ERV / ERV-V

Packaged Type Energy Recovery Unit

eneko®

ErP 2018

Index

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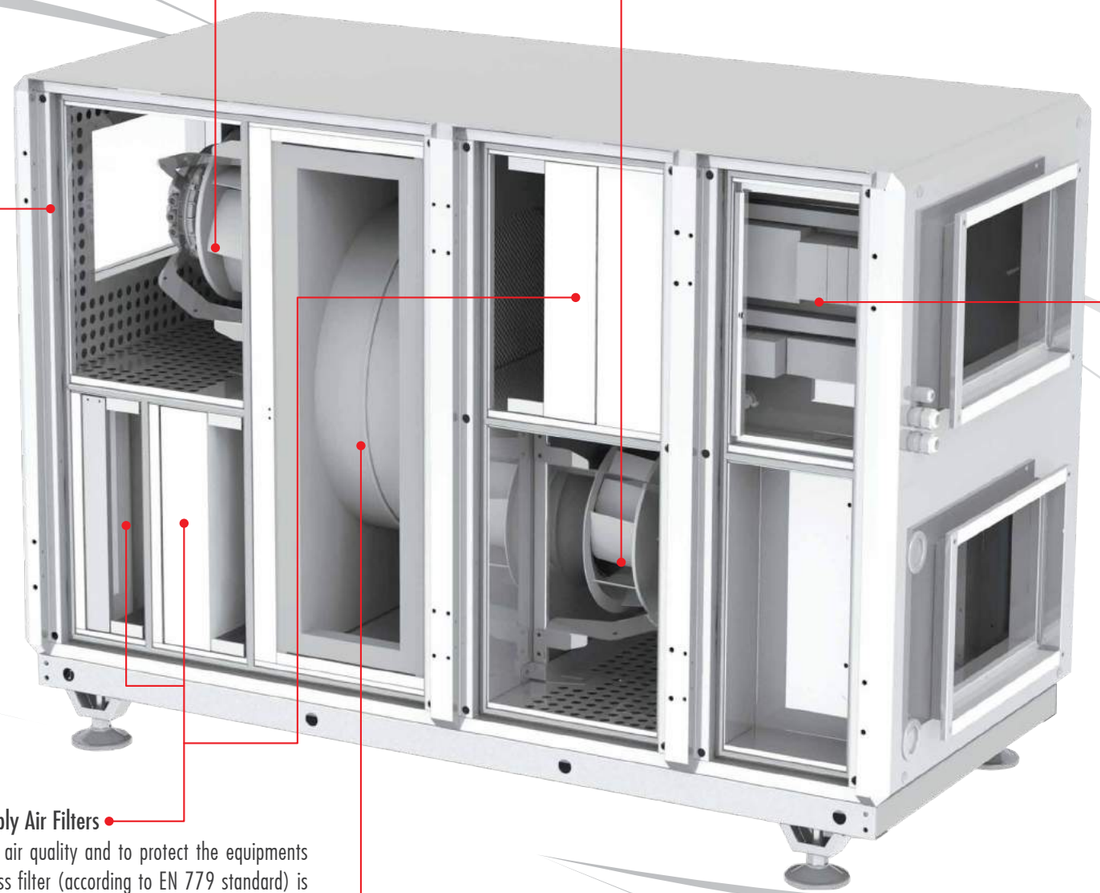
Accessories

Casing & Insulation
The unit's casing is made up of double skinned high corrosion resistive 200 gr/m² galvanize coated steel. **50 mm thickness and 70kg/m³ density of Rockwool insulation** between the walls is used for thermal and sound insulation. The case of unit is painted by electrostatic powdered paint. The unit is constructed in sections to ease transportation, mounting and commissioning. Every section has its own basis and transport slots.

Exhaust and Supply Air Fans
The fans in packaged type energy recovery units are equipped with innovative Electronically Commutated **EC motor** technology. EC motors have higher efficiency and simple speed control. Fan blades have high aerodynamic efficient backward curved design. EC motors reduce the energy consumption and increase the energy efficiency of the unit. With EC Fans, maintenance costs are reduced as the fans are directly connected to the motors; the belt and pulley problems are eliminated.



Control System Plug&Play
ENECON control unit is developed for controlling of heat recovery units' equipments, meeting the demands coming from the customers and is user friendly designed. ENECON is capable of controlling the standard equipments and optional accessories. ENECON Control unit can perform the basic functions. Besides, the control unit can be switched on/off via BMS, gets fault signals and controls all the functions via ModBus. Alternative controllers are listed in "Control System" part.

Exhaust and Supply Air Filters
To increase indoor air quality and to protect the equipments used in unit, F class filter (according to EN 779 standard) is used for supply air streams; M class filter is used for exhaust air streams. A choice of pre-filters (G2-G4) and final filters (F6-F9) are available optionally. Optional filters reduce the available static pressure of the unit.

Rotary Heat Recovery
ERV energy recovery ventilation units have high efficient rotary heat recovery exchangers. The exchanger transfers sensible heat and moisture between supply and exhaust air. Thus, it is also possible to transfer latent heat. With the optimization of heat exchanger, temperature and humidity efficiency is increased, pressure drop is decreased. Optionally, condensation rotor can be used for sensible heat transfer and sorption rotor can be used for humidity transfer.

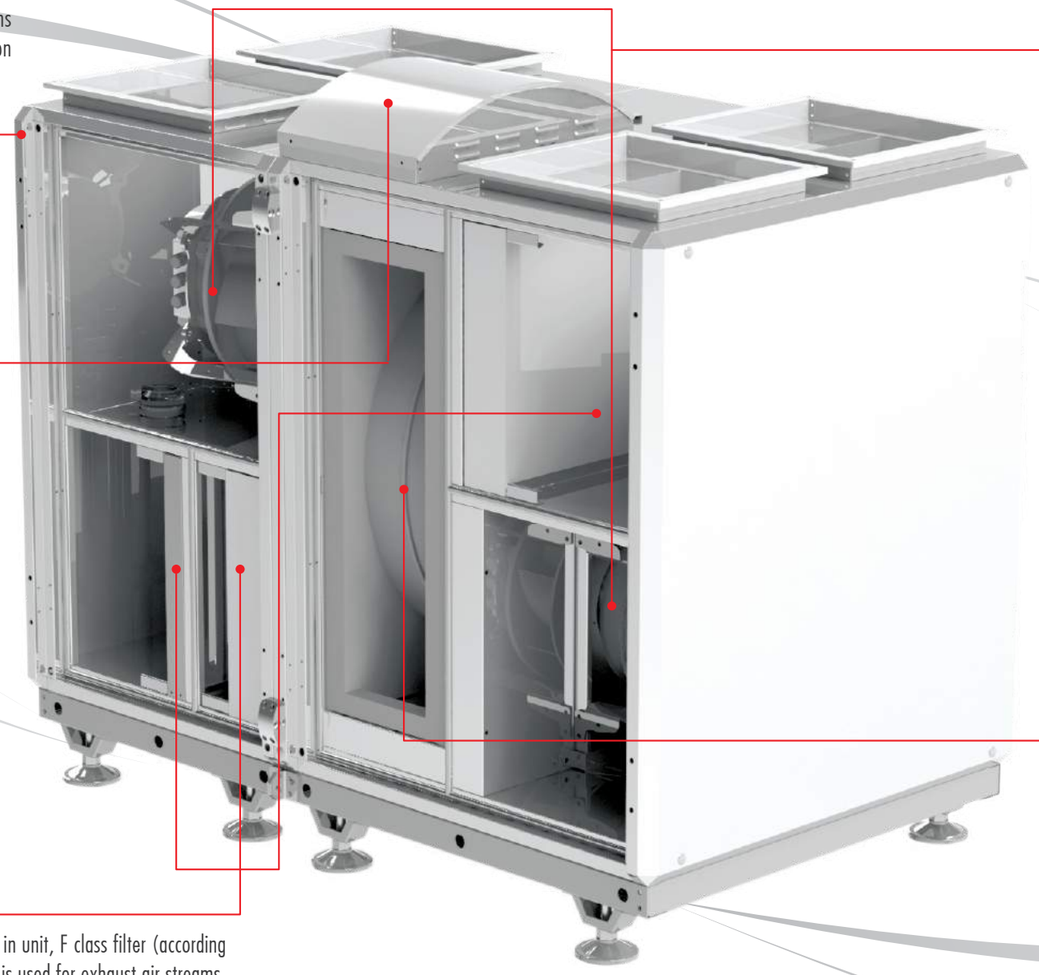
Management System ISO 9001:2015 TÜVRheinland CERTIFIED www.tuv.com ID 9105070269 CE TSEK PG RoHS conform

eel eneko energylab

The technical specifications and the performance data declared with this logo have been developed by the tests performed in Eneko Energy Laboratory which is established with the development Project support of Tübitak by regarding relevant standards.

Casing & Insulation

The unit's casing is made up of double skinned high corrosion resistive 200 gr/m² galvanize coated steel. **50 mm thickness and 70kg/m3 density of Rockwool insulation** between the walls is used for thermal and sound insulation. The case of unit is painted by electrostatic powdered paint. The unit is constructed in sections to ease transportation, mounting and commissioning. Every section has its own basis and transport slots.



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Rotary Heat Recovery

ERV-V energy recovery ventilation units have high efficient rotary heat recovery exchangers. The exchanger transfers sensible heat and moisture between supply and exhaust air. Thus, it is also possible to transfer latent heat. With the optimization of heat exchanger, temperature and humidity efficiency is increased, pressure drop is decreased. Optionally, condensation rotor can be used for sensible heat transfer and sorption rotor can be used for humidity transfer.

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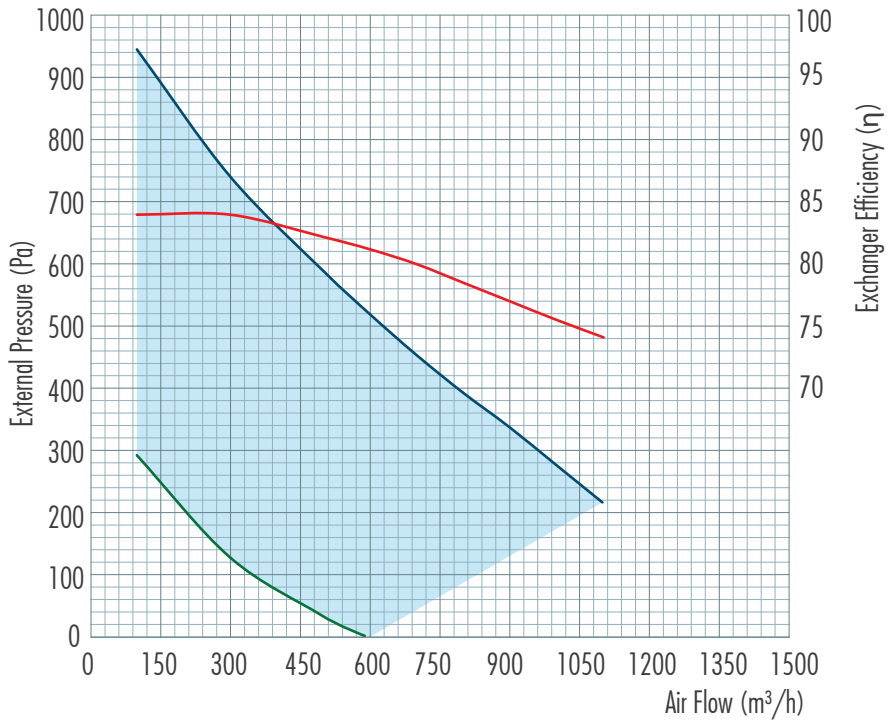
Performance Data

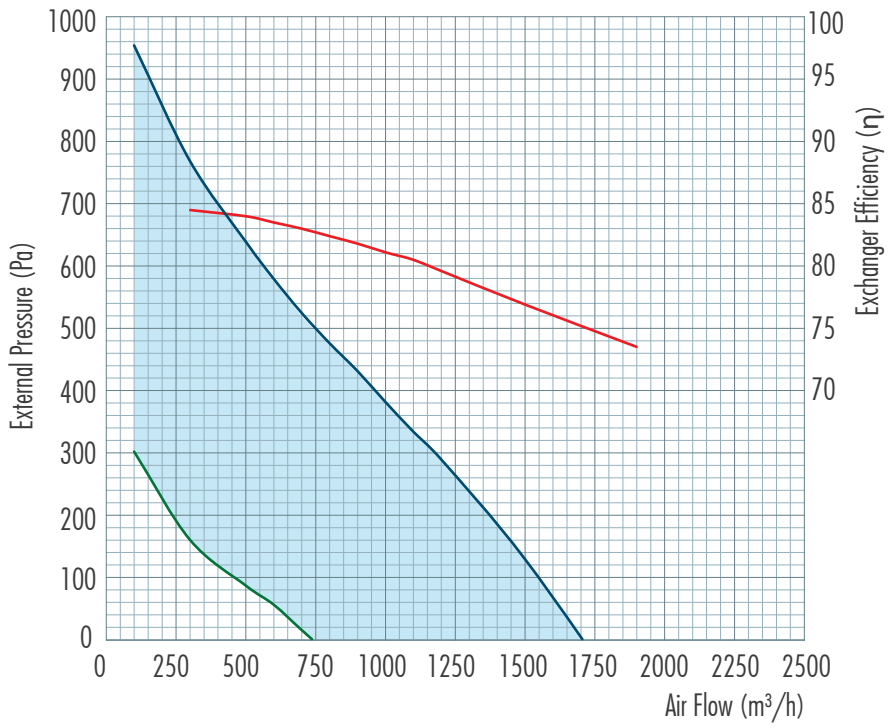
ERV 100 / ERV-V 100

PERFORMANCE CURVE



ERV 200 / ERV-V 200

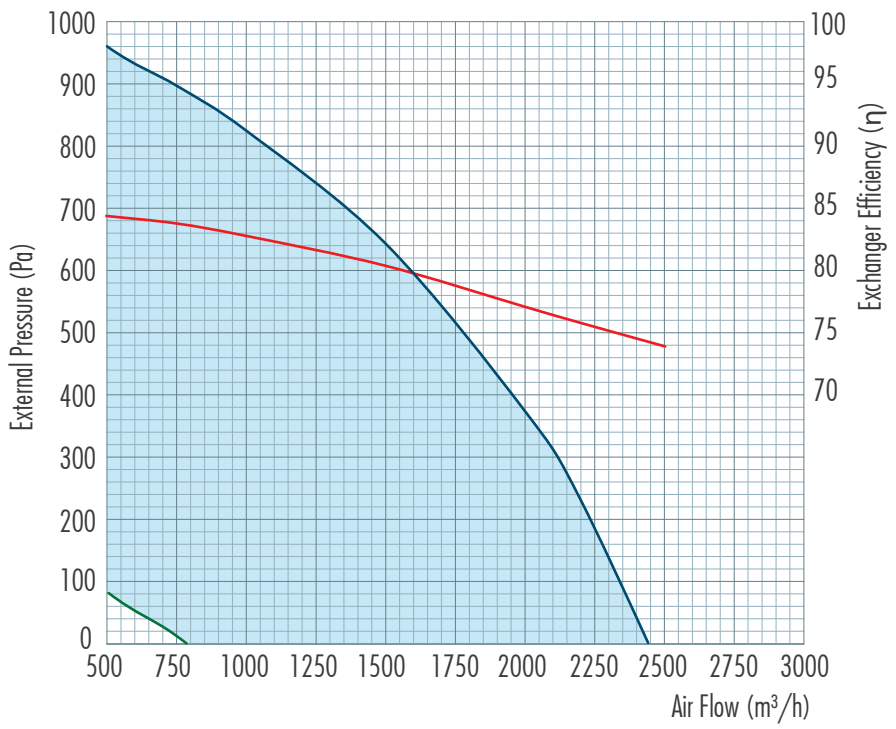
PERFORMANCE CURVE



Note: Efficiency values are calculated according to EN 308 standard.

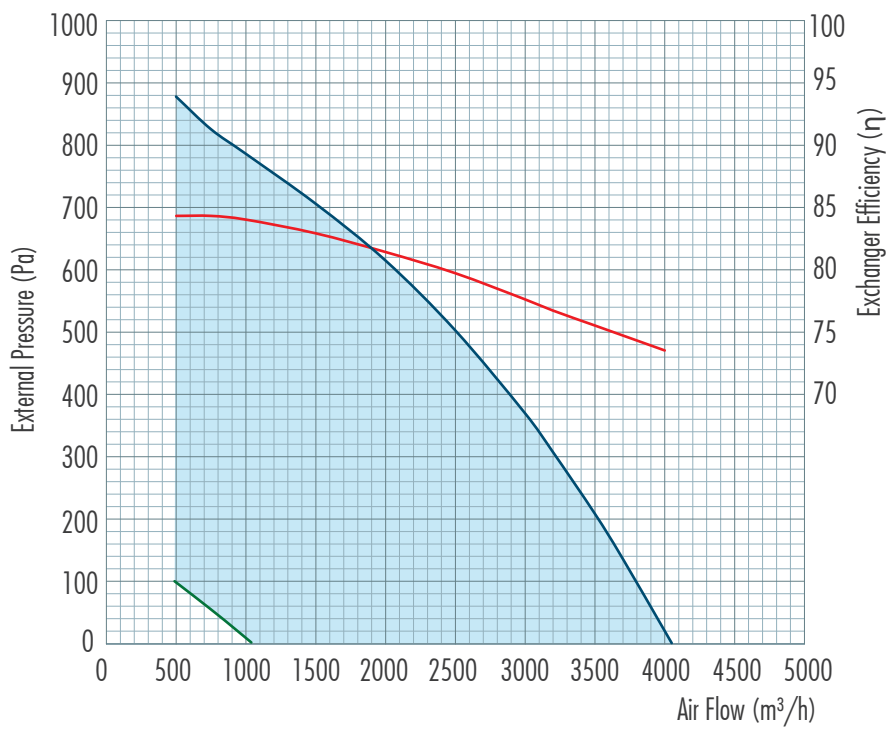
ERV 300 / ERV-V 300

PERFORMANCE CURVE



ERV 400 / ERV-V 400

PERFORMANCE CURVE

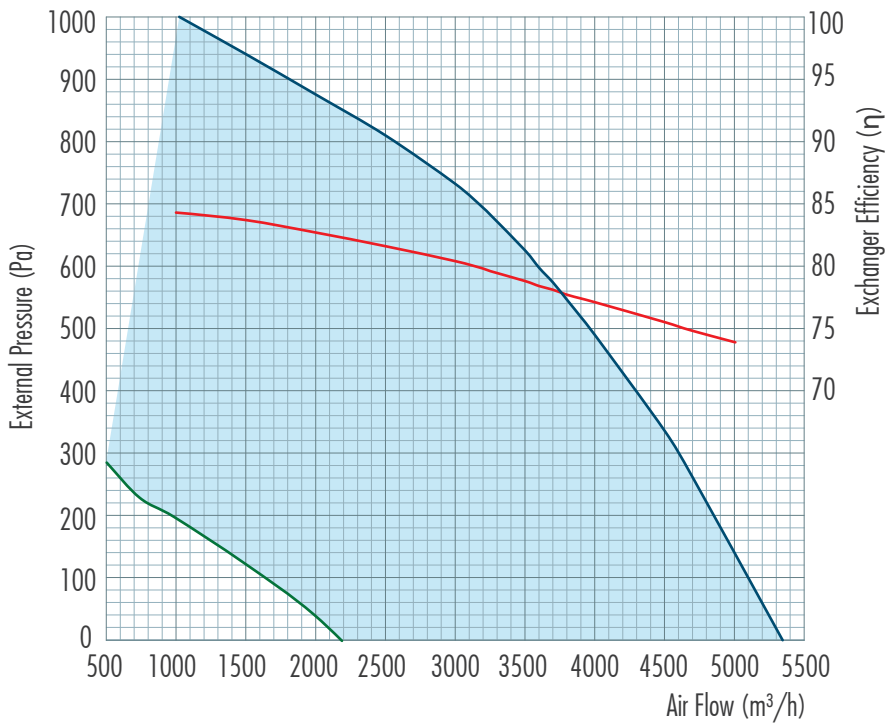


Note: Efficiency values are calculated according to EN 308 standard.

Performance Data

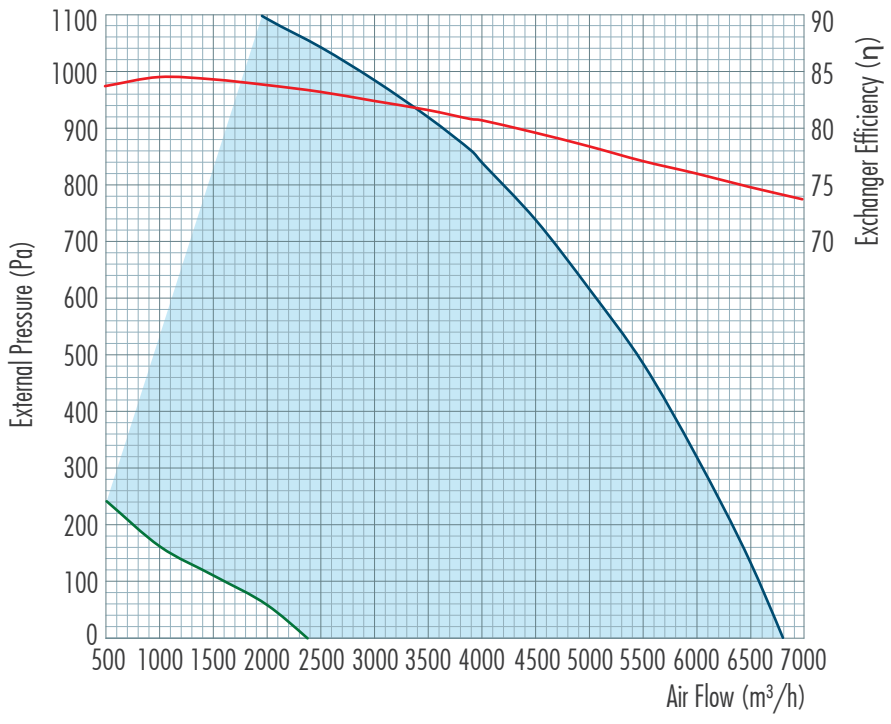
ERV 500 / ERV-V 500

PERFORMANCE CURVE



ERV 700 / ERV-V 700

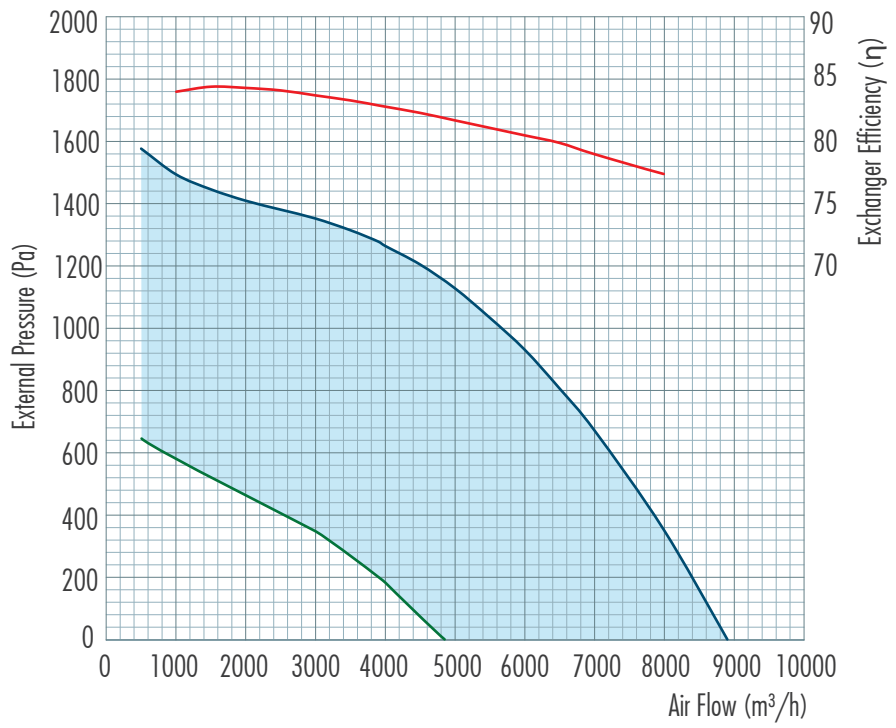
PERFORMANCE CURVE



Note: Efficiency values are calculated according to EN 308 standard.

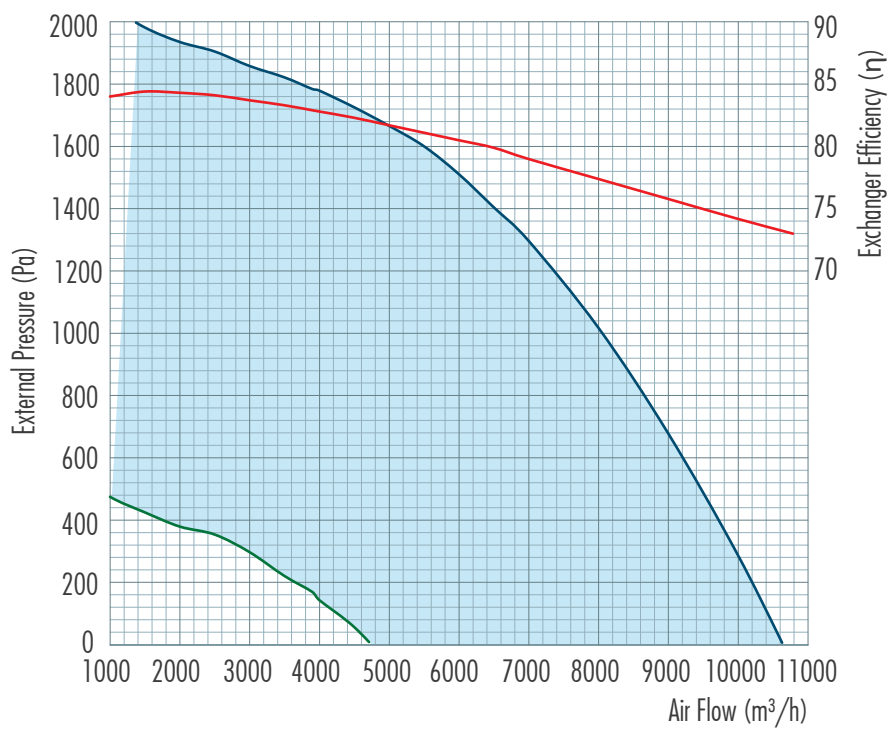
ERV 900 / ERV-V 900

PERFORMANCE CURVE



ERV 1100 / ERV-V 1100

PERFORMANCE CURVE



Note: Efficiency values are calculated according to EN 308 standard.

Technical Specifications

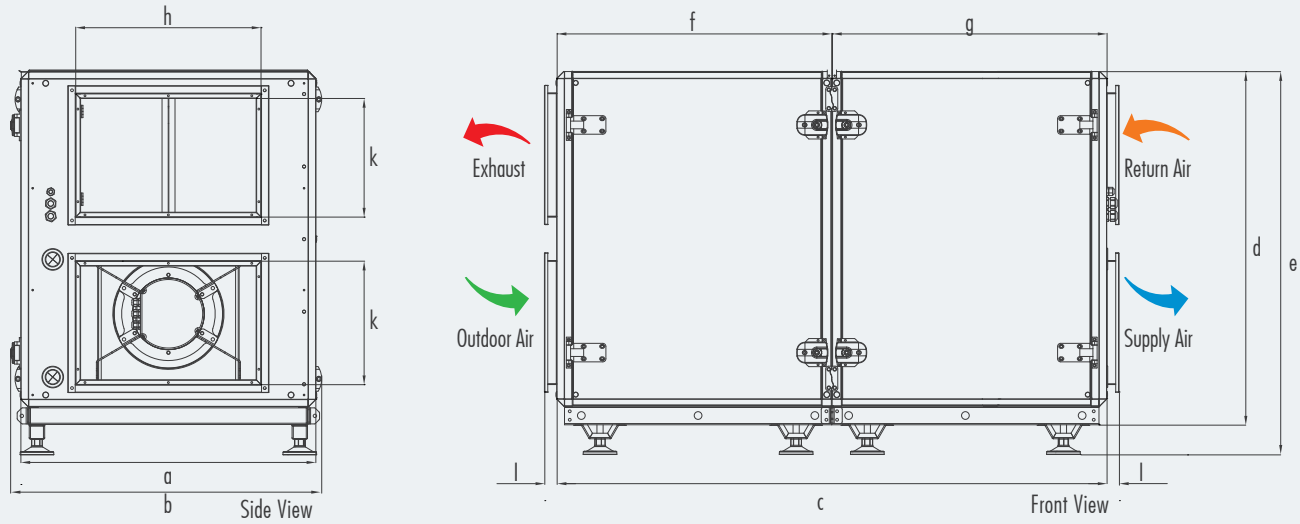
		ERV 100 ERV-V 100	ERV 200 ERV-V 200	ERV 300 ERV-V 300	ERV 400 ERV-V 400	ERV 500 ERV-V 500	ERV 700 ERV-V 700	ERV 900 ERV-V 900	ERV 1100 ERV-V 1100
Declared typology		NRVU							
Type of drive installed or intented to be installed		variable speed drive							
Type of HRS (run around, other, none)		regenerative							
Thermal efficiency of heat recovery [1]	%	81.1	78.6	78.4	79.7	78.8	80.6	81.1	80.8
Nominal flow rate	m^3/h	600	1300	1800	2500	3500	4000	5500	5800
Maximum flow rate	m^3/h	1100	1700	2450	4050	5350	6800	8900	10600
Effective electric power input	W	376	706	934	1204	1692	2170	2554	2970
SFP_{int} [1]	$W(m^3/s)$	1199.3	1179.3	1136.9	1023.2	1061.8	1130.7	935.3	1052.3
Face velocity at design flow rate	m/s	1.3	1.3	1.6	1.8	1.9	2	1.7	1.7
Nominal external pressure ($\Delta P_{s,ext}$) [1]	Pa	200	200	200	200	200	200	200	200
Internal pressure drop of ventilation components ($\Delta P_{s,int}$)	Pa	227	304	311	288	313	275	254	266
Internal pressure drop of non-ventilation components ($\Delta P_{s,add}$)	Pa	There is no "non-ventilation" components							
Static efficiency of fans used in accordance with Regulation (EU) No. 327/2001		38	52	55	56	59	49	54	51
Declared maximum external leakage rate	%	Less than %3	3	2.9	0.9	Less than %3			
Declared maximum internal leakage rate	%	NA							
Energy classification of the filters (Energy performance)	Kwh	826	826	1331	1667	1835	2003	1499	1499
Description of visual filter warning for NRVUs intented for use with filters [2]		www.eneko.com.tr							
Sound power level (L_{WA})		57	52	46	49	61	61	63	65
Internet adress for pre-/dis-assembly instructions		www.eneko.com.tr							

[1] Measured at balanced flow, EN 308.

[2] Including test pointing out the importance of regular filter changes for performance and energy efficiency of the unit.
Note: F7 class filter at supply side, M5 class filter at exhaust side are used according to EN 779.

ERV Unit Dimensions

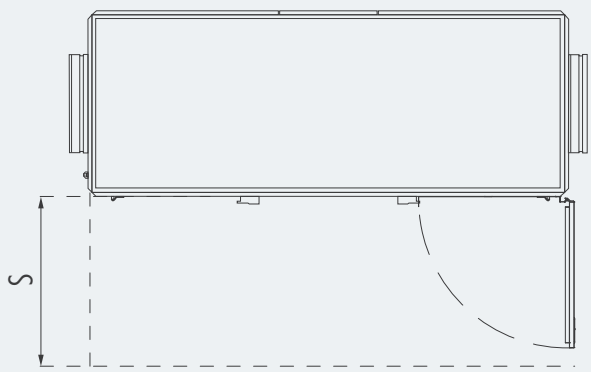
AUTODESK REVIT



	ERV 100	ERV 200	ERV 300	ERV 400	ERV 500	ERV 700	ERV 900	ERV 1100
a	705	705	805	955	1055	1185	1405	1405
b	740	740	840	1010	1110	1240	1460	1460
c	1630	1630	1700	1780	1780	1780	2070	2070
d	1010	1010	1110	1145	1245	1245	1405	1405
e	1110	1110	1210	1245	1345	1345	1560	1560
f	-	-	-	890	890	890	1070	1070
g	-	-	-	890	890	890	1000	1000
hxk	350x300	350x300	450x300	600x400	700x400	800x400	1000x500	1000x500
l	40	40	40	40	40	40	40	40
weight(kg)	250	250	290	360	400	440	525	540

*All measurement values are mm.

ERV Unit Service Space



A clear space must be provided in front of the unit for service.

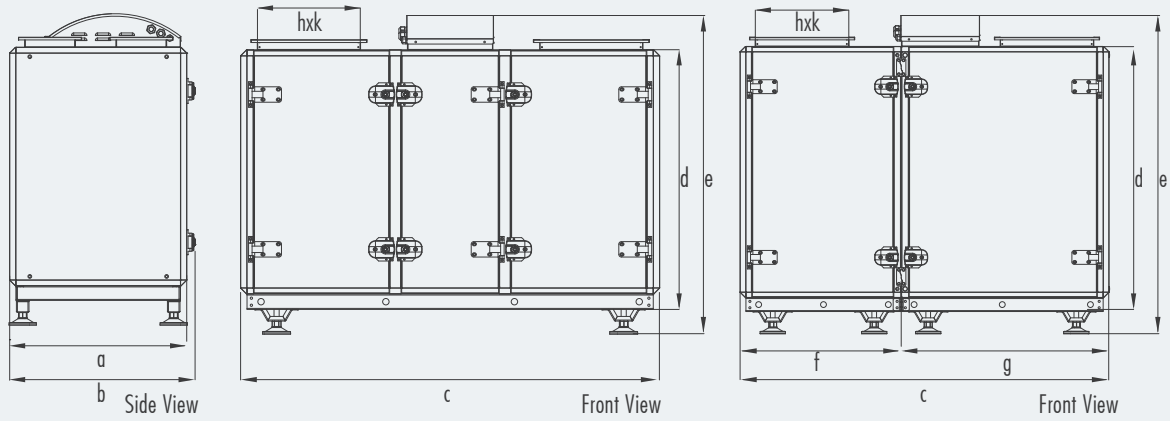
	ERV 100	ERV 200	ERV 300	ERV 400	ERV 500	ERV 700	ERV 900	ERV 1100
S	700	700	800	950	1050	1200	1300	1300

*All measurement values are mm.

Unit Dimensions

ERV-V Unit Dimensions

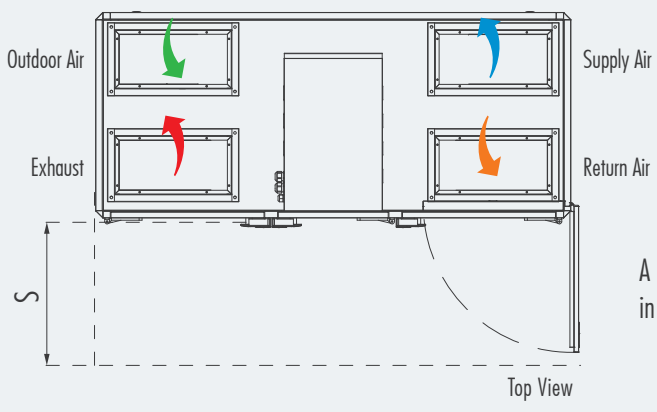
AUTODESK REVIT



	ERV-V 100	ERV-V 200	ERV-V 300	ERV-V 400	ERV-V 500	ERV-V 700	ERV-V 900	ERV-V 1100
a	705	705	805	955	1055	1185	1405	1405
b	740	740	840	1010	1110	1240	1460	1460
c	1630	1630	1630	1580	1580	1580	1930	1930
d	1010	1010	1110	1145	1245	1245	1405	1405
e	1245	1245	1345	1380	1480	1480	1680	1680
f	-	-	-	690	690	690	860	860
g	-	-	-	890	890	890	1070	1070
hxk	400x200	400x200	400x250	400x350	400x400	400x450	550x500	550x500
weight(kg)	250	250	280	340	370	410	485	500

*All measurement values are mm.

ERV-V Unit Service Space



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	ERV-V 100	ERV-V 200	ERV-V 300	ERV-V 400	ERV-V 500	ERV-V 700	ERV-V 900	ERV-V 1100
S	700	700	800	950	1050	1200	1300	1300

*All measurement values are mm.

Automation Options		Control Cards				
Standard	Optional	Standard - Pro	Alternative 1	Alternative 2		
				Type 1	Type 2	Type 3
OA Temperature Sensor		✓	✓	✓	✓	✓
RA Temperature Sensor		✓	✓	✓	✓	✓
SA Fan Control		✓	✓	✓	✓	✓
RA Fan Control		✓	✓	✓	✓	✓
On/Off Rotor Control		✓	✓	✓	✓	✓
Filter Contamination Info (DPS)		✓	✓	✓	✓	✓
SA Temperature Sensor		✓	✓	✓	✓	✓
Weekly Timer		✓	✓	✓	✓	✓
Modbus RTU		✓	✓	✓	✓	✓
	Proportional Rotor Control	✓	✓	✓	✓	✓
	On/Off Damper Control	✓	✓	✓	✓	✓
	Proportional Damper Control	✗	✓	✓	✓	✓
	Airflow Control	≡	✓	≡	✓	≡
	Humidity Control		✓		✓	
	CO2 Control		✓		✓	
	On/Off Heating Coil	✓	✓	✓	✓	✓
	Proportional Heating Coil	✗	✓	✓	✓	✓
	On/Off Cooling Coil	✓	✓	✓	✓	✓
	Proportional Cooling Coil	✗	✓	✓	✓	✓
	Electrical Pre-Heater	✓	✓	✓	✓	✓
	Electrical After-Heater	✓	✓	✓	✓	✓
	BacNET MSTP	✗	✓	✓	✓	✓
	Web Browser (TCP/IP)	✗	✓	✗	✓	✗

≡ Only one of them the defined functions is selectable for this control card.

Control Panel			Control Cards				
Panel Type		Panel Descriptions	Standard - Pro	Alternative 1	Alternative 2		
					Type 1	Type 2	Type 3
	Standard-Pro	Wall-mounted type, Max:50 m communication ability	✓	✗	✗	✗	✗
	Alternative-1	Wall-mounted type hand panel, IP 30 protection class, Max:100 m communication ability	✗	✓	✗	✗	✗
	Alternative-2.1	Wall-mounted type room panel, IP 30 protection class, Max:700 m communication ability	✗	✗	✗	✗	✓
	Alternative-2.2	**Hand Panel 1:** Wall-mounted type, IP 65 protection class for only front side of panel, Max:50 m communication ability **Hand Panel 2:** Magnet type, IP 65 protection class for whole panel, Max:50 m communication ability	✗	✗	✓	✓	✓
	Alternative-2.3	Magnet type, IP 31 protection class, Max:700 m communication ability	✗	✗	✓	✓	✓

Selection of Electrical Cable Cross-Section

Unit Model ERV / ERV-V	Unit Voltage (V)	Unit Power Input (kW)	Current (A)	Fuse (A)	Cable Cross-Section(mm^2) for 50M and PF=0.8
100	400	0.99	2	3 x 3	1.5
200	400	0.99	2	3 x 3	1.5
300	400	1.59	3	3 x 4	1.5
400	400	2.37	5	3 x 6	1.5
500	400	3.49	7	3 x 10	1.5
700	400	5.77	10.4	3 x 16	1.5
900	400	7	12.7	3 x 16	1.5
1100	400	10.8	19.5	3 x 25	2.5

Cable Cross-Section Formulas

1

$$I_{current} = \frac{P}{\sqrt{3}.U.CosQ}$$

$$I_{cable} > I_{current}$$

2

$$\%e = \frac{100.P.L}{k.S.U^2} \quad , \quad S = \frac{100.P.L}{k.\%e.U^2}$$

$$\%e = \%3$$

3

$$I_{cable} > I_{fuse} \geq I_{current}$$

Cable Cross-Section S = Max (S1, S2, S3, 1.5mm^2)

P : Power
I : Current
U : Voltage
S : Conductor cross section
k : Conductor coefficient
L : Conductor length
%e : The voltage drop

Example of Cable Cross-Section Calculation

P : 10,8kW **L** : 50m
U : 400V **%e** : %3
PF: CosQ : 0,8 **k** : 56m / Ω

1

$$I_{current} = \frac{10800\ W}{\sqrt{3}.400.0,8} = 19.5\ A$$

The cable will be used, is selected from the cable cross-section table so that the equivalent ampere value in the table should be higher than calculated "$I_{current}$" value.

$S1 = 1.5\ mm^2$

2

$\%e = \%3$

$$S = \frac{100.10800.50}{56.3.400^2}$$

$S2 \geq 2\ mm^2$

$S2 = 2\ mm^2$

3

$I_{cable} > I_{fuse} \geq I_{current}$

$I_{cable} > 25A \geq 19.5A$

"I_{fuse}"which will be higher than "$I_{current}$", is selected.

The cable will be used, is selected from the cable cross-section table so that the equivalent ampere value in the table should be higher than selected "I_{fuse}" value.

$I_{cable} = 32A$

$S3 = 2.5\ mm^2$

Cable cross-section S = Max (S1, S2, S3, 1.5 mm^2)

S = Max (1.5, 2, 2.5, 1.5)

$S = 2.5\ mm^2$

Duct Type Electric Heaters

Electric heaters are optionally supplied in cold climates for supply air and in extreme climates for both supply and outdoor air sides against freezing. Electric heaters are manufactured according to circular or rectangular duct systems.
Standard types are produced of stainless steel heating elements and galvanized metal casing. Stainless steel casing is also avaliable. Electric heaters are equipped with two circuit cutting thermostats. Factory setting for the automatically operating one is 70 °C and for the manual operating 110 °C.
Electric heaters capacity can be controlled up to 2 or 3 steps with ENECON control according to the set temperature from the room control panel and room (or supply air) temperature. Speed controls shall not be used with Electric heater installations. Eneko electric heaters are connected in Delta connection in standard models. The electrical heaters, designed as maximum 2 steps, step automatically according to temperature that is set on room control panel with control panel.

Heating Capacity Calculation

$Q = 0{,}33 \times V \times (T_2 - T_1)$

Q : Heating Capacity (W)
V : Air Flow through electric heater (m^3/h)
T_1 : Air temperature before the heater (°C)
T_2 : Air temperature after the heater (°C)

Electrical Heater Capacity				
Unit Model		Capacity (pre-heater) (kW) (Outdoor air between 0°C and -5°C)*	Capacity (pre-heater) (kW) (Outdoor air between -5°C and -15°C)*	Capacity (after-heater) (kW) (Heating the supply air to 25°C)**
ERV / ERV-V	100	2.5	6.5	3.5
	200	5	12	5-6
	300	5	12	5-8
	400	6	20	6-12
	500	8	25	8-15
	700	12	34	12-20
	900	14	41	26.5
	1100	17	50	32

* All pre-heaters are duct type.
** After heater is located inside the unit for ERV units. ERV-V units have after-heater as duct type.

Duct Type Heating Coil

Duct type heating/cooling coils are assembled in cabin as suitable to mount inside duct and have standard capacity. Coils consist of copper tubes and aluminum fins. Inlets and outlets of cabin are suitable for circular duct connections as in heat recovery ventilation units. Additionally, cooling coils have drain pan and extra insulation to prevent condensation of cabin. Both heating and cooling coils can be controlled separately as on/off or proportionately via automation system. Heating coil is mounted inside in ERV units and outside as duct type in ERV-V units.
All values are calculated according to EN 308 standard.

		90°C/70°C Water				80°C/60°C Water			
Unit Model ERV / ERV-V	Air flow (m^3/h)	Air side pressure drop (Pa)	Capacity (kW)	Fluid side pressure drop (kPa)	Supply air temperature (°C)	Air side pressure drop (Pa)	Capacity (kW)	Fluid side pressure drop (kPa)	Supply air temperature (°C)
100	600	5	3.4	0.4	38.1	5	2.6	0.2	34
	1050	12	4.7	0.6	33.4	12	3.7	0.4	30.4
200	1000	6	4.3	0.3	33.7	6	2.5	0.1	28.4
	1300	9	5	0.4	32.4	9	2.7	0.1	27.2
300	1800	11	10.8	4.4	38.8	11	8.6	2.9	35.3
	2200	16	12.2	5.5	36.5	16	9.8	3.7	33.3
400	2500	9	15.7	5	39.7	9	12.5	3.2	35.9
	3400	15	19	7.1	36.5	15	15.1	4.6	33.2
500	3500	11	21.8	13.1	39.6	11	17.6	8.8	36
	4750	19	26.1	10.6	36.3	19	21.2	12.5	33.3
700	4000	8	26.8	5.6	40.9	8	21.5	9.3	37
	6200	17	34.5	9.1	36.5	17	27.9	6.1	33.4
900	5500	9	33.3	5.5	38	9	26.2	3.4	34.1
	8300	19	41.3	8.4	34.8	19	32.5	5.2	31.6
1100	5800	10	33.5	5.5	38.2	10	26.2	3.4	34.5
	10000	27	45.4	4.6	33.5	27	35.8	6.3	30.6

		70°C/50°C Water				60°C/40°C Water			
Unit Model ERV / ERV-V	Air flow (m^3/h)	Air side pressure drop (Pa)	Capacity (kW)	Fluid side pressure drop (kPa)	Supply air temperature (°C)	Air side pressure drop (Pa)	Capacity (kW)	Fluid side pressure drop (kPa)	Supply air temperature (°C)
100	600	9	2.8	0.2	34.8	8	1.8	0.1	30.1
	1050	22	4.6	0.4	32.9	22	2.3	0.1	26.6
200	1000	11	5.2	0.5	36.6	11	2.8	0.1	29.3
	1300	17	6.2	0.7	35.3	17	3	0.2	27.9
300	1800	11	6.5	1.7	31.7	11	4.2	0.8	27.9
	2200	16	7.4	2.2	30	16	4.9	1	26.6
400	2500	9	9.2	1.8	32	9	5.5	0.7	27.5
	3400	15	11.2	2.6	29.8	15	7	1.1	26.1
500	3500	11	13.4	5.2	32.4	11	9.1	2.5	28.7
	4750	19	16.2	7.5	30.1	19	11.1	3.7	27
700	4000	8	16.2	5.4	33.1	8	10.7	2.4	28.9
	6200	17	21.1	9	30.1	17	14.2	4.2	26.8
900	5500	9	18.7	6.1	30.1	9	6.7	0.8	23.6
	8300	19	23.4	9.5	28.4	19	11.9	2.5	24.3
1100	5800	10	18.5	6	30.5	10	6.5	0.8	24.3
	10000	27	25.8	3.3	27.6	27	13.9	3.4	24.1

Note: Calculated values are derived from different coils which can be fitted into same coilbox for each model in order to reach desired conditions.

Duct Type Cooling Coil

Unit Model ERV / ERV-V	Air flow (m^3/h)	7°C/12°C Water				6°C/10°C Water			
		Air side pressure drop (Pa)	Capacity (kW)	Fluid side pressure drop (kPa)	Supply air temperature (ºC)	Air side pressure drop (Pa)	Capacity (kW)	Fluid side pressure drop (kPa)	Supply air temperature (ºC)
100	600	15	1.9	4.2	16.6	15	2.5	3.3	14.2
	1050	36	3.3	3.5	17.5	36	4	8	15.9
200	1000	19	3.4	3.5	15.8	20	4.3	8.5	14.1
	1300	28	4.1	5.2	16.3	29	5.1	11.8	14.8
300	1800	29	6	10.2	16	30	7.3	9.2	14.7
	2200	42	7.4	6.3	16.8	43	8.9	13.7	15.7
400	2500	23	9.3	8.7	15	24	11.2	11.3	13.9
	3400	38	11.4	12.9	15.9	39	13.5	16.1	14.8
500	3500	28	12.8	8.9	15.3	29	15.3	12	14.2
	4750	49	16.9	15.1	16.6	50	19.9	19.6	15.6
700	4000	21	14.7	7.9	15.1	22	17.8	7.8	13.8
	6200	43	21.4	7.3	16.7	45	25.5	11.4	15.6
900	5500	24	11.4	9.5	19.7	24	18.3	5	15.9
	8300	56	29	10.4	15.7	58	34.6	14.9	14.6
1100	5800	26	11.6	9.9	19.9	26	19.2	5.4	16
	10000	80	35.7	10.3	16.7	83	42.6	14.4	15.7

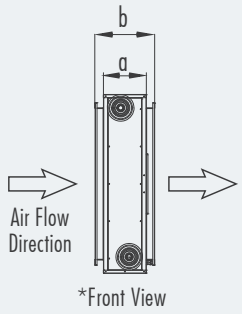
Duct Type DX Coil

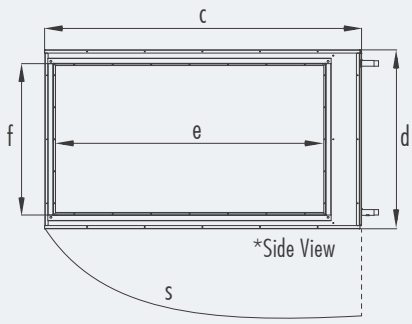
Unit Model ERV / ERV-V	Air flow (m^3/h)	R407C,5°C / 54°C				R410A,5°C / 54°C			
		Air side pressure drop (Pa)	Capacity (kW)	Fluid side pressure drop (kPa)	Supply air temperature (°C)	Air side pressure drop (Pa)	Capacity (kW)	Fluid side pressure drop (kPa)	Supply air temperature (°C)
100	600	15	2.9	1.2	13.8	14	2.7	1.2	14.5
	1050	34	4.1	2.6	16	33	3.8	2.4	16.4
200	1000	19	4.5	2.6	14.1	18	4	1.3	14.6
	1300	27	5	3.3	15.5	26	4.7	1.9	15.4
300	1800	28	7.1	6	15	28	7	3.6	15.9
	2200	41	8.5	8.4	16.2	40	7.8	4.6	16.6
400	2500	23	10.8	12.3	14.3	22	9.7	6.4	14.7
	3400	37	12.7	17.1	15.3	36	11.7	9.2	15.7
500	3500	28	14.4	21.2	14.7	27	14	12.7	15.6
	4750	47	18.1	33.4	16.3	46	16.7	18.1	16.7
700	4000	21	17.7	28.5	14.1	20	17	16.7	15.1
	6200	42	24	52	16.1	41	22.1	27.9	16.6
900	5500	23	22.1	42.4	15	26	25.6	36.7	14.6
	8300	55	33.4	98.3	14.9	55	32.7	59.9	16
1100	5800	25	22.5	44.1	15.1	28	26.4	39.1	14.8
	10000	78	39.7	138.9	16.2	76	36.5	74.3	16.6

Note: Calculated values are derived from different coils which can be fitted into same coilbox for each model in order to reach desired conditions.

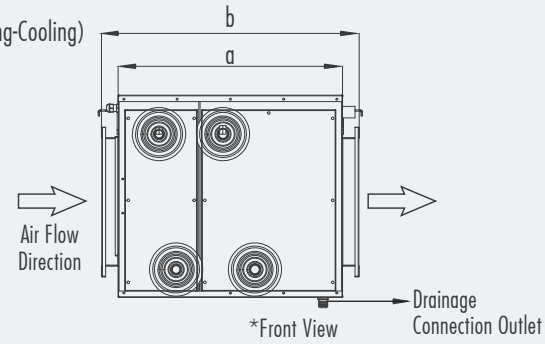
Duct Type Coil

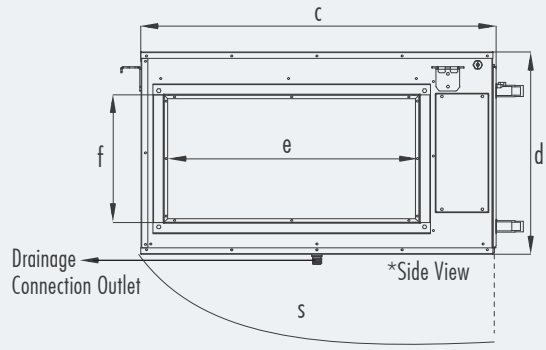
HC (Heating)





HCC (Heating-Cooling)





"S" value indicate the size of the service area. All connections are threaded connection.

Unit Model	Duct Type Water Coil Box Model	a	b	c	d	e	f	s	Weight(kg)
ERV/ERV-V 100	ECB-H-L	201	280	734	386	525	300	734	13
	ECB-CH-L	527	605	806	411	525	300	806	41
	ECB-H-R	201	280	734	386	525	300	734	13
	ECB-CH-R	527	605	806	411	525	300	806	41
	ECB-C-L	527	605	806	411	525	300	806	35
	ECB-C-L	527	605	806	411	525	300	806	38
	ECB-C-R	527	605	806	411	525	300	806	35
	ECB-C-R	527	605	806	411	525	300	806	38
ERV/ERV-V 200	ECB-CH-R	527	605	830	475	600	300	830	48
	ECB-H-R	201	280	809	450	600	300	809	16
	ECB-CH-L	527	605	830	475	600	300	830	48
	ECB-H-L	201	280	809	450	600	300	809	16
	ECB-C-L	527	605	830	475	600	300	830	41
	ECB-C-L	527	605	830	475	600	300	830	43
	ECB-C-R	527	605	830	475	600	300	830	41
	ECB-C-R	527	605	830	475	600	300	830	43
ERV/ERV-V 300	ECB-H-L	201	280	884	525	700	400	884	17
	ECB-H-R	201	280	884	525	700	400	884	17
	ECB-CH-L	527	605	909	550	700	400	909	55
	ECB-CH-R	527	605	909	550	700	400	909	55
	ECB-C-L	527	605	909	550	700	400	909	47
	ECB-C-L	527	605	909	550	700	400	909	50
	ECB-C-R	527	605	909	550	700	400	909	47
	ECB-C-R	527	605	909	550	700	400	909	50
ERV/ERV-V 400	ECB-H-L	201	280	1034	650	850	500	1034	21
	ECB-H-R	201	280	1034	650	850	500	1034	21
	ECB-CH-L	527	605	1059	675	850	500	1059	72
	ECB-CH-R	527	605	1059	675	850	500	1059	72

* All measurement values are mm.

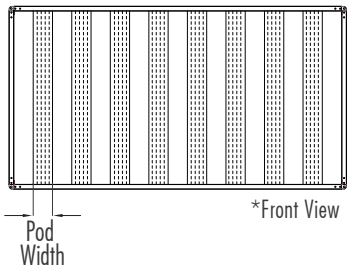
Duct Type Coil

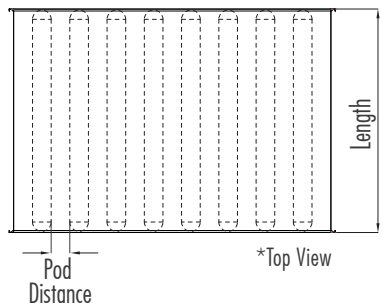
Unit Model	Duct Type Water Coil Box Model	a	b	c	d	e	f	s	Weight(kg)
ERV/ERV-V 400	ECB-C-L	527	605	1059	675	850	500	1059	61
	ECB-C-L	527	605	1059	675	850	500	1059	65
	ECB-C-R	527	605	1059	675	850	500	1059	61
	ECB-C-R	527	605	1059	675	850	500	1059	65
ERV/ERV-V 500	ECB-H-L	201	280	1109	700	925	600	1109	23
	ECB-H-R	201	280	1109	700	925	600	1109	23
	ECB-CH-L	527	605	1134	725	925	600	1134	80
	ECB-CH-R	527	605	1134	725	925	600	1134	80
	ECB-C-L	527	605	1134	725	925	600	1134	67
	ECB-C-L	527	605	1134	725	925	600	1134	72
	ECB-C-R	527	605	1134	725	925	600	1134	67
	ECB-C-R	527	605	1134	725	925	600	1134	72
ERV/ERV-V 700	ECB-H-L	201	280	1334	775	1125	650	1334	28
	ECB-H-R	201	280	1334	775	1125	650	1334	28
	ECB-CH-L	527	605	1359	800	1125	650	1359	98
	ECB-CH-R	527	605	1359	800	1125	650	1359	98
	ECB-C-L	527	605	1359	800	1125	650	1359	84
	ECB-C-L	527	605	1359	800	1125	650	1359	88
	ECB-C-R	527	605	1359	800	1125	650	1359	84
	ECB-C-R	527	605	1359	800	1125	650	1359	88
ERV/ERV-V 900/1100	ECB-CH-R	562	640	1509	863	1275	710	1509	115
	ECB-CH-L	562	640	1509	863	1275	710	1509	115
	ECB-H-R	201	280	1484	838	1275	710	1484	37
	ECB-H-L	201	280	1484	838	1275	710	1484	37
	ECB-C-L	562	640	1509	863	1275	710	1509	98
	ECB-C-L	562	640	1509	863	1275	710	1509	105
	ECB-C-R	562	640	1509	863	1275	710	1509	98
	ECB-C-R	562	640	1509	863	1275	710	1509	105

* All measurement values are mm.

ECB-H : Coilbox with only heating coil.
ECB-C : Coilbox with only cooling coil or dx coil.
ECB-CH : Coilbox with both heating and cooling or dx coil.
L : Service direction left.
R : Service direction right.

Duct Type Sound Attenuator





Characteristics (Pod width 100 mm)

Length (mm)	Hz								Pressure drop coefficient,ß
	63	125	250	500	1k	2k	4k	8k	
600	2	5	10	14	20	15	9	7	1,6
1000	3	8	18	27	37	29	19	14	1,9
1500	5	12	26	40	50	44	27	18	2,4

*Pod distance 100 mm

Pressure drop of the sound attenuator is calculated with ß, Pressure drop coefficient
$\Delta P = ß \times V^2$.
V face velocity (m/s), is calculated by dividing Air Flow (m^3/s) to the areaof the connected duct spigot.(m^2)

$$\text{Face Velocity, V(m/s)} = \frac{\text{Air Flow } (m^3/s)}{\text{Spigot Area } (m^2)}$$

Duct Type Sound Attenuator

	Casing Dimensions			
Unit Model	a	b	l	Type
ERV 100- 200	350	300	600	SL-350x300x600x100x75
	350	300	1000	SL-350x300x1000x100x75
	350	300	1500	SL-350x300x1500x100x75
ERV 300	450	300	600	SL-450x300x600x100x100
	450	300	1000	SL-450x300x1000x100x100
	450	300	1500	SL-450x300x1500x100x100
ERV 400	600	400	600	SL-600x400x600x100x100
	600	400	1000	SL-600x400x1000x100x100
	600	400	1500	SL-600x400x1500x100x100
ERV 500	700	400	600	SL-700x400x600x100x75
	700	400	1000	SL-700x400x1000x100x75
	700	400	1500	SL-700x400x1500x100x75
ERV 700	800	400	600	SL-800x400x600x100x100
	800	400	1000	SL-800x400x1000x100x100
	800	400	1500	SL-800x400x1500x100x100
ERV 900-1100	1000	500	600	SL-1000x500x600x100x100
	1000	500	1000	SL-1000x500x1000x100x100
	1000	500	1500	SL-1000x500x1500x100x100
ERV-V 100-200	400	200	600	SL-400x200x600x100x100
	400	200	1000	SL-400x200x1000x100x100
	400	200	1500	SL-400x200x1500x100x100
ERV-V 300	400	250	600	SL-400x250x600x100x100
	400	250	1000	SL-400x250x1000x100x100
	400	250	1500	SL-400x250x1500x100x100
ERV-V 400	400	350	600	SL-400x350x600x100x100
	400	350	1000	SL-400x350x1000x100x100
	400	350	1500	SL-400x350x1500x100x100
ERV-V 500	400	400	600	SL-400x400x600x100x100
	400	400	1000	SL-400x400x1000x100x100
	400	400	1500	SL-400x400x1500x100x100
ERV-V 700	400	450	600	SL-400x450x600x100x100
	400	450	1000	SL-400x450x1000x100x100
	400	450	1500	SL-400x450x1500x100x100
ERV-V 900-1100	550	500	600	SL-550x500x600x100x82
	550	500	1000	SL-550x500x1000x100x82
	550	500	1500	SL-550x500x1500x100x82

General Terms and Conditions of Sale

GENERAL

The sale of all Products of ENEKO shall exclusively be made on the basis of these General Terms and Conditions of Sales. Any other conditions and General Conditions of Purchase of the Buyer are not accepted.

OFFERS

Our offers are non-binding and without obligation. Contracts for delivery and all other agreements (including subsidiary agreements) as well as declarations of our representatives shall only become legally binding for us after written confirmation. We do not render planning service. Proposals made and information provided by our representatives shall be non-binding. Illustrations, drawings, dimensions and weights or other performance data shall only be binding if this is expressly agreed in writing.

TERMS OF ORDER

Purchase orders shall be sent to ENEKO in written form and shall be non-binding unless they are accepted by written confirmation (order confirmation) from ENEKO. Each order shall include properly identified Products ordered and relevant shipping dates.

PRICE OF THE GOODS

Prices are net Ex Works according to current Incoterms unless stated otherwise and do not include any kind of taxes.Prices are valid at the date of delivery will be applied.We reserve the right to adjust prices for confirmed orders as well to reflect any increase in our costs for any reason beyond our control like force majeure, shortage of primary material or labor strikes, official orders, transportation or similar problems.In this case, a new price agreement shall be required for higher rates. If such an agreement is not made, we shall be entitled to withdraw from the contract by written notice within 15 days.

TERMS OF PAYMENT

Payments shall be carried out according to the contractual terms as defined and set forth in the order confirmation. If the payment conditions have not been agreed upon conclusion of the contract, the payment terms and payment dates specified in our invoices shall be binding. Deadlines for discounts and periods allowed for payment shall begin to run upon receipt of the invoice. Payments by draft, bills of Exchange or anyway extended payments shall mean neither credit novation, nor prejudice to the Retention of Title agreement, nor to territorial competence.If buyer fails to make payment by due date, we are entitled to charge the buyer with a relevant interest on the unpaid amount.

TERMS OF DELIVERY

Delivery time information is only approximate. We shall only be in default if the performance is due and a written demand for payment was issued. Delivery day is the day of dispatch Ex Works.We shall also not be liable with regard to bindingly agreed periods and dates in the event of delays an delivery and of performance due to force majeure and events which considerably complicate or make delivery impossible not only temporarily-strike lockout, breakdown, delay in supply with important raw and auxiliary materials even if the delay occurs at our supplier, in particular. These delays entitle us to postpone delivery for the period of the impediment plus a reasonable start-up period or to withdraw from the contract as a whole or in part.If delivery time is extended or we are released from our delivery commitment, the buyer may not derive a claim for damages from it. However, we may only rely on the circumstances mentioned if we notify the buyer immediately.We shall be entitled to make part deliveries. Any part delivery shall be considered as independent transaction.In case of default, our liability is limited to contract-typical foreseeable damage.

SHIPMENT

Shipment is made for the buyer's account.Mode of shipment and shipping route, transport and packaging and other securities respectively shall be at our choice. We shall be entitled, however, not obliged to insure deliveries in the name and for account of the buyer.Risk passes to the buyer when shipment is handed over to the person performing the transport or left our Works for shipment. If shipment is delayed upon buyer's request, risk passes to the buyer with the ready for shipment note.If ordered goods are rejected after the ready for shipment note, we shall be entitled to request payment and store the goods at buyer's expense.Discharge of the goods is made at buyer's expense.

RETENTION OF TITLE

In any event ENEKO shall retain full ownership of all materials supplied whilst the payment conditions of the entire amount have not been complied with, said materials may be removed from the customer at our request. Should the customer be declared bankrupt or insolvent and has not made paid the entire amount of payments. ENEKO shall be entitled to recover the goods. ENEKO may interrupt the supply without incurring any liability whatsoever if he had notice of or became aware of a decrease in the creditworthiness of the purchaser or if any of the existing negotiable instruments or debts were not properly complied with, shall result as being unpaid and protested.

WARRANTY

ENEKO Products are under warranty (defect in material or workmanship)for 2 years from the date of sale reflected on the invoice. Under this warranty, ENEKO is under the obligation to replace the part requested under warranty.

The followings are excluded from ENEKO warranty:

- Normal wear and tear
- Defective assembly or handling
- Third party compensation

Parts the subject of a claim shall be sent to our warehouse as carriage paid with relevant report completely filled in, wherein the parts shall be subjected to analysis.

LIABILITY

ENEKO, for any losses/damages, shall only be responsible within the limits of the law.Owing to basic obligations undertaken by simple negligence, if the contract is violated, ENEKO's liability shall be limited to compensate for losses which are emerged specific and predictable. ENEKO shall not carry any responsibility in case of a single negligence in breach of non-essential contractual obligations.

PROPERTY RIGHTS

The purchaser in no event and under no circumstances whatsoever shall publish or use the trademark, trade name or logo of ENEKO without a prior written permission.

GOVERNING LAW AND JURISDICTION

This agreement shall be governed with all aspects of the Turkish Law.The courts of Izmir/Turkey shall have an exclusive jurisdiction to adjudicate any dispute arising under or in connection with this agreement.

Notes

Notes

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