



Air Condition Unit

**Manual for
Installation - Start up - Service**



COVENT AS

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1 Warnings



Warnings – Electrical connection

- All electrical connection have to be done by authorized workers.
- Turn OF electrical voltage before service and electrical work



Warnings – Working

- The unit is heavy, be careful with transport, lifting and installation. Risk for injury. Use proper lifting device.
- Fasten the unit to the floor by welding or by bolts to avoid tip over.

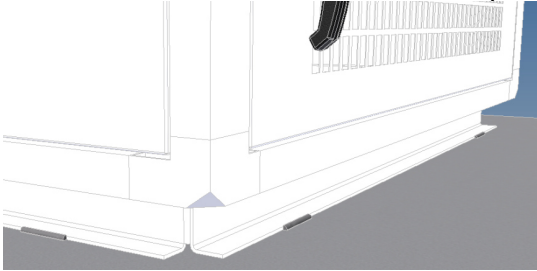


Fig. 1:Welding to the floor.

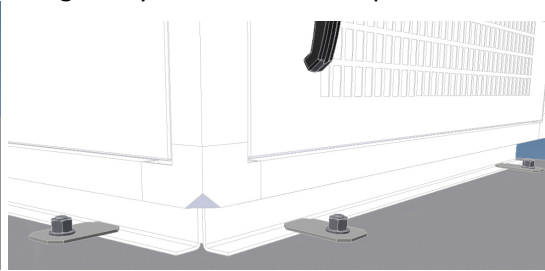


Fig. 2: Fasten by bolt.

- During running of fan, the access door have to be closed. The handle have to be locked by key.



Warnings – Importance

- Be careful with connection of water pipe at cooling coil. Avoid damage at header.

2 Product information

Standard execution:

- Capacities 10-55 kW
- Casing material in galvanized steel and insulated with 50mm sound insulation.
- Inside sound insulation
- Filter G4 for inlet air in front door.
- Coil in Cu/Al
- Drip pan in aluminium. Drain connection 1".
- Painted casing in grey-white (RAL 9002)
- Electric panel with control system.
- EC – electronically commutated motor with various speed controls.
- Insulated plenum chamber or duct connection, up or down stream.

Options:

- Casing in stainless steel
- Coil in Cu/Cu
- Coil in Cu/AlMg
- Other refrigerants also include R134a and R407c
- Heating coil (either hot water or electric)

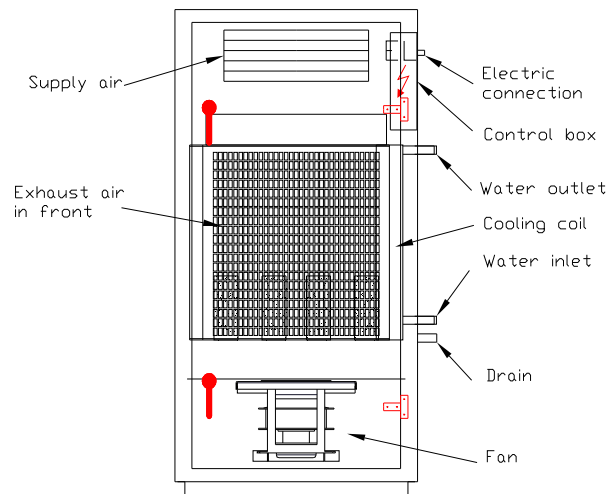
General description:

CCUWxx: Unit for chilled water

CCUDxx: Unit for direct expansion

Size	Cooling capacity kW	Air flow m ³ /h	Fan motor 50/60Hz kW	Max current Based on voltage 3x230 V 3x400 V 3x440 V A	Water flow [l/s]	Pressure drop, water [kPa]	Chilled water connection Inch	Electric heater kW	Sound dB(A)
01	12,7	1800	1,0	3,0/1,7/1,7	0,5	14,9	1"	6	63
02	17,5	2900	1,0	3,0/1,7/1,7	0,7	25,6	1"	12	66
03	20,4	3700	1,0	3,0/1,7/1,7	0,8	33,7	1"	15	67
04	30,5	4500	1,7	4,5/2,6/2,6	1,2	18,0	1¼"	24	75
05	35,7	5700	2 x 1,0	2 x 3,0/1,7/1,7	1,5	23,8	1¼"	24	76
06	44,9	6600	3,0	8,0/4,6/4,6	1,8	24,9	1½"	24	79
07	55,1	8600	2 x 1,7	2 x 4,5/2,6/2,6	2,2	36,0	1½"	24	84

3 Installation



Warnings – Electrical connection

- Air Condition Unit type CCU is delivered with internal control box and internal electrical connection to all components.
- Only need main electric connection to main switch inside the control box.

Main components:

- Fan
- Cooling coil
- Filter for exhaust air in front
- Control box

Options:

- Supply air grill in front
- Electric heater



Warnings – Working

- Close the service door before start up of fan.



Control function

Temperature sensor in air inlet ensure correct temperature in the room. Temperature sensor in air outlet gives the possibility to limit minimum and maximum supply air temperature.

With heat requirement the speed on fan is adjusted in parallel with admission to heating coil within min and max of rational speed and temperature on fan.

With cooling demand with on-of-ventilator, the cooling valve will open, and the fan goes to max speed.

With cooling demand with 3-ways modulating valve, the speed on fan is adjusted in parallel with admission to cooling coil within min and max fan speed.

Between heating and cooling sequency, there is a dead zone (4 %) where the fan will be adjusted to min speed for heating/cooling.

The unit operates from "off-man-auto" functions in the display.

In "auto" the unit start/stop via an internal timer in the controller.

4 Start up



Warnings – Electrical connection



Warnings – Working

BEFORE ANY START UP:

Electrical:

Make sure that the electrical work has been completed.
Controll of delta / star connection.

Fan:

Check that the impeller is turning free.
Check that all bolts for motor and base is tightened.
Make sure that there is no loose object that can damage the fan.

Cooling coil:

The pipe connection is according to instruction (inlet and outlet).
Check the installation of water trap.

Heating coil:

The pipe connection is according to instruction (inlet and outlet).
If electric heater, controll electrical connection

Filter:

Check the installation of panel filter

General:

Close all doors before start up.

AFTER START UP:

Electrical:

Measure current at fan motor.

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Fan:

Make sure that rotation direction of fan is correct.
See that no abnormal vibration occurs.

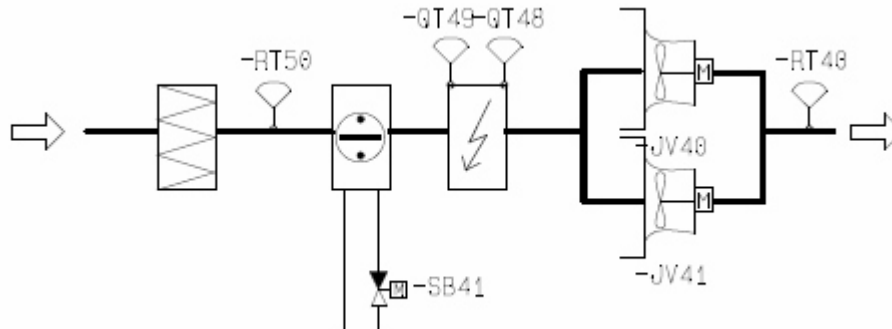
Sign.

Date

Control system:

Air Condition Unit, CCU, is generally made for the marine marked, but can also be used on other marked.

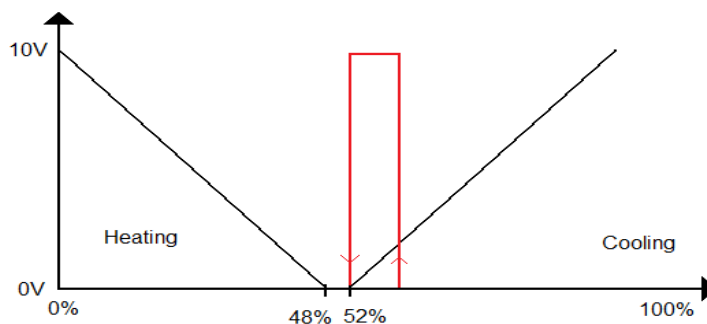
Components:



Specification:

Controller: Cascade controller in two PI-controllers with adjustable P-band (C°) and adjustable time of integration (s). The value of default is 2°C for P-band and 30 minutes for I-time. Value for set point supply air temperature is adjustable between 15-30°C.

Graph:



The graph show the function of signal to heating and cooling coil. Between 48% and 52% there is no output signal. No capacity at heating and cooling coil.

The red curve is for on/of-function for cooling coil.

Fan: The speed of fans is adjusted by output signal to heating/cooling. The speed increase if the capacity at heating/cooling increase. Default set point for fan speed:

Minimum = 30% for cooling
Minimum = 70% for heating
Maximum = 100% for heating and cooling

Minimum voltage 2V for running, approx. 20% capacity.

Cooling: 2 systems for cooling, chilled water and dx.
For chilled water the capacity of cooling is adjustable from 0-100%.
For dx, the signal is on/off.

Heating: Electric heater, adjustable capacity of 0-100% by analog output signal at 0-10V.

Running mode: 3 alternatives:

OF:	The unit is stopped
MANUAL:	The unit is continuous running.
AUTO:	The unit is ON/OFF according preselected operated hours.

Preselected values:

Limited values in the controller is adjustable:

Room temperature. Default = 20°C

Minimum fan speed with heating. Default = 70%

Maximum fan speed with heating. Default = 100%

Minimum fan speed with cooling. Default = 30%

Maximum fan speed with cooling. Default = 100%

Preselected operating hours. Default = always ON.

Start cooling. Default = 20%.

Stop cooling. Default = 0%

Set point for supply air temperature. Default min = 10°C, max = 30°C

Parameters in controller, room/supply air control. Default P=100°, I=300s

Parameters in controller, supply air control. Default P=33°, I=300s

Tolerance in controller. Default = 5°C.

Configuration D14. Filter guard/external stop. Default = Filter guard

5 Service



Warnings – Electrical connection

- Turn OF electrical voltage before service and electrical work

Service form for logging

Description	Service interval	
	Every 3 months	Every 12. months
UNIT CASING		
Cleaning of the unit casing		X
Inspect seals and door fittings		X
FILTER		
Inspect the filter and if necessary change the filter	X	
FAN		
General inspection	X	
Clean the fan wheel		X
Inspect the bearing		X
Inspect the anti vibrators		X
COOLING COIL		
General inspection	X	
Clean the fins		X
Clean the drip pan		X
Inspect water trap		X
HEATING COIL, hot water		
General inspection	X	
Clean the fins		X
ELECTRIC HEATER (option)		
General control and inspection	X	
CONTROL SYSTEM (automation)		
General control and inspection	X	