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eCO TOP®

TECHNICAL CATALOGUE

CONTENT

DESCRIPTION

DESCRIPTION

eCO Top is a top connected unit in three sizes that require minimal space. Compact dimensions and low noise data provides great flexibility in the placement of the unit. All duct connections are on top of the unit. The unit is supplied with energy saving plug fans, supply and extract air filters and a rotating heat exchanger. The ISYteq Mini control system is integrated with the unit and is ready for use with a large number of functions.

QUALITY & ENVIRONMENT

All units and components from FläktGroup are designed, tested and manufactured in accordance with applicable standards including the quality assurance system ISO 9001, the environmental management system ISO 14001.

Substance	Proportion	Recycable	To landfill
Metals	92%	X	
Polymers	2.5%	X	X
Mineral wool insulation	5.0%	X	
Other	0.5%		X

PRODUCT DATA

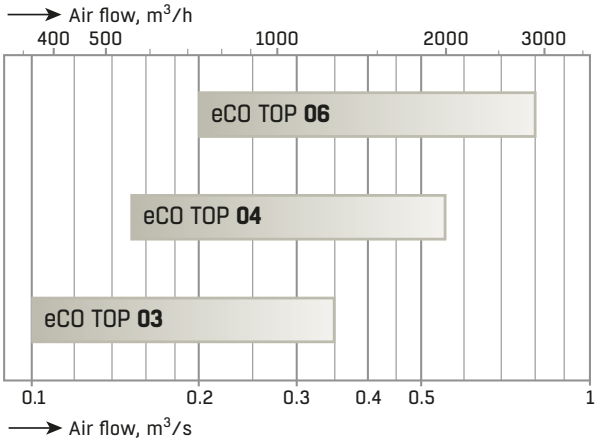
- Air flow range 100-800 l/s
- High thermal efficiency, up to 85% according to EN308
- Speed controlled rotary heat exchanger
- Built-in ISYteq Mini control system
- Built-in post heater (Duct mounted electrical post heater for size 06)
- Simple installation with all connections on top
- Internal silencer (accessory)
- Top and bottom cover available as accessories when unit is placed in public areas
- Attractive design
- Outside of the casing is painted white
- Modbus and Ethernet as standard

TYPICAL INSTALLATIONS

The eCO Top has a wide range of applications and can be installed in most buildings that require ventilation such as schools, offices, conference centers and shops.

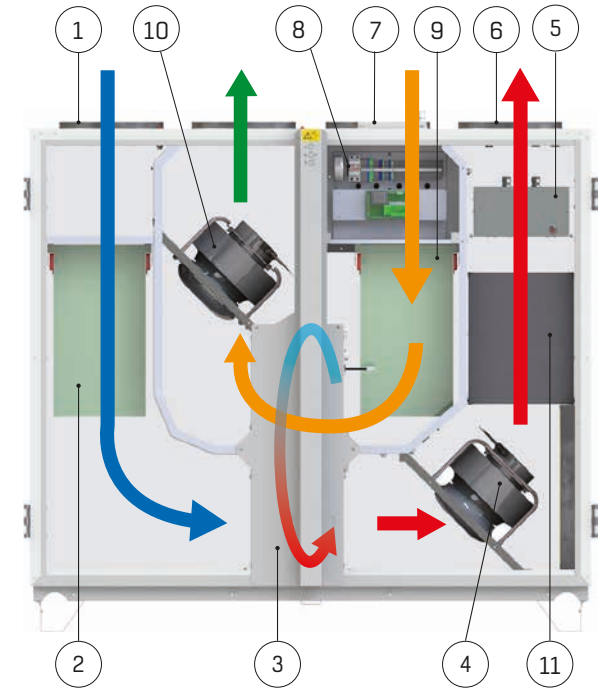
When using the accessories internal silencer, top and bottom cover eCO Top can be placed in public areas.

AIRFLOW DIAGRAM



COMPONENTS

COMPONENTS



Outdoor air

Supply air

Extract air

Exhaust air

1 Outdoor air sensor GT3
2 Supply filter
3 Rotary heat exchanger with rotation sensor
4 Supply fan
5 Electrical heater including overheating protection alternatively hot water coil with freeze protection GT5
6 Supply air sensor GT1
7 Extract air sensor GT12
8 Control equipment
9 Extract filter
10 Exhaust fan
11 Internal silencer (accessory)

CASING

The unit is made of galvanized sheet steel and the outside is painted white. The casing is insulated with 50 mm mineral wool. Service hatches for the fans and filter have handles with locks. The unit is supplied on a stable base. Adjustable feet's are a vailable as accessories.

- Corrosivity class C3
- Permeability CEN class L1(M) (CEN class A)
- Mechanical Strength of casing class D1(M)
- Filter bypass leakage class (F7) ePM1 50%
- Thermal performance of casing (Heat transfer class) corresponding to class T2
- Thermal bridging corresponding to TB2

FILTER

Green Flo bag filter made of PLA for low pressure drop. Filter class (F7) ePM1 50% on both supply and extract air. The filters are pressed against the sealing strip in the casing.

ROTARY HEAT EXCHANGER

Speed controlled rotor made of non-hygroscopic aluminum provided with a purging sector and rotation sensor. During normal ventilation there is no need for defrosting.

At a relative humidity of the extract air above 30% and an outdoor temperature lower than –15° C there may be a risk of frosting.

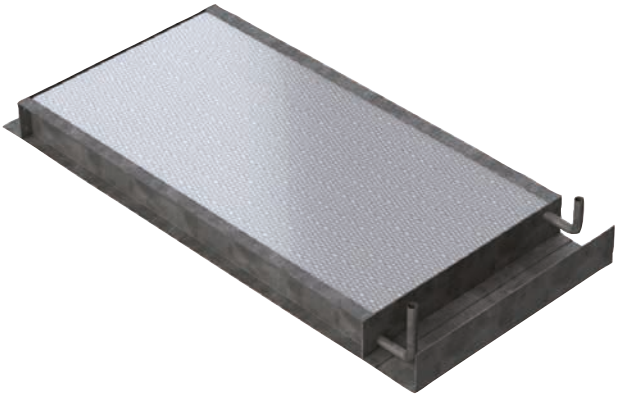
COMPONENTS

FAN

eCO Top gives you top performance and overall economy combined with low noise levels. The high efficiency plug fans are powered by energy saving EC motors. The fan speed can be adjusted independently by the unit´s ISYteq Mini control system.

Flow, pressure or 3-speed control can be selected.

POST HEATER, HOT WATER



Hot water coil containing copper tubes and aluminum fins. Pipe connection ø15 mm. Freeze protection temperature sensor is included. Max operating pressure 1.0 MPa.

PIPE CONNECTIONS

Size 03 = 3/8”
Size 04 = 12 mm
Size 06 = 12 mm

POST HEATER, ELECTRICAL

The electric heater has built-in control equipment for power control. The element is made of stainless steel. The heater has two thermal overload protection devices, one with an automatic reset and one with a manual reset.

The heater for size 03 and 04 is built-in. Size 06 has a duct mounted electrical post heater 600 x 300 mm, length 425 mm.

INTERNAL SILENCER (ACCESSORY)

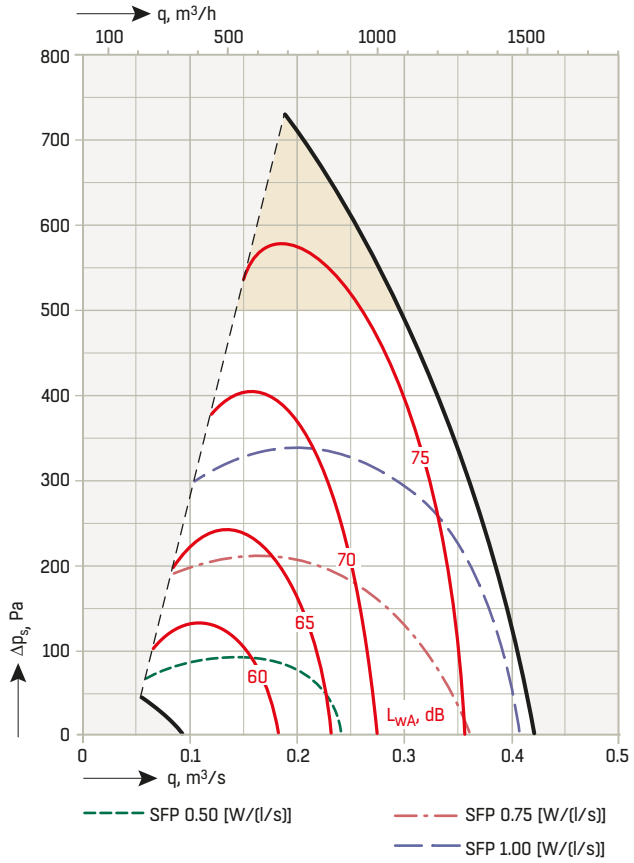
The unit can be ordered with an internal silencer in the supply air which decreases the noise to supply air with approximately 8 dB(A).

The internal silencer also has a positive effect on the noise level to the room.

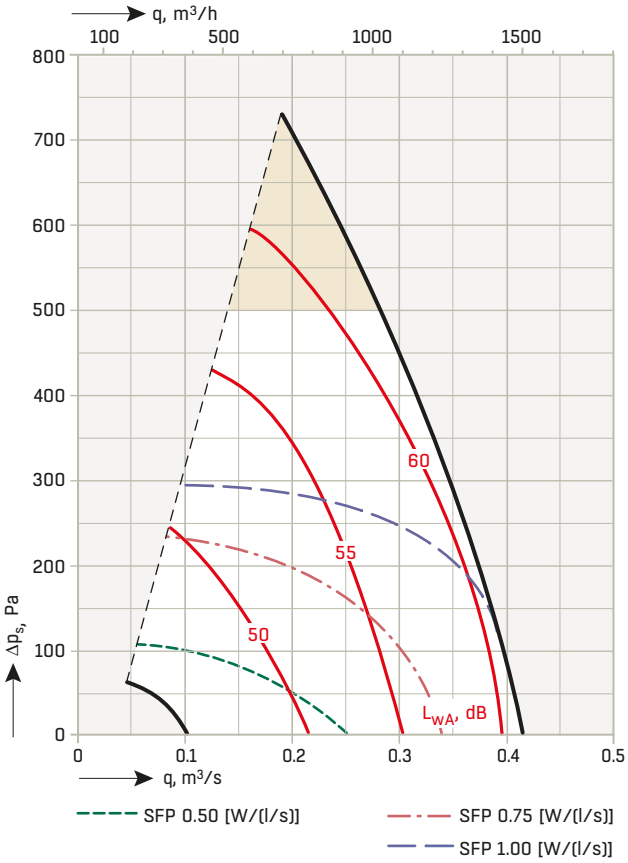
See selection program Acon for sound calculation.

TECHNICAL DATA – SIZE 03

SUPPLY FAN



EXHAUST FAN

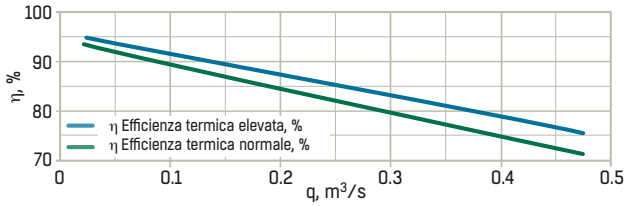


SYSTEM OVERVIEW

The diagrams show the available external pressure drop for the duct system and external components at η_{temp} 80%.
Use selection program Acon for calculation. The weighted noise levels given in dB(A) apply to ducts on the fan's outlet side.

The SFP values for each fan are calculated according to the Swedish Association of Air Handling Industries (V document 1995:1 rev. 2000). That means, clean filters, consideration taken to leakage, purging sector airflow and any additional pressure drop for correct pressure balance. Add the SFP values for each fan to get the SFP value for the entire unit.

TEMPERATURE EFFICIENCY



ELECTRICAL DATA

The mains supply cable must be fitted with an external safety switch, which can cut the current to the entire unit.

Ambient temperature during operation 0 - 40° C

Unit with	Hot water coil	Electrical coil
Supply	1 x 230 V	3 x 400 V
Fuse	10 A	10 A

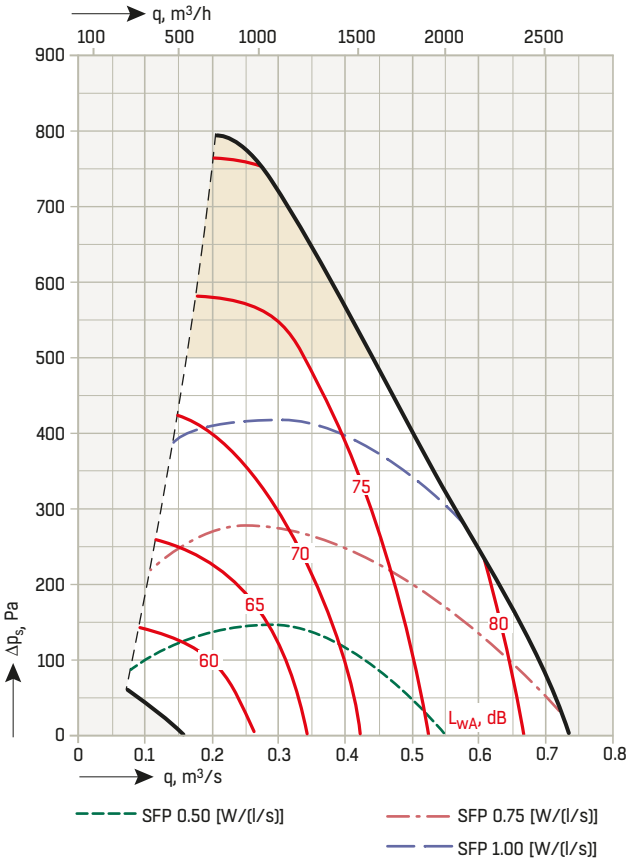
Motor data	0.385 kW x 2	2.5 A x 2	1 x 230 V
Electrical heater	4 kW	10 A	2 x 400 V

FILTER

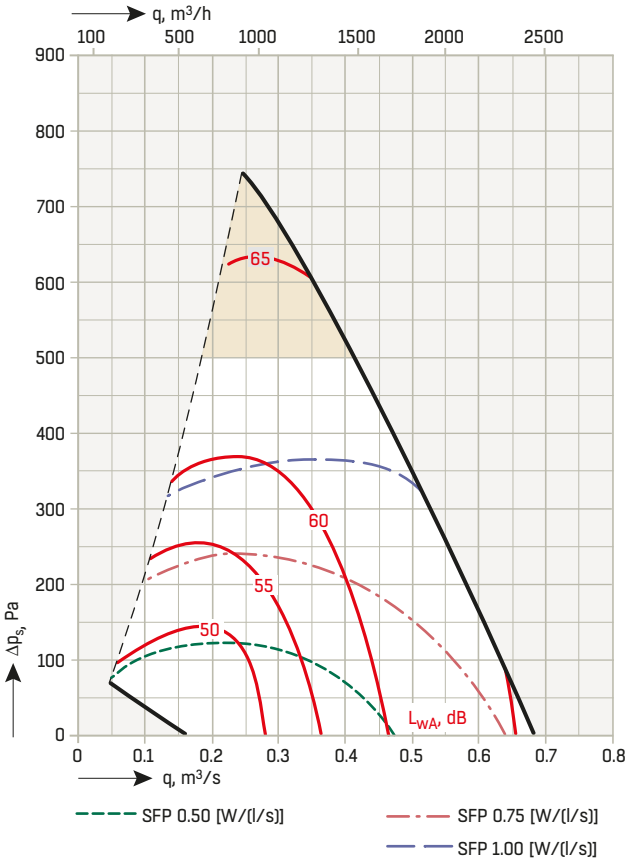
Bag filters, class (F7) ePM1 50% in supply and extract air.

TECHNICAL DATA – SIZE 04

SUPPLY FAN



EXHAUST FAN



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The diagrams show the available external pressure drop for the duct system and external components at η_{temp} 80%.
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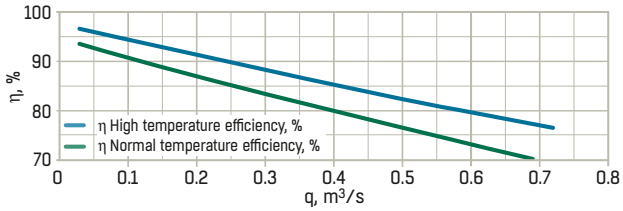
TEMPERATURE EFFICIENCY



ELECTRICAL DATA

The mains supply cable must be fitted with an external safety switch, which can cut the current to the entire unit.

Ambient temperature during operation 0 - 40° C

Unit with	Hot water coil	Electrical coil
Supply	1 x 230 V	3 x 400 V
Fuse	10 A	16 A

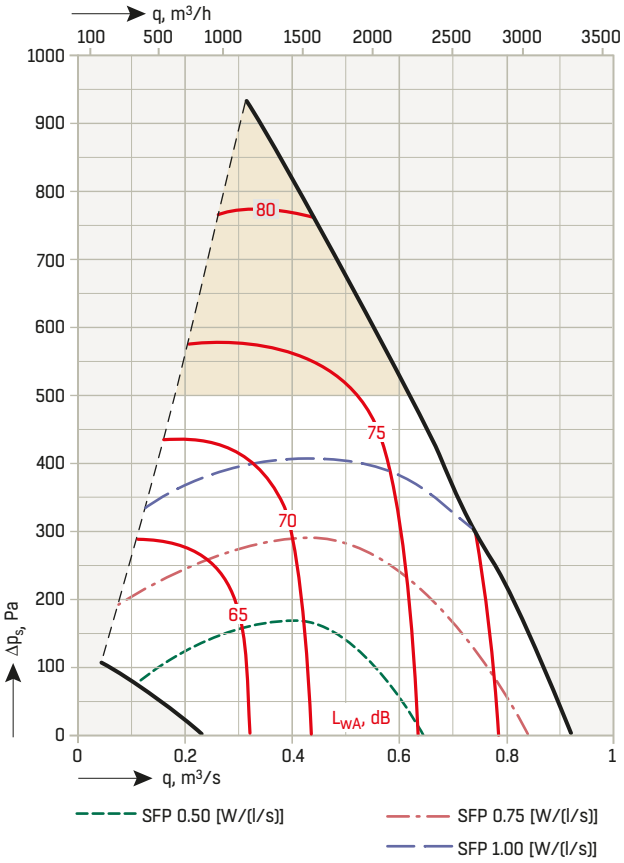
Motor data	0.5 kW x 2	2.2 A x 2	1 x 230 V
Electrical heater	6 kW	15 A	2 x 400 V

FILTER

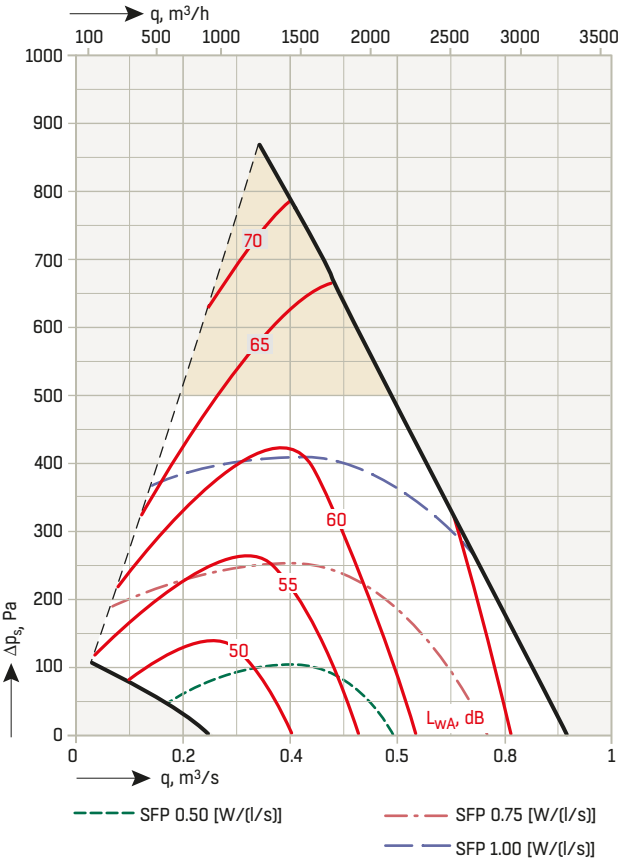
Bag filters, class (F7) ePM1 50% in supply and extract air.

TECHNICAL DATA – SIZE 06

SUPPLY FAN



EXHAUST FAN



SYSTEM OVERVIEW

The diagrams show the available external pressure drop for the duct system and external components at η_{temp} 80%.
Use selection program Acon for calculation. The weighted noise levels given in dB(A) apply to ducts on the fan's outlet side.

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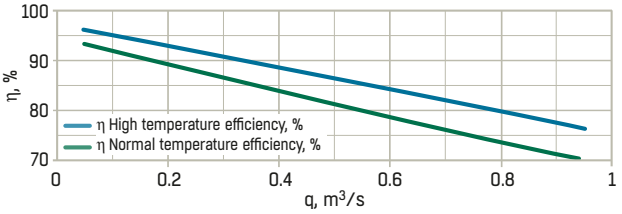
TEMPERATURE EFFICIENCY



ELECTRICAL DATA

The mains supply cable must be fitted with an external safety switch, which can cut the current to the entire unit.

Ambient temperature during operation 0 - 40° C

Unit with	Hot water coil	Electrical coil
Supply	1 x 230 V	1 x 230 V
Fuse	10 A	10 A

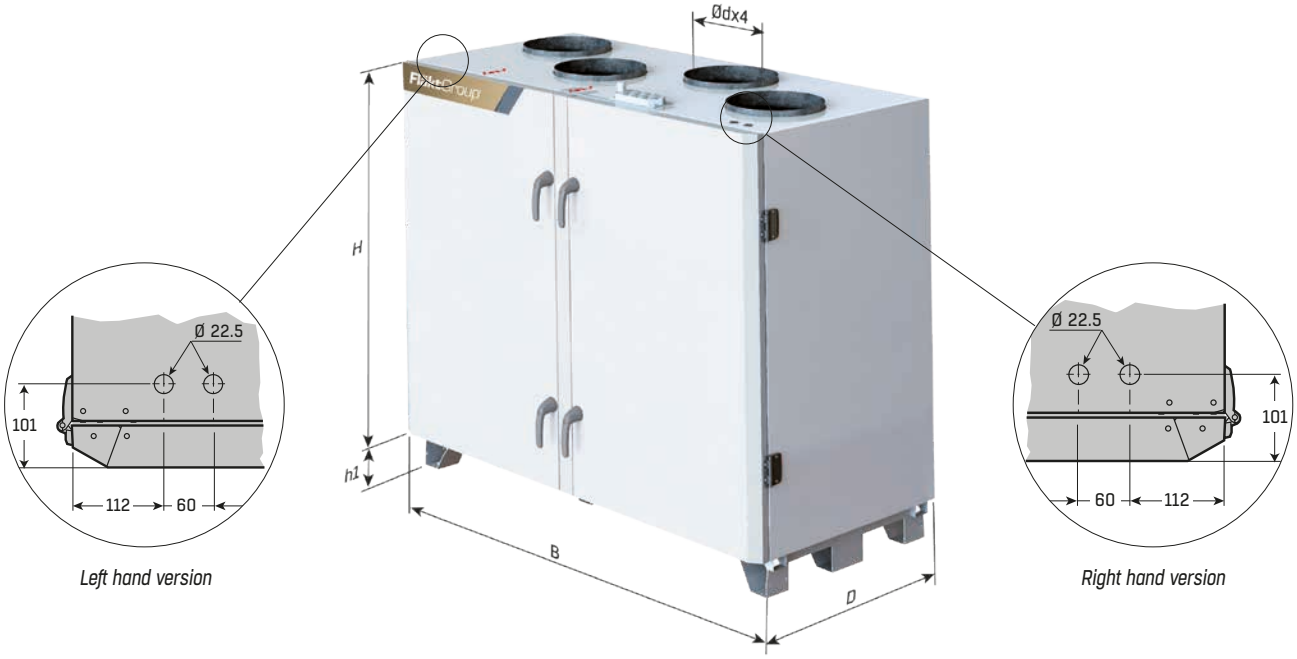
Motor data	0.75 kW x 2	3.3 A x 2	1 x 230 V
Electrical heater[1)]	9 kW	13 A	3 x 400 V

[1)] Electrical heater has a separate supply.

FILTER

Bag filters, class (F7) ePM1 50% in supply and extract air.

DIMENSIONS AND WEIGHT



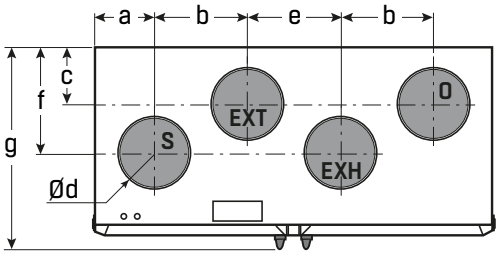
DETAILED PICTURES SHOW THE LOCATION OF THE PIPE TRANSIT FOR HOT WATER COIL.

Size	B	D	H	a	b	c	d	e	f	g	h1	W
03	1570	678	1210	220	360	217	Ø250	410	393	800	139	260
04	1720	778	1040	250	045	247	Ø315	410	463	900	139	300
06	1990	888	1040	71	216	85	600	300	–	1000[1)]	139	040

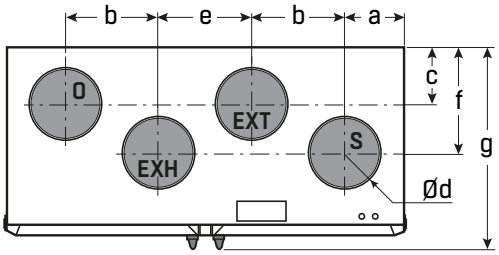
All dimensions in mm, W = weight in kg

[1)] To move size 06 through a 900 mm opening, remove the doors and the central strut.

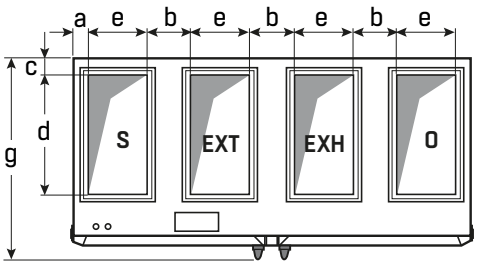
CONNECTIONS SIZE 03 AND 04, LEFT HAND VERSION



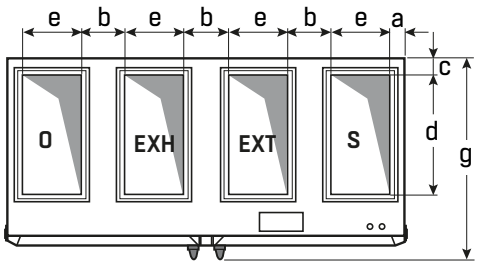
CONNECTIONS SIZE 03 AND 04, RIGHT HAND VERSION



CONNECTIONS SIZE 06, LEFT HAND VERSION



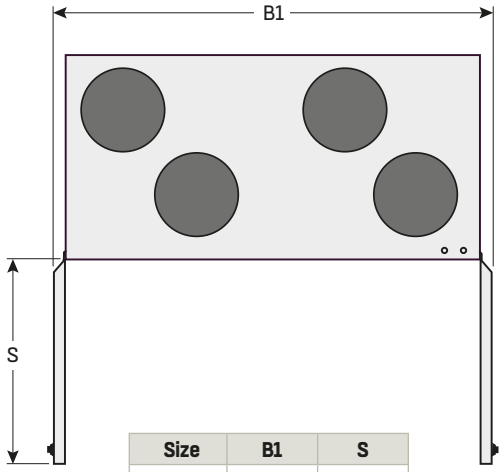
CONNECTIONS SIZE 06, RIGHT HAND VERSION



S = supply air **O** = Outdoor air **EXT** = Extract air **EXH** = Exhaust air

MAINTENANCE SPACE, ACCESSORIES

MAINTENANCE SPACE



Size	B1	S
03	1690	760
04	1840	840
06	2110	970

B1 = width with open doors S = minimum service space

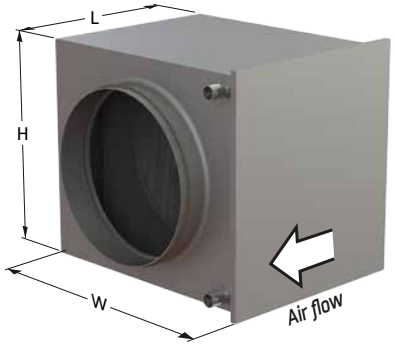
in front of the control cabinet there has to be enough space according to local electrical regulations.

ACCESSORIES, GENERAL

All accessories have rectangular PG connection.

Adapter PG / flange available as accessories. Four adapters for duct connection are included the size 06.

DUCT MOUNTED COOLING COIL - RDTZ-14



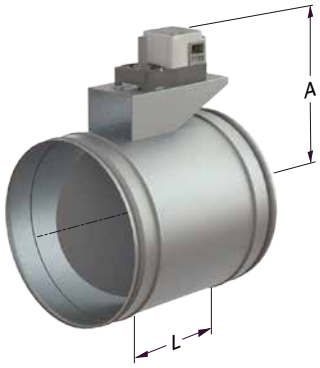
Size	ØD	W	H	L	Weight, kg
03	250	486	405	356	13
04	315	560	504	356	16
06	400	710	529	460	21,4

Cold water coil containing copper tubes and aluminum fins. The coil is built-in to a galvanized sheet steel casing. The casing has a removable hatch for cleaning and duct connections with rubber ring seals. The cooler has to be installed horizontally and the distance to nearest bend has to be at least 600 mm. The cooler is only available in a left-hand version.

Venting and draining is carried out via the pipe system. The pipe connection, Ø 22 mm, is located on the outlet end, is smooth and is intended for a compression fitting. The drainage tray is in stainless steel and has an R 1/2" connection.

Maximum operating pressure 1.0 MPa and maximum operating temperature 150° C.

SHUT OFF DAMPER WITH ACTUATOR - RDTZ-87



Size	L	A	Weight, kg
03	125	270	3.2
04	125	305	3.6

Duct mounted damper in leakage class 3 (CEN 3). The damper is made of galvanized sheet steel and has a spring return on/off actuator. The actuator has to be connected to a terminal block in the electrical cabinet.

Size 03 and 04 have circular duct connections, see table above. Size 06 has rectangular duct connections 600 x 300 mm, length 130 mm.

The damper has duct connections with rubber ring seals and can be mounted directly onto the unit or in the duct system. It is designed for duct insulation of up to 50 mm.

At air speeds below 10 m/s an d the damper fully open the sound power level is below 20 dB.

A shut-off damper with spring return actuator shall be used for units with water coil.

MOUNTING FEET – RDTZ-13

The height of the mounting feet can be adjusted between 55 - 120 mm. The unit can be placed directly onto the surface if this is flat and horizontal.

ACCESSORIES

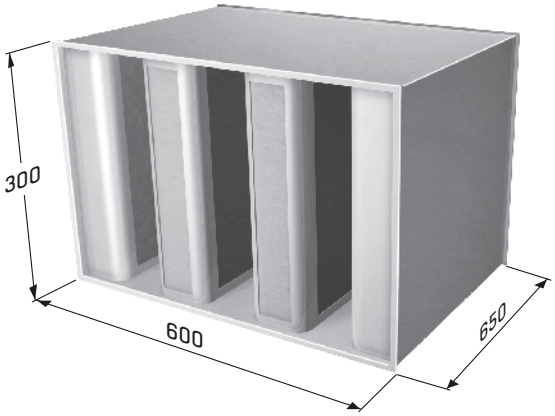
SILENCER, CIRCULAR – RDTZ-16

The silencer is a straight circular duct silencer with 50 mm mineral wool filling. Duct connections have rubber seals. The silencer consists of a perforated sheet metal pipe surrounded by a galvanized sheet steel mantle and end pieces sandwiching mineral wool covered with nonwoven fabric to prevent fiber migration.

Fire resistance rating EI30.

The distance to the fan has to be at least 300 mm.

RECTANGULAR SILENCER, DUCT MOUNTED – RDTZ-15



The silencer is intended to be connected to a rectangular duct or directly to the unit. The casing has no isolation. The sound baffles are covered with glass fabric for dry cleaning.

The silencer has a casing of galvanized sheet steel with baffles with rounded fronts. The gap between the baffles narrows in the direction of the air flow to get the lowest possible pressure drop.

The baffles have a filling of mineral wool for attenuation.
The silencer fulfills leakage class C if the duct connections are correctly performed.

SPARE FILTER – RDTZ-81

Bag filters for supply and extract air. Filter Class (F7) ePM1 50%.

FLEXIBLE CONNECTION – RDTZ-55

Flexible connection in fiber glass for connection of ducts.

MANOMETER, AIR FLOW – RDTZ-56

Manometer for air flow measurement. Cannot be used together with Constant Air Volume control.

MANOMETER, FILTER – RDTZ-07

Manometer for measuring filter pressure drop.

DRAIN TRAP - RDTZ-08

Compact drain trap for duct mounted cooling coil.

ACCESSORIES

TOP COVER – RDTZ-20

The cover has the same white color as the unit and is used to hide the duct work. The cover is delivered unmounted. It is intended for ceiling heights, 2400 mm.

BOTTOM COVER – RDTZ-21

The cover has the same white color as the unit and is delivered unmounted. It is intended for units without mounting feet.

CONVERTER FROM RECTANGULAR TO CIRCULAR – RDTZ-24

For unit size 06. Converter 600 x 300 mm to Ø400 mm. Length 400 mm.

CONVERTER FROM PG TO FLANGE – RDTZ-25

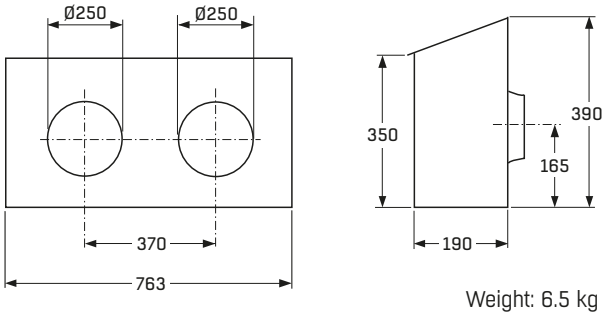
4 pcs 600 x 300 mm included and mounted on the unit for size 06.

ACCESSORIES

COMBINATION COVER – RDTZ-59-03

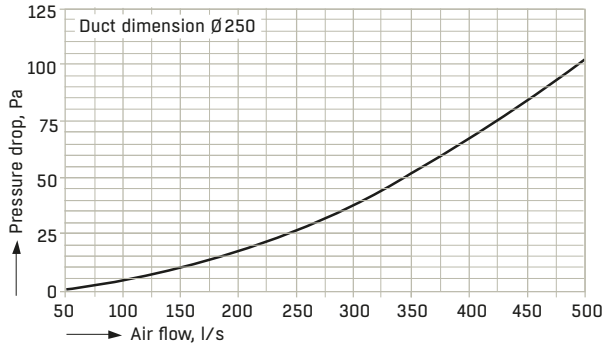
Cover for outdoor air and exhaust air, intended for wall mounting. The cover prevents mixing of the two air flows. It is made of plastic coated sheet metal.

DIMENSIONS - RDTZ-59-03

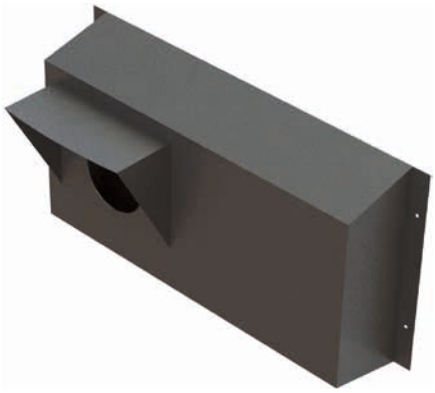


Weight: 6.5 kg

PRESSURE DROP - RDTZ-59-03

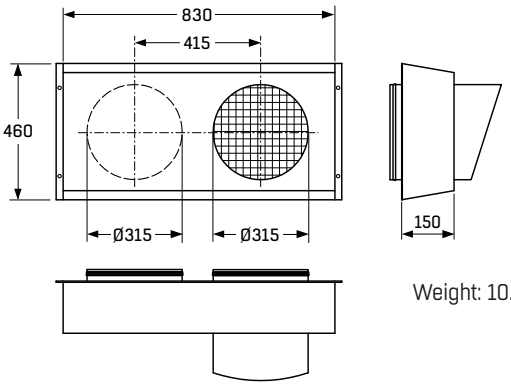


COMBINATION COVER – RDTZ-59-04



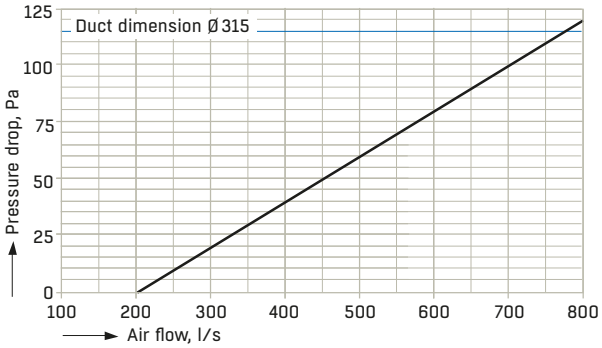
Cover for outdoor air and exhaust air, intended for wall mounting. The cover prevents mixing of the two air flows. It is made of plastic coated sheet metal.

DIMENSIONS - RDTZ-59-04



Weight: 10.0 kg

PRESSURE DROP - RDTZ-59-04



CONTROL FUNCTIONS

GENERAL

eCO Top is supplied with integrated control platform ISYteq Mini including the ISYteq Touch 3.5 control panel.

The ISYteq Mini platform has been developed to be easy to use. All internal components are pre-connected and the unit is factory tested.

The control system can communicate via Modbus RS485 or Modbus TCP/IP.

Functions that are ordered together with the unit are activated and configured from factory. Some functions are possible to activate on site.

STANDARD FUNCTIONS

- Supply air control
- Fan control (3 speed)
- Stepless speed control of RHE
- Cooling recovery
- Frost protection sensor, units with hot water coil
- Schedules
- Control circuit for pumps, max 2A
- Inlet for external fire alarm

FUNCTIONS THAT CAN BE ACTIVATED ON SITE

- Extract air control
- Outdoor air temperature compensation
- Night cooling

ACCESSORIES

- Defrosting
- Filter monitor
- Room control
- Extended / forced operation through external timer or PIR
- COP, CAV or CO_2 control

The fans in the eCO Top have three different speeds: Low, Normal and High. Switching fan speed is carried out using schedules, an external timer, push button or PIR, flow, pressure or CO_2 control is available as accessories.

TEMPERATURE CONTROL

Following options are available:

Supply air control

Maintain the supply air temperature.

Extract air control

Maintain the extract air temperature through cascade control of the supply air temperature with minimum and maximum limitation.

Room control (accessory)

Maintain the room temperature through cascade control of the supply air temperature with minimum and maximum limitation.

OUTDOOR TEMPERATURE COMPENSATION

The supply air temperature set point is changing depending on the outdoor air temperature. Not in combination with extract air or room control.

NIGHT COOLING

Night cooling is used during warm summer nights in order to reduce the indoor temperature. This is provided by cooling the warm indoor air with cold outdoor air.

When both the room temperature and outdoor temperature exceeds the set threshold value, and the difference between these values exceeds the difference set point, the unit is started in order to cool the building.

COOLING RECOVERY

The rotary heat exchanger will start to cool the supply air when the extract air temperature is lower than the outdoor air temperature and there is a cooling demand.

CONTROL OF POST HEATER

Control signal 0-10 V for valve actuator or electrical heater with a built-in thyristor.

FREEZE PROTECTION

The valve is controlled to keep the water return temperature above 15°C. If the temperature drops below 7°C the unit is stopped and an alarm is generated. When the unit is not in operation the water temperature is maintained at 25°C.

CONTROL FUNCTIONS

CIRCULATION PUMPS

The control system can start and stop circulation pumps for heating and cooling. The pumps starts up every 24 h for a test run. The maximum current for both pumps is 2A.

CONTROL OF COOLING COIL

Control signal 0-10 V for valve actuator or a start signal for a cooler with direct expansion, DX.

FIRE PROTECTION

A separate fire protection system can be connected to stop the unit.

Smoke detectors and fire dampers can not be connected to the unit. A separate fire protection system is needed.

COMMUNICATION

The control system can communicate via Modbus RS485 or Modbus TCP/IP.

FILTER MONITOR RDTZ-28 (ACCESSORY)

Generates an alarm if the pressure drop over the filter exceeds the set point.

DEFROSTING RDTZ-80 (ACCESSORY)

A pressure monitor is used to determine if defrosting is necessary.

EXTENDED/FORCED OPERATION, EXTERNAL TIMER RDTZ-91-1 (ACCESSORY)

External timer, 0-5 hours.

EXTENDED/FORCED OPERATION, PIR RDTZ-92-1 (ACCESSORY)

Delivered separately for mounting on site.

SAFETY SWITCH RDTZ-89

Delivered separately for mounting in connection to the unit.

VALVE/ACTUATOR FOR HEATING/COOLING COIL RDTZ-70

Delivered separately for mounting on site.

ORDERING KEY

Energy recovery unit eCO Top **RDTP-aa-b-c-d-e-ff**

Size (aa)
03, 04, 06

Supply side and efficiency (b)
1 = Right, Standard efficiency, RHE = 80%
2 = Left Standard efficiency, RHE = 80%
3 = Right, High efficiency, RHE = 85%
4 = Left, High efficiency, RHE = 85%

Fan speed control (c)
1 = Standard, 3-speed
2 = COP, Constant Pressure, Supply/exhaust
3 = CAV Constant air volume, Supply/exhaust
4 = CO_2 control (internal sensor)

Post heater options (d)
0 = Without
1 = Electrical (duct mounted for size 06)
2 = Hot water

Filter Supply / Exhaust (e)
1 = (F7) ePM1 50% bag filter

Language (ff)
01 = Swedish
03 = English
04 = Finnish
07 = French

ACCESSORIES

Adjustable mounting feet, kit **RDTZ-13-1**

Drain trap **RDTZ-08-1**

Temperature control **RDTZ-61-b-c**

Control situation (b)
2 = Extract air control
3 = Room air control (room sensor delievered separately)
4 = Supply air control with outdoor air compensation

Generation (c)
1

Defrosting **RDTZ-80-b-c**

Type (b)
1 = Pressure sensor

Generation (c)
1

Circular duct nounted cooling coil **RDTZ-14-bb-c-d**

Size (bb)
03, 04, 06

Type (c)
1 = Water

Connection side (d)
2 = Left

Filter monitor **RDTZ-28-b-1**

Type (b)
1 = Filter monitor, supply/exhaust

Safety switch **RDTZ-89-bbb-1**
Delievered separately

Current (bbb)
016 = 16 A

Extended/forced operation, external timer **RDTZ-91-1**

Extended/forced operation, PIR **RDTZ-92-1**

Valve/actuator for heating/cooling coil **RDTZ-70-b-c-d-eee**

Scope of supply (b)
1 = Actuator only
2 = Valve with actuator
3 = Valve only

Type of valve (c)
0 = Without (b = 1)
2 = 2-way
3 = 3-way

Location (d)
1 = Värme
2 = Kyla

kvs-value (eee)
002 = 0.25 010 = 1.0
004 = 0.40 016 = 1.6
006 = 0.63 025 = 2.5

ORDERING KEY

Spare filter **RDTZ-81-bb-c**

Size (bb)
03, *04,* 06

Type (c)
1 = (F7) ePM1 50% (2 pcs)

Manometer, fan pressure **RDTZ-56-1**

Manometer, U-pipe for filters **RDTZ-07-1**

Combination cover **RDTZ-59-bb**

Size (bb)
03 = Size 03
04 = Size 04

Silencer, Rectangular **RDTZ-15-bb-c**
600x300 mm, L = 650 mm

Size (bb)
06 = Size 06

Type (c)
1 = PG

Silencer, Circular **RDTZ-16-bb-ccc**

Size (bb)
03 = Size 03, Ø250 mm
04 = Size 04, Ø315 mm

Length (ccc)
060 = 600 mm
090 = 900 mm

Shut off damper with actuator **RDTZ-87-bb-c-d**

Size (bb)
03 = Size 03, Ø250 mm
04 = Size 04, Ø315 mm
06 = Size 06, 600 x 300 mm

Type (c)
0 = For sizes 03 and 04
1 = PG, unisolated blades, size 06
3 = PG, isolated blades, size 06

Actuator (d)
2 = On-off, spring return

HMI extra cabel **RDTZ-76-bb**

Length (bb)
10 = 10 meters
25 = 25 meters

Internal silencer **RDTZ-19-bb**

Size (bb)
03, 04, 06

Flexible connection **RDTZ-55-bb-c**

Size (bb)
03 = Size 03, circular
04 = Size 04, circular
06 = Size 06, rectangular

Type (c)
0 = For sizes 03 and 04
1 = PG, size 06

Top cover **RDTZ-20-bb-1**

Bottom cover **RDTZ-21-bb-1**

Size (bb)
03, 04, 06

Converter from rectangular to circular **RDTZ-24-bb-c**

Size (bb)
06 = size 06 (from 600 x 300 mm to Ø400 mm)

Type (c)
1 = PG

Converter from PG to flange **RDTZ-25-bb-c**

Size (bb)
06 = Size 06

Type (c)
1 = PG/flange

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