Product description

MTN-400 – Reactive supply air diffuser [movable underplate]

Introduction MTN-400

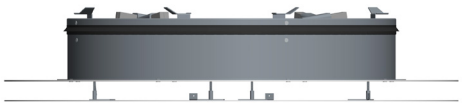
MTN, like MTC, is a self-activating reactive supply air diffuser intended for demand-controlled ventilation. The variable airflow is evenly distributed over a number of diffusers, all of which are served by one common damper on the supply air duct.

- It is used together with Lindinvent's duct-mounted room climate control unit DCV-RC.
- It does not have a fixed underplate, which means that the diffuser is closed and level with the ceiling with zero flow.
- It is intended for larger premises with a low requirement for flexibility, such as educational premises, large conference rooms, open-plan offices, restaurants, foyers etc.
- It can handle low and high flows (up to 110 l/s at 30 dBA) with under-temperature air (down to 15°C) while maintaining the recirculation of room air.
- Like the active diffuser TTC, it is equipped with moving slots. The opening of the diffuser (height of the slots) is changed reactively in response to pressure changes and thereby the air flow in the supply air duct,.

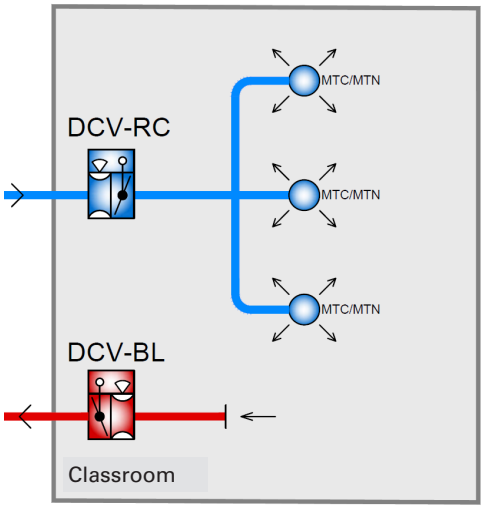
Function

With the variable air flow, the height between the diffuser's underplate and overplate is adjusted. As a result of the variable opening (slot height), air speed is maintained from the edge of the diffuser even at low flow levels, so that no downdraughts occur. The air is diffused along the ceiling with a strong injection of air from the room, which means that after only 1.5 metres the air stream will have reached room temperature.

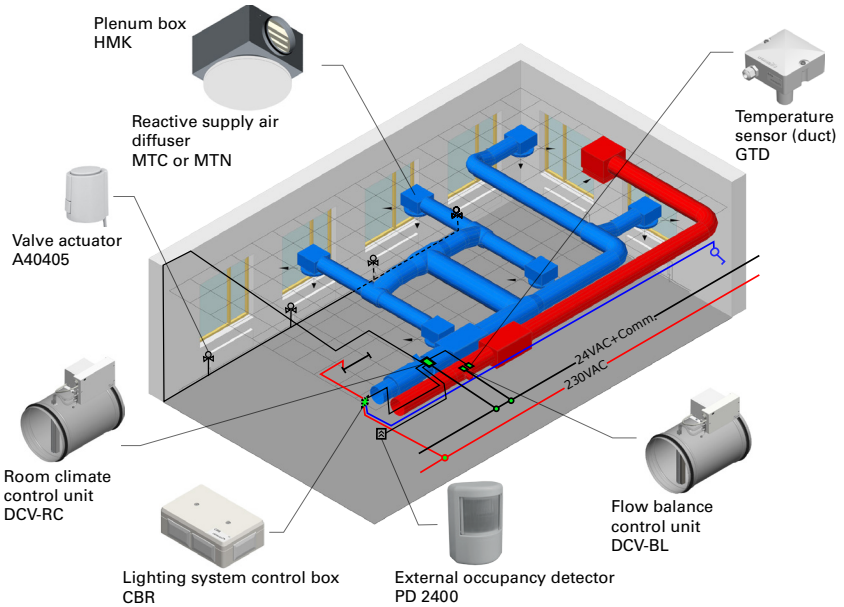
MTN – Reactive supply air diffuser with a movable underplate.



MTN – Reactive supply air diffuser with a movable underplate.



Functional chart for DCV-RC with MTN-400 and DCV-BL.



Type solution - Open-plan with MTN.

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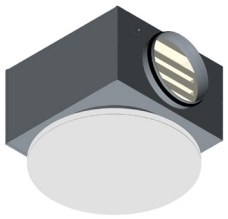
Installation options

MTN, like MTC, is mounted in a dropped ceiling via plenum box HMK or as a free hanging diffuser using plenum box HMR.The plenum boxes are of the same type used for active supply air diffusers, which makes it possible to change to active diffusers if the room structure is changed.

Adapter DAB or DAS can be used as an alternative to a plenum box. DAB is used for mounting directly in a rectangular channel. DAS is used for mounting directly in a circular channel.

Lindinvent's devices are mounted via bayonet mounting.

Examples of MTN mounting and flow distribution

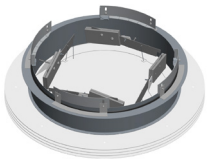


- HMK is equipped with a pressure drop mat with detachable plugs which is used when flow equalization between diffusers is required. The carpet sits in the inlet to the plenum box.

Mounted in plenum box HMK-250/400.

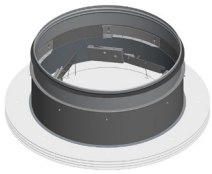
- HMR is equipped with a manually adjustable damper in the inlet to the plenum box which can be adjusted when flow equalization is needed.

Mounted in plenum box HMR-250/400.



- When mounting with DAB, a separate manually adjustable damper is used when flow adjustment is needed.

Mounted via DAB-400.



- When mounting is done via DAS, without a plenum box, a separate manually adjustable damper is required for airflow adjustment.

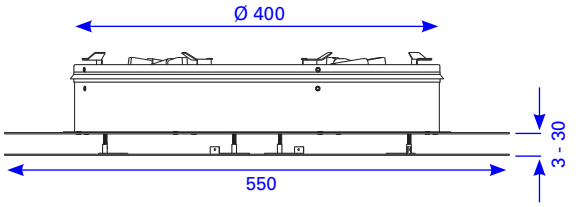
Mounted using DAS-400. This solution can be used to extend the outlet of plenum box HMK.

Distribution of the air flow over several diffusers
A description of the flow equalization method between diffusers can be found in the commissioning instruction for MTN and MTC.

Technical specifications MTN

General

Dimensions (mm)
The dimensions of MTN-400 appear in the illustration on the right. For plenum box dimensions, see the product descriptions for HMK and HMR respectively.



MTN-400 with width and height in mm depending on the size of the opening.

Material
Powder coated aluminium and steel plate.

Colour
Standard: RAL9003
Other colours may be specially ordered.

Weight
3.9 kg.

Air flow
Flow area: Up to 110 l/s at 30 dB(A). Limits depending on sound requirements according to Diagrams 1 and 2.

Pressure, flow and sound levels

See page 3.

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Pressure, flow and sound levels

Sound pressure levels L_{PA} in diagrams 1 and 2 correspond to A-weighted sound level in the reverberation zone with 10 m² equivalent sound absorption area. This corresponds to 4 dB room absorption in a room with normal absorption and a volume of 25 m³. Note the examples of corrections for other types of room in table 2.

Sound effect level/octave band $L_w = L_{PA} + K_0$ [dB]
L_{PA} = Sound pressure level [dB(A)] (Diagram1 and 2)
K_0 = Correction factor/octave band [dB] (Table 3)

Self-damping according to table 4-6.
The measurements have been performed according to ISO 9614-2 and ISO 691:1995.

Diagram 1 Flow, pressure and sound level for MTN-400 and HMK with different initial HMK insert adjustment positions.

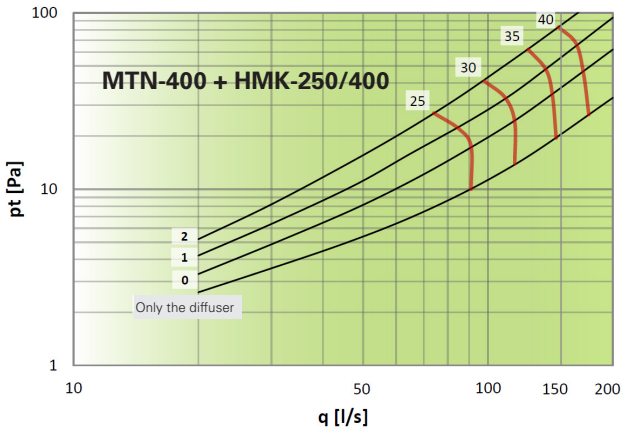

Diagram 2 Flow, pressure and sound level for MTN-400 and HMR.

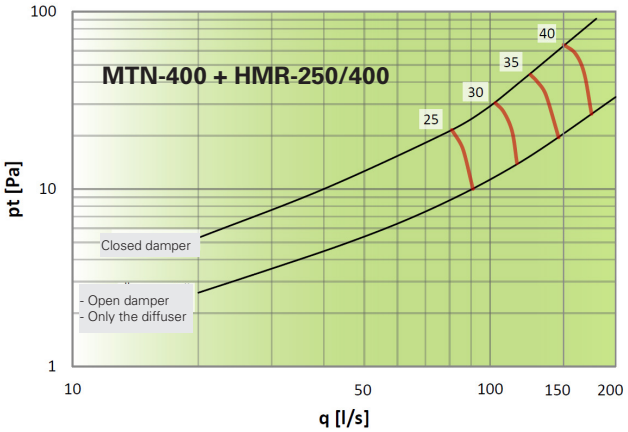

Table 1: Tolerances [dB]

MTN	Octave band [Hz]							
	63	125	250	500	1K	2K	4K	8K
400	3	3	2	2	2	2	2	2

Table 2: Correction for room damping [dB]

Room volume	Type of room	Correction
25 m³	hard room	+2 dB
25 m³	normal room	0 dB
25 m³	damped room	-2 dB
150 m³	hard room	-3 dB
150 m³	normal room	-5 dB
150 m³	damped room	-7 dB

Table 3: Correction factors, K_0 [dB]

MTN	Octave band [Hz]							
	63	125	250	500	1K	2K	4K	8K
400	10	10	5	2	-2	-5	-12	-15

Table 4: Self-damping [dB]
MTN with plenum box HMK.

MTN +HMK	Octave band [Hz]							
	63	125	250	500	1K	2K	4K	8K
400	15	11	20	20	21	18	22	23

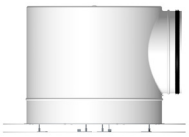

Table 5: Self-damping [dB]
MTN with plenum box HMR.

MTN +HMR	Octave band [Hz]							
	63	125	250	500	1K	2K	4K	8K
400	11	6	13	10	12	12	14	16

Table 6: Self-damping [dB]
Only diffuser part MTN mounted with transformer DAB or DAS.

MTM	Octave band [Hz]							
	63	125	250	500	1K	2K	4K	8K
400	18	16	12	13	14	12	15	18

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Additional product documentation MTN

Table 6: Additional documentation for MTN can be obtained via links on the product's website under Products at www.lindinvent.se

Document	Available	Not available	Comments
Installation Instruction	●		Combined for MTN, MTC and plenum boxes HMK and HMR.
Start-up instruction	●		Instruction for air flow distribution between diffusers.
Maintenance instruction		●	Regarded as maintenance-free.
External connection diagram		●	Not applicable.
Environmental product declaration	●		Assessed by Byggvarubedömningen and Sundahus.
User information		●	Not applicable.
Modbus list		●	Not applicable.
AMA text	●		

Product documentation can be downloaded via www.lindinvent.se/produkter/

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The company offers products and systems for controlling ventilation, lighting, solar shading and local utilization. Equipment and climate solutions are being developed for offices, schools, hospitals, laboratories and similar working environments. Lindinvent's systems work together to provide high indoor comfort and the lowest possible energy use.