

TECHNOLOGY IN MOTION



MACO VENT

VENTILATION VALVES



... stay healthy

... prevent mould

... secure the value of your property

CONCEALED
WINDOW
VALVE



Proper ventilation

Rooms require ventilation depending on the nature and function of their use. Air humidity and odours must always be taken into consideration when ventilating.



The golden principle for ventilation

Moisture and pollutants should be removed at source and immediately after emergence, as far as this is possible.

Free ventilation. . .



. . . in the bedroom

Windows should be kept completely open at night (or be tilted the whole night). This ensures the greatest amount of air exchange. In winter you can "shock ventilate" by fully opening the windows immediately after getting up (see also "ventilation in winter").



. . . In the living room

This also requires regular ventilation to carry away the moisture present in the room. If there are plants, aquariums or other sources of moisture in the living room, then ventilation must be further intensified. When the air quality is perceived as poor or water droplets form on the windows, the room must be shock-ventilated.



. . . in the kitchen / bathroom

Sudden increases in humidity can occur in these areas (cooking, showering, bathing). This moisture spikes must be removed immediately by airing. Textile materials that can attract a lot of moisture should be avoided in the bathroom.



Free ventilation. . .



. . . in the cellar

The outer walls in cellars have low surface temperatures in contrast to inner walls. In summer, the ingress of warm air can lead to high temperature differences, resulting in condensation on the wall surfaces. For this reason, the basement should only be aired at night and in the morning (outdoor temperature must be at least 5°C cooler than indoor temperature). Of course, it makes sense to ventilate cellars in the winter. During this season it can normally be done at any time of day.

Basements that are used permanently should be heated and have window ventilation options.

Shock / cross ventilation



Always make sure that the interior doors are open when shock / cross-ventilating. The effect of air exchange is thereby enhanced.

When dealing with humidity spikes, e.g. in bathrooms, it is necessary to close the doors to other rooms, otherwise moisture would be distributed in the living area. Doors to minimally heated rooms should be kept closed (see also ventilation in winter).

Avoid permanent tilting of windows.

The energy consumption is drastically increased by constantly tilted windows. The most effective way is to integrate a user-independent window ventilation system and assist with shock ventilation as required. Tilted windows in bedrooms can cause the window reveal to cool down.



Respond to increased moisture



Moisture is increasingly encountered in new buildings or where renovation work has been carried out. What matters is how much building moisture passes through the plaster and screed of the building. Solid construction usually leads to more building moisture than in light weight construction and prefabricated houses.

Moisture must be removed from all rooms through increased ventilation. For this you need one to two years for solid construction. Increased heating costs can be expected during this period. Dehumidifiers can be used in order to shorten the duration.

Ventilation after refurbishment



A critical humidity situation can arise after the renewal of window units if the outside walls are not heat-insulated. The room-side surface temperature of the outer wall thus remains low.

For this reason, the ventilation needs to be adjusted for the new situation. Extended and more frequent ventilation in combination with ventilation measures are recommended. In addition, the room humidity should always be checked with a hygrometer.

If the refurbishment is for a rented apartment, landlords should point out the refurbishment work and the need for resulting ventilation.



Drying clothes in the living area

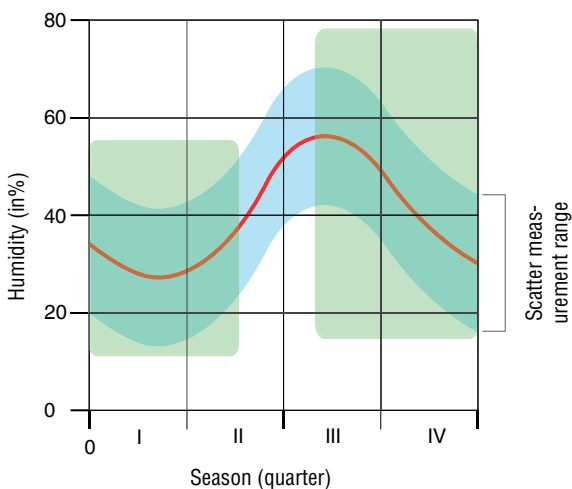


Washing should not be dried in the home or basement if drying rooms or the like are available.

Air hoses for driers should always be fed outdoors. Ventilation must be increased when washing or drying in the apartment. It is advisable to keep windows open during this time and to close doors to other rooms. But don't switch the heating off!

At what time of year is there an increased risk of mould?

The red line is the average value. The area shown in green indicates an increased ventilation requirement. The risk of moisture, bacteria and mould patches are then extremely high.





Ventilation in winter

All rooms should be adequately heated.



The golden principle for heating

Cold air can hold less water than warm!

Bedroom

Each person adds from 1/4 litre of water to the surrounding air per night. The air temperature of bedrooms should not drop below 16°C, to ensure that this water does not settle on the walls, but is sufficiently absorbed by the air.

Unused spaces

Even minimally or unused spaces should be heated slightly. Keep doors to minimally heated rooms closed.

It is not sensible to try to heat cool rooms with air from warmer areas. Doing so causes not only heat, but also moisture to be deposited. When the air cools down again, the relative humidity increases and there is a risk of mould (from more than 75% relative humidity).

Absence and night-time



The heating can be turned down when nobody is home and at night. This saves energy, but special attention should be paid to the indoor humidity. In the event of excessive humidity, the temperature must be lowered only in correlation with ventilation options. The drying process is facilitated by such ventilation measures.

Never impede the heat output of radiators

It is unwise to hinder heater effectiveness by covering them with furniture, curtains or oversized window sills. In the worst case, the desired room temperature can no longer be achieved.



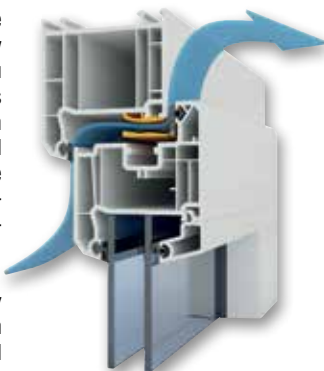
The new generation of MACO- window ventilation systems



These window ventilation systems have been designed, developed and manufactured exclusively by MACO. In doing so, MACO has skilfully combined its expertise in windows and ventilation applications.

Concealed window rebate valves are available for a variety of PVC window profile systems. As a result, you can install these ventilation elements either as a retrofit kit or directly from the factory - with minimal effort and without special tools. More details, see the "MACO ventilation - concealed window rebate valve" operation and maintenance instructions.

The window rebate valve is mainly used on new buildings or renovation projects where there is increased moisture and therefore a need for minimum ventilation to protect against moisture build-up.



The advantages of the concealed window rebate valve are evident even at high wind speeds. Its flap function closes automatically at air pressures of 20 Pa (from 21 km/h). This serves to avoid uncontrolled air exchange and prevents the feeling of draughts.

Once the air pressure drops, the valve opens and the air is able to circulate in a controlled manner.

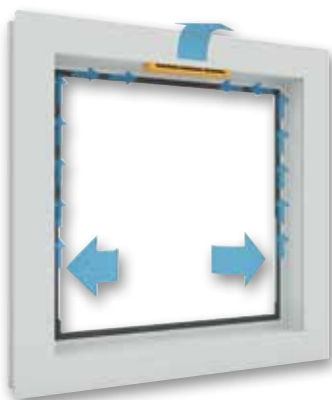


Advantages of MACO window rebate valves at a glance

- Minimum ventilation for moisture protection
- Air permeability up to 8 m³/h per individual item
- Regulated air exchange with the window closed
- Automatically protects against strong gusts of wind (prevents draughts)
- Quick and easy installation in window rebate
- Low maintenance
- No milling required

Technical specifications

- Dimensions (L x W x H):
140 mm x 27.5 mm x 12 mm



Test results according to FUS test

Measured differential pressure acc. to DIN 1946-6 in Pascal [Pa] to determine the air flow rate [in m³/h] with PVC elements*:

DIN 1946-6 [Pa]	2 Pa	4 Pa	8 Pa	10 Pa	
1 pair of MACO-Win- dow rebate vent	3.1 m ³ /h	4.0 m ³ /h	5.5 m ³ /h	6.5 m ³ /h	

* Actuation and air performance are profile and hardware-dependent and may vary.



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Temperature test results

Measured difference in temperature between prevailing outdoor and indoor air and the air inlet from the outside to inside through the MACO concealed window rebate valve:

Air exchange when using a pair of MACO-window rebate valves

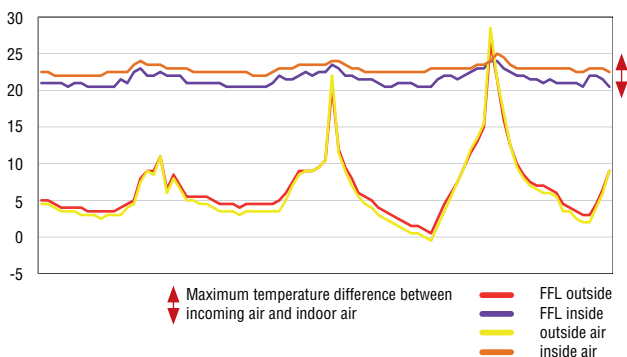
We conducted tests to recreate the pre-heated outside air flowing over the window rebate. In doing so, the action of alternate fan ventilation and cross ventilation was simulated.

Over 90 measured readings were taken as part of the practice-oriented test. The average pre-heated outside air after evaluation of the measuring points was 14.91°C. The incoming outdoor air was preheated significantly via the path from the entry point of external air through the window rebate and into the interior.

Our advantages

- Pre-heated, incoming outside air without additional energy
- No cold drafts
- Use of indoor and outdoor thermal radiation

Temperature differential values: outside - inside





Notes

A large rectangular area filled with a fine grid of light gray lines, intended for handwritten notes.



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Order no. 757101EN
Date: January 2015
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