



HEATING, COOLING AND VENTILATION

Membranes

Solution for complicated projects.

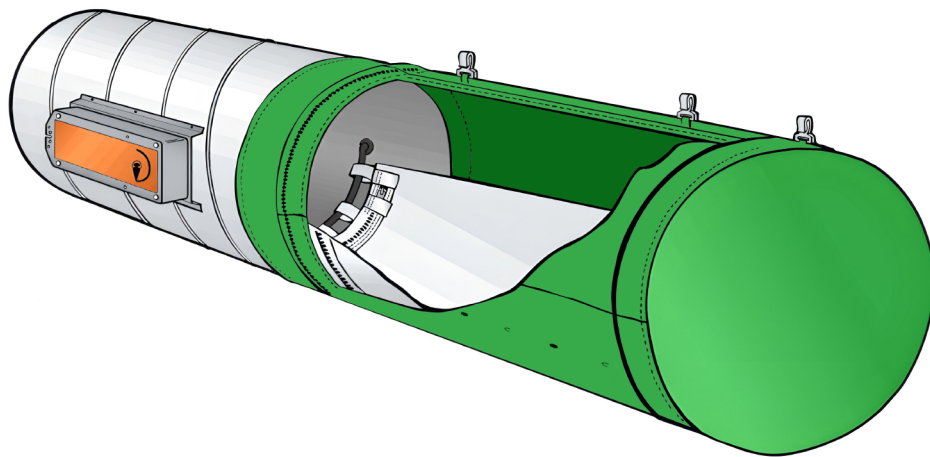
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Membranes

In practice, we often encounter systems that use a single diffuser for both cooling and heating. This approach suits most applications; however, there are physical limitations that can significantly affect efficiency—especially when the system needs to provide both heating and cooling.

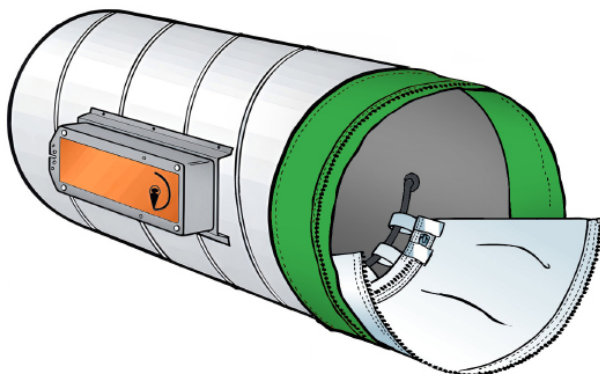
Principle of the membrane system

The main issue lies in the different physical properties of cold and warm air. Cold air has a higher density and therefore naturally sinks. Warm air, due to its lower density, rises. The membrane offers an effective solution by integrating both cooling and heating systems into a single textile outlet. Each half of the outlet is designated either for cooling or heating, separated by an airtight layer that switches between the two systems based on current needs.



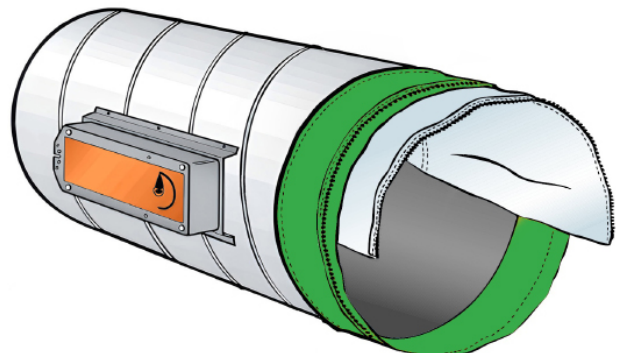
Cooling mode

Cold air is distributed exclusively through the upper half. The lower part with perforation remains covered by the membrane. The airflow takes advantage of the natural downward movement of denser cold air. As a result, the cold air gradually spreads into the space, naturally displacing the warmer air from the lower zone of the room.



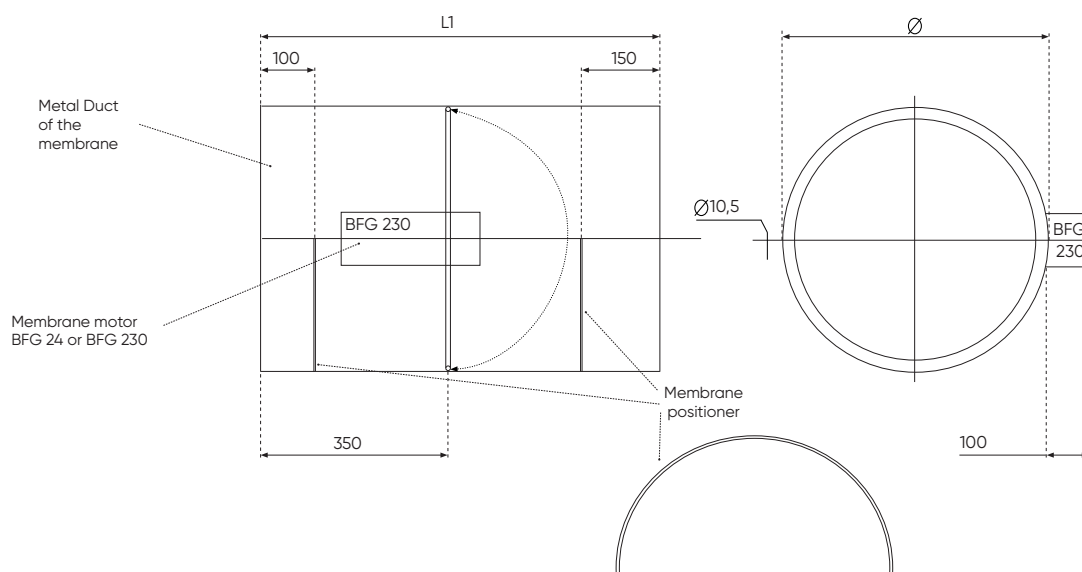
Heating mode

Warm air is supplied exclusively through the lower perforated surface of the outlet, while the upper part is covered by an insulating membrane that prevents air from escaping upward. Thanks to the perforation, the warm air exits the outlet at a higher velocity, allowing it to penetrate the occupied zone without immediately rising.



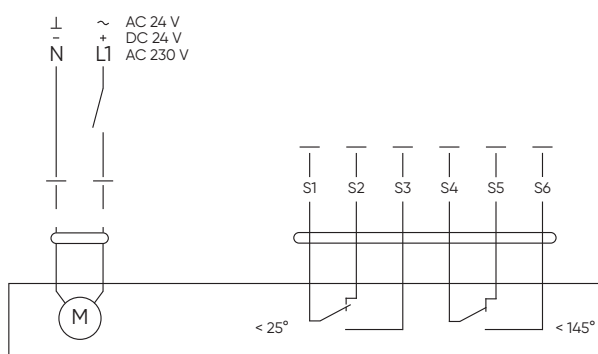
TECHNICAL DATA

Membranes



Diameter [mm]	L1 [mm]	Q _{max} [m³/h]	Weight [g]
250	625	1 400	6 900
315	658	2 200	8 500
400	700	3 600	10 300
500	750	5 300	12 600
630	815	9 000	15 900
710	855	11 500	18 200
800	900	14 500	21 000
900	950	18 000	24 200
1 000	1 000	23 000	27 900
1 100	1 050	27 000	31 900
1 200	1 100	33 000	35 800

Technical data	Belimo BFG 24	Belimo BFG 230
Nominal voltage	AC/DC 24V 50/60Hz	AC 230V 50/60Hz
Voltage range	AC 19,2-28,8V / DC 21,6-28,8V	AC 198 - 264V
Consumption	Motoring: 7W ; Holding: 2W	Motoring: 8W ; Holding: 3W
I _{max}	8,3A at 5ms	500 mA at 5ms
Protection class	III	II
Degree of protection	IP 54	-
Connection cable	1m, 2 x 0,75 mm²	1m, 2 x 0,75 mm²
Running Time	Motor: 140 s, Spring: 20 s	Motor: 140 s, Spring: 20 s
EMC rating	CE: 89/336/EEC-EWG & 73/23/EEC-EWG & 92/31/EEC	CE: 89/336/EEC-EWG & 73/23/EEC-EWG & 92/31/EEC
Sound power level	Max. 45 dB(A) / 62 dB(A) (motor/spring)	Max. 45 dB(A) / 62 dB(A) (motor/spring)
Service life	Min. 50 000 cycles	Min. 50 000 cycles



Note

BFG 24: Connect 24V via safety isolating transformer.

BFG 230: To isolate from the main power supply, the system must incorporate a device which disconnects the phase conductors (with at least a 3 mm contact gap)

Please note: Parallel connection of several actuators possible.

BFG 24, BFG 230

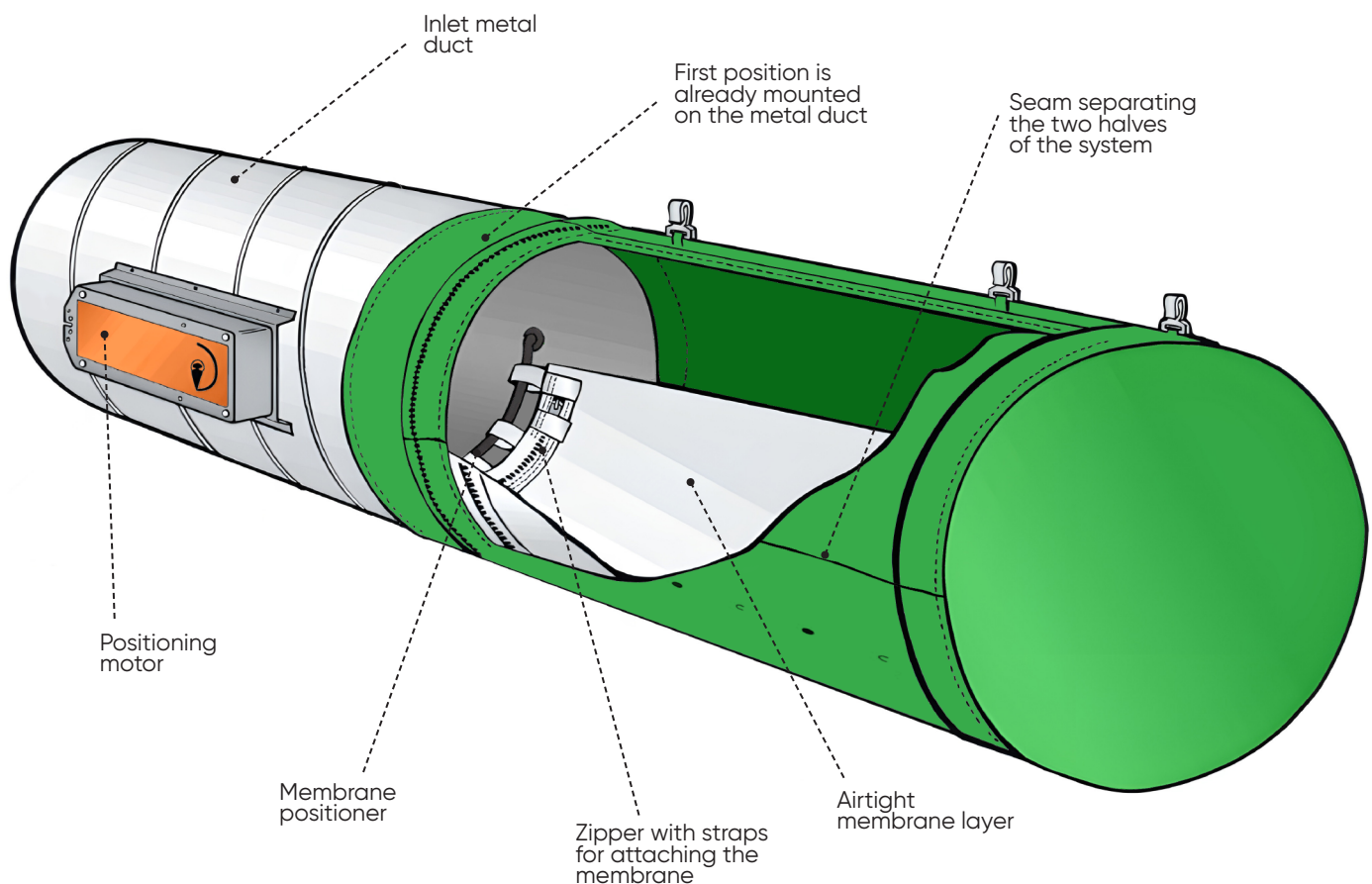
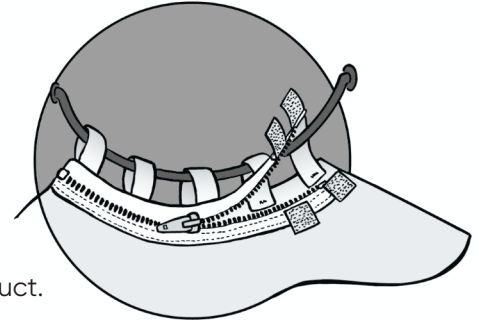
MOUNTING INSTRUCTIONS

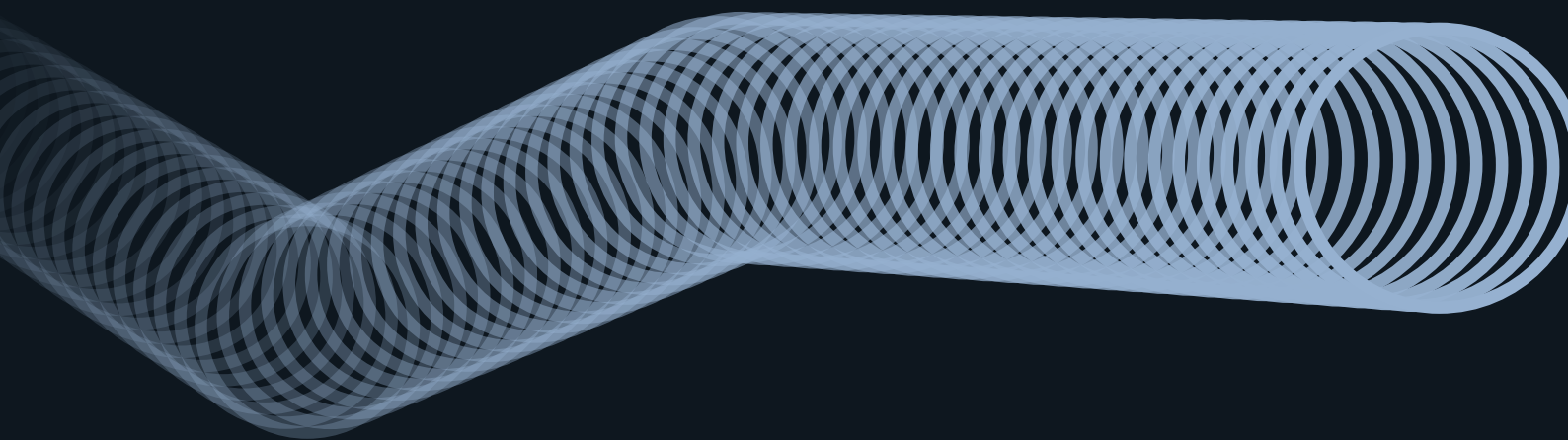
Membranes

The membrane system shipment includes a textile duct with an integrated airtight layer, a short metal inlet duct with a motor, and mounting accessories for suspending the outlet.

Installation steps:

1. Attach the inlet metal duct with the motor to the air supply.
 - The standard position of the positioning motor is on the right-hand side in the direction of airflow.
 - When the membrane is not connected to power, the motor indicator should point to the heating position, i.e. upwards.
2. The textile straps on the airtight layer are wrapped around and fastened with a zipper to the positioning bracket inside the metal duct.
3. Attach the duct to the initial position, which is already fixed to the metal duct.
 - Ensure that the membrane is properly aligned and that the seam separating the heating and cooling halves (typically containing the perforation) is exactly centered at the 3 and 9 o'clock positions.
4. Attach the sections of the duct and membrane using zippers, ensuring they connect seamlessly.





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