CAP-F-N

Multi Nozzle Diffuser

Handbook

systemair

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Description

CAP-F-N 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.

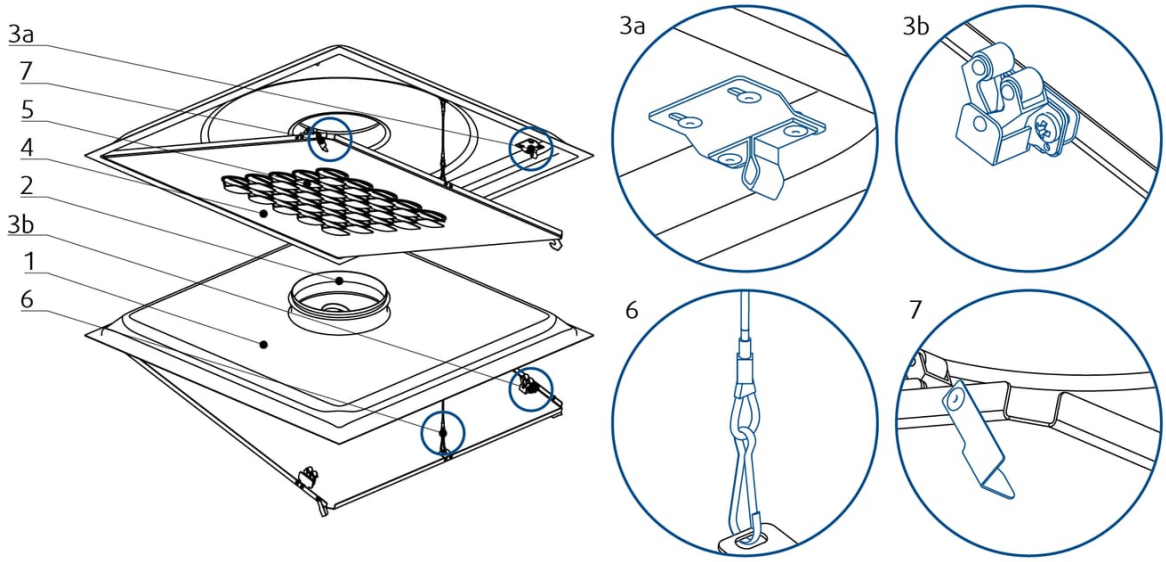
Highlights

- 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 sound level and moderate pressure drop
- Compact design

Design

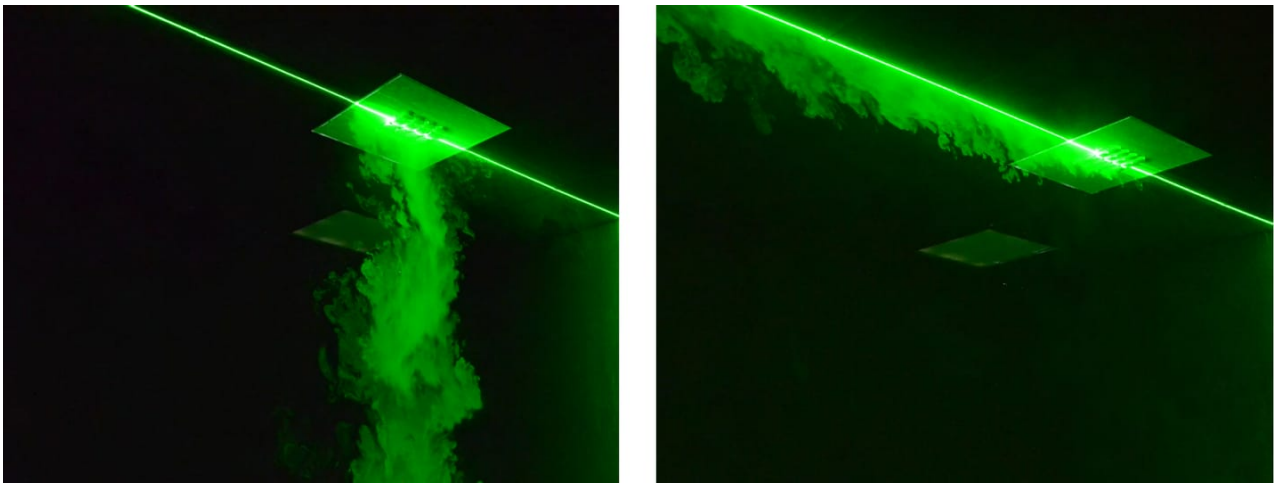
The CAP-F-N body is made from galvanized steel, composed of the backing box with a vertically oriented rubber gasket sealed circular connection and diffuser plate with polymer nozzles, attached by spring clips. The nozzles can be rotated by 360° in the plane of the diffuser plate The proper directional 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



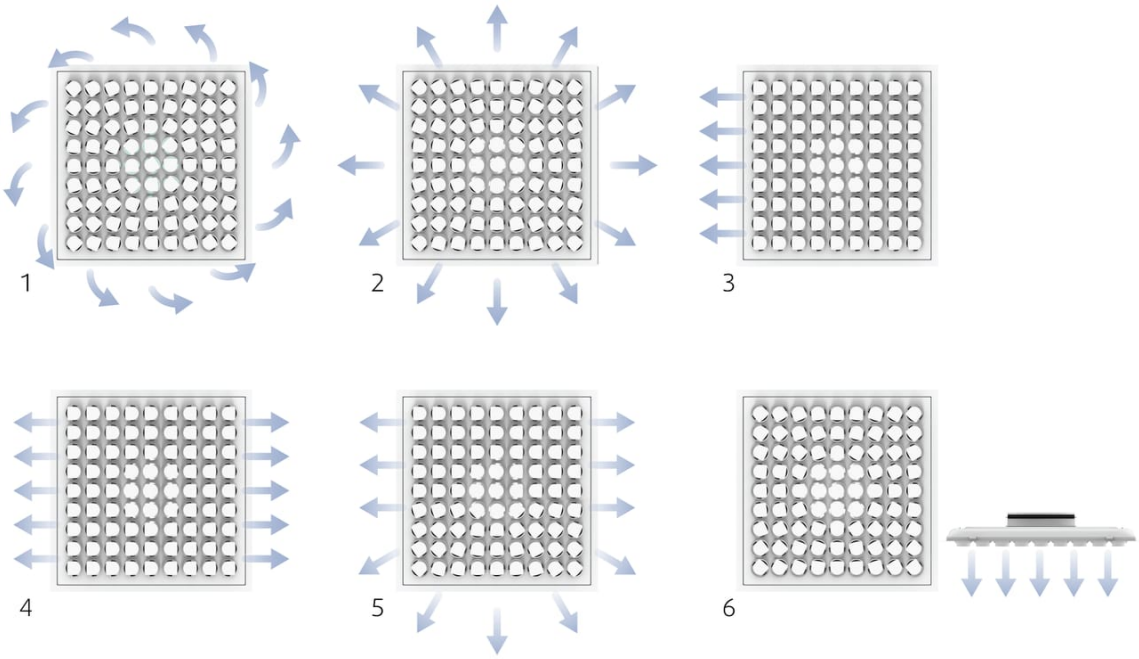
Legend

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)
7 Commissioning tubes pull cut-outs



Air flow visualisation

Setup Possibilities

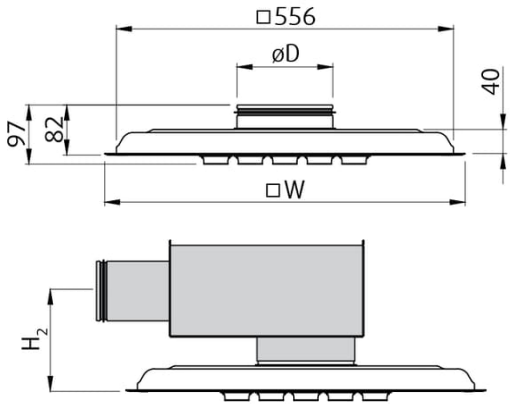


Nozzle adjustments and resulting air flow pattern

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 & Weights



	□W	øD	H_2	m (CAP-F-N)	m (THOR-F)
	mm			kg	
CAP-F-N-125-600-16*	595	124	189	5,3	3,8
CAP-F-N-125-625-16*	620	124	189	5,7	3,8
CAP-F-N-160-600-16*	595	159	189	6,2	3,7
CAP-F-N-160-625-16*	620	159	189	6,2	3,7
CAP-F-N-200-600-25*	595	199	194	6,2	4,4
CAP-F-N-200-625-25*	620	199	194	6,2	4,4
CAP-F-N-250-600-49*	595	249	211	5	6,1
CAP-F-N-250-625-49*	620	249	211	5,4	6,1
CAP-F-N-315-600-64*	595	314	239	6,2	7,9
CAP-F-N-315-625-64*	620	314	239	6,2	7,9
CAP-F-N-400-600-81*[1)]	595	399	262	3,9	10,8
CAP-F-N-400-600-81*[2)]	620	399	312	3,9	15,6
CAP-F-N-400-625-81*[1)]	595	399	262	4,02	10,8
CAP-F-N-400-625-81*[2)]	620	399	312	4,02	15,6

NOTE:

* Number of nozzles

1) THOR-F connection 250-400

2) THOR-F connection 315-400

Ordering Codes

Nominal size (connection diameter)

125

160

200

250

315

400

T-bar raster size

600

625

Number of nozzles

16 (for nom. size 125)
25 (for nom. size 160)
36 (for nom. size 200)
49 (for nom. size 250)
81 (for nom. size 315)
81 (for nom. size 400)

Surface and nozzle colour

SW Signal white (RAL9003, gloss 30%)

Example of the Ordering Code

CAP-F-N-250-600-49-SW

Diffuser CAP-F-N in signal white colour (RAL 9003) with connection diameter 250 mm and 49 nozzles for T-bar raster 600 mm.

Accessories

THOR-F

Plenum Box

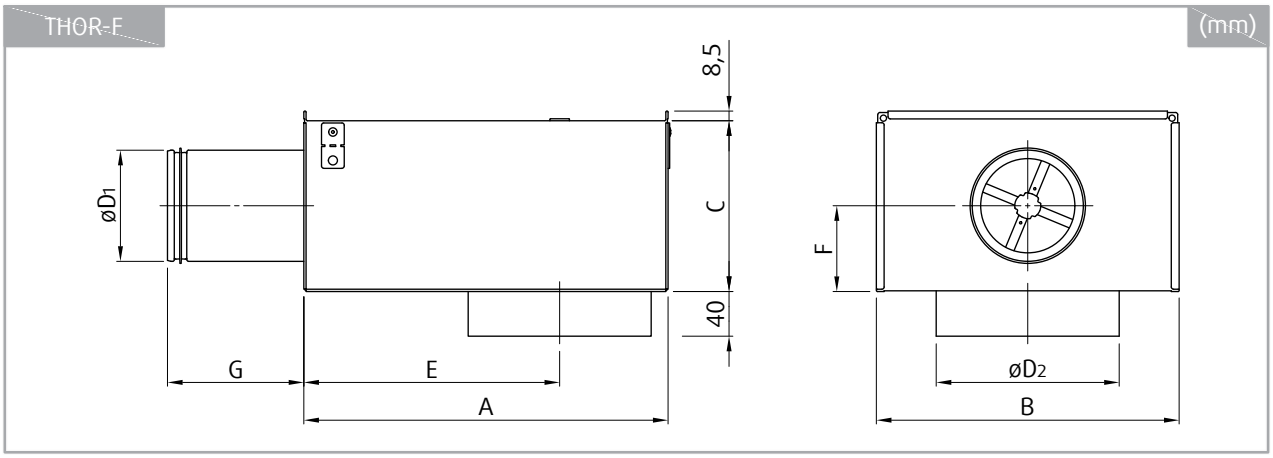
Description

The THOR-F 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-F 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 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



THOR-F CAP-F-N	A	B	C	$øD_1$	$øD_2$	E	F	G	m
	mm								kg
100-125	320	267	150	98	125	243	75	162	3,8
100-160	320	267	150	98	160	225	75	162	3,8
125-200	360	267	160	123	200	245	80	177	4,4
160-250	450	317	195	158	250	310	98	192	6,1
200-315	500	367	250	198	315	328	125	202	8,0
250-400	565	467	300	248	400	350	150	217	10,9
315-400	620	567	400	313	400	405	200	232	15,6

Ordering Codes

Nominal size: Inlet-Outlet

100-125

100-160

125-200

160-250

200-315

250-400

315-400

Example of the Ordering Code

THOR-F-100-160

Plenum box THOR-F with 100 mm circular inlet and 160 mm circular outlet (nominal dimensions).

Quick Selection

Air flow volume q_v at different A-weighted sound power levels L_{WA}

	25 dB(A)		30 dB(A)		35 dB(A)	
	m³/h	l/s	m³/h	l/s	m³/h	l/s
CAP-F-N-125-16	67	19	86	24	106	29
CAP-F-N-160-16	79	22	100	28	125	35
CAP-F-N-200-25	107	30	137	38	169	47
CAP-F-N-250-49	198	55	251	70	304	84
CAP-F-N-315-64	283	79	351	98	428	119
CAP-F-N-400-81	436	121	552	153	666	185

Air flow volume q_v at different A-weighted sound pressure levels L_{pA} with 10m² absorbtion area

	25 dB(A)		30 dB(A)		35 dB(A)	
	m³/h	l/s	m³/h	l/s	m³/h	l/s
CAP-F-N-125-16	82	23	101	28	125	35
CAP-F-N-160-16	94	26	119	33	147	41
CAP-F-N-200-25	131	36	162	45	202	56
CAP-F-N-250-49	238	66	293	81	355	99
CAP-F-N-315-64	334	93	409	114	488	136
CAP-F-N-400-81	529	147	642	178	766	213

NOTE: The working points were measured with THOR-F plenum box and open adjustment damper.
For CAP-F-N-400-81 was used with plenum box THOR-F-315-400.

Quick Selection

Air flow volume q_v at different A-weighted sound power levels L_{WA}

Item	25 dB(A)		30 dB(A)		35 dB(A)	
	m^3/h	m^3/h	m^3/h	m^3/h	m^3/h	m^3/h
CAP-F-N-125-600-16-SW	76	76	96	96	116	116
CAP-F-N-125-600-16-SW + THOR-F-100-125	66	66	85	85	105	105
CAP-F-N-160-600-16-SW	93	93	121	121	149	149
CAP-F-N-160-600-16-SW + THOR-F-100-160	77	77	98	98	123	123
CAP-F-N-200-600-25-SW	146	146	184	184	221	221
CAP-F-N-200-600-25-SW + THOR-F-125-200	106	106	135	135	169	169
CAP-F-N-250-600-49-SW	237	237	295	295	348	348
CAP-F-N-250-600-49-SW + THOR-F-160-250	197	197	248	248	304	304
CAP-F-N-315-600-64-SW	316	316	402	402	480	480
CAP-F-N-315-600-64-SW + THOR-F-200-315	278	278	348	348	422	422
CAP-F-N-400-600-81-SW + THOR-F-250-400	390	390	484	484	579	579
CAP-F-N-400-600-81-SW + THOR-F-315-400	435	435	550	550	666	666
CAP-F-N-125-625-16-SW	76	76	96	96	116	116
CAP-F-N-125-625-16-SW + THOR-F-100-125	66	66	85	85	105	105
CAP-F-N-160-625-16-SW	93	93	121	121	149	149
CAP-F-N-160-625-16-SW + THOR-F-100-160	77	77	98	98	123	123
CAP-F-N-200-625-25-SW	146	146	184	184	221	221
CAP-F-N-200-625-25-SW + THOR-F-125-200	106	106	135	135	169	169
CAP-F-N-250-625-49-SW	237	237	295	295	348	348
CAP-F-N-250-625-49-SW + THOR-F-160-250	197	197	248	248	304	304
CAP-F-N-315-625-64-SW	316	316	402	402	480	480
CAP-F-N-315-625-64-SW + THOR-F-200-315	278	278	348	348	422	422
CAP-F-N-400-625-81-SW + THOR-F-250-400	390	390	484	484	579	579
CAP-F-N-400-625-81-SW + THOR-F-315-400	435	435	550	550	666	666

NOTE: The working points were measured with open adjustment damper.

Air flow volume q_v at different A-weighted sound pressure levels L_{pA} with 10m² absorbtion area

Item	20 dB(A)		25 dB(A)		30 dB(A)	
	m^3/h	m^3/h	m^3/h	m^3/h	m^3/h	m^3/h
CAP-F-N-125-600-16-SW	71	71	93	93	112	112
CAP-F-N-125-600-16-SW + THOR-F-100-125	61	61	81	81	101	101
CAP-F-N-160-600-16-SW	85	85	115	115	143	143
CAP-F-N-160-600-16-SW + THOR-F-100-160	73	73	94	94	118	118
CAP-F-N-200-600-25-SW	137	137	178	178	214	214
CAP-F-N-200-600-25-SW + THOR-F-125-200	100	100	129	129	162	162
CAP-F-N-250-600-49-SW	223	223	285	285	338	338
CAP-F-N-250-600-49-SW + THOR-F-160-250	188	188	238	238	292	292
CAP-F-N-315-600-64-SW	295	295	386	386	464	464
CAP-F-N-315-600-64-SW + THOR-F-200-315	263	263	334	334	406	406
CAP-F-N-400-600-81-SW + THOR-F-250-400	371	371	465	465	560	560
CAP-F-N-400-600-81-SW + THOR-F-315-400	410	410	527	527	642	642
CAP-F-N-125-625-16-SW	71	71	93	93	112	112
CAP-F-N-125-625-16-SW + THOR-F-100-125	61	61	81	81	101	101
CAP-F-N-160-625-16-SW	85	85	115	115	143	143
CAP-F-N-160-625-16-SW + THOR-F-100-160	73	73	94	94	118	118
CAP-F-N-200-625-25-SW	137	137	178	178	214	214
CAP-F-N-200-625-25-SW + THOR-F-125-200	100	100	129	129	162	162
CAP-F-N-250-625-49-SW	223	223	285	285	338	338
CAP-F-N-250-625-49-SW + THOR-F-160-250	188	188	238	238	292	292
CAP-F-N-315-625-64-SW	295	295	386	386	464	464
CAP-F-N-315-625-64-SW + THOR-F-200-315	263	263	334	334	406	406
CAP-F-N-400-625-81-SW + THOR-F-250-400	371	371	465	465	560	560
CAP-F-N-400-625-81-SW + THOR-F-315-400	410	410	527	527	642	642

NOTE: The working points were measured with open adjustment damper.

Technical Parameters

Legends

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
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.

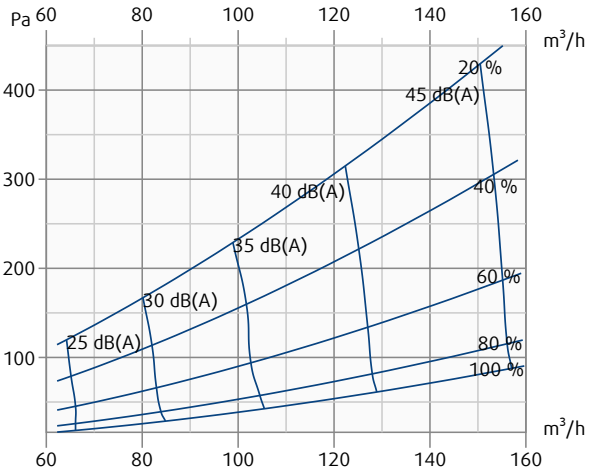
Calculation of Air Throw for Different Terminal Velocities

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

Pressure drop & A-weighted total sound power level, depending on air flow volume

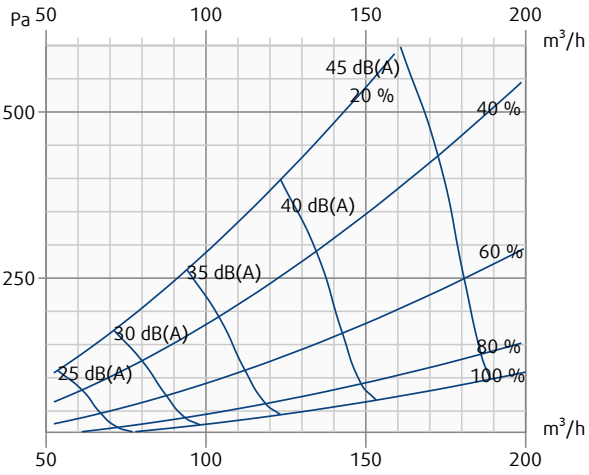
CAP-F-N-125-600-16-SW + THOR-F-100-125

Pressure drop & A-weighted sound power level in dB(A)



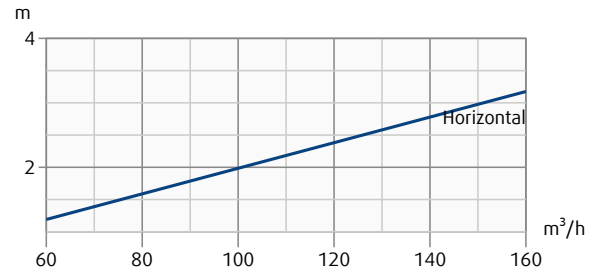
CAP-F-N-160-600-16-SW + THOR-F-100-160

Pressure drop & A-weighted sound power level in dB(A)



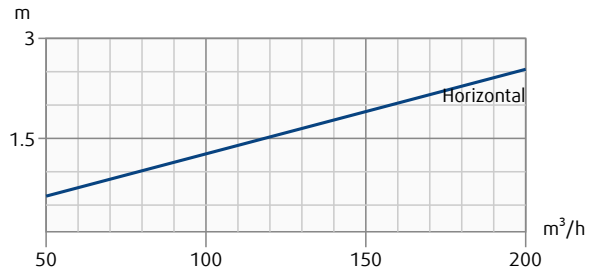
CAP-F-N-125-600-16-SW + THOR-F-100-125

Throw length (terminal velocity 0.2 m/s)



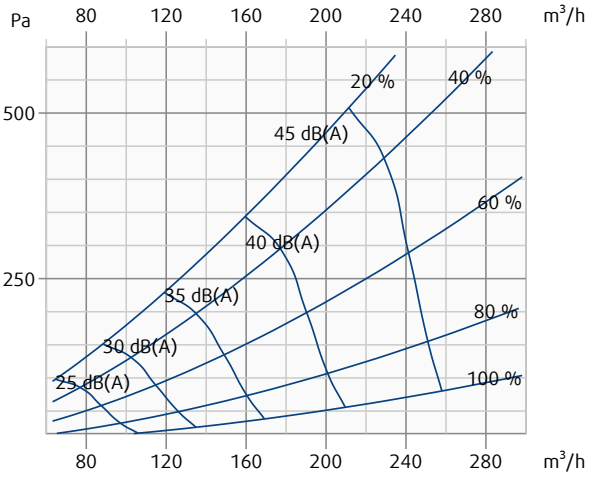
CAP-F-N-160-600-16-SW + THOR-F-100-160

Throw length (terminal velocity 0.2 m/s)



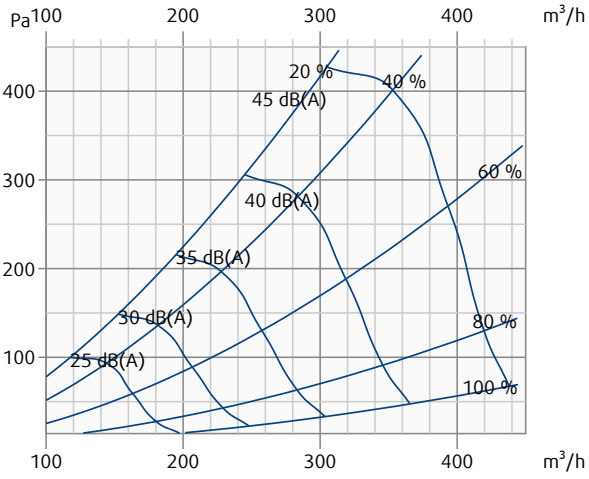
CAP-F-N-200-600-25-SW + THOR-F-125-200

Pressure drop & A-weighted sound power level in dB(A)



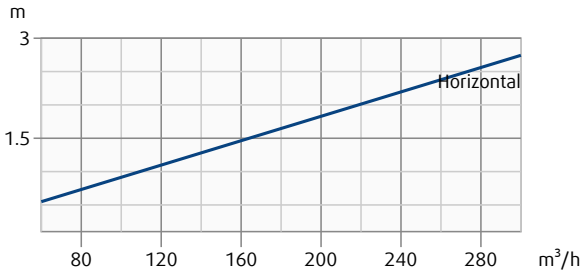
CAP-F-N-250-600-49-SW + THOR-F-160-250

Pressure drop & A-weighted sound power level in dB(A)



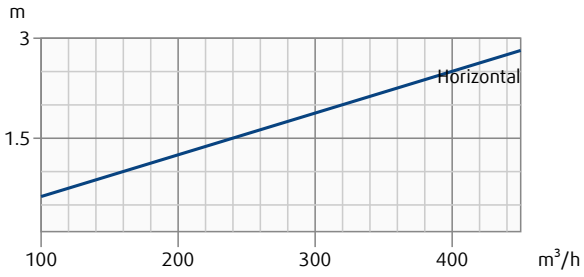
CAP-F-N-200-600-25-SW + THOR-F-125-200

Throw length (terminal velocity 0.2 m/s)



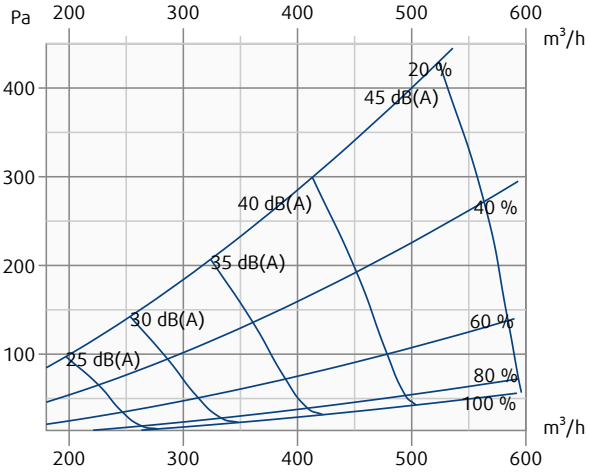
CAP-F-N-250-600-49-SW + THOR-F-160-250

Throw length (terminal velocity 0.2 m/s)



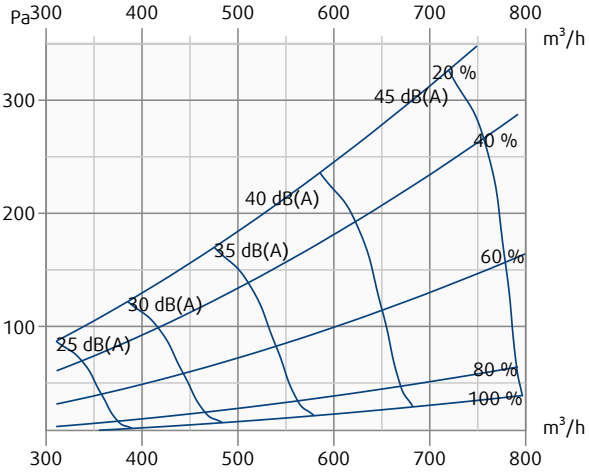
CAP-F-N-315-600-64-SW + THOR-F-200-315

Pressure drop & A-weighted sound power level in dB(A)



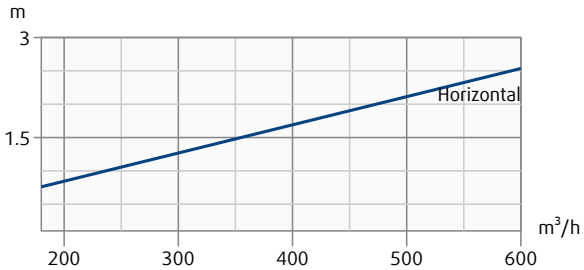
CAP-F-N-400-600-81-SW + THOR-F-250-400

Pressure drop & A-weighted sound power level in dB(A)



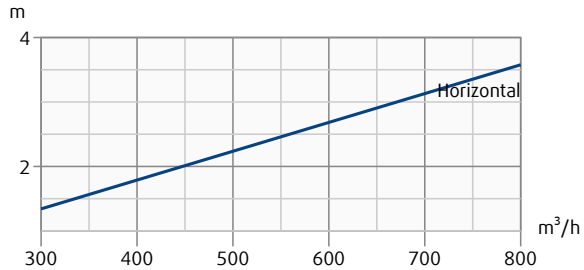
CAP-F-N-315-600-64-SW + THOR-F-200-315

Throw length (terminal velocity 0.2 m/s)



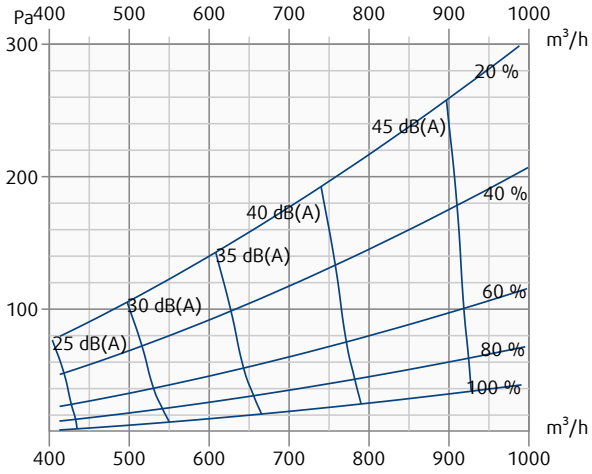
CAP-F-N-400-600-81-SW + THOR-F-250-400

Throw length (terminal velocity 0.2 m/s)



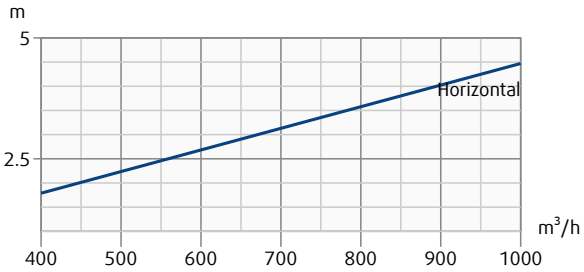
CAP-F-N-400-600-81-SW + THOR-F-315-400

Pressure drop & A-weighted sound power level in dB(A)



CAP-F-N-400-600-81-SW + THOR-F-315-400

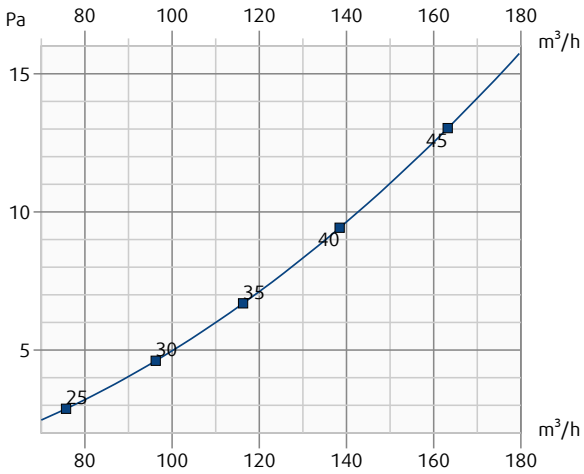
Throw length (terminal velocity 0.2 m/s)



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

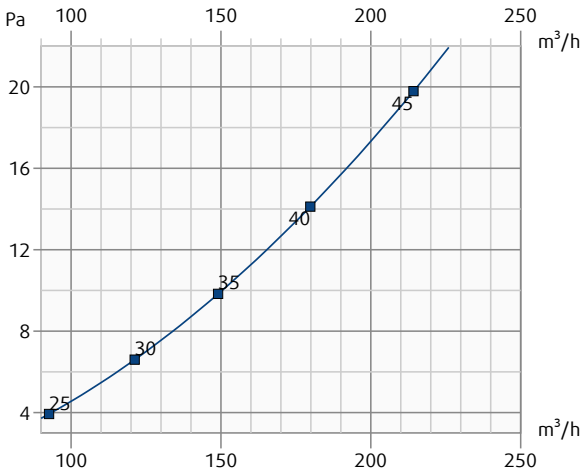
CAP-F-N-125-600-16-SW

Pressure drop & A-weighted sound power level in dB(A)



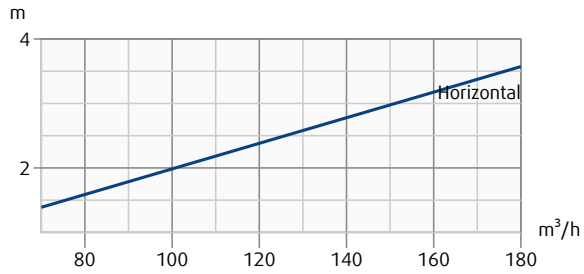
CAP-F-N-160-600-16-SW

Pressure drop & A-weighted sound power level in dB(A)



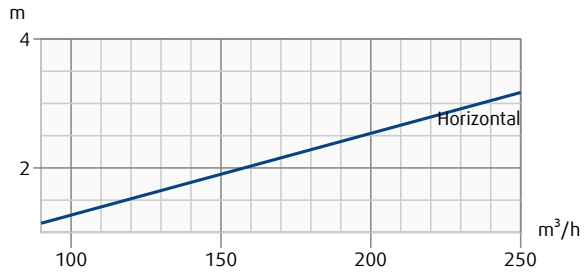
CAP-F-N-125-600-16-SW

Throw length (terminal velocity 0.2 m/s)



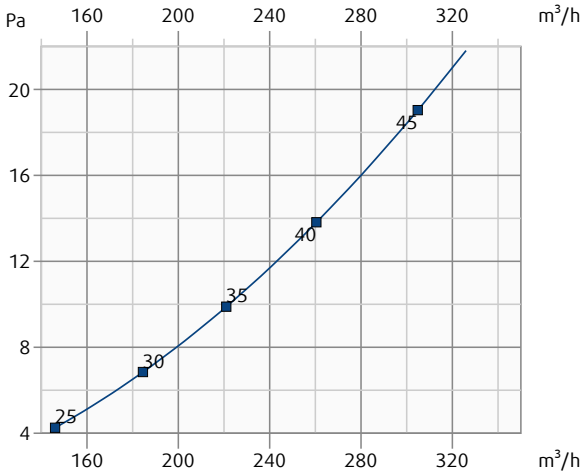
CAP-F-N-160-600-16-SW

Throw length (terminal velocity 0.2 m/s)



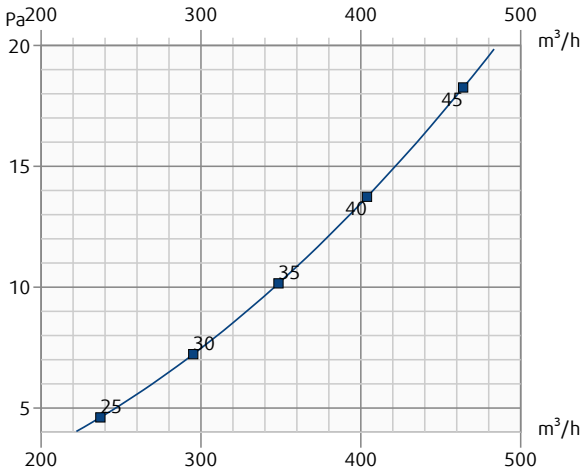
CAP-F-N-200-600-25-SW

Pressure drop & A-weighted sound power level in dB(A)



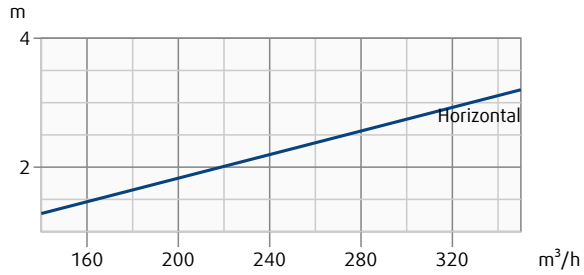
CAP-F-N-250-600-49-SW

Pressure drop & A-weighted sound power level in dB(A)



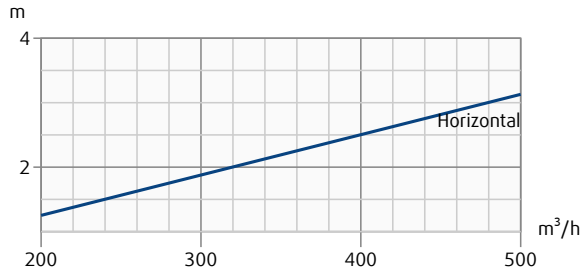
CAP-F-N-200-600-25-SW

Throw length (terminal velocity 0.2 m/s)



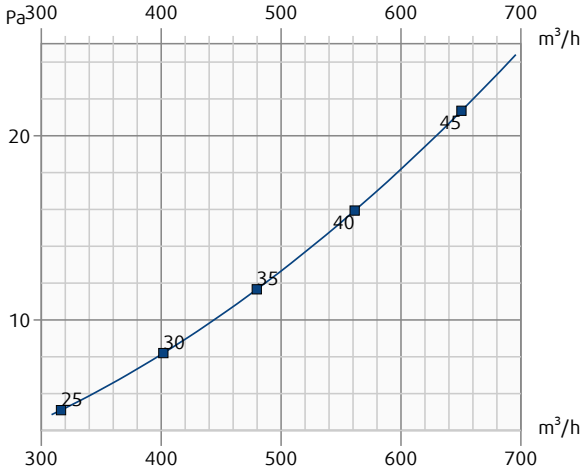
CAP-F-N-250-600-49-SW

Throw length (terminal velocity 0.2 m/s)



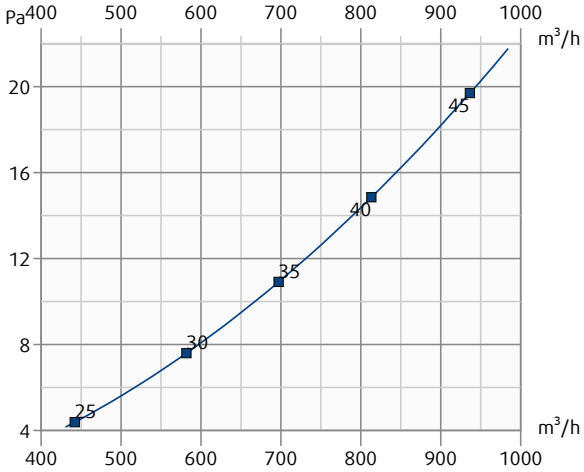
CAP-F-N-315-600-64-SW

Pressure drop & A-weighted sound power level in dB(A)



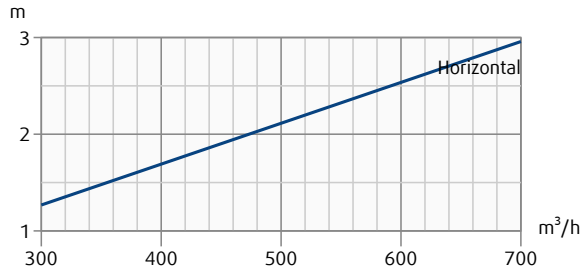
CAP-F-N-400-600-81-SW

Pressure drop & A-weighted sound power level in dB(A)



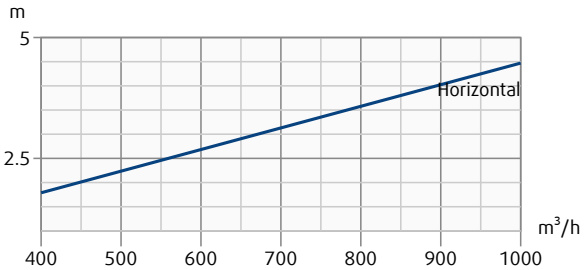
CAP-F-N-315-600-64-SW

Throw length (terminal velocity 0.2 m/s)

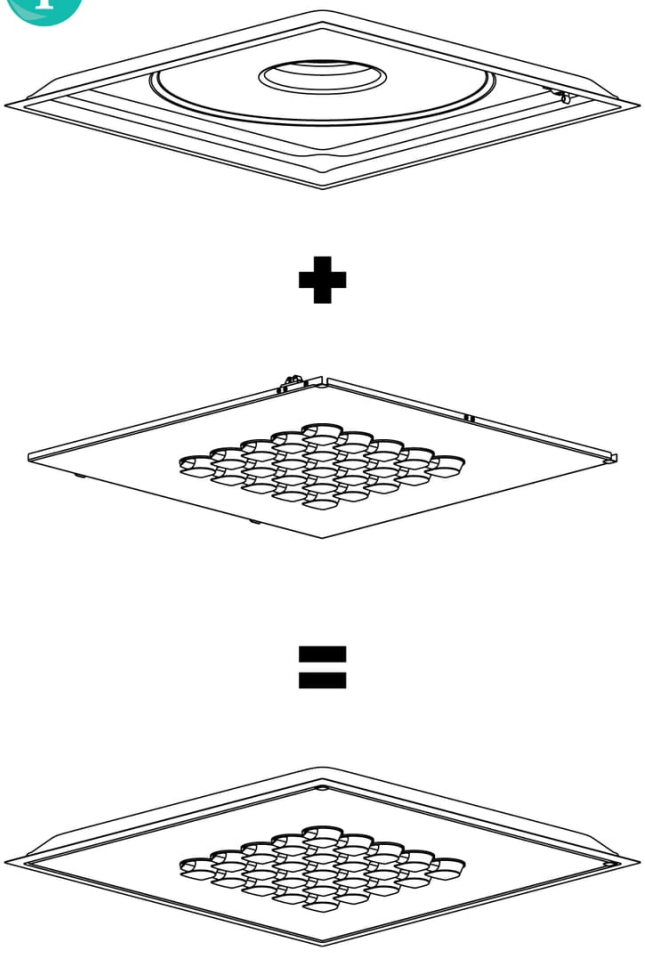


CAP-F-N-400-600-81-SW

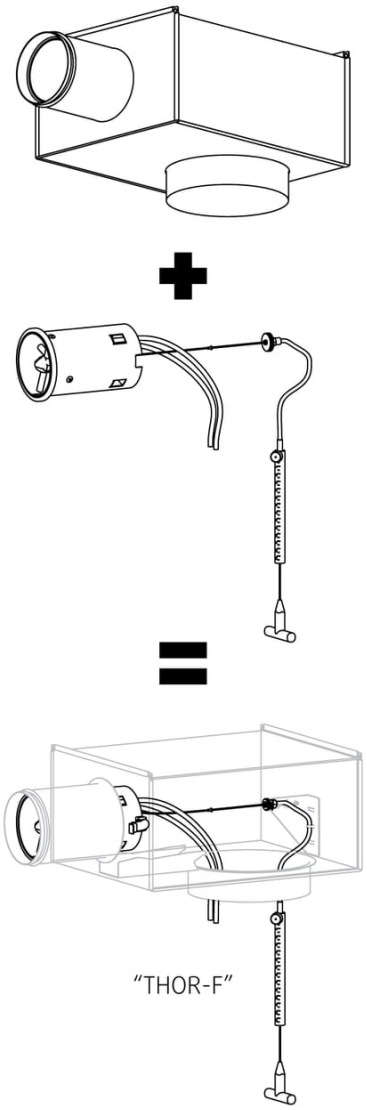
Throw length (terminal velocity 0.2 m/s)



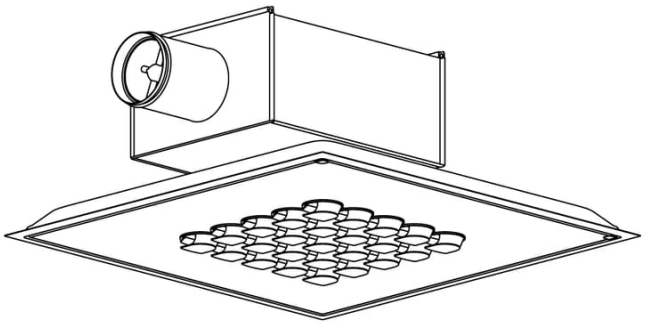
Installation



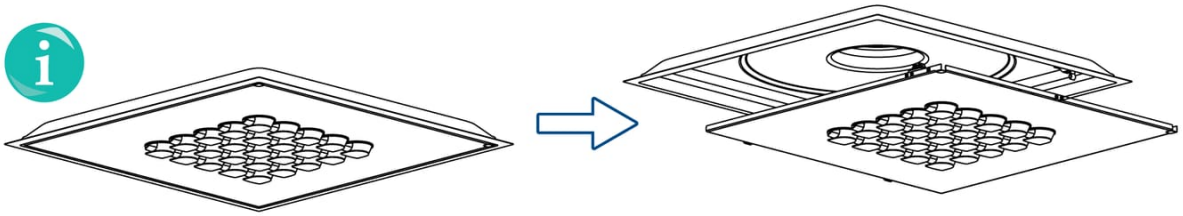
"CAP-F-N"



"THOR-F"



"CAP-F-N" + "THOR-F"



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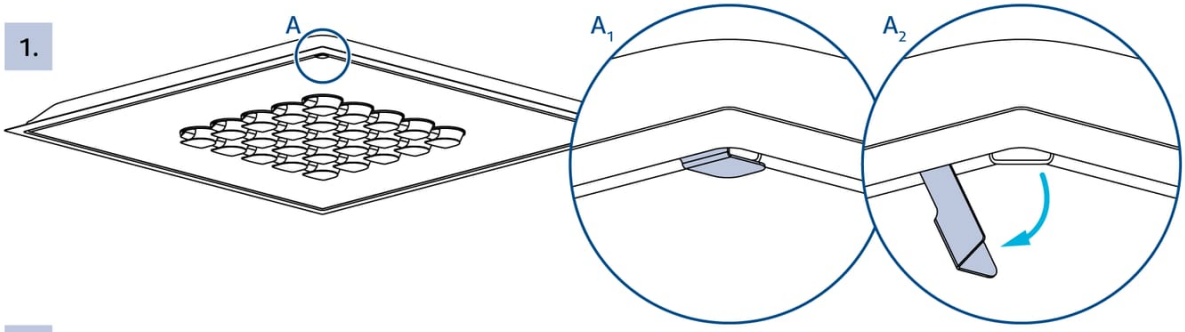

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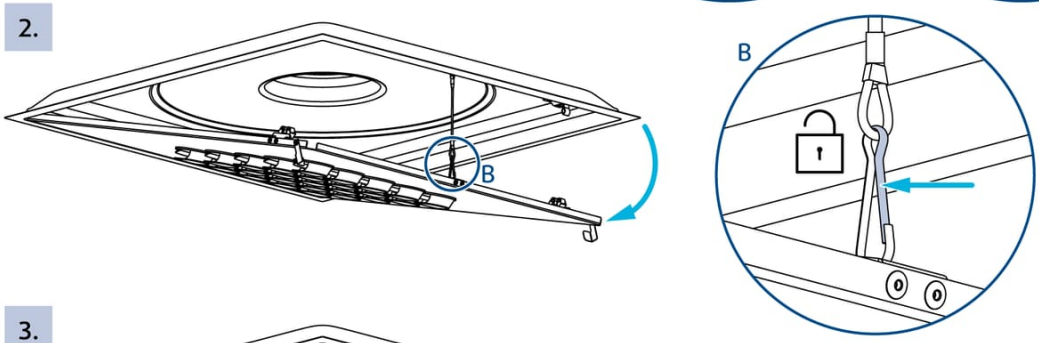

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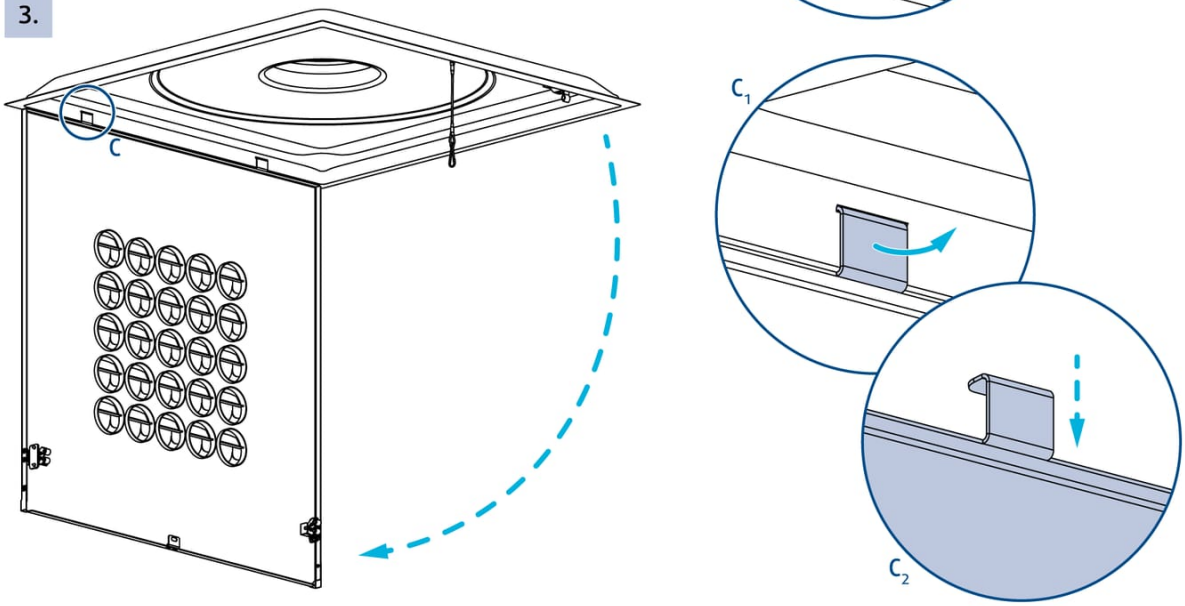
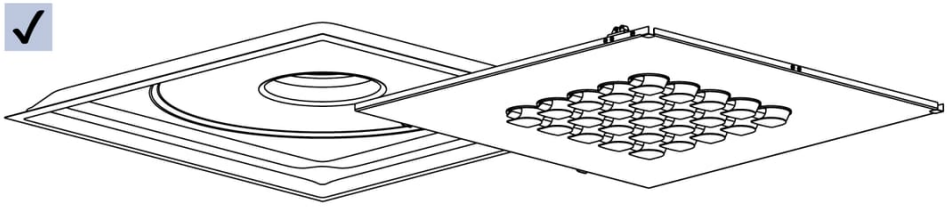
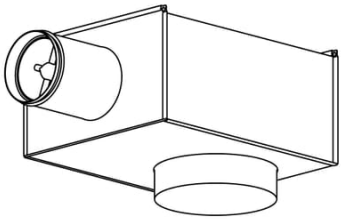
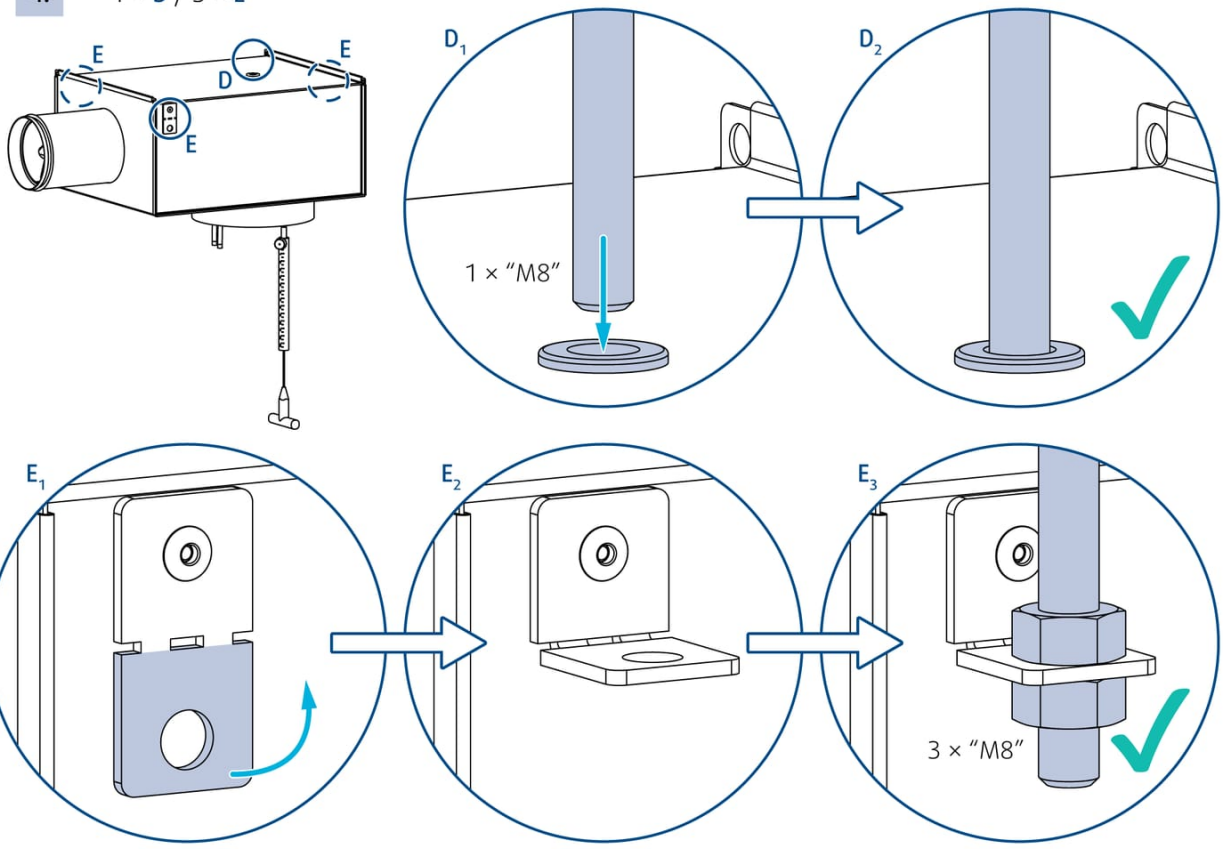


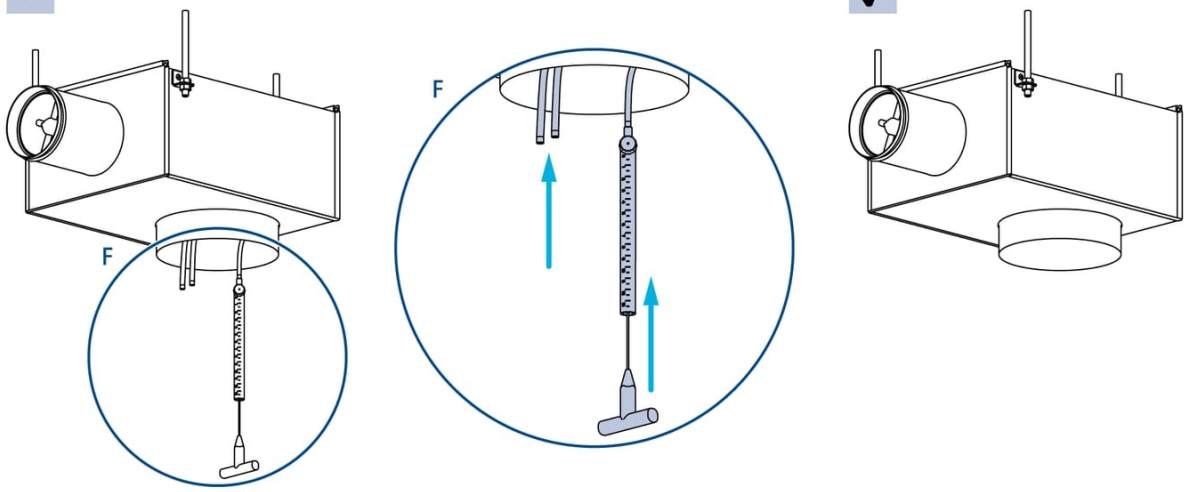


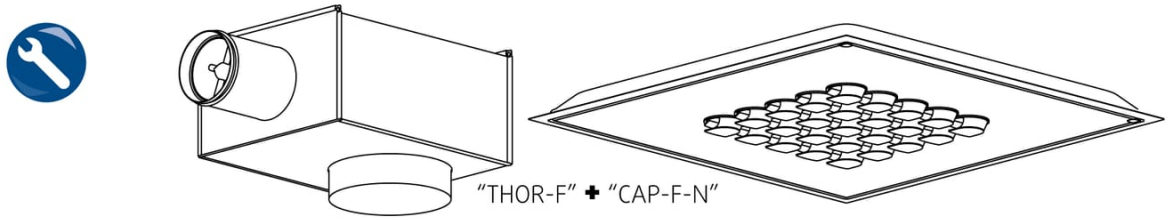


4. 1 × **D** / 3 × **E**



5.





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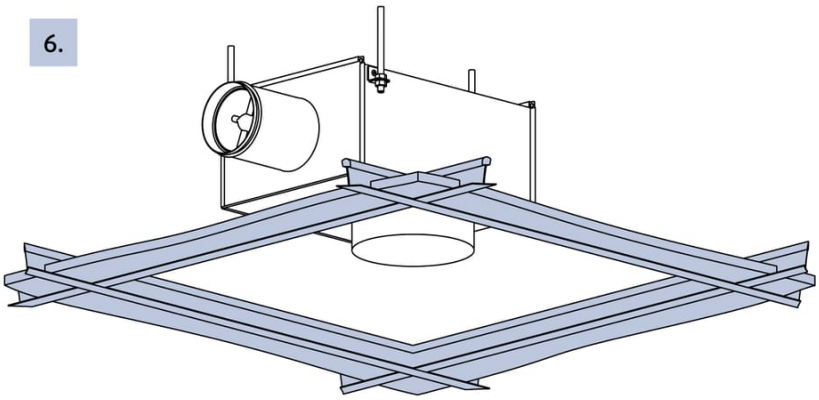

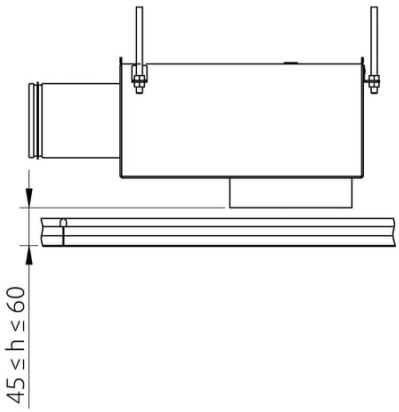

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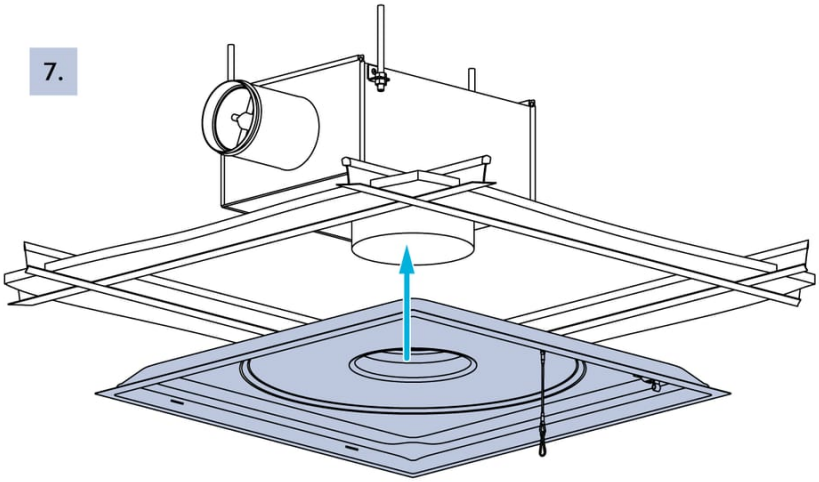

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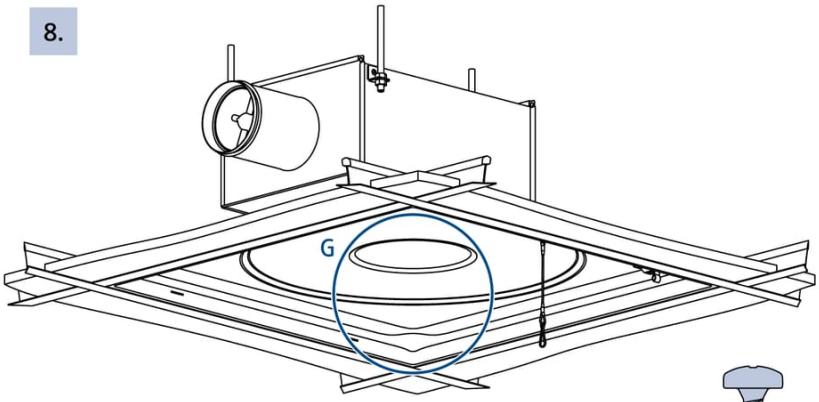
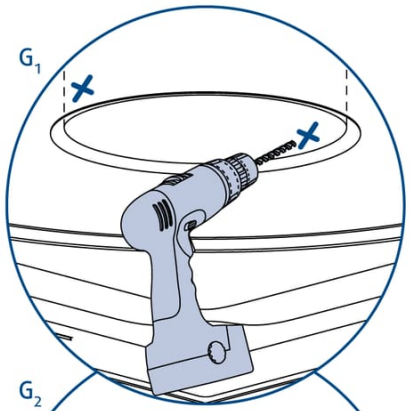
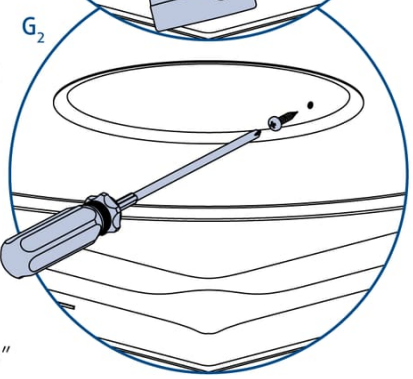
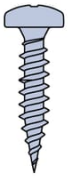


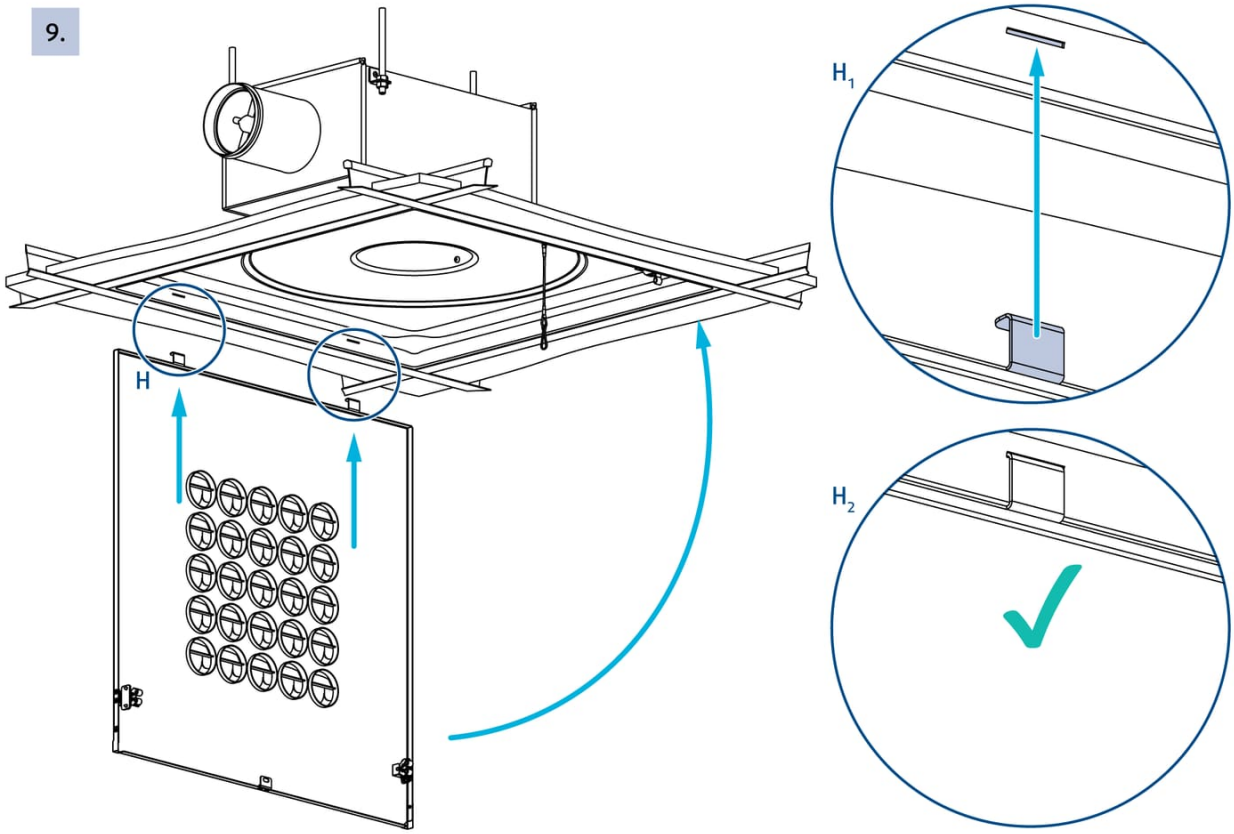






2 × "ø4×10"

9.



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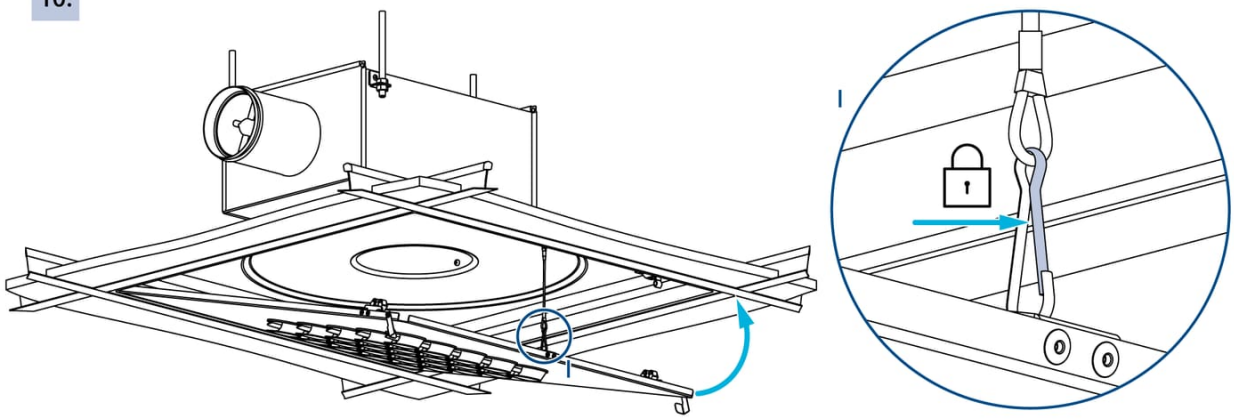

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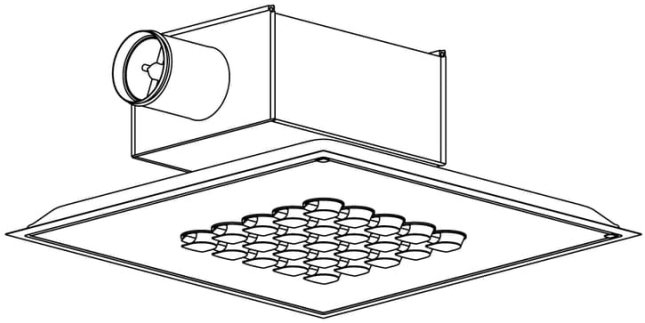

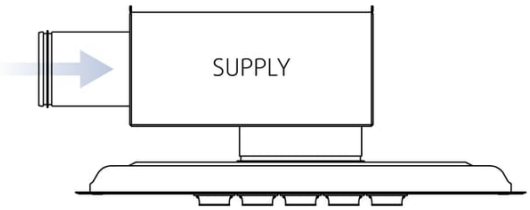

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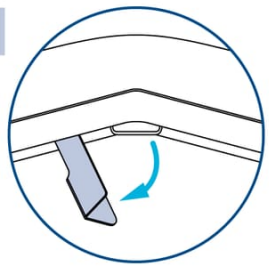

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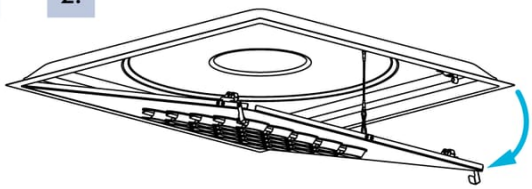

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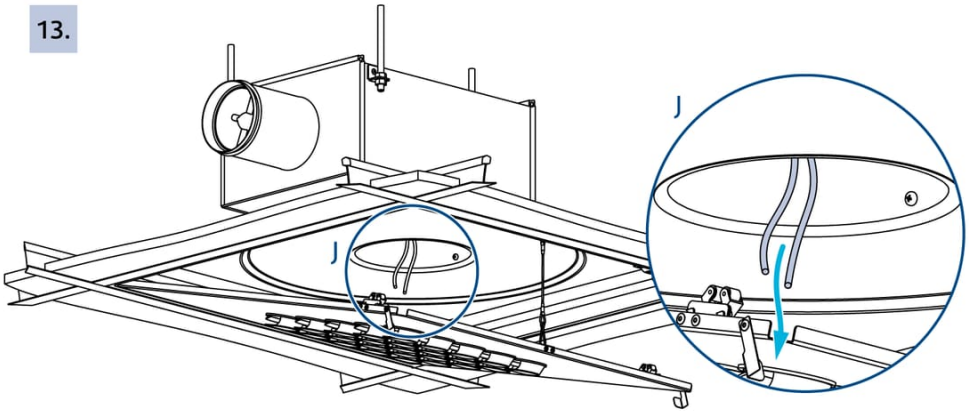

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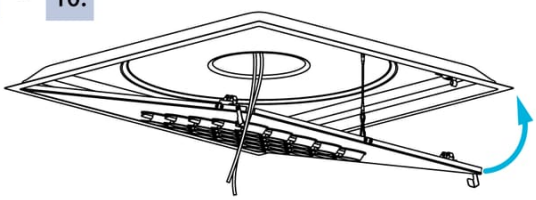
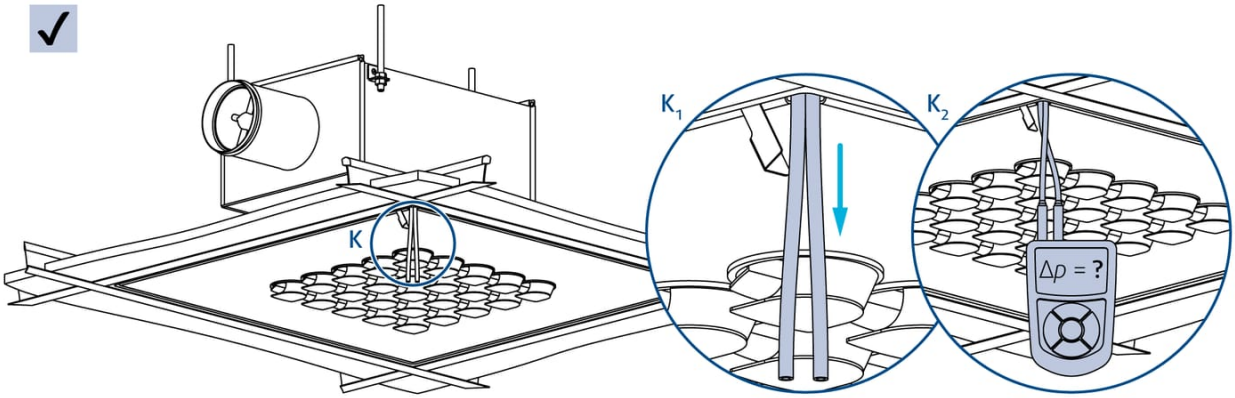
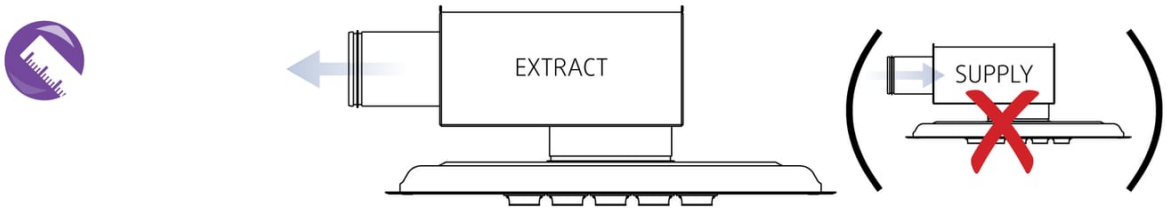


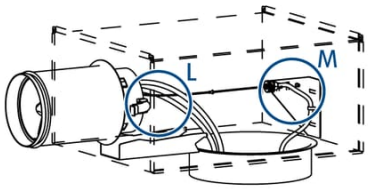


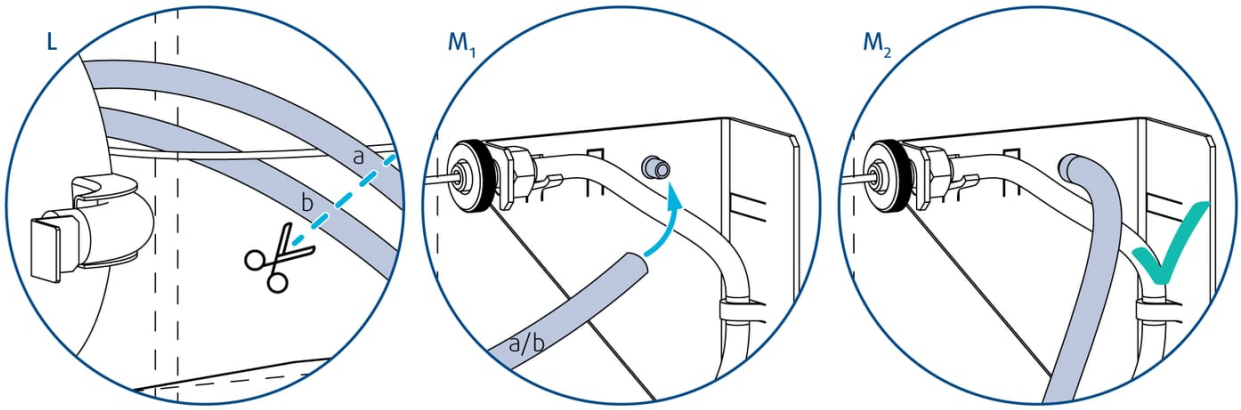
$q = k\sqrt{\Delta p\ (\text{Pa})}$

		$k \rightarrow q$ (m³/h)	$k \rightarrow q$ (l/s)
CAP-F-N-125-16	**THOR-F-100-125**	15,7	4,4
CAP-F-N-160-16	**THOR-F-100-160**		
CAP-F-N-200-25	**THOR-F-125-200**	29,1	8,1
CAP-F-N-250-49	**THOR-F-160-250**	52,6	14,6
CAP-F-N-315-64	**THOR-F-200-315**	82,6	22,9
CAP-F-N-400-81	**THOR-F-250-400**	134,4	37,3
CAP-F-N-400-81	**THOR-F-315-400**	226,2	62,8



15.





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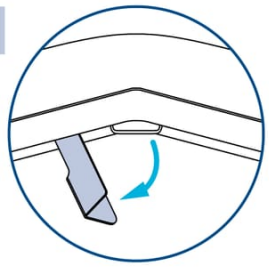

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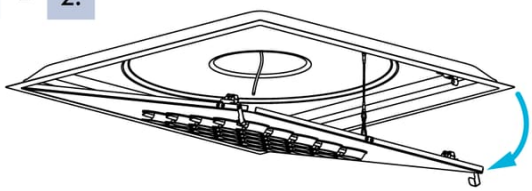
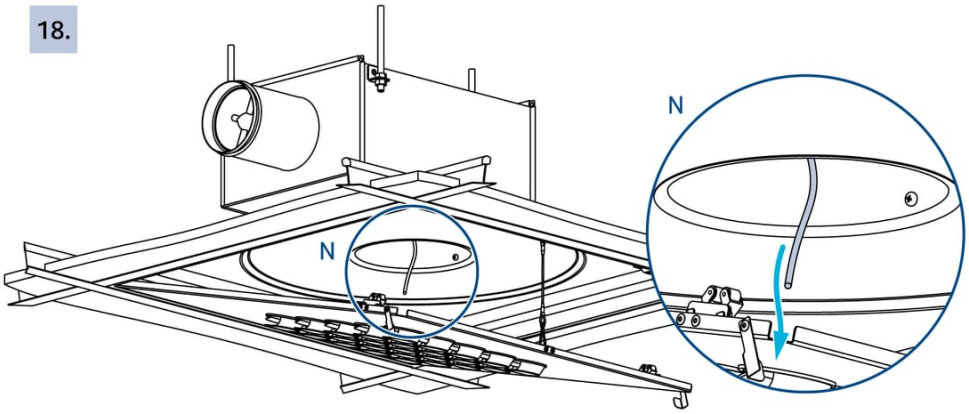


18.



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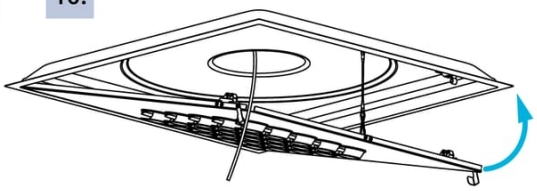

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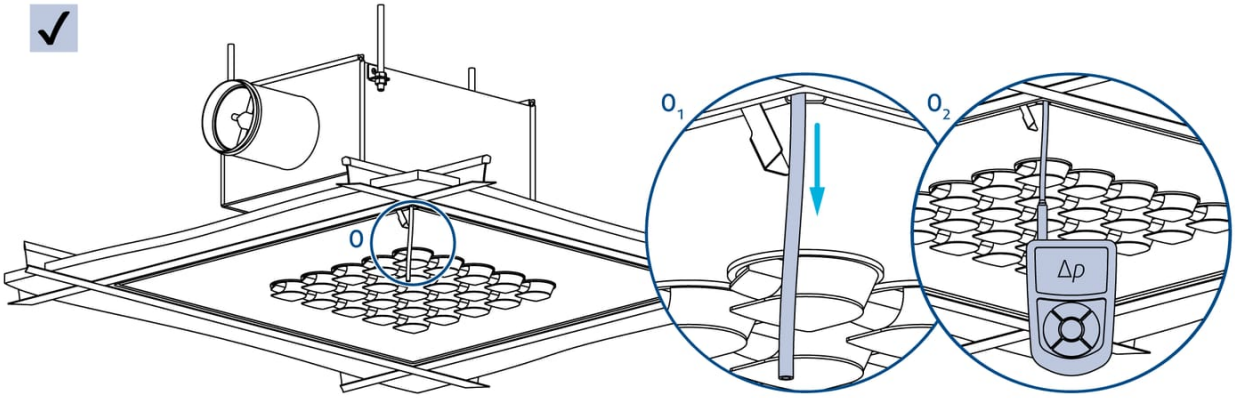
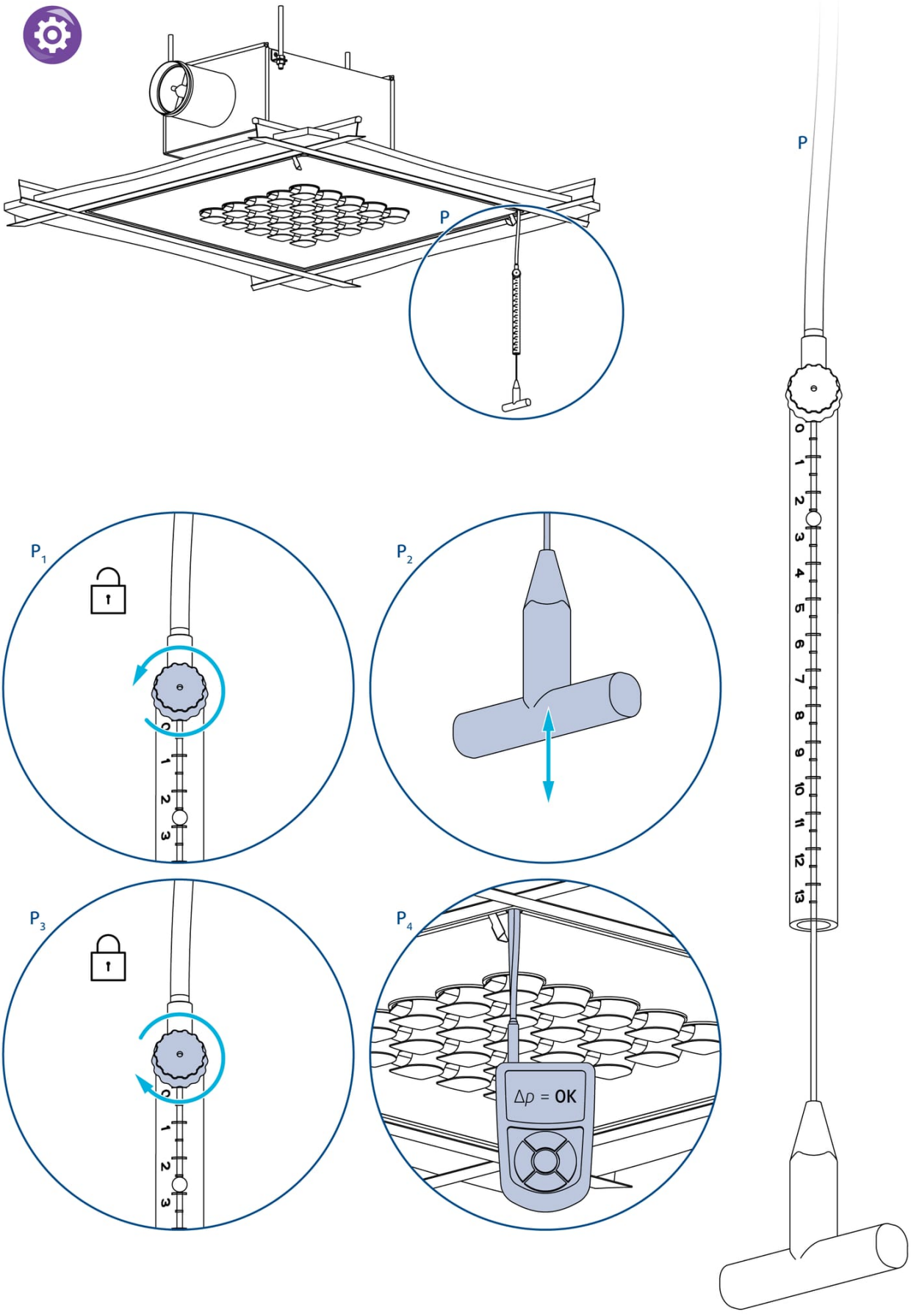
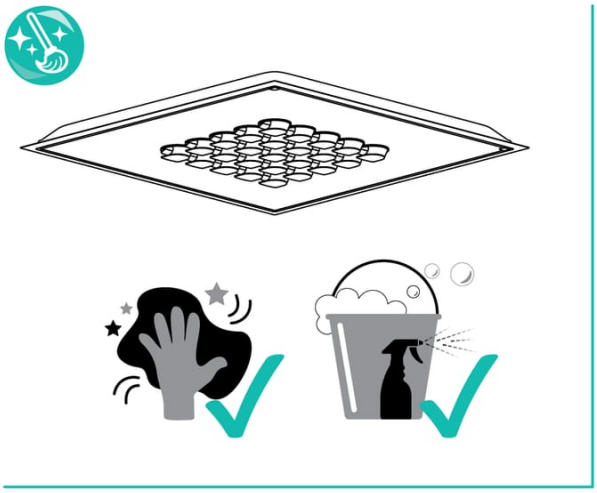
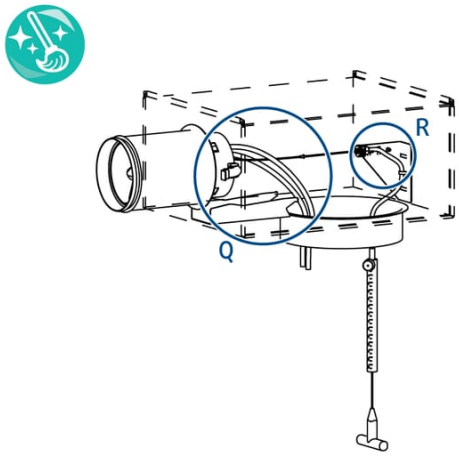


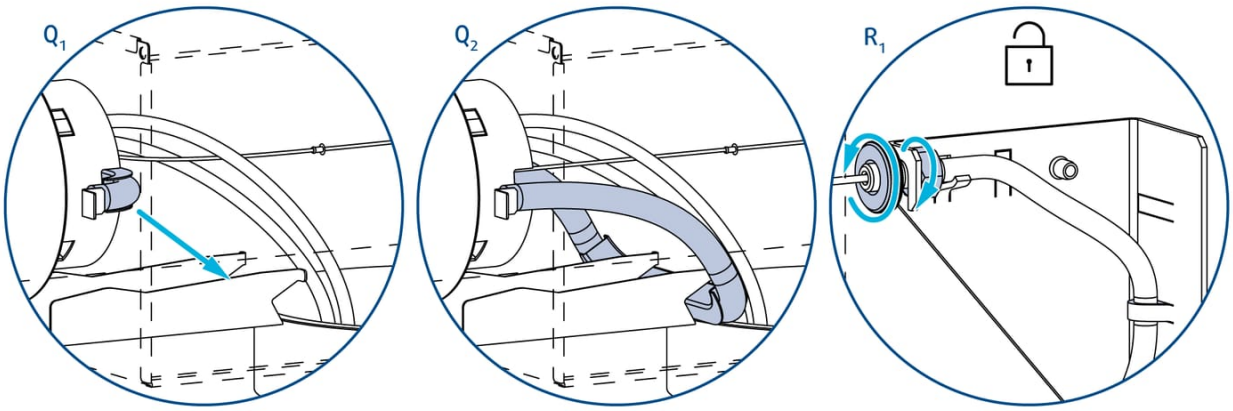
$q = k\sqrt{\Delta p\ (\text{Pa})}$

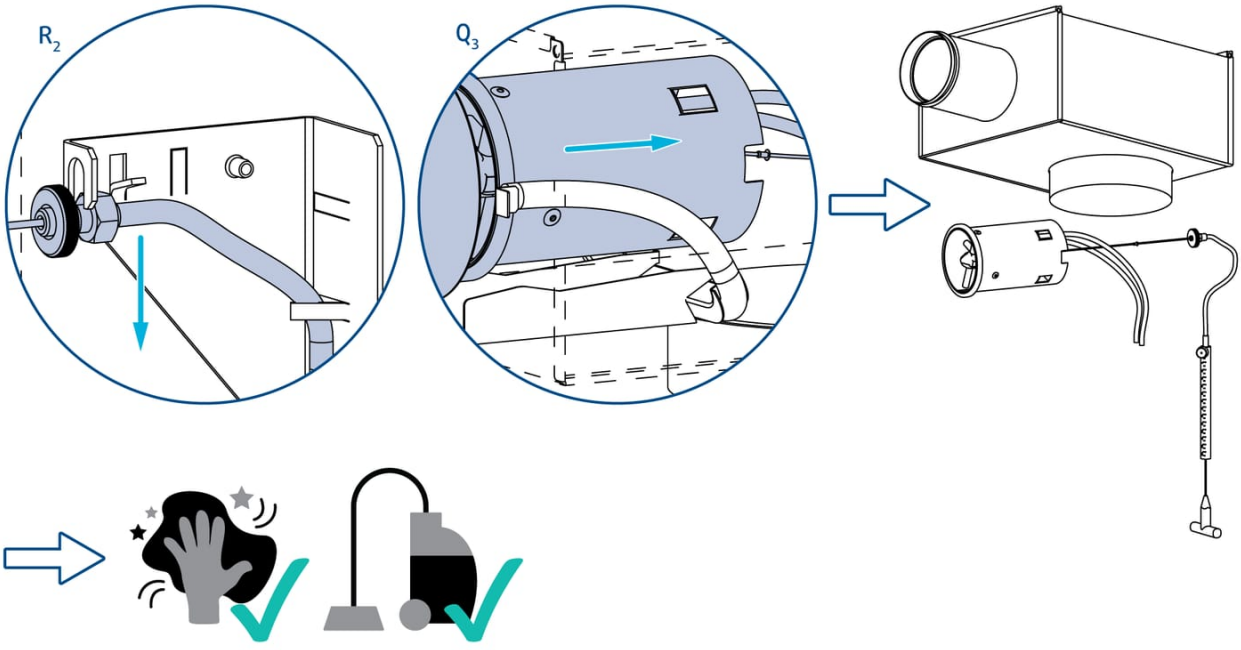
		$k \rightarrow q$ (m³/h)	$k \rightarrow q$ (l/s)
CAP-F-N-125-16	THOR-F-100-125	33,1	9,2
CAP-F-N-160-16	THOR-F-100-160	40,4	11,2
CAP-F-N-200-25	THOR-F-125-200	57,8	16,1
CAP-F-N-250-49	THOR-F-160-250	105,3	29,2
CAP-F-N-315-64	THOR-F-200-315	138,2	38,4
CAP-F-N-400-81	THOR-F-250-400	181,7	50,5
CAP-F-N-400-81	THOR-F-315-400		


P
P1
P2
P3
P4
Δp = OK

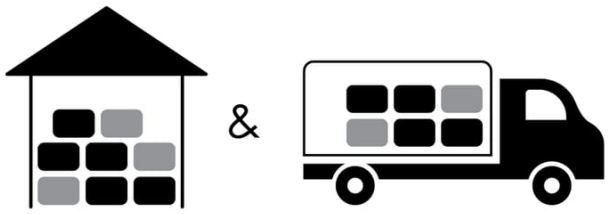



R
Q


Q1
Q2
R1


R2
Q3

Transport, Storage and Operation



°C -40°C ... +50°C

% ≤ 95%

°C -20°C ... +50°C

% ≤ 95%

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 design.systemair.com.

[object Object] • 2023-06-19 • Handbook_CAP_F_THOR_F_en-GB • 83FC7E8D-A103-45D6-A350-2474F97B36F2 • Original instructions

systemair