

Systemair EC - Energy Conservation Products



Low Carbon Product Range Quick selection guide



Low Carbon Product Range - Quick selection guide

Systemair have long been pioneers of energy efficient products. Since the formation of the Company in 1974 we have researched, designed and developed new and efficient ways of improving air quality to buildings of all types. The development of an extensive Air Handling Heat Recovery product range over the past decade has helped make the Systemair brand one of the world leaders in the H&V market sector and has enabled the Company to become widely specified, particularly in the education sector where the longer term energy costs are given priority consideration over any perception of higher capital costs.

Now the Company has combined its' carbon friendly heating (and cooling) recovery, fresh air systems with new EC motor technology that has dramatically reduced the running costs of fans and air handling units to a point where they may now have a pay back period of only a matter of months.

All Systemair products are fully tested and certified using the latest state of the art facilities within the Company's headquarters in Sweden and we are confident that all published data is totally accurate and reliable.

Ongoing development will ensure that more and more products will incorporate ever increasing energy efficient motors and components as we continue our ambitions to become outright leaders in our field.

This brochure illustrates some of the lines that are now readily available.



Low SFP Values with Systemair Fan Products

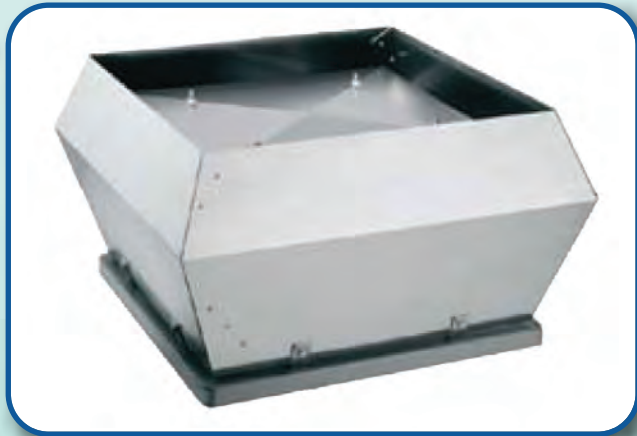
The technical fan curves within this brochure show SFP (Specific Fan Power) values against typical performance curves for all products. This will assist in ensuring quick compliance with specification design requirements. Our web based selection programme will show actual SFP values changing in accordance with performance variations and this is freely available to all customers with local training and support given on request.

EC Motor technology - a design of the times

The development of EC (electronically commutated) Motors has transformed the H&V sector as it enables far more precise fan usage against actual needs, particularly when combined with **DEMAND CONTROL** options which allow fans to perform against given criteria for Humidity, Heat, CO₂, Personnel, etc, using low voltage/cost control equipment.

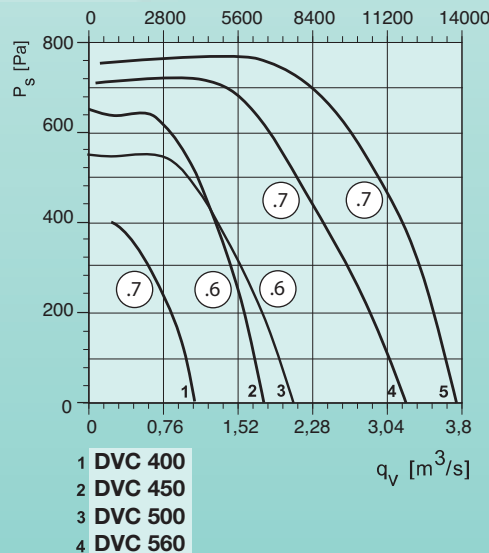
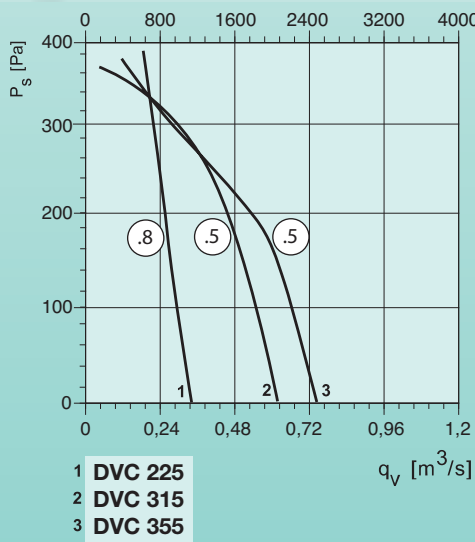
This further reduces energy consumption and enables Systemair to promote itself as a Company committed to Energy Conservation whilst providing clean, fresh air that also has far reaching health benefits in addition to reducing costs.

DVC - EC Roof Extract Units



- 100 % speed controllable
- Integrated motor protection
- Low noise level
- Safe and maintenance free operation
- Energy-saving

The input voltage can vary between 200 and 277V. All motors are suitable for 50 Hz and 60 Hz. Driven by EC external rotor motors with high efficiency. Motor protection is integrated in the electronics of the motor, no additional external motor protection device is needed.



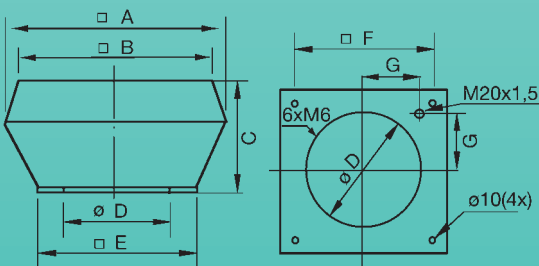
Casing from seawater-resistant aluminium, base frame powder coated. Impeller manufactured from polyamide PA6.

⊙ = SFP value (Specific Fan Power)

DVC units are available in 2 forms - Type DVC-P with inbuilt pressure control and Type DVC-S suitable for remote signal control.

NB: Low SFP values are circled for quick selection purposes, however full selection data can be accessed via our website or Sales office

DVC	225-P/225-S	315-P315-S	355-P355-S	400-P/400-S	450-SK/450-PK	450-P/450-S	500P/500S	560-P560-S	630-P630-S
Voltage/frequency V50/60 Hz	230	230	230	230	230	230	400	400	400
Phase	1	1	1	1	1	3	3	3	3
Power Watts	155	173	378	381	580	1048	984	1873	2444
Current Amps	1.17	1.18	2.31	2.3	2.0	1.79	1.66	2.88	3.72
Max Airflow M3/s	0.26	0.55	0.92	1.00	1.42	1.70	1.84	2.99	3.59
RPM	3280	1870	1660	1350	1250	1560	1340	1360	1210
Max temp of transported air °C	60	60	60	60	60	60	60	60	60
* when speed controlled	60	60	60	60	60	60	60	60	60
Sound pressure at 4/10m dB(A)	58/51	47/39	50/42	49/41	53/45	55/47	55/47	63/55	64/56
Weight KG	10	11	25	29	43	43	49	58	65
Insulation class, motor	B	B	B	B	F	F	F	F	F
Enclosure class, motor	IP44	IP44	IP44	IP44	IP54	IP54	IP54	IP54	IP54



DIMENSIONS

Size	A	B	C	D	E	F	G
225	370	295	170	213	335	245	105
315	560	470	330	285	435	330	146
355	720	618	400	438	595	450	200
400	720	618	400	438	595	450	200
450	900	748	440	438	665	535	237
500	900	748	440	438	665	535	237
560	1150	955	560	605	939	750	293
630	1150	955	560	605	939	750	293

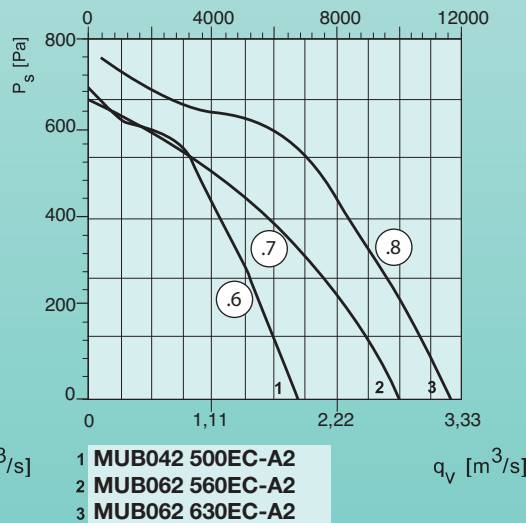
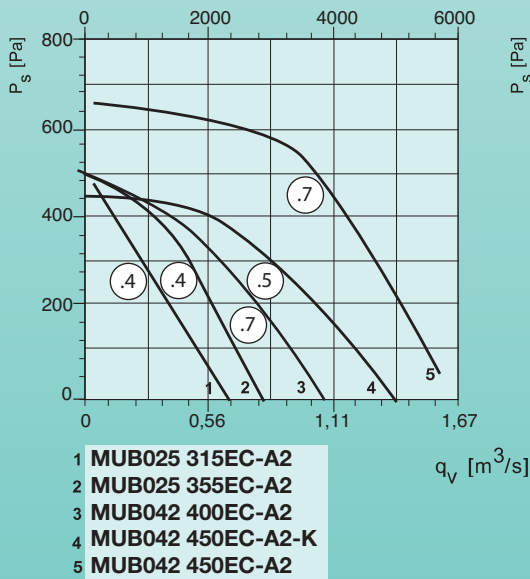
MUB EC, Multibox Duct Fans



- * 100% Speed Controllable
- * Integrated electronic motor
- * Modular System
- * Low Noise Level
- * Safe & maintenance free operation
- * Energy Saving

Multibox fans are driven by EC external rotor motors. All types are speed controllable by a 0-10v signal. From 450 the motor has an output voltage of 10v and 20v for external potentiometer. Fans are equipped with backward curved impellers manufactured from aluminium. Casings consist of an aluminium frame with fibreglass reinforced plastic corners of PA6: highly shock resistant. The double skin panels are manufactured from galvanised steel with 20mm mineral wool insulation.

To avoid condensation the profile is provided with a separate chamber to fix the screws. The panels are removable and any outlet side can be chosen. MUB EC can be used as a fan module in individual supply or exhaust air applications. Installation in any mounting position is possible.



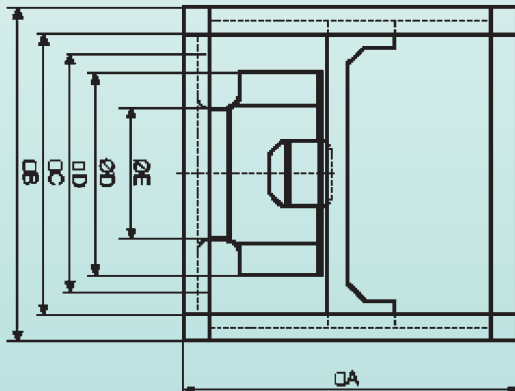
Performance curves illustrated relate to right angle discharge installations. For in line performance figures please refer to our website or sales office

3.0 = SFP value (Specific Fan Power)

NB: Low SFP values are circled for quick selection purposes, however full selection data can be accessed via our website or Sales office

	450EC-A2-K	450EC-A2	500EC-A2	560EC-A2	630EC-AC
Voltage/frequency 50/60 hz	230	400	400	400	400
Phase	1	3	3	3	3
Power W	530	1170	1100	2000	2560
Current A	2.4	1.95	2.18	3.1	3.9
Max Airflow A M3/s	1.38	1.61	1.85	2.77	3.17
Max Airflow B M3/s	1.42	1.75	2.06	3	3.62
RPM	1250	1560	1340	1360	1210
Max air temp C	60	60	60	60	60
Sound pressure at 3m dB(A)	52	44	56	57	67
Weight KG	60	65	80	90	95
Insulation class	F	F	F	F	F
Enclosure	IP54	IP54	IP54	IP54	IP54

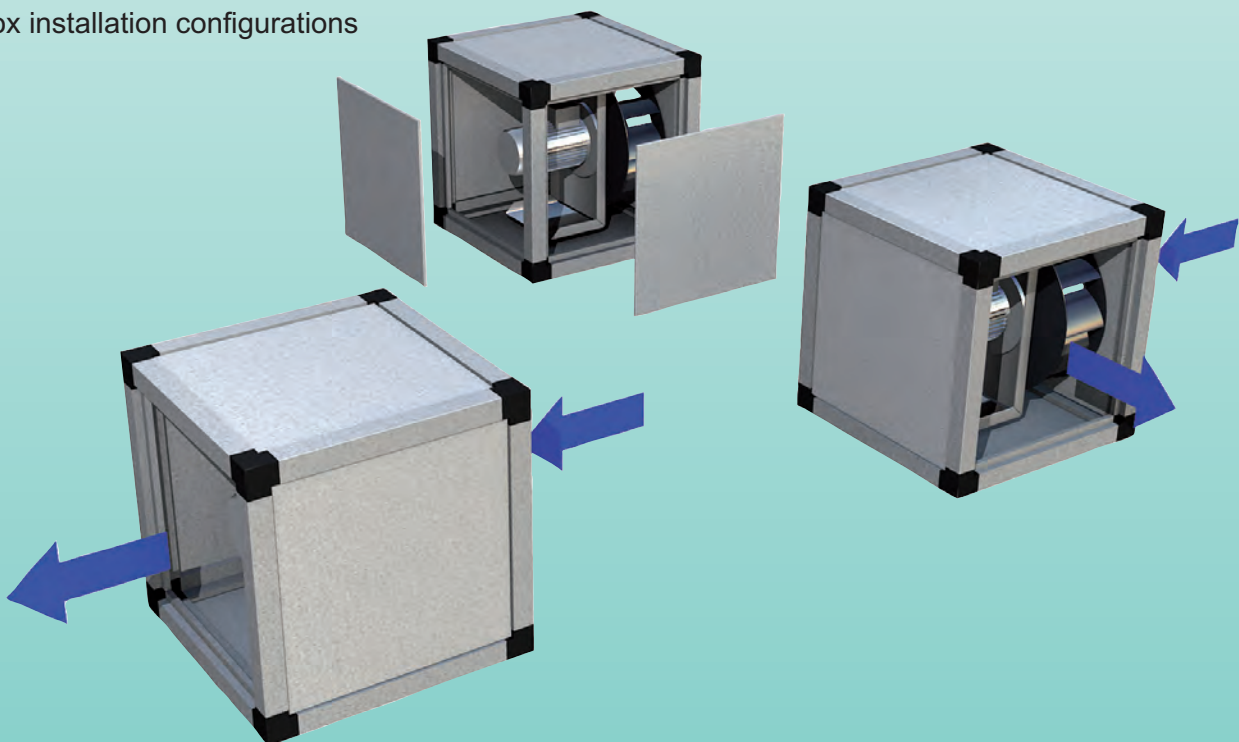
MUB EC, Multibox Duct Fans



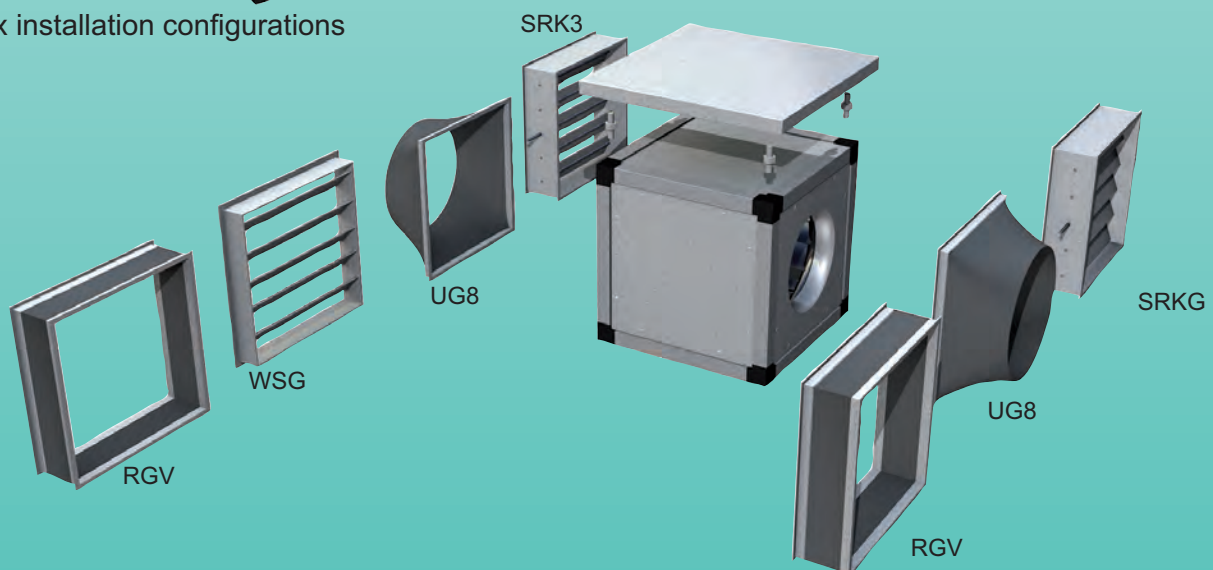
DIMENSIONS

	A	B	C	D	E
MUB025 315	500	500	420	315	200
MUB025 355	500	500	420	355	224
MUB042 400	670	670	500	400	258
MUB042 450	670	670	500	400	268
MUB042 450	670	670	500	454	288
MUB042 500	670	670	500	504	321
MUB062 560	800	800	720	560	350
MUB062 630	800	800	720	630	407

Multibox installation configurations



Multibox installation configurations



Please also enquire regarding MUB Kitchen fans and MUB twin fans

EC Fans, Demand Control Systems

General information

Systemair EC fans have been developed to be used in high efficiency supply and exhaust air systems, that are saving energy when speed controlled. All fans are equipped with high efficiency motors, developed with state of the art technology. Systemair EC-fans can be combined with many standard components of our product range, including control systems.

Systemair ranges

All Systemair EC fans are equipped with self-cleaning impellers with backward curved blades. All fans can be used with a 50/60 Hz mains supply and voltages between 200- 270V for single phase, 380-480V in three phase, without loss in performance. All motors are well suited to speed control and can be used with control systems based on pressure, speed or temperature.

The use of EC fans

Systemair provide you with helpful information, making it easier for you to choose an EC fan. We want to point out that comparisons with standard AC solutions should only be done with complete systems.

Energy saving made easy

Looking at today's control systems, it quickly becomes clear that the use of conventional speed controllers using phase cutting or frequency inversion can have problems, both large and small. For applications that are noise sensitive, speed control in low speed is almost impossible when using phase cutting systems. When using frequency inverters, missing information regarding sensitive external rotor motors can be a problem. Often the installation of all pole sine filters and screened cables, necessary for a trouble free operation of the motor when used with a frequency inverter, is not given consideration even at the design stage. The failure rate of EC motors is very low. Energy saving, as shown in the following chart, has a positive impact on such systems.

Motors

The DVC and MUB-EC ranges use electronically commutated motors. The power electronics are very compact and integrated into the motor casing. All motors are equipped with electronic motor protection, thus no need for additional motor protection devices. It is possible to use an external 0-10V input signal. Control equipment, having a 0-10V output, can be used for direct control. From size 355 an external potentiometer (0-10 kohm) can be connected directly to the motors.

Applications where sensitive control is required

Using a roof fan as an example, the EC motor turns out to be a real "control wonder". Also small control units work reliably. We recommend EC motors for all applications where control is required. Reference projects in the field of clean room technology, swimming pool ventilation, roof fans, domestic ventilation etc. confirm the suitability and acceptance of this motor technology.

Systemair offers a wide performance range with roof fans DVC range and Multiboxes MUB-EC. We also offer this technology in domestic ventilation and comfort ventilation units VR, Topvex and Rotovex.

Calculation of annual cost saving:

$$K_e = E_e \times E_k \times L_z \times n$$

$$K_e = 0,5 \text{ kW} \times 0,1 \text{ /kWh} \times 7000 \text{ h} \times 8 = 2.800,-$$

K_e = cost saving (£) per year

E_e = energy saving (kW)

E_k = energy cost (£/kW/h)

L_z = operating time (h/year)

n = number of fans

High energy saving

The EC-Motor has a very high efficiency at any speed. When running at rated speed, the energy saving is approx. 10%. When speed controlling, the relative and absolute energy saving is considerably higher.



System comparison using DVC and standard DVS of an application with constant pressure control.



DSG Pressure Sensor CXE/AVC and MTP10 Control Units TFR Temperature Sensor

MUB-EC/DVC-S external signal plus MTP10 controller

MUB-EC/DVC-S pressure & temperature control with CXE/AVC control and auxiliary sensors

DVC-P Built in pressure controller

Reasons to invest in EC technology

- Reduced energy consumption due to high efficiency low operating cost
- Small heat development by small energy dissipation no additional cooling necessary through low heating losses.
- Maintenance free operation, long lifetime
- Fan performance can be adapted to application – stepless speed control and integrated automatic control functions.
- No additional installation necessary (electrical or mechanical).
- Favourable system cost, compared with conventional technique with comparable functions.
- Can be used for 50 and 60Hz mains supply.

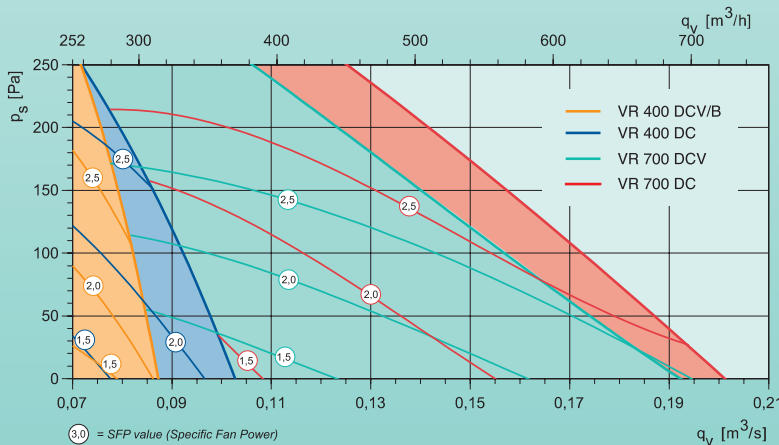
Type VR - Residential Heat Recovery Low Energy Air Handling Units

- High efficiency heat recovery unit without need for defrosting will give the highest average efficiency over the year
- Energy efficient fan motors with modern EC technology
- Operation from user friendly control panel(s), type CD with LCD-display
- Separate setting of supply and extract airflow
- Constant airflow and balance between extract and supply air
- Changes automatically to summer operation with no heat recovery
- Bypass option for connection to duct from cookerhood
- Flexible installation. No need for condensation drain

White painted model with EC fans, flexible control functions and modern control panel, designed for installation on the wall in dwellings with ventilated area up to apx. 200 m².

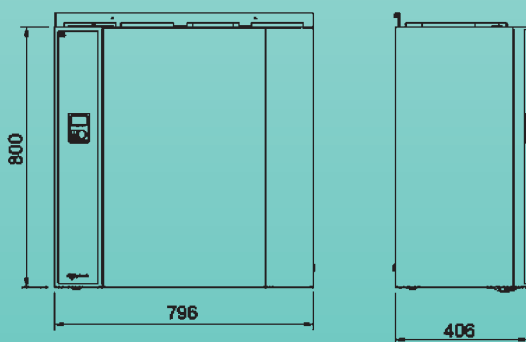


Unit illustrated is vertical discharge. For full details and dimensions of VR horizontal units please visit our website or contact our sales office.

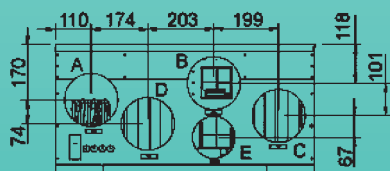


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All units are 230v 1phase 50hz supply. Electrical heater battery 1.67kw, EU7 supply filter, EU3 extract filter.
Size 400 units have input power 2 x 114w, 10 amp fuse. Unit weight 57kg
Size 700 units have input power 2 x 240w, 13 amp fuse. Unit weight 72.3kg

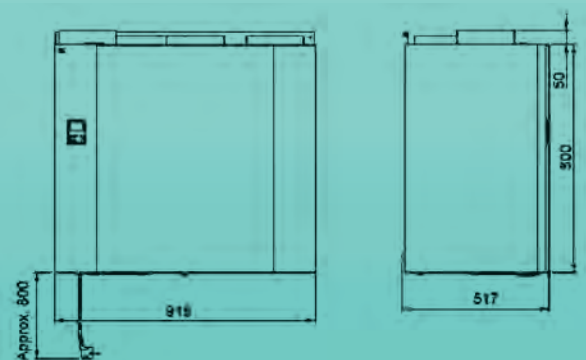


Dimensions

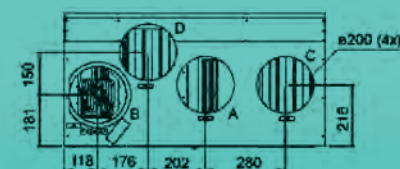


- A Supply air ϕ 160 mm
- B Exhaust air ϕ 160 mm
- C Fresh air ϕ 160 mm
- D Extract air sanitary room/kitchen ϕ 160 mm
- E Extract air cooker hood ϕ 125 mm

VR-400 DCV/B



Dimensions



- A Exhaust air
- B Supply air
- C Fresh air
- D Extract air.

VR-700-DCV

TOPVEX Heat Recovery Air Handling Units



Top connected air handling units

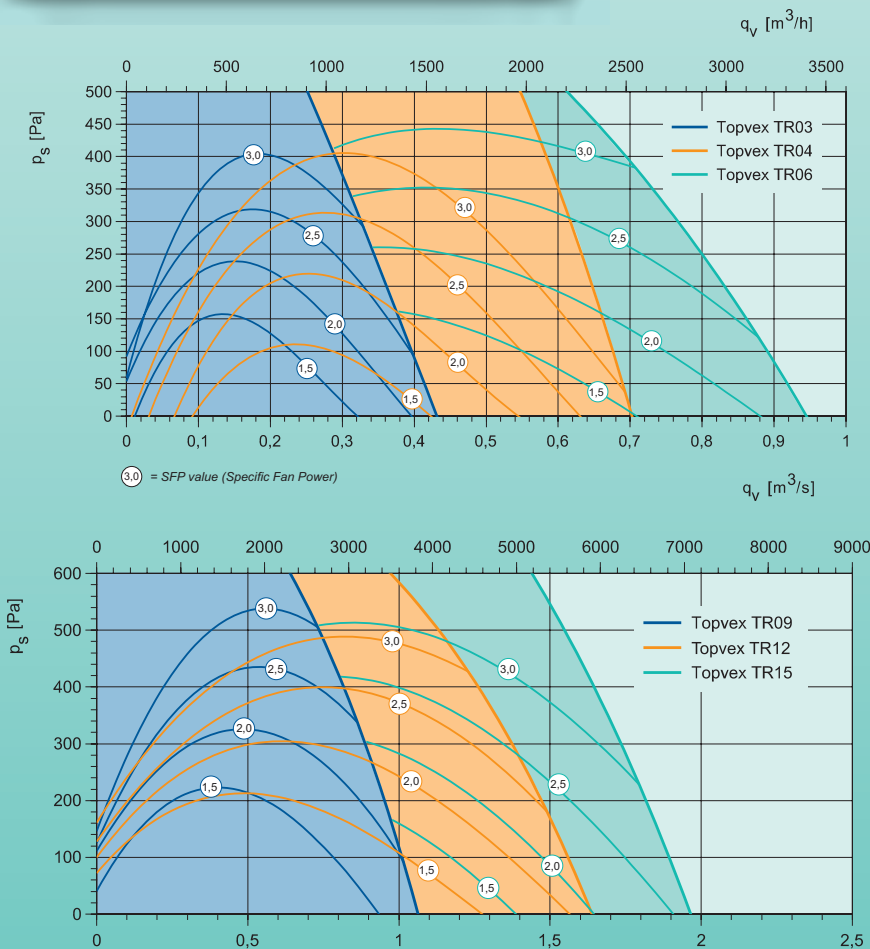
Topvex TR is a heat recovery air handling unit for top connection especially designed to meet the new, more stringent, energy requirements in building regulations. Units have rotary wheel to provide up to 85% heat recovery with balanced airflow.

In order to achieve low energy performance it is essential for air handling units to have low pressure drop.

Topvex TR is designed for low internal air velocities that together with space for large air filters contribute to low pressure drop. One of the important features of Topvex TR is the high efficiency.

EC-motors use 50 % less energy than conventional asynchronous motors with voltage regulation in rpm regulation mode. The units also have energy saving features such as night cooling (TR09-TR15), cool recovery, season related temperature and season related flow regulation (TR09-TR15). The unit is delivered complete control system for facilitating installation and commissioning. Topvex TR has everything that is needed to create an indoor climate with best possible comfort at lowest possible running cost.

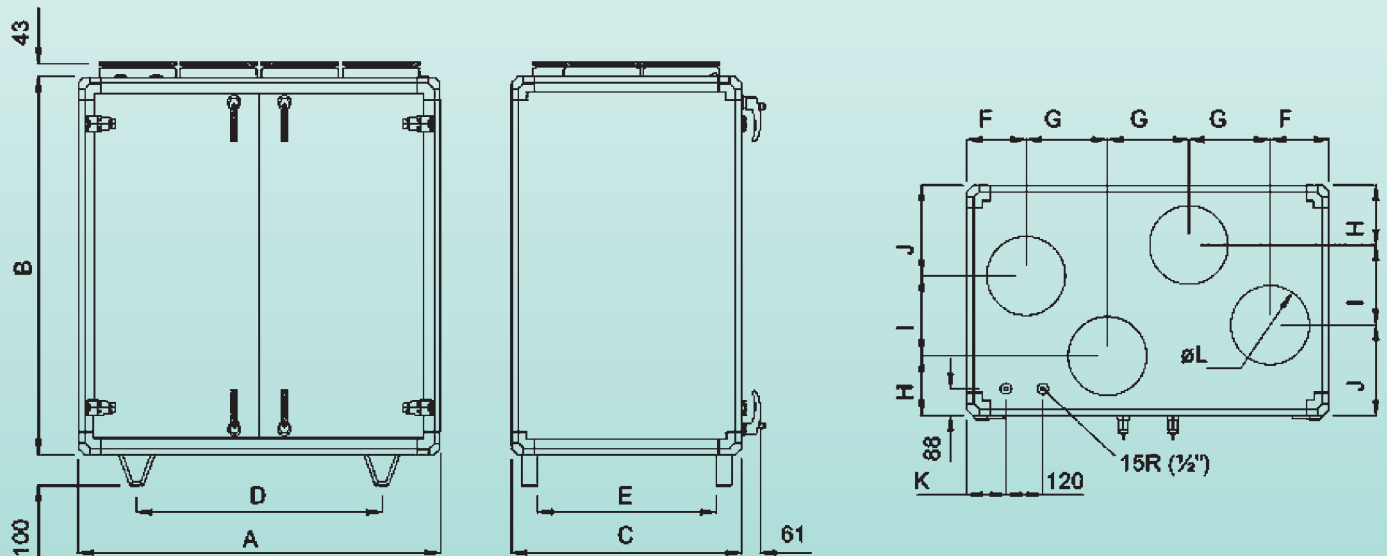
Unit have inbuilt control panel with possibility to communicate with Modbus, LON or Exoline (TCP/TP) and have fully integrated heater battery/coils and controls.



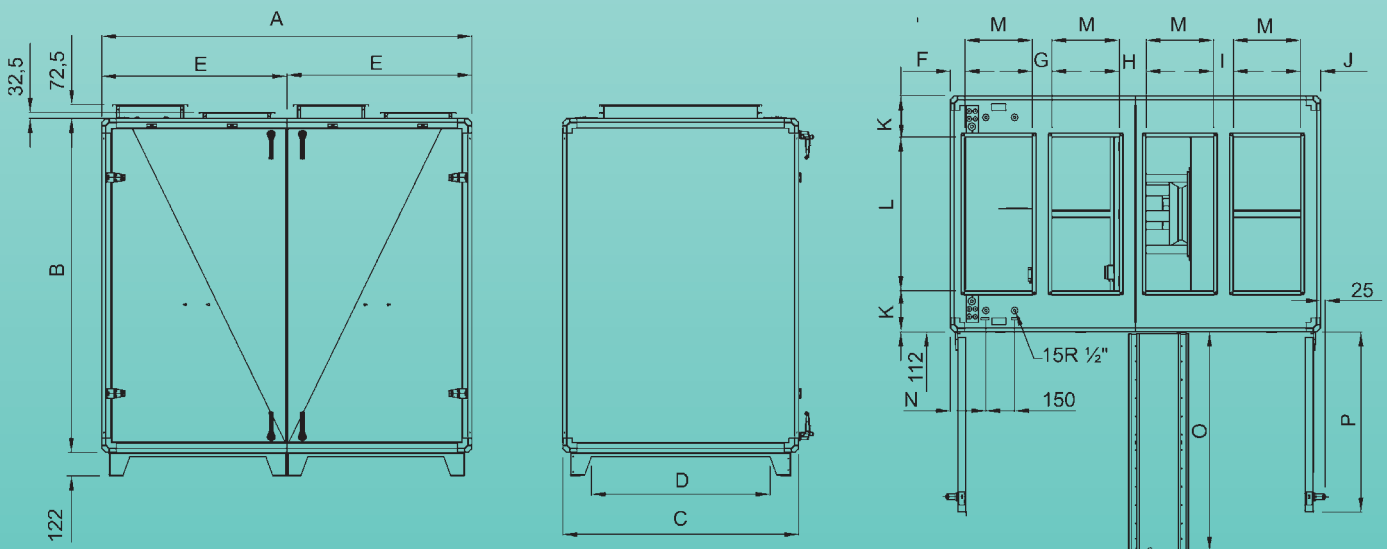
NB: Low SFP values are circled for quick selection purposes, however full selection data can be accessed via our website or Sales Office

Technical Parameter	TR-03 HW	TR-03EL	TR-04 EL	TR-04 EL	TR-06 HW	TR-06EL 1	TR-09	TR-12	TR-15	
Voltage	V	230	400	400	400	230	400	400	400	
Frequency	Hz	50	50	50	50	50	50	50	50	
Phase		1	3	3	3	3	3	3	3	
Input power, fan motors	W	2 x 505	2 x 505	2 x 1088	2 x 1088	2 x 1101	2 x 1101	2 x 1060	2 x 1850	2 x 3380
Input power, Electric heater		n/a	3	n/a	n/a	3.99	n/a	6/15	9/12	15
Fuse	A	10	16	10	13	10	25	3x16/3x35	3x25/3x50	3x35
Weight	Kg	225	225	280	280	335	335	505	580	710
Enclosure Class		IP44	IP44	IP44	IP44	IP44	IP23	IP23	IP23	IP23
Filter, supply air		eu7	EU7	EU7	EU7	EU7	EU7	EU7	EU7	EU7

TOPVEX - Dimension



Topvex	A	B	C	D	E	F	G	H	I	J	K	L dia
TR-03	1180	1230	750	800	580	193	265	195	260	295	127	250
TR-04	1480	1280	850	1100	680	209	354	315	220	315	163	315
TR-06	1700	1279	1000	1321	839	99	114	274	250	500	171	250



Topvex	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
TR09	1790	1630	1120	810	895	104	129	123	129	105	210	700	300	165	1030	870
TR12	1930	1740	1230	930	965	76	104	141	104	105	215	800	350	185	1140	940
TR15	1930	1980	1470	1180	965	76	104	141	104	105	236	1000	350	185	1380	940

ROTOVEX Heat Recovery Air Handling Units



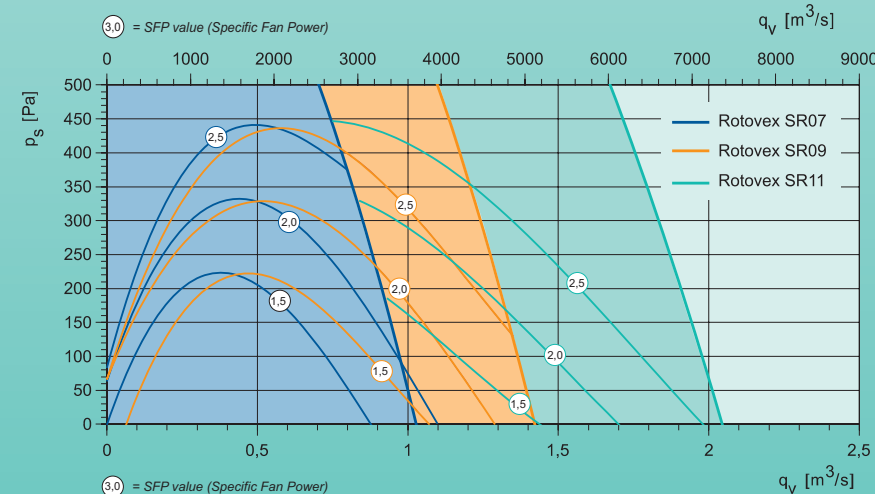
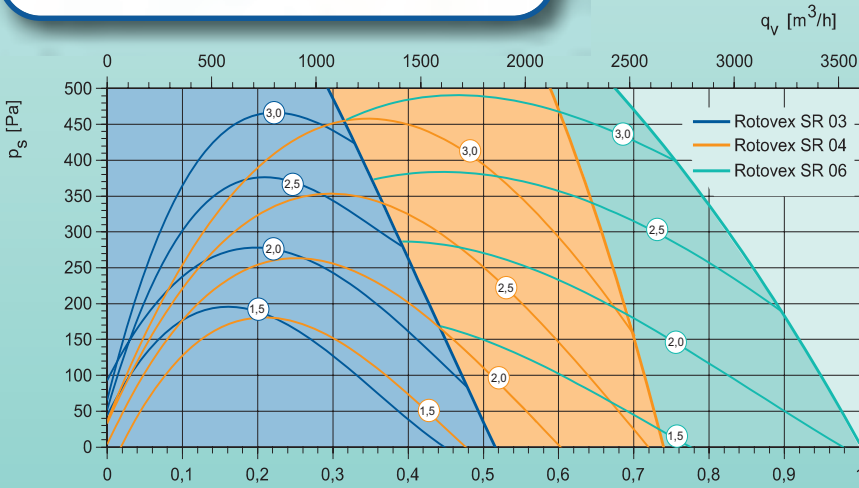
Rotovex is a series of efficient ventilation units designed for schools, shops and offices etc. The units are complete with controls and delivered ready for operation. Units have rotary wheel to provide up to 85% heat recovery with balanced airflow.

They are compact in design, have very low energy consumption and have high efficiency heat exchangers, EC driven fan motors and a duty range up to 4,000 M3/h.

All Systemair low energy heat recovery units incorporate the same control panel which can be set to date and time with humidity, pressure temperature or PIR 'demand control' options and may be linked to standard BMS systems.

Units have an inbuilt control panel with possibility to communicate with Modbus, LON or Exoline (TCP/TP) and have fully integrated heater battery/coils and controls.

Rotovex units can also be used for external applications on sizes SR-04 to SR-11.



Technical Parameter	SR03-EL	SR-03 HW	SR-04 EL	SR-04HW	SR-06 EL	SR-06 HW	S-07 EL	S-07 HW	S-09 EL	S-09 HW	S-11 EL	S-11 HW
Voltage	V	230	230	400	400	400	400	400	400	400	400	400
Frequency	Hz	50	50	50	50	50	50	50	50	50	50	50
Phase		1	11	3	3	3	3	3	3	3	3	3
Input power, fan motors	W	2x508	2x508	2x1109	2x1124	2x1124	2x1030	2x1030	2x1900	2x1900	2x3070	2x3070
Input power, Electric heater		6	n/a	6/12	n/a	9/16	n/a	3/12	10	4.5/15	15	6/12/24
Fuse	A	40	10	16/25	10	25/32	10	10	10	16/10	10	20/16/10
Weight	Kg	225	225	270	270	315	315	320	320	365	365	435
Filter, supply air			EU7	EU7	EU7	EU7	EU7	EU7	EU7	EU7	EU7	EU7

Systemair are committed to ongoing product development
and will be adding EC motors to many other product lines

Please visit our website for the latest information

www.systemair.co.uk

