



The jewel among
compact ventilation units





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The compact ventilation units of the **diamant** series have been especially developed to meet today's demands of energy efficiency in the non-industrial sector. All components were selected with optimal energy savings in mind to grant the greatest possible benefit in the operation of the unit. Starting with the design of the casing, the series provides a unit with the best possible values according to EN 1886. Minimal energy consumption is achieved by applying the best possible insulation, casing seal tightness and sound absorption. The rotary heatwheel at the heart of this energy-efficient compact unit series reaches levels of efficiency of up to 90% according to EN 308 at the lowest air resistances. A long lifetime and high dust accumulation capacity by using the largest possible surfaces at the lowest pressure losses are features of our filter. As a result of this ideal combination, not only the environment is protected through the reduction in CO₂ emissions, but your wallet as well, by reducing the costs of energy, operation and maintenance.

Application of a drive unit using motors with EC technology rounds off the entire energy-optimized package. With its intelligent control system, it is easy to operate and handle the **diamant** series unit. It independently seeks the most efficient mode of operation depending on the prevailing conditions (*).

The **diamant** series covers an air volume range from 800 to 15,000 m³/h, making it the jewel among compact ventilation systems for any application. And yet you need to do without the usual flexibility from our house. The choices of model, accessories or the optional additional components, which reach from supplementary heater elements through humidification devices to a sound absorber, are versatile.

As simple and yet as fascinating as a **diamond**.

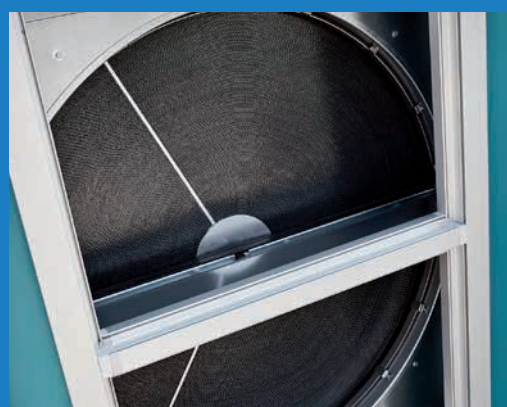
(*) Details regarding the controller can be found on page 13 of this leaflet.

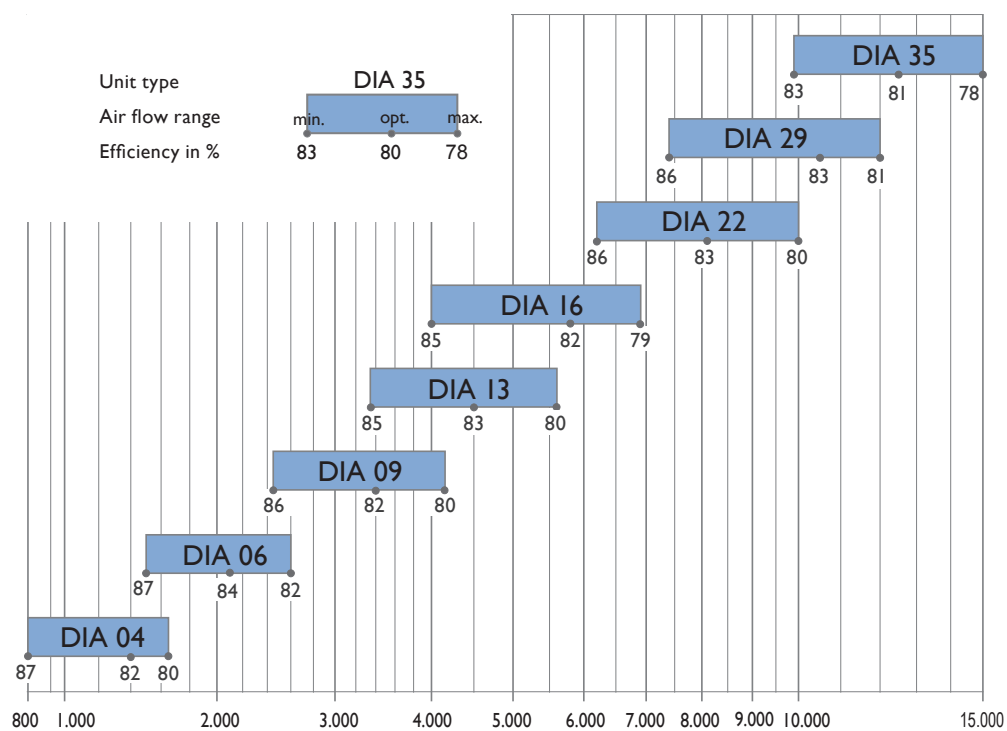
High overall energy efficiency with the following components:

- › High-insulation casing in class T2/TB2 as per EN 1886
- › Highest class L I regarding air-tightness thanks to axially screw-mountable frame profiles
- › Rotating energy recovery systems with efficiencies up to 90%
- › Energy-saving drive systems with low-noise impellers and motors offering the lowest energy consumption by using EC technology

Technical advantages with the following features:

- › Best sound insulation by using high-density mineral wool
- › Visually appealing by using our well-known screwless frame
- › Top-quality workmanship of the entire unit
- › Easy installation using proven connection systems
- › Serviceability
- › Intelligent, easy-to-use control system



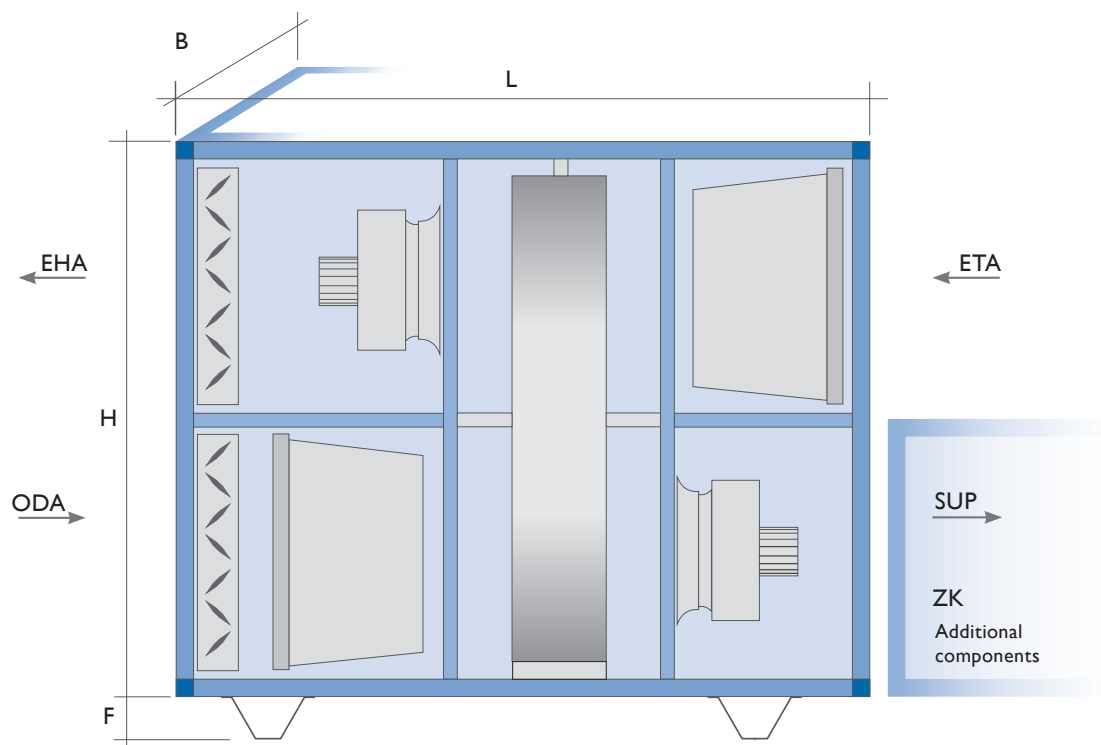


External pressure drop supply air 300 Pa, exhaust air 300 Pa
Efficiency of energy recovery acc. to DIN EN 308 (dry condition)

Type	Parts	Length (L) ^{1,2} mm	Width (B) mm	Height (H) mm	Base (F) mm	Duct connection mm	
						Width	Height
DIA 04	1-piece	1650	806	1461	80	710	534
DIA 06	1-piece	1650	1006	1461	80	910	534
DIA 09	1-piece	1800	1156	1647	80	1060	627
DIA 13	1-3-pieces	1800	1306	1647	80	1210	627
DIA 16	1-3-pieces	1900	1621	1727	80	1252	667
DIA 22	1-3-5-pieces	2133	1706	2314	120	1610	972
DIA 29	1-3-5-pieces	2133	1906	2314	120	1810	972
DIA 35	1-3-5-pieces	2612	1906	2924	120	1810	1277

¹ For a split design + 65 mm per division

² Length duct connection 80 mm by use of flexible canvas



Type	Motor capacity kW		SFP value at optimal airvolume		Sound Power Level db(A) at optimal airvolume	
	Supply fan	Exhaust fan	Supply fan	Exhaust fan	Supply fan	Exhaust fan
DIA 04	1	1	3	3	84	84
DIA 06	1	1	3	2	81	81
DIA 09	2,9	2,9	2	2	87	87
DIA 13	3	3	2	2	87	87
DIA 16	2,7	2,7	2	2	85	85
DIA 22	5,5	5,5	1	1	88	88
DIA 29	5,5	5,5	2	2	95	95
DIA 35	5,9	5,9	1	1	86	86

All information calculated based on optimal air volume.

Flexible canvas on connection openings ①

As a standard, all **diamant** units are equipped on all four connection openings with an elastic compensator for sound isolation and stretch compensation, consisting of an airtight, coated special fabric bellows, bending on both sides with two bend-resistant, round-edged profile frames connected by pressure interlocking and permanently sealed. Fabric bellows made of PVC - Polyester fabric coated on both sides, continually flexible, shrink resistant, air-tight, pressure-resistant, tear-resistant and rot-resistant, shock set plastic welded. The corners are punched to match the following standard air duct profiles. The lip seal welded to the bellows guarantees a seal grade acc. to DIN 24194 and VDI 3803, total neck seal class C acc. to EN 13180.

With the weatherproof design, as an option, a weather louvre made from aluminium is available on the ambient air side or exhaust air side.

Multi-leaf damper ②

On the entry side of the ambient air and exhaust air, the well-known and proven multi-leaf dampers from Weger are installed. The dampers are made of strong aluminium profile frames with 30 mm flange width and counter-rotating warp-resistant hollow profile - aluminium fins with lip seal. A damper actuator

mounted on the drive shaft and fully wired up as a standard. Operation through maintenance free plastic gearwheels, to prevent collection and deposit of dust and dirt integrated in the frame (outside the air flow). Bearings of the damper blades in lubricant-free plastic bushing on both sides. Damper airtightness class 2 according to DIN EN 1751.

Bag filter ③

The **diamant** units are equipped with a F7 bag filter on the supply air as well the exhaust air side. The filters are high efficiency filters, made of fibreglass with intrinsically stable compartment pockets. The filters have a total surface area of 20 m² per filter cell and thus guarantee maximum service life. Of course, the cross-sections of **diamant** at the optimal operating point are generously sized so that the pressure losses are very low and thus the demands of the latest version of EN 779 regarding energy efficiency are more than satisfied. In addition, the **diamant** is particularly maintenance-friendly, because with the proven Weger filter clamping system, a change of the filter - by the way on dust-air side - is done in an instant. The cumbersome loosening of brackets is no longer necessary and close contact with the filter itself is avoided as well. So you save not only time, but you also protect your lungs from harmful dust particles.

Type	Electric air heater		Nominal heating capacity	Nominal cooling capacity	Power consumption of the steam humidifier A	Humidifying capacity of the steam humidifier kg/h
	Heating capacity kW	Power consumption A	Air heater HW kW	Air cooler CW kW		
DIA 04	11,1	16	10,4	8,6	16,2	12
DIA 06	16,7	24,1	15,6	12,9	27,1	18,1
DIA 09	27	39	25,2	20,3	48,7	29,1
DIA 13	35,8	51,7	33,3	26,9	48,7	38,5
DIA 16	46,1	66,6	43	35,6	70,4	49,6
DIA 22	64,4	93	60	49,5	97,43	69,3
DIA 29	83,4	120,5	77,8	65,1	140,73	90,1
DIA 35	99,3	143,5	92,6	76,8	140,73	107

All information calculated based on optimal air volume.

Rotary heat exchanger ④

The rotary heat exchanger, perfectly adapted to the housing guarantees optimum efficiency in energy recovery. Due to the construction of the spirally wound foil mass by means of a smooth and a corrugated sheet layer, turbulent flow is generated in the hollow chambers, promoting the exchange of energy. With the rotational movement and the opposite working air streams, an automatic cleaning effect is achieved. The rotor is equipped as standard with a parameterized control unit and regulates automatically the speed depending on the demand.

Optional additional component - ⑤ electric air heater

Should the energy recovery under extreme conditions affect performance limits, an electric air heater can be installed as an additional component on the blow-out opening of the supply air. The cross section is exactly matched to the opening, so without additional work, the functionality of the **diamant** device can be expanded. The electric heater is equipped with all safety systems and ensures the required room temperature if no hot water connection is available.

①



②



③



④



Type	Level of insertion of the silencer dB at 250 Hz	Air-side pressure drop	
		HW ³ air heater Pa	CW ⁴ air cooler Pa
DIA 04	12	16	45
DIA 06	16	19	51
DIA 09	12	24	59
DIA 13	15	29	71
DIA 16	16	24	58
DIA 22	14	18	42
DIA 29	15	22	53
DIA 35	15	18	42

³ Supply/return temp. of the HW coil: 70°C/50°C

⁴ Supply/return temp. of the CW coil: 7°C/13°C

⑥



Optional additional component - ⑥ hot water (HW) air heater

For additional or post-heating of the supply air, a hot water head exchanger is available. This variant can be selected instead of the electric air heaters. Also in this optional additional component, the dimensions of components are perfectly matched and easy to connect. As an accessory for the HW air heater, the 3-way mixing valve including actuator supplied (loose) as well as the frost protection sensor can be installed.

⑦



Optional additional component - ⑦ chilled water (CW) air cooler

You can even air-condition your spaces with **diamant**. With the optional cooler add-on component, with the same available features as the heater. You can also combine the components and thus maximally increase your comfort.

Type	Pressure loss of droplet separator setion Pa	Air velocity on finned surface		Air velocity over the free/open cross-section of the unit m/sec	Waste heat recovery class at optimal air flow (mass flow 1:1)
		HW air heater m/sec	CW air cooler m/sec		
DIA 04	3	1,73	2,04	0,98	HI
DIA 06	4	1,89	2,20	1,15	HI
DIA 09	5	2,10	2,38	1,37	HI
DIA 13	6	2,37	2,68	1,59	HI
DIA 16	6	2,10	2,38	1,53	HI
DIA 22	5	1,81	1,96	1,40	HI
DIA 29	6	2,05	2,24	1,62	HI
DIA 35	5	1,83	1,94	1,47	HI

All information calculated based on optimal air volume.

Optional additional component - ⑧ silencer

In cases where the reduction of noise on the **diamant** unit becomes an issue, a silencer section as an additional component can be selected. The silencers are made of highly effective absorbent material with neoprene coating for an abrasion resistance to air velocity of up to 20 m/s as well as aerodynamically optimized frame plates and displaced resonance plates made out of galvanized steel. In the well-known WEGER housing, the highly satisfactory sound reduction values are achieved both in the radiation through the housing as well as in the air stream. The best part is that both the supply air as well as the exhaust air ends can be fitted with a silencer module!

Optional additional component - ⑨ steam humidifier

In order to meet the highest standards of comfort needs, a humidification section can even be attached to the **diamant** unit. With panels made of stainless steel and an inclined drain pan, not only the requirements of VDI 6022 are met, but in this area, even the specifications of DIN 1946 part 4. The generator is delivered equipped with accessories like distributor lance, steam pipes, etc.

⑧



⑨



Type	Weight of the unit without additional components kg	Weight of heater section kg	Weight of cooler separator section kg	Weight of electric air heater section kg	Weight of silencer section kg	Weight of steam humidifier section kg
DIA 04	400	59	109	54	79	114
DIA 06	470	68	116	61	93	140
DIA 09	580	80	135	71	105	183
DIA 13	740	96	161	88	131	229
DIA 16	860	115	194	105	155	298
DIA 22	1190	161	254	140	205	423
DIA 29	1350	175	275	155	225	512
DIA 35	1690	200	308	168	251	550



How to Order

1 2 3 4 5 6 7
DIA - 13 - A3 - LO - B2 - MR - ZK2456

1	2	3	4	5
Diamant	size	unit execution ^{1,2,3,4}	Info on service side + fan position	Information about damper + flexible canvas
	04-06-09-13-16-22-29-35	A: external I: internal 1: 1-piece 3: 3-piece 5: 5-piece	R: service side in supply air flow direction right L: service side in supply air flow direction left U: supply air is the lower part O: supply air is the upper part	A: without flexible canvas B: with flexible canvas 1: no damper 2: with damper inside

¹ Roof in AlMg3

² All-around 100 mm overhang

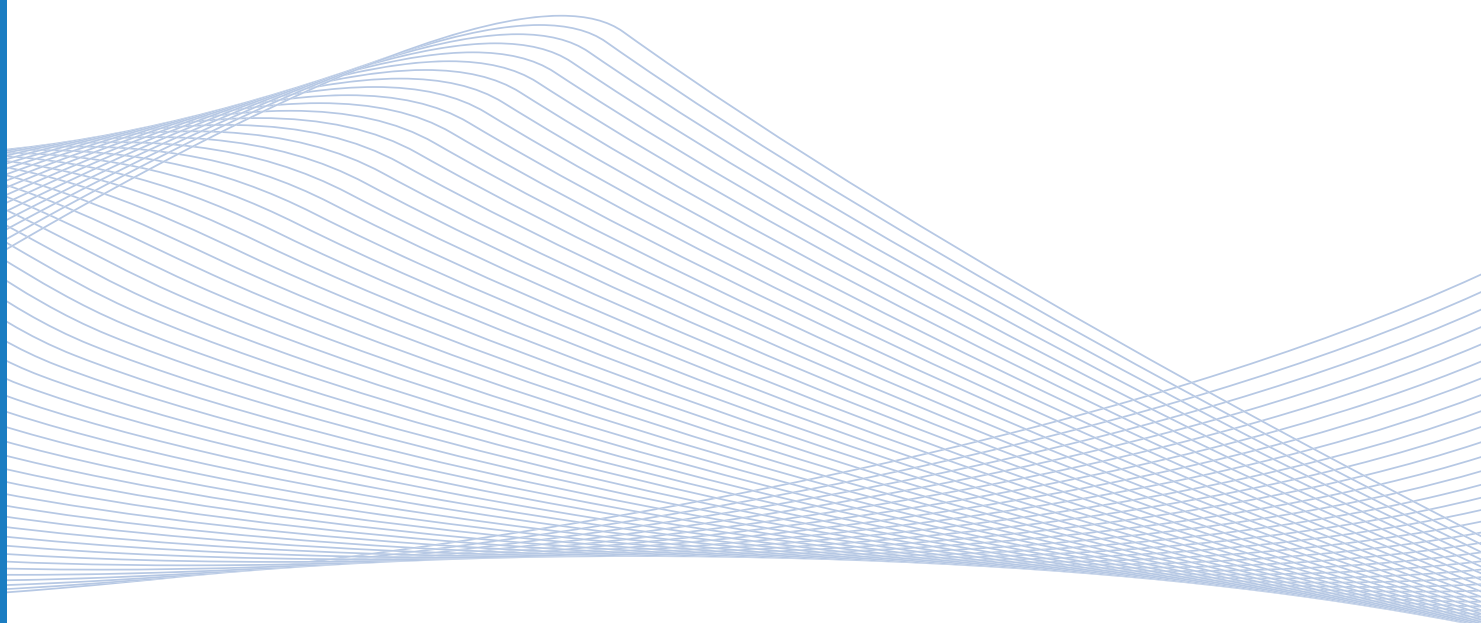
³ Weather louvre loose instead flexible canvas at ODA and EHA

⁴ with weatherproof 3-5-piece - base frame instead of feet



6	7
Design with or without controller	Additional Components ⁵ ZK
MR: With controller KR: No controller	1: only electric air heater 2: only PWW heater 3: only PKW cooler (including TA) 4: Silencer L 500 mm in supply air 5: Silencer L 500 mm in exhaust air 6: Steam humidifier empty part; optional steam generator available

⁵ All additional components can be selected



Controller *imperia*³

With the *imperia*³, a specially designed controller for the **diamant** unit, operating the unit is easy. The high quality and future-proof control offers several key benefits, such as the platform-independent programming. The controller corresponds the current version of IEC61131 and on the hardware side, is already executed with all the necessary components in the maximum stage of expansion so an upgrade of the basic unit with the available additional components is possible without the need of extension. All components are mounted on a mounting plate (motherboard) which is integrated in the unit and thus easily accessible for maintenance purposes. For operating the controller, a colour touch screen (size 4.3", 256 colours) is recessed mounted at a comfortable working height in housing panel. The representation which is freely selectable (graphical or schematically) of all measurement data and control signals ensures easy and intuitive operation by means of index cards, symbols and texts.

The configurations of all aggregates and unit equipment can be done directly on the display. All inputs and outputs can be simulated. The software has several password levels (customer, service technicians, manufacturer), so that ultimate protection against vandalism is guaranteed. All configurations and alarms are saved in history and can be displayed. Software updates can be carried out via the USB interface.

The following functions are available in the Standard Version:

- > Volume control
- > Temperature Control
- > Humidity Control
- > Air quality control

*imperia*³ features off, eco, comfort, auto by display operation modes, has a remote control and time clock, making it one of the most flexible solutions in the field of programmable controllers which adapts perfectly to the individual needs of the user.





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sabsgraphics.com

The Jewel Among Compact Ventilation Units

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