

Swegon **CASA**[®] Air cooler for cooling the supply air

Installation, operation and maintenance instructions
for design engineers, installation engineers and service personnel



Important information

Only qualified personnel

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

Observe the following during installation

The air cooler must be installed in an area that is equipped with a drain. The air cooler must not be installed in the immediate vicinity of the ventilation unit or duct bends, as this will prevent an even air flow across the cooler resulting in impaired output.

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

Commissioning

The air cooler's duct connections must be capped during transport and installation.

Make sure that the air cooler 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 pipe system is mounted and insulated and that the venting sleeves and shut-off valves are mounted.

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

Air cooler in three sizes for the supply air duct:

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

The following components are included in the delivery:

- CASA CWK 160-3-2.5 air cooler
- 3-way valve (1/2", kvs 0.6) Belimo R3015-P63-S1
- Actuator Belimo HRYD24-SR
- Temperature sensor, cable length 3 m.
- SET connection unit
- RJ45 cable, 3 m, 2 pcs.
- Power supply 24 VDC 12 W

- **For 200 mm ducts; SDCW 200F (LVI-no. 7906556)**

The following components are included in the delivery:

- CASA CWK 200-3-2.5 air cooler
- 3-way valve (1/2", kvs 0.6) Belimo R3015-P63-S1
- Actuator Belimo HRYD24-SR
- Temperature sensor, cable length 3 m.
- SET connection unit
- RJ45 cable, 3 m, 2 pcs.
- Power supply 24 VDC 12 W

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

The following components are included in the delivery:

- CASA W2504F air cooler, 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
- SET connection unit
- RJ45 cable, 3 m, 2 pcs.
- Power supply 24 VDC 12 W

NOTE! The manual's original language is Finnish.

1. General Description

Separate air cooler 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 suitable for use together with Econo models.

2. Planning

To observe during planning: when sizing the pump and pipe system, find out the cooling water net's temperature and flow and the cooler's pressure loss. Take the pressure loss caused by the air cooler into consideration when sizing the air flows and selection of the ventilation unit.

A shut-off damper must be installed in the outdoor duct. The shut-off damper's relay control is taken from a SET connection unit.

3. Installation

3.1. Installation of the air cooler in the duct system

The air cooler must be installed in the supply air duct.

The ducts are connected to the air cooler's Ø160 mm or Ø200 mm or Ø250 mm connection sleeves. The air cooler is supported either 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. In cold areas the supply air duct must thermally and condensation insulated after the air cooler using 10 cm mineral wool + vapour barrier (general instruction).

The air cooler can only be installed horizontal in the duct. The air cooler must be mounted with 10–15 degree angle in the direction towards the condensation water drain so that the condensation water does not remain standing in the unit.

3.2. Water connection

The following must be taken into consideration when the air cooler is connected to the pipe system:

1. Compression couplings are to be used to connect the air cooler. Valve connection with threaded couplings: 3-way valve (½" female thread, kvs 0.6) Belimo R3015-P63-S1(160 mm and 200 mm cooler) 3-way valve (½" female thread, kvs 1.0) Belimo R3015-1-S1
2. The air cooler's connection pipes must not be subjected to distortion or bending movements when the connections are made. Counterhold with a tool when assembling the couplings. The valve's actuator can be mounted horizontally or so that the actuator is above the pipe system.
3. Ensure that the unit's expansion forces or the pipe system's own weight does not load the connections on the air cooler.
4. To facilitate venting of the air cooler, chilled water is generally supplied through the lowermost pipe on the cooler. The venting valve is normally placed at the highest point of the pipe system. The main pipe for the chilled water must be fitted with filters.
5. The air cooler 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. The air cooler and its connections must be checked for leakage once the pipe system has been completely filled with water. Any leakage 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 air cooler 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 discharge outlet is not clogged and check its outflow by pouring water on the bottom of the ventilation unit.

3.4 Electric and control cables

- Install the SET-connection unit in an appropriate position in the vicinity of the sensor and actuator. Connect the RJ45 cables (2 pcs.) supplied with the SET unit to the specified connections on the ventilation unit.
- Install the supplied temperature sensor in the supply air duct, after the air cooler seen from the direction of flow.
- Connect the sensor to the SET module's free Sensor connection.
- Connect the valve motor control and the power source supplied with the delivery to the connections shown on the function diagram.
- Install a possible room temperature sensor (PRTG, accessory) in the room area whose temperature the system should control. Connect the sensor to the SET module's free Sensor connection.
- Install any actuators according to the manufacturer's instructions and connect the control cable to the SET card's relay outputs according to the function diagram.

NOTE! If the SET module is used for 230 VAC control, the module must be installed, according to the electrical safety directives, in a separate enclosure.

NOTE! Make sure that the strain relief is arranged for the connections according to the electrical safety directives.

Important

Only a qualified electrician may make the electrical connections.

4. Commissioning

The commissioning of the air cooler is performed with a Smart control panel.

Main menu/Settings/(1234)/Heating and cooling

| Heating and Cooling | |
|-----------------------------|-------------------------------------|
| Control type | Supply air |
| Sensors / controls | |
| Setpoint | 17°C |
| Setpoint (Away) | 17°C |
| Setpoint (Travelling) | 17°C |
| Internal post heater | <input checked="" type="checkbox"/> |
| External post heater | <input type="checkbox"/> |
| Post heater out limit | 8°C |
| External post cooling | <input checked="" type="checkbox"/> |
| Post cooling out limit | 20°C |
| External electric preheater | <input type="checkbox"/> |
| External liquid coil | <input type="checkbox"/> |

Cooling function

Put the cooling function into service from the menu item *External after cooler*.

Outdoor air limit

If necessary set *Outdoor air limit after cooling*. Cooling is permitted when the outdoor air temperature exceeds the set value.

Select the functions for the temperature sensors used and fine adjust the measurements if necessary from the *Sensor/Control* menu.

| Sensors / controls | |
|------------------------|----------|
| | 22,2°C |
| Supply air | 18,2°C |
| Fine tuning Room air | 0,0°C |
| Room air sensor | Internal |
| Fine tuning Supply air | 0,0°C |
| Supply air sensor | Internal |
| Outside air sensor | Internal |
| Water radiator sensor | Internal |
| SET Relay 1 | Off |
| SET Relay 2 | Off |

Supply air sensor

Select the SET sensor input to which supply air sensor is connected:

"SET T6 -T9" = SET-connection unit's Sensor inputs.

"Internal" = The unit's internal supply air temperature sensor.

Room air sensor

Select the room air sensor which is used:

"Internal" = The unit's internal extract air temperature sensor.

"SET T6 -T9" = SET connection's Sensor inputs.

"UP1" = Internal temperature sensor in CASA Smart control panel 1.

"UP2" = Internal temperature sensor in CASA control panel 2.

Relay control functions

If you wish to use relay control functions, e.g. for a cooling pump or a duct damper, the SET unit's relays can be programmed for the required function from the *Sensor/Control* menu.

A minimum operating time has been established for the cooling pump's control (10 minutes).

5. Use and function

The cooling capacity is regulated automatically when the outdoor temperature has exceeded the set limit value. The Smart control panel shows a cooling symbol while the cooling function is active.

You can select supply air or room air control as the cooling control method. *Main menu/Settings/(1234)/Heating and cooling/Control method*

| Control type | |
|--------------------------|----------|
| Control type | Room air |
| Supply control min value | 17°C |
| Supply control max value | 17°C |
| Cooling min setpoint | 14°C |
| Cooling max setpoint | 25°C |

Supply air control

For supply air control while cooling is in progress you attempt to keep the supply air stable.

NOTE! When supply air control is used, the setting value for the heating season is also changed, and thus the temperature setting value is selected according to the season.

Room air control

For room air control, the temperature of the supply air is based on the measurement of the room air temperature. This means in the summer, that the warmer the room air is, the cooler the requested supply air. It is possible, from the *Control mode* menu, to select the highest and lowest set point for cooling and heating to the supply air. The heating values should be kept close to the comfort temperature for the heating season. The lowest cooling value should be chosen so that there is no risk of condensation on the pipe system and the highest value so that there is no cooling requirement when the residence is cool.

The control's set point

The set point can be changed directly from the *Main menu* or from the *Heating and cooling* menu. It is also possible to select separate set point values for Away and Travelling modes. **NOTE!** No cooling is permitted in Travelling mode.

| Heating and Cooling | |
|------------------------|--------|
| Cooling power | 0% |
| Supply air setpoint | 17°C |
| Supply air temperature | 16,5°C |
| Summer mode | 100% |
| Preheater status | 0% |

Control of cooling can be observed from a diagnostics screen. *Main menu/Diagnostics/Heating and cooling*.

Depending on the selected control mode, the set point value is shown for room air control or the set point value for supply air control, the measured supply air temperature and the heating and or cooling capacity.

When the cooling function is active, it is possible to use Smart temperature boost, which variably increases the ventilation capacity to raise the efficiency of the cooling function when the room temperature is higher than the set point value. The function requires room air control to be selected as the control method.

The function is put into service from the "Smart-functions" menu *Main menu/Settings/Smart functions/Temperature boost*

The efficiency of the temperature boost can be regulated by changing the cooling boost. The cooling function can also be put into service from the Temperature menu by unchecking "External after cooler".

6. Service

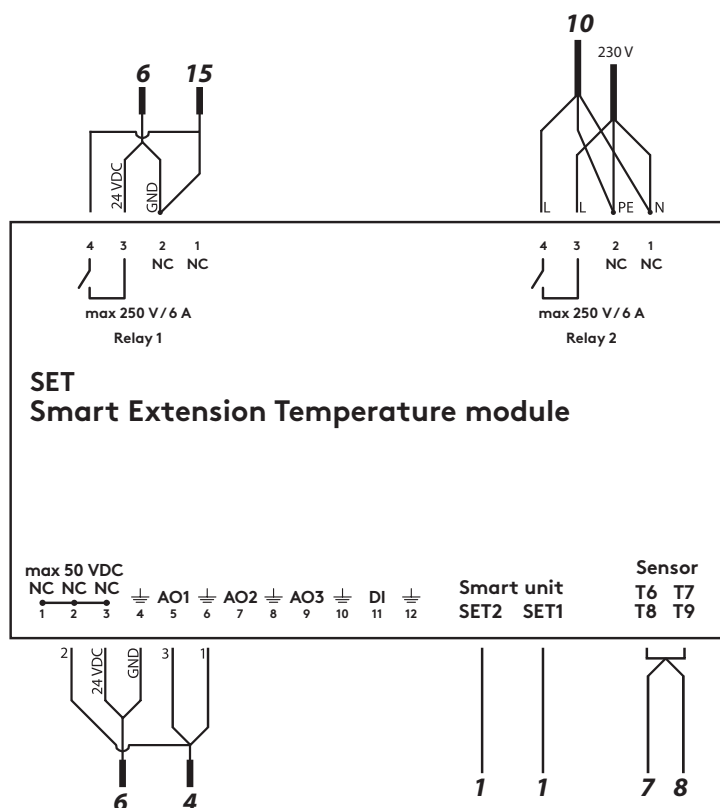
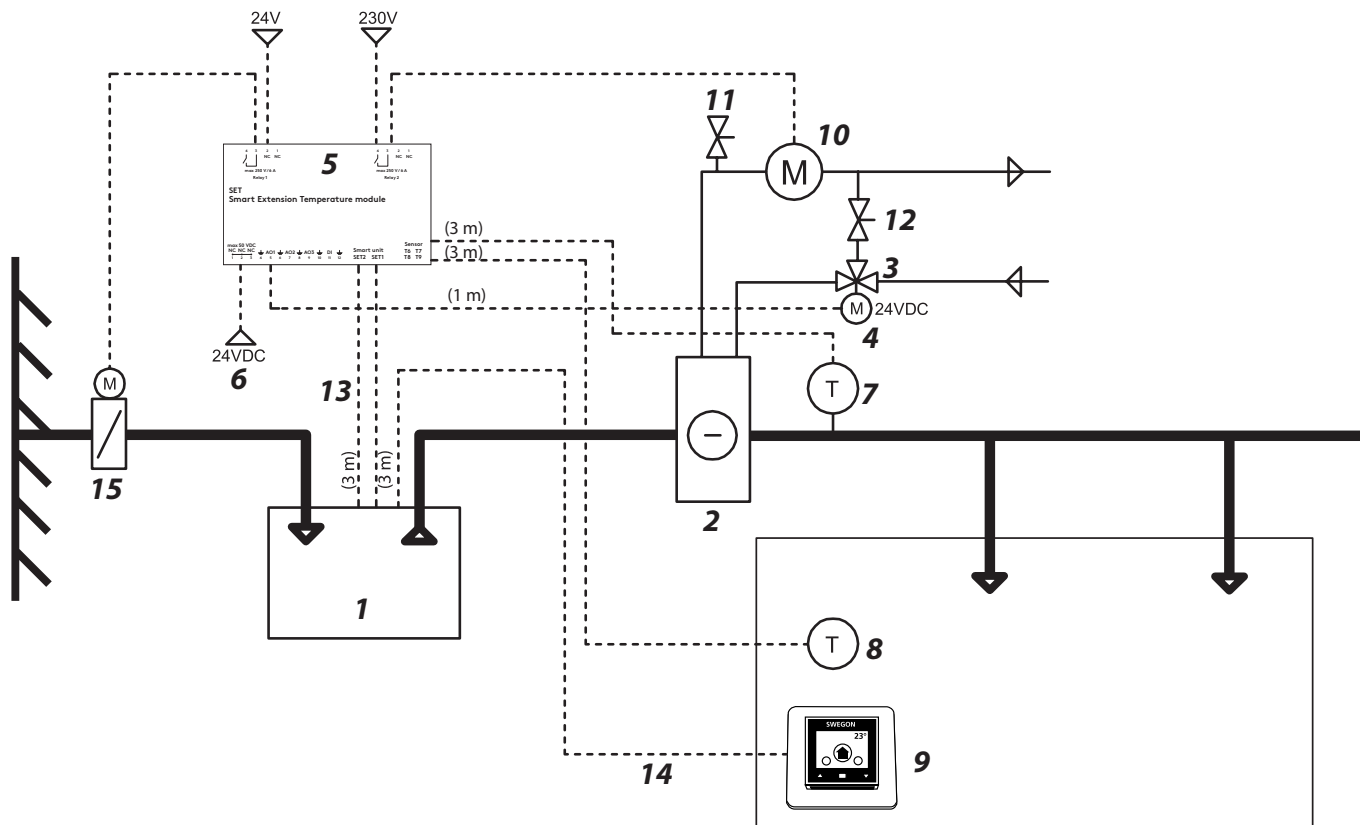

Important


Stop the ventilation before servicing.

The unit must be cleaned at regular intervals to obtain full power from the air 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 air cooler can be easily cleaned once the cooler's cover has been removed. The inlet side of the air cooler is cleaned first with a brush, and then you can clean the entire air cooler with compressed air, water or steam. Blow or wipe off dirt in the direction from the output side towards the input side. Exercise care so that the thin edges of the fins are not damaged.

7. Function diagram and connections



!

Important

!

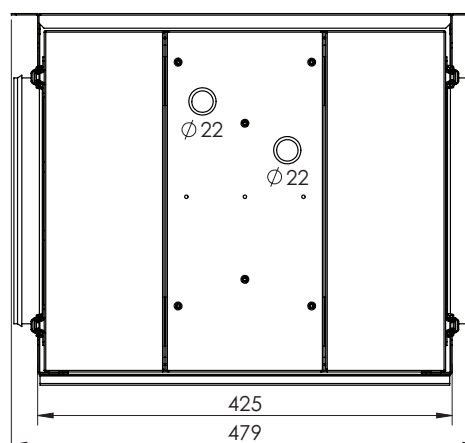
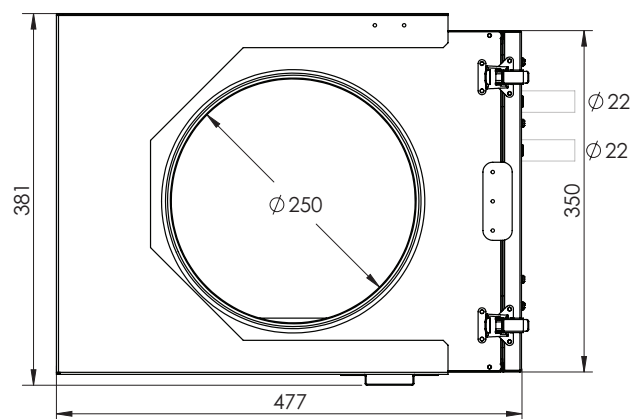
If the SET module is used for 230 VAC control, the module must be installed, according to the electrical safety directives, in a separate enclosure.

Make sure that the strain relief is arranged for the connections according to the electrical safety directives.

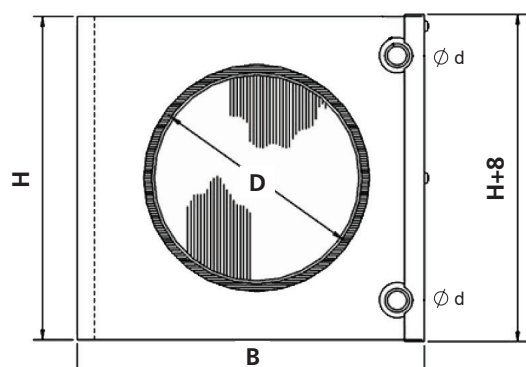
1: CASA Smart ventilation unit* | 2: SDCW duct cooler | 3: 3-way valve | 4: Actuator | 5: SET connection unit | 6: Power source 24 VDC | 7: Supply air temperature sensor | 8: Room air temperature sensor* | 9: Control panel | 10: Circulation water pump* | 11: Extract air | 12: Flow regulator | 13: RJ45 cable (2 pcs.) | 14: Modular cable PMK20* | 15: Duct actuator*

*) Not included in the delivery.

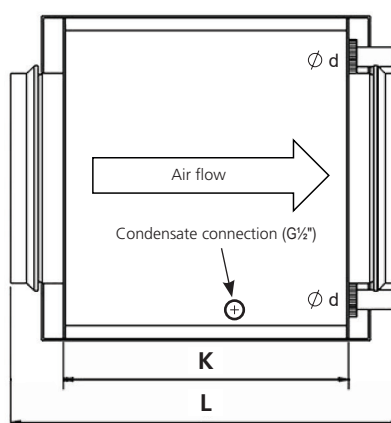
8. Dimensions



W2504F



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



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

Accessories:

- Condensate hose W2504F for the air cooler: 502130

CASA air cooler for supply air duct:

| CASA CWK 160-3-2.5 (cooled water 7/12) | | | | H=255, L=356 | | |
|----------------------------------------|------|-----------------------|----------------------|--------------|--------------------------------|--------------------|
| Air flow | | Pressure loss for air | Output approx. 26→15 | Cooled water | Pressure loss for cooled water | Air flow to cooler |
| 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 | | |
|-----------------------------------------|------|-----------------------|----------------------|--------------|--------------------------------|--------------------|
| Air flow | | Pressure loss for air | Output approx. 26→15 | Cooled water | Pressure loss for cooled water | Air flow to cooler |
| 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 | | |
|----------------------------------|------|-----------------------|----------------------|--------------|--------------------------------|--------------------|
| Air flow | | Pressure loss for air | Output approx. 26→15 | Cooled water | Pressure loss for cooled water | Air flow to cooler |
| l/s | m³/h | Pa | kW | l/s | kPa | m/s |
| 60 | 216 | 13 | 1.0 | 0.05 | 3.2 | 0.67 |
| 70 | 252 | 15 | 1.0 | 0.05 | 3.2 | 0.78 |
| 90 | 324 | 22 | 1.1 | 0.06 | 3.7 | 1.00 |
| 100 | 360 | 26 | 1.2 | 0.06 | 4.0 | 1.11 |
| 150 | 540 | 44 | 1.4 | 0.07 | 4.6 | 1.67 |

Other sizes are available, please ask for sizing data separately