



Digireg®



EC-motor



ErP conform



Tight motor

Max. recuperation
efficiencyRotating
wheel heat
exchangerVAV-CAV-COP
control types

Technical Parameters

Cabinet

Patented ISOSTREAM® Cabinet is built out of aluminum profiles to which individual panels are attached by screws. The panels are made out of galvanized sheet metal with wall thickness of 45mm and finished with external grey-white paint, type RAL9002. Optional anti-corrosion surface protection is available upon request. The panels are lined with non-flammable mineral wool core and sandwiched from both sides. All panels are removable and selected panels are equipped with hinges and locks to provide for easy service access. In location where condensation will occur cabinets are fitted with condensate drains outlets.

Fans

Centrifugal backward-curve blades fans with impeller made out of composite materials. Each fan comes statically and dynamically balanced.

Motors

Direct drive EC motors. Each motor can be continuously controlled by external 0...10V signal, comes with built-in thermal protection. Motor efficiency class is rated IE4, electric motor insulation protection is IP54.

RW Heat Exchanger

Rotating Wheel heat exchanger can transfer heat or heat and humidity simultaneously. It is designed for ambient temperatures running between -20°C to +55°C. Wheel is coiled from layers of aluminum foil with standard layer span of 1,6mm. Wheel's casing is supported by galvanized profiles. Brush seal provides a tight seal between rotor and its casing. Where needed labyrinth seal with air leakage rate less than 1.5% can be used. The rotating wheel is driven by electric motor, worm transmission with pulley and belt. Power supply requirement: 1× 230V / 50Hz or 3× 230V / 50Hz. 0 to 10V continuous speed controller comes as an option.

Filters

Unit's outside air and return air inlets come fitted with either two sets of 48mm compact filter brackets or one set of 96mm filter brackets. Filter classification G4 to F9 is available. Filter access is provided through a set of service doors.

Dampers

Aluminum control dampers are integrated with outside air and exhaust air inlets. Dampers are installed with Belimo actuators and comply with class 2 leakage rate, EN1751. Optional class 3 leakage rate is available upon request.

Heating and Cooling

Based on project requirements each unit can be fitted with hot water coil or electric heat strip to provide heating. Chilled water coil or DX coil for cooling. Heat pump can provide primary source of heating and cooling with water coil or electric heat strip serving as a secondary source. All coils are built from copper tubes and aluminum sheets locked inside a galvanized frame. Where better protection is needed optional anti-corrosion coating is available. Electric heat strip comes equipped with a safety thermostat activating at temperature 60°C and emergency thermostat with manual reset and activating at temperature 120°C.

Power Supply

3× 400V / 50 Hz. Control wires and power cables are installed running through plastic penetration inlets pre-drilled in panels and rubber penetration gromets with membrane running on the inside of unit

Controls

In standard configuration Digireg® control system enclosure comes mounted to the unit's mid panel with all internal wiring completed and with control board preprogrammed based on unit's configuration. Any other mounting location can be done per request. QC running test is performed before each unit leaves the manufacturing plant.

Installation

Installed in vertical position sitting on a floor or vertical position sitting on building's roof. Unit's inlet and outlet openings must be placed in consideration when installing the unit. Service access must be sufficient in order to open service door and replace filters. Digireg must be accessible for any future service work. Adequate space below the unit must be maintained in order to connect to condensate drain outlets and install drain traps. Condensate drain needs to slope at

1degree towards the condensate discharge. Refrigeration lines are to be connected to prefabricated square neck mounted in panel. Flexible pipe connections and flexible duct connections are recommended in order to eliminate any vibrations coming from the unit.

Noise

Noise data as listed in acoustic tables represent acoustic output levels at individual inlets/ outlets, including tolerance for weight filter A. The table includes acoustic noise level incorporating casing of the unit and reads noise level when measured 1 m from the service side of the unit, in open field Q=2. The acoustic readings come within ±3 dB tolerance.

Unit Configuration

Unit's individual configuration and its accessories are identified by a specific code number which is part of model number. Any non-typical, custom unit configuration needs to be consulted prior to ordering unit.

Warranty Terms

DUOVENT® MODULAR RV equipment, incl. its DVAV, DCAV, DCOP and MVAV systems, must be commissioned by a factory authorized service technician. Failure to provide factory authorized commissioning will lead to termination of rights of the Buyer and will void the unit's warranty.

Ductwork Accessories

- SPIRO round pipe and fittings (K7.3)
- IAE flexible couplings (K7.1)
- IAA noise attenuators (K7.1)
- TSK dampers (K7.1)
- MSK, IJK adjustable throttle and mixing dampers (K7.1)
- Disc valves, diffusers, orifices, grilles (K7.2)
- Rain louveres (K7.1)
- ESU mixing valves (K7.1)
- SF-P drain traps (K7.1)

Electrical Accessory

- Digireg® digital control system for units equipped with heating and cooling, controller with touch-screen display (K9)
- JTR triac switch for electric heater control (K9)
- HIG, HYG hygrostats (K8.2)
- AIRSENS, EDF-CO₂, SQA sensors CO₂ (K8.2)
- RTR thermostats (K8.2)
- DTS PSA pressure sensors (K8.2)
- Servo-drives (K8.2)

Model Number Abbreviation List

D	U	O	V	E	N	T		M	O	D	U	L	A	R		R	V		e	v	o		1	0	1	0	0		T		D	C	A		D	C	C		M	X		K	L		F	7	/	M	5		D	V	A	V		A	V		L	A	K	-	C	4
																							1								2			3			4			5			6			7			8			9			10			11						

1 – unit size – 8500, 10100, 12000, 14500

2 – type of rotating wheel:

- T – temperature
- E – enthalpy
- S – sorption

3 – type of heating:

- DI – electric heater
- DI2 – electric heater with reduced power
- DCA – water, temperature gradient 80/60 °C
- DCB – water, temperature gradient 45/35 °C

4 – type of cooling:

- DCC – water, temperature gradient 6/12 °C
- DX – direct evaporation coil, R410A or R32 refrigerant, evaporation temperature 6 °C

(When using DX coil we must specify type of refrigerant, cooling capacity and amount of cooling circuits based on type of condensing unit being used)
Use of heat pump needs to be specified in the order.

DXr – direct evaporation cooling coil use for heating and cooling, R410A or R32 refrigerant

5 – MX – mixing air damper, without actuator (when unit is ordered with Digireg MAR system, the power actuator becomes part of delivery)

C – mixing air damper designed for 100% air recirculation (when unit is ordered with Digireg MAR system, the power actuator becomes part of delivery)

6 – KL – outside air and return air dampers, without actuators (when unit is ordered with Digireg MAR system, the power actuator becomes part of delivery)

7 – classification of air filters for outside air and return air inlets (G4–F9)

8 – type of unit control system:

- D – Digireg®

9 – type of airflow regulation:

- VAV – variable air volume
- CAV – constant air volume
- COP – constant operating pressure

10 – placement of unit's inlets and outlets – AV or AV2

11 – LAK-C4 – fully painted unit (corrosion protection C4)

MAG-C4 – internal and external parts made of MAGNELIS® ZM310 material

Class acc. to EN779	Class acc. to EN ISO 16890
G4	ISO Coarse 60%
M5	ISO ePM10 50%
F7	ISO ePM2,5 70%
F9	ISO ePM1 80%

Order examples

DUOVENT® MODULAR RV 14500 T DI DX MX KL G4+F7/F7 DVAV AV2

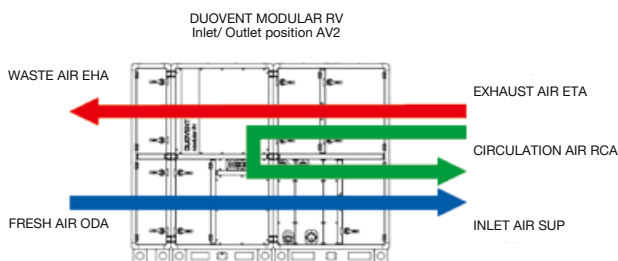
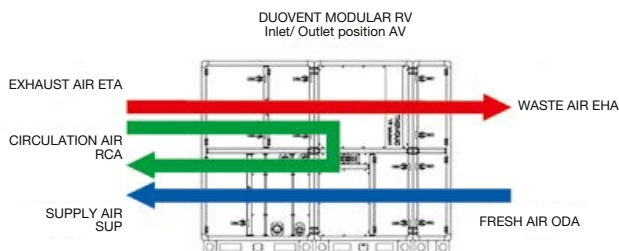
Unit size 14500, equipped with temperature based rotating wheel, electric heater, direct evaporation coil for cooling, mixing damper, two filter brackets on supply side G4+F7, single filter bracket on exhaust side F7, Digireg MAR system with VAV, AV2 inlet/ outlet configuration.

DUOVENT® MODULAR RV 8500 S DCA F7/M5 DVAV AV

Unit size 8500, equipped with sorption based rotating wheel, water heater 80 / 60 °C, supply filter rated F7, exhaust filter rated M5, Digireg MAR system with VAV, AV2 inlet/ outlet configuration.

Supplemental Illustrations

Options for air flow directions for DUOVENT® MODULAR RV units:



Type	nominal flow	voltage	fan inlet/ outlet		heater		cooler power*	efficiency*	max. unit air flow**	control system	weight *** without MX	weight *** with MX
	[m³/h]		[V/Hz]	max. input [W]	power [A]	current* [kW]						
8500	7800	3×400V 50Hz	3653/2521	5,3/3,6	–	–	–	75,7	9000	M3-Vx	832 to 917	860 to 951
8500 DCA					61,1	–	–					
8500 DCB					43,1	–	–					
8500 DCA DCC					61,1	–	62,2					
8500 DCA DX					61,1	–	66,2					
8500 DI2					15,0	22,0	–					
8500 DI					30,0	43,3	–					
10100	9300	3×400V 50Hz	4228/3152	6,1/4,6	–	–	–	76,2	11500	M3-Vx	965 to 1072	996 to 1109
10100 DCA					75,7	–	–					
10100 DCB					53,1	–	–					
10100 DCA DCC					75,7	–	77,3					
10100 DCA DX					75,7	–	80,9					
10100 DI2					22,5	33,0	–					
10100 DI					45,0	65,0	–					
12000	11500	3×400V 50Hz	5183/3780	7,5/5,5	–	–	–	75,9	13500	M3-Vx	1176 to 1302	1224 to 1357
12000 DCA					92,2	–	–					
12000 DCB					63,3	–	–					
12000 DCA DCC					92,2	–	95,2					
12000 DCA DX					92,2	–	96,9					
12000 DI2					22,5	33,0	–					
12000 DI					45,0	65,0	–					
14500	13600	3×400V 50Hz	6129/4531	8,9/6,6	–	–	–	75,1	16500	M3-Vx	1389 to 1544	1441 to 1604
14500 DCA					111,0	–	–					
14500 DCB					76,4	–	–					
14500 DCA DCC					111,0	–	115,0					
14500 DCA DX					111,0	–	115,0					
14500 DI2					30,0	43,3	–					
14500 DI					60,0	86,6	–					

* at nominal air flow, $t_a = 12^\circ\text{C}/90\%$ r.h., $t_e = 22^\circ\text{C}/50\%$ r.h., $t_s = 35^\circ\text{C}/35\%$ r.h. (SUMMER), temperature rotor

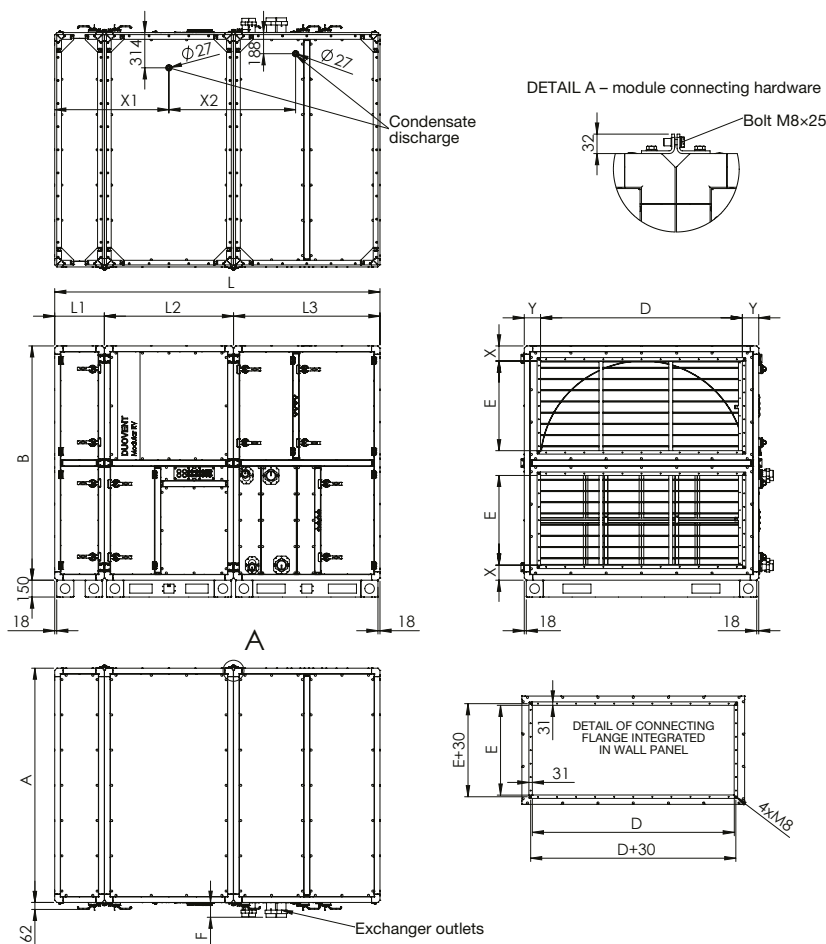
** for arrangement – inlet: filter F7+RV+DCB, outlet: filter M5+RV

*** in relation to the unit accessory (without I&C)

Water cooler power DCC for $t_a = 35^\circ\text{C}/35\%$ r.h., $t_e = 6/12^\circ\text{C}$. Water heater power DCA for $t_a = 10^\circ\text{C}$, $t_s = 80/60^\circ\text{C}$.Water heater power DCB for $t_a = 10^\circ\text{C}$, $t_s = 45/35^\circ\text{C}$. Direct evaporating unit power DX for R410A coolant, $t_a = 35^\circ\text{C} / 35\%$ r.h., $t_{\text{evp}} = 6^\circ\text{C}$.

Dimensions

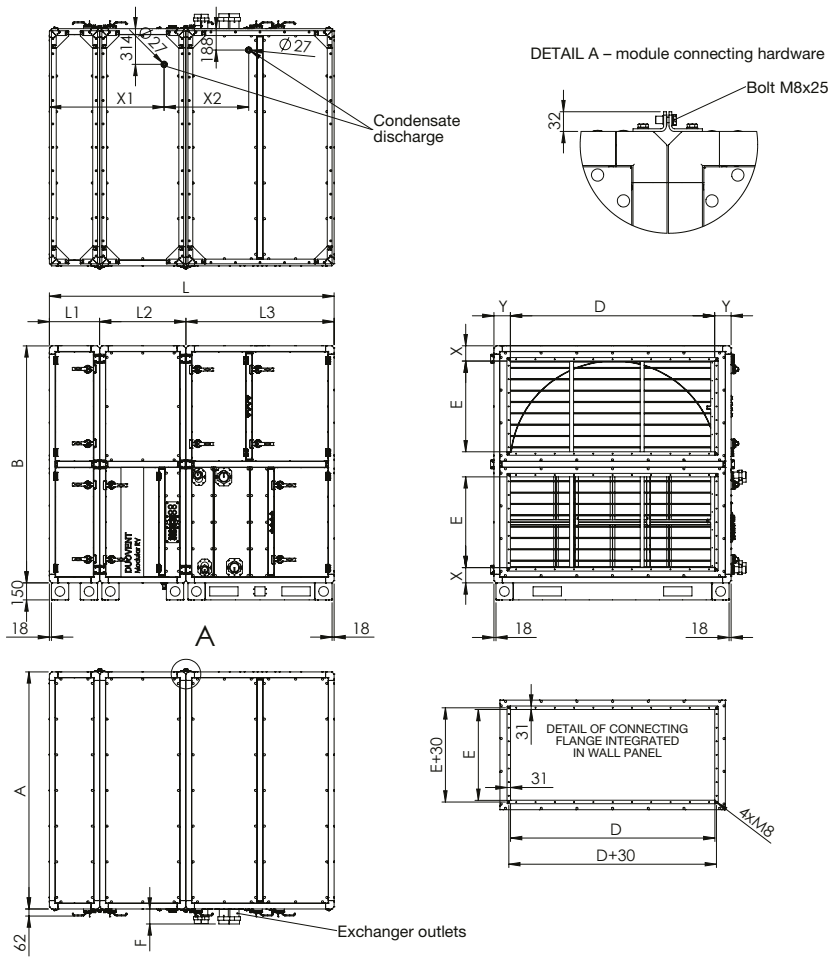
DUOVENT® MODULAR RV 8500 to 14500 – unit with mixing damper (MX or C in model number)



Type	A [mm]	B [mm]	D [mm]	E [mm]	F [mm]	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]	X [mm]	Y [mm]	X1 [mm]	X2 [mm]
RV 8500	1620	1620	1350	600	132	2662	442	1071	1149	118	135	978	1019
RV 10100	1777	1777	1500	650	132	2662	442	1071	1149	132	138.5	978	1019
RV 12000	1934	1934	1650	700	132	2819	442	1149	1228	146	142	1017	1075
RV 14500	2091	2091	1800	800	132	2897	442	1149	1306	135	145.5	1017	1133

Dimensions

DUOVENT® MODULAR RV 8500 to 14500 – unit without mixing damper (MX or C in model number)

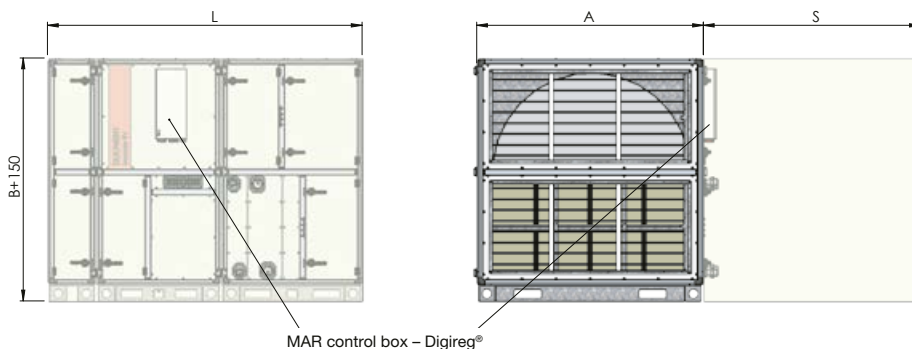


Type	A [mm]	B [mm]	D [mm]	E [mm]	F [mm]	L [mm]	L1 [mm]	L2 [mm]	L3 [mm]	X [mm]	Y [mm]	X1 [mm]	X2 [mm]
RV 8500	1620	1620	1350	600	132	2348	442	757	1149	118	135	1011	671
RV 10100	1777	1777	1500	650	132	2348	442	757	1149	132	138.5	1011	671
RV 12000	1934	1934	1650	700	132	2427	442	757	1228	146	142	1011	688
RV 14500	2091	2091	1800	800	132	2505	442	757	1306	135	145.5	1011	746

Supplemental Information

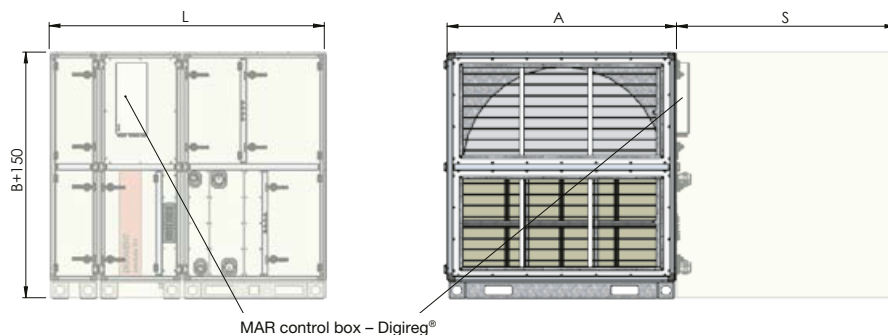
Minimum service clearance – unit with mixing damper (MX or C in the model number)

Size	A [mm]	B [mm]	L [mm]	S [mm]
RV 8500	1620	1620	2662	1700
RV 10100	1777	1777	2662	1800
RV 12000	1934	1934	2819	2000
RV 14500	2091	2091	2897	2150



Minimum service clearance – unit model without mixing damper (MX or C in model number)

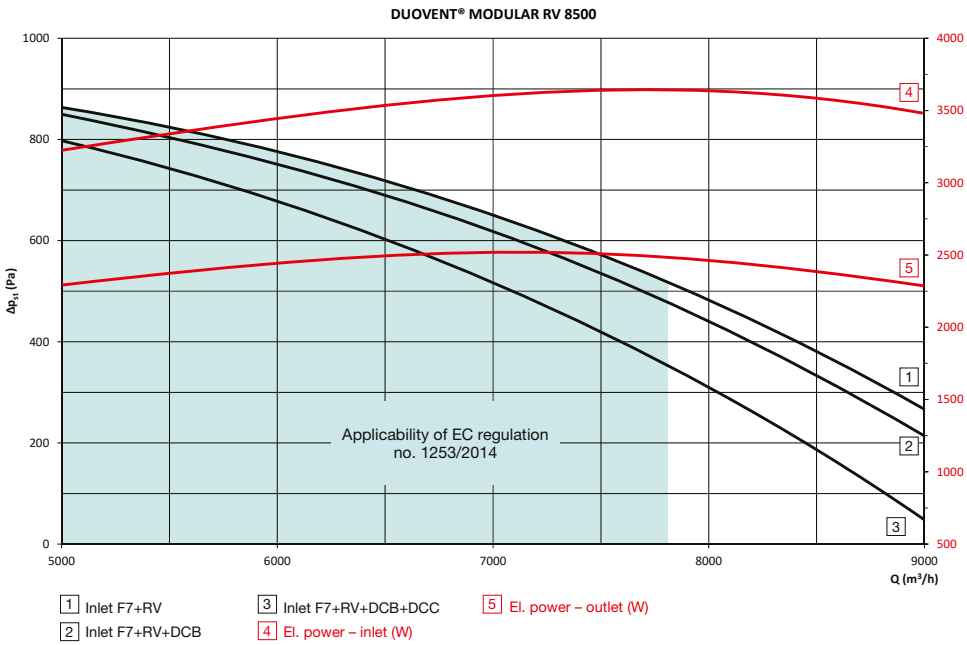
Size	A [mm]	B [mm]	L [mm]	S [mm]
RV 8500	1620	1620	2348	1700
RV 10100	1777	1777	2348	1800
RV 12000	1934	1934	2427	2000
RV 14500	2091	2091	2505	2150



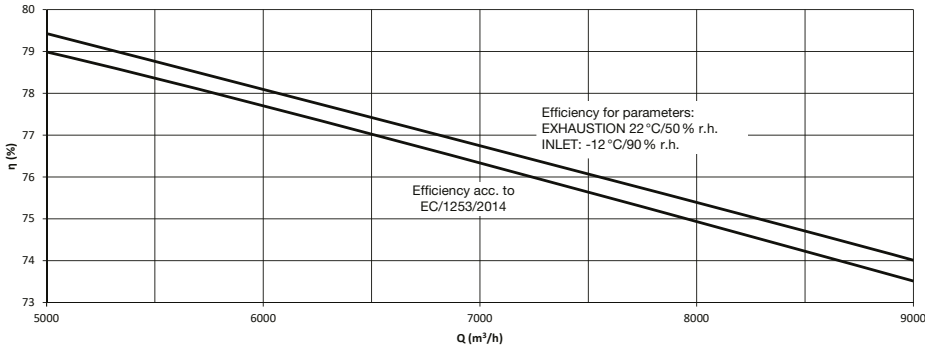
Characteristics

- Q air flow (m³/h)
 Δp_s unit external static pressure (Pa)
P fan electric input power (W)
 η heat recuperation efficiency (%)
F7+RV+DCB+DCC ... performance curve with maximum pressure loss of inner parts at inlet side (i.e. filter F7 at inlet, regenerator, water heaters 3 lines, water cooler 4 lines, drop eliminator)

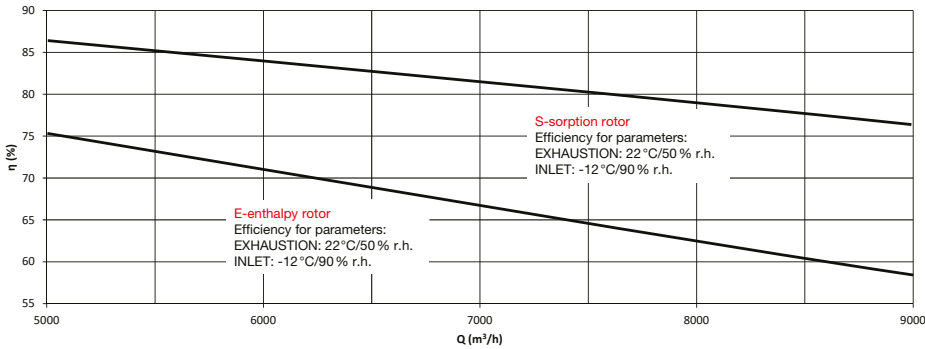
Characteristics

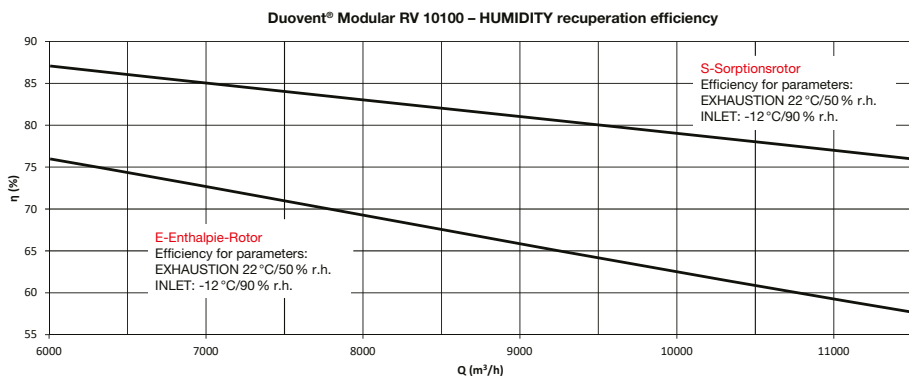
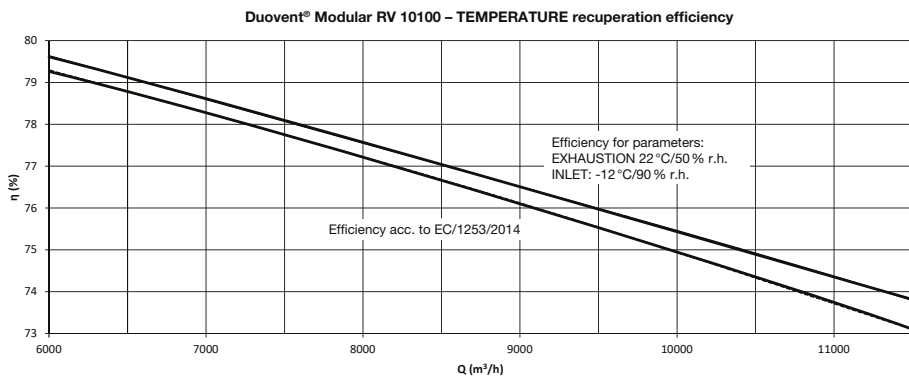
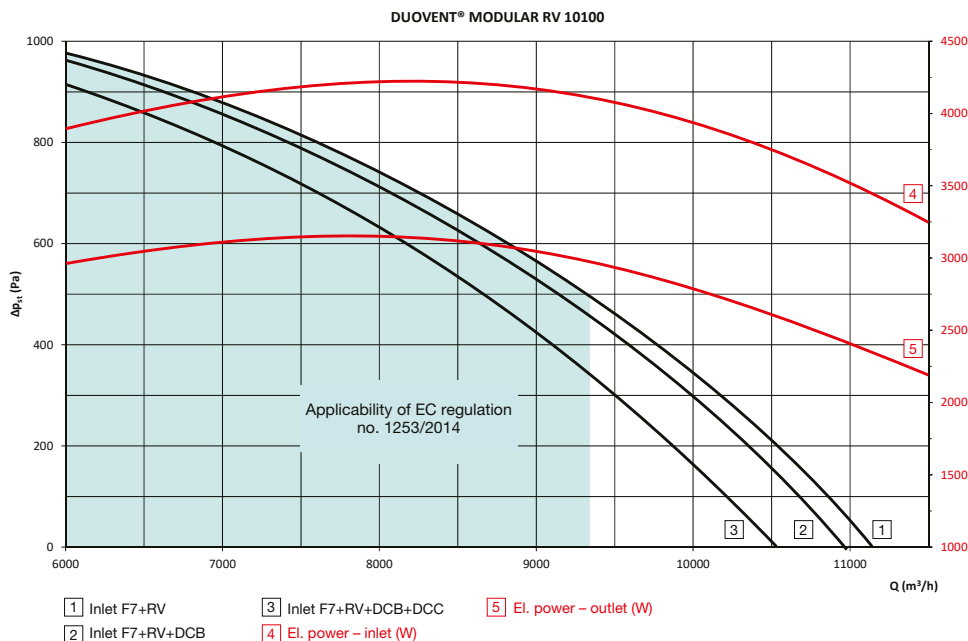


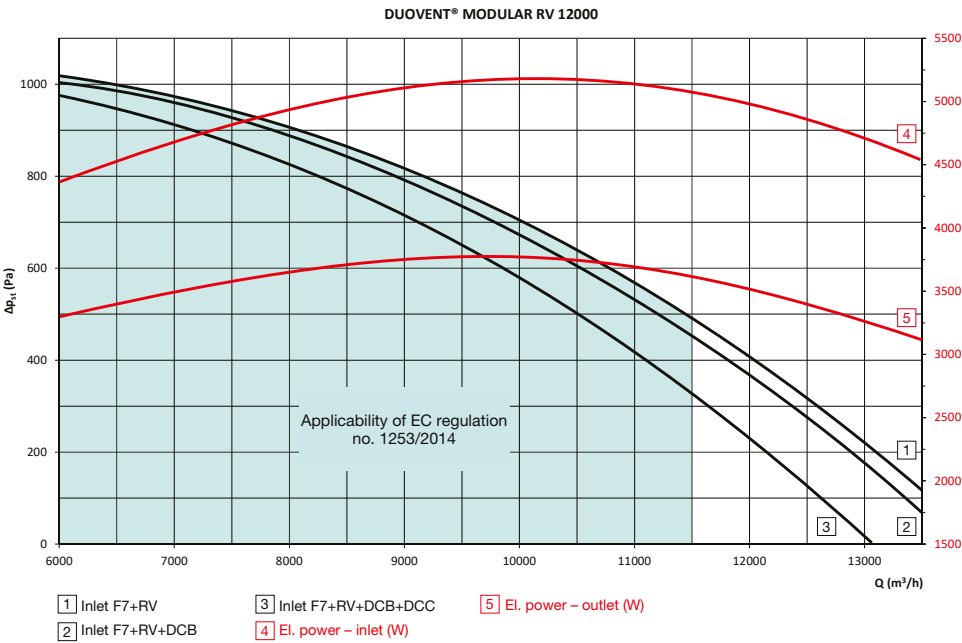
Duovent® Modular RV 8500 – TEMPERATURE recuperation efficiency



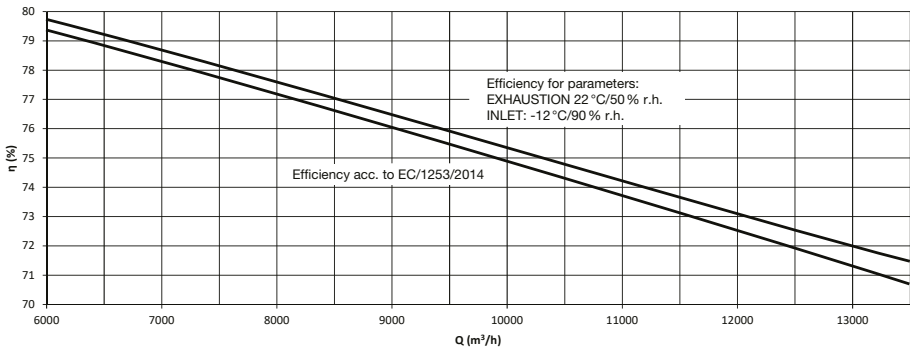
Duovent® Modular RV 8500 – HUMIDITY recuperation efficiency



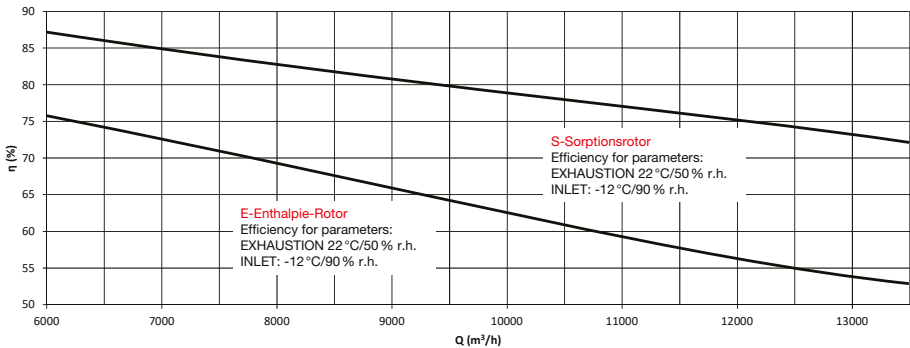


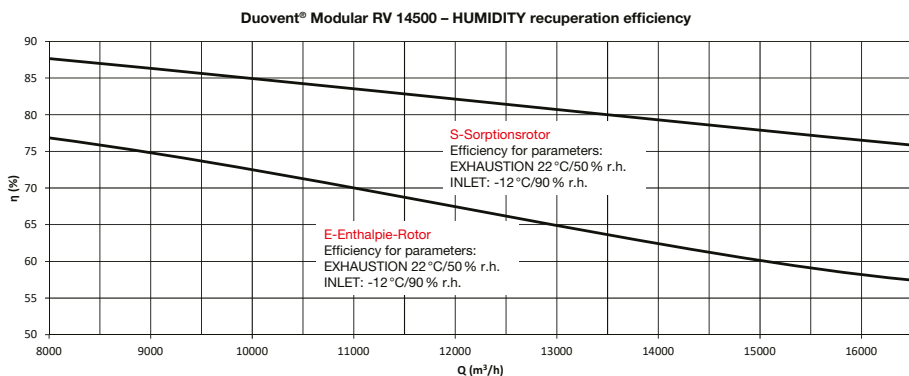
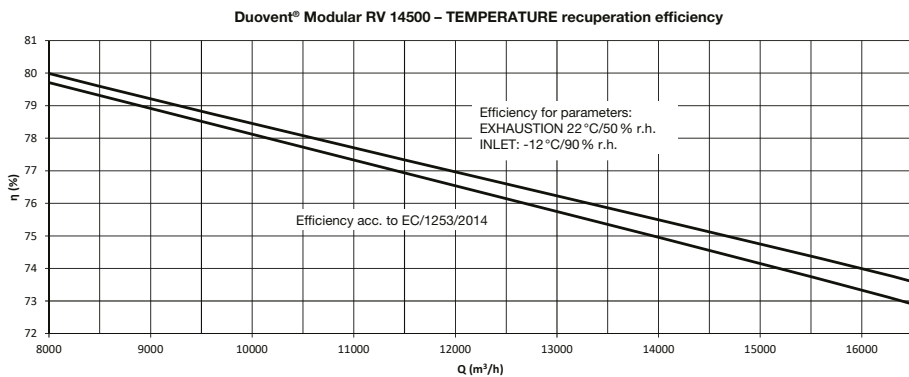
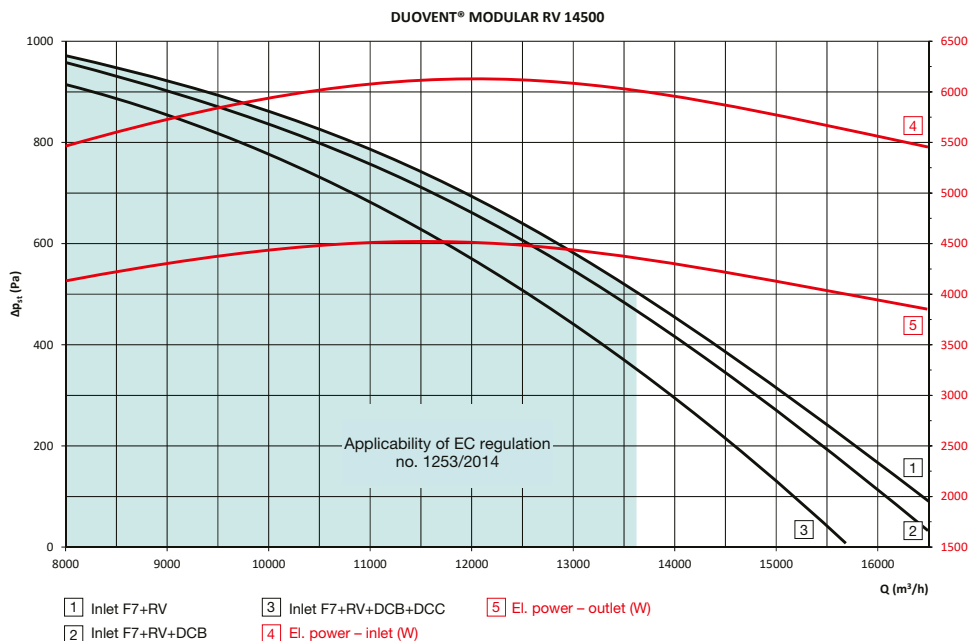


Duovent® Modular RV 12000 – TEMPERATURE recuperation efficiency



Duovent® Modular RV 12000 – HUMIDITY recuperation efficiency





Schallleistungspegel (Druck) in Oktavbändern [db(A)]*

DUOVENT® MODULAR RV 8500 (for V_{nom} = 7800 m³/h)

Hz	63	125	250	500	1000	2000	4000	8000	L _{WA}
fresh	36	43	62	63	59	60	54	49	67
inlet	50	58	74	78	83	82	77	73	87
L _{WA} exhaust	39	47	66	67	63	65	60	59	72
waste	42	50	68	71	76	74	67	61	79
case**	42	53	68	61	58	51	39	32	69

DUOVENT® MODULAR RV 10100 (for V_{nom} = 9300 m³/h)

Hz	63	125	250	500	1000	2000	4000	8000	L _{WA}
fresh	36	43	62	65	61	61	54	50	69
inlet	50	58	75	79	85	83	78	75	88
L _{WA} exhaust	43	50	69	69	66	66	62	64	74
waste	44	53	70	74	79	76	69	65	82
case**	43	55	69	63	60	52	41	34	71

DUOVENT® MODULAR RV 12000 (for V_{nom} = 11500 m³/h)

Hz	63	125	250	500	1000	2000	4000	8000	L _{WA}
fresh	39	44	65	66	62	62	55	50	70
inlet	53	61	78	81	86	83	77	74	89
L _{WA} exhaust	42	52	71	70	67	67	62	62	75
waste	46	55	72	76	79	75	68	64	82
case**	45	57	72	65	61	52	40	33	73

DUOVENT® MODULAR RV 14500 (for V_{nom} = 13600 m³/h)

Hz	63	125	250	500	1000	2000	4000	8000	L _{WA}
fresh	40	49	66	68	64	61	52	48	72
inlet	51	64	80	84	87	87	81	76	92
L _{WA} exhaust	48	57	71	73	69	67	60	61	77
waste	48	60	74	79	81	80	72	65	85
case**	45	61	74	68	62	56	44	35	75

* Configuration data (integrated flaps, water cooler DCC, water heater DCA, filtering class F7/M5)
** case damping with R_s value

Characteristics of recuperation units acc. to 2009/125/EC, EC regulation no. 1253/2014.

unit size	nominal air flow [m³/h]	SFP _{int} [W/(m³/s)]	recuperation efficiency [%]	SFP _{int} LIMIT 2018 [W/(m³/s)]	external pressure [Pa]
RV 8500	7800	868	75.3	868	350
RV 10100	9300	880	75.7	881	350
RV 12000	11500	852	75.5	875	350
RV 14500	13600	864	75.4	872	350

Technical data for water heaters DCA (t_w = 80/60 °C) and DCB (t_w = 45/35 °C)

unit size	temperature gradient [°C/°C]	power [kW]	nominal air flow [m³/h]	inlet air temperature [°C]	outlet air temperature [°C]	pressure loss at water side [kPa]	water flow [m³/h]
RV 8500	80/60	61.1	7800	10	33.4	9	2.69
	45/35	43.1			26.5	24	3.74
RV 10100	80/60	75.7	9300	10	34.3	11	3.33
	45/35	53.1			27.1	28	4.61
RV 12000	80/60	92.2	11500	10	33.9	14	4.05
	45/35	63.3			26.4	14	5.49
RV 14500	80/60	111.0	13600	10	34.4	17	4.89
	45/35	76.4			26.8	15	6.63

Technical data for water coolers DCC ($t_w = 6/12^\circ\text{C}$) and evaporation units DX ($t_{\text{evp}} = 6^\circ\text{C}$, R410A coolant)

unit size	temperature gradient/ evaporation temperature [$^\circ\text{C}$]	power [kW]	nominal air flow [m ³ /h]	inlet air temperature / humidity [$^\circ\text{C}$] / [%]	outlet air temperature [$^\circ\text{C}$]	pressure loss at water/ coolant side [kPa]	water flow [m ³ /h]
RV 8500	6/12	62.2	7800	35 $^\circ\text{C}$ / 35 %	17.9	27	8.88
	6	66.2			17.3	44	–
RV 10100	6/12	77.3	9300	35 $^\circ\text{C}$ / 35 %	17.4	32	11.04
	6	80.9			17.0	53	–
RV 12000	6/12	95.2	11500	35 $^\circ\text{C}$ / 35 %	17.5	44	13.61
	6	96.9			17.4	70	–
RV 14500	6/12	115.0	13600	35 $^\circ\text{C}$ / 35 %	17.2	53	16.49
	6	115.0			17.2	84	–

Technické údaje elektrických ohřivačů (napájecí napětí 3× 400 V / 50 Hz), přiřazení regulačních sad

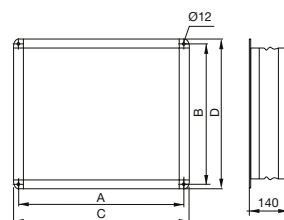
unit size	DI type	power [kW]	No. of sections	Digireg® set
RV 8500	IBE-Duovent® DV8500_15/1	15	1 (15 kW)	M3-E15 / M3-E36
	IBE-Duovent® DV8500_30/1	30	1 (30 kW)	
RV 10100	IBE-Duovent® DV10100_22,5/1	22,5	1 (22,5 kW)	M3-E24 / M3-E72
	IBE-Duovent® DV10100_45/2	45	2 (15+30 kW)	
RV 12000	IBE-Duovent® DV12000_22,5/1	22,5	1 (22,5 kW)	M3-E24 / M3-E72
	IBE-Duovent® DV12000_45/2	45	2 (15+30 kW)	
RV 14500	IBE-Duovent® DV14500_30/1	30	1 (30 kW)	M3-E36 / M3-E72
	IBE-Duovent® DV14500_60/2	60	2 (30+30 kW)	

Different sizes of electric heaters can be ordered upon demand. Please contact technical department for further information.

Unit Accessories

DUO-DV-IAE

- Flexible ductwork connector for unit's outlets and inlets.
- Prevents transfer of vibrations
- Flange width 30 mm

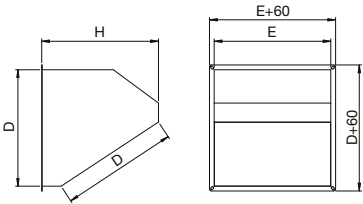
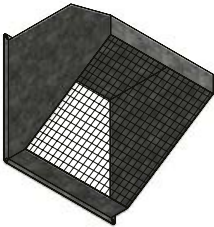


Type	A [mm]	B [mm]	C [mm]	D [mm]
DUO-DV-IAE-8500-P30	1380	630	1410	660
DUO-DV-IAE-10100-P30	1530	680	1560	710
DUO-DV-IAE-12000-P30	1680	730	1710	760
DUO-DV-IAE-14500-P30	1830	830	1860	860

DUOVENT® MODULAR RV evo

DUO-DV-MOUNT RAIN LOUVRES

- Rain louvres available for outdoor use
- Made from galvanized sheet metal
- Fitted with anti-bird mesh
- Painted to match the unit's color comes as an option.
- Flange width 30 mm



Type	D [mm]	E [mm]	H [mm]
DUO-DV-MOUNT 8500-P30	600	1350	600
DUO-DV-MOUNT 10100-P30	650	1500	650
DUO-DV-MOUNT 12000-P30	700	1650	700
DUO-DV-MOUNT 14500-P30	800	1800	800

ROOFPACK-A

- Made from galvanized steel or painted steel
- Mounted directly to top of the unit
- Frame height is 150 mm when feet are incorporated
- Insulated corner profiles of cabinet frame
- Waterproof external case
- Digireg® control box in IP65
- As an option, unit's supply side can be fitted with 1000 W electric heaters IBET in unison with thermostat F2000 with adjustable temperature settings. The heater temps inside of the unit while preventing freezing of water coil when the unit is not operational.

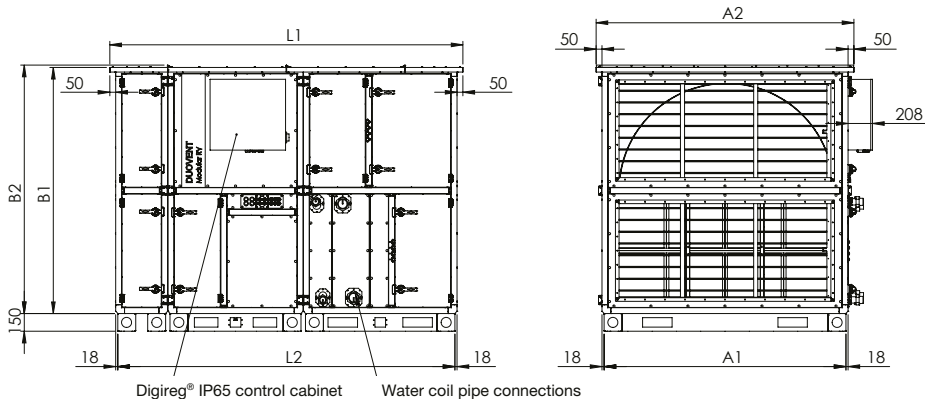
Type key for ordering of ROOFPACK accessory

R	O	O	F	P	A	C	K	-	A	-	D	U	O	-	M	O	D	-	R	V	-	8	5	0	0

- 1 – ROOFPACK accessory type: A
2 – Identification of recuperation unit type:
DUO-MOD-RV = DUOVENT® MODULAR RV
3 – Size of unit DUOVENT® MODULAR RV:
8500, 10100, 12000, 14500

Sizes of ROOFPACK-A accessory

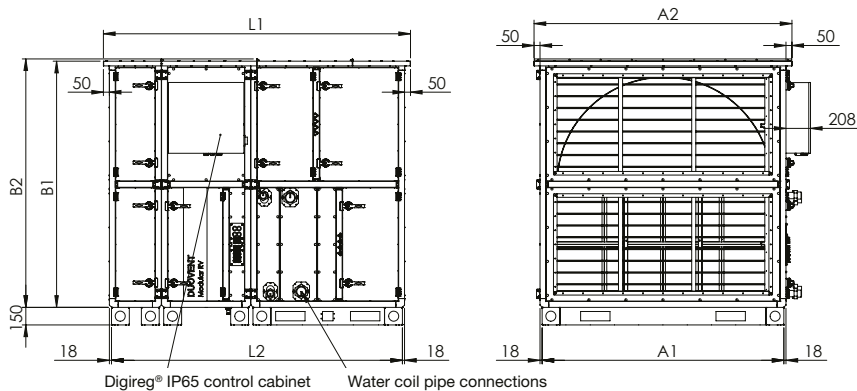
DUOVENT® MODULAR RV 8500 to 14500 – unit model equipped with mixing damper (MX or C in model number)



unit size	L1 [mm]	L2 [mm]	A1 [mm]	A2 [mm]	B1 [mm]	B2 [mm]	weight [kg]
RV 8500	2762	2626	1584	1720	1622	1640	50
RV 10100	2762	2626	1741	1877	1779	1797	55
RV 12000	2919	2783	1898	2034	1936	1954	64
RV 14500	2997	2861	2055	2191	2093	2111	70

Sizes of ROOFPACK-A accessory

DUOVENT® MODULAR RV 8500 to 14500 – unit model without mixing damper (**MX** or **C** in model number)



unit size	L1 [mm]	L2 [mm]	A1 [mm]	A2 [mm]	B1 [mm]	B2 [mm]	weight [kg]
RV 8500	2448	2312	1584	1720	1622	1640	46
RV 10100	2448	2312	1741	1877	1779	1797	50
RV 12000	2527	2391	1898	2034	1936	1954	56
RV 14500	2605	2469	2055	2191	2093	2111	62

Example of ROOFPACKA for units DUOVENT® MODULAR RV



DUOVENT® MODULAR RV14500
with MX ROOFPACK-A



DUOVENT® MODULAR RV14500
without MX + ROOFPACK-A