



# Ideal comfort diffuser

## IKA



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## Ideal Comfort Diffuser IKA

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| <b>Order code IKA</b>                     | <b>21</b> |
| <b>Order code AKR-IKA</b>                 | <b>22</b> |
| <b>Specification text</b>                 | <b>23</b> |

## Ideal Comfort Diffuser IKA

### Description

Electrically or manually adjustable diffusers are required **for cooling and heating large halls**.

In order to prevent draughts in the cooling mode, the supply air must largely be discharged horizontally from the diffuser. In heating mode, however, the diffuser must have high penetration depth, in order to achieve fast and efficient heating.

The diffuser type IKA meets both these requirements with either a manual or electric adjustment. It ensures optimum air distribution in cooling and heating modes.

The diffuser has a funnel neck connection with an inner and outer basket arrangement. The diffuser has openings on its circumference and underside. In the heating mode, the diffuser can be adjusted manually or electrically by the actuator, the thermocouple to close off the lateral openings and open the bottom openings, thus creating a vertical supply air jet. This results in a compact supply air jet, reaching a great penetration depth. **The high penetration depth ensures quick heating of the rooms.**

The outer casing is opened up for cooling thus closing the openings at the bottom of the diffuser. **The individual supply air jets created ensure a high induction, which means that velocity and temperature differentials are rapidly reduced.**

The openings on the perimeter and underside of the diffuser are dimensioned such that **pressure loss and noise level remain constant** if the air flow direction is changed.

For maintenance, service, retrofitting, etc., inspection openings in sufficient number and size must be provided on site.

### Construction

#### Diffuser

- Housing and inner cage made of sheet steel painted to RAL 9010 (white), RAL 9006 (white aluminium) or to a different RAL colour (at an extra charge).

### Accessories

#### Plenum box (AKR)

- Housing and connection pipe made of galvanised sheet steel.

#### Ball-impact guard (-BS...)

- Sheet steel painted to RAL 9010 (white), RAL 9006 (white aluminium) or to a different RAL colour (at an extra charge).

#### Damper (-DV1/-DV2/-DV3)

- Galvanised sheet steel, integrated and adjustable from below, in special design painted on the outside.
- Connection to spiral duct (-DV1, not possible for IKA 600 with thermocouple)
- Connection to connecting pieces (-DV2, not possible for IKA 600 with thermocouple)
- Connection to spiral duct with rubber lip seal (-DV3, not possible for IKA 600 with thermocouple)

#### Damper (-DK1)

- In the plenum box AKRS, adjustable, in the connection pipe for air volume regulation (NW 300-800 adjustable from below) (at an extra charge).
- Throttle damper made of galvanised sheet steel
- Damper fastening made of plastic

#### electric actuator

- Standard version on the inside, for NW 300 integrated on the outside
- 230 V AC, 3-point activation (-E045, -E092, -E006)
- 24 V AC, 0 - 10 V DC (standard) (-E046, -E091, -E014)
- 24 V AC, 3-point activation (-E044, -E090, -E005)

#### Thermocouple adjustment (only for NW 600) (-TE01)

- Diffuser adjustment option without electrical energy as a function of the supply air temperature

#### Rubber lip seal (-GD)

- at the IKA for connection to a spiral duct (at an extra charge) (-GD1, select under diffuser)
- In plenum box AK on connection piece (at an extra charge) (-GD1, select for plenum box)
- In damper -DV3 (at an extra charge)
- Special rubber

#### Internal insulation (-li)

- Thermal insulation on the inside of the plenum box

#### External insulation (-la)

- Thermal insulation on the outside of the plenum box

## Ideal Comfort Diffuser IKA

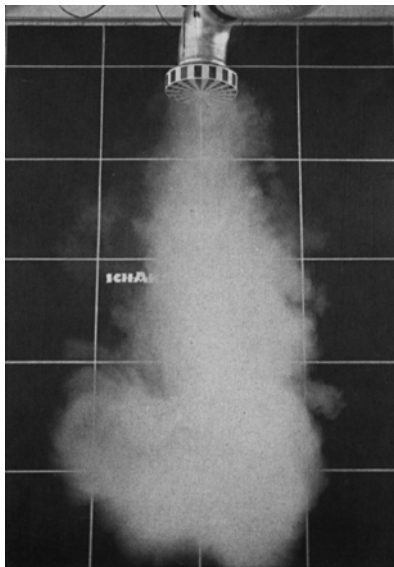
### Quick selection

| NW                                |                     | 300 | 400  | 500  | 600  | 800  |
|-----------------------------------|---------------------|-----|------|------|------|------|
| $V_{\min}$                        | (m <sup>3</sup> /h) | 170 | 280  | 605  | 830  | 1680 |
|                                   | [l/s]               | 47  | 78   | 168  | 231  | 467  |
| $V_{\max}$                        | (m <sup>3</sup> /h) | 810 | 1380 | 2330 | 3080 | 5450 |
|                                   | [l/s]               | 225 | 383  | 647  | 856  | 1514 |
| $V_{\text{at } 40 \text{ dB(A)}}$ | (m <sup>3</sup> /h) | 450 | 640  | 1075 | 1440 | 2590 |
|                                   | [l/s]               | 125 | 178  | 299  | 400  | 719  |

### Smoke test

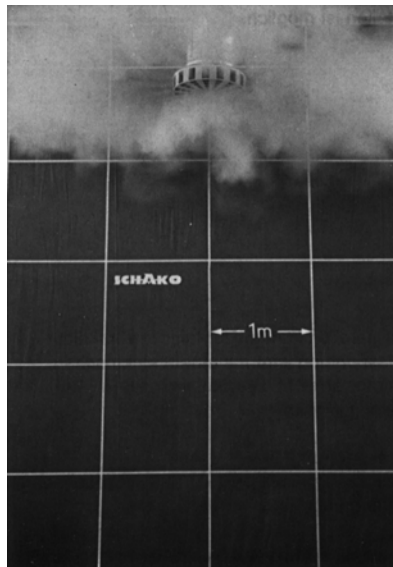
Snapshots of an ideal comfort diffuser type IKA-600-..., mounting height = 5.0 m

#### Heating mode



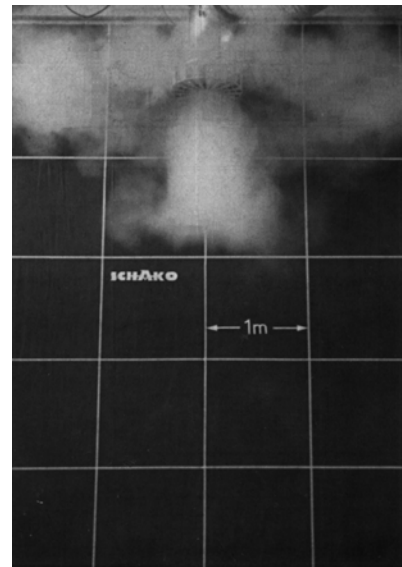
with electric actuator  
Control voltage 10 V  
 $V_{ZU} = 2000 \text{ m}^3/\text{h}$  [556 l/s]  
 $\Delta T_0 = +15 \text{ K}$

#### Cooling mode



with electric actuator  
Control voltage 0 V  
 $V_{ZU} = 2000 \text{ m}^3/\text{h}$  [556 l/s]  
 $\Delta T_0 = -10 \text{ K}$

#### Intermediate position



50% horizontal  
50% vertical

### Layout example:

Assume: Selected:  
possible mounting height NW 600  
in hall 6.0 m

$\Delta T_0 = +20 \text{ K}$   
 $\Delta T_0 = -4 \text{ K}$

$V_{ZU} = 2000 \text{ m}^3/\text{h}$   
Max. penetration at  $\Delta T_0 + 20 \text{ K} = 6.5 \text{ m}$

Connection to 90°  
bend

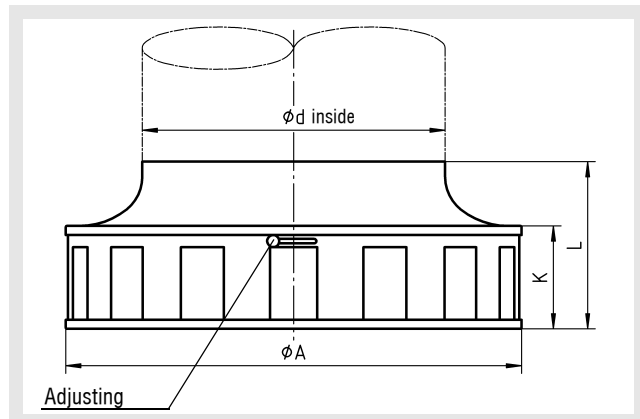
$L_{WA} = 48 \text{ dB(A)}$   
 $\Delta p_t = 70 \text{ Pa}$

Distance to diffuser = 8.0 m = x = 4 m  
y = 4 m  
 $v_{\max} = 0.23 \text{ m/s}$  since x + y = 8 m

## Ideal Comfort Diffuser IKA

### Models and dimensions

#### Dimensions



#### IKA Available sizes

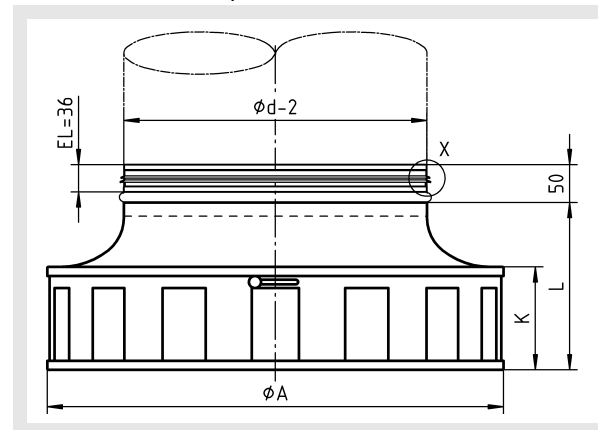
| NW  | $\phi A$ | $\phi d_{\text{innen}}$ | K   | L   |
|-----|----------|-------------------------|-----|-----|
| 300 | 302      | 180                     | 84  | 149 |
| 400 | 402      | 250                     | 103 | 180 |
| 500 | 503      | 315                     | 125 | 205 |
| 600 | 603      | 400                     | 141 | 226 |
| 800 | 803      | 500                     | 185 | 310 |

The inner diffuser basket is locked into position by means of an adjusting screw attached sideways. The diffuser is set to a horizontal throw ex factory. Subsequent adjustment is possible.

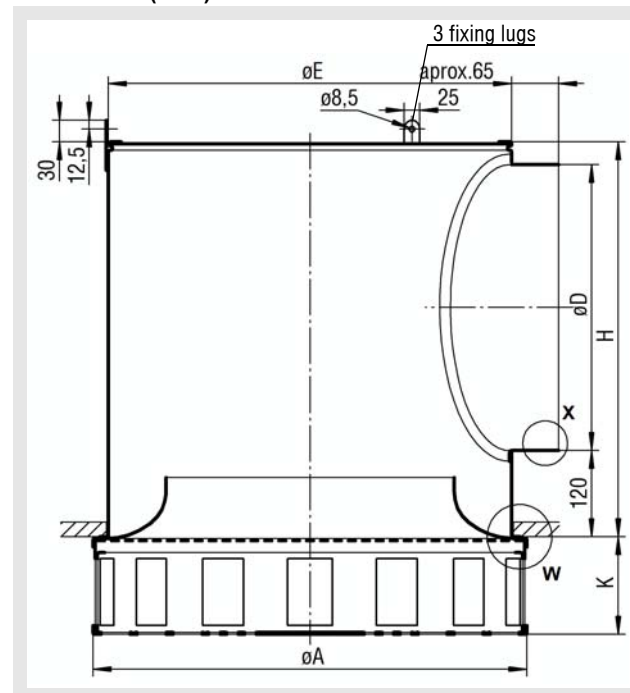
#### Accessories - dimensions

##### IKA with rubber lip seal (-GD1)

for connection to a spiral duct



#### Plenum box (AKR)



#### Available sizes

| NW  | $\phi A$ | $\phi E$ | K   | $\phi D$ | H   |
|-----|----------|----------|-----|----------|-----|
| 300 | 302      | 260      | 84  | 178      | 330 |
| 400 | 402      | 360      | 103 | 248      | 400 |
| 500 | 503      | 460      | 125 | 313      | 465 |
| 600 | 603      | 560      | 141 | 398      | 550 |
| 800 | 803      | 725      | 185 | 498      | 650 |

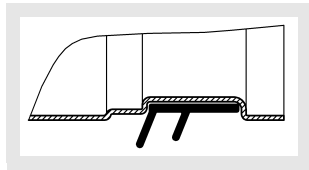
The galvanised sheet steel plenum box is attached to the diffuser IKA with 4 screws.

The throttle damper in the plenum box can easily be adjusted from below.

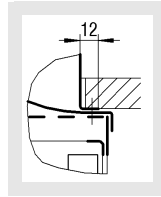
(Clockwise - damper CLOSED)

## Ideal Comfort Diffuser IKA

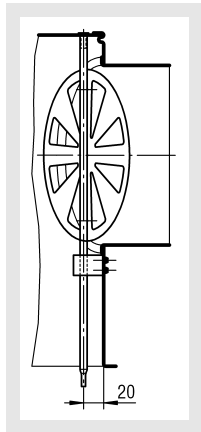
**Rubber lip seal**  
(-GD1, at an extra charge)  
**Detail X**



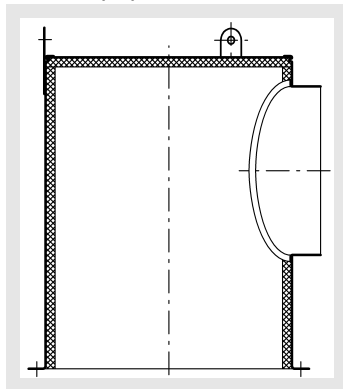
**Detail W**



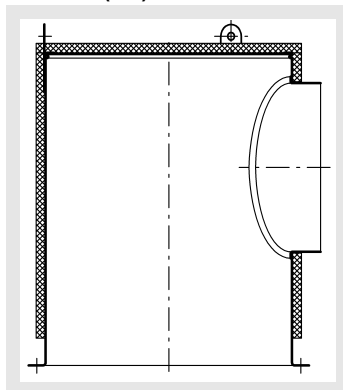
**Damper (-DK1)**



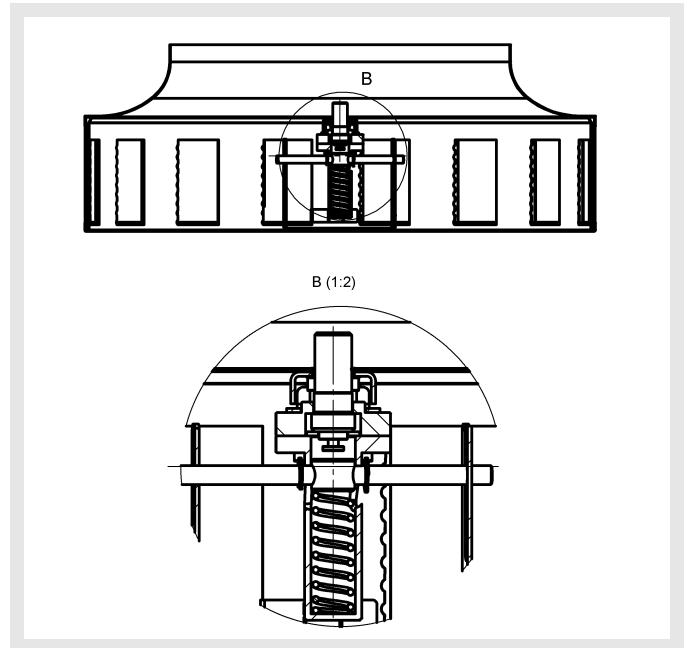
**Insulation for AKR**  
**internal (-li)**



**external (-la)**



**Thermocouple (-TE01)**



The throw direction of the air diffuser changes due to the temperature-related extension of the expanding element responsible for the adjustment and a turning mechanism to adjust the lower and lateral outlet openings.

At supply air temperatures of  $< 20^{\circ}\text{C}$ , the air diffuser has a horizontal throw direction (cooling mode), at temperatures of  $> 35^{\circ}\text{C}$ , it has a vertical throw direction (heating mode). In the range between these two values, the supply air flows out proportionally in horizontal and vertical direction.

At a temperature of approx.  $23-25^{\circ}\text{C}$ , the thermocouple starts adjusting the throw direction from horizontal to vertical. In order to prevent draughts, it is recommended to pass quickly through this temperature range.

The adjustment times depend on the absolute change of the supply air temperature and the air flow velocity reaching the thermocouple.

At supply air temperatures between  $< 20^{\circ}\text{C}$  and  $> 35^{\circ}\text{C}$ , the technical data indicated in the diagrams for the cooling and heating mode can be guaranteed. The field of application of the thermocouple is between  $15^{\circ}\text{C}$  and  $50^{\circ}\text{C}$ .

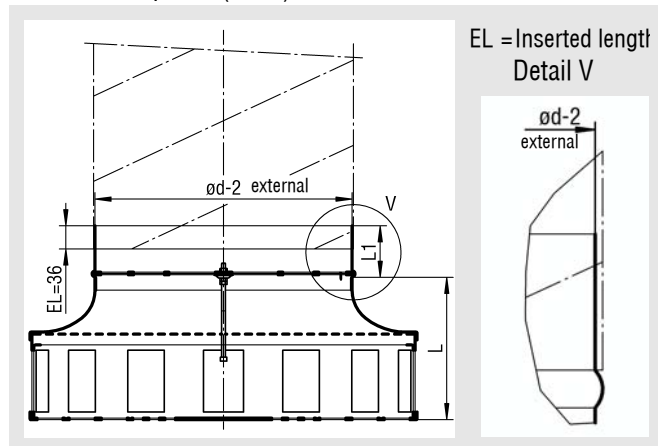
## Ideal Comfort Diffuser IKA

### Damper (-DV1/-DV3)

Connection to spiral duct

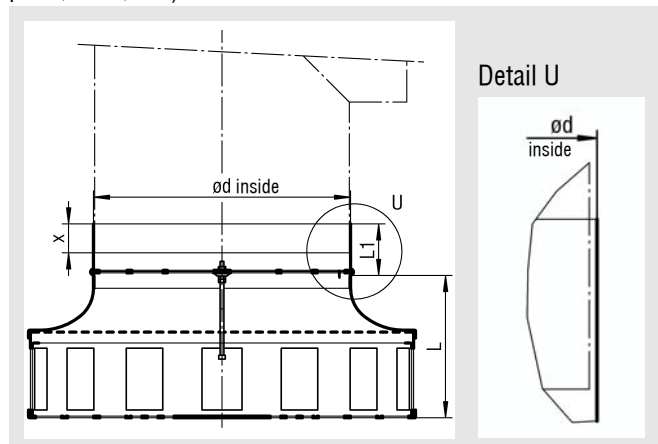
Without rubber lip seal (-DV1)

With rubber lip seal (-DV3)



### Damper (-DV2)

Connection to connection pieces according to DIN 24147 (e.g.: T-piece, bend, etc.)



The adjustable damper is factory-fitted directly to the diffuser. The damper can be adjusted from below.  
(Counterclockwise - damper CLOSED)

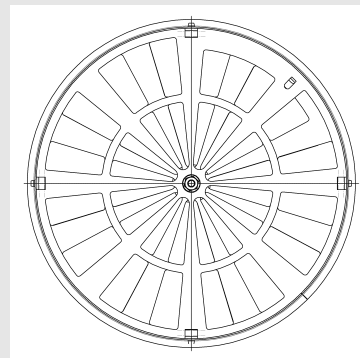
### Available sizes

| NW  | ød  | x  | L   | L1  |
|-----|-----|----|-----|-----|
| 300 | 180 | 40 | 149 | 80  |
| 400 | 250 | 60 | 180 | 100 |
| 500 | 315 | 60 | 205 | 100 |
| 600 | 400 | 80 | 226 | 120 |
| 800 | 500 | 80 | 310 | 120 |

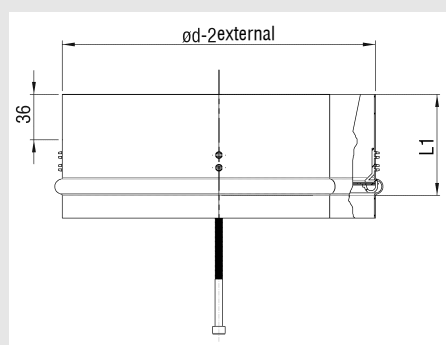
Damper not possible for IKA 600 with thermocouple.

### Damper element

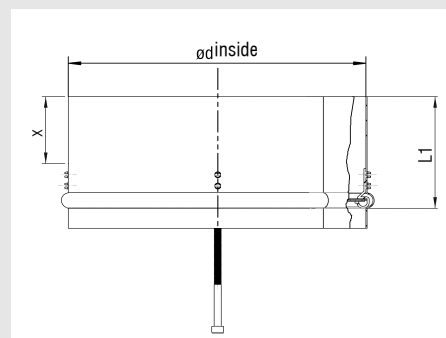
Top view



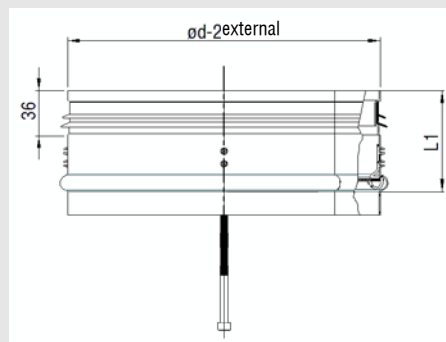
(-DV1)



(-DV2)



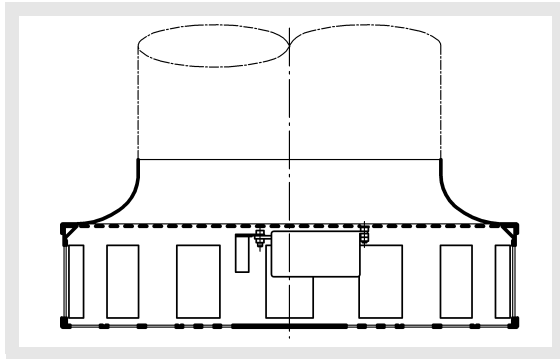
(-DV3)





## Ideal Comfort Diffuser IKA

Electric actuator (-ME)  
NW400-800

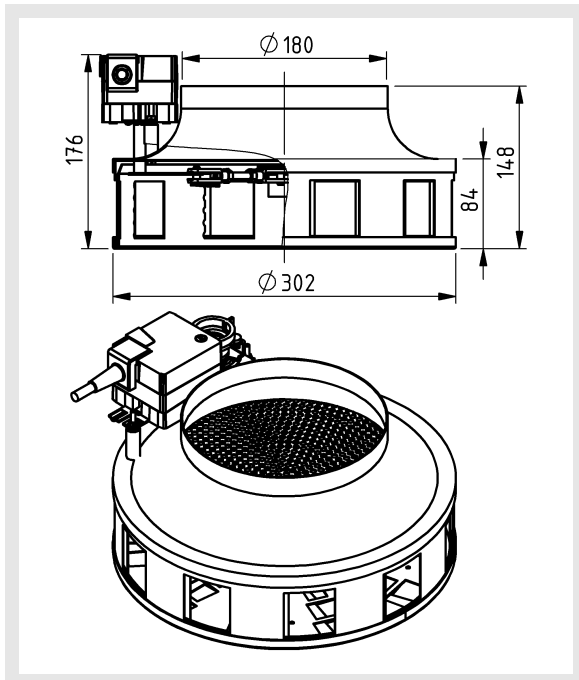


Model:

- 230 V AC, 3-point activation
- 24 V AC, 0 - 10 V DC (standard)
- 24 V AC, 3-point activation

The adjustment from a vertical to horizontal throw can be achieved with a continuously adjustable electric actuator. Actuator for NW 400-800 integrated on the inside, for NW 300 on the outside. For NW 800, the electric actuator can be serviced or replaced through a lateral diffuser slot designed as inspection opening.

### NW300



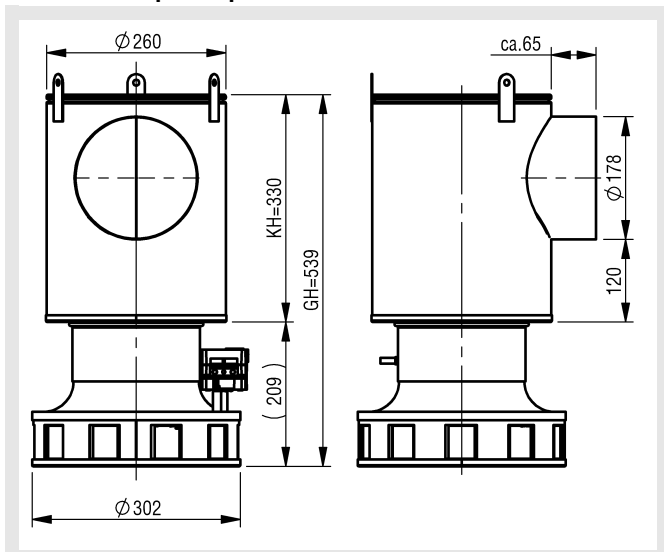
### List of motors

| NW  | (230 V AC 3-PKT)                  | (Standard)<br>(24 V AC 0-10 V DC) | (24 V AC 3-PKT)                   |
|-----|-----------------------------------|-----------------------------------|-----------------------------------|
| 300 | <b>E045</b> Belimo<br>LM230A-F    | <b>E046</b> Belimo<br>LM24A-SR-F  | <b>E044</b> Belimo<br>LM24A-F     |
| 400 | <b>E092</b> Siemens<br>GLB 331.2E | <b>E091</b> Siemens<br>GLB 163.2E | <b>E090</b> Siemens<br>GLB 131.2E |
| 500 |                                   |                                   |                                   |
| 600 |                                   |                                   |                                   |
| 800 | <b>E006</b> Belimo<br>SM230A      | <b>E014</b> Belimo<br>SM24A-SR    | <b>E005</b> Belimo<br>SM24A       |

### Note:

We recommend switching off the actuator voltage after reaching the controller position.

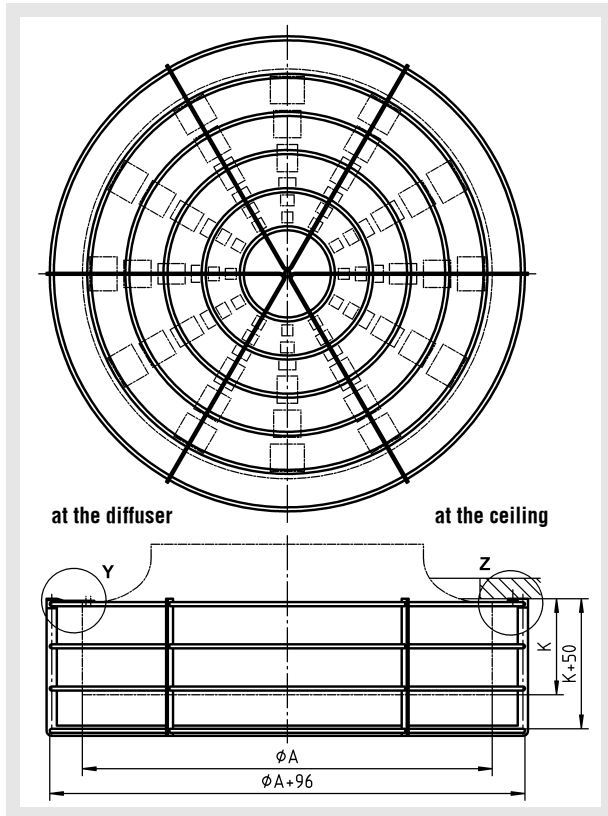
### NW300 with special plenum box





## Ideal Comfort Diffuser IKA

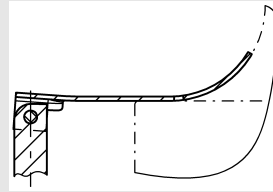
### Ball-impact guard (-BS...)



### Ball-impact guard mounting

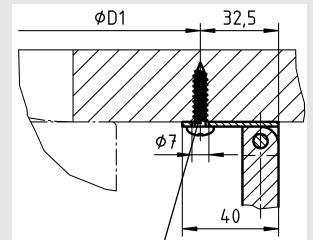
#### at the diffuser (-BSA)

##### Detail Y



#### at the ceiling (-BSD)

##### Detail Z



Screw on-site

### Available sizes

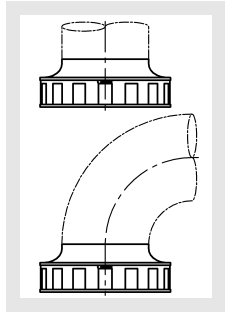
| NW  | øA  | øD1 | K   |
|-----|-----|-----|-----|
| 300 | 302 | 345 | 84  |
| 400 | 402 | 445 | 103 |
| 500 | 503 | 545 | 125 |
| 600 | 603 | 645 | 141 |
| 800 | 803 | 845 | 185 |

## Ideal Comfort Diffuser IKA

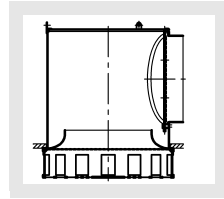
### Technical data

#### Pressure loss and noise level

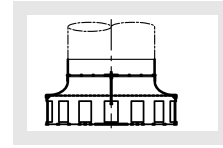
IKA-...



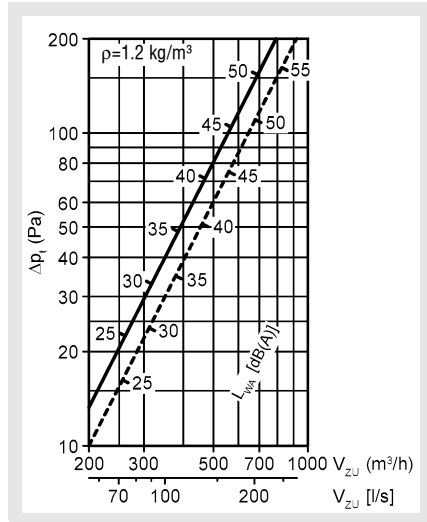
IKA-.../AKR-IKA-...



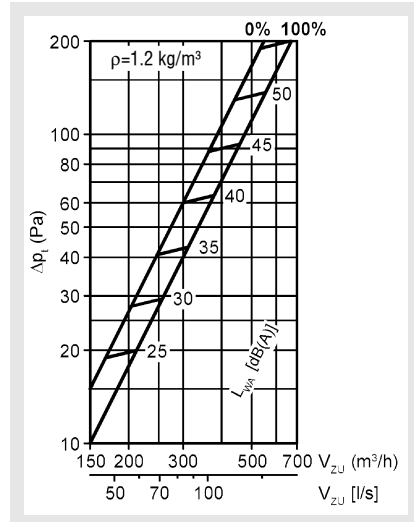
IKA-...-DV-...-...



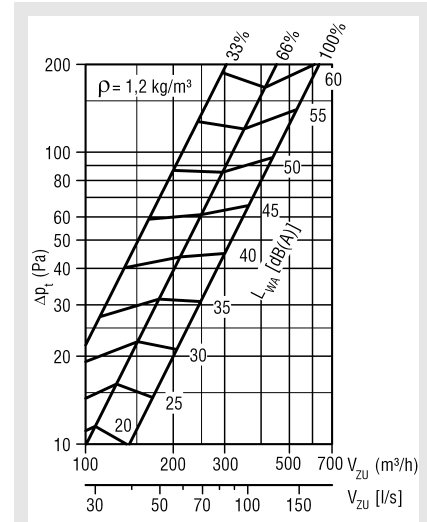
IKA-300-...



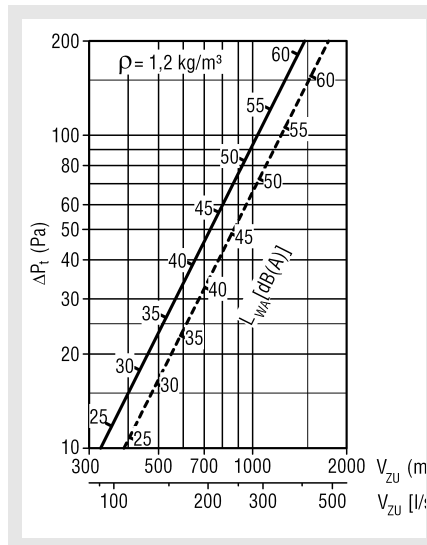
IKA-300-.../AKR-IKA-...-300-...



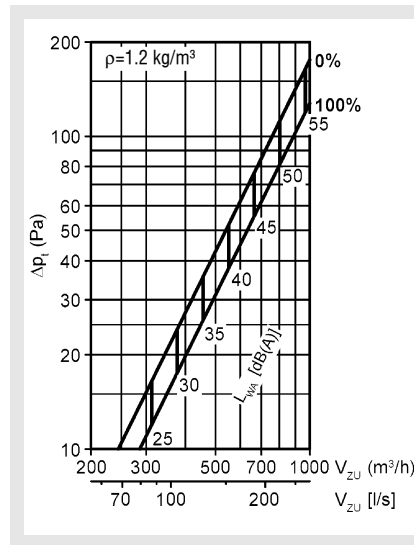
IKA-300-...-DV-...-...



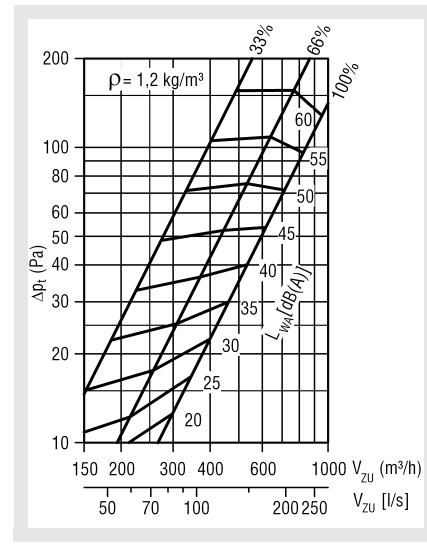
IKA-400-...



IKA-400-.../AKR-IKA-...-400-...



IKA-400-...-DV-...-...



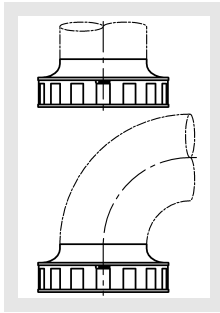
----- Straight connection  
 ——— Connection to 90° bend

0 % = Damper CLOSED  
 100 % = Damper OPEN

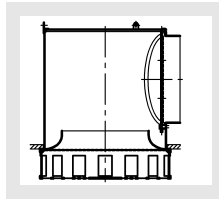
% = Damper OPEN

## Ideal Comfort Diffuser IKA

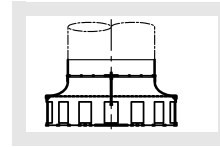
IKA-...



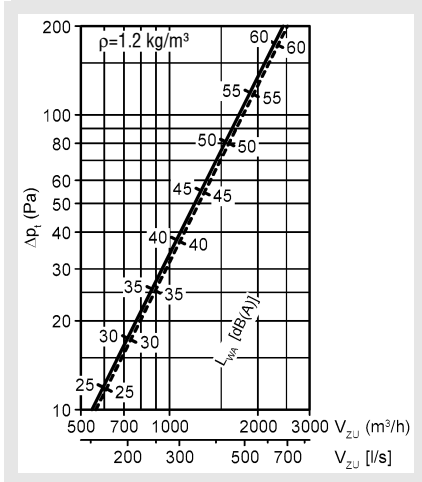
IKA-.../AKR-IKA-...



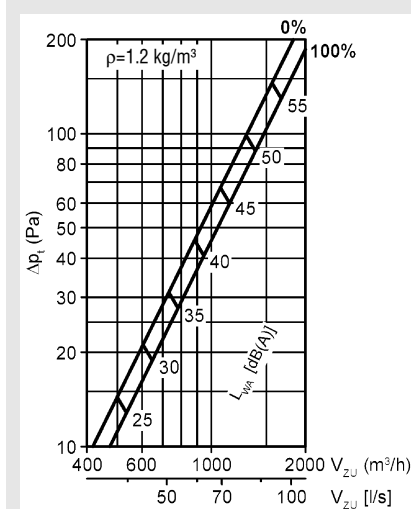
IKA-...-DV-...-...



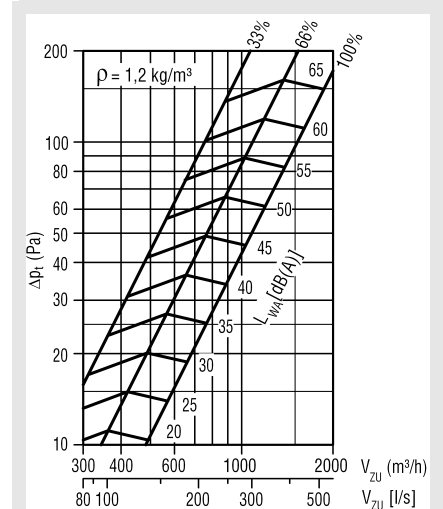
IKA-500-...



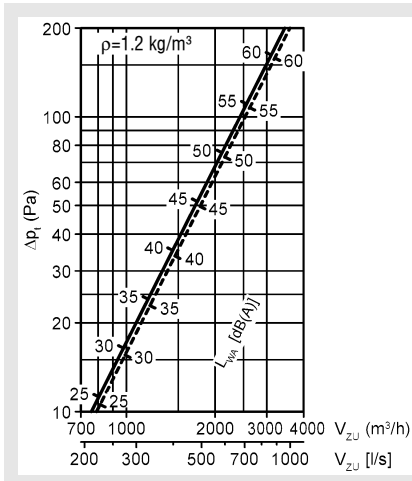
IKA-500-.../AKR-IKA-...-500-...



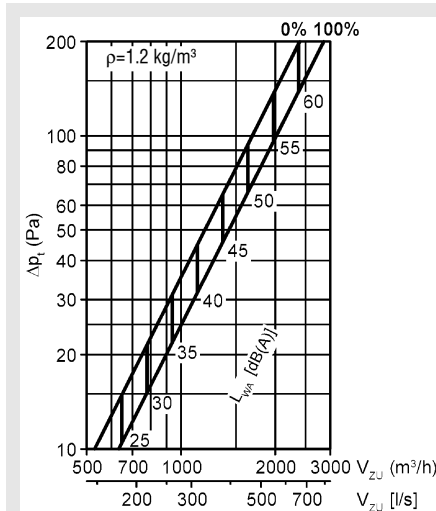
IKA-500-...-DV-...-...



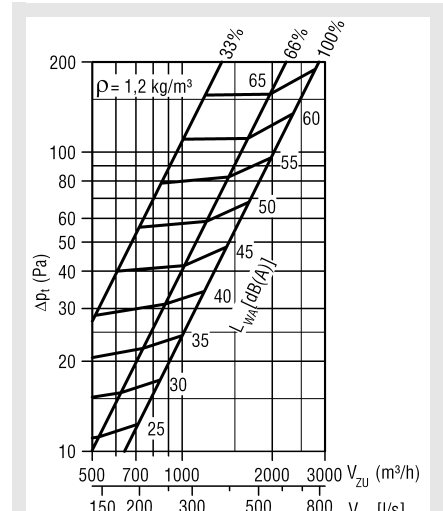
IKA-600-...



IKA-600-.../AKR-IKA-...-600-...



IKA-600-...-DV-...-...



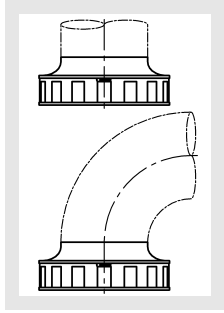
----- Straight connection  
 ——— Connection to 90° bend

0 % = Damper CLOSED  
 100 % = Damper OPEN

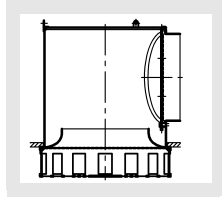
% = Damper OPEN

## Ideal Comfort Diffuser IKA

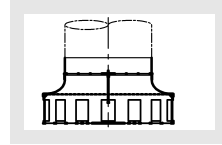
IKA-...



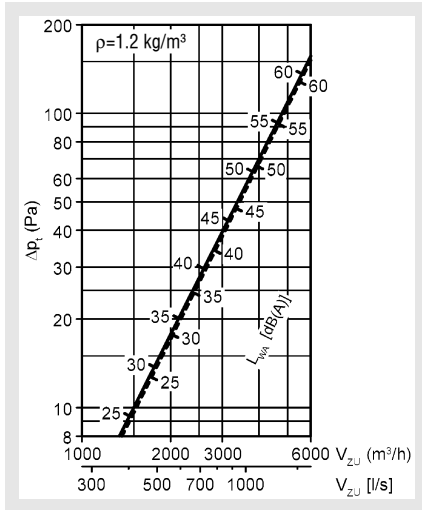
IKA-.../AKR-IKA-...



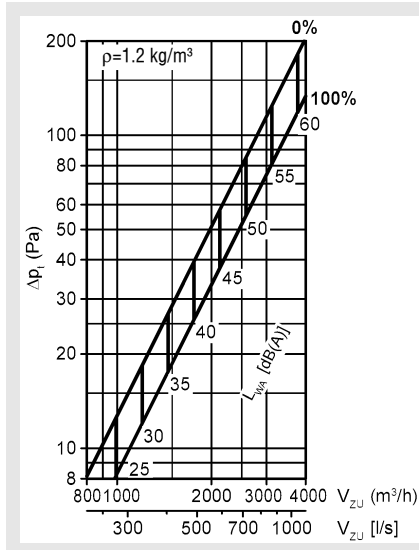
IKA-...-DV-...-...



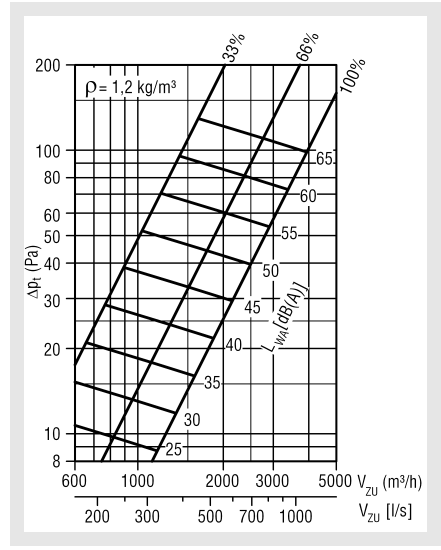
IKA-800-...



IKA-800-.../AKR-IKA-...-800-...



IKA-800-...-DV-...-...



----- Straight connection  
 ——— Connection to 90° bend

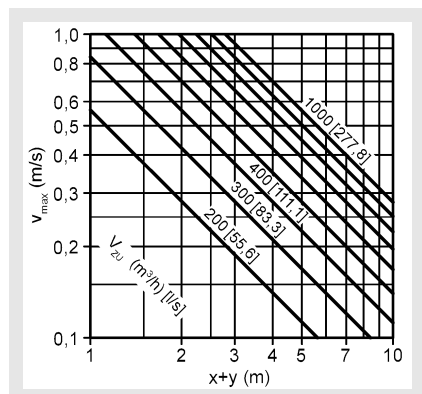
0 % = Damper CLOSED  
 100 % = Damper OPEN

% = Damper OPEN

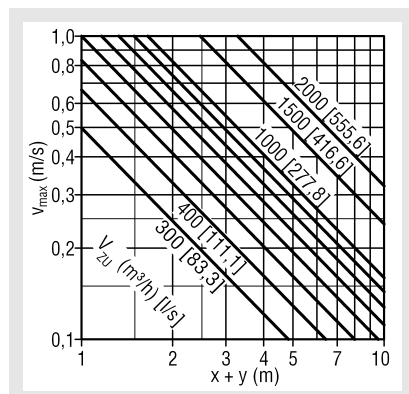
## Ideal Comfort Diffuser IKA

Maximum end velocity of jet  
without coanda effect

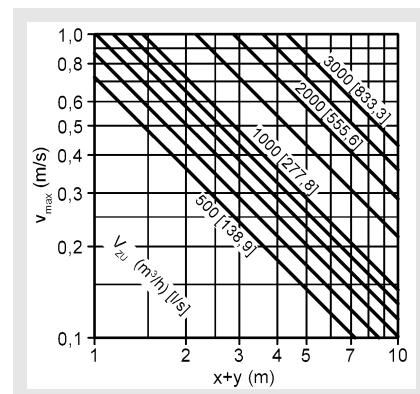
IKA-300-...



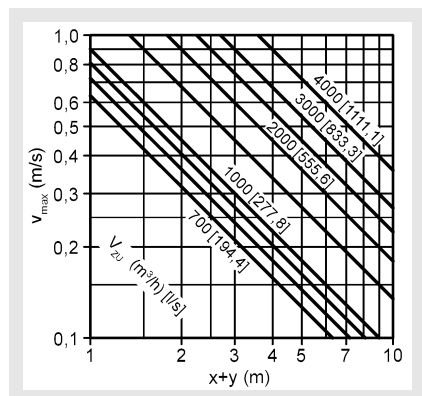
IKA-400-...



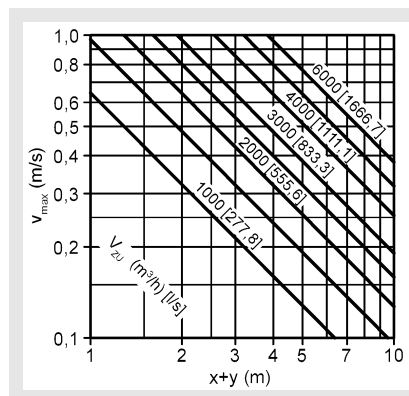
IKA-500-...



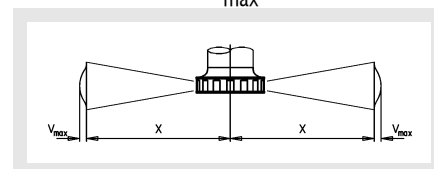
IKA-600-...



IKA-800-...



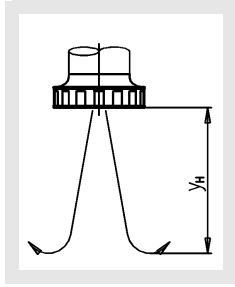
with coanda effect  $v_{max} \times 1.4$



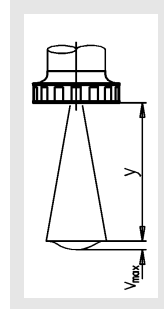
## Ideal Comfort Diffuser IKA

### Maximum penetration

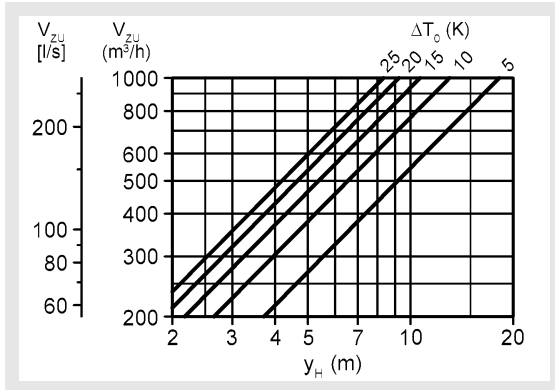
In heating mode



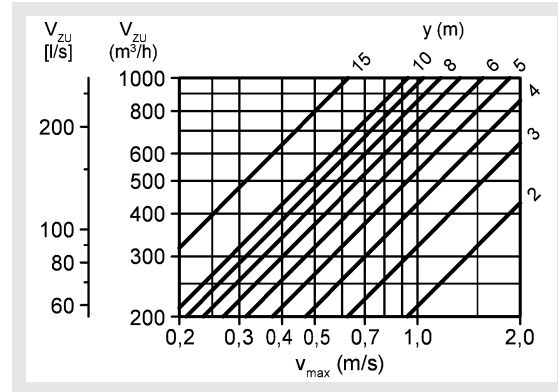
isothermal



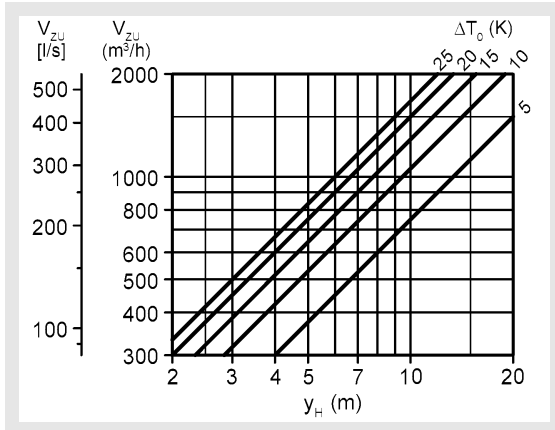
### IKA-300-..., in heating mode



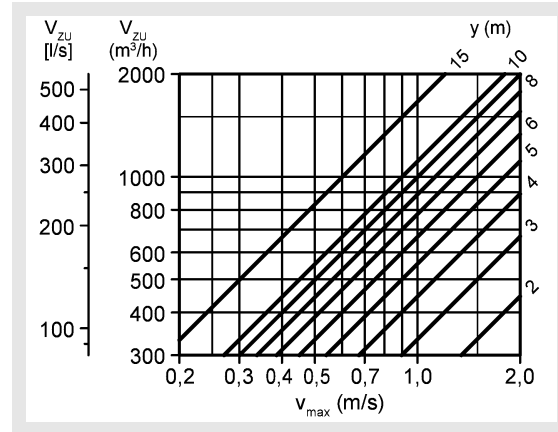
### IKA-300-..., isothermal



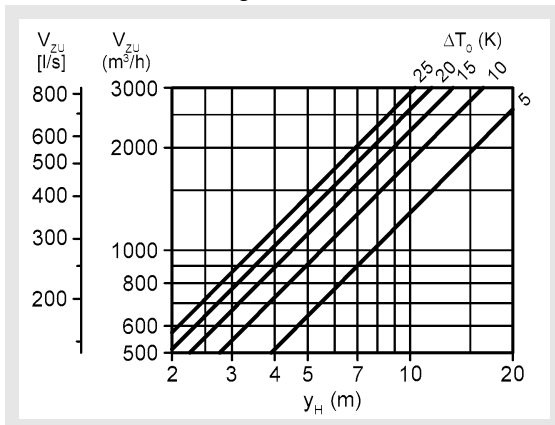
### IKA-400-..., in heating mode



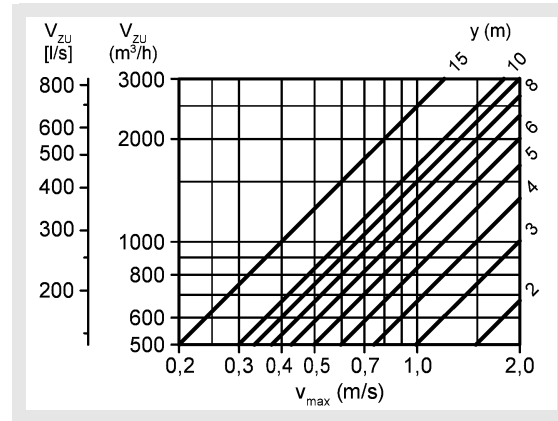
### IKA-400-..., isothermal



### IKA-500-..., in heating mode

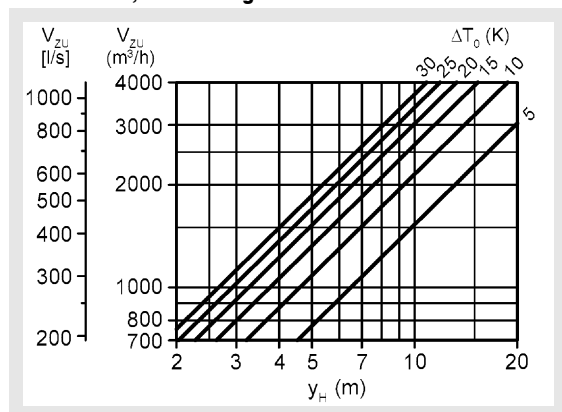


### IKA-500-..., isothermal

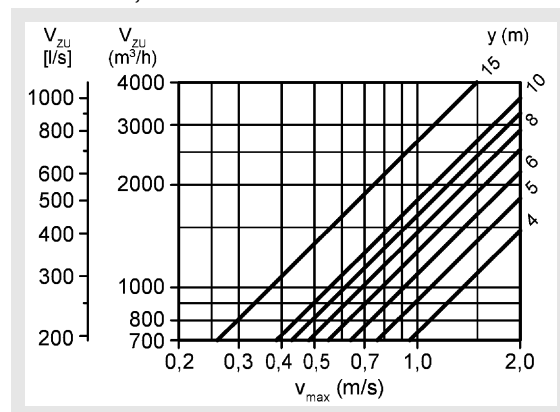


## Ideal Comfort Diffuser IKA

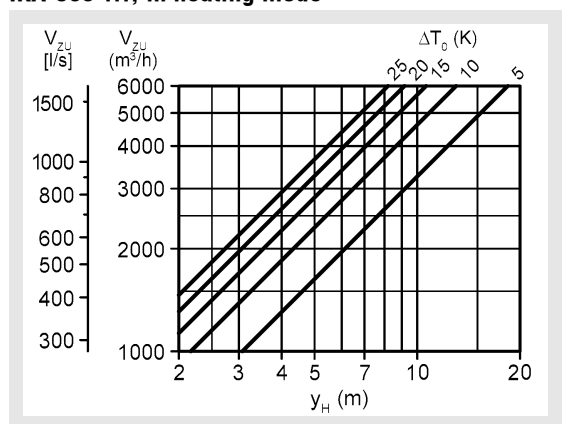
### IKA-600-..., in heating mode



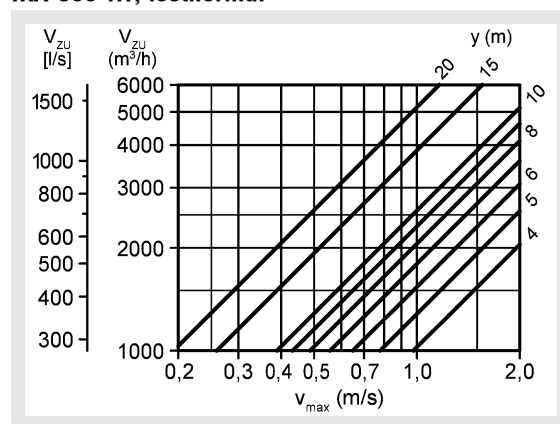
### IKA-600-..., isothermal



### IKA-800-..., in heating mode

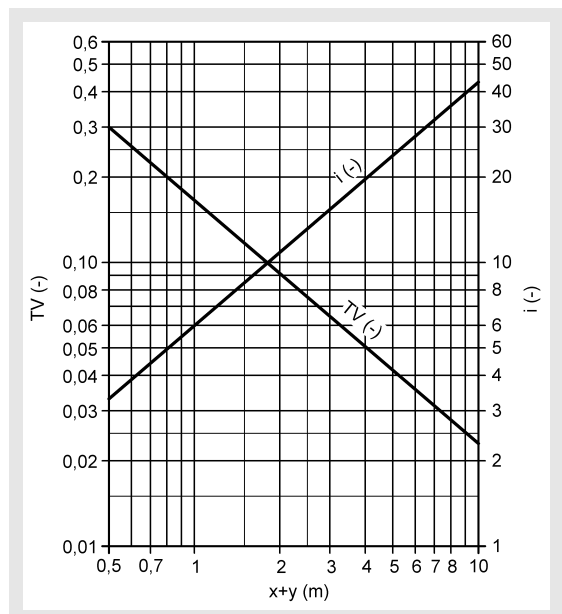


### IKA-800-..., isothermal

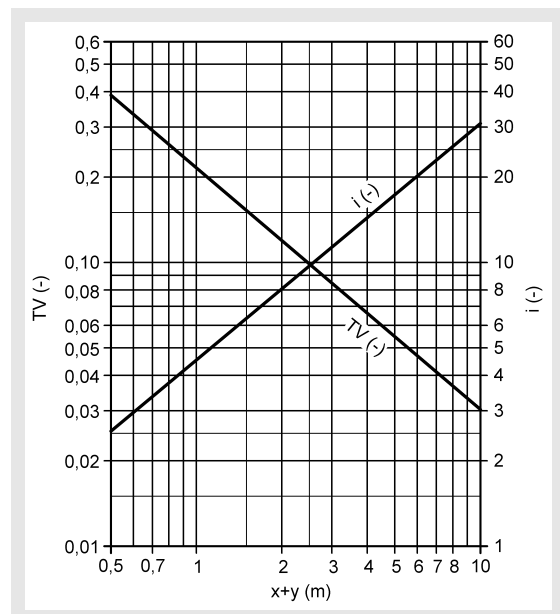


## Temperature and induction ratios

### IKA-300-...



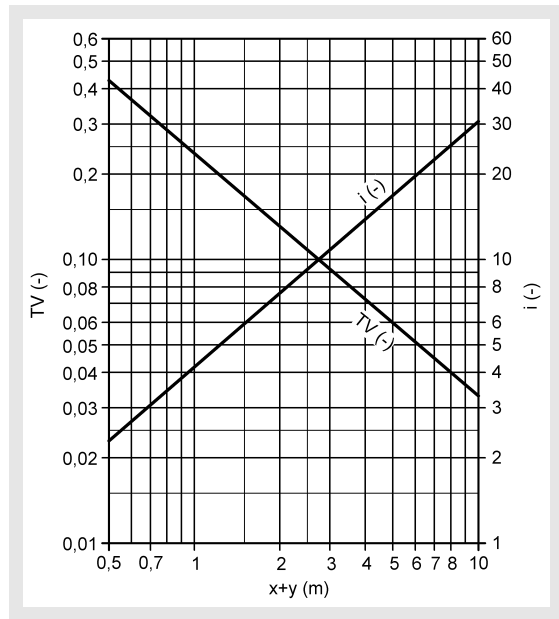
### IKA-400-...



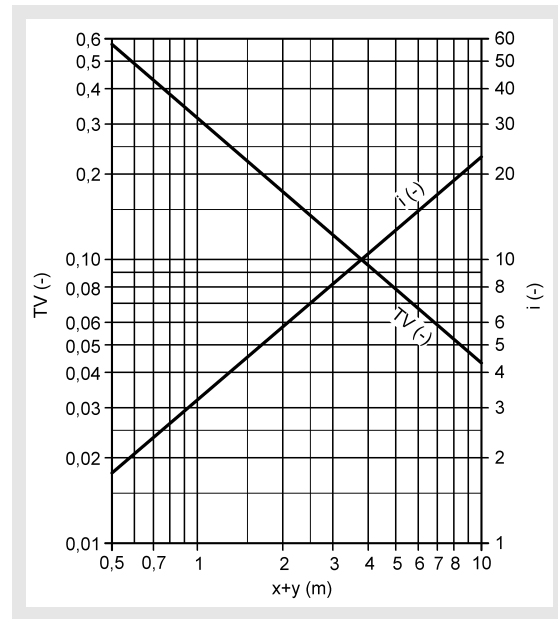


## Ideal Comfort Diffuser IKA

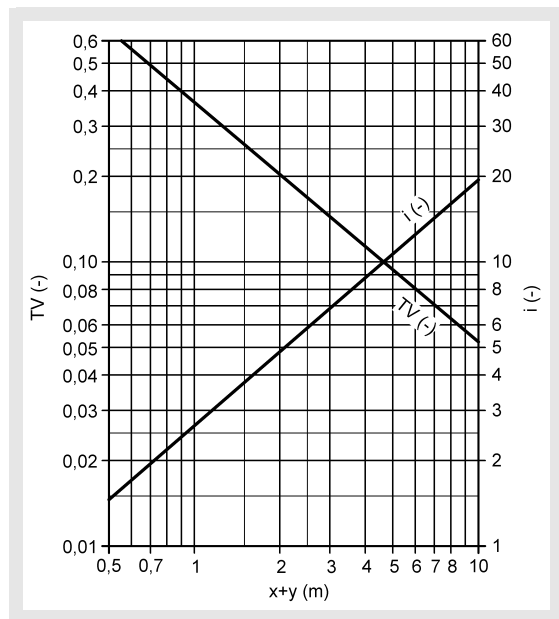
IKA-500-...



IKA-600-...



IKA-800-...





## Ideal Comfort Diffuser IKA

### Technical data of electric actuators

#### Make Belimo E045 (LM230A-F) for NW 300

|                        |                                |
|------------------------|--------------------------------|
| Rated voltage:         | AC 100 ... 240 V, 50 / 60 Hz   |
| Functional range:      | AC 85 ... 265 V                |
| Power consumption      |                                |
| - Operation:           | 1.5 W @ nominal torque         |
| - Idle position:       | 0.4 W                          |
| - Dimensioning:        | 4 VA                           |
| Torque                 |                                |
| (rated torque):        | Min. 5 Nm at the rated voltage |
| Running time:          | 150 s                          |
| Sound power level:     | max. 35 dB (A)                 |
| Protection class:      | II protective insulation       |
| Degree of protection:  | IP54 in all mounting positions |
| EMC:                   | CE according to 89 / 336 / EEC |
| Low voltage directive: | CE according to 73 / 23 / EEC  |
| Ambient temperature:   | -30 ... +50 °C                 |

#### Make Belimo E006 (SM230A) for NW 800

|                        |                                 |
|------------------------|---------------------------------|
| Rated voltage:         | AC 100 ... 240 V, 50 / 60 Hz    |
| Functional range:      | AC 85 ... 265 V                 |
| Power consumption      |                                 |
| - Operation:           | 2.5 W @ nominal torque          |
| - Idle position:       | 0.6 W                           |
| - Dimensioning:        | 6 VA                            |
| Torque                 |                                 |
| (rated torque):        | Min. 20 Nm at the rated voltage |
| Running time:          | 150 s                           |
| Sound power level:     | max. 45 dB (A)                  |
| Protection class:      | II protective insulation        |
| Degree of protection:  | IP54 in all mounting positions  |
| EMC:                   | CE according to 89 / 336 / EEC  |
| Low voltage directive: | CE according to 73 / 23 / EEC   |
| Ambient temperature:   | -30 ... +50 °C                  |

#### Make Belimo E046 (LM24A-SR-F) (standard), for NW 300

|                        |                                                  |
|------------------------|--------------------------------------------------|
| Rated voltage:         | AC / DC 24 V, 50 / 60 Hz                         |
| Functional range:      | AC / DC 19.2 ... 28.8 V                          |
| Power consumption      |                                                  |
| - Operation:           | 1 W @ nominal torque                             |
| - Idle position:       | 0.4 W                                            |
| - Dimensioning:        | 2 VA                                             |
| Torque                 |                                                  |
| (rated torque):        | Min. 5 Nm at the rated voltage                   |
| Activation             |                                                  |
| - Actuator signal Y:   | DC 0 ... 10 V, input resistance typically 100 kΩ |
| - Operating range:     | DC 2 ... 10 V                                    |
| Positional feedback    |                                                  |
| (Measuring voltage U): | DC 2 ... 10 V, max. 1 mA                         |
| Running time:          | 150 s                                            |
| Sound power level:     | max. 35 dB (A)                                   |
| Damper drive:          | Positive locking 8 mm                            |
| Protection class:      | III Safety extra low voltage                     |
| Degree of protection:  | IP54 in all mounting positions                   |
| EMC:                   | CE according to 89 / 336 / EEC                   |
| Ambient temperature:   | -30 ... +50 °C                                   |

#### Make Belimo E014 (SM24A-SR) (standard), for NW 800

|                        |                                                  |
|------------------------|--------------------------------------------------|
| Rated voltage:         | AC / DC 24 V, 50 / 60 Hz                         |
| Functional range:      | AC / DC 19.2 ... 28.8 V                          |
| Power consumption      |                                                  |
| - Operation:           | 2 W @ nominal torque                             |
| - Idle position:       | 0.4 W                                            |
| - Dimensioning:        | 4 VA                                             |
| Torque                 |                                                  |
| (rated torque):        | Min. 20 Nm at the rated voltage                  |
| Activation             |                                                  |
| - Actuator signal Y:   | DC 0 ... 10 V, input resistance typically 100 kΩ |
| - Operating range:     | DC 2 ... 10 V                                    |
| Positional feedback    |                                                  |
| (Measuring voltage U): | DC 2 ... 10 V, max. 1 mA                         |
| Running time:          | 150 s                                            |
| Sound power level:     | max. 45 dB (A)                                   |
| Protection class:      | III Safety extra low voltage                     |
| Degree of protection:  | IP54 in all mounting positions                   |
| EMC:                   | CE according to 89 / 336 / EEC                   |
| Ambient temperature:   | -30 ... +50 °C                                   |

## Ideal Comfort Diffuser IKA

### Make Belimo E044 (LM24A-F) for NW 300

|                       |                                |
|-----------------------|--------------------------------|
| Rated voltage:        | AC / DC 24 V, 50 / 60 Hz       |
| Functional range:     | AC / DC 19.2 ... 28.8 V        |
| Power consumption     |                                |
| - Operation:          | 1 W @ nominal torque           |
| - Idle position:      | 0.2 W                          |
| - Dimensioning:       | 2 VA                           |
| Torque                |                                |
| (rated torque):       | Min. 5 Nm at the rated voltage |
| Running time:         | 150 s                          |
| Sound power level:    | max. 35 dB (A)                 |
| Protection class:     | III Safety extra low voltage   |
| Degree of protection: | IP54 in all mounting positions |
| EMC:                  | CE according to 89 / 336 / EEC |
| Ambient temperature:  | -30 ... +50 °C                 |

### Make Belimo E005 (SM24A) for NW 800

|                       |                                 |
|-----------------------|---------------------------------|
| Rated voltage:        | AC / DC 24 V, 50 / 60 Hz        |
| Functional range:     | AC / DC 19.2 ... 28.8 V         |
| Power consumption     |                                 |
| - Operation:          | 2 W @ nominal torque            |
| - Idle position:      | 0.2 W                           |
| - Dimensioning:       | 4 VA                            |
| Torque                |                                 |
| (rated torque):       | Min. 20 Nm at the rated voltage |
| Running time:         | 150 s                           |
| Sound power level:    | max. 45 dB (A)                  |
| Protection class:     | III Safety extra low voltage    |
| Degree of protection: | IP54 in all mounting positions  |
| EMC:                  | CE according to 89 / 336 / EEC  |
| Ambient temperature:  | -30 ... +50 °C                  |

### Make Siemens E092 (GLB 331.2E) / E091 (GLB 163.2E) (standard) / E090 (GLB 131.2E) for NW 400, 500 and 600

|                                           |                                            |
|-------------------------------------------|--------------------------------------------|
| Supply AC 24 V (SELV / PELV)              |                                            |
| -Operating voltage / Frequency:           | AC 24 V $\pm$ 20 % / 50 / 60 Hz            |
| -Power consumption GLB13..2               | 2 VA / 1 W                                 |
| -GLB16..2 lifting rod is moving           | 3 VA / 2 W                                 |
| -GLB16..2 stopping state                  | 1 W                                        |
| Supply AC/DC 230 V                        |                                            |
| -Operating voltage / Frequency            | AC 230 V $\pm$ 10 % / 50 / 60 Hz           |
| -Power consumption GLB33..2               | 2 VA / 1 W                                 |
| Functional data                           |                                            |
| -Nominal lifting power:                   | 250 N                                      |
| -Running time for 60 mm stroke:           | 150 s (50 Hz) / 125 s (60 Hz)              |
| Actuator signal Y for GLB 16..2           |                                            |
| -Input voltage Y (wires 8-2)              | DC 0...10 V, internally limited to DC 10 V |
| -Max. allowed input voltage               | DC 35 V                                    |
| Position detector for GLB 16..2           |                                            |
| -Output voltage U (wires 9-2)             | DC 0...10 V / DC 10...0 V                  |
| -Max. output current                      | DC $\pm$ 1 mA                              |
| Housing protection type                   |                                            |
| - Protection type according to DIN 60 529 | IP40                                       |
| (Observe mounting information)            |                                            |
| Protection class                          |                                            |
| -Insulation protection class              | EN 60 730                                  |
| Environmental conditions                  |                                            |
| -Temperature                              | -30...+55 °C / -30...+60 °C                |

## Ideal Comfort Diffuser IKA

### Legend

|              |                      |                                                                                                              |
|--------------|----------------------|--------------------------------------------------------------------------------------------------------------|
| $V_{ZU}$     | (m <sup>3</sup> /h)  | = Supply air volume                                                                                          |
| $V_{ZU}$     | [l/s]                | = Supply air volume                                                                                          |
| $y_H$        | (m)                  | = Maximum penetration depth in heating mode                                                                  |
| $\Delta T_0$ | (K)                  | = Temperature difference between supply air temperature and room temperature ( $\Delta T_0 = t_{ZU} - t_R$ ) |
| $t_{ZU}$     | (°C)                 | = Supply air temperature                                                                                     |
| $t_R$        | (°C)                 | = Room temperature                                                                                           |
| $L_{WA}$     | [dB(A)]              | = A-weighted sound power level                                                                               |
| $f_m$        | (Hz)                 | = Octave centre frequency                                                                                    |
| NW           | (mm)                 | = Nominal value                                                                                              |
| $v_{max}$    | (m/s)                | = Maximum end velocity of jet                                                                                |
| x            | (m)                  | = horizontal throw                                                                                           |
| y            | (m)                  | = vertical throw                                                                                             |
| TV           | (-)                  | = Temperature ratio ( $TV = \Delta T_X / \Delta T_0$ )                                                       |
| $L_W$        | [dB/oct]             | = Sound power level/octave                                                                                   |
| i            | (-)                  | = Induction ratio ( $i = V_X / V_{ZU}$ )                                                                     |
| $\Delta p_t$ | (Pa)                 | = Pressure loss                                                                                              |
| $\rho$       | (kg/m <sup>3</sup> ) | = Density                                                                                                    |
| $\Delta T_X$ | (K)                  | = Temperature difference at point x                                                                          |
| $V_X$        | (m <sup>3</sup> /h)  | = Total air jet volume at point x                                                                            |
| $V_X$        | [l/s]                | = Total air jet volume at point x                                                                            |

## Ideal Comfort Diffuser IKA

### Order code IKA

| 01             | 02           | 03    | 04                | 05     | 06              | 07       |
|----------------|--------------|-------|-------------------|--------|-----------------|----------|
| Type           | Nominal size | Paint | Ball-impact guard | Damper | Rubber lip seal | Actuator |
| <b>Example</b> |              |       |                   |        |                 |          |
| IKA            | -500         | -9010 | -BS0              | -DVO   | -GDO            | -E090    |

#### Sample

#### **IKA-500-9010-BS0-DVO-GDO-E090**

Ceiling diffuser type IKA | size 500 | RAL 9010 white | without ball-impact guard | without damper | without rubber lip seal | with actuator 24V AC / 3-point (Actuator inside, NW400-600 Siemens)

#### Order details

##### 01 – Type

IKA = Ideal comfort diffuser type IKA

##### 02 – Nominal size

300 = NW 300

400 = NW 400

500 = NW 500

600 = NW 600

800 = NW 800

##### 03 – Paint

9010 = RAL colour white (standard)

9006 = RAL colour, white aluminium

xxxx = RAL colour can be freely selected

##### 04 – Ball-impact guard

BS0 = without ball-impact guard (standard)

BSA = with ball-impact guard painted to the same colour as faceplate, fastened to diffuser

BSD = with ball-impact guard painted same as faceplate, fastening on the ceiling

##### 05 – Damper

DVO = Without damper (standard)

DV1 = With damper - connection to spiral duct

DV2 = With damper - connection to connection piece

DV3 = With damper - connection to spiral duct with rubber lip seal

##### 06 – Rubber lip seal

GDO = Without rubber lip seal for spiral duct connection (standard)

GD1 = With rubber lip seal for spiral duct connection

##### 07 – Actuator

E000 = Without actuator (standard)

E005 = 24V AC / 3-point (actuator inside, NW800 Belimo)

E006 = 230V AC / 3-point (actuator inside, NW800 Belimo)

E014 = 24V AC / 0-10V DC (actuator inside, NW800 Belimo)

E044 = 24V AC / 3-point (actuator outside, NW300 Belimo)

E045 = 230V AC / 3-point (actuator outside, NW300 Belimo)

E046 = 24V AC / 0-10V DC (actuator outside, NW300 Belimo)

E090 = 24V AC / 3-point (actuator inside, NW400-600 Siemens)

E091 = 24V AC / 0-10V DC (actuator inside, NW400-600 Siemens)

E092 = 230V AC / 3-point (actuator inside, NW400-600 Siemens)

TE01 = Thermocouple adjustment (only possible for NW 600) (not available in connection with damper)

## Ideal Comfort Diffuser IKA

### Order code AKR-IKA

| 01             | 02           | 03        | 04           | 05        | 06     | 07              |
|----------------|--------------|-----------|--------------|-----------|--------|-----------------|
| Accessories    | Air diffuser | Air throw | Nominal size | Fastening | Damper | Rubber lip seal |
| <b>Example</b> |              |           |              |           |        |                 |
| AKR            | -IKA         | -Z        | -500         | -SM       | -DK1   | -GD1            |

| 08         | 09                   | 10              | 11              |
|------------|----------------------|-----------------|-----------------|
| Insulation | Height of plenum box | Spigot diameter | Spigot position |
|            |                      |                 |                 |
| -I0        | -KHS                 | -SDS            | -S              |

#### Sample

#### AKR-IKA-Z-500-SM-DK1-GD1-I0-KHS-SDS-S

Plenum box, round model | suitable for diffuser type IKA | supply air | NW500 | with screw mounting | with damper | with rubber lip seal | without box insulation | standard height of box | standard spigot diameter | lateral spigot at the box

#### Order details

##### 01 – Accessories

AKR = Plenum box, round design

##### 02 – Air diffuser

IKA = Ideal comfort diffuser type IKA

##### 03 – Air throw

Z = Supply air

##### 04 – Nominal size

300 = NW 300

400 = NW 400

500 = NW 500

600 = NW 600

800 = NW 800

##### 05 – Mounting

SM = Screw mounting

##### 06 – Damper

DK0 = without damper (standard)

DK1 = with damper

##### 07 – Rubber lip seal

GD0 = without rubber lip seal (standard)

GD1 = With rubber lip seal

##### 08 – Insulation

I0 = Without insulation (standard)

Ia = With external insulation

Ii = With internal insulation

##### 09 – Height of box

KHS = Height of plenum box standard

xxx = Height of plenum box in mm  
(Height<sub>min</sub> = spigot diameter + 152 mm)

##### 10 – Spigot diameter

SDS = Spigot diameter standard

xxx = Spigot diameter in mm

##### 11 – Spigot position

S = Lateral connection pipe on the box (standard)

## Ideal Comfort Diffuser IKA

### Specification text

Ideal comfort diffuser particularly suitable for optimum cooling and heating of large and high rooms and halls. High-induction supply air intake in cooling mode by splitting the horizontal, radial supply air jet into several smaller jets due to reduction in temperature. Compact vertical round jet in heating mode with great penetration for effective heating. Flexible air supply by continuous manual adjustment from only horizontal to only vertical throw without any change in the pressure loss and sound power level. Possible installation as a free suspension or at the ceiling. Simple integration in the duct system via round connection piece. Round design with outer diffuser casing and adjustable inner basket to change air flow direction. Only a short inflow distance necessary due to built-in perforated air flow straightener. Diffuser consisting entirely of sheet steel painted with a high-quality powder coating to a RAL colour RAL 9010 (white, standard), RAL 9006 (white aluminium) or to a different RAL colour (at an extra charge).

Product: SCHAKO **type IKA-...**

#### Accessories:

- Rubber lip seal (-GD1), made of special rubber for connection to a spiral duct
- With round plenum box (-AKR) made of galvanised sheet steel with fixing lugs
  - With a damper (-DK1) adjustable from the room side in the plenum box for simple air volume regulation.
  - with rubber lip seal (-GD1), made of special rubber.
  - with thermal insulation
    - internal (-li)
    - external (-la)
- with ball-impact guard (-BS...), steel powder-coated in the colour of the diffuser.
  - Fastened to the diffuser (standard) (-BSA)
  - Fastened to the ceiling (-BSD)
- With damper (-DV1/-DV2/-DV3), made of galvanised sheet steel, integrated, room side adjustable for simple volumetric flow adjustment.
  - Connection to spiral duct (-DV1)
  - Connection to connection pieces (-DV2)
  - Connection to spiral duct with rubber lip seal (-DV3)
- with electric actuator (-ME) for adjusting air jet direction. For NW 400-800 integrated on the inside, for NW 300 on the outside. NW 300 and 800 with Belimo actuator. NW 400 to 600 with Siemens actuator

#### Model

- 230 V AC, 3-point activation (-E045, -E092, -E006)
- 24 V AC, 0 - 10 V DC (-E046, -E091, -E014)
- 24 V AC, 3-point activation (-E044, -E090, -E005)
- Thermocouple (-TE01, only possible for NW 600), Diffuser adjustment option without electrical energy as a function of the supply air temperature (not available in connection with damper)