Specification

Specification

Model No.	Voltage	Frequency	CFM AT Static Pressure (ps-inches of H_2O)											RPM	Watts*	Watts**
			inches of H_2O	0	0.1	0.125	0.25	0.375	0.5	0.75	1	1.25	1.5	1.75		For AMCA	For IEC
E25DZUA	220V	60Hz	CFM (OA-SA)	183	172	168	155	143	131	108	77	14	-	-	1,448	197	171
			CFM (RA-EA)	130	118	115.5	104	91	77	44	0	-	-	-	1,387	187	
E35DZUA	220V	60Hz	CFM (OA-SA)	258	250	247	237	225	211	174	144	118	69	-	1,425	348	310
			CFM (RA-EA)	192	183	180	169	157	144	116	84	49	0	-	1,402	342	
E50DZUA	220V	60Hz	CFM (OA-SA)	339	330	326	314	303	290	261	230	188	134	80	1,501	470	406
			CFM (RA-EA)	253	241	238	224	207	190	154	117	82	41	-	1,452	443	

Preformance certified is for installation type D-Ducted inlet, Ducted outlet.
Speed (RPM) shown is nominal. Performance is based on actual speed of test.
Performance ratings do not include the effects of appurtenances."
Air performance ratings for gross supply airflow are from port 2. Air performance ratings for gross exhaust airflow are to port 3.
* The Watts rating is only for AMCA test method and it is at the static pressure of 0 inch of H_2O.
** The Watts rating is only for IEC test method and AMCA Certified Rating Seal does not apply to IEC test method watts.

Main Body	Size (mm)	650 x 750 x 220	680 x 920 x 230	680 x 1090 x 240
	Weight	30	39	45
	OA Side Duct Diameter	ø200		
	Duct Diameter RA/SA/EA	ø150		ø200
Up-Side Down Installation		Yes		
Filter Box	Duct Diameter	ø200		
	Size (mm)	600 x 385 x 240		600 x 385 x 350

KDK Company, Division of PES
4017, Takaki-cho, Kasugai, Aichi, Japan
http://kdk.jp

SINCE 1909
JAPAN

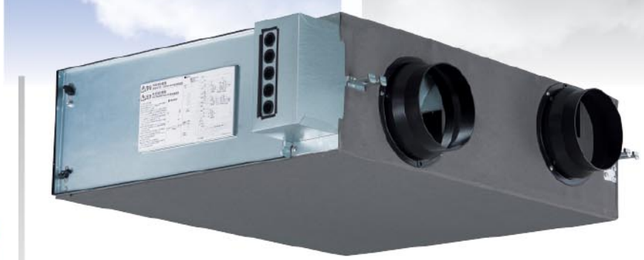
• Specifications are subject to change without prior notice.
• Actual colors may vary slightly from those shown.

CATALOG NO: K-AMCA006
Printed in Hong Kong (April 2018)

SINCE 1909
JAPAN

Energy Recovery Ventilator

YOUR HEALTHIER CHOICE



- E25DZUA
- E35DZUA
- E50DZUA

By using the energy recovery ventilator, outdoor air will be filtered and ventilated indoors. It will also effectively filter the indoor polluted air to outdoors "Green" lifestyle is achieved and you and your family's health are taken care of.

With energy recovery ventilator,
nature is inside your home.

Outdoor Pollution

Asthma rate in Middle East, East Mediterranean

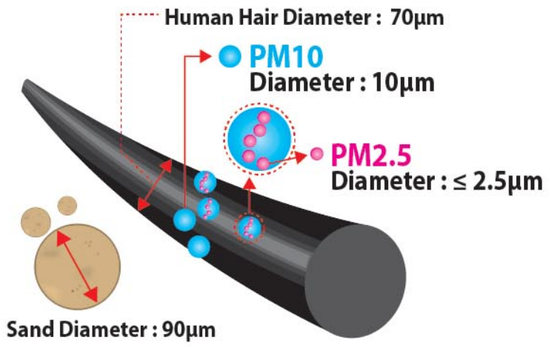
10.7% - 50 million

Asthma rate in worldwide 4%

SO_2 NO_X CO_X CH_X TSP $PM_{2.5}$ PM_1

Invisible Killer PM2.5

PM2.5 refers to dangerous particles of pollutants that are less than 2.5 μm in diameter. These can be easily inhaled to lung and cause health issues.



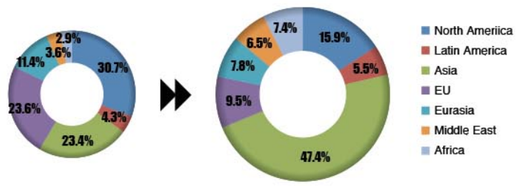
PM2.5 on health effects:

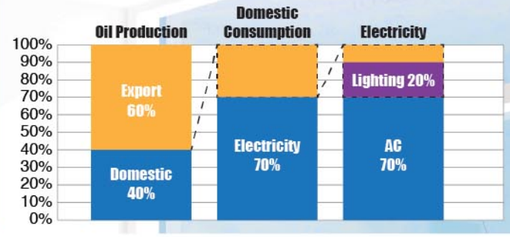
- easy to penetrate the thoracic cavity of the respiratory system
- respiratory and cardiovascular morbidity increases, such as aggravation of asthma, respiratory symptoms
- Increases the mortality caused by cardiovascular and respiratory diseases and lung cancer

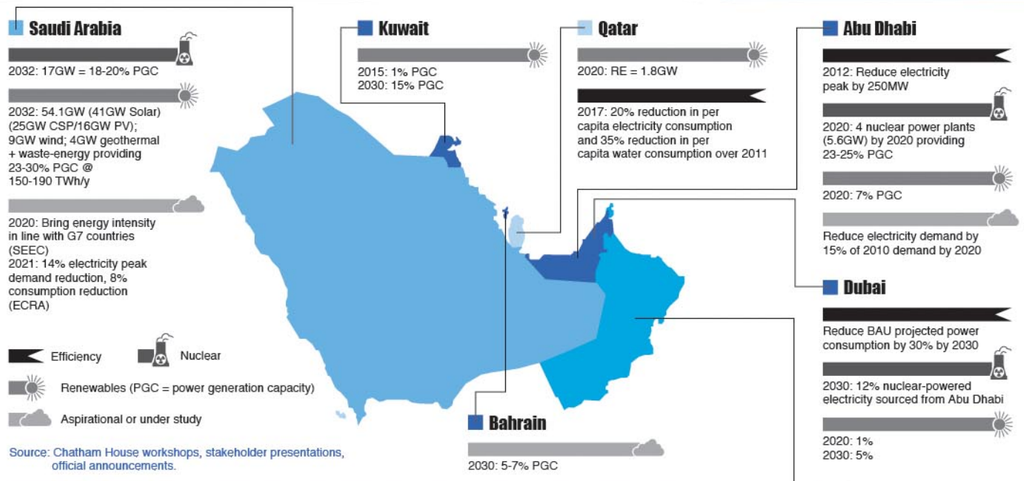
Energy Consumption Demand

There is a significant increase in the Energy consumption demand. The demand is expected to take up to 13.9% of global energy consumption in 2040 for Middle East and Africa region. Rapid rise of oil consumption will exceed the oil &NGL production in the future. If electricity demand is growing at a rate of 5-7 percent a year, it is expected to import oil in 2030. Air-conditioning has the highest poprotion of domestic electricity consumption which over 70%.

Worldwide Energy consumption demand







Source: Chatham House workshops, stakeholder presentations, official announcements.

New Energy Saving Regulation "World Top Regulation (EER > 9.5 at T1 condition)"

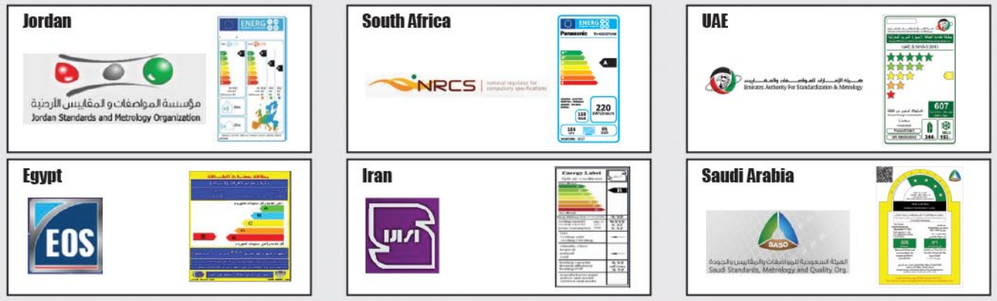
Y2013 Feb : DEWA Gov. Announced New Regulation (From 2015)
Y2013 May : Oil Gov. Announced to Move up the Schedule (From 2014)

(Phase-1)
Y2013 Sep : Banned to Import / Manufacture Non-Conformity Products
Y2014 Jan : Banned to Import / Manufacture Non-Conformity Products

(Phase-2)
Y2015 Jan : Regulation becomes more strict (Required for EER>11.5)

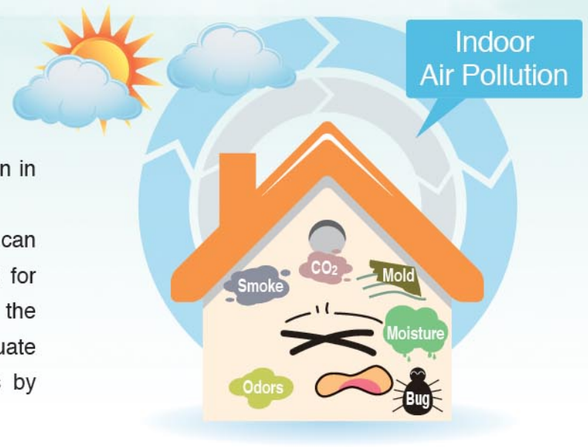
Energy Saving Label Regulation

Significant energy saving could be achieved by using more energy efficient appliances which helps reduce the emission of greenhouse gases and other air pollutants from power plants. To further facilitate the public in choosing energy efficient appliances and raise public awareness on energy saving, Energy Efficiency Labelling Scheme have been introduced.



Importance of Indoor Air Quality

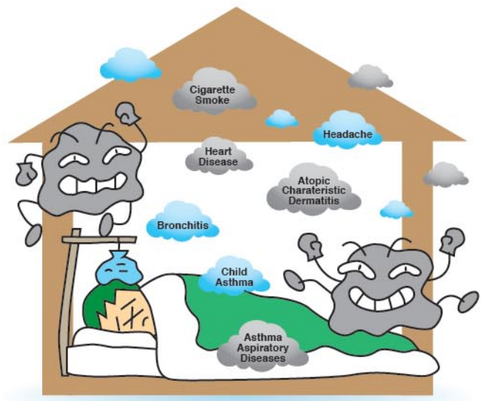
KDK Energy Recovery Ventilator (ERV) ensures proper indoor air circulation and conducts proper exchange between air indoors and outdoors.



In recent years, home are built more airtight than in the past.
Highly airtight house restricts air leakage that can closely retain the expected indoor temperature for energy saving. However, it also brings out the problem of indoor air quality (IAQ). Inadequate ventilation can increase indoor pollutant levels by trapping air pollutant inside.

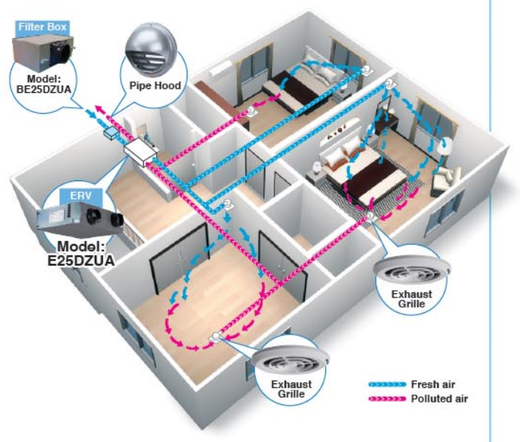
Influence of Insufficient Ventilation

Health effects from indoor air pollutants may be experienced soon after exposure or, possibly, years later.
Some symptoms may show up shortly which include irritation of the eyes, nose, and throat, headaches, dizziness, and fatigue. Other long term health effects which include some respiratory diseases, heart disease and cancer, can be severely debilitating or fatal.



24-hours Whole House Ventilation

"24-hour ventilation" targets to the whole residence, focusing on general living area such as living room, dining room, bedroom, study room and guest room. It would run continuously with gentle extraction over 24-hour period.
Sources, interval and amount of those unpleasant pollutants are often unclear, thus 24-hour ventilation is necessary, and 0.5 air change per hour is recommended.



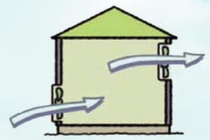
Types of Ventilation

There are 2 methods of ventilation, Natural Ventilation and Mechanical Ventilation. Mechanical Ventilation is also divided into First Type, Second Type and Third Type Ventilation generally.

Natural Ventilation

Exhaust → Natural
Intake → Natural

Mechanical Ventilation

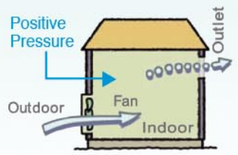


First Type

Exhaust → Mechanical
Intake → Mechanical

Provides most reliable ventilation and easy control airflow
Able to achieve stable ventilation in the house with low airtight

Mechanical Ventilation

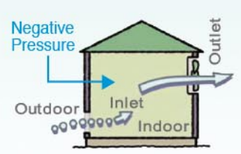


Second Type

Exhaust → Natural
Intake → Mechanical

Suitable for apartment with steel and concrete structure in where only little condensation due to air leaking through the walls during winter

Mechanical Ventilation

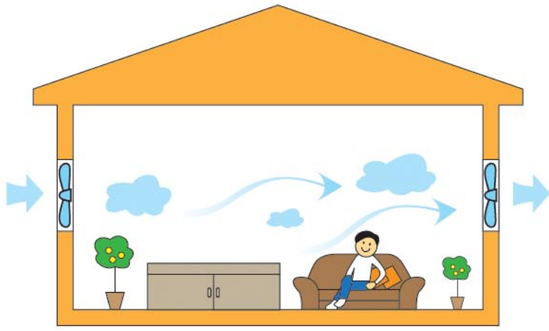


Third Type

Exhaust → Mechanical
Intake → Natural

Ventilation plan may be at low cost. It should be aware that planned ventilation may not work effectively in low airtight houses

24-hour Ventilation Vs Spot Ventilation



"24-hour Ventilation" brings in fresh air and removes polluted air from the house constantly over 24-hour period.

24-hour Ventilation
- 24-Hour Operation
- Low Air Volume
- Slow

Air Change Per Hour = 0.5

Indoor air is polluted by cooking odors or cigarette smoke.

"Spot Ventilation" focuses on removal of concentrated pollutants directly from the sources , such as smoke and smell from cooking.

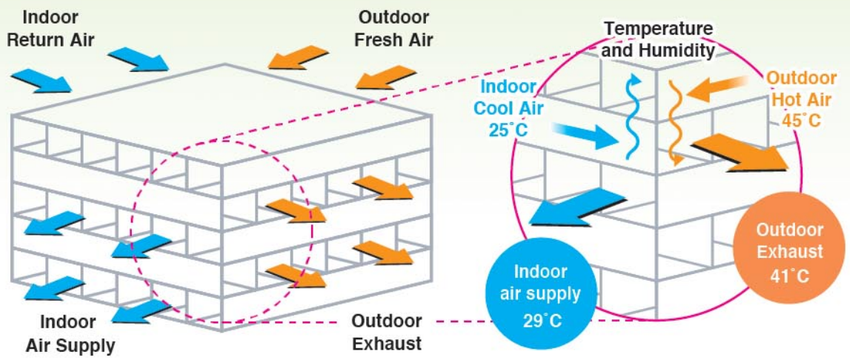
Spot Ventilation
- Localized
- Powerful Air Volume
- Fast

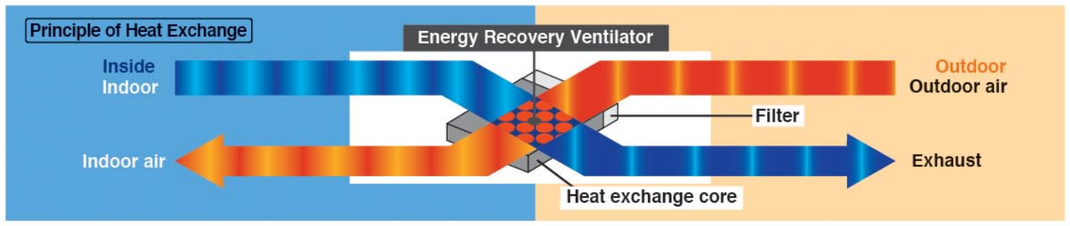
Air Change Per Hour depends on location e.g. bathroom = 5

Reduce Energy Consumption

KDK Energy Recovery Ventilator is equipped with a heat-exchanging element. When outdoor fresh air and indoor foul air passes through the energy recovery element, the temperature is exchanged through air flow and heat conduction of different temperatures at both ends of the heat transfer sheets. Meanwhile, humidity exchange occurs from high humidity to low humidity as moisture is transferred through difference in pressure of water vapor.

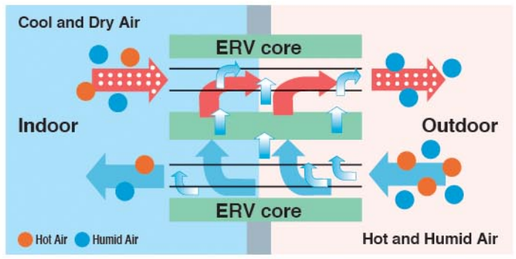
Inside of Heat Exchange Core (diagram)





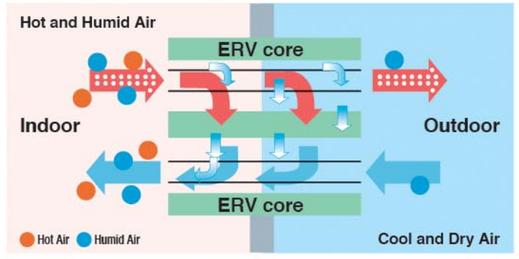
Summer

In summer, the indoor cool air discharged can be used to precool outdoor warm air before it gets delivered indoor and so reduces the loss of cool air.



Winter

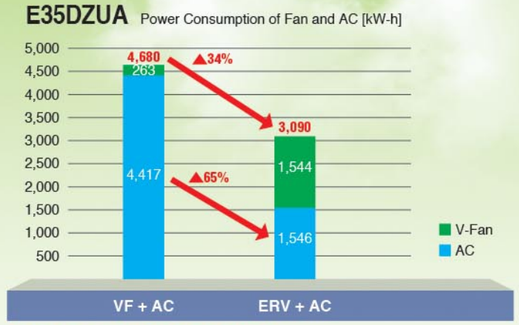
Whereas in winter, indoor warm air discharged can be used to preheat outdoor cool air before it is released indoor and so reduces the loss of warm air.



Highly efficient energy recovery reduces energy loss during ventilation, that achieve energy saving

Long Term Energy Comparison

Long term Energy comparsion for KDK ventilation fan and energy recovery ventilator



Based on the following condition

Simulation place: Aug Riyadh Saudi Arabia
Room Area = 210 m²
Room Height = 3 m
Required Air Volume = 315 CMH
A/C system running time : 2700h =15h/day*180day (May~Oct)
ERV : E35DZUA (2unit) 282W*2 = 564W
V-Fan : General (6unit) 48W*6 = 288W

Summer Utilizes energy of indoor return cool air to cool down outdoor air before intake to indoor, indoor cool loss is reduced

Energy Recovery Ventilation + Air Condition

Normal Ventilation + Air Condition

Energy saving while holding down the air-conditioning costs.

Saving of the air-conditioning cost

Because of less heat loss, indoor comfortable temperature won't be damaged, and the air-conditioning cost is largely saved.

Comfortable thanks to the almost unchanged room temperature.

Ventilation is performed while keeping warmth of the heated air.

In winter, because the cold outer air is supplied after being preheated and unpleasant cold air gush is prevented.

Ventilation is performed while keeping coolness of the conditioned air.

Outer air is supplied after being cooled close to the room temperature.
A more comfortable environment is created.

Soundproof effect is high

Indoor sound is hard to leak

Ventilation is performed while preventing outflow of sound. Night music and video can be enjoyed without worry.

Outdoor noise is moderated as well.

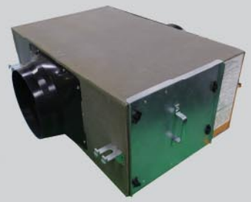
Ventilation is performed while preventing entry of the noise from automobiles or constructions.

Air Purification

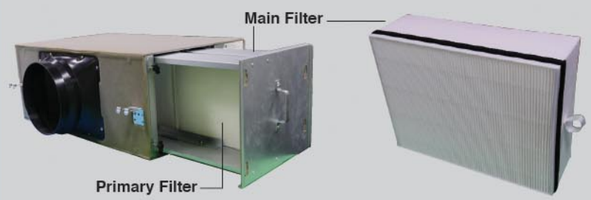
Filter Box designed for Middle East
Bring clean air to your life

KDK filter box is part of the ERV which designed to make the indoor spaces insect free, dustproof and pollen free. Equipped with filter box, fresh air can circulate and refresh the household.
There are two filters - Primary and PM2.5 filter. First, primary filter will filter big particles such as sand, insect. The tiny and invisible particles can be traped by PM2.5 filter. With two layers of filters, ERV can bring clean, fresh and comfortable air to your house.

Filter Box

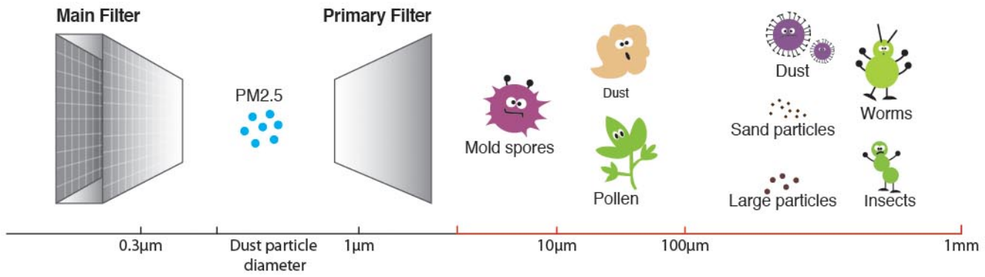


Filter Box Unit



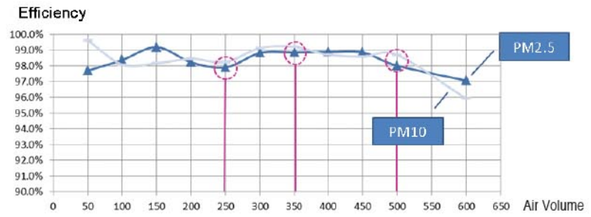
Outside Air Filter
Recommend to change every 2-4 month

Filter - It can filter PM2.5 and PM10



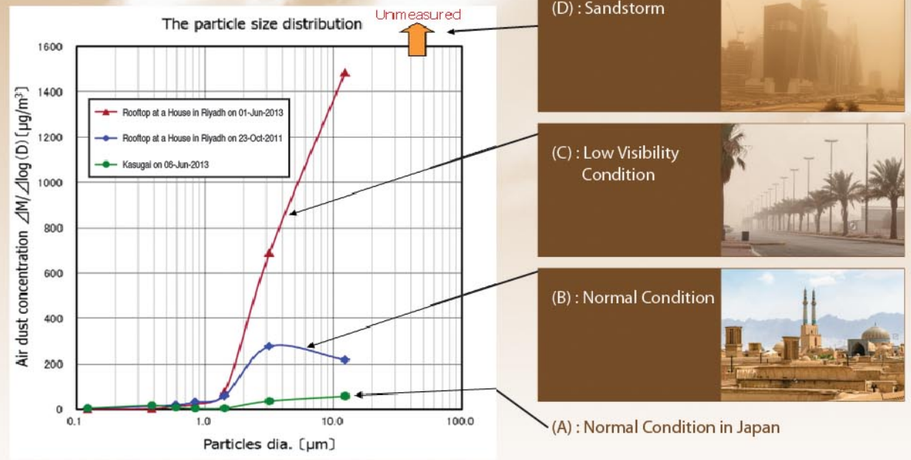
Filter Efficiency - Effectively capture PM2.5 and PM10 particles to deliver clean air to indoor

Model	Air Volume	PM 2.5	PM 10
E25DZUA	250	98%	98.2%
E35DZUA	350	99%	99.2%
E50DZUA	500	98%	98.8%



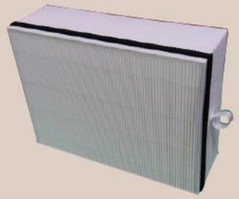
Dust Polluted Air in Riyadh

Comparison of the particle size distribution of air dust (At a House in Riyadh)



Field test result in KSA

When sand dust disperses, 2-10 micrometer particles are increased.
KDK ERV can cooperate with filter box which is designed for Middle East environment.



New, Clean PM 2.5 Filter

Dirty PM 2.5 Filter after 1 month field test

KDK PM 2.5 Filter has high efficiency to capture PM 2.5 and PM 10.
Field Test Period: 4th Nov 2014 – 15th Dec 2014

Ignition Loss Test* result in KSA:

large particles can be effectively trapped by the filter, there are many pollutant can be obtained by filters.

Standard Pre-filter	Collection amount (g)	13.2	
	Moisture (%)	2.5	
	Inorganic matter (%)	60.7	

PM 2.5 Filter	Collection amount (g)	2.5	
	Moisture (%)	3.0	
	Inorganic matter (%)	61.7	

* Test Period: 2014/11/04~2014/12/15 Test Filter: FY-FBG25C

Product Specification

E25DZUA

No.	Part name	Qty	Material
1	Frame	1	Galvanized Steel Sheet
2	Adapter	4	ABS
3	Impeller	2	PP
4	Fan Motor	1	/
5	Heat Exchange Core	1	Special Paper and Resin
6	Indoor Filter	1	/
7	Ceiling Suspension	4	Galvanized Steel Sheet
8	Switch Box	1	Galvanized Steel Sheet
9	Filter Box Unit	-	/

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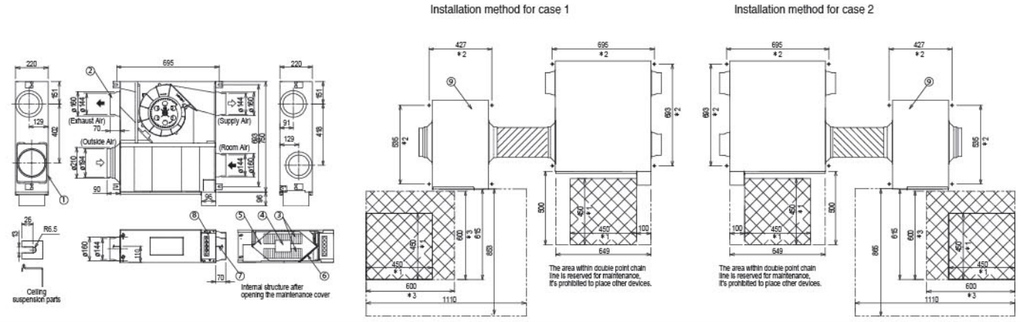
Product Dimension

■ Maintenance Dimension
It must be set the maintenance door, and clean the filter and heat exchange core as specified in instruction.

UNIT: mm



Specification

Model No.	Voltage	Frequency	CFM AT Static Pressure (ps-inches of H_2O)											RPM	Watts*	Watts**
			inches of H_2O	0	0.1	0.125	0.25	0.375	0.5	0.75	1	1.25	1.5	1.75		For AMCA	For IEC
E25DZUA	220V	60Hz	CFM (OA-SA)	183	172	168	155	143	131	108	77	14	-	-	1,448	197	171
			CFM (RA-EA)	130	118	115.5	104	91	77	44	0	-	-	-	1,387	187	

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Product Specification

E35DZUA

No.	Part name	Qty	Material
1	Frame	1	Galvanized Steel Sheet
2	Adapter	4	ABS
3	Impeller	2	PP
4	Fan Motor	1	/
5	Heat Exchange Core	1	Special Paper and Resin
6	Indoor Filter	1	/
7	Ceiling Suspension	4	Galvanized Steel Sheet
8	Switch Box	1	Galvanized Steel Sheet
9	Filter Box Unit	-	/

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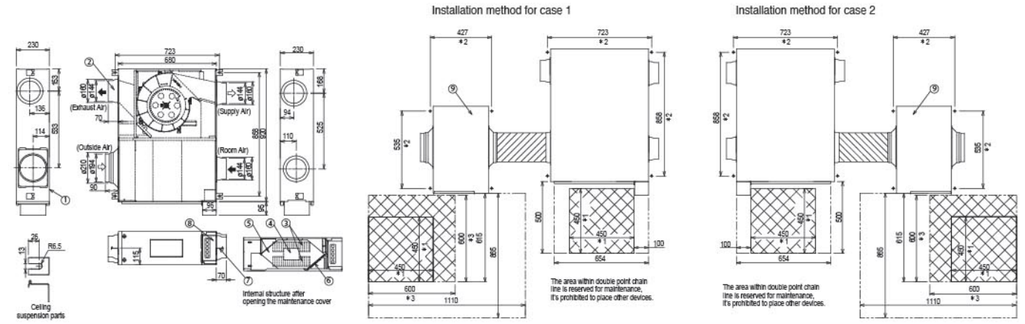

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E35DZUA	220V	60Hz	CFM (OA-SA)	258	250	247	237	225	211	174	144	118	69	-	1,425	348	310
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Product Specification

E50DZUA

No.	Part name	Qty	Material
1	Frame	1	Galvanized Steel Sheet
2	Adapter	4	ABS
3	Impeller	2	PP
4	Fan Motor	1	/
5	Heat Exchange Core	2	Special Paper and Resin
6	Indoor Filter	1	/
7	Ceiling Suspension	4	Galvanized Steel Sheet
8	Switch Box	1	Galvanized Steel Sheet
9	Filter Box Unit	-	/

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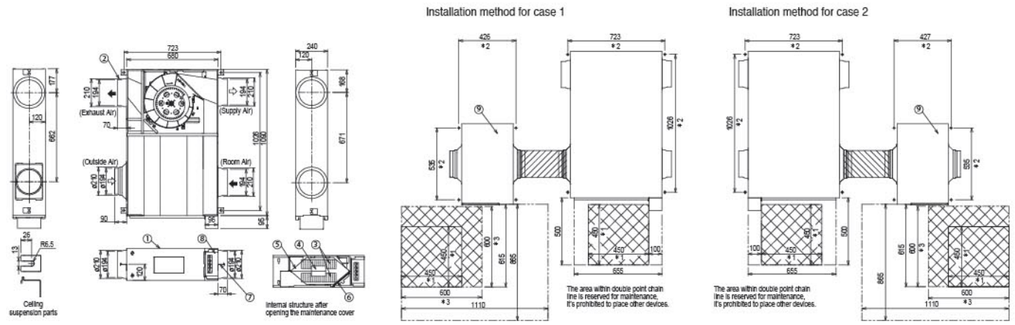
Product Dimension

UNIT: mm

■ Maintenance Dimension
It must be set the maintenance door, and clean the filter and heat exchange core as specified in instruction.



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Air performance ratings for gross supply airflow are from port 2. Air performance ratings for gross exhaust airflow are to port 3.
* The Watts rating is only for AMCA test method and it is at the static pressure of 0 inch of H_2O.
** The Watts rating is only for IEC test method and AMCA Certified Rating Seal does not apply to IEC test method watts.

Accessory

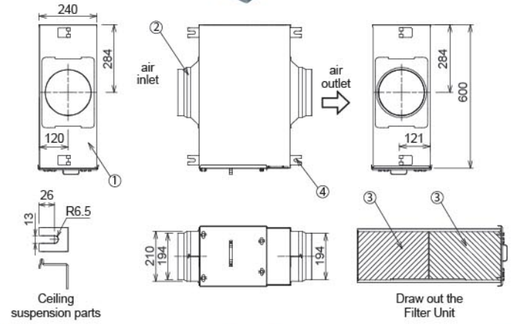
EB90SA (Applicable to series DZUA)

- Power : 220V / 60Hz
- Rate voltage : 3.6W
- Outter size : 86x86x40mm

Filter Box Unit

BE25DZUA For E25DZUA, E35DZUA

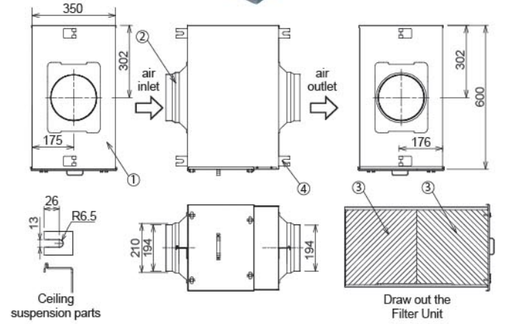
UNIT: mm



No.	Part name	Qty	Material
1	Frame	1	Galvanized Steel Sheet
2	Adapter	2	ABS
3	Outdoor filter	2	Nonwoven Fabric
4	Ceiling Suspension	4	Galvanized Steel Sheet

BE50DZUA For E50DZUA

UNIT: mm



No.	Part name	Qty	Material
1	Frame	1	Galvanized Steel Sheet
2	Adapter	2	ABS
3	Outdoor filter	2	Nonwoven Fabric
4	Ceiling Suspension	4	Galvanized Steel Sheet

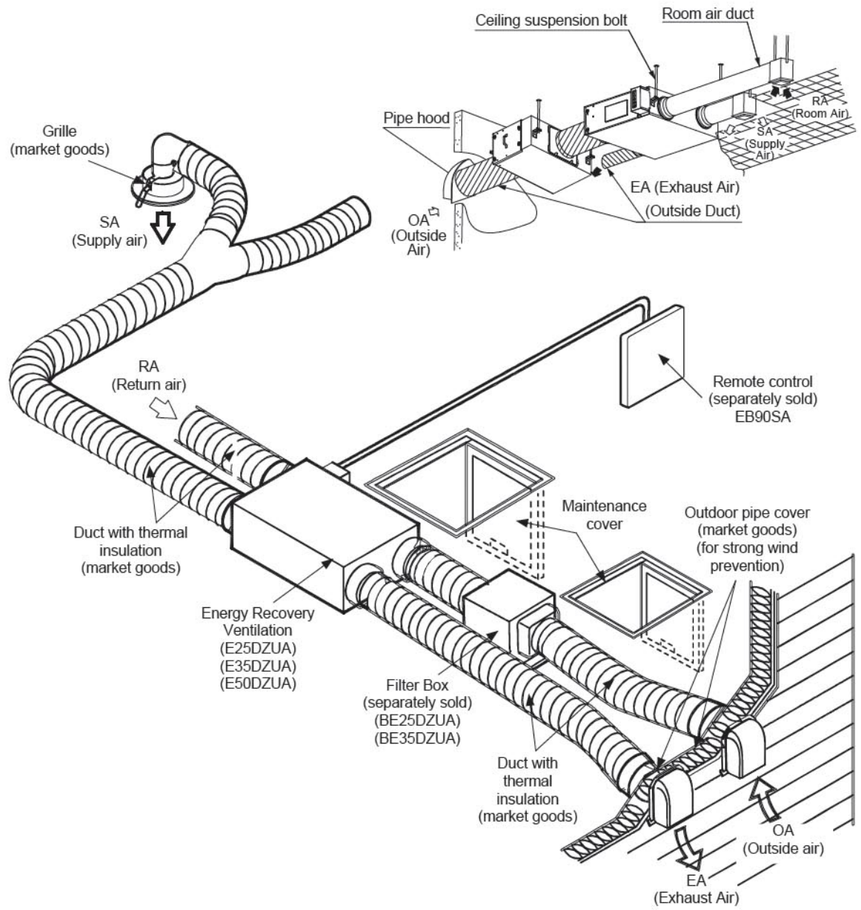
Replacement Filter

Product name	Filter Model	Filter(s) Included	Applicable Model	Service life of the filter	Remarks
Replacement filter for Filter Box Unit	FP25DZUA	2	BE25DZUA	2-4 months	Clean monthly
	FP50DZUA	2	BE50DZUA		
Replacement filter for ERV	FB25DZUA	1	E25DZUA	6 months	
	FB35DZUA	1	E35DZUA		
	FB50DZUA	1	E50DZUA		

- The service life of the filters varys with service environment, and the filters should be replaced with the new one.
- The air volume and filter efficiency will drop to different levels because of different service environments and service time. If the whole area indicated by the arrow turns black, please replace the filter.

General Information

Insatallation Diagram



Cautions

- It's recommended to install the pipe cover for strong wind prevention form outside. Please stop the unit during the strong wind and sandstorm as they may enter into the room along the air duct.
- Please carefully read the instruction for parts which are sold separately during the construction.
- Handle the thermal insulation to duct.

  1. The Outside air is cold in winter, but the dry air comes into the duct, dew will occur in the external duct.
  2. The Exhaust air is warm in the room, but the damp air goes out of the room, dew will occur in the internal duct.

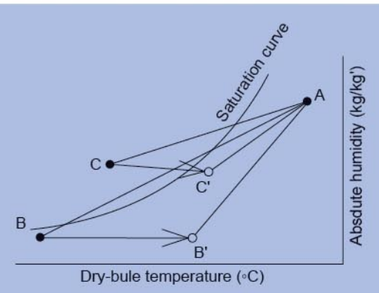
  In the conclusion, the outdoor duct should be conducted with thermal insulation.
- The air duct which connects the filter box unit to ERV is suggested to install horizontally.

General Information

Using Condition

- Outdoor air condition
  Temperature range -10°C~+50°C, relative humidity 85% or less.
- Indoor air condition
  Refer to the indoor air condition of living room.
- Installation requirements:

  Same as the indoor air conditions.
  Indoor air here means air in air-conditioned living rooms. The appliance usage in refrigerators or other places where temperature can fluctuate greatly. It is prohibited even if a temperature range is acceptable.



Be careful of frost and dew

- As shown in the right figure, it's supposed that a high temperature absorbing air condition A and a low temperature absorbing air condition B are plotted on the air line figure, then a high temperature air A is heat-exchanged by the unit and Point C represents the trend of saturation curve .In this case, it will cause the dew or frost inside the unit. To avoid this, you are required to heat a low temperature air B up to B' so as to get C' below the saturation curve before using the unit.
- The Energy Recovery Ventilator manufactured by our company is conducted the condensation without the water dropping test in the following conditions based on JIS B 8628:2003, if using condition is tougher than the following sheet, it may cause the frost or dew.

JIS B8628:2003 Energy Recovery Ventilator Appendix 5 (Specification) condensation test method

Classification	Indoor condition			Outdoor condition				Measured time
	dry-bulb temperature	wet-bulb temperature	* relative Humidity (reference) %	dry-bulb temperature	wet-bulb temperature	* relative Humidity (reference) %	Operation status	
Cooling in summer	22°C	17°C	60	35°C	29°C	65	operate	6 hours
Heating in winter	20°C	14°C	50	-5°C	-	-	operate	6 hours
Heating in winter	20°C	14°C	50	-15°C	-	-	Stop	6 hours

※ Relative humidity is calculated according to JIS B 8628:2003.