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Project information Traungasse office building Decentralised sill ventilation units FSL-B-ZAB · FSL-B-SEK



Project: Traungasse · Vienna, Austria



Interior view

Building owner: Zürich Versicherungen AG
Consultant
for building services: Dipl.-Ing. R. Bacher, MSC
Contractor: Wieselthaler Ges.m.b.H

The building

The building with offices and shops is situated in a premium location at the edge of the downtown area of Vienna with an excellent infrastructure.

In the last few years, the entire building complex was renovated in regard to energy and power and equipped with modern building services.

Several shops and offices are located on nine floors.

The ventilation concept

The individual ventilation of the regular stories are handled using decentralised ventilation units Type FSL-B-ZAB, which was integrated into the parapet of the façade. In addition to the mechanical ventilation with heat recovery and air filtration, this device concept guarantees the heating and cooling of the offices.

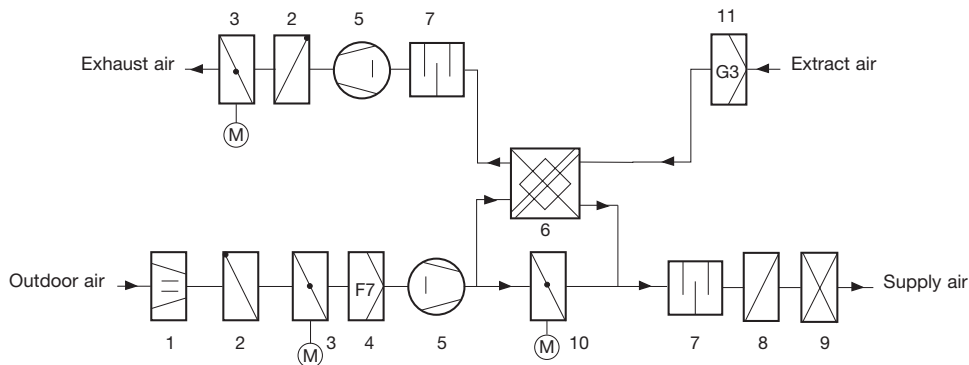
The devices convince customers due to their low noise power, stable outdoor air supply independent of the weather and wind situation, and optimum discharge of supply air.

Façade axes that are not equipped with one of the above mentioned decentralised ventilation units can be supplemented by a secondary air ventilation unit Type FSL-B-SEK. This creates a possibility for dissipating higher thermal loads.



Type FSL-B-ZAB

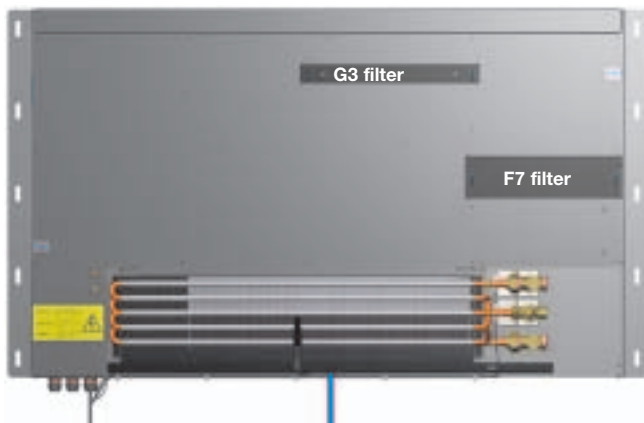
Ventilation diagram for Type FSL-B-ZAB



- 1 Volume flow limiter
- 2 Non-return damper
- 3 Outdoor air damper
- 4 F7 filter

- 5 EC fan
- 6 Recuperative heat recovery
- 7 Sound attenuator
- 8 Air heater

- 9 Cooling coil
- 10 Bypass damper
- 11 G3 extract air filter



Type FSL-B-ZAB



Type FSL-B-SEK

Structure of the sill ventilation units

The sill ventilation units consist of a casing made of galvanised sheet steel integrated into the axis of the façade. The function units for supply and extract air, the recuperative heat recovery including bypass, and a heat exchange unit are located in the casing.

The devices are attached to the concrete sill. Closed porous sealing tapes are a part of the devices and seal off the outdoor and exhaust air openings. Tapping drill holes with a diameter of 140 mm are required for outdoor and exhaust air. The façade provides weather protection.

The secondary air ventilation units contain a radial fan, a coarse dust filter, and the heat exchange unit.

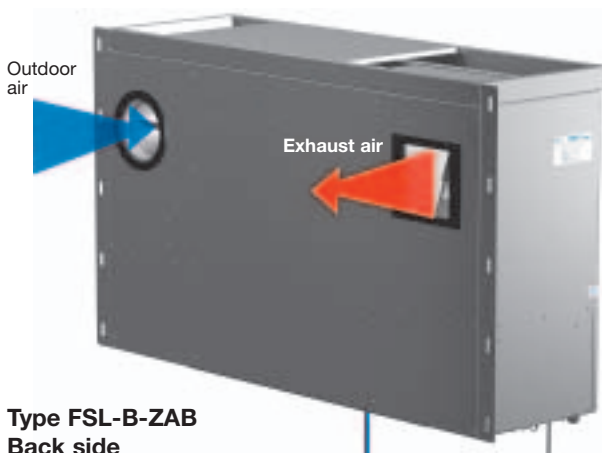
Constructional features

- Heat and noise insulating lining with mineral wool, non-combustible (material class A1), protected against erosion with glass-fibre cloth and thus hygienically harmless.
- Coarse dust filter class G3 for extract air
Fine dust filter class F7 for outdoor air
- Outdoor air dampers with spring return actuator, bypass dampers with actuator
- Mechanically self-actuating volume flow limiter, Type VFL
- Heat exchange unit with air heater and chiller made of copper/aluminium, four-pipe coil, including control valves with actuators, shut-off valves, and supply air temperature sensors, as well as a condensate drip tray made of powder-coated galvanised sheet steel.

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Type FSL-B-ZAB
Front view



Type FSL-B-ZAB
Back side



Type FSL-B-SEK

Function description for the supply and extract air unit (FSL-B-ZAB)

Supply and extract air units maintain a high air quality in rooms by supplying prepared outdoor air to the room and extracting “used” room air. For air discharge, the unit has two radial fans.

The supply air fan takes in outdoor air, which flows through a volume flow limiter, a non-return damper, a shut-off damper, and a fine dust filter. These components prevent the exceeding of the dimensioned outdoor air flow rate through wind pressure, the switching of the flow direction in case of a negative pressure on the façade, and uncontrolled flows when the device is turned off. The Class F7 fine dust filter complies with the hygiene requirements of VDI 6022.

The thermal conditioning of the outdoor air takes place using heat exchangers for heat recovery and air heating and cooling. Heat recovery takes place recuperatively with a plate heat exchanger. A part of the heat in the extract air is transferred to the outdoor air. In energetically sensitive cases during the transitional period, as well as for protection against freezing, a bypass damper opens the heat recovery bypass.

The supply air flows through the under sill cladding into the room like displacement flow.

The extract air fan takes in room air through the perforated section of the window sill and discharges it outdoors through the heat exchanger for heat recovery, the non-return damper, and the shut-off damper. A coarse dust filter in the extract air protects the fan and heat exchanger from dirt.

The acoustic lining minimizes the intrinsic noises of the device and increases noise insulation.

Function description of the secondary air unit (FSL-B-SEK)

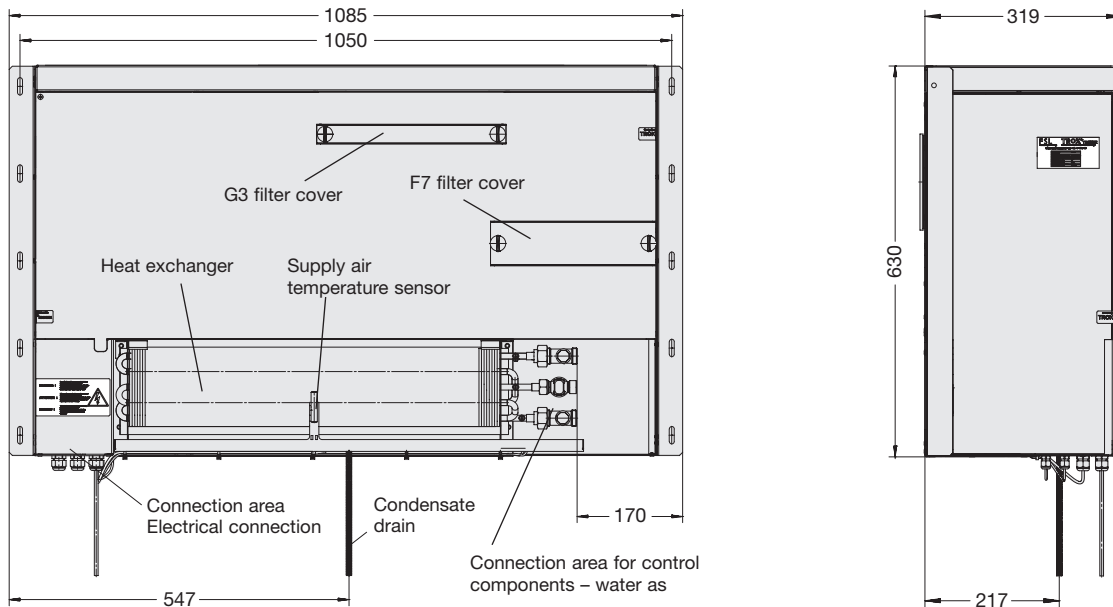
Secondary air units dissipate thermal loads; they are operated without outdoor air. The device has an extract air fan for air discharge.

The extract air fan takes in the room air through the perforated section of the window sill and discharges it through the heat exchanger for air heating and cooling. A coarse dust filter in the extract air protects the fan and heat exchanger from dirt.

The supply air flows through the under sill cladding into the room like displacement flow.

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Dimensions



Technical data

The acoustic, aerodynamic optimisation of the sill ventilation units is based on project-specific specifications.

The heat exchanger is selected according to the required output values for the specified flow rates.

The performance data of the devices are listed in the following table.

		Supply and extract air unit FSL-B-ZAB			Secondary air unit FSL-B-SEK		
Volume flow rate	m ³ /h	80	100	120	100	120	150
Sound power level	dB(A)	31	35	39	29	33	38
Sound pressure level at 8 dB room attenuation	dB(A)	23	27	31	21	25	30
Supply voltage	V	230 V AC 50 Hz			230 V AC 50 Hz		
Electrical power consumption	W	15	17	19	9	10	12
Overall device cooling capacity ¹⁾	W	542	664	781	450	510	580
Internal cooling capacity, sensitive	W	278	337	425	370	430	490
Outdoor air temperature	°C	32	32	32	–	–	–
Room temperature	°C	26	26	26	26	26	26
Supply air temperature	°C	15.6	15.9	15.4	14.8	15.2	15.1
Condensate volume	g/h	136	164	192	103	105	119
Cold water flow rate	l/h	78	96	114	66	72	84
Cold water flow temperature	°C	7	7	7	7	7	7
Cold water return flow temperature	°C	13	13	13	13	13	13
Total heating capacity ¹⁾	W	1397	1604	1788	615	700	790
Internal heating capacity	W	481	461	417	–	–	–
Outdoor air temperature	°C	-12	-12	-12	–	–	–
Room temperature	°C	22	22	22	22	22	22
Supply air temperature	°C	40	35.8	32.4	40.4	39.4	37.8
Warm water flow rate	l/h	42	48	54	18	21	24
Warm water flow temperature	°C	80	80	80	80	80	80
Warm water return flow temperature	°C	51	50	51	49	50	50

1) Without consideration of heat recovery