

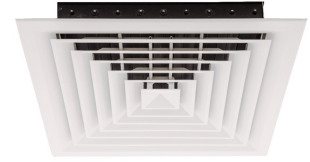


Ceiling Diffusers

BM-KA-01

Ceiling Diffusers

BM-KA-01

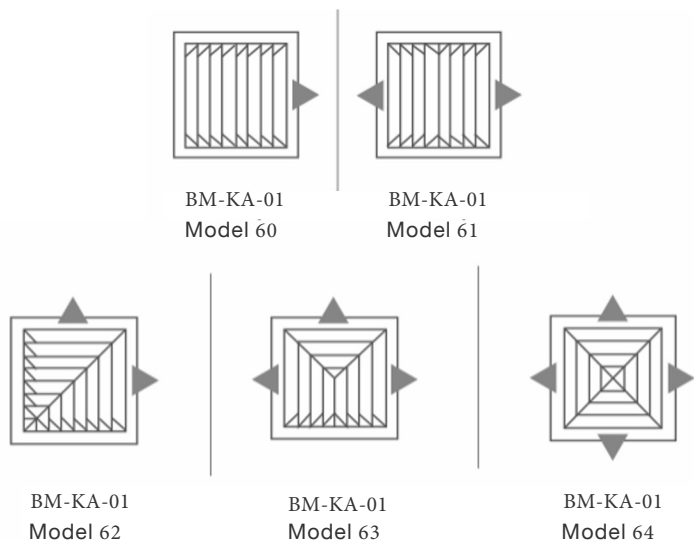


BM-KA-01 ceiling diffusers are compatible with low and medium pressure ventilation systems as well as A/C air supply and exhaust ducts. Aerodynamically designed blades provide a tight horizontal pattern that maintains stability even at low airflow rates. Excellent for architectural applications.

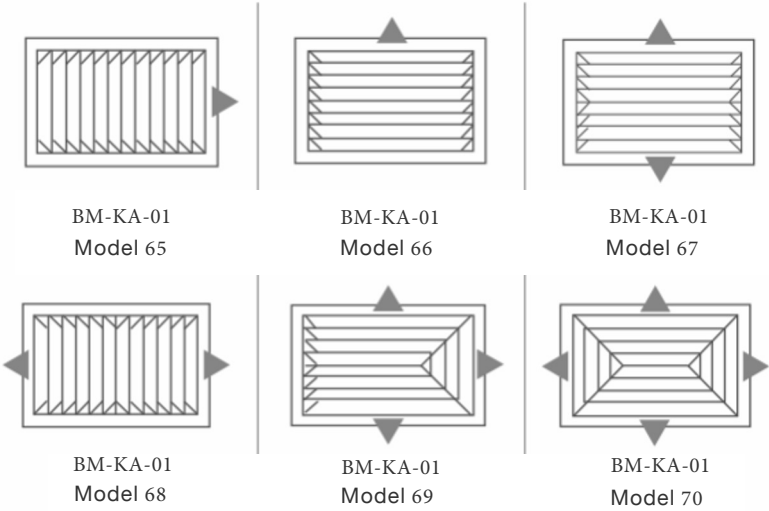
- Recommended for spaces with a maximum ceiling height of 4 - 6 m.
- Easy-to-install
- The diffuser vanes can be removed
- The diffuser provides air supply in four directions
- Optionally available in square and rectangular shapes, with different directions of discharging core styles for 1, 2, 3 and 4 way in horizontal path
- Rear dampers and ancillaries are of aluminum mill finish. Available with black matt finish in color on request.
- Available with optional extended panels to suit modular ceilings.

Types

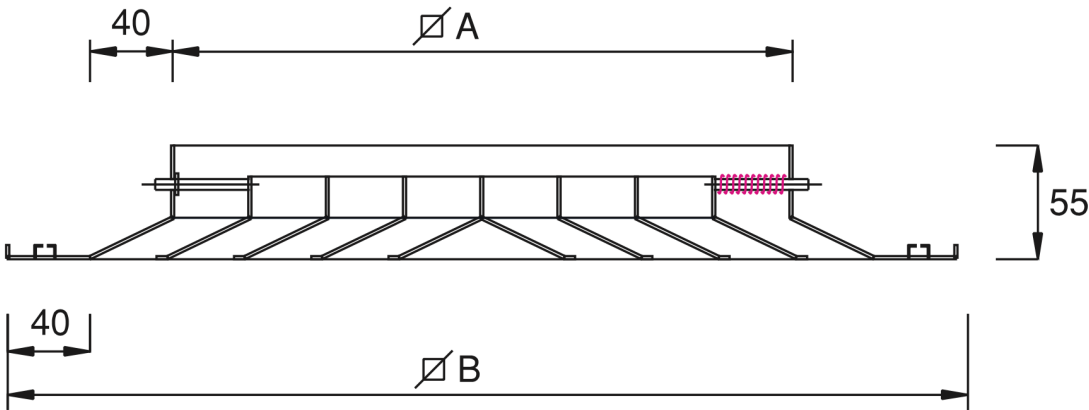
BM-KA-01 models of square diffusing cores are interchangeable between standard outer frames of the same size



BM-KA-01 models of rectangular diffusing cores are interchangeable between standard outer frames of the same size

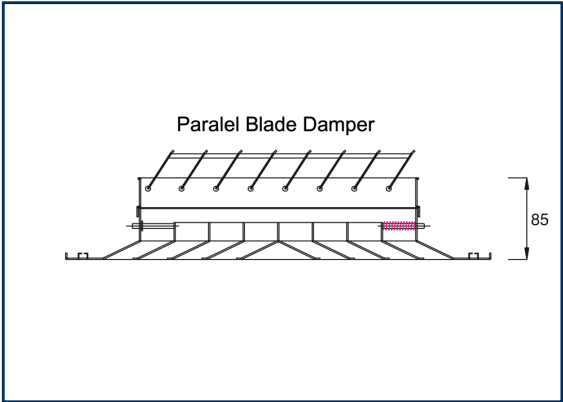
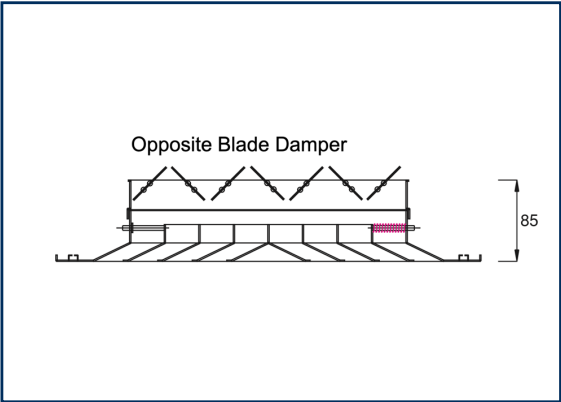


Sizes

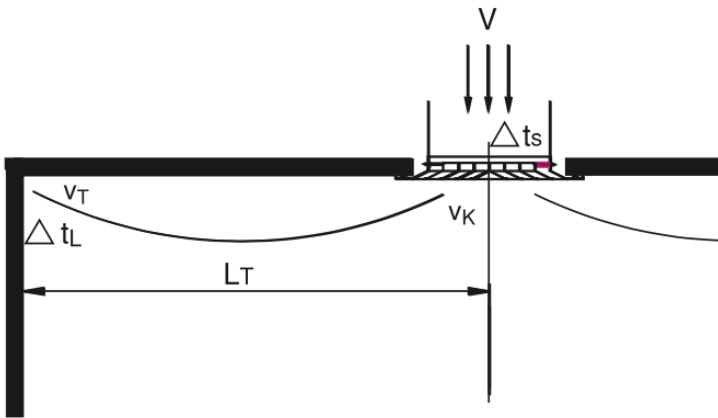


AXA	150	225	300	375	450	525	600	750
BXB	310	385	460	525	595	685	760	910

- Sizes: mm
- Any combination



Performance Data



V (m³/h) : Flow Rate

ΔP_t (Pa) : Pressure Loss

v_K (m/s) : Outlet Velocity

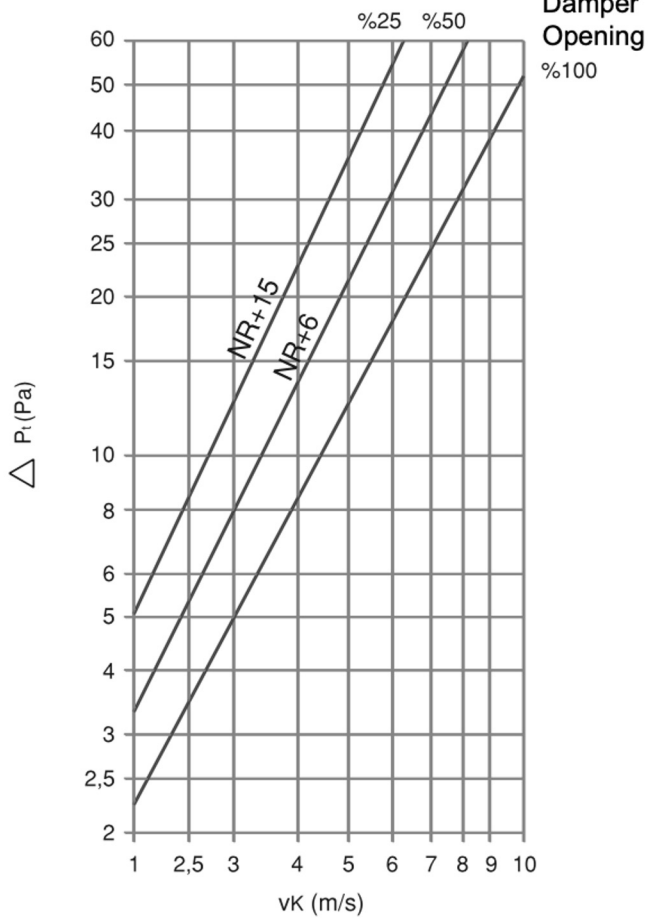
A_K (m²) : Effective Area

L_T (m) : Horizontal Throwing Distance

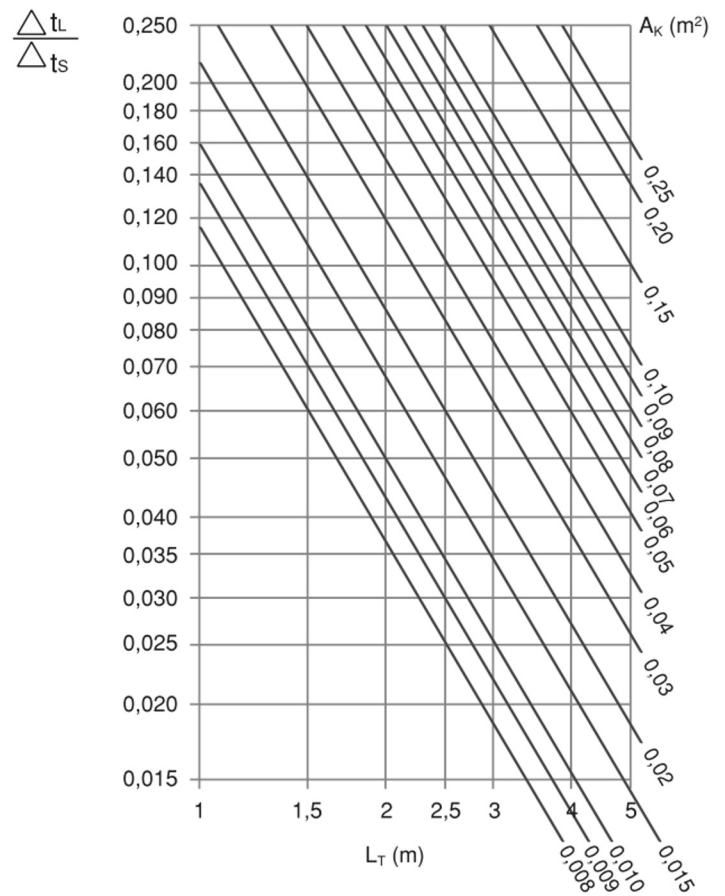
v_T (m) : Velocity at the Comfort Zone

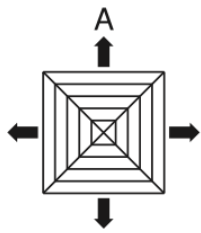
NR : Sound Level

Pressure Loss Diagram



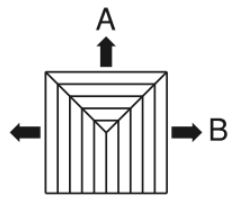
Thermal Diagram





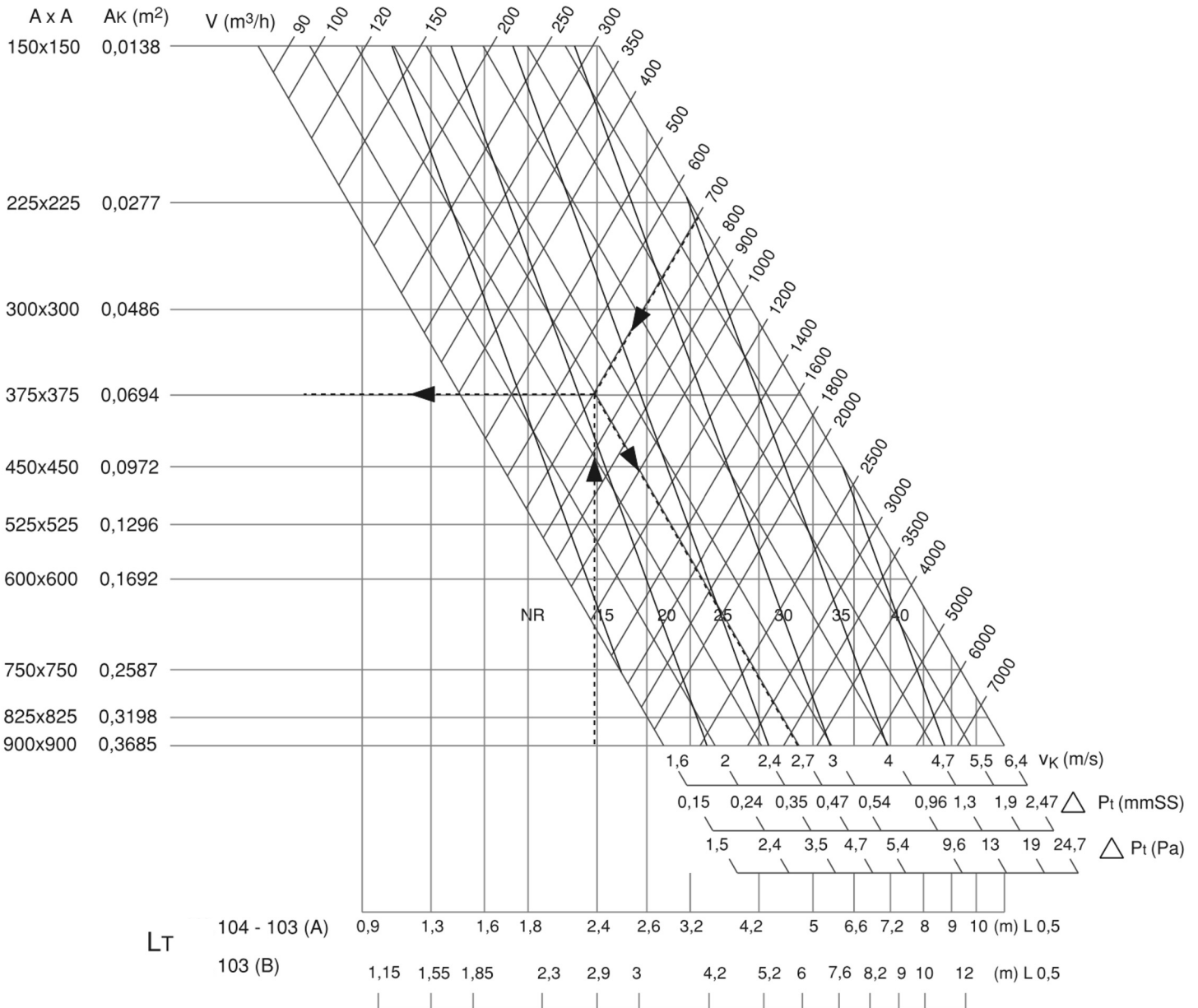
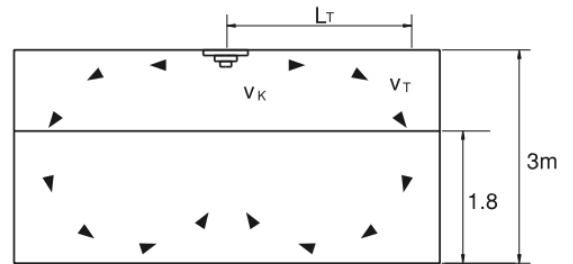
BM-KA-01

Model 64



BM-KA-01

Model 63



Example Selection

Needs:

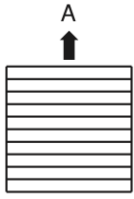
Flow Rate : V=700m³/h
Throw : L_T= 2,4m (v_T=0,5 m/s)

Choose:

Chooed Size : 375x375
Outlet Velocity : v_K=2,7m/s
Pressure Loss : ΔP_t=4,7Pa
Sound Level : 22 NR
If needed 50% Damper Opening:
Pressure Loss : ΔP_t=+10Pa
Sound Level : +6 NR

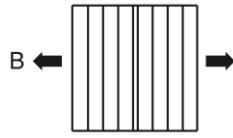
Total ΔP_t and NR:

Pressure Loss : ΔP_t=14,7 Pa
Sound Level : 28 NR



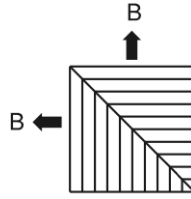
BM-KA-01

Model 66



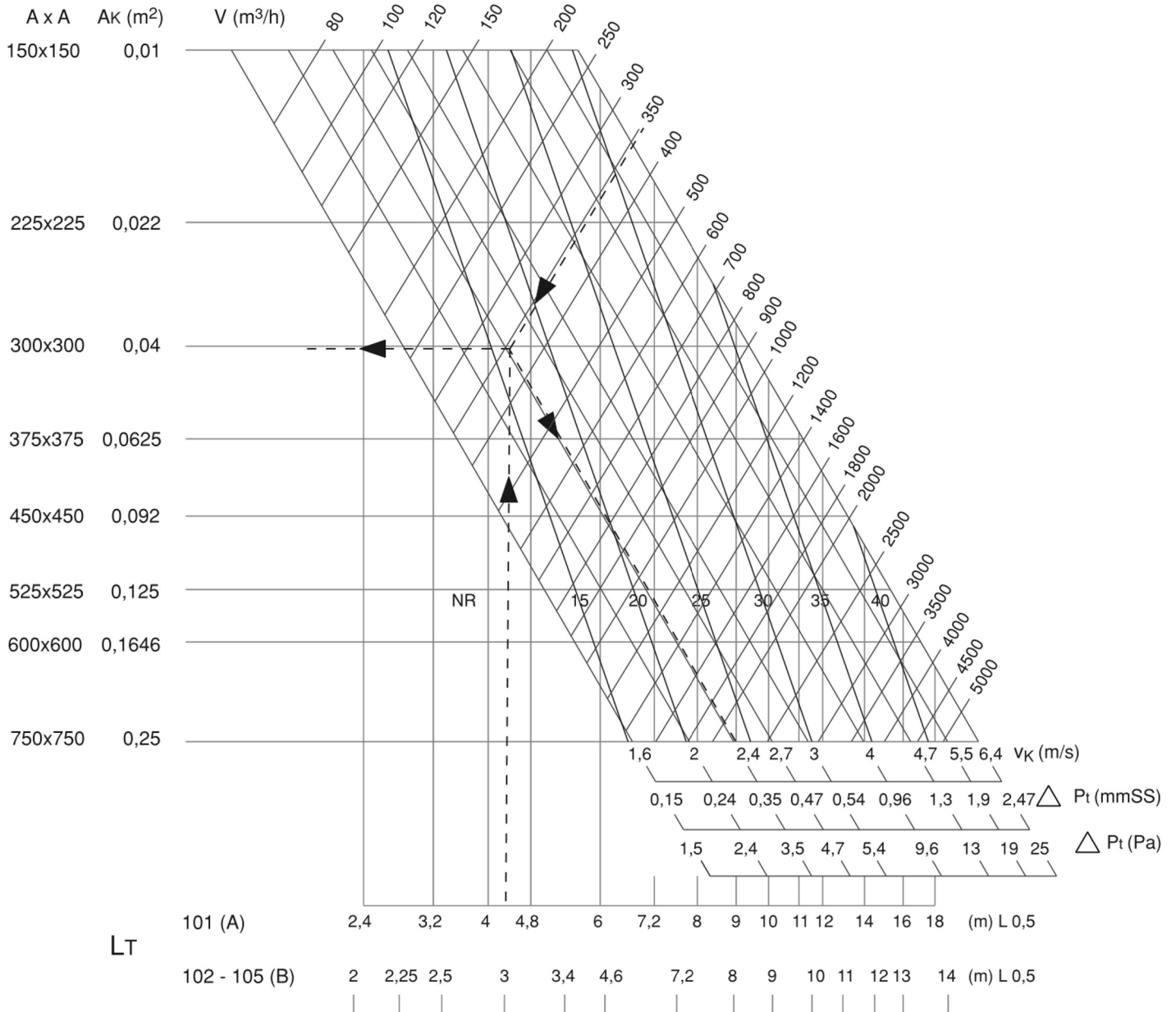
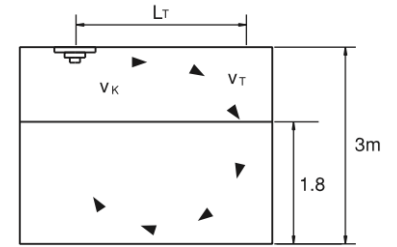
BM-KA-01

Model 68



BM-KA-01

Model 71



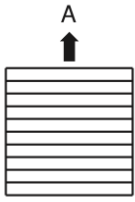
Example Selection

Needs:

Flow Rate : $V = 300 \text{ m}^3/\text{h}$
 Throw : $L_T = 4,5 \text{ m}$ ($v_T = 0,5 \text{ m/s}$)

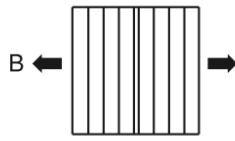
Choose:

Chooed Size : 300x300
 Outlet Velocity : $v_K = 2,4 \text{ m/s}$
 Pressure Loss : $\Delta P_t = 3,5 \text{ Pa}$
 Sound Level : 23 NR



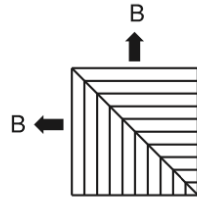
BM-KA-01

Model 66



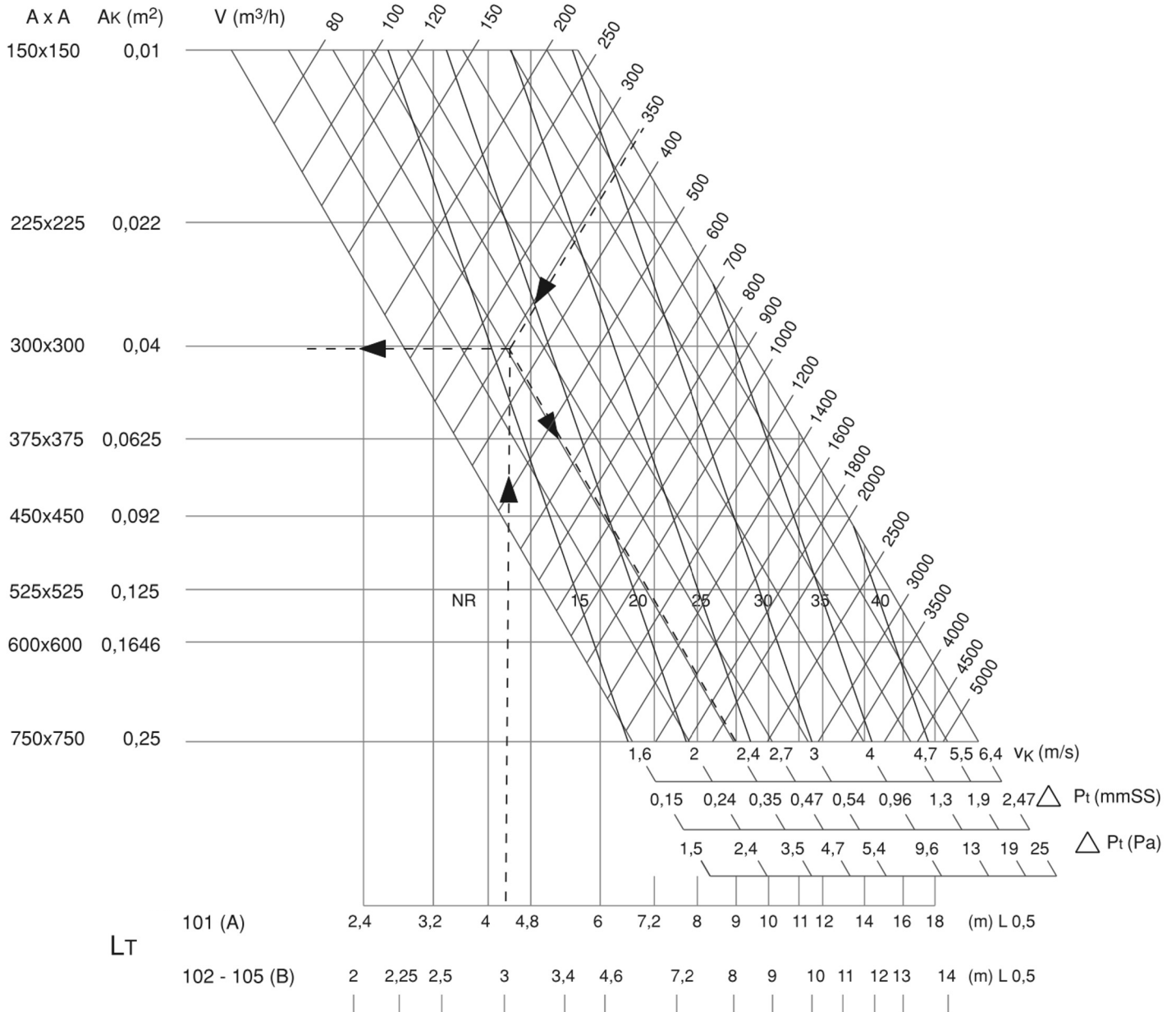
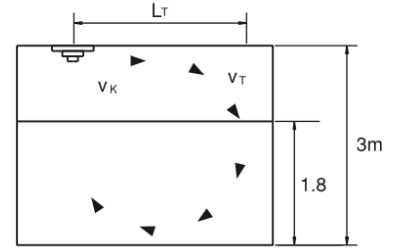
BM-KA-01

Model 68



BM-KA-01

Model 71



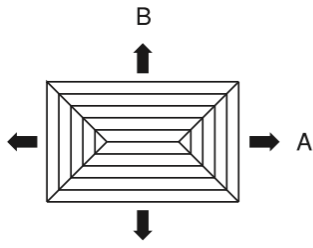
Example Selection

Needs:

Flow Rate : $V = 300$ m³/h
 Throw : $L_T = 4,5$ m ($v_T = 0,5$ m/s)

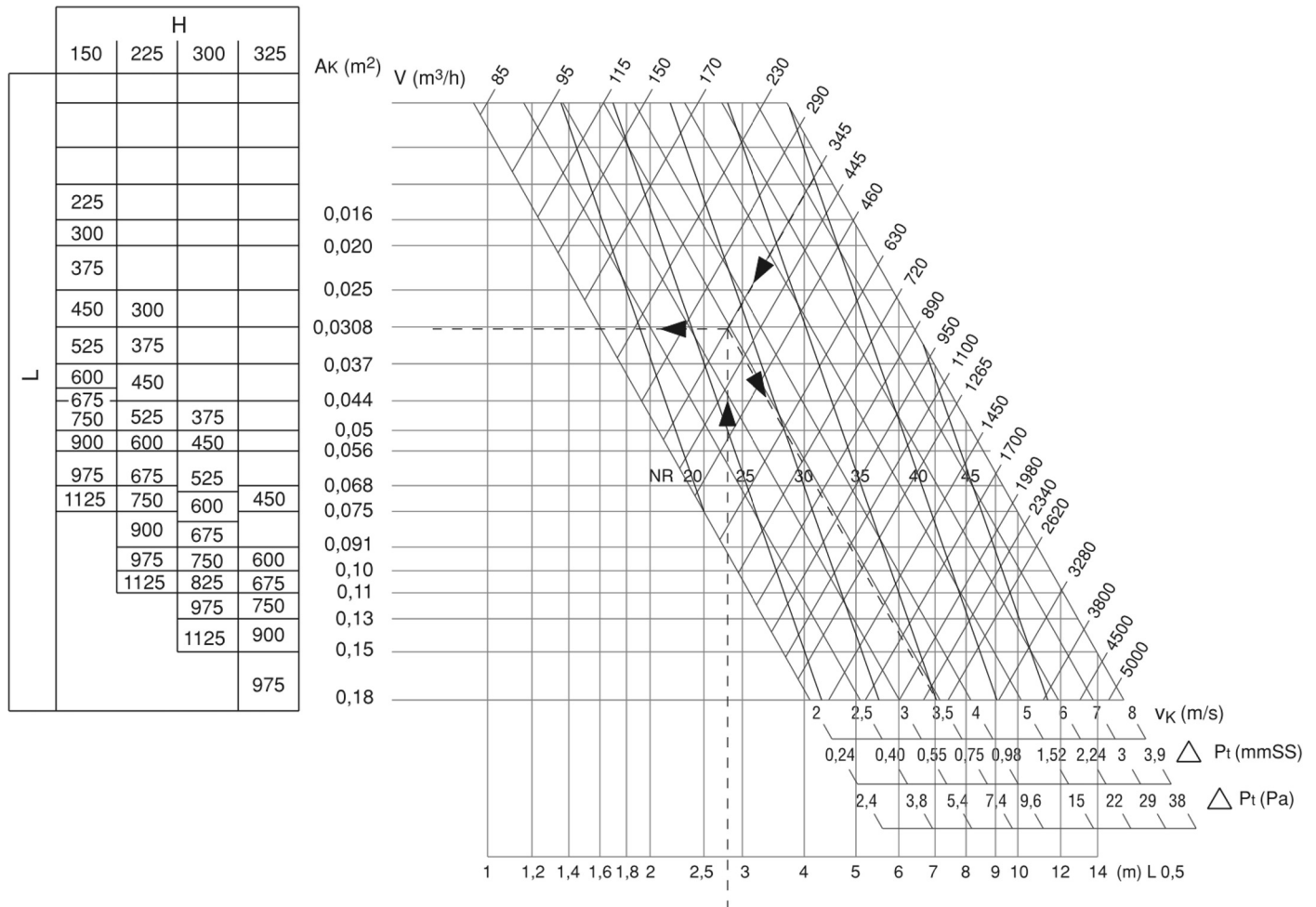
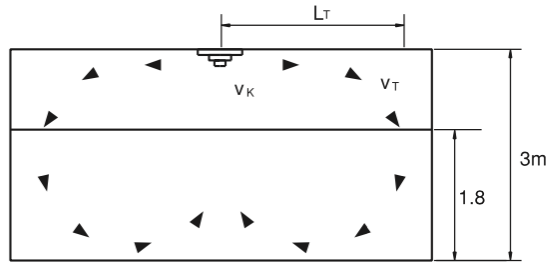
Choose:

Chooed Size : 300x300
 Outlet Velocity : $v_K = 2,4$ m/s
 Pressure Loss : $\Delta P_t = 3,5$ Pa
 Sound Level : 23 NR



BM-KA-01

Model 64



Example Selection

Needs:

Flow Rate : $V=300\text{m}^3/\text{h}$

Throw : $L_T(A)=2,8\text{m}$ ($v_T=0,5\text{ m/s}$)

Throw : $L_T(B)=2,1\text{m}$ ($v_T=0,5\text{ m/s}$)

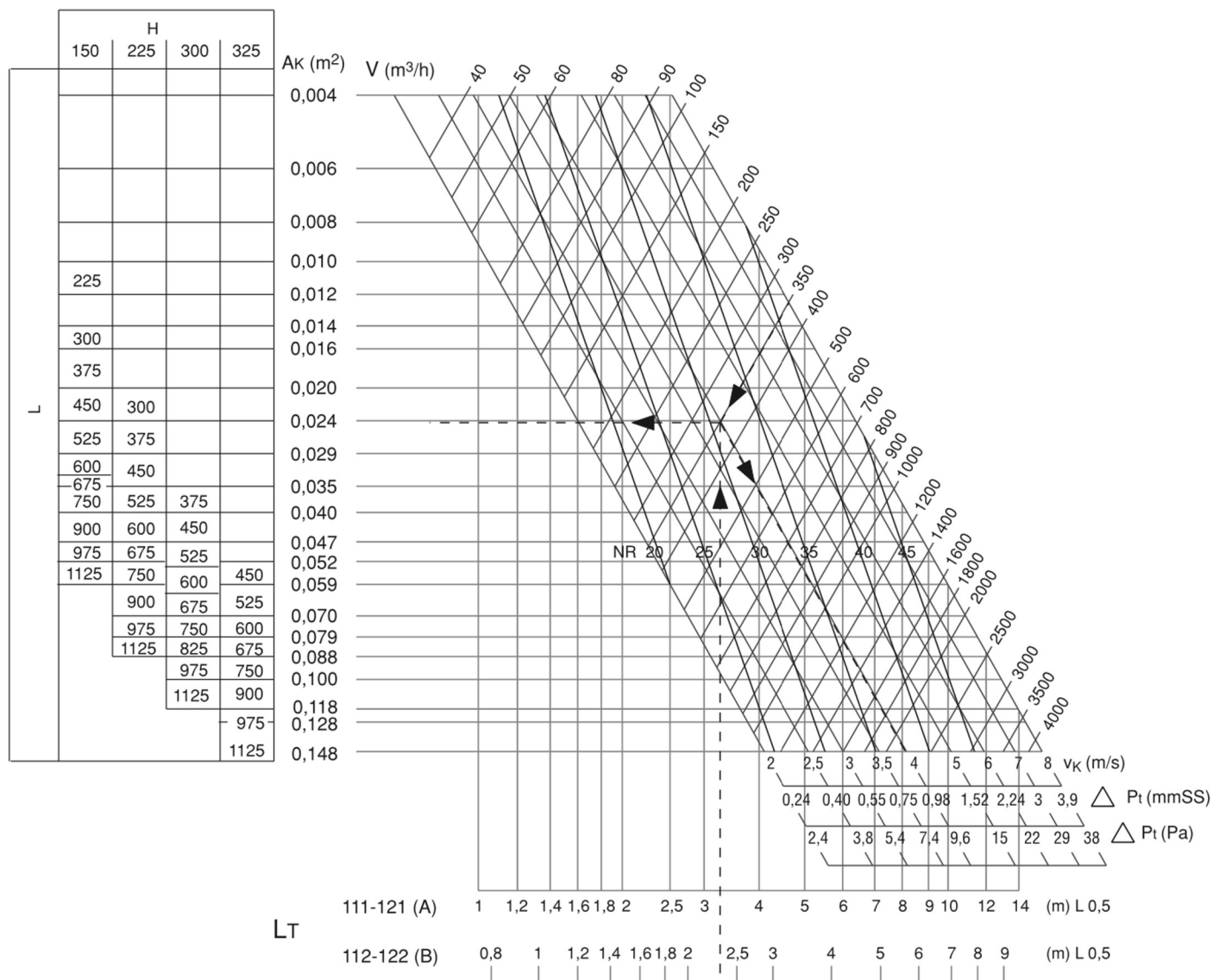
Chose:

Chosed Size : 300×225

Outlet Velocity : $v_K = 3,5\text{m/s}$

Pressure Loss : $\Delta P_t=7,4\text{ Pa}$

Sound Level : 28 NR



Birlik Menfez Technical Catalogue – Ceiling Diffusers

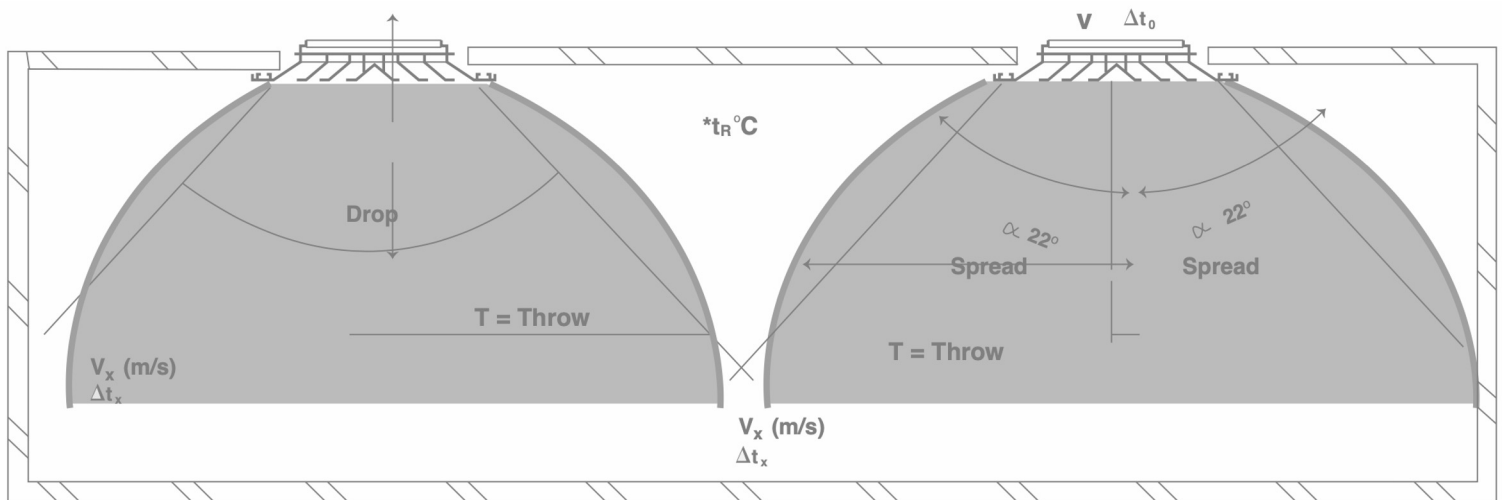
Engineering and Performance Data

Notes on Selection

Throw data are based on terminal velocities (V_t) at the ceiling for supply air temperatures of 11°C below room temperatures. To determine throw for isothermal and Δt 11°C temperature differential, use factors in following table.

V_t m/s	Isothermal air flow	$\Delta t = 11^\circ\text{C}$
0,75	1	1,00
0,5	1,05	1,10
0,25	1,11	1,22

Maximum throw show is based on a V_t of 0.25 m/s, and minimum throw on a V_t of 0.75 m/s. With diffusers mounted on a 2.7 m high ceiling and supplying air at 11°C below room temperature, the approximate average room velocities will be 0.175 m/s and 0.33 m/s respectively.



Air diffusion without side wall effect with model 70

- When two diffusers are discharging air towards each other, selection should be based on the diffuser size which will produce the required throw (one half the distance between diffuser centers) within the medium to maximum throw range at the air volume requirements.
- When diffusers are mounted on an exposed duct, or used with drop collars, the throw is decreased by approximately 40%. Air will be discharged downwards at an angle of approximately 20° from the horizontal. Horizontal air thrown can be obtained by extending a surface minimum of 300 mm beyond the periphery of the diffuser.
- For heating application, maximum mounting height is 3.7 metres at 16.5°C temperature differential with returns mounted at or near floor level.
- NC data are measured at a location from the diffuser of 1.5 metres and 45° angle from the face with an allowance of 10 dB for room effect and for diffusers without dampers or with dampers fully open. A blank space indicates no significant sound.
- Dampers fitted to diffusers are intended for fine balancing purposes. Excessive dampering to overcome high duct pressures will result in an increased sound level of approximately 8dB per doubling of pressure drop.

Engineering and Performance Data

Air Distribution

For ceiling diffusers, in addition to air flow, air throw and induction characteristics are the principle actors for selection.

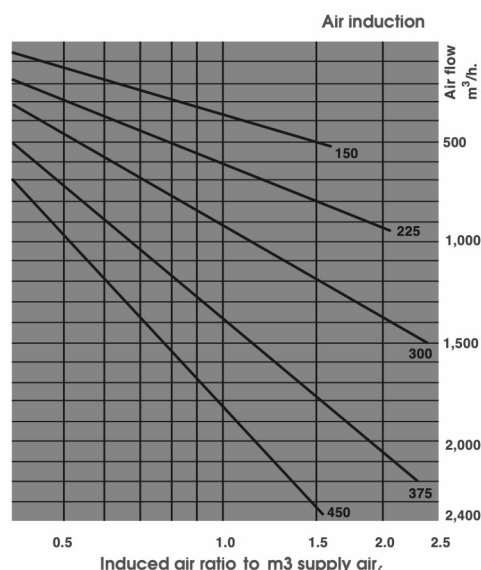
The induction factor and the throw can be adjusted by the individual internal setting blades for slot diffusers but they are mostly fixed for ceiling diffusers.

For such reason, the selection of ceiling diffuser must be made with precision, taking into consideration, the following procedure:

- Calculate the total air flow for the specific area.
- locate diffusers uniformly and co-ordinate with lighting fixtures.
- If diffusers cannot be located in the center of the area, select random diffusers with 1, 2 or 3 way pattern. Suggest diffuser locations considering ceiling height.
- Find maximum air flow rate per side of diffuser.
- Control the total air flow rate permissible per diffuser.
- Select the number of supply and return diffusers.
- Control sound level for the type of application.
- Select the size of diffusers from the air flow data and recontrol the horizontal throw of the selected diffusers.

Air Induction

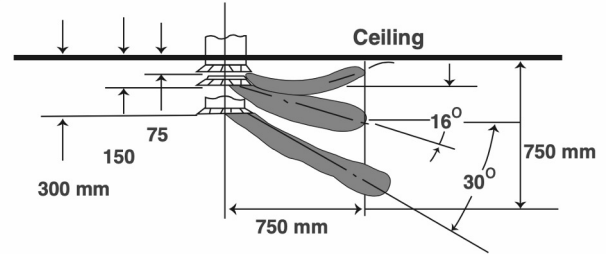
Air induction is an important factor in air conditioning distributing systems. The energy produced by the volume flow through diffuser and the discharge velocity at the diffusers outlet induces the air in the room and is the principle reason for the drop in temperature between supply air and room air. At high neck velocity, the induced air capacity can become more important than the original air flow, and throw is increasing in function of induced air ratio. Testing results for throw includes the influence of air induction.



Engineering and Performance Data

Ceiling Effect

Performance data as published in this catalogue is based on the diffuser being mounted at the ceiling. The published performance for the directional air pattern benefits from the ceiling coanda effect. When the diffuser is mounted remote from the ceiling, the air patterns to be anticipated are illustrated in Figure.



Sound data

- NC values are based on a room absorption of 10 db, re 10-12 watts.
- Performance data as tabulated is for supply air applications.
- Performance data assumes that BM-KA-01 is mounted on the ceiling for maximum ceiling effect.
- When no ceiling effect is present, the horizontal throw will be reduced approximately by 25%.

Outlet size

Outlet sizes are mentioned on the left side of each row within a tolerance of 10%

Accessories

BM-KA-01

Opposite Blade Damper

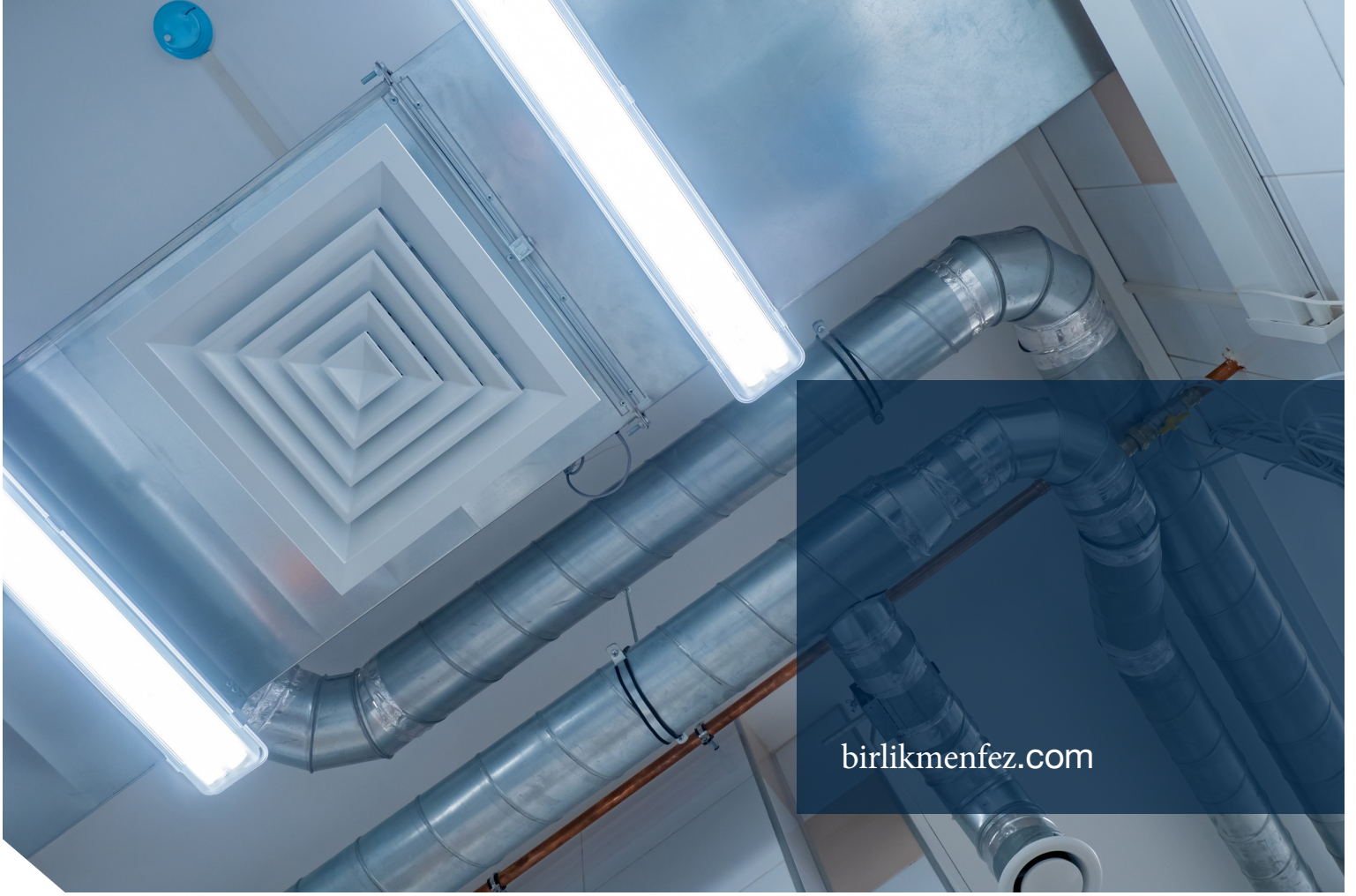
BM-KA-01-03



Plenum Box

BM-BOX-01





Ceiling Diffuser BM-KA-01



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