

CAP-F

Multi-Nozzle Diffuser

Data Sheet



Table of Contents

Description	3
Design	4
Product Parts	4
Setup Possibilities	5
Dimensions	6
Ordering Code	7
Accessory	8
Quick Selection	10
Technical Parameters	10
Installation, Maintenance & Operation	17
Transport & Storage	17
Supplement	17
Related Products.	18



Good to know

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



Description

CAP-F is a multi-nozzle diffuser with a backing box, mainly intended for air supply in comfort ventilation systems for offices, shops, medical rooms, school classrooms, etc., installed in T-bar false ceiling.

Highlights

- Versatile adjustability of air discharge patterns
- Excellent air induction and mixing even with small air flow volumes, fit for VAV ventilation
- High air flow capacity with low noise and moderate pressure drop
- Compact design

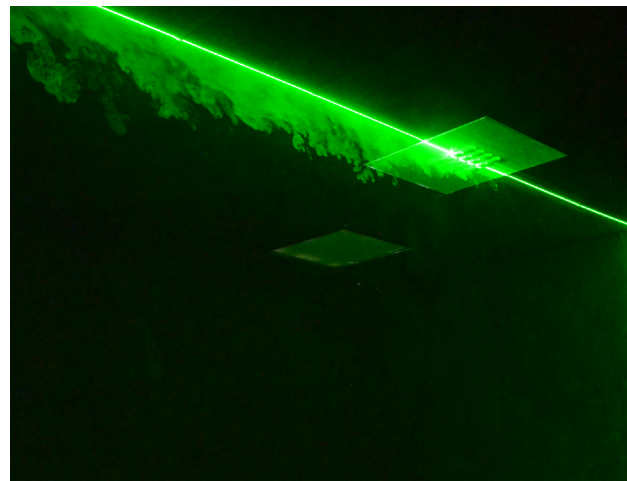
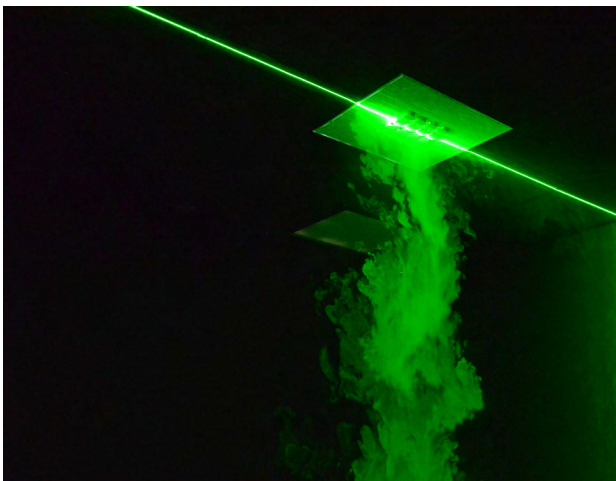


Fig. 1: Air flow visualisation

Design

The CAP-F body is made from galvanized steel, composed of the backing box with a vertically oriented rubber gasket sealed circular connection and diffuser plate with polymer nozzles, attached by spring clips. The nozzles can be rotated by 360° in the plane of the diffuser plate. The proper directional adjustment of the individual nozzles results in the desired air discharge pattern. The backing box frame has dimensions to fit into the T-bar false ceiling either with raster 600 mm or 625 mm.

Product Parts



Fig. 2: Components of CAP-F

Legend

1	Backing box
2	Connection with rubber gasket
3	Spring clips for diffuser plate fixing (inside the backing box)
4	Diffuser plate
5	Nozzles
6	Safety cable (inside the backing box)

Setup Possibilities

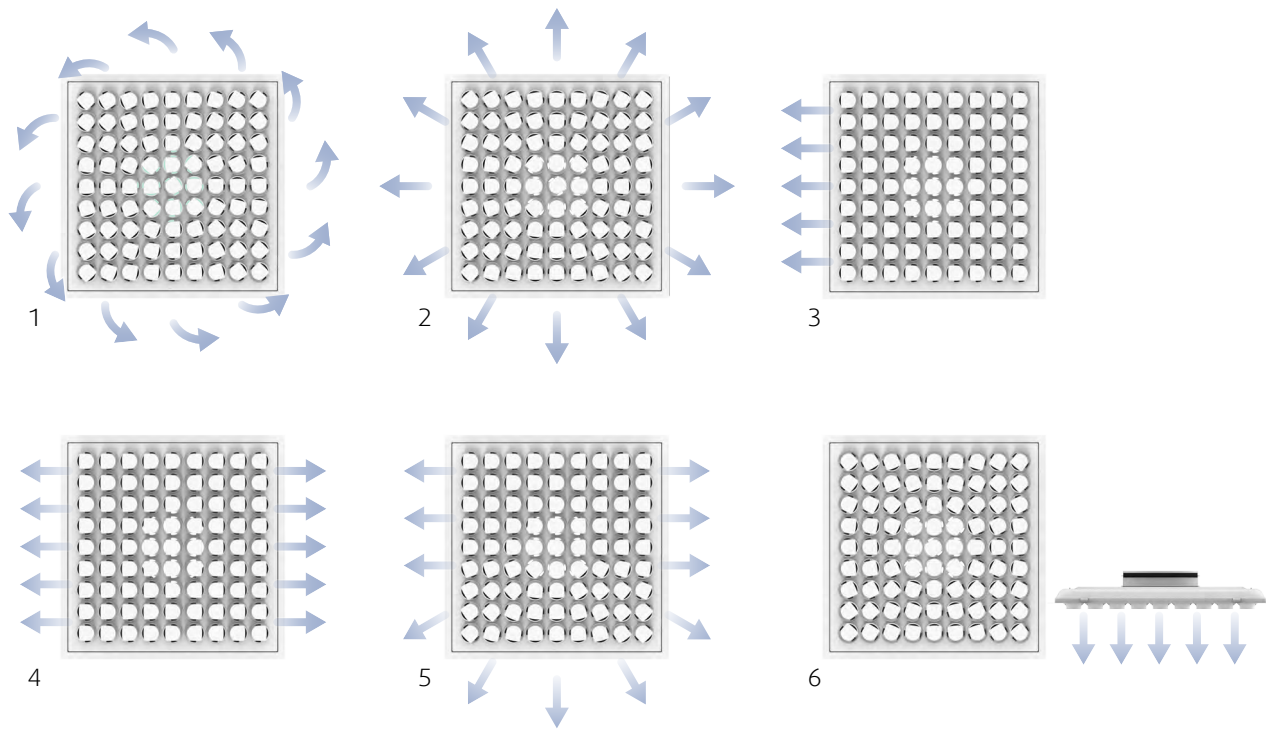


Fig. 3: Nozzle adjustments and resulting air flow pattern

Legend

1	Tangential horizontal swirl discharge
2	Radial horizontal omnidirectional discharge
3	Horizontal discharge, single direction
4	Horizontal discharge, 2 directions
5	Horizontal discharge, 3 directions
6	Vertical discharge

Dimensions

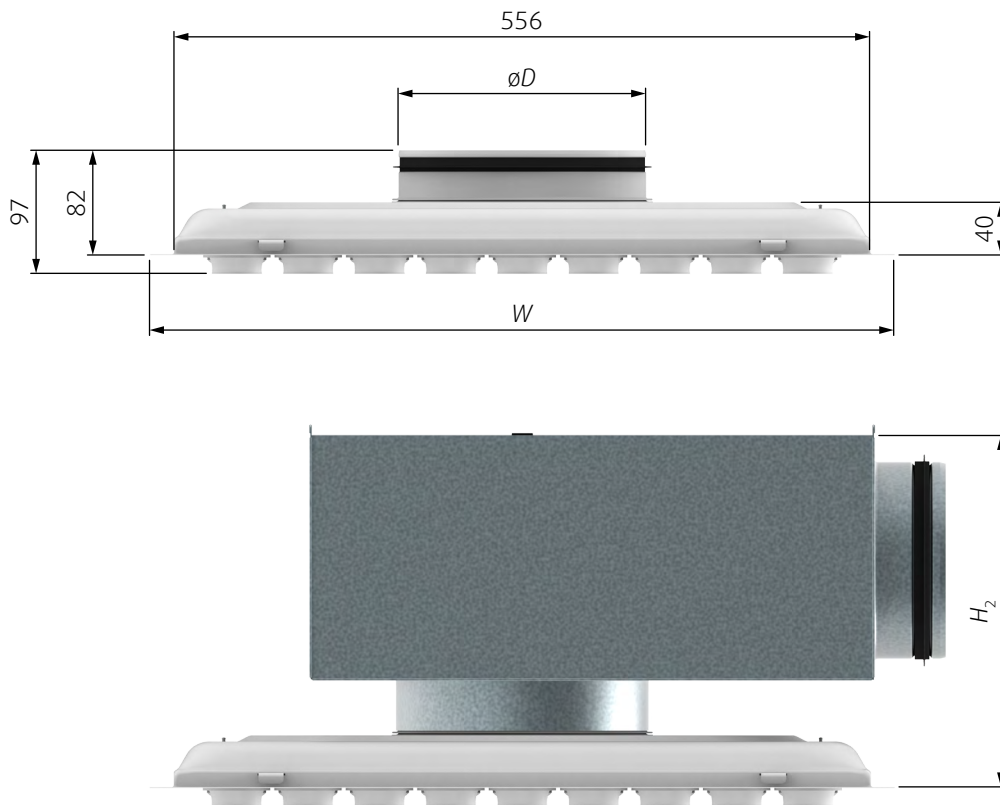


Fig. 4: Dimensions of the CAP-F

Tab. 1: Dimensions of the CAP-F

Name	W	$\varnothing D$	H_2	m
	(mm)			(kg)
CAP-F-125-600-16*	595	124	234	4,77
CAP-F-125-625-16*	620	124	234	4,94
CAP-F-160-600-25*	595	159	244	4,68
CAP-F-160-625-25*	620	159	244	4,85
CAP-F-200-600-36*	595	199	279	4,56
CAP-F-200-625-36*	620	199	279	4,73
CAP-F-250-600-49*	595	249	334	4,40
CAP-F-250-625-49*	620	249	334	4,57
CAP-F-315-600-81*	595	314	384	4,01
CAP-F-315-625-81*	620	314	384	4,18
CAP-F-400-600-81*	595	399	485	4,02
CAP-F-400-625-81*	620	399	485	3,85

NOTE: * Number of nozzles

Ordering Code

		CAP-F-	-	-	-	-
		125				
		160				
		200				
		250				
		315				
Nominal size (con. diameter)		400				
		600				
T-bar raster size		625				
	(for nom. size 125)	16				
	(for nom. size 160)	25				
	(for nom. size 200)	36				
	(for nom. size 250)	49				
	(for nom. size 315)	81				
Number of nozzles	(for nom. size 400)	81				
	(RAL9010)	W				
	(RAL9003)	SW				
Surface and nozzle colour		RALXXXX				

Example of the Ordering Code

CAP-F-250-600-49-W

Diffuser CAP-F in white colour (RAL 9010) with connection diameter 250 mm and 49 nozzles for T-bar raster 600 mm.

Accessory

THOR

Plenum Box



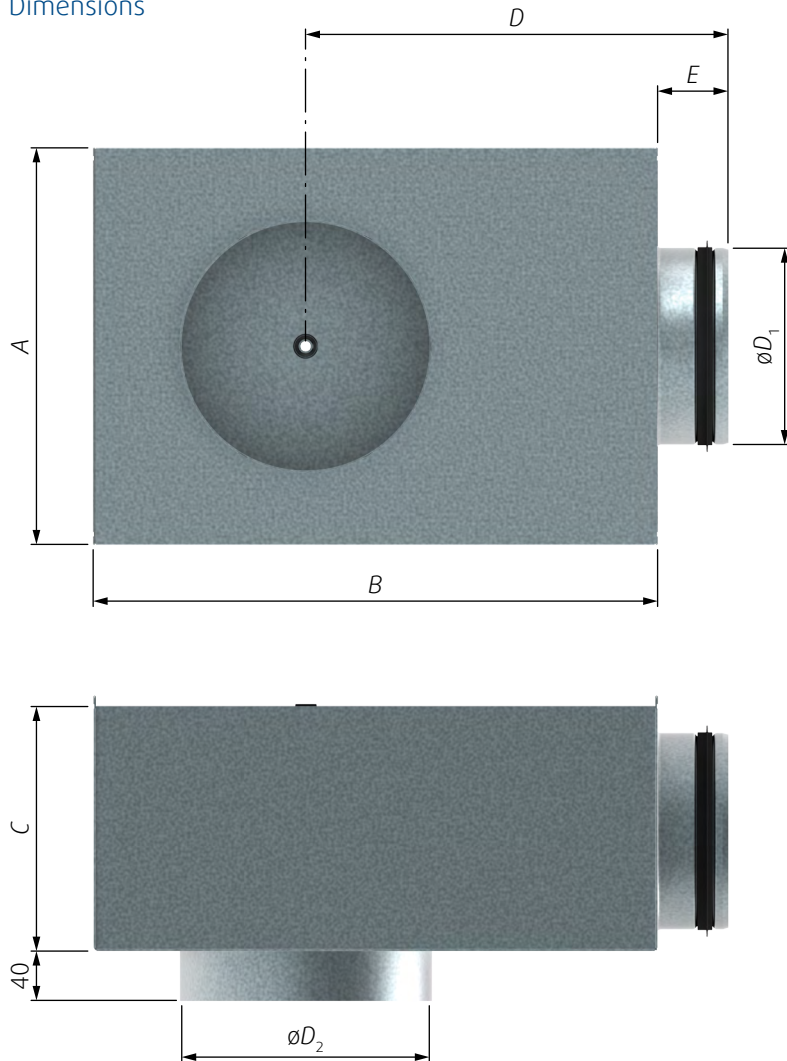
Description

The THOR plenum box is used together with air diffusers for pressure reduction, airflow balancing and sound attenuation as well as for measuring and adjusting the air flow. The plenum box can be used for air inlet and extract.

Design

THOR plenum boxes are manufactured from hot-dip galvanized sheet steel with inlet connection sleeve fitted with a rubber seal tested for air-tightness. The inlet is equipped by the ZEUS damper with impulse tubes for measuring differential pressure for flow volume calculation, using a portable measuring device. It can be adjusted manually using a cable gearing.

Dimensions



Tab. 2: Dimensions of the THOR

Type DN ₁ - DN ₂	A	B	C	øD ₁	øD ₂	m
(mm)						(kg)
100-125	250	300	150	99	126	2,5
125-160	250	340	160	124	161	2,7
160-200	300	430	195	159	202	4,0
200-250	350	480	250	199	252	5,9
250-315	450	545	300	249	317	8,3
315-400	550	600	400	314	402	10,5

Fig. 5: Dimensions of the THOR

Ordering Code

		THOR-	-
		100	
		125	
		160	
		200	
		250	
Inlet	DN ₁ (mm)	315	
		125	
		160	
		200	
		250	
		315	
Outlet	DN ₂ (mm)	400	

Example of the Ordering Code

THOR-125-160

Plenum box THOR with 125 mm circular inlet and 160 mm circular outlet (nominal dimensions).

Quick Selection

Type	Air flow volume q_v at different sound power levels L_{WA}					
	25 dB		30 dB		35 dB	
	m ³ /h	l/s	m ³ /h	l/s	m ³ /h	l/s
CAP-F-125-...-16	73	20	92	26	110	31
CAP-F-160-...-25	103	29	136	38	168	47
CAP-F-200-...-36	159	44	203	56	245	68
CAP-F-250-...-49	237	66	286	79	338	94
CAP-F-315-...-81	332	92	417	116	497	138
CAP-F-400-...-81	468	130	585	163	694	193

NOTE: The working points were measured with THOR plenum box and open adjustment damper.

Technical Parameters

Legend

p_s	Pa	Pressure drop
q_v	m ³ /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 m ² room absorption area
L_w	dB	Non weighted total sound power level
$L_{0,2}$	m	Air throw length with terminal velocity 0,2 m/s
L_x	m	Air throw length calculated for specific terminal velocity
x	m/s	Terminal velocity in range of 0,1 m/s ... 1 m/s
20%, 40%, 60%, 80%, 100%		The plenum box damper positions in pressure drop/noise diagrams are represented as percentage. 20% is fully closed damper. 100% is fully open damper.

Calculation of Air Throw for Different Terminal Velocities

$$L_x = L_{0,2} \cdot 0,2/x$$

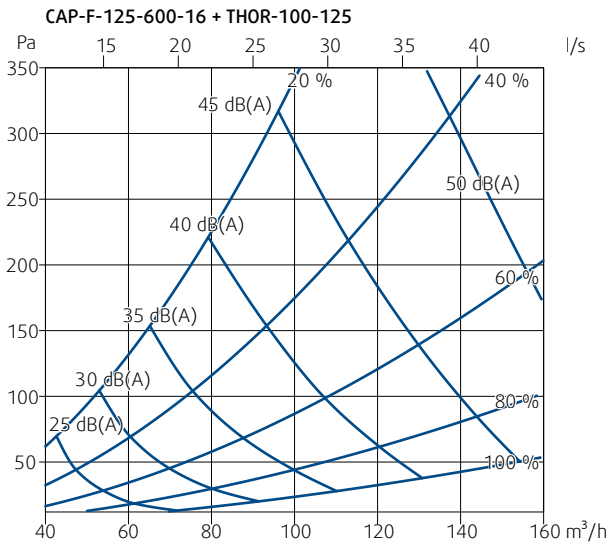


Diagram 1: Pressure drop & A-weighted total sound power level, depending on air flow volume, measured with THOR plenum box

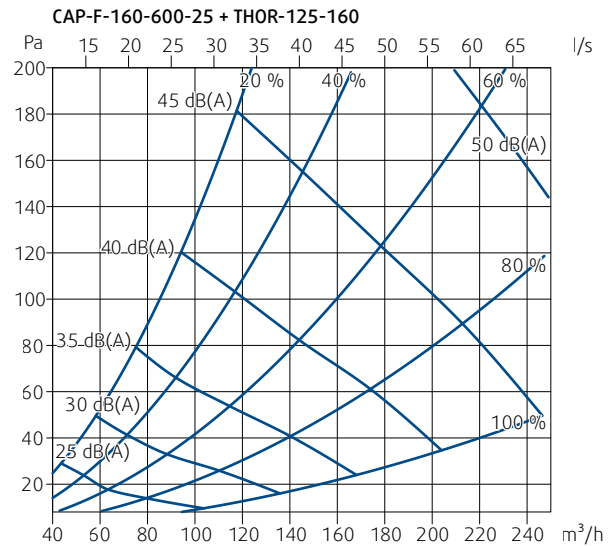


Diagram 3: Pressure drop & A-weighted total sound power level, depending on air flow volume, measured with THOR plenum box

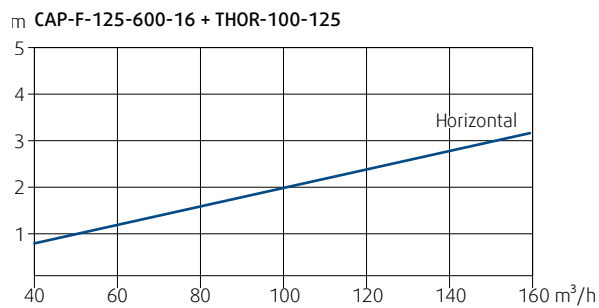


Diagram 2: Isothermal air throw lengths for horizontal radial discharge with terminal velocity 0,2 m/s, depending on air flow volume

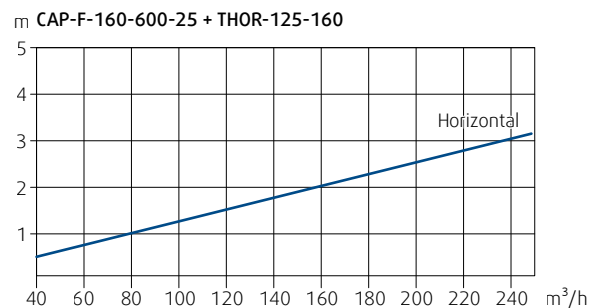


Diagram 4: Isothermal air throw lengths for horizontal radial discharge with terminal velocity 0,2 m/s, depending on air flow volume

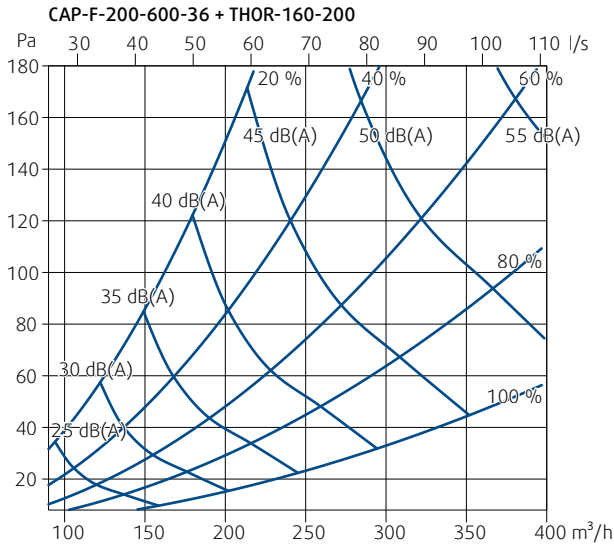


Diagram 5: Pressure drop & A-weighted total sound power level, depending on air flow volume, measured with THOR plenum box

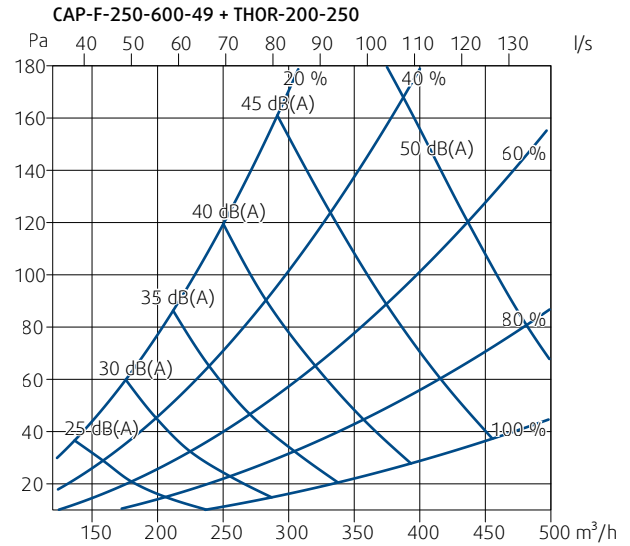


Diagram 7: Pressure drop & A-weighted total sound power level, depending on air flow volume, measured with THOR plenum box

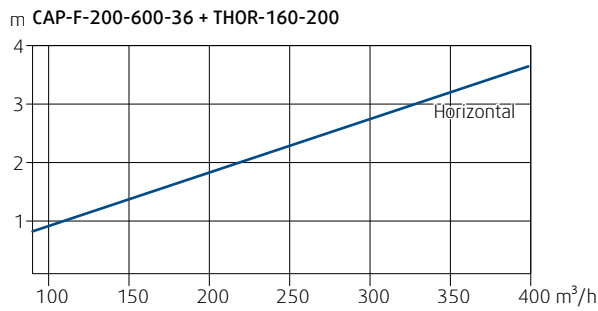


Diagram 6: Isothermal air throw lengths for horizontal radial discharge with terminal velocity 0,2 m/s, depending on air flow volume

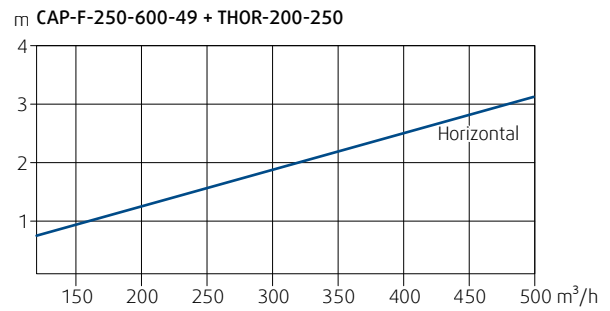


Diagram 8: Isothermal air throw lengths for horizontal radial discharge with terminal velocity 0,2 m/s, depending on air flow volume

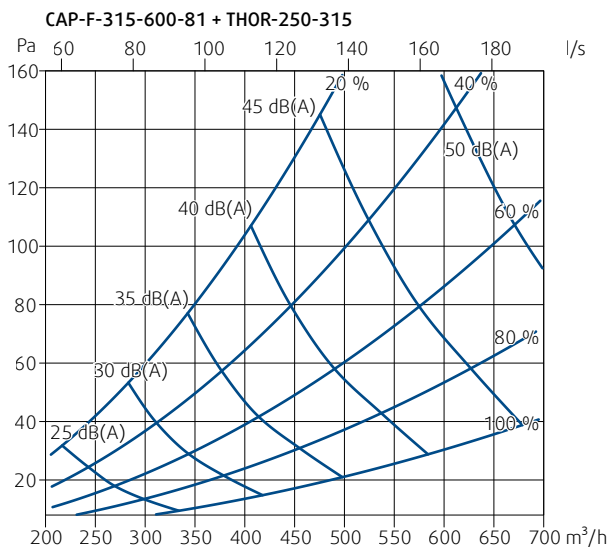


Diagram 9: Pressure drop & A-weighted total sound power level, depending on air flow volume, measured with THOR plenum box

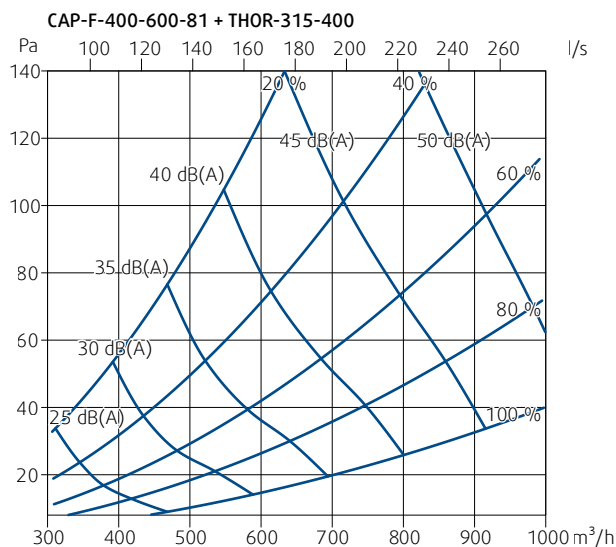


Diagram 11: Pressure drop & A-weighted total sound power level, depending on air flow volume, measured with THOR plenum box

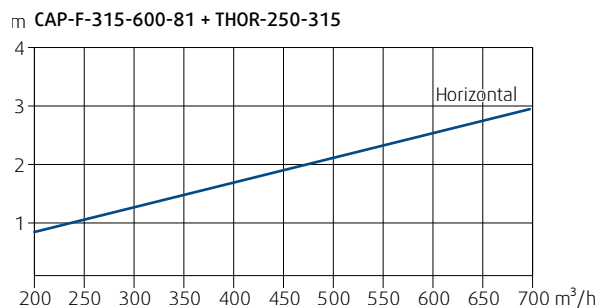


Diagram 10: Isothermal air throw lengths for horizontal radial discharge with terminal velocity 0,2 m/s, depending on air flow volume

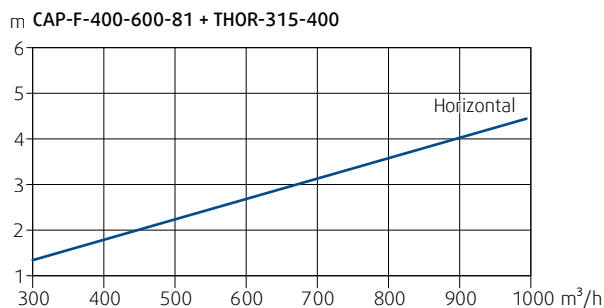


Diagram 12: Isothermal air throw lengths for horizontal radial discharge with terminal velocity 0,2 m/s, depending on air flow volume

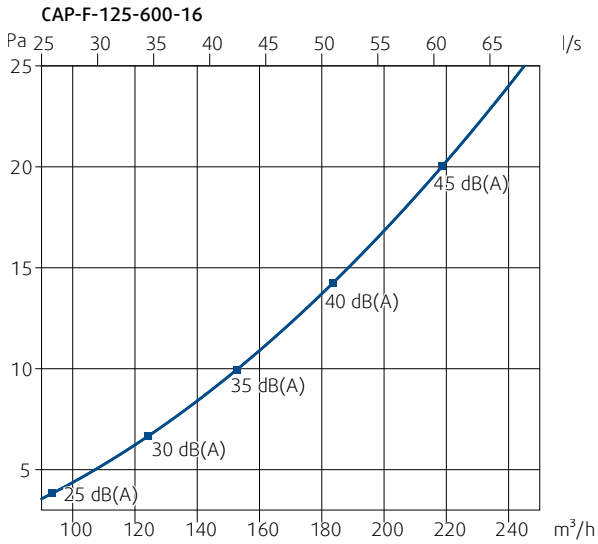


Diagram 13: Pressure drop & A-weighted total sound power level, depending on air flow volume, measured without plenum box

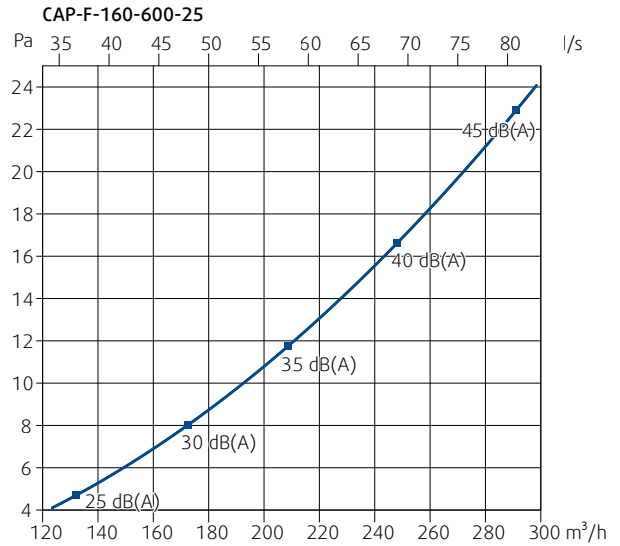


Diagram 15: Pressure drop & A-weighted total sound power level, depending on air flow volume, measured without plenum box

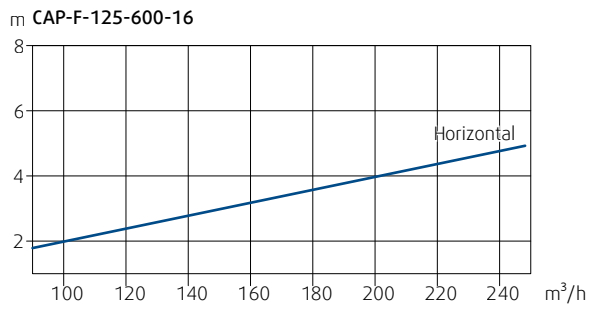


Diagram 14: Isothermal air throw lengths for horizontal radial discharge with terminal velocity 0,2 m/s, depending on air flow volume

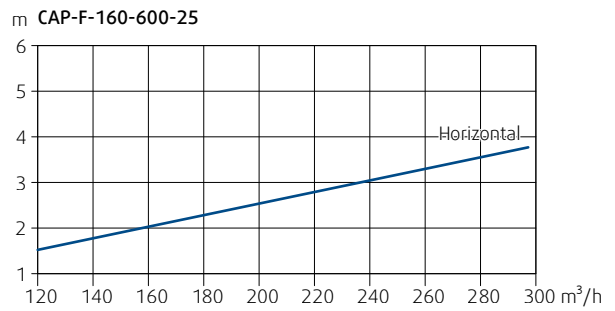


Diagram 16: Isothermal air throw lengths for horizontal radial discharge with terminal velocity 0,2 m/s, depending on air flow volume

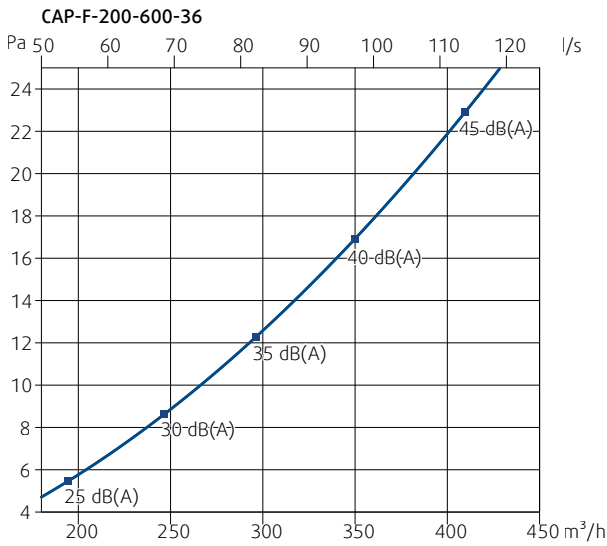


Diagram 17: Pressure drop & A-weighted total sound power level, depending on air flow volume, measured without plenum box

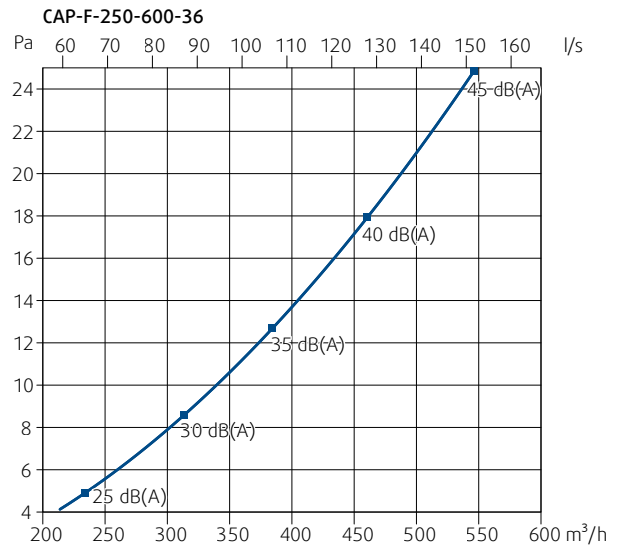


Diagram 19: Pressure drop & A-weighted total sound power level, depending on air flow volume, measured without plenum box

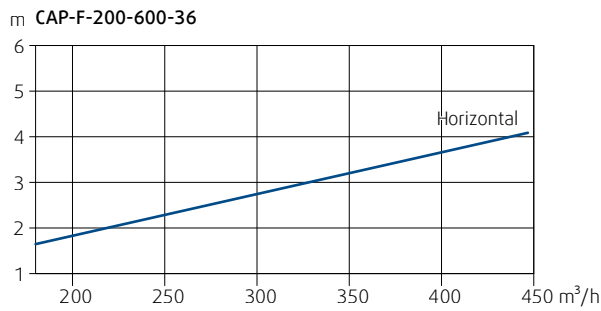


Diagram 18: Isothermal air throw lengths for horizontal radial discharge with terminal velocity 0,2 m/s, depending on air flow volume

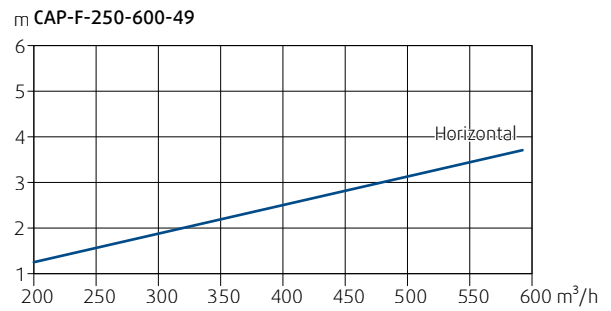


Diagram 20: Isothermal air throw lengths for horizontal radial discharge with terminal velocity 0,2 m/s, depending on air flow volume

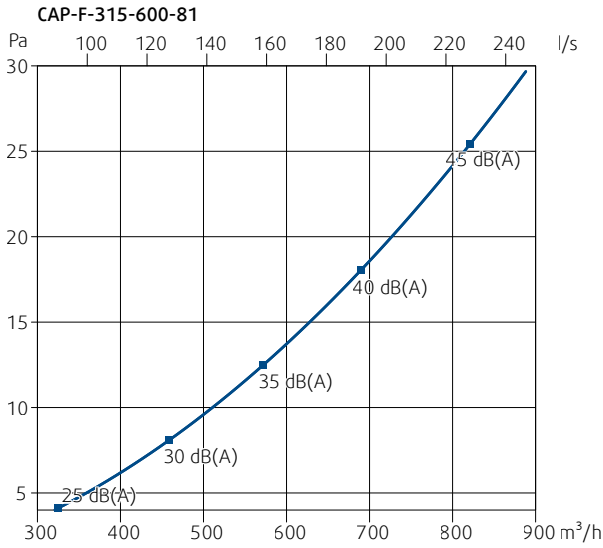


Diagram 21: Pressure drop & A-weighted total sound power level, depending on air flow volume, measured without plenum box

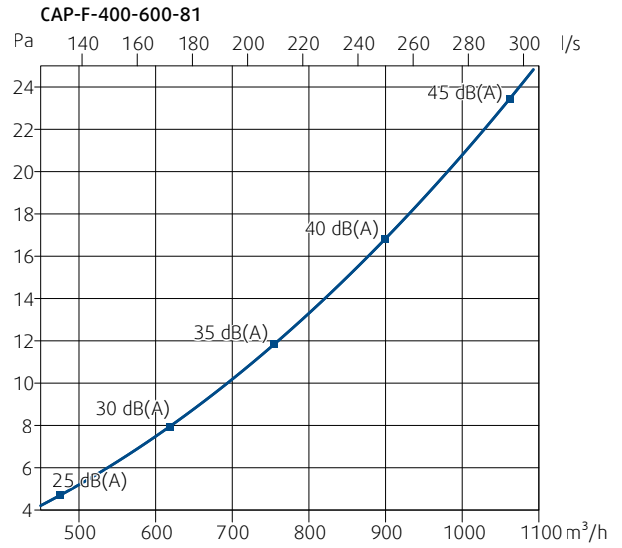


Diagram 23: Pressure drop & A-weighted total sound power level, depending on air flow volume, measured without plenum box

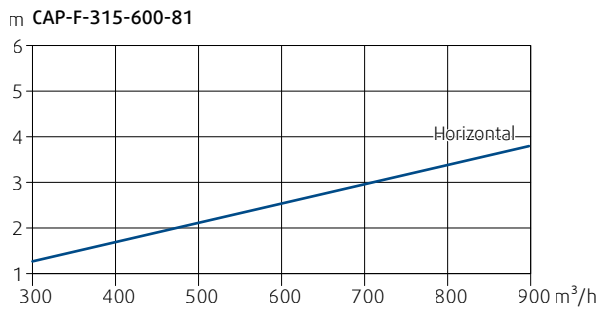


Diagram 22: Isothermal air throw lengths for horizontal radial discharge with terminal velocity 0,2 m/s, depending on air flow volume

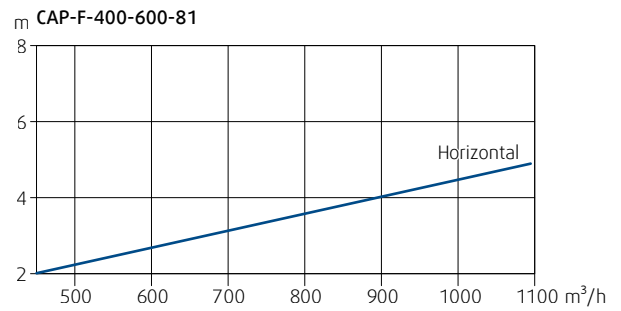


Diagram 24: Isothermal air throw lengths for horizontal radial discharge with terminal velocity 0,2 m/s, depending on air flow volume

Installation, Maintenance & Operation

Information about installation, maintenance and operation is available in the document ["UserManual_CAP-F"](#) or follow the instructions at [Systemair DESIGN](#).

Operate in 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 at [Systemair DESIGN](#).

Related Products

CAP-G

Multi-Nozzle Diffuser

Product information is available within the ["DataSheet_CAP-G"](#) technical documentation and at [Systemair DESIGN](#).



