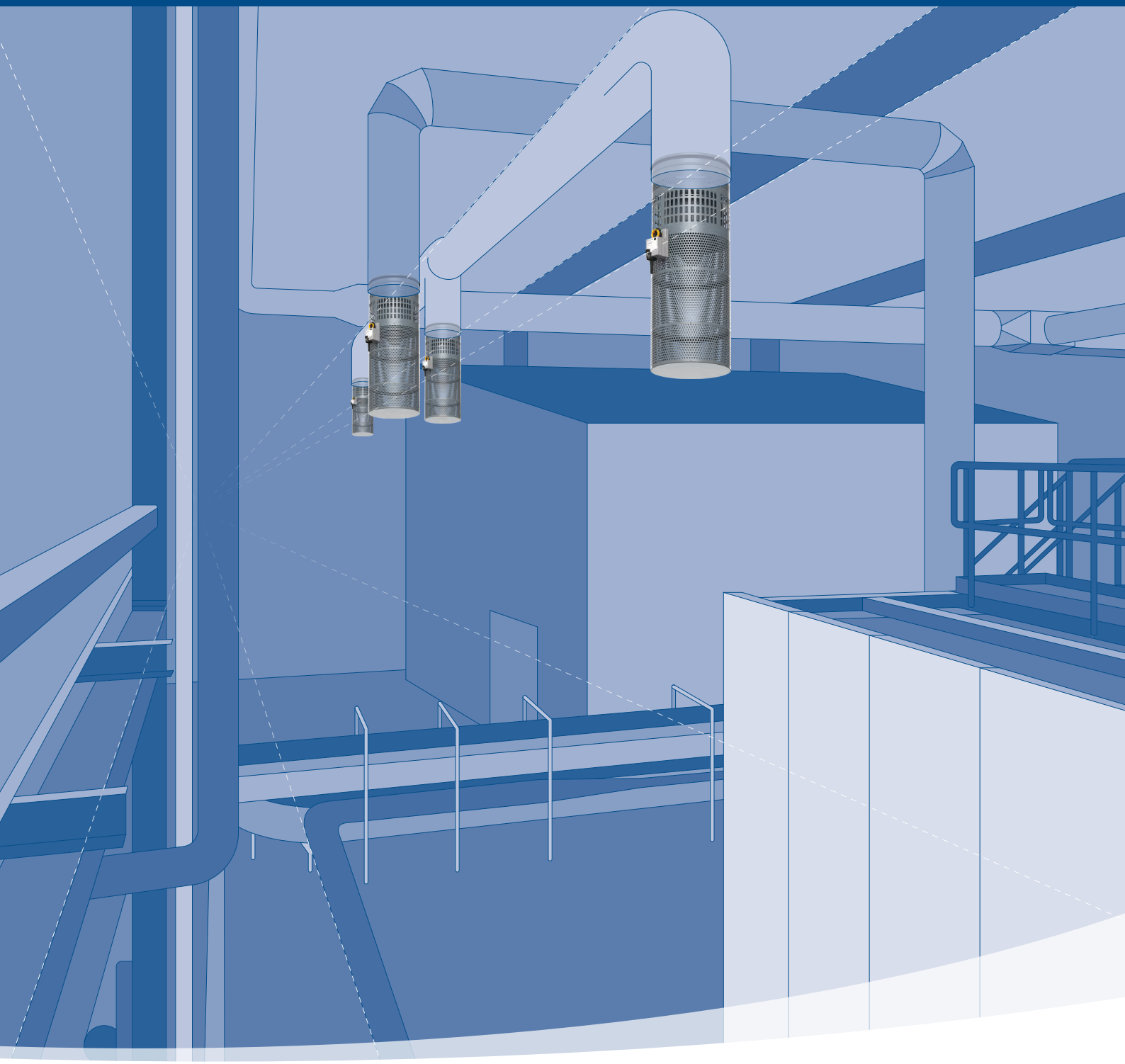
Air Distribution Products

BIA

Adjustable Displacement Diffuser

Data Sheet



systemair

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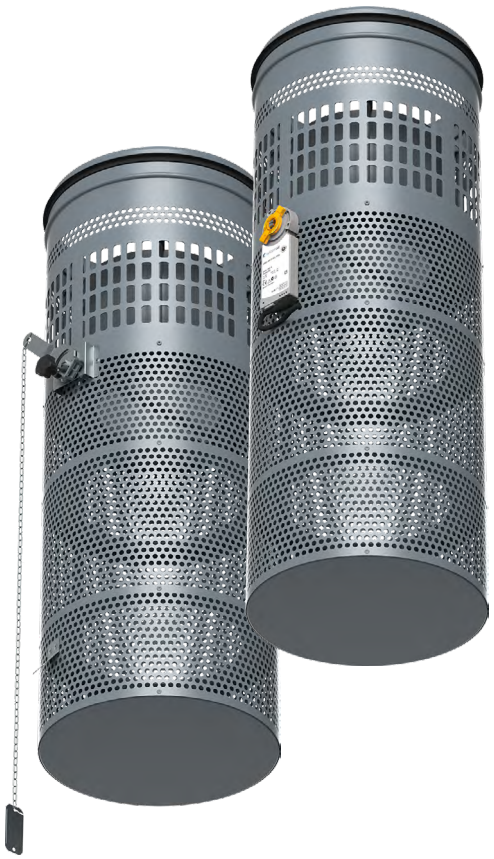
Good to know

Current information on all products is available at design.systemair.com



Description

BIA is a variable geometry displacement/induction hybrid diffuser, mainly intended for air supply in comfort ventilation systems for industrial-, office- and public halls.

Highlights

- Compact dimensions
- Precise adjustment of different discharge patterns for heated and cooled air
- Pressure drop independent from the air discharge mode adjustment
- Manual or motorized adjustment versions
- Easy and quick installation in elevation 0 m to 5 m

Product Types

- BIA-...-HC: Variable geometry displacement/induction hybrid diffuser with manual geometry adjustment
- BIA-...-MC: Variable geometry displacement/induction hybrid diffuser with continuous actuator for geometry adjustment

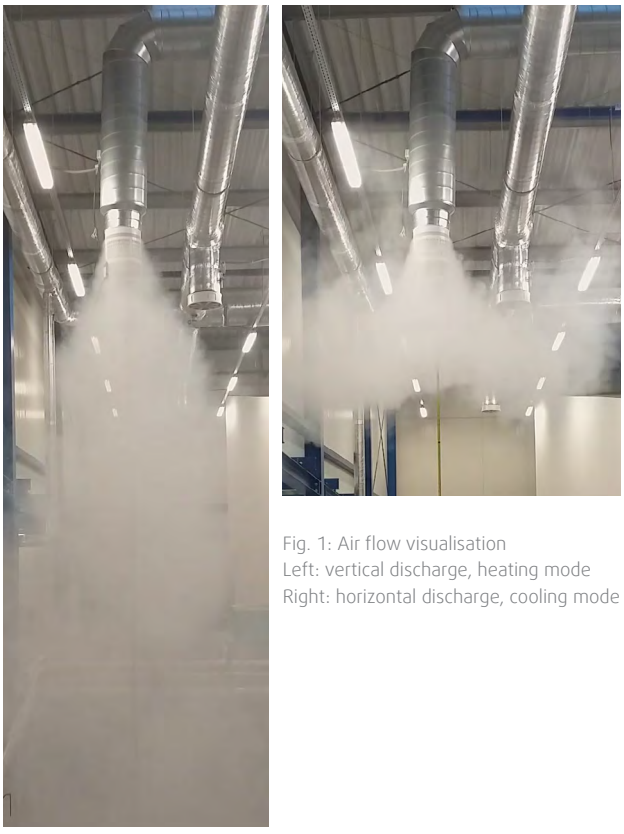


Fig. 1: Air flow visualisation
Left: vertical discharge, heating mode
Right: horizontal discharge, cooling mode

Design

The diffuser casing is made from galvanized perforated steel sheet. A version with the casing from satin finish stainless steel is also available for better protection in case of water condensation in spaces with higher humidity. The air inlet with rubber gasket fits to the standard circular spiral ducts. The upper part with vertical slit perforation permits the air discharge in vertical direction with higher face velocity (induction mode). The lower part with perforation of circular holes permits the air in displacement discharge mode. The internal mechanism adjusts the ratio between the induction and displacement air discharge. The positioning of the mechanism can be manual or with electrical (AC 24 V) continuously positioning (DC 0 V ... 10 V) actuator. The manual adjustment is possible over longer distance by a rope bound to the adjustment pull chain, when the diffuser is installed in higher elevation. The pull chain reaches app. 200 mm under the bottom of the casing. The mechanism assures pressure drop independent from the adjusted position.

Controls

The diffuser type BIA-...-MC ais equipped by an actuator with AC 24 V power supply and continuous positioning by the control signal DC 0 V ...10 V.

Information about installation, maintenance and operation is available in the “UserManual_BIA” document on Systemair DESIGN.

Product Parts

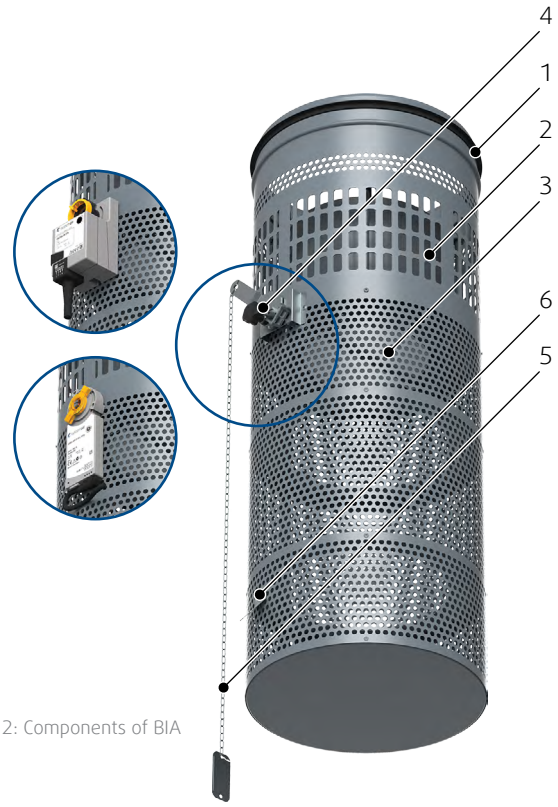


Fig. 2: Components of BIA

Legend

1	Connection for spiral duct with rubber gasket
2	Perforation for vertical induction discharge
3	Perforation for horizontal displacement discharge
4	Platform with adjustment handle (BIA-...-HC) or adjustment actuator (BIA-...-MC)
5	Pull chain for manual adjustment (BIA-...-HC), reaches app. 200 mm lower than the casing bottom
6	Position arresting holder for manual adjustment (BIA-...-HC)

Setup Possibilities

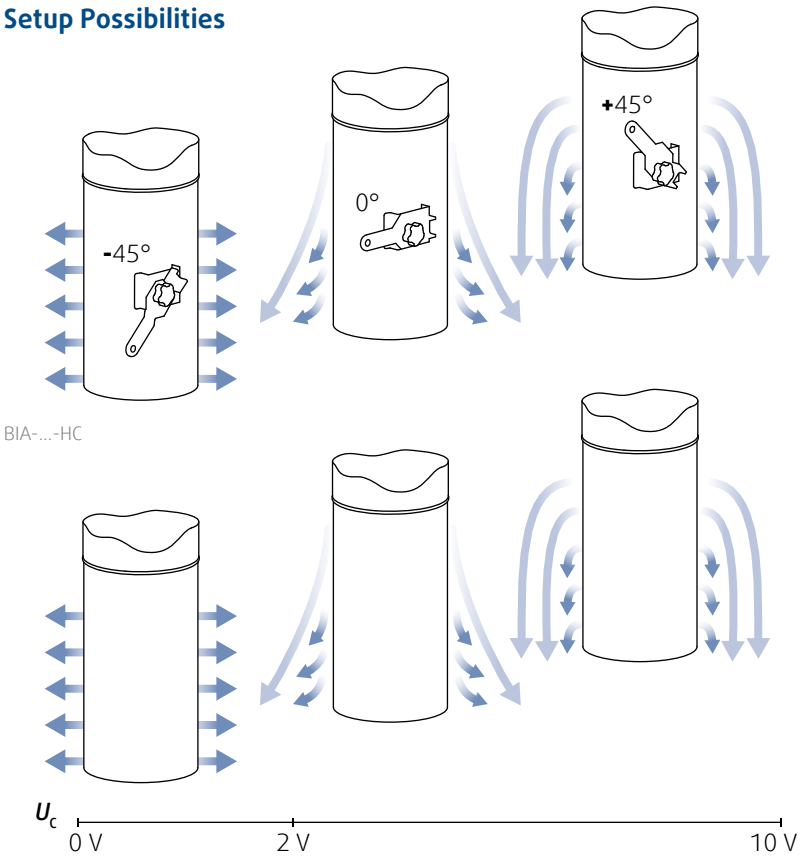


Fig. 4: Different deflection mechanism setup and resulting air flow pattern

Dimensions

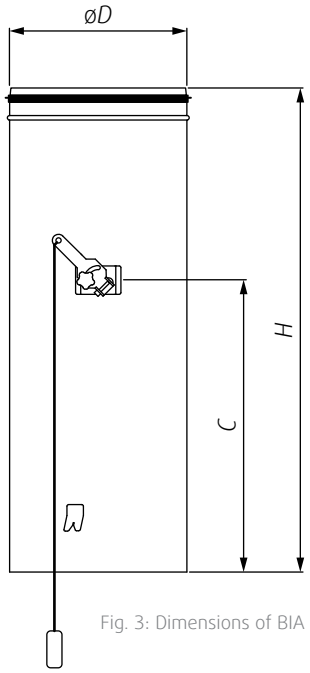


Fig. 3: Dimensions of BIA

Tab. 1: Dimensions of BIA

Type-Size	H	C	øD	m	
				HC (manual)	MC (actuator)
(mm)				(kg)	
BIA-200	550	330	198	4	4,4
BIA-250	700	440	248	6	6,4
BIA-315	850	515	313	9,5	10,3
BIA-400	1100	660	398	15,5	16,3
BIA-500	1350	800	498	23	23,8
BIA-630	1700	970	628	35,5	36,3

Ordering Code

		BIA- [ ] - [ ] - [ ]
		200
		250
		315
		400
		500
Size - Inlet ø	(mm)	630
	Manual	HC
Adjustment Mechanism Type	Actuator, continuous position 0 V ... 10 V, AC/DC 24 V power	MC
	RAL7001 silver grey (galvanized steel)	SG
	RAL9003 signal white (galvanized steel)	SW
	Other RAL colour (galvanized steel)	RALXXXX
Surface Finish/Material	Stainless steel A316 casing only (no paint)	A

Example of Ordering Code

BIA-200-HC-SW

Diffuser with inlet diameter 200 mm, manually adjustable, made of galvanized steel with RAL9003 signal white surface finish.

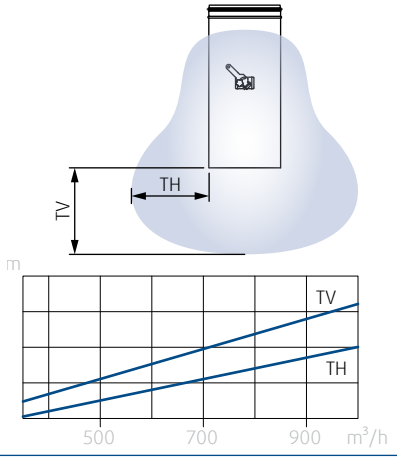
.

Technical Parameters

Legend

p_s	Pa	Pressure drop
q_v	m³/h l/s	Air flow volume
L_{WA}	dB(A)	A-weighted total radiated sound power level
L_{PA}	dB(A)	A-weighted total sound pressure level expressed for 10 m² room absorption area
TH_x TV_x	m	Throw length, maximum horizontal (TH) and maximum vertical (TV) component calculated for specific terminal velocity
x	m/s	Terminal velocity in range of 0,1 m/s ... 1 m/s
-45°, 0°, 45°		Flow pattern adjustment position (angle of adjustment shaft – see Setup Possibilities on page 5)

TH, TV	Throw length, maximum horizontal (TH) and maximum vertical (TV) component with terminal velocity 0,2 m/s.



Calculation of Air Throw for Different Terminal Velocities

$TH_x = TH \cdot 0{,}2/x$
$TV_x = TV \cdot 0{,}2/x$

SIZE 200

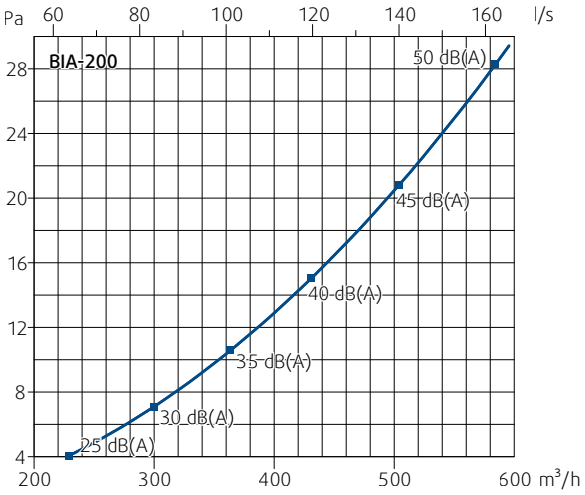
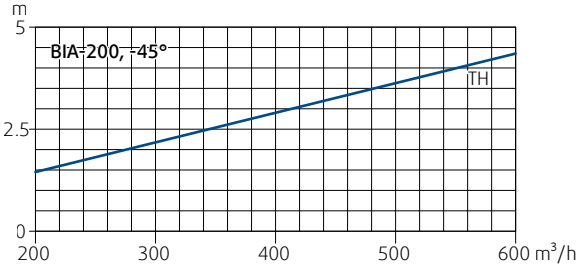
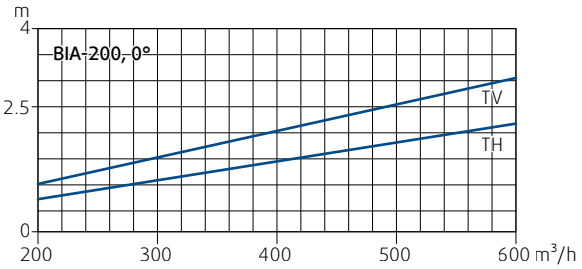


Diagram 1: Pressure drop and radiated A-weighted sound power level dependent on air flow volume





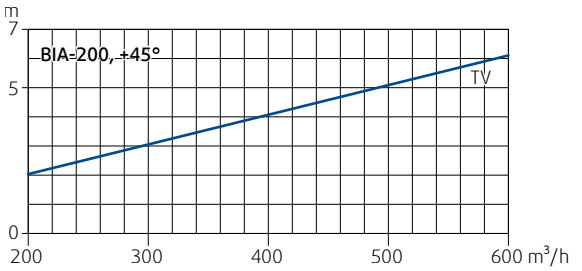


Diagram 2: Isothermal air throw length with maximum horizontal (TH) and maximum vertical (TV) component with terminal velocity 0,2m/s, dependent on air flow volume and adjustment angle

SIZE 250

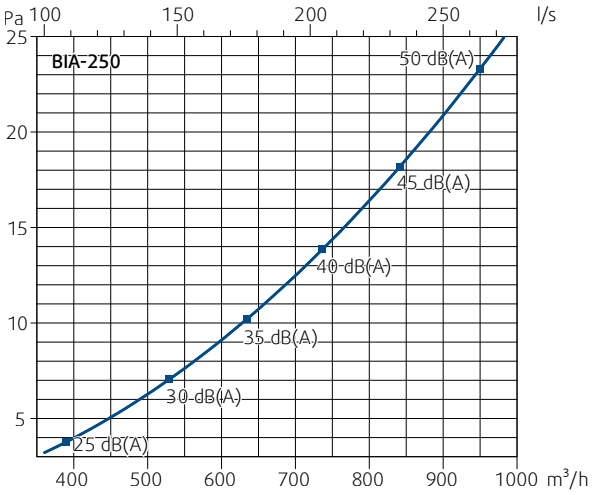
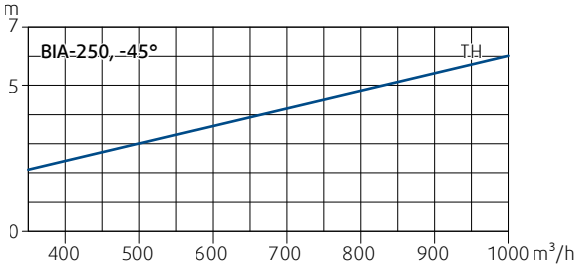
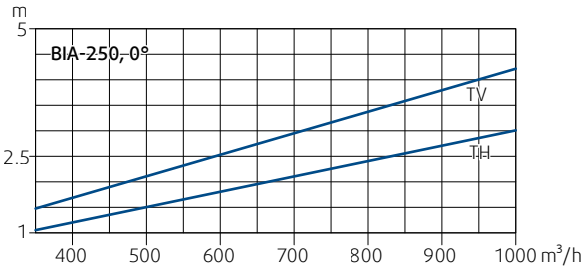


Diagram 3: Pressure drop and radiated A-weighted sound power level dependent on air flow volume





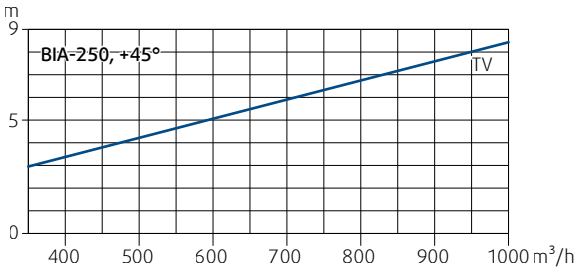


Diagram 4: Isothermal air throw length with maximum horizontal (TH) and maximum vertical (TV) component with terminal velocity 0,2m/s, dependent on air flow volume and adjustment angle

SIZE 315

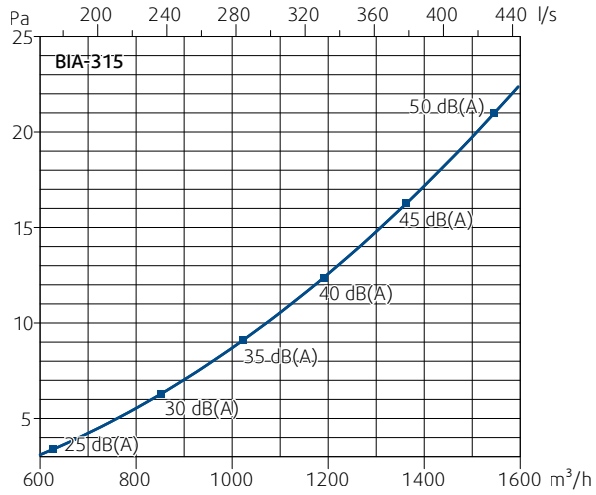
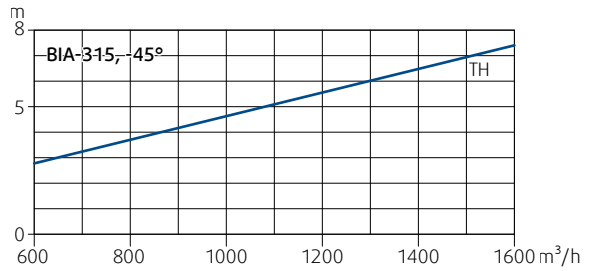
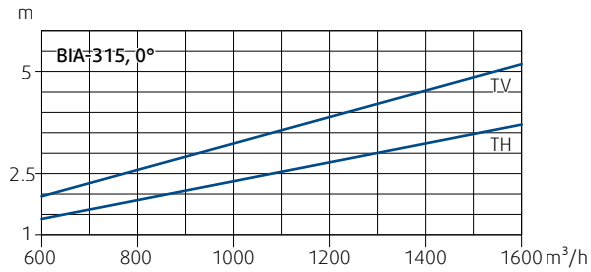


Diagram 5: Pressure drop and radiated A-weighted sound power level dependent on air flow volume





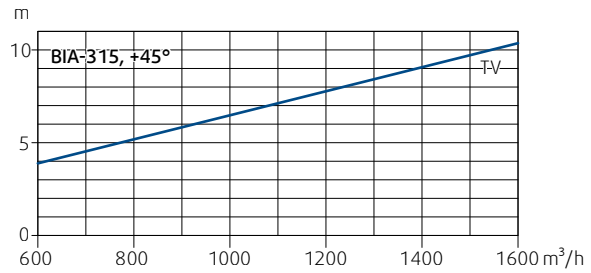


Diagram 6: Isothermal air throw length with maximum horizontal (TH) and maximum vertical (TV) component with terminal velocity 0,2m/s, dependent on air flow volume and adjustment angle

SIZE 400

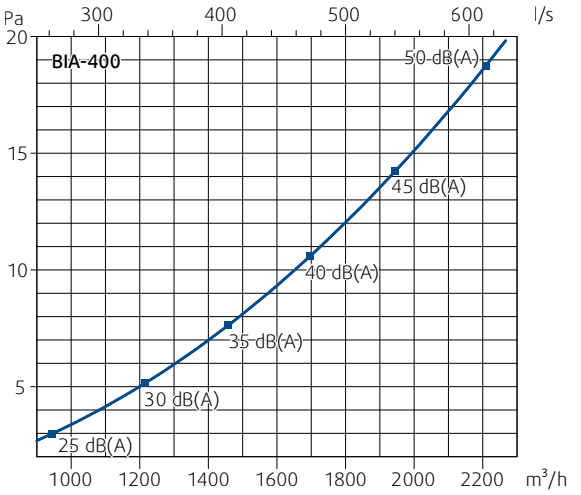
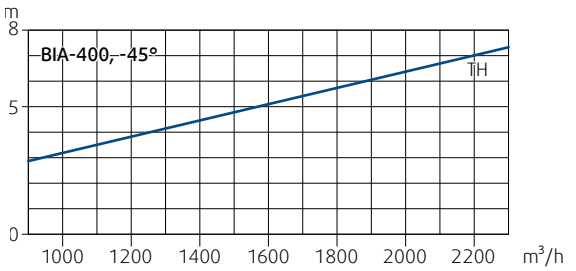
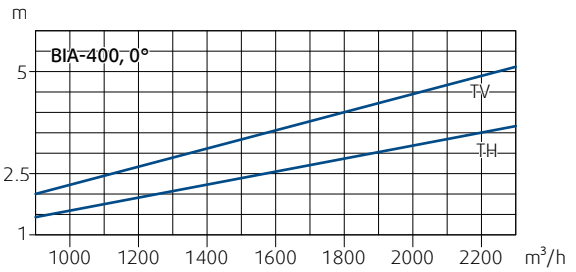


Diagram 7: Pressure drop and radiated A-weighted sound power level dependent on air flow volume





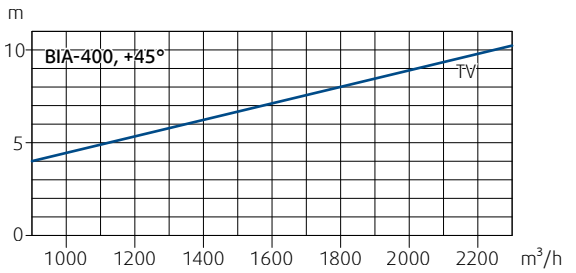


Diagram 8: Isothermal air throw length with maximum horizontal (TH) and maximum vertical (TV) component with terminal velocity 0,2m/s, dependent on air flow volume and adjustment angle

SIZE 500

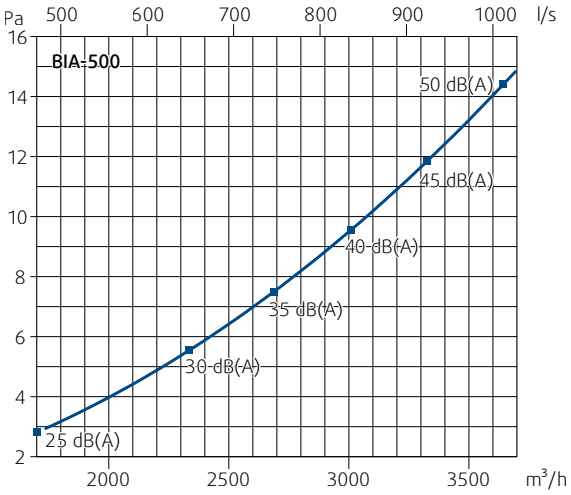
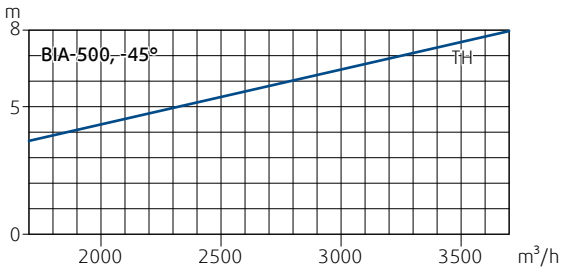
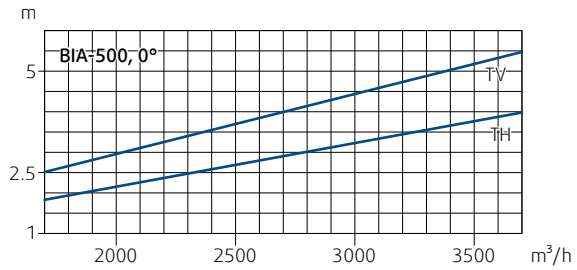


Diagram 9: Pressure drop and radiated A-weighted sound power level dependent on air flow volume





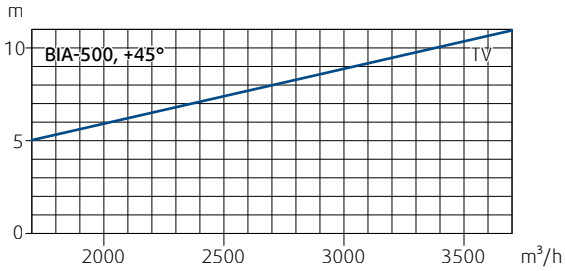


Diagram 10: Isothermal air throw length with maximum horizontal (TH) and maximum vertical (TV) component with terminal velocity 0,2m/s, dependent on air flow volume and adjustment angle

SIZE 630

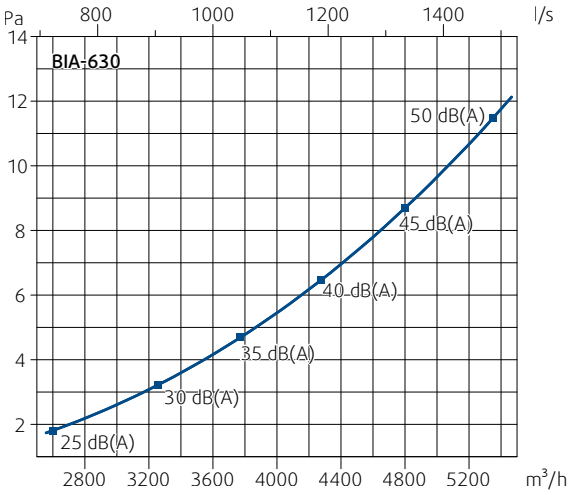
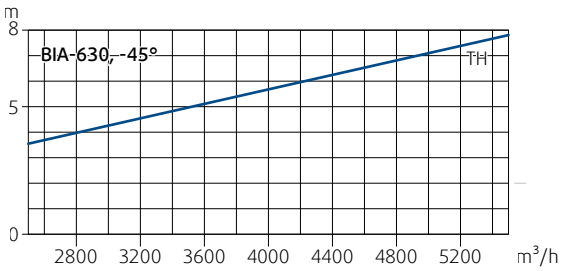
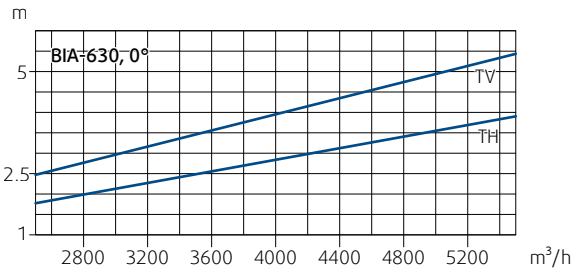


Diagram 11: Pressure drop and radiated A-weighted sound power level dependent on air flow volume





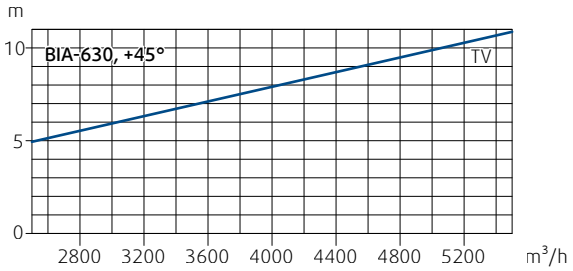


Diagram 12: Isothermal air throw length with maximum horizontal (TH) and maximum vertical (TV) component with terminal velocity 0,2m/s, dependent on air flow volume and adjustment angle

Installation, Maintenance & Operation

Information about installation, maintenance and operation is available in the “UserManual_BIA” document on Systemair DESIGN.

Dry indoor conditions with an operation temperature range of -20°C to +50°C.

Transport & Storage

Dry indoor conditions with a temperature range of -40°C to +50°C.

Supplement

Any deviations from the technical specifications contained herein and the terms should be discussed with the manufacturer. We reserve the right to make any changes to the product without prior notice, provided that these changes do not affect the quality of the product and the required parameters.

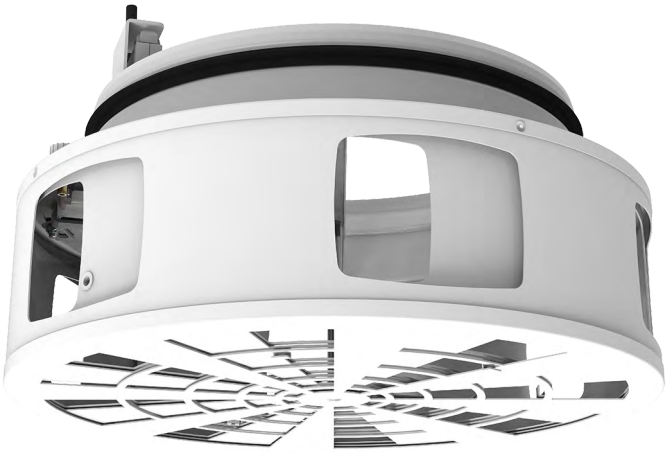
Current information on all products is available on Systemair DESIGN.

Related Products

BURE

Variable Geometry Diffusers

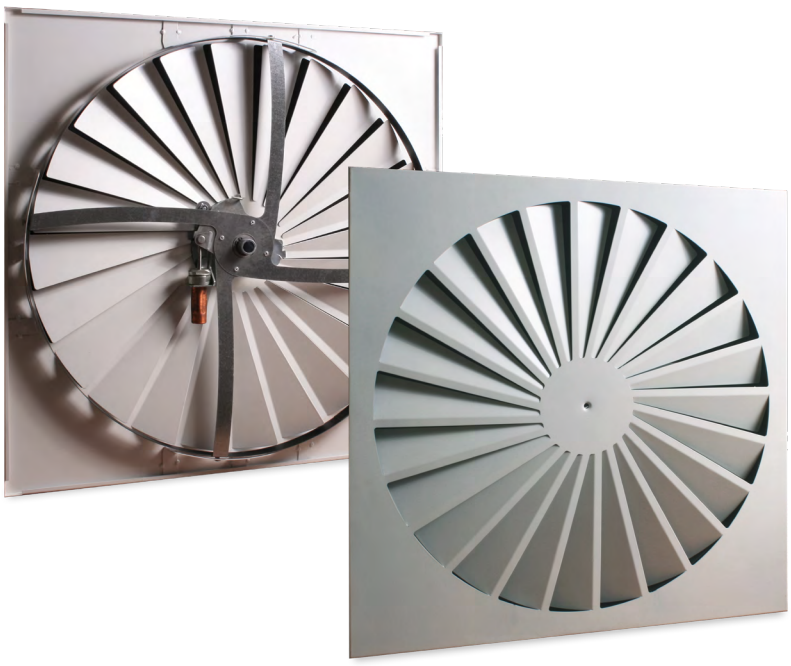
Product information is available within the “DataSheet_BURE” technical documentation on Systemair DESIGN.



VVT

Thermo-Adjustable Diffuser

Product information is available within the “DataSheet_VVT” technical documentation on Systemair DESIGN.



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