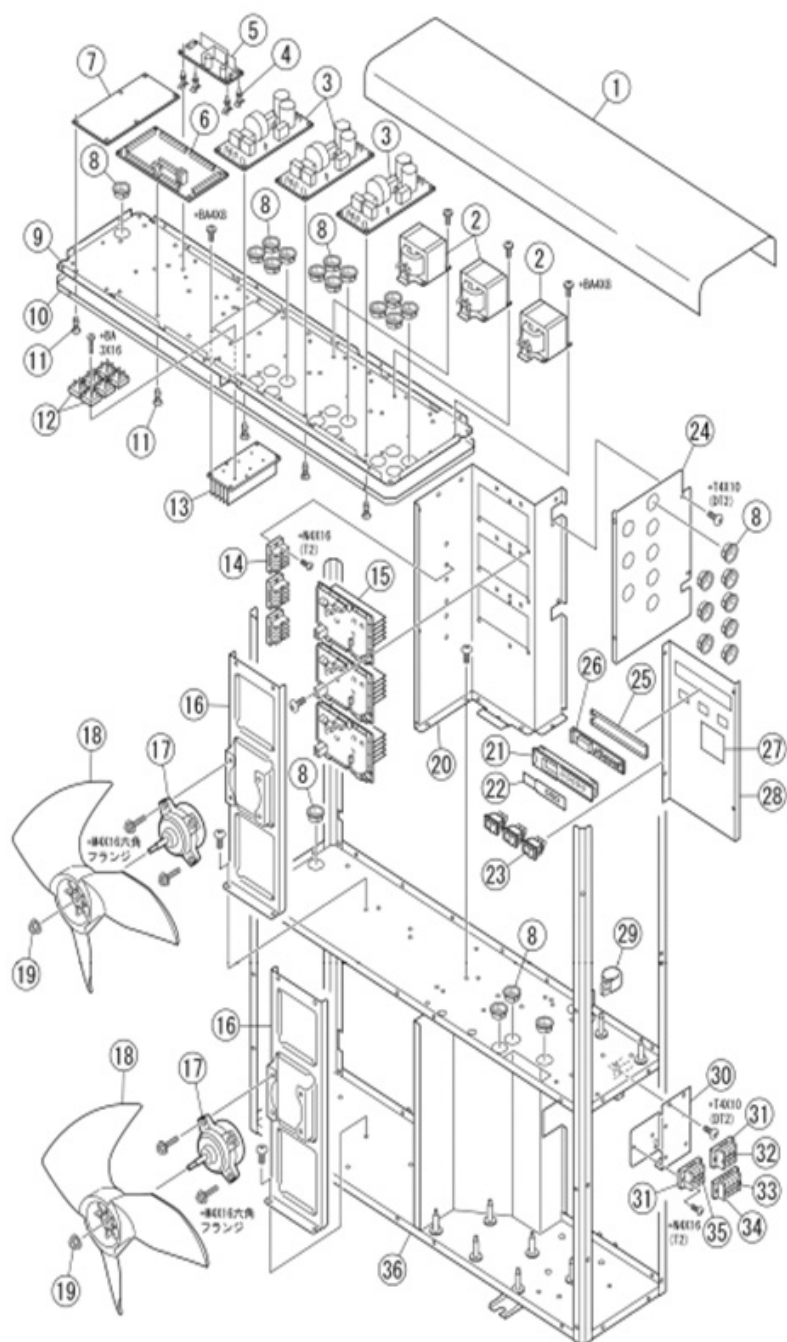
N°	Part	Qty	Reference	Spare Y/N
1	Top Board	1	23101-45660-A	Y
2	Side plate left	1	24010-42580-A	Y
3	Handle assembly	3	40317-10240	N
4	Upper rear panel	1	24013-46730-A	Y
5	PL display plate CS	2	21619-40890	N
6	Upper angle A	1	25270-70300	N
7	Heat Exchanger connecting plate	1	24990-87880	N
8	Angle BD	1	25270-68330	N
9	Lower angle A	1	25270-70330	N
10	Upper angle B	1	25270-70310	N
11	Upper angle C	1	25270-70320	N
12	Sticker packaging 55B	3	6100-3460	N
13	Heat exchanger guard assembly	2	23790-10510-A	N
14	Rear panel right	1	24013-46750-A	Y
15	Electrical cover	1	24912-44901-A	Y
16	CO2 mark label	1	37770-50860	N
17	Wiring display board	1	21602-59161	N
18	Front panel right	1	23720-40650-A	Y
19	Operation window cover	1	24031-44430	N
20	Lower angle C	1	25270-70350	N
21	Lower angle B	1	25270-70340	N
22	Heat exchanger fixing plate A	1	25270-70360	N
23	Heat exchanger fixing plate B	1	25270-70370	N
24	Shroud	2	40307-43220	N
25	Charge valve mounting bracket	1	25270-70380	N
26	Cable holder BR	1	8910-0263	N
27	Front panel left	1	23720-40640-A	N
28	Fan guard	2	44004-42850	Y
29	Thermistor EOUR assembly	1	91101-52060	Y
30	Error display plate	1	21670-55670	N



7.4.a CDU-L triple phase 230V and spare parts list

2nd part

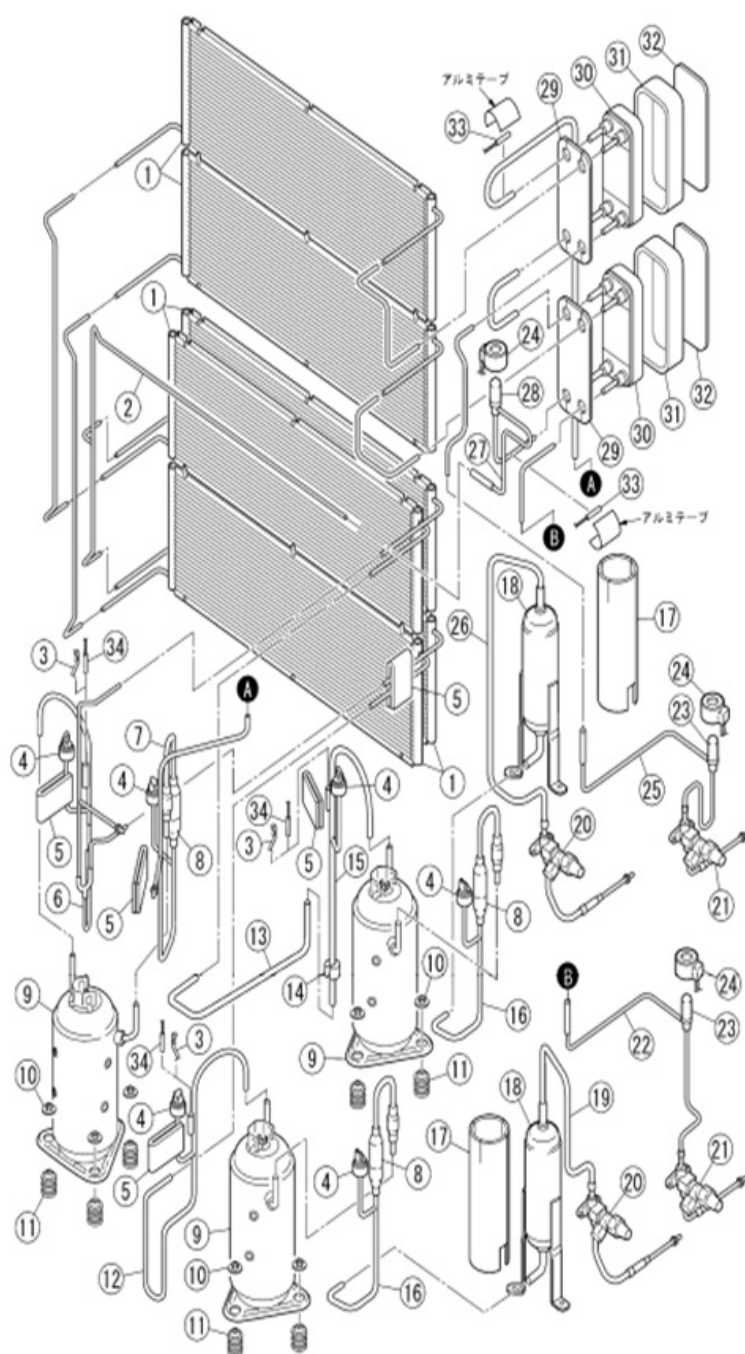
N°	Part	Qty	Reference	Spare Y/N
1	Water-proof sheet	1	24990-89230	N
2	Reactor HPDR-25A-4.0MH-CU	3	91002-54050	Y
3	PCB filter NFU-2RS	3	NFU-2RS	Y
4	Board holder LCBS-6-19	4	91004-44120	N
5	AC-DC CONVERTOR LFA75F-24-J1Y	1	91903-42410	Y
6	System controller SCU-8B1MRT5-B	1	20725-13460	Y
7	PCB fan motor FMU-32801	1	FMU-32801	Y
8	Cable bush TB-2533	25	8928-0154	N
9	Upper bottom plate assembly	1	24990-13760	N
10	Sticker packaging 55B	2	6100-3460	N
11	Board holder KGLS-10RT	27	91004-47190	N
12	Diode bridge S25VB60	6	91602-53050	Y
13	Heat sink BD6	1	20730-40171	N
14	3P terminal BTB30C3	3	91604-94120	Y
15	INV board high-stage assembly C90A	3	40105-10570	Y
16	Fan motor mounting bracket	2	24332-43160	N
17	Fan motor SIC-65FV-F515-2	2	93501-54220	Y
18	Propeller fan HP	2	42815-40280	N
19	Washer nut M6 left-hand thread	2	92101-F4100	N
20	Upper partition plate	1	24990-88350	N
21	Operation panel case	1	23190-48610	Y
22	Operation display panel	1	21607-42080	N
23	Waveform switch HLS208N	3	8913-0467	Y
24	Side case B	1	24911-51540	N
25	Operation panel rear cover	1	23190-48630	N
26	SCU-4B1MSP1	1	SCU-4B1MSP1	Y
27	Indication mark plate	1	21670-55640	N
28	Front case A	1	24911-51530	N
29	Cable holder BR	1	8910-0263	N
30	Terminal block fixing plate C	1	24926-40420	N
31	3P terminal block BTB30C3-B	2	91604-92130	Y
32	Communication control terminal display board	1	21604-41890	N
33	Defrosting signal terminal display board	1	21604-42020	N
34	Terminal block BTB15LC4	1	91604-A2290	Y
35	Power supply display board	1	21604-42030	N
36	Frame assembly	1	24906-10962	N



7.4.b CDU-L triple phase 230V and spare parts list

3rd part

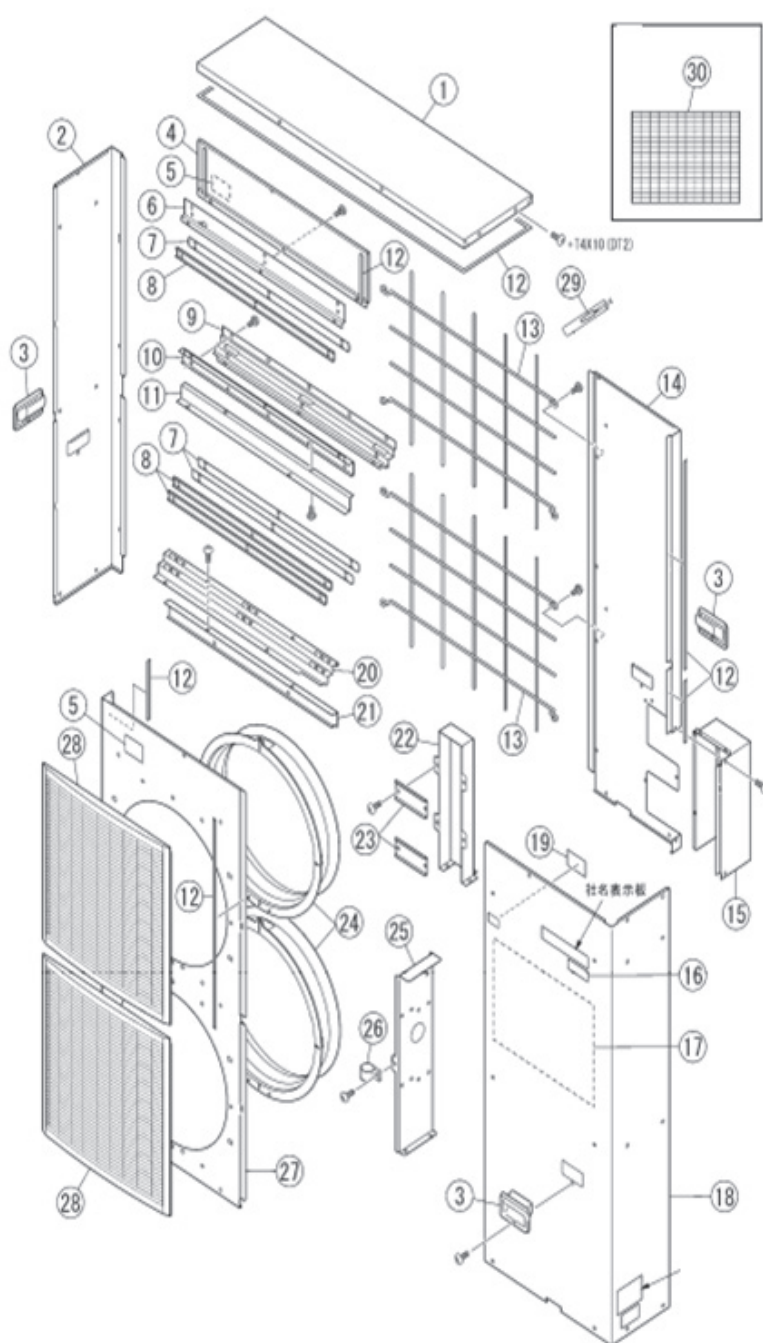
N°	Part	Qty	«Reference R06A2B»	«Spare Y/N»
1	AL heat exchanger N5792316A68A	6	90707-84070	N
2	High-stage GC outlet pipe assembly	1	25219-10071	N
3	Thermistor fixing bracket	3	41105-43710	N
4	Pressure sensor HSK	6	91406-C2010	Y
5	Vibration-proof rubber A	5	24924-40470	N
6	High-stage discharge pipe assembly	1	25211-11191	N
7	High-stage suction pipe assembly	1	25217-14761	N
8	Check valve CAV-10Y3C	3	92605-B2110	N
9	Compressor SHC040B2403	3	91001-72030	Y
10	Flange nut M6	9	92101-F4110	N
11	Compressor vibration-proof rubber	9	40580-41910	N
12	Low-stage discharge pipe B assembly	1	25211-11180	N
13	Low-stage GC inlet pipe A assembly	1	25211-11261	N
14	Anti-vibration weight	1	5786-2840	N
15	Low-stage discharge pipe A assembly	1	25211-11170	N
16	Suction pipe assembly	2	25217-14750	N
17	Foamed polyethylene 05	2	21906-99301	N
18	Accumulator	2	43103-40020	N
19	Accumulation pipe B assembly	1	25219-10140	N
20	Charge valve FCV-JY3	2	92605-C2050	Y
21	Charge valve FCV-JY2	2	92605-C2040	Y
22	Expansion valve pipe assembly	1	25219-10060	N
23	EX valve CPM-B12YCSD-1	2	92605-54060	Y
24	EX valve coil CKM-MD24SD-1	3	92605-62130	Y
25	Expansion valve pipe assembly	1	25219-10060	N
26	Accumulation pipe A assembly	1	25219-10130	N
27	High stage expansion valve piping	1	25219-10080	N
28	EX valve CPM-B12YCSD-1	1	92605-53020	Y
29	Thermal insulation A	2	21906-98860	N
30	Plate heat exchanger	2	25205-10050	N
31	Thermal insulation 10x32x540	2	21906-98961	N
32	Thermal insulation B	2	21906-98870	N
33	Thermistor	1	91101-52060	Y
34	Thermistor EOUR	3	91101-52070	Y



7.5 Product BOM CDU-L triple phase 400V and spare parts list

Part 1

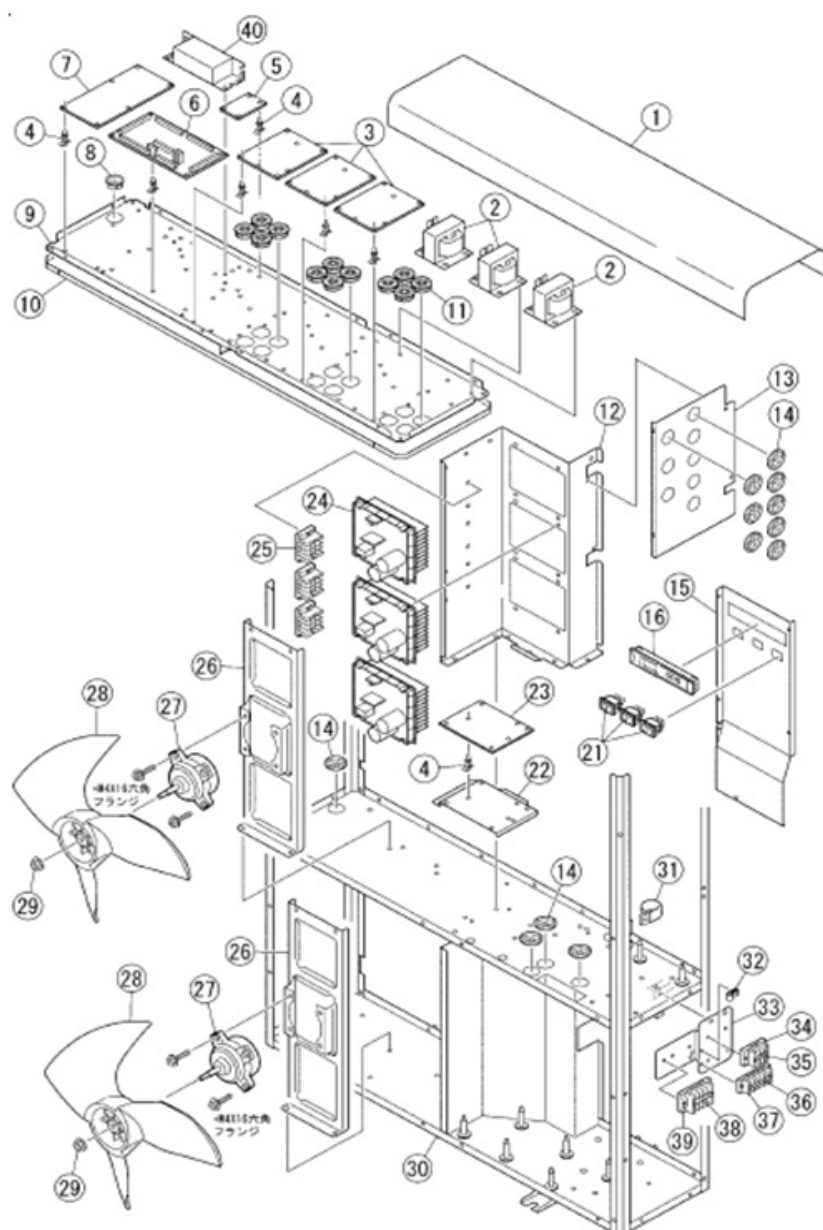
N°	Part	Qty	«Reference R06A2A»	«Spare Y/N»
1	Top Board	1	23101-45660-A	Y
2	Side plate left	1	24010-42580-A	Y
3	Handle assembly	3	40317-10240	N
4	Upper rear panel	1	24013-46730-A	Y
5	PL display plate CS	2	21619-40890	N
6	Upper angle A	1	25270-70300	N
7	Heat Exchanger connecting plate	1	24990-87880	N
8	Angle BD	1	25270-68330	N
9	Lower angle A	1	25270-70330	N
10	Upper angle B	1	25270-70310	N
11	Upper angle C	1	25270-70320	N
12	Sticker packaging 55B	3	6100-3460	N
13	Heat exchanger guard assembly	2	23790-10510-A	N
14	Rear panel right	1	24013-46750-A	Y
15	Electrical cover	1	24912-44901-A	Y
16	CO2 mark label	1	37770-50860	N
17	Wiring display board	1	21602-59160	N
18	Front panel right	1	23720-40650-A	Y
19	Operation window cover	1	24031-44430	N
20	Lower angle C	1	25270-70350	N
21	Lower angle B	1	25270-70340	N
22	Heat exchanger fixing plate A	1	25270-70360	N
23	Heat exchanger fixing plate B	1	25270-70370	N
24	Shroud	2	40307-43221-A	N
25	Charge valve mounting bracket	1	25270-70380	N
26	Cable holder BR	1	8910-0263	N
27	Front panel left	1	23720-40640-A	N
28	Fan guard	2	44004-42851-A	Y
29	Thermistor EOUR assembly	1	91101-52060	Y
30	Error display plate	1	21670-55670	N



7.5.a Product BOM CDU-L triple phase 400V and spare parts list

Part2

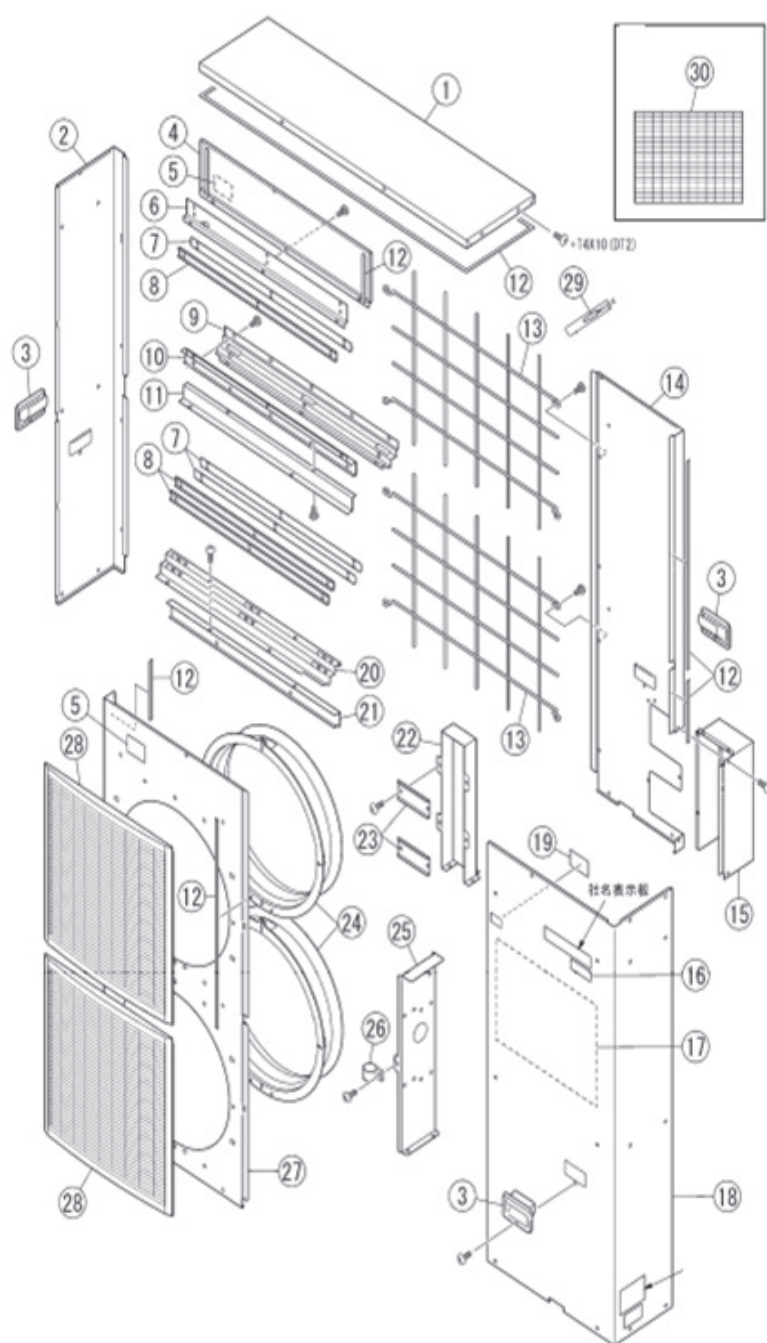
N°	Part	Qty	Reference	«Spare parts «
1	Water-proof sheet	1	24990-89230	N
2	Reactor AC400V-12A10MMH	3	91002-52060	Y
3	PCB filter NFU-4SCR2	3	NFU-4SCR2	Y
4	Board holder LCBS-6-19	44	91004-44120	N
5	PCB interface FU-E485TTL1	1	IFU-E485TTL1	Y
6	System controller SCU-8B5MRTH-Z	1	20725-14100	Y
7	PCB fan motor FMU-32801	1	FMU-32801	Y
8	Cable bush TB-2533	1	8928-0154	N
9	Upper bottom plate assembly	1	24990-13970	N
10	Sticker packaging 55B	2	6100-3460	N
11	Board holder 40B	12	92804-43040	N
12	Upper partition plate	1	24990-91260	N
13	Side case B	1	24911-52470	N
14	Board holder 40B	12	8928-0284	N
15	Front case A	1	24911-52790	N
16	Operation panel	1	24073-20030	Y
21	Waveform switch HLS208N	3	8913-0467	Y
22	Filter bracket	1	24926-40460	N
23	PCB filter NFU-4SCR1	1	NFU-4SCR1	Y
24	PCB inverter INV-SCRM1A	3	INV-SCRM1A	Y
25	3P terminal BTB50C3	3	91604-92140	Y
26	Fan motor mounting bracket	2	24332-43160	N
27	Fan motor SIC-65FV-F515-2	2	93501-54220	Y
28	Propeller fan HP	2	42815-40280	N
29	Washer nut M6 left-hand thread	2	92101-F4100	N
30	Frame assembly	1	24906-10990	N
31	Cable holder BR	1	8910-0263	N
32	Cable holder BE	3	8910-0250	N
33	Terminal block fixing plate D	1	24926-40430	N
34	3P terminal block BTB30C3-B	1	91604-92130	Y
35	Communication control terminal display board	1	21604-41890	N
36	Defrosting signal terminal display board	1	21604-42090	N
37	6P terminal block BTB16LC6	1	91604-C2010	Y
38	Power supply display board	1	21604-42100	N
39	4P terminal block BTB50C4	1	91604-A2020	Y
40	AC-DC CONVERTOR SWLFA75F-24-SNJ1Y	1	91903-42520	Y

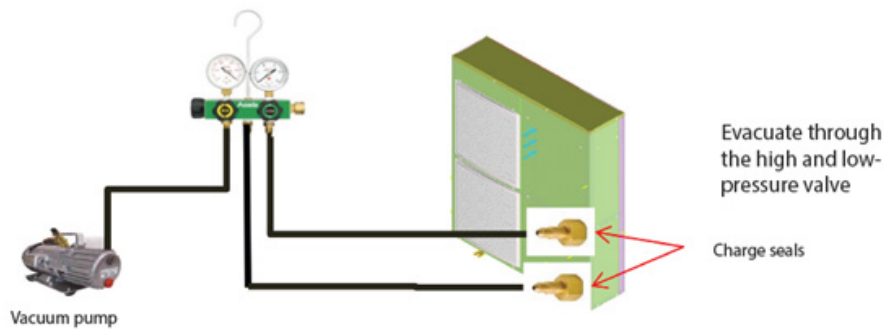


7.5.b Product BOM CDU-L triple phase 400V and spare parts list

Part 3

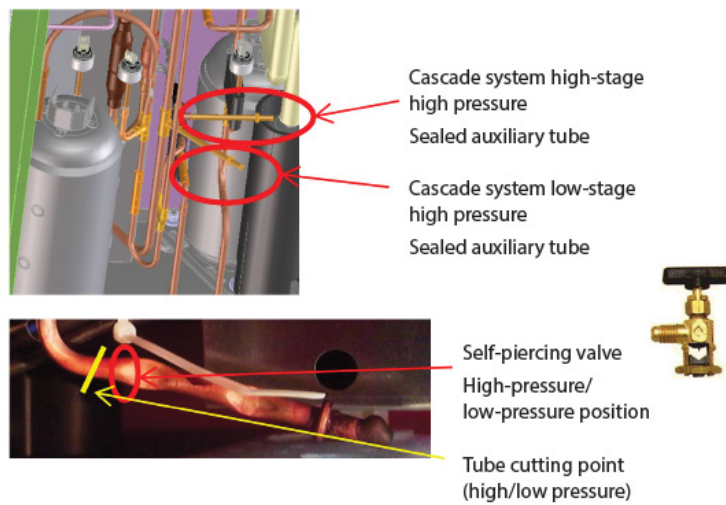
N°	Part	Qty	«Reference R06A2A»	«Spare Y/N»
1	Top Board	1	23101-45660-A	Y
2	Side plate left	1	24010-42580-A	Y
3	Handle assembly	3	40317-10240	N
4	Upper rear panel	1	24013-46730-A	Y
5	PL display plate CS	2	21619-40890	N
6	Upper angle A	1	25270-70300	N
7	Heat Exchanger connecting plate	1	24990-87880	N
8	Angle BD	1	25270-68330	N
9	Lower angle A	1	25270-70330	N
10	Upper angle B	1	25270-70310	N
11	Upper angle C	1	25270-70320	N
12	Sticker packaging 55B	3	6100-3460	N
13	Heat exchanger guard assembly	2	23790-10510-A	N
14	Rear panel right	1	24013-46750-A	Y
15	Electrical cover	1	24912-44901-A	Y
16	CO2 mark label	1	37770-50860	N
17	Wiring display board	1	21602-59161	N
18	Front panel right	1	23720-40650-A	Y
19	Operation window cover	1	24031-44430	N
20	Lower angle C	1	25270-70350	N
21	Lower angle B	1	25270-70340	N
22	Heat exchanger fixing plate A	1	25270-70360	N
23	Heat exchanger fixing plate B	1	25270-70370	N
24	Shroud	2	40307-43220	N
25	Charge valve mounting bracket	1	25270-70380	N
26	Cable holder BR	1	8910-0263	N
27	Front panel left	1	23720-40640-A	N
28	Fan guard	2	44004-42850	Y
29	Thermistor EOUR assembly	1	91101-52060	Y
30	Error display plate	1	21670-55670	N





- Begin the refrigerant removal starting with the vapor side (1) (to avoid oil removal and pipe clogging with CO₂ dry ice).
- When CO₂ pressure is low, open liquid side (2).
- When pressure is close to 1 bar, start up the vacuum pump.

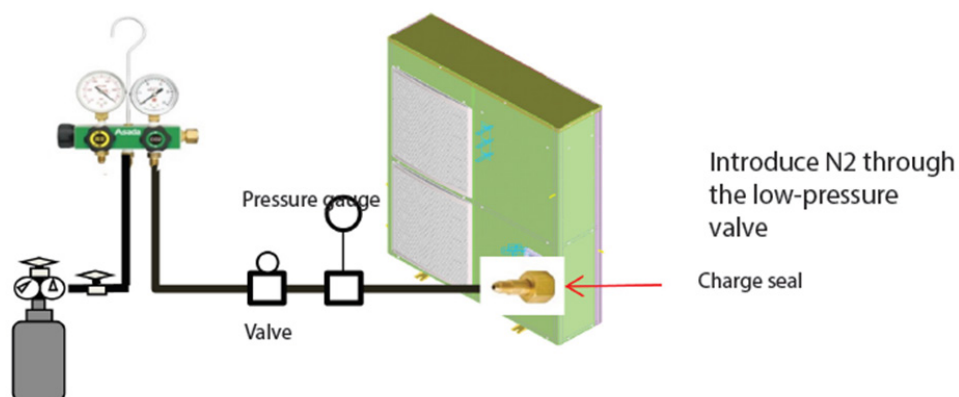
8.2 High stage CDU-M, CDU-L



9. Leakage test

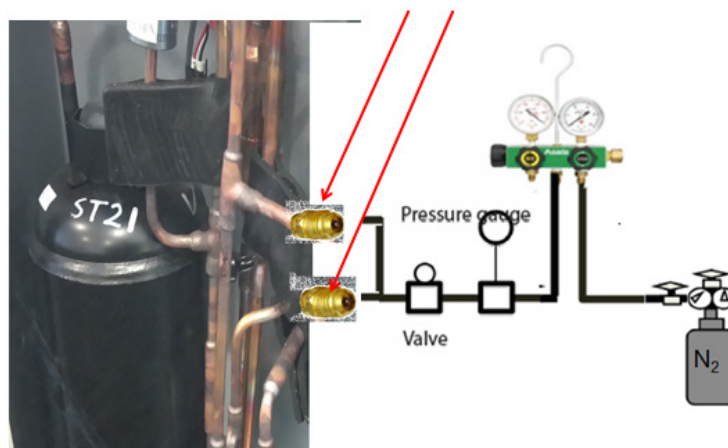
9.1 Low stage CDU-S, CDU-M, CDU-L

Introduce nitrogen in the refrigerant loop and check for any leakage (pressure is reducing over time). Remove the nitrogen gas the same way you remove the CO₂ refrigerant.



9.2 High stage CDU-M, CDU-L

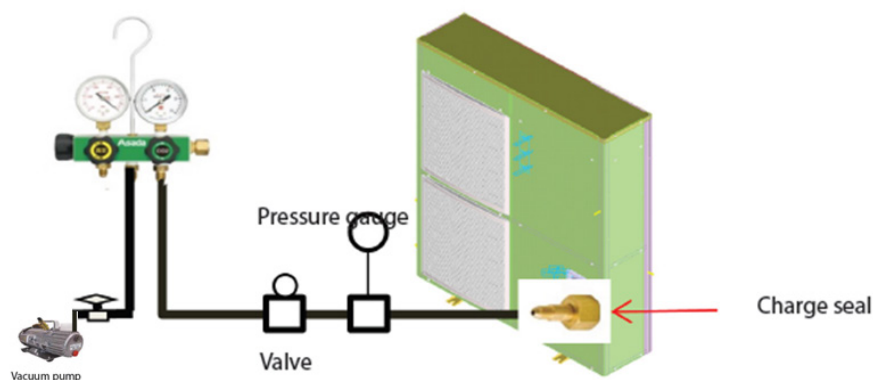
Add 2 charging valve Schrader and make brazing



Introduce nitrogen in the refrigerant loop and check for any leakage (pressure is reducing over time). Remove the nitrogen gas the same way you remove the CO₂ refrigerant.

10. Vaccuming

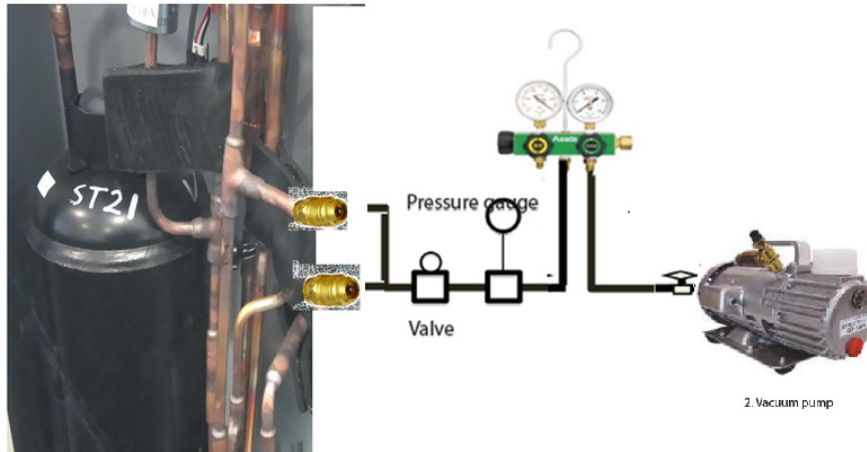
10.1 Low stage CDU-S, CDU-M, CDU-L



Vacuum the loop during few hours (3 hours)

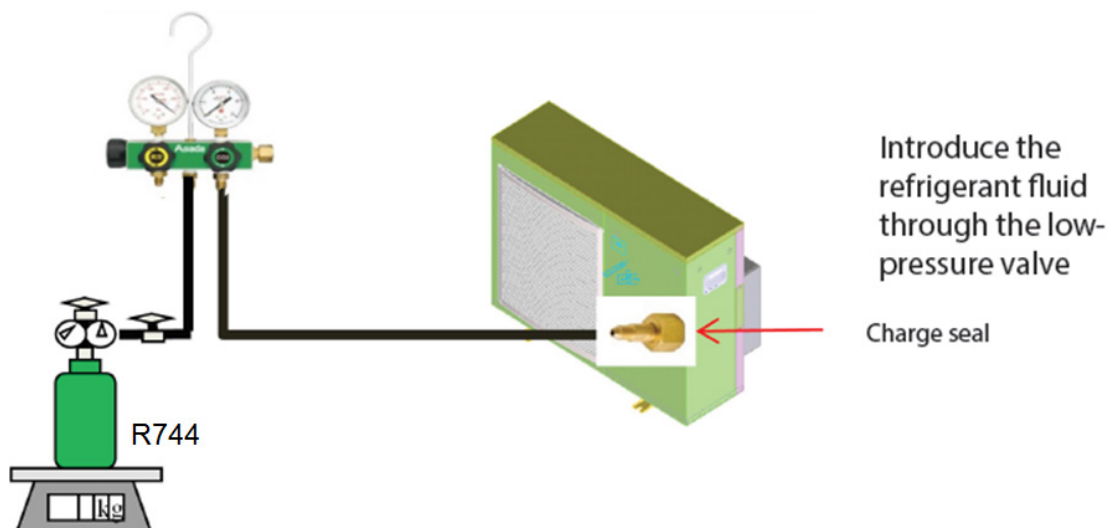
10.2 High stage CDU-M, CDU-L

Vacuum the loop during few minutes (20mn)



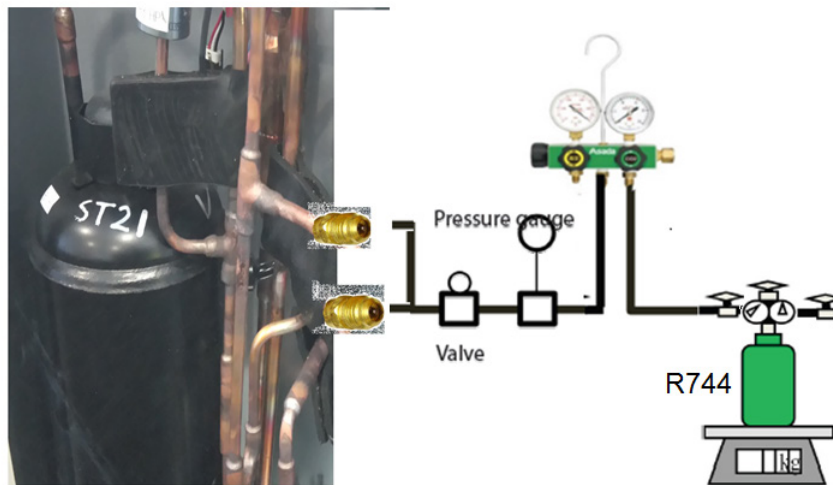
11. Refrigerant Refill

11.1 Low stage CDU-S, CDU-M, CDU-L



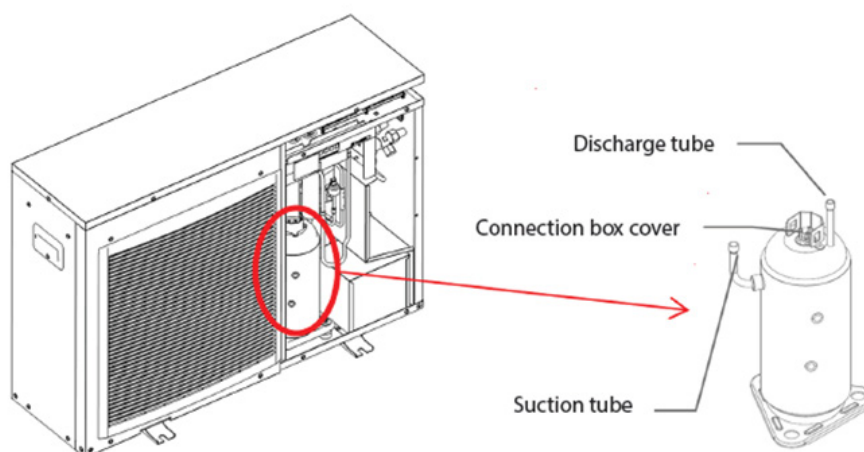
Refer to the installation guide for refrigerant charge calculation.

11.2 High stage CDU-M, CDU-L



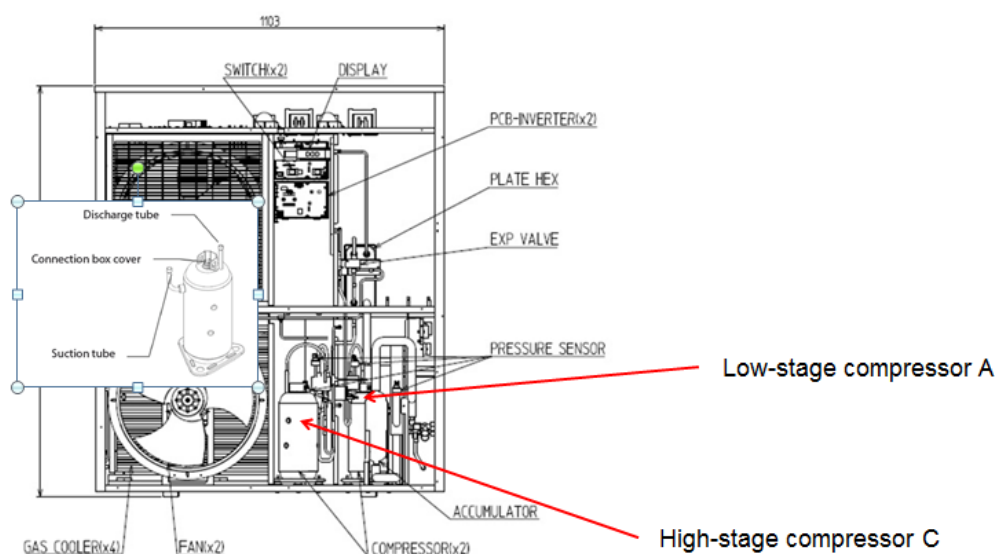
12. Compressor change

12.1 CDU-S



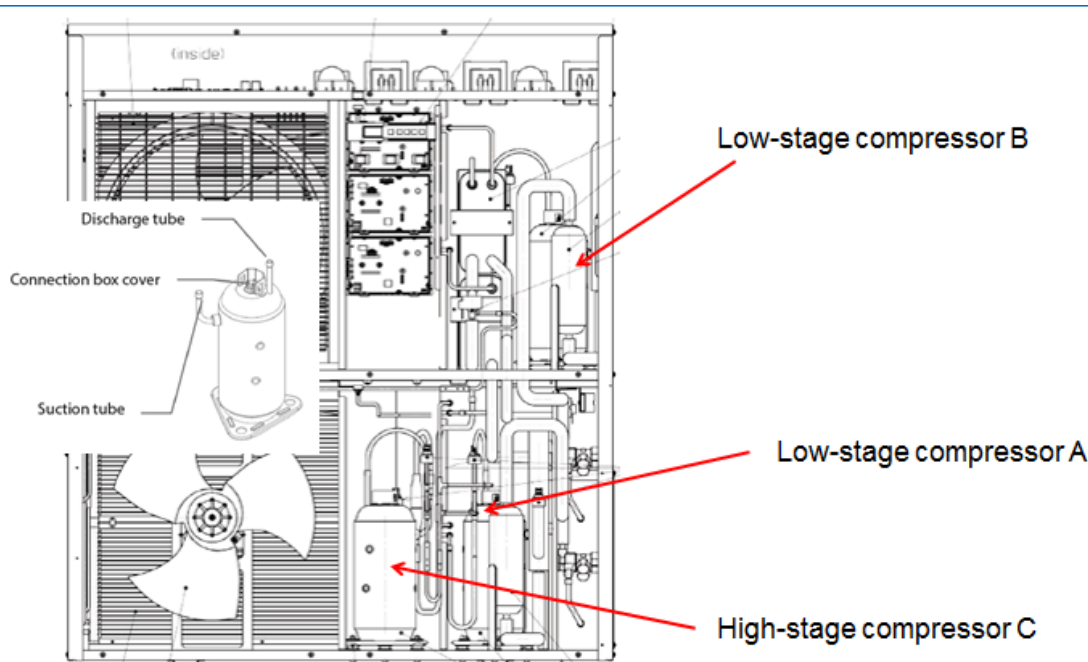
- 1.** Remove the front panel and shut off the refrigeration unit's power supply by placing the switch on «OFF».
- 2.** Leave the circuit breaker on «OFF» throughout the intervention to prevent the unit from restarting if it is accidentally switched on.
- 3.** Remove the refrigerant gas by following the procedure §7
- 4.** To replace the compressor, remove the suction tube and discharge tube.
- 5.** Remove the connection box cover and disconnect the cables.
- 6.** Prepare a flat surface, on which the compressor can be placed after removal (approx. 14 kg).
- 7.** Remove the flange nuts located beneath the compressor before lifting and removing it.
- 8.** Install the replacement compressor, proceeding in the reverse order of steps (5) to (7).
- 9.** Check loop leakage and make vacuum by following the procedure §7
- 10.** Fully open the solenoid valve located on the refrigerated display side.
- 11.** Introduce the refrigerant by following the procedure §7

12.2 CDU-M



1. Remove the front panel and shut off the refrigeration unit's power supply by placing the switch on «OFF».
2. Leave the circuit breaker on «OFF» throughout the intervention to prevent the unit from restarting if it is accidentally switched on.
3. Remove the refrigerant gas by following the procedure (6.1 for low stage or 6.2 for high stage)
4. To replace the compressor, remove the suction tube and discharge tube.
5. Remove the connection box cover and disconnect the cables.
6. Prepare a flat surface, on which the compressor can be placed after removal (approx. 14 kg).
7. Remove the flange nuts located beneath the compressor before lifting and removing it.
8. Install the replacement compressor, proceeding in the reverse order of steps (5) to (7).
9. Check loop leakage and make vacuum by following the procedure (6.1 for low stage or (6.2 for high stage)
10. Fully open the solenoid valve located on the refrigerated display side.
11. Introduce the refrigerant by following the procedure (6.1 for low stage or 6.2 for high stage)
12. Place the operating switch in the «ON» position, connect the power supply and close the main circuit breaker (ON).
13. Confirm that the compressor does not generate any vibrations or abnormal noise.

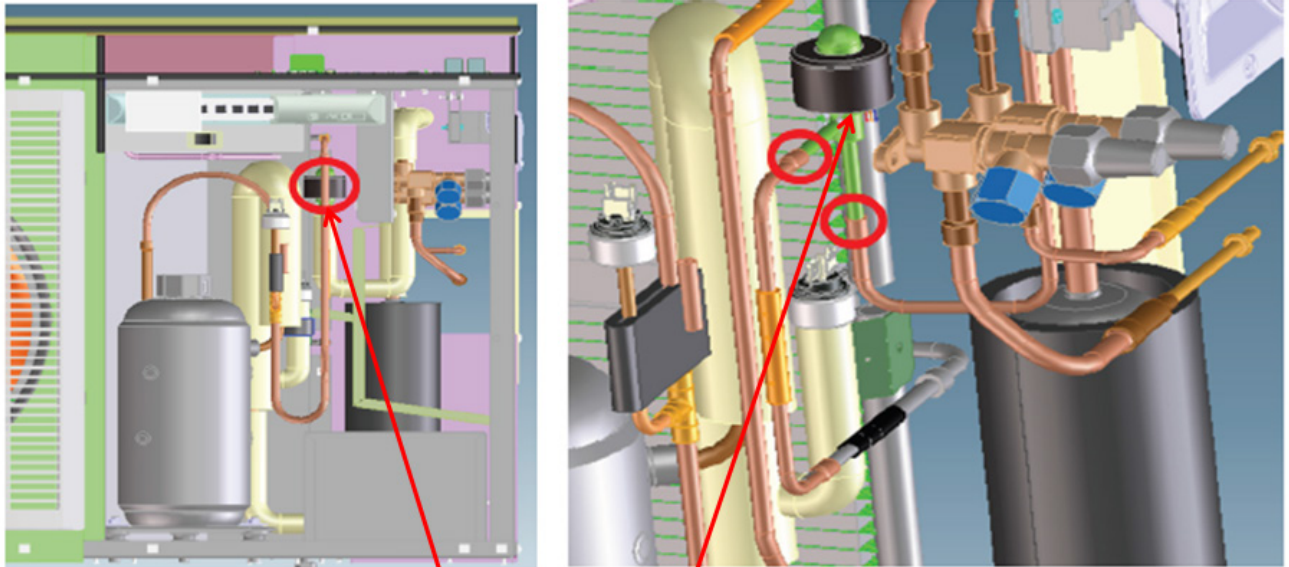
12.3 CDU-L



- 1.** Remove the front panel and shut off the refrigeration unit's power supply by placing the switch on «OFF».
- 2.** Leave the circuit breaker on «OFF» throughout the intervention to prevent the unit from restarting if it is accidentally switched on.
- 3.** Remove the refrigerant gas by following the procedure (7.1 for low stage or 7.2 for high stage)
- 4.** To replace the compressor, remove the suction tube and discharge tube.
- 5.** Remove the connection box cover and disconnect the cables.
- 6.** Prepare a flat surface, on which the compressor can be placed after removal (approx. 14 kg).
- 7.** Remove the flange nuts located beneath the compressor before lifting and removing it.
- 8.** Install the replacement compressor, proceeding in the reverse order of steps (5) to (7).
- 9.** Check loop leakage and make vacuum by following the procedure (7.1 for low stage or 7.2 for high stage)
- 10.** Fully open the solenoid valve located on the refrigerated display side.
- 11.** Introduce the refrigerant by following the procedure (7.1 for low stage or 7.2 for high stage)
- 12.** Place the operating switch in the «ON» position, connect the power supply and close the main circuit breaker (ON).
- 13.** Confirm that the compressor does not generate any vibrations or abnormal noise.

13. EEV change

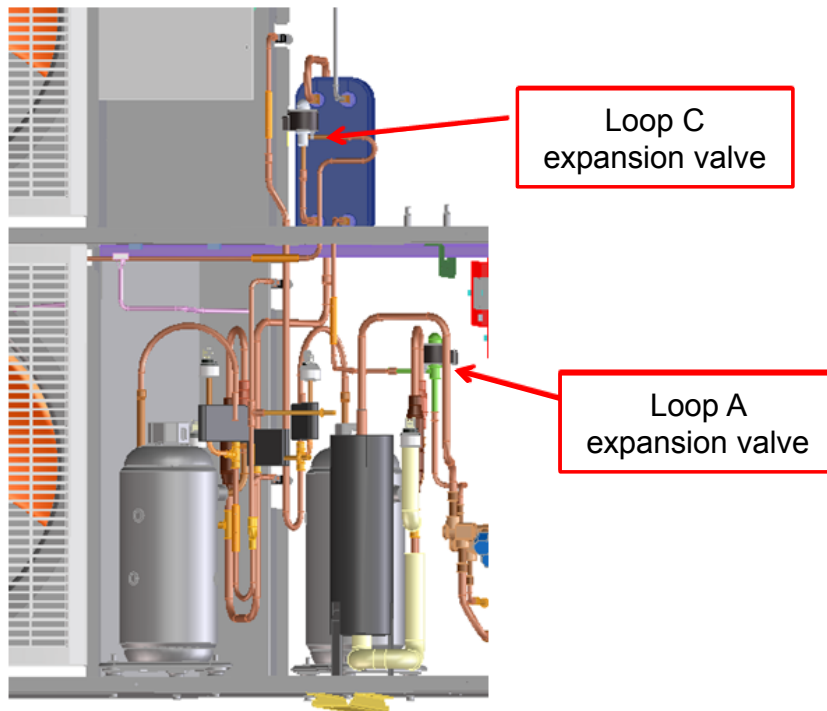
13.1 CDU-S



Expansion valve

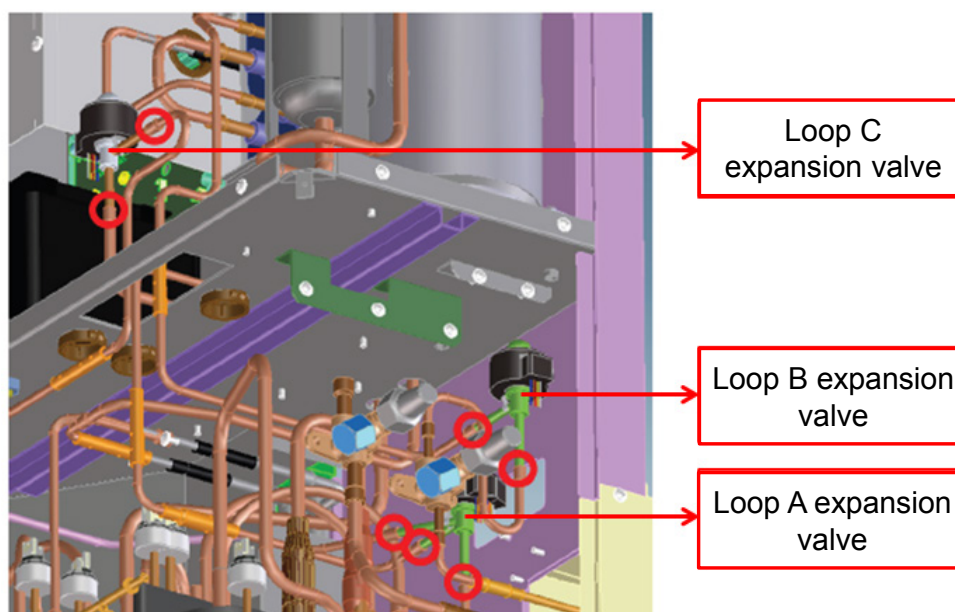
1. Retirer le panneau avant et mettre l'interrupteur CLA sur OFF.
2. Couper l'alimentation générale.
3. Pour remplacer la bobine , déconnecter le faisceau et retirer là du corps du détendeur .
4. Pour remplacer le détendeur , évacuer le réfrigérant suivant la procédure définie au §8.
5. Débraser le détendeur et remplacer le en effectuant l'opération sous azote.
6. Vérifier l'étanchéité du circuit et procéder à un tirage au vide suivant la procédure définie au §10.
7. Ouvrir le(s) détendeur(s) des postes évaporation .
8. Charger le circuit en réfrigérant suivant la procédure définie au §11.
9. Remettre l'alimentation générale.
10. Mettre l'interrupteur CLA sur ON.
11. Confirmer le bon fonctionnement du CDU.

13.2 CDU-M



1. Remove the front panel and shut off the refrigeration unit's power supply by placing the switch on «OFF».
2. Leave the circuit breaker on «OFF» throughout the intervention to prevent the unit from restarting if it is accidentally switched on.
3. To replace a EEV coil, detach it before removing it. Remove the wire harness from the connector.
4. To replace a valve, evacuate the refrigerant gas by following the procedure (6.1 for low stage or 6.2 for high stage)
5. Remove the soldering from the expansion valve, then replace it.
6. Check loop leakage and make vacuum by following the procedure (6.1 for low stage or 6.2 for high stage)
7. Open the solenoid valve located on the refrigerated display side.
8. Introduce the refrigerant by following the procedure (6.1 for low stage or 6.2 for high stage)
9. Place the operating switch in the «ON» position, connect the power supply and close the main circuit breaker (ON).
10. Confirm that the compressor does not generate any vibrations or abnormal noise

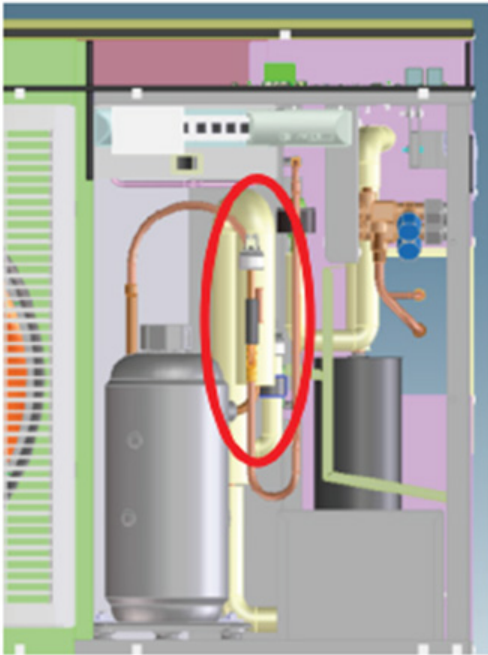
13.3 CDU-L



1. Remove the front panel and shut off the refrigeration unit's power supply by placing the switch on «OFF».
2. Leave the circuit breaker on «OFF» throughout the intervention to prevent the unit from restarting if it is accidentally switched on.
3. To replace a EEV coil, detach it before removing it. Remove the wire harness from the connector.
4. To replace a valve, evacuate the refrigerant gas by following the procedure (7.1 for low stage or 7.2 for high stage)
5. Remove the soldering from the expansion valve, then replace it.
6. Check loop leakage and make vacuum by following the procedure (7.1 for low stage or 7.2 for high stage)
7. Open the solenoid valve located on the refrigerated display side.
8. Introduce the refrigerant by following the procedure (7.1 for low stage or 7.2 for high stage)
9. Place the operating switch in the «ON» position, connect the power supply and close the main circuit breaker (ON).
10. Confirm that the compressor does not generate any vibrations or abnormal noise.

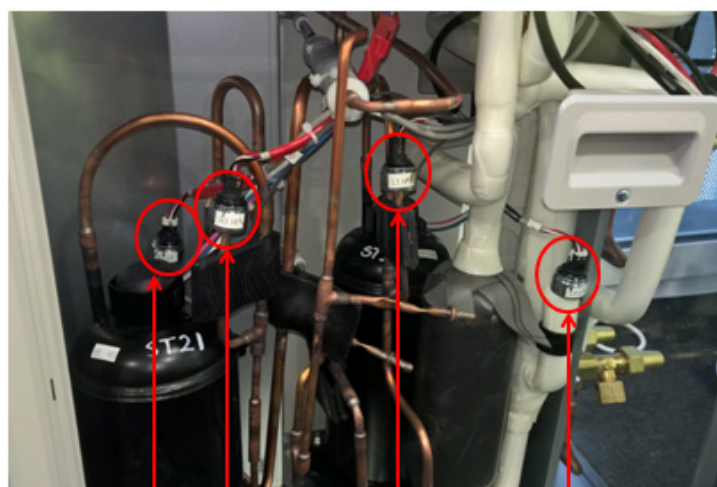
14. Pressure sensor change

14.1 CDU-S



1. Remove the front panel and shut off the refrigeration unit's power supply by placing the switch on «OFF».
2. Leave the circuit breaker on «OFF» throughout the intervention to prevent the unit from restarting if it is accidentally switched on.
3. To replace a pressure sensor, evacuate the refrigerant gas by following the procedure §7
4. Remove and replace the pressure sensor, applying gas during welding work.
5. Check loop leakage and make vacuum by following the procedure §7
6. Open the solenoid valve located on the refrigerated display side.
7. Introduce the refrigerant by following the procedure §7
8. Place the operating switch in the «ON» position, connect the power supply and close the main circuit breaker (ON).
9. Confirm that the compressor does not generate any vibrations or abnormal noise

14.2 CDU-M

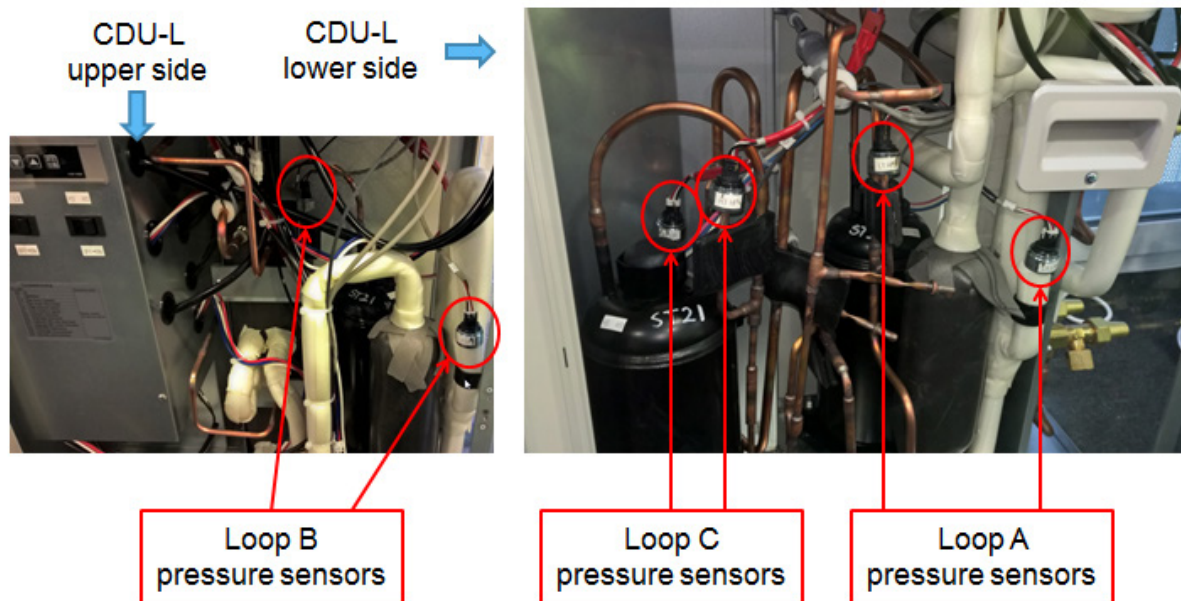


Loop C
pressure sensors

Loop A
pressure sensors

- 1.** Remove the front panel and shut off the refrigeration unit's power supply by placing the switch on «OFF».
- 2.** Leave the circuit breaker on «OFF» throughout the intervention to prevent the unit from restarting if it is accidentally switched on.
- 3.** To replace a pressure sensor, evacuate the refrigerant gas by following the procedure (6.1 for low stage or 6.2 for high stage)
- 4.** Remove and replace the pressure sensor, applying gas during welding work.
- 5.** Check loop leakage and make vacuum by following the procedure (6.1 for low stage or 6.2 for high stage)
- 6.** Open the solenoid valve located on the refrigerated display side.
- 7.** Introduce the refrigerant by following the procedure (6.1 for low stage or 6.2 for high stage)
- 8.** Place the operating switch in the «ON» position, connect the power supply and close the main circuit breaker (ON).
- 9.** Confirm that the compressor does not generate any vibrations or abnormal noise.

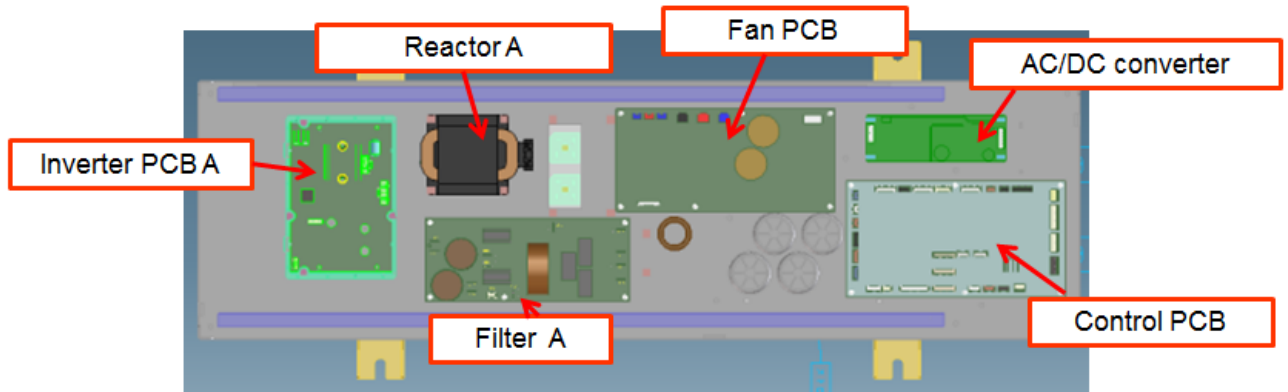
14.3 CDU-L



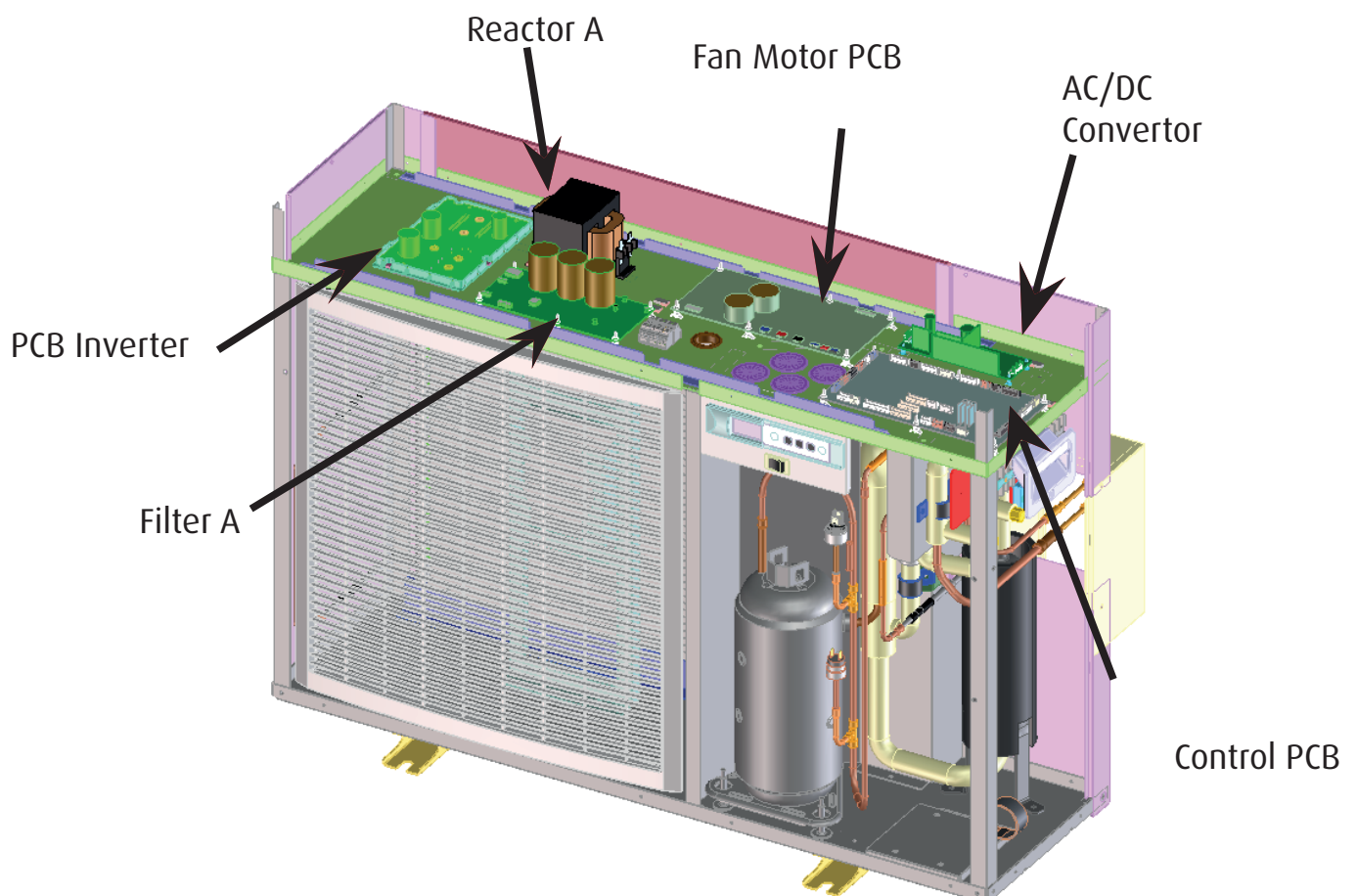
1. Remove the front panel and shut off the refrigeration unit's power supply by placing the switch on «OFF».
2. Leave the circuit breaker on «OFF» throughout the intervention to prevent the unit from restarting if it is accidentally switched on.
3. To replace a pressure sensor, evacuate the refrigerant gas by following the procedure (7.1 for low stage or 7.2 for high stage)
4. Remove and replace the pressure sensor, applying gas during welding work.
5. Check loop leakage and make vacuum by following the procedure (7.1 for low stage or 7.2 for high stage)
6. Open the solenoid valve located on the refrigerated display side.
7. Introduce the refrigerant by following the procedure (7.1 for low stage or 7.2 for high stage)
8. Place the operating switch in the «ON» position, connect the power supply and close the main circuit breaker (ON).
9. Confirm that the compressor does not generate any vibrations or abnormal noise

15. Electronic Replacing

15.1 CDU-S triple-phase



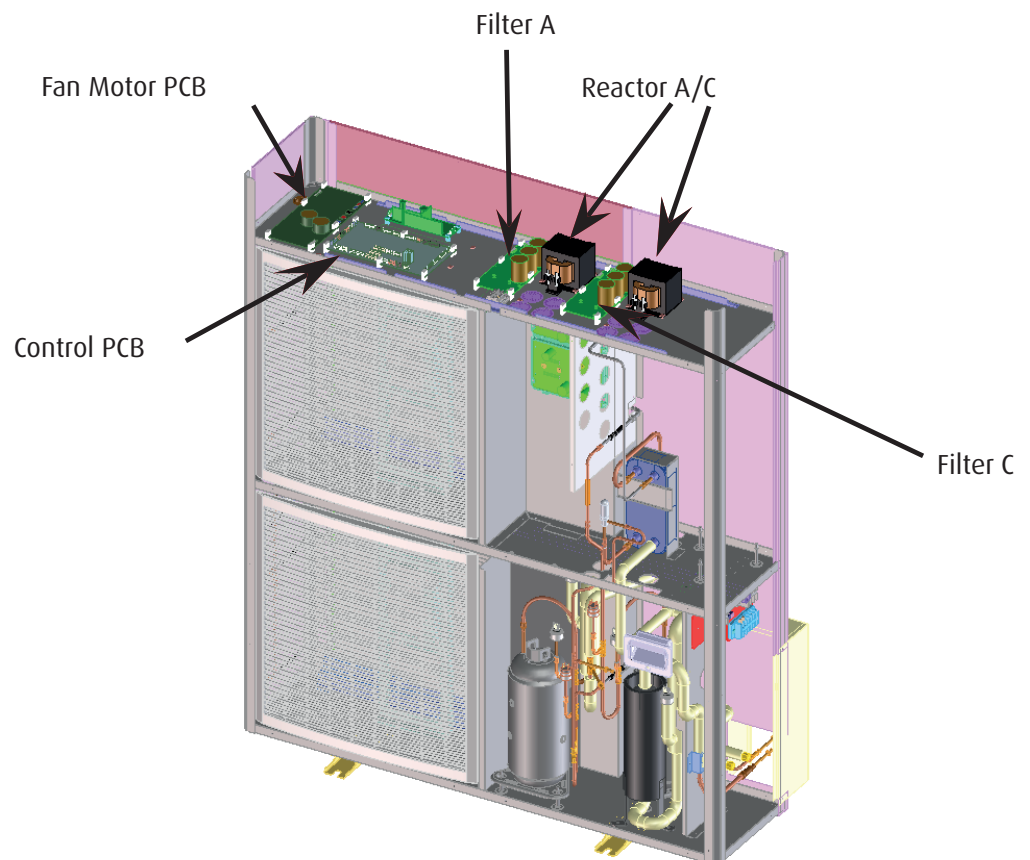
15.2 CDU-S Single phase



15.3 Operation

1. Remove the front panel and the upper cover, then shut off the refrigeration unit's power supply by placing the switch on «OFF».
2. Always shut off the room's power supply main circuit breaker.
3. Unplug the connector from the printed circuit board that you wish to replace.
4. Hold the stator in place using long nose pliers while removing the defective printed circuit board.
5. Make sure that no screws or dust remain when installing the printed circuit board.
6. Install the circuit and plug the connector in.
7. Close the room's power supply main circuit breaker (ON).
8. Place the operating switch in the «ON» position.
9. Confirm correct operation.

15.4 CDU-M



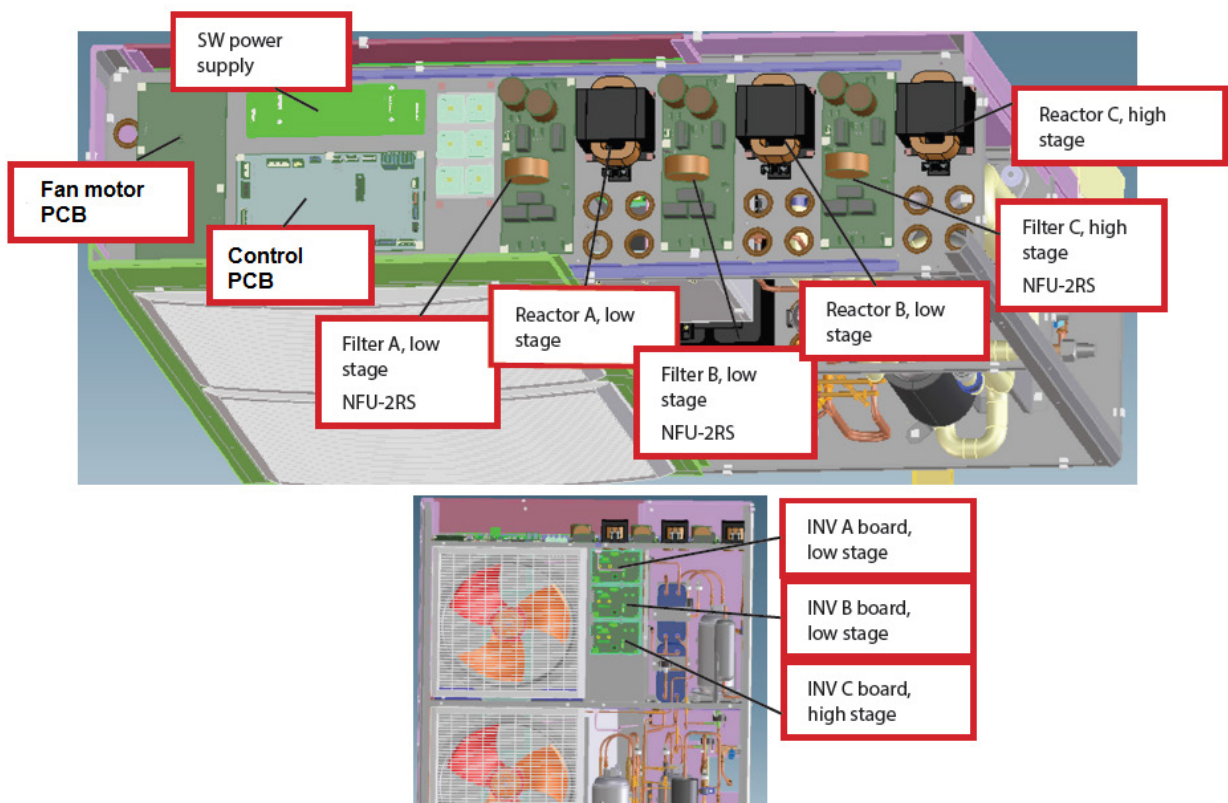
INVERTER PCB A
LOW STAGE

INVERTER PCB C
HIGH STAGE

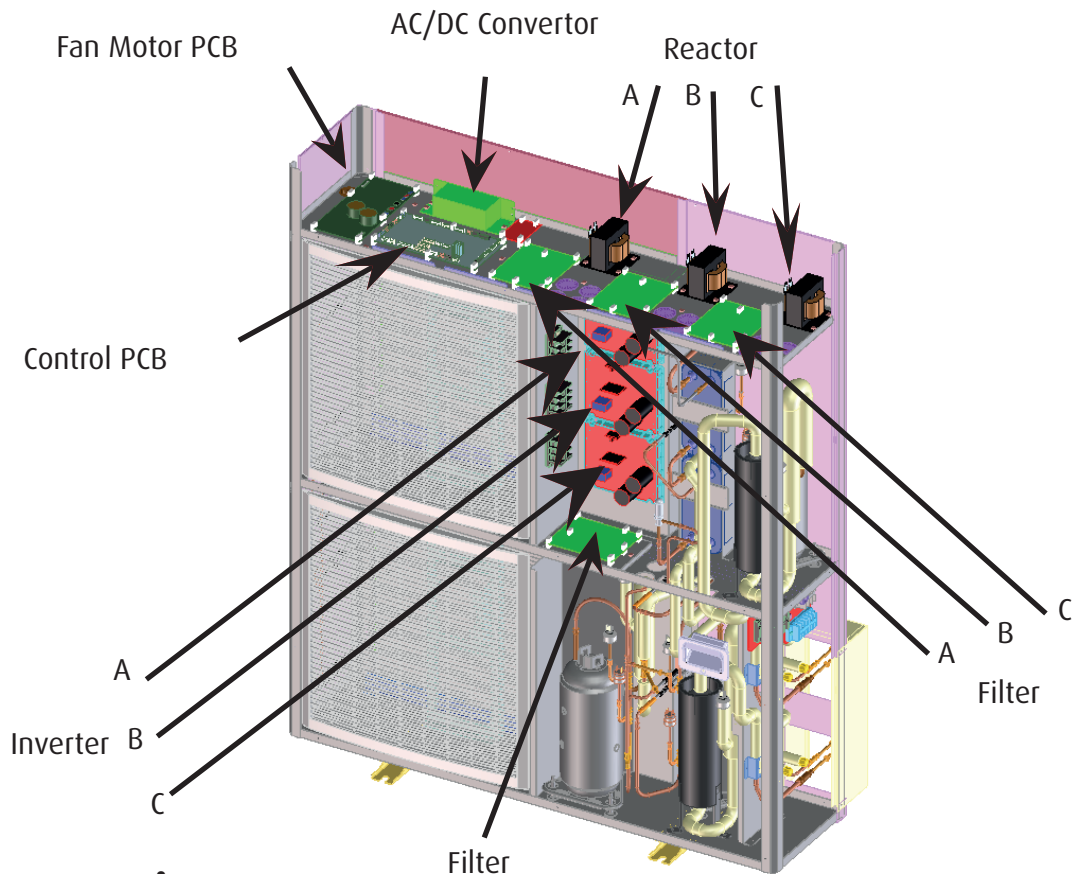
15.5 Opération

1. Remove the front panel and the upper cover, then shut off the refrigeration unit's power supply by placing the switch on «OFF».
2. Always shut off the room's power supply main circuit breaker.
3. Unplug the connector from the printed circuit board that you wish to replace.
4. Hold the stator in place using long nose pliers while removing the defective printed circuit board.
5. Make sure that no screws or dust remain when installing the printed circuit board.
6. Install the circuit and plug the connector in.
7. Close the room's power supply main circuit breaker (ON).
8. Place the operating switch in the «ON» position.
9. Confirm correct operation.

15.6 CDU-L triple phase 230V



15.7 CDU-L triple phase 400V



15.8 Operation

1. Remove the front panel and the upper cover, then shut off the refrigeration unit's power supply by placing the switch on «OFF».
2. Always shut off the room's power supply main circuit breaker.
3. Unplug the connector from the printed circuit board that you wish to replace.
4. Hold the stator in place using long nose pliers while removing the defective printed circuit board.
5. Make sure that no screws or dust remain when installing the printed circuit board.
6. Install the circuit and plug the connector in.
7. Close the room's power supply main circuit breaker (ON).
8. Place the operating switch in the «ON» position.
9. Confirm correct operation.

SANDEN Environmental Solutions

4 rue René Dumont | 35000 Rennes | France
Tel: +33 (0)2 90 02 65 30 | Fax: +33 (0)2 99 38 98 48
info@sanden-es.com | www.sanden-es.co