

Swegon **CASA**[®] duct coils for cooling the supply air

Instructions for installation, operation and maintenance
For design engineers, installation engineers and service personnel



Important information

Qualified personnel only

Only qualified personnel should carry out installation, configuration and commissioning.

Important details to consider during installation

The coil must be installed in a space where there is a drain. The coil must not be installed directly next to the ventilation unit or a bend in the duct, as the airflow that passes over the coil will then not remain even resulting in an impaired output.

If the air is cooled to temperatures below the ambient dew point, the supply air duct must be insulated against condensation after the coil!

Commissioning

The duct connections on the duct coil must be capped during transport, when in storage and during installation.

Make sure that the duct coil and the ducts are clean and that there are no loose objects in them before you commission the ventilation system.

Ensure that the chilled water pipes are mounted and insulated and that the venting connections and shut-off valves are mounted.

Do not commission the duct coil until all carpentry work that produces large quantities of sanding dust or other impurities has been completed.

Three different sized cooling duct coils for the supply air duct:

- **For 160 mm ducts; SDCW 16033W (LVI-no 7906555)**

The following components are included in the delivery:

- CASA CWK 160-3-2.5 cooling duct coil
- 3-way valve (1/2", kvs 0.6) Belimo R3015-P63-S1
- Actuator Belimo HRYD24-SR
- Temperature sensor, cable length 3 m.

- **For 200 mm ducts; SDCW 20033W (LVI-no 7906556)**

The following components are included in the delivery:

- CASA CWK 200-3-2.5 cooling duct coil
- 3-way valve (1/2", kvs 0.6) Belimo R3015-P63-S1
- Actuator Belimo HRYD24-SR
- Temperature sensor, cable length 3 m.

- **For 250 mm ducts; SDCW 25033W (LVI-no 7906557)**

The following components are included in the delivery:

- CASA W2504F duct chiller, fully insulated
- 3-way valve (1/2", kvs 1.0) Belimo R3015-1-S1
- Actuator Belimo HRYD24-SR
- Temperature sensor, cable length 3 m.
- Wall mounting bracket/ceiling mounting frame

NOTE! The manual's original language is Finnish.

1. General Description

Separate cooling duct coil for mounting in the duct, utilizes the cooling medium or water from the cooling water circuit. Can be used in the supply air duct for cooling the room air.

Cooling control can be fully transferred to the CASA Smart control technology.

Not compatible with the Econo models.

2. Project planning

Remember when planning: find out the temperature and flows in the system for the chilled water, as well as the coil's pressure loss in order to size the pump and pipe system. Take into consideration the pressure loss caused by the coil when sizing the airflows and selection of the ventilation unit.

Remember the shut-off damper that is placed in the outdoor air duct! The damper control signal is taken from the circuit board on ventilation units equipped with Smart control system. 24 VDC, max. 2 W. (ON/OFF.)

3. Installation

3.1. Coil installation in the duct system

The duct coil can be mounted in supply air duct.

The duct is connected to the duct coil's Ø125 mm or Ø160 mm or Ø250 mm connection sleeves. The coil is suspended with the help of a shelf or another approved manner. The ducts are pushed into the sleeves and locked with pop rivets. Keep in mind that the ducts' insulation must run right up to the unit. After the duct coil, the supply air duct is insulated thermally and against condensation using 10 mm thick mineral wool in cold air space (general instruction).

The duct coil can only be mounted horizontally.

3.2 Water connection

The following must be taken into account when connecting the coil to the pipe system:

1. Push-on couplings must be used for the connection of the coil. Valve connection with threaded couplings:
3-way valve (½" int. g., kvs 0.6) Belimo R3015-P63-S1 (160 and 200 mm coils)
3-way valve (½" int. g., kvs 1.0) Belimo R3015-1-S1
2. The duct coil's connection pipes must not be subjected to distortion or bending movements when the connections are made. Counterhold with a tool when assembling the connections. The valve's actuator can be mounted horizontally or so that the actuator is above the pipe lines.
3. Make sure that the unit's expansion forces and the self-weight of the pipe system does not load the coil connections.
4. In order to facilitate venting of the coil, the chilled water is usually led in via the lower tube. The venting valve is generally positioned at the highest point on the line. The main pipe for the chilled water must be fitted with filters.
5. The duct coil must be connected so that the pipe system can be drained easily, for example, during repairs, extended periods of downtime or when there is a risk of freezing.
6. Immediately after filling the pipe system with water, you must check that the duct heater and its connections do not leak. A possible leak can cause water damage.

3.3 Condensate discharge

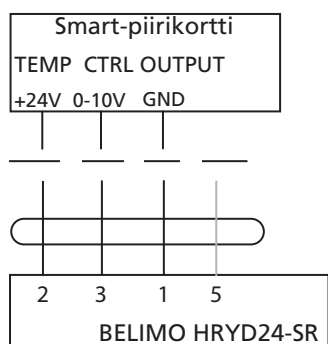
The discharge hose is connected to the condensate outlet (CWK G1/2", W2504F G3/8") The condensate is led off to a floor drain or the like using a hose with an inner diameter of at least 12 mm. The condensate hose (502130) is available as an accessory for cooling duct coil W2504F. The hose must not be led off directly to the drain. There must be two water traps or a horizontal section on the condensate hose. The damming height of the water trap should be at least 100 mm.

Check that the condensate outlet is not clogged and check its outflow by pouring water on the bottom of the ventilation unit.

3.4 Electric and control cables

Temperature sensor T4 is mounted in the supply air duct after the coil in the direction of flow and sensor cable is routed to the unit's circuit board. The temperature sensor is connected to the circuit board's T4 outlet. (If there is already a sensor connected in the terminal T4, remove it. The heating coil kit includes temperature sensor T4 (604930) with 3 m cable.

The valve motor's control signal and power supply are connected to the circuit board outlet "TEMP CTRL OUTPUT", see the figure below.



The cable for the room temperature sensor T8 (accessory PRTG) is routed from the circuit board outlet T8 to a suitable location in the home, such as the entrance hall, where sunlight does not penetrate and where the temperature is uniform.

Important

Only a qualified electrician may make the electrical connections.

4. Commissioning

Commissioning of the cooling duct coil is done from a Smart control panel.

The duct coil's settings can be changed in the menu (Main menu/Settings(1234)/Temperature Controller). The temperature setting changed in the Main menu (Temperature) with the reset button.

Main menu	
Alarms	
Temperature	17°C
Display	
Diagnostics	
Weekly programs	
Information	
Settings	

Change temperature control mode to "Room air". During the heating and cooling season aim is to keep the room temperature at the level which is determined at the main Menu.

Choose the Supply control min. value and Supply control max. value for the heating season. These values are recommended to set to meet the comfort heat at the heating season, for example 17 °C.

Select the sensor that measures the temperature of the room air.

"UP1" = an internal temperature sensor of the CASA Smart control panel.

"UP2" = an internal temperature sensor of the CASA Smart control panel (accessory).

"T3" = internal temperature sensor of the air handling unit which measures temperature of the extract air.

"T8" = external room air temperature sensor (accessory).

Temperature Controller	
Control type	Room air
Fresh air limit	8°C
Supply control min. value	17°C
Supply control max. value	17°C
Room air	T3
Post cooling	<input type="checkbox"/>
Ext. afterheat	<input type="checkbox"/>
Ext. preheat/cooling	<input type="checkbox"/>

Select "Post cooling".

Set the "Cooling fresh air limit". Cooling is allowed when temperature of the outdoor air exceeds that limit.

Also "Cooling min. setpoint" and "Cooling max. setpoint" can be determined. Room air controller adjusts the supply air temperature between these values when cooling is allowed. Increase minimum setpoint of the cooling if there is a risk of condensation at the channels. If a standar supply air temperature is wanted, both "Cooling min. setpoint" and "Cooling max. setpoint" must be the same value.

Temperature Controller	
Control system	Room air
Fresh air limit	8°C
Supply control min. value	17°C
Supple control max. value	17°C
Room air	T3
Post cooling	<input checked="" type="checkbox"/>
Cooling fresh air limit	20°C
Cooling min. setpoint	14°C
Cooling max. setpoint	25°C
Ext. afterheat	<input type="checkbox"/>
Ext. preheat/cooling	<input type="checkbox"/>

Return to the Main menu and set the desired room air temperature setting.

Main menu	
Alarms	
Temperature	21°C
Display	
Diagnostics	
Weekly programs	
Information	
Settings	

5. Use

When the settings above is made, the cooling works completely automatically. Cooling power is automatically adjusted when the outside temperature has exceeded the set limit. When the cooling function is active the Smart control panel shows the cooling symbol.

Control of the cooling can be monitored from the Smart control panel Main menu/Diagnostics/Heating and Cooling. From there you can see the temperature setting controlled by room air control, measured room air temperature and cooling power.

When the cooling function is active, it is possible to use Smart temperature boost, which increases the ventilation capacity to raise the efficiency of the cooling function when the room temperature is higher than the setting value. (Put the function into service by selecting "Heat boost" in the Main menu/Settings/Smart functions.) The efficiency of the temperature boost can be set from the Smart functions settings.

The cooling function can also be put into service from the "Temperature" menu, unchecking "External after cooling". The cooling function is also switched off when you select "Travelling" mode.

When the cooling function is active, the relay output PUMP CTRL is switched on, so that e.g. control of an extra pump for the cooling function is possible. A minimum operating time (10 minutes) has been set for pump control.

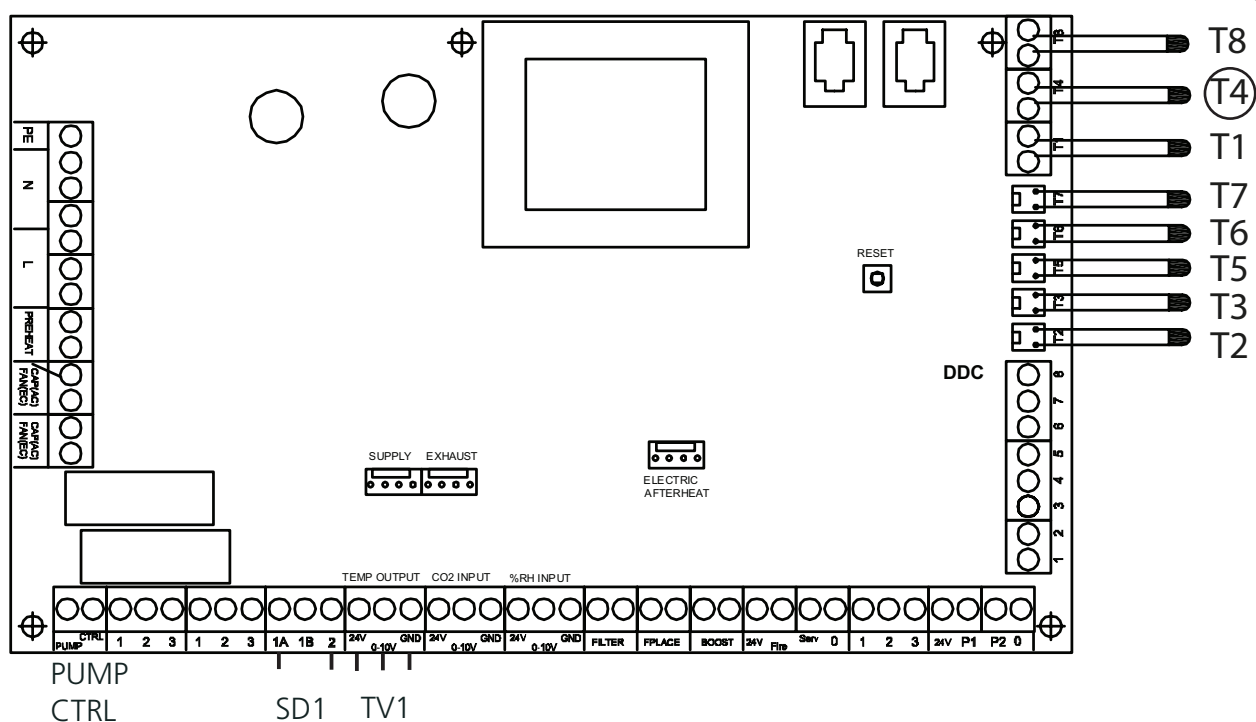
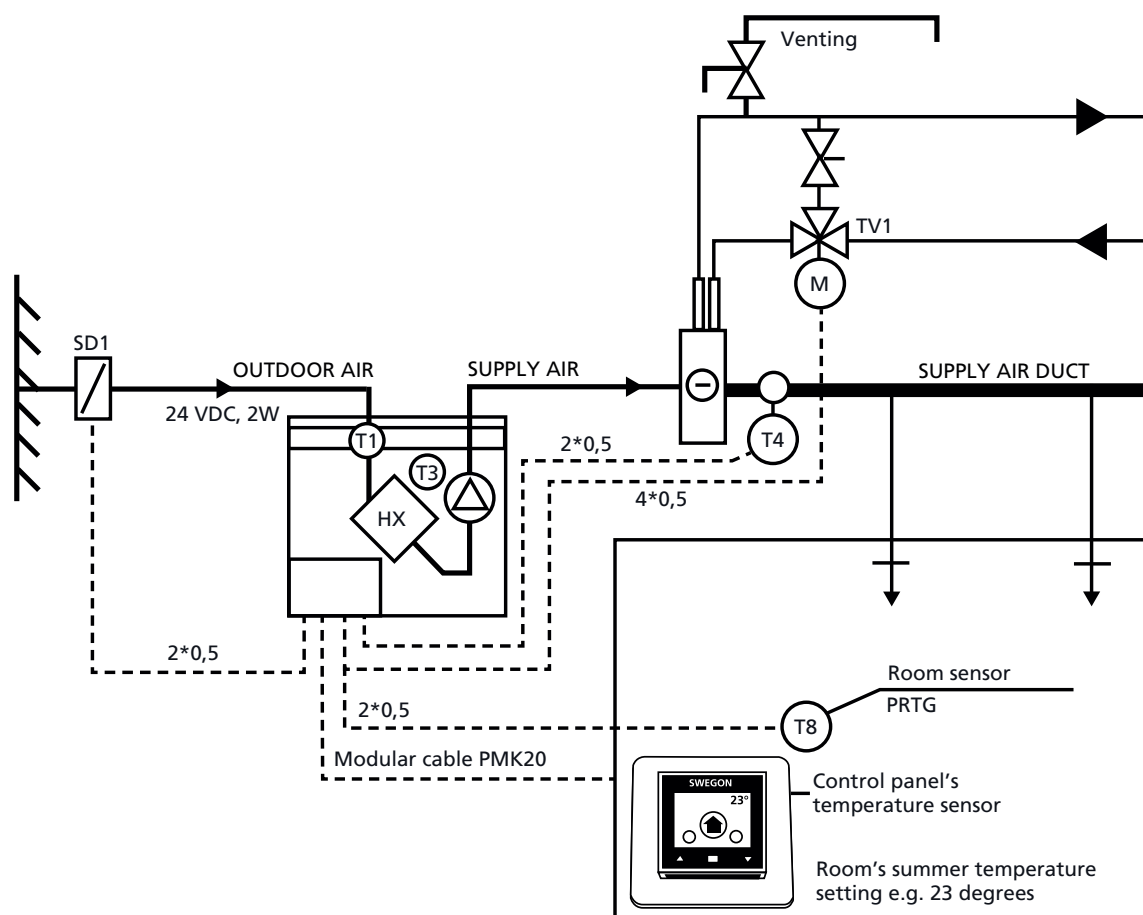
6. Service


Important

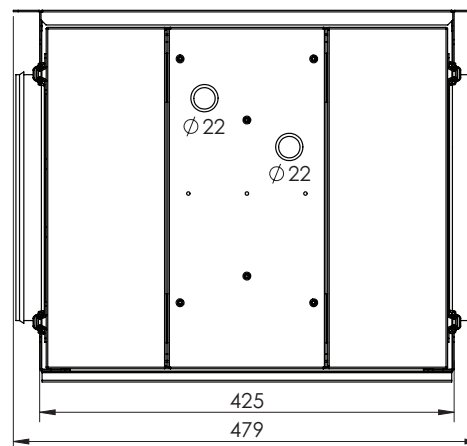
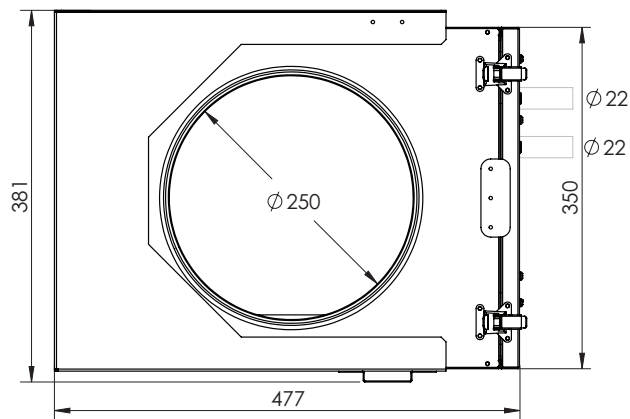

Stop the ventilation before servicing.

The coil must be cleaned regularly to get full output from of the heater/cooler. The length of the service interval is entirely dependent on the cleanliness of the air, and of how well the filters and unit are maintained in general. The duct coil is easy to clean if you remove the heater/cooler cover. The inlet side of the coil is cleaned first with a brush, and then you can clean the entire coil with compressed air, water or steam. Blow or rinse dirt away from the outlet side toward the inlet side. Exercise care so that the thin edges of the fins are not damaged.

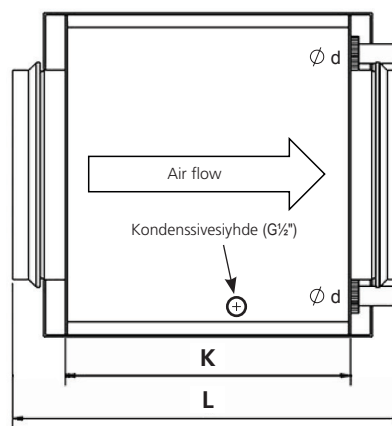
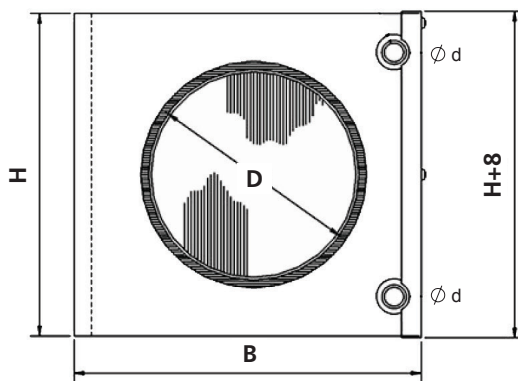
7. Wiring example



8. Dimensions



W2504F



CWK 160
H: 255 mm
B: 326 mm
D: 160 mm
d: 10 mm

K: 276 mm
L: 356 mm

CWK 200
H: 330 mm
B: 411 mm
D: 200 mm
d: 22 mm

K: 276 mm
L: 356 mm

Leave at least 40 cm service space in front of the door.

Accessories:

- Condensate hose W2504F for cooling duct coil: 502130

CASA cooling coils for the supply air duct:

CASA CWK 160-3-2.5 (chilled water 7/12)			H=255, L=356			
Airflow		Pressure loss for air	Output approximately 26→15	Chilled water	Pressure loss chilled water	The air's flow to the coil
l/s	m³/h	Pa	kW	l/s	kPa	m/s
40	140	9	0.7	0.03	5.62	0.5
55	200	15	0.9	0.04	8.65	1.23
70	250	22	1.1	0.05	11.68	1.57

CASA CWK 200-3-2.5 (chilled water 7/12)			H=330, L=356			
Airflow		Pressure loss for air	Output approximately 26→15	Chilled water	Pressure loss chilled water	The air's flow to the coil
l/s	m³/h	Pa	kW	l/s	kPa	m/s
55	200	5	1	0.05	2.22	0.67
70	250	8	1.3	0.06	4.11	0.85
85	300	11	1.5	0.07	5.59	1.04
100	360	15	1.7	0.08	6.96	1.22
115	410	19	1.8	0.09	8.32	1.4

CASA W2504F (chilled water 7/12)			H=350, L=479			
Airflow		Pressure loss for air	Output approximately 26→15	Chilled water	Pressure loss chilled water	The air's flow to the coil
l/s	m³/h	Pa	kW	l/s	kPa	m/s
80	290	18	1.3	0.06	10.7	0.89
100	360	26	1.6	0.08	16.6	1.11
120	430	36	2.1	0.08	18.2	1.33
140	500	46	2.4	0.08	18.2	1.56
160	580	61	3	0.14	47.8	1.78

Other sizes are available, please ask for sizing data separately