

Commissioning Guide

Version 2012:09

Air diffusers
Flow control
Climate systems



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This commissioning guide shows the measurement instructions for measurable ventilation products made by Swegon AB.

The products are equipped with adjustable dampers and measuring units, which are designed to measure a reference pressure.

Measurement instructions:

There are several different ways to measure a product. It depends on the product and the design of the measuring function:

- Ductwork with fixed measuring unit.
- Exhaust air terminals with fixed measuring units.
- Supply air terminals with fixed measuring units.

In this commissioning guide you will find these three categories.

Most of the products have measuring tubes connected to the measuring units. The tubes can easily be reached through the front of the terminal device. Some products have one tube and some have two tubes.

A few products have what we call a "nipple well" with a cover. The cover should be shut when balancing has been done.

Some of the flow control products do not have any measuring tubes. Instead you reach the measuring unit easily.

All the products documented together with commissioning boxes ALS, ALV and TRG must be measured together with the commissioning boxes as the measuring units are placed within those.

Procedure:

1. Define the k-factor for the specific terminal by using the tables in this commissioning guide.
2. Connect the manometer to the measuring tube(s), (measuring units, nipple well).
3. The manometer gives you a measurement pressure, pi (balancing pressure).
4. The airflow can now be calculated according to the equation on next page.
5. Adjust the damper to change the airflow. A few of the products do not have ordinary dampers. Instead you use adjustable slot openings or plastic plugs.

When the correct flow/pressure has been achieved the damper regulator should be locked in one of the following ways:

Supply air diffusers:

1. In air terminals in which the damper position adjustment control consists of one white and one black nylon cord, the outstretched cords should be tied together to form a so-called commissioning knot. Doing so ensures that the preset damper position is always indicated
2. Wind the cords one turn around the locking screw provided in the product. Lock the damper position by tightening the screw.

Measurement and commissioning

Extract air diffusers:

Takes place analogous to the supply airflow. If the air device is an air extract air register, the position of the cone can be locked in position by tightening a wing nut on the rear side of the air register.

VAV/CAV and commissioning dampers:

On the duct products in which measurement/commissioning takes place according to Method A2, the damper knob is equipped with a locking device.

Calculation of airflow – k-factor equations:

There is a specific balancing factor, k-factor, for each measurable Swegon product.

The products are normally marked with a k-factor.

The following equations are used to obtain the actual airflow or the balancing pressure that is valid for the designed airflow.

$$q = k \cdot \sqrt{p_i} \quad (\text{l/s})$$

q = measured airflow (l/s)

p_i = actual balancing pressure (Pa)

k = k-factor

$$p_i = \left(\frac{q}{k} \right)^2 \quad (\text{Pa})$$

p_i = balancing pressure at designed airflow (Pa)

q = designed airflow (l/s)

k = k-factor

If temperature and atmospheric pressure differ from standard settings (20 °C and 1013 mbar) at the time of commissioning, the balancing pressure is recalculated according to the following equation:

$$p_i = p_{i, \text{measured}} \cdot \frac{1,2}{p_{\text{time of measurement}}} \quad (\text{Pa})$$

Or the airflow can be recalculated to the standard settings according to:

$$q = q_{\text{measured}} \cdot \sqrt{\frac{1,2}{p_{\text{time of measurement}}}} \quad (\text{Pa})$$

Air diffusers with commissioning box ALS

Air diffusers

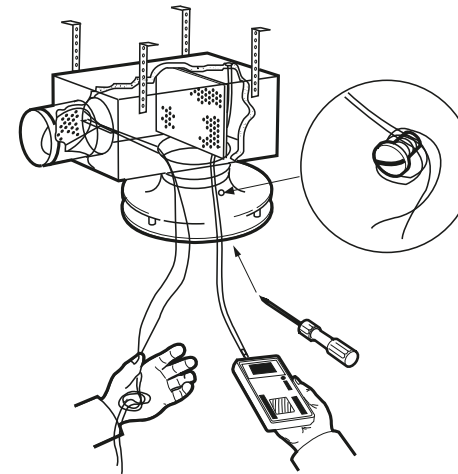


Figure 1. Example with ALS. Measurement with one tube.

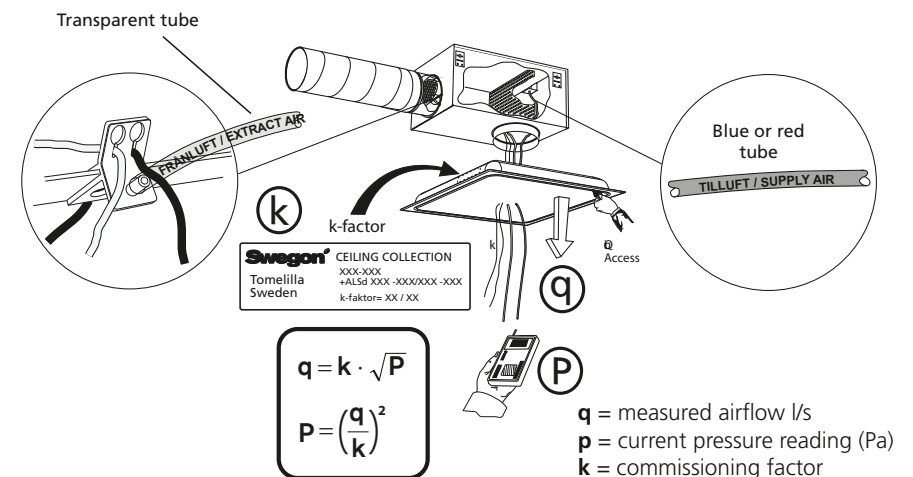


Figure 2. Example with ALS. Measurement with two tubes.



ALC

ALSd	ALBATROSS ALCa – supply air	
Size	Size	k-factor
200-250	250	30,1
250-315	315	42,6
315-400	400	59,4
400-500	500	78,2
500-630	630	153,0

Measuring tube: 1
Tube colour: Red



CBE

ALSd	CBEa – supply air	
Size	Size	k-factor
80-100	100	4,6
100-125	125	7,3
125-160	160	11,9

Measuring tube: 1
Tube colour: Red



CDD

ALSd	CDDb – supply air 360°			
Size	Size	Slot – 20 mm	Slot – 30 mm	Slot – 40 mm
80-100	100	5,8	6,1	–
100-125	125	8,2	8,9	–
125-160	160	–	14,4	15,0
160-200	200	–	21,3	23,4
200-250	250	–	24,4	31,1
250-315	315	–	34,6	43,3

Measuring tube: 1
Tube colour: Red



CDK

ALSd	CDKa – supply air 360°			
Size	Size	Slot – 20 mm	Slot – 30 mm	Slot – 40 mm
80-100	100	6,8	6,9	–
100-125	125	9,8	10,1	–
125-160	160	–	16,3	–
160-200	200	–	26,9	27,6
200-250	250	–	38,5	42,1
250-315	315	–	57,6	69,9

Measuring tube: 1
Tube colour: Red



CDR

ALSd	CDRb – supply air 360°			
Size	Size	Slot – 20 mm	Slot – 30 mm	Slot – 40 mm
80-100	100	5,0	5,6	–
100-125	125	7,1	8,1	–
125-160	160	–	13,1	13,9
160-200	200	–	18,4	20,3
200-250	250	–	24,3	28,5
250-315	315	–	36,1	42,6

Measuring tube: 1
Tube colour: Red



CKD

ALSd	CKDa – supply air		
Size	Size	Diffused	Concentrated
160-200	200	13,9	12,6
200-250	250	22,8	21,1
250-315	315	34,7	32,3
315-400	400	55,8	52,9

Measuring tube: 1
Tube colour: Red



CKP

ALSd	CKPa – supply air 360°			
Size	Size	Slot – 20 mm	Slot – 30 mm	Slot – 40 mm
80-100	100	3,8	6,8	–
100-125	125	9,9	10,1	–
125-160	160	–	16,2	16,5
160-200	200	–	27,3	27,9
200-250	250	–	39,8	42,2
250-315	315	–	60,6	68,7

Measuring tube: 1
Tube colour: Red



COLIBRI CC

ALSd	COLIBRI CCa – supply air			
Size	Size	Standard	Low version	Tube colour
100-125	125-400	7,3	7,0	Red
100-125	125-600	7,3	7,0	Red
100-160	160-400	9,3	8,9	Blue
100-160	160-600	9,3	8,9	Blue
125-160	160-400	9,8	9,3	Red
125-160	160-600	9,8	9,3	Red
125-200	200-500	15,6	14,5	Blue
125-200	200-600	15,6	14,5	Blue
160-200	200-500	16,8	15,2	Red
160-200	200-600	16,8	15,0	Red
160-250	250-600	23,4	21,7	Blue
200-250	250-600	24,9	22,8	Red
200-315	315-600	26,4	25,4	Blue
250-315	315-600	27,4	25,6	Red
315-400	400-600	32,5	–	Red

Measuring tube: 1

ALSd	COLIBRI CCa – extract air	
Size	Size	Standard
200-250	250-600	14,4
250-315	315-600	18,7
315-400	400-600	25,5

Measuring tube: 1
Tube colour: Transparent



ALSd		COLIBRI CRa – supply air		
Size	Size	Standard	Low version	Tube colour
100-125	125-400	7,4	7,2	Red
100-125	125-600	7,4	7,2	Red
100-160	160-400	9,5	9,2	Blue
100-160	160-600	9,5	9,2	Blue
125-160	160-400	10,0	9,6	Red
125-160	160-600	10,0	9,6	Red
125-200	200-500	16,7	15,5	Blue
125-200	200-600	16,7	15,5	Blue
160-200	200-500	17,7	16,5	Red
160-200	200-600	17,7	16,5	Red
160-250	250-600	26,4	24,7	Blue
200-250	250-600	28,9	26,4	Red
200-315	315-600	30,3	28,6	Blue
250-315	315-600	32,1	29,5	Red
315-400	400-600	37,7	–	Red

Measuring tube: 1

ALSd		COLIBRI CRa – extract air	
Size	Size	Standard	
200-250	250-600	16,2	
250-315	315-600	21,2	
315-400	400-600	29,1	

Measuring tube: 1
Tube colour: Transparent



ALSd		DPGa – supply air	
Size	Size	k-factor	
100-125	125-0	3,8	

Measuring tube: 1
Tube colour: Red



ALSd		EAGLE Ca – supply air		
Size	Size	Standard	Low version	Tube colour
100-125	125-400	7,8	7,6	Red
100-125	125-600	7,7	7,6	Red
100-160	160-400	11,8	11,5	Blue
100-160	160-600	11,8	11,2	Blue
125-160	160-400	12,6	11,9	Red
125-160	160-600	12,6	11,7	Red
125-200	200-500	17,6	16,9	Blue
125-200	200-600	17,6	16,7	Blue
160-200	200-500	19,9	17,9	Red
160-200	200-600	19,9	17,9	Red
160-250	250-600	26,5	24,1	Blue
200-250	250-600	28,2	25,9	Red
200-315	315-600	35,2	32,2	Blue
250-315	315-600	37,3	33,5	Red
315-400	400-600	53,1	–	Red

Measuring tube: 1

ALSd		EAGLE Ca – extract air	
Size	Size	Standard	
200-250	250-600	18,6	
250-315	315-600	26,4	
315-400	400-600	39,6	

Measuring tube: 1
Tube colour: Transparent



EAGLE S/D

ALSd	EAGLE Sa – supply air	EAGLE Da – supply air
Size	k-factor	k-factor
100-125	7,5	8,1
125-160	12,1	13,5
160-200	20,1	22,2
200-250	29,8	33,5
250-315	42,3	50,4
315-400	67,8	79,6

Measuring tube: 1
Tube colour: Red



FALCON C

ALSd	FALCON Ca – supply air 360°		
Size	Size	Horizontal	Vertical
100-125	125	8,6	6,8
125-160	160	13,5	8,5
160-200	200	20,6	13,2
200-250	250	32,5	19,5
250-315	315	50,2	33,3
315-400	400	82,8	51
400-500	500	125	79,5

Measuring tube: 1
Tube colour: Red



EIV

ALSd	EIVa – supply air	
Size	Size	k-factor
80-80	80	4,6
80-100	100	5,9
100-125	125	8,2
125-160	160	10,3

Measuring tube: 1
Tube colour: Red



GRC

ALSd	GRCa – extract air	
Size	Size	k-factor
80-100	100	3
100-125	125	4,9
125-160	160	8,2
160-200	200	12,7
200-250	250	22,2
250-315	315	34
315-400	400	59,6
400-500	500	95

Measuring tube: 1
Tube colour: Transparent



HAWK C

ALSd	HAWK Ca – supply air			
Size	Size	Standard	Low version	Tube colour
100-125	125-600	8,4	8,0	Red
100-160	160-600	11,7	10,9	Blue
125-160	160-600	12,3	11,9	Red
125-200	200-600	19,1	17,0	Blue
160-200	200-600	20,9	18,2	Red
160-250	250-600	29,1	25,7	Blue
200-250	250-600	32,5	28,5	Red
200-315	315-600	37,0	34,2	Blue
250-315	315-600	39,4	35,3	Red
315-400	400-600	50,9	–	Red

Measuring tube: 1

ALSd	HAWK Ca – extract air	
Size	Size	Standard
200-250	250-600	19,1
250-315	315-600	25,4
315-400	400-600	34,9

Measuring tube: 1

Tube colour: Transparent



LOCKZONE B

ALSd	LOCKZONE Ba – supply air	
Size	Size	k-factor
80-100	100	2,7
100-125	125	3,7
125-160	160	5,6

Measuring tube: 1

Tube colour: Red



LOCKZONE C

ALSd	LOCKZONE Ca – supply air			
Size	Size	Standard	Low version	Tube colour
100-125	125-400	8,3	7,9	Red
100-125	125-600	8,2	7,8	Red
100-160	160-400	11,1	10,8	Blue
100-160	160-600	11,2	10,8	Blue
125-160	160-400	12,1	11,4	Red
125-160	160-600	12,4	11,4	Red
125-200	200-500	18,0	16,9	Blue
125-200	200-600	17,8	16,9	Blue
160-200	200-500	19,7	18,4	Red
160-200	200-600	19,7	18,0	Red
160-250	250-600	28,1	25,6	Blue
200-250	250-600	30,9	27,4	Red
200-315	315-600	36,5	35,1	Blue
250-315	315-600	39,6	39,6	Red
315-400	400-600	56	–	Red

Measuring tube: 1

ALSd	LOCKZONE Ca – extract air	
Size	Size	Standard
200-250	250-600	18,4
250-315	315-600	27,1
315-400	400-600	42,5

Measuring tube: 1

Tube colour: Transparent



LPA

ALSd	LPAa – supply air	
Size	Size	k-factor
125-160	160	11,0
160-200	200	18,1
200-250	250	27,5
250-315	315	38,0
315-400	400	58,7

Measuring tube: 1
Tube colour: Red

ALSd	LPAa – extract air	
Size	Size	k-factor
125-160	160	7,0
160-200	200	11,5
200-250	250	17,7
250-315	315	28,5
315-400	400	41,6

Measuring tube: 1
Tube colour: Transparent



PELICAN CE

ALSd	PELICAN CEa – extract air		
Size	Size	Standard	Low version
100-125	125-400	4,9	4,6
125-160	160-400	7,6	7,2
160-200	200-600	14,2	12,6
200-250	250-600	21,2	20,2
250-315	315-600	27,9	27,7
315-400	400-600	41,6	–

Measuring tube: 1
Tube colour: Transparent



PELICAN CS

ALSd	PELICAN CSa – supply air			
Size	Size	Standard	Low version	Tube colour ^{*)}
100-125	125-400	7,1	7,7	Red + Red
100-160	160-400	10,6	10,1	Blue + Red
125-160	160-400	11,4	11,8	Red + Red
125-200	200-600	16,0	16,5	Blue + Red
160-200	200-600	18,1	19,0	Red + Red
160-250	250-600	25,7	27,1	Blue + Red
200-250	250-600	29,0	28,4	Red + Red
200-315	315-600	37,6	36,1	Blue + Red
250-315	315-600	44,0	38,1	Red + Red
315-400	400-600	68,2	–	Red ^{**)}

Measuring tubes: 2
^{*)}Initial colour refers to the commissioning box ALS, subsequent colour refers to PELICAN CS.
^{**)} Size 400-600: 1 measuring tube only, from the commissioning box.



PELICAN CE HF

ALSd	PELICAN CE HFa – extract air	
Size	Size	k-factor
125-160	160-600	8,1
160-200	200-600	13,3
200-250	250-600	20,5
250-315	315-600	32,1
315-400	400-600	49,6

Measuring tube: 1
Tube colour: Transparent

Air diffusers with commissioning box ALS



ROC

ALSd	ROCa – supply air	
Size	Size	k-factor
100-125	125	7,1
125-160	160	11,2

Measuring tube: 1
Tube colour: Red

ALSd	ROCa – extract air	
Size	Size	k-factor
100-125	125	4,6
125-160	160	7,0

Measuring tube: 1
Tube colour: Transparent



SWIFT C

ALSd	SWIFT Ca – supply air	
Size	Size	k-factor
160-200	200-500	18,1
200-250	250-500	22,2
160-200	200-600	20,7
200-250	250-600	28,0
250-315	315-600	32,4

Measuring tube: 1
Tube colour: Red

ALSd	SWIFT Ca – extract air	
Size	Size	k-factor
200-250	250-500	14,2
200-250	250-600	15,9
250-315	315-600	22,6

Measuring tube: 1
Tube colour: Transparent

Air diffusers with commissioning box ALV

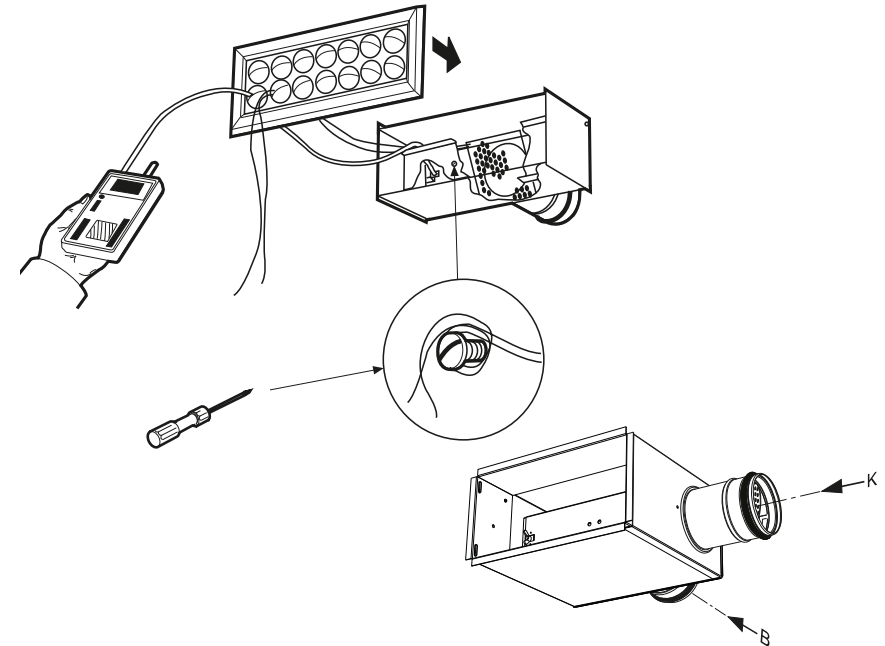


Figure 3. Example with ALV. Measurement with one tube and connection options, B= Backside, K = Short side.



COLIBRI Wall

ALVd	COLIBRI Wa – supply air				
Size	Size	B		K	
		Closed Slot	Open Slot	Closed Slot	Open Slot
300-150-100	300-150	5,4	7,1	5,1	6,6
400-150-125	400-150	7,8	9,9	7,6	9,4
400-200-160	400-200	10,2	12,7	10,1	12,4
550-250-200	550-250	16,9	20,5	16,5	20
550-300-250	550-300	19,8	23,7	19,6	23,5

Connection options: B = backside, K = short side
Measuring tube: 1
Tube colour: Transparent



EAGLE Wall

ALVd	EAGLE Wa – supply air				
Size	Size	B		K	
		Closed Slot	Open Slot	Closed Slot	Open Slot
300-150-100	300-100	7,8	9,2	7,2	8,1
400-150-125	400-150	9,9	11,8	9,6	11,1
400-200-160	400-200	14,8	17,1	14	15,9
550-250-200	550-250	25,5	27,8	24,4	26,8
550-300-250	550-300	31,1	33,9	30,5	33,4

Connection options: B = backside, K = short side
 Measuring tube: 1
 Tube colour: Transparent



LOCKZONE Wall

ALVd	LOCKZONE Wa – supply air	
Size	B	K
300-150	7,4	6,9
400-150	10	9,9
400-200	15	14,3
550-250	26,3	24,9
550-300	32,4	32

Connection options: B = backside, K = short side
 Measuring tube: 1
 Tube colour: Transparent



PELICAN Wall

ALVd	PELICAN Wa – supply air		
Size	Size	B	K
300-150-100	300-100	8,8	8,1
400-150-125	400-150	10,9	11,1
400-200-160	400-200	17,3	17,3
550-250-200	550-250	25,6	25,1
550-300-250	550-300	32,2	32,6

Connection options: B = backside, K = short side
 Measuring tube: 1
 Tube colour: Transparent



ROW

ALVd	ROWb – supply air	
Size	Size	B
400-150-125-B	400-150	10,0
400-200-160-B	400-200	15,0

Connection options: B = backside
 Measuring tube: 1
 Tube colour: Transparent

Air diffusers with commissioning box TRG

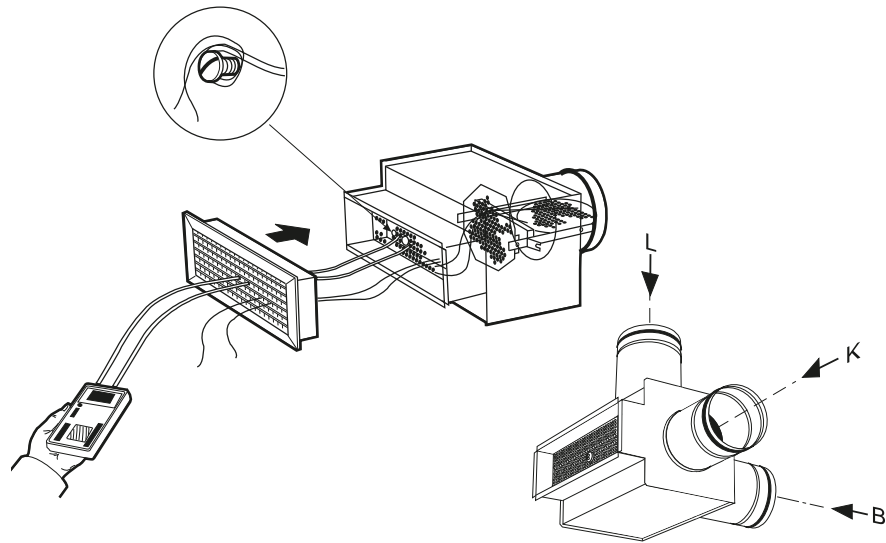


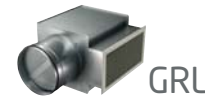
Figure 4. Example with TRG. Measurement with two tubes and connection options, B= Backside, K = Short side and L = Long side.



TRGc	ALGc – supply air			ALGc – extract air		
	B	K	L	B	K	L
200-100-125	7,2	7,1	7,4	7,6	7,7	7,2
300-100-160	11,9	12,2	12,3	13,4	13,0	12,3
400-100-160	15,9	16,2	15,5	19,3	18,2	17,4
500-100-200	21,4	21,4	22,2	23,2	23,0	21,2
300-150-200	19,6	19,4	20,2	20,9	21,4	19,2
400-150-250	26,9	26,3	27,3	28,9	28,2	26,4
500-150-250	35,0	34,5	32,4	36,3	35,7	33,3
400-200-250	36,8	38,5	42,0	45,6	44,3	41,0
500-200-315	52,4	50,8	48,5	56,3	56,1	51,5
600-200-315	61,9	60,7	57,6	70,7	69,6	61,0

Connection options: B = backside, K = short side, L = long side
 Measuring tubes: 2
 Tube colours: Transparent + Blue

Air diffusers with commissioning box TRG



TRGc	GRLc – extract air		
	B	K	L
200-100-125	7,9	8,5	7,0
300-100-160	13,3	13,2	11,8
400-100-160	18,9	18,5	16,9
500-100-200	23,2	23,3	21,0
300-150-200	21,0	20,9	18,5
400-150-250	29,1	28,4	25,3
500-150-250	36,6	35,7	32,4
400-200-250	46,6	42,9	39,8
500-200-315	56,8	55,4	47,9
600-200-315	70,0	68,5	59,4
600-300-400	109,0	107,0	104,0

Connection options: B = backside, K = short side, L = long side
 Measuring tubes: 2
 Tube colours: Transparent + Blue



TRGc	GTHc – supply air – straight blades			GTHc – supply air – blades 45°		
	B	K	L	B	K	L
200-100-125	7,5	7,2	7,3	7,2	7,0	7,1
300-100-160	12,1	12,1	12,3	11,3	11,9	12,1
400-100-160	16,2	16,6	15,4	15,0	16,1	15,0
500-100-200	21,1	20,7	22,1	20,1	20,4	21,1
300-150-200	19,3	19,2	19,7	19,4	18,8	19,2
400-150-250	26,5	26,1	27,9	25,4	25,8	26,6
500-150-250	34,8	33,5	32,9	33,8	33,4	30,9
400-200-250	38,1	39,2	41,2	37,4	38,1	41,1
500-200-315	50,5	48,4	48,3	48,0	48,2	46,4
600-200-315	60,3	58,7	56,6	57,6	57,8	54,4

Connection options: B = backside, K = short side, L = long side
 Measuring tubes: 2
 Tube colours: Transparent + Blue

Air diffusers with a circular commissioning box

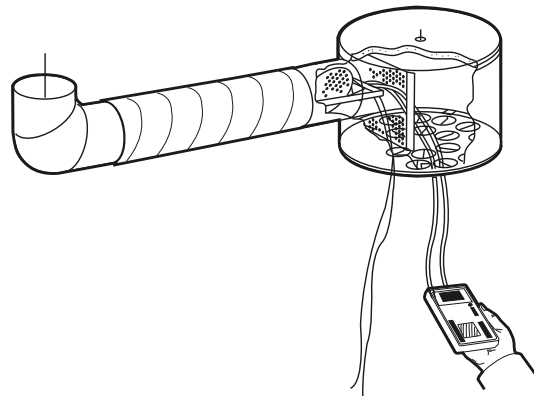


Figure 5. Example with a circular commissioning box. Measurement with two tubes.

Straight sections requirements before the diffuser in order to secure that the stated method error 5 %, will be obtained, see table:

1 · 90° bend	3 · Ød
2 · 90° bends	4 · Ød
T-joint	4 · Ød
Damper 45°	6 · Ød



ACD

ACDa – supply air 360°			
Size	Slot – 20 mm	Slot – 30 mm	Slot – 40 mm
100	5,5	5,5	–
125	8,9	8,9	–
160	–	15,5	15,5
200	–	25,8	25,8
250	–	39,6	39,6
315	–	67,4	67,4

Measuring tubes: 2.
Tube colours: Blue + Blue



EAGLE F

EAGLE Fc – supply air	
Size	k-factor
100	5,2
125	8,2
160	14,8
200	24,5
250	36,9
315	62,6
400	101,0

Measuring tubes: 2
Tube colour: Blue + Blue

EAGLE Fc – extract air	
Size	k-factor
100	7,0
125	11,4
160	16,6
200	26,0
250	36,0
315	46,0
400	74,0

Measuring tube: 1
Tube colour: Transparent



LOCKZONE F

LOCKZONE Fa – supply air 360		
Size	Slot – 20 mm	Slot – 30 mm
125	14,1	15,2
160	23,4	25,7
200	35,1	38,6
250	51,5	56,7
315	74,5	83,1

Measuring tube: 1
Tube colour: Transparent
No straight section required.

Displacement units

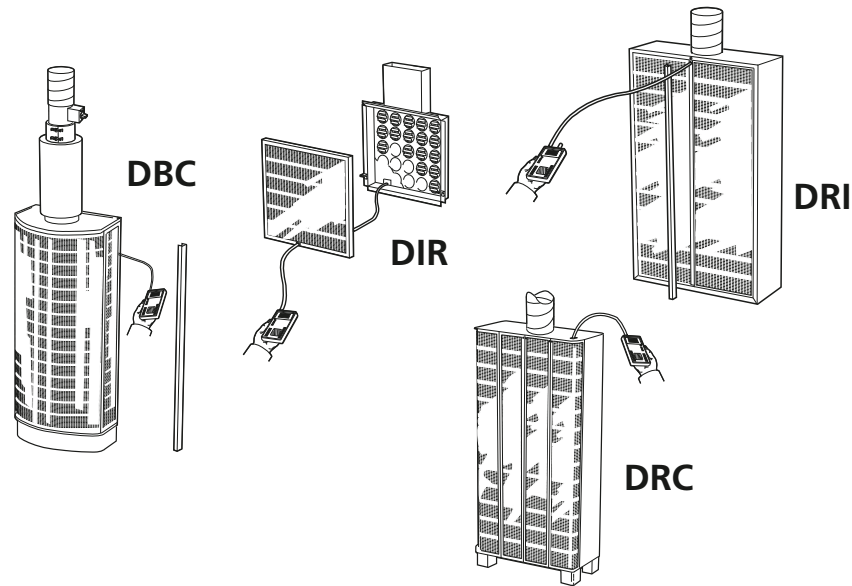


Figure 6. Example with a displacement unit. Measurement with one tube.



Size	DBC _a – supply air	DBR _e – supply air
200	34,0	36,8
250	54,0	41,0
315	89,5	46,5
400	142,5	–
200-600	122,0	–
300-600	185,0	–

Measuring tube: 1



Size	DCP _e – supply air	DHC _e – supply air	DVC _e – supply air
125	12,2	12,0	12,0
160	22,8	20,0	20,0
200	37,0	33,0	33,0
250	58,0	50,0	50,0
315	88,0	84,0	84,0
400	141,0	134,0	134,0
500	210,0	202,0	–
630	295,0	285,0	–
800	–	520,0	–

Measuring tube: 1



Size	DIR _c – supply air	DRC _e – supply air	DRI _f – supply air
400-100	13,1	–	–
500-125	18,7	–	–
600-160	23,5	–	–
900-200	46,8	–	–
200	–	32,0	32,0
250	–	53,0	53,0
315	–	85,0	85,0
400	–	130,0	130,0
200-600	–	120,0	120,0
250-800	–	176,0	176,0
500	–	–	–
630	–	–	–
800	–	–	–

Measuring tube: 1

Displacement units/Home air diffusers/Duct diffusers



ICP



IHC



IVC

Size	ICPa – supply air	IHCa – supply air	IVCa – supply air
200	22,9	22,9	22,9
250	35,9	35,9	35,9
315	54,4	54,4	54,4

Measuring tube: 1

Home air diffusers



DOMO

DOMOb	
Setting	k-factor
R 1	1,3
R 2	2,3
R 3	3,3
R 4	3,9

Duct diffusers



IBIS C

Size	IBIS Ca – Commissioning unit
160-1500	14,8
200-1500	22,5
250-1500	36,1
315-1500	61,2
400-1500	96

Measuring tubes: 2

Straight sections requirements before the diffuser in order to secure that the stated method error 5 %, will be obtained, see table:

1 · 90° bend	3 · Ød
2 · 90° bends	4 · Ød
T-joint	4 · Ød
Damper 45°	6 · Ød

Linear diffusers

Linear diffusers



SWAN/SWAN Wall-To-Wall

SWAN Ta	SWANa/W-T-Wa – supply air		
	Size ^{*)}	1-våg	2M
2-160	21	21	18,8
2-200	22,4	22,4	19,8
2-250	23,4	23,4	19,8
3-160	27,1	–	24,9
3-200	29,4	–	25,8
3-250	32,2	–	25,8
4-160	27,6	27,6	25,1
4-200	35,4	35,4	30,8
4-250	39	39	34,2

Measuring tube: 1

Supply air tube colour: Blue

^{*)} Initial digit indicates the number of slots

SWAN Ta	SWANa/W-T-Wa – extract air
	Size ^{*)}
2-160	13
2-200	16,6
2-250	18,7
3-160	15,8
3-200	19,3
3-250	22,8
4-160	16,7
4-200	22,5
4-250	29,1

Measuring tube: 1

Extract air tube colour: Transparent

^{*)} Initial digit indicates the number of slots



SRY

SRYT 1b	SRYb – supply air			
	Size	Size ^{**)}	k-factor	Size ^{**)}
1-500-125-L	1-900-1	4,5	1-1200-1	5,3
2-500-160-L	2-900-1	8,6	2-1200-2	6,5
3-500-160-L	3-900-1	12,4	3-1200-2	9,4
4-500-200-L	4-900-1	16,2	4-1200-2	12,4
1-500-125-L	1-1500-2	4,2	1-1800-2	4,6
2-500-160-L	2-1500-2	7,8	2-1800-2	8,6
3-500-160-L	3-1500-2	11,4	3-1800-2	13,0
4-500-200-L	4-1500-2	14,4	4-1800-3	12,4

NOTE! K-factor is valid for one commissioning box. Example: When using two or more commissioning boxes for one diffuser, the total of the designed airflow must be divided by the number of commissioning boxes.

Measuring tube: 1

^{**) Final digit indicates the number of slots.}

Extract air diffusers

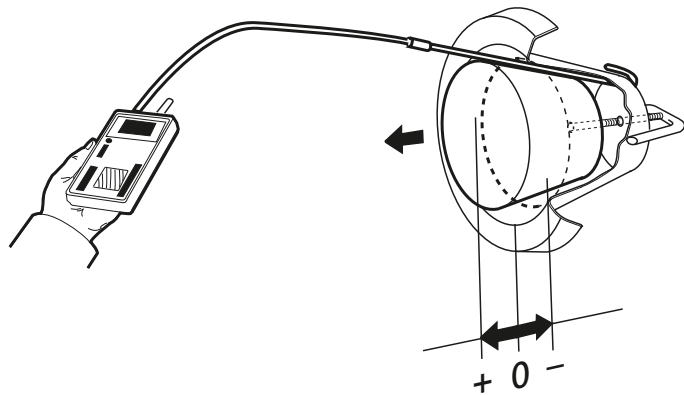


Figure 7. Example with an extract air diffuser. Measurement with one tube.

VAV/CAV and Commissioning dampers

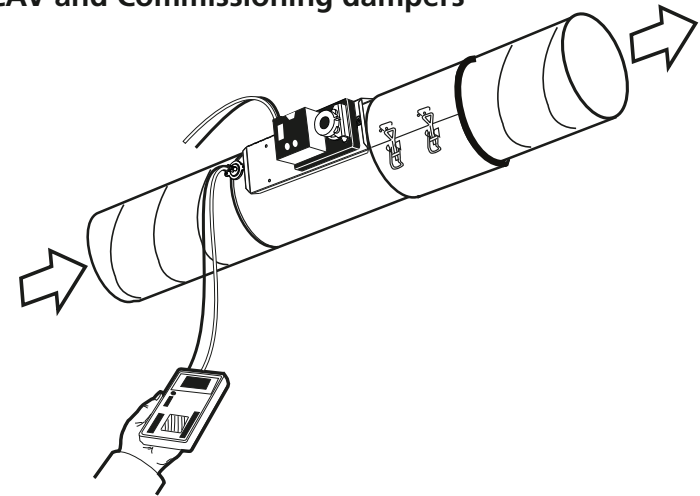


Figure 8. Example VAV/CAV. Measuring tubes: 2. Connects to the "nipple well". The K-factor also applies for a VAV damper combined with sound attenuator CLA L = 500 and 1000 mm.



EXC



ROE

EXCa – k-factor for each size depending on cone position				
Cone position	100	125	160	200
-15	0,6	–	–	–
-12	0,8	–	–	–
-10	1,0	1,3	2,0	–
-5	1,4	1,9	2,8	–
-3	–	–	–	1,8
0	1,8	2,6	3,6	2,6
+5	2,3	3,2	4,5	3,8
+10	2,7	3,9	5,4	5,2
+15	–	–	6,2	6,4
+20	–	–	–	7,5
+25	–	–	–	8,6

Measured by pressure gauge.

ROEa – k-factor for each size depending on cone position				
Cone position	100	125	160	200
-15	0,6	–	–	–
-12	0,8	–	–	–
-10	1,0	1,3	2,0	–
-5	1,4	1,9	2,8	–
-3	–	–	–	1,8
0	1,8	2,6	3,6	2,6
+5	2,3	3,2	4,5	3,8
+10	2,7	3,9	5,4	5,2
+15	–	–	6,2	6,4
+20	–	–	–	7,5
+25	–	–	–	8,6

Measured by pressure gauge.



REACT - Circular

Size	REACTa
100	5,3
125	8,7
160	15,5
200	24,8
250	40,0
315	63,4
400	102,0
500	164,0

Straight sections requirements before the diffuser in order to secure that the stated method error 5 %, will be obtained, see table:

1 · 90° bend	3 · Ød
2 · 90° bends	4 · Ød
1 · T-joint	4 · Ød
Mixing box	4 · Ød



REACT - Rectangular

Size	REACTa
200-200	33,5
300-200	50,0
400-200	66,5
500-200	83,5
600-200	100,0
700-200	117,0
800-200	133,0
1000-200	167,0
300-300	76,0
400-300	102,0
500-300	127,0
600-300	152,0
700-300	178,0
800-300	203,0
1000-300	254,0
400-400	136,0
500-400	171,0
600-400	205,0
700-400	239,0
800-400	273,0
1000-400	341,0
1200-400	409,0
1400-400	478,0
1600-400	546,0

Size	REACTa
500-500	214,0
600-500	257,0
700-500	300,0
800-500	343,0
1000-500	429,0
1200-500	514,0
1400-500	600,0
1600-500	686,0
600-600	309,0
700-600	361,0
800-600	412,0
1000-600	515,0
1200-600	618,0
1400-600	722,0
1600-600	825,0
700-700	422,0
800-700	482,0
1000-700	603,0
1200-700	723,0
1400-700	844,0
1600-700	964,0



SIRI

SIRIa – k-factor for each size dependent of damper position						
Damper position	80	100	125	160	200	250
1	3,9	6	10,2	21,3	35,4	53,3
2	2,1	3,8	6,7	15	24,7	39,3
3	1,2	2,6	4,7	11,1	18,3	30,4
4	0,7	1,8	3,3	8,5	14	24,2
5	0,3	1,2	2,3	6,6	10,8	19,4
6		0,7	1,5	5,1	8,4	15,7
7				3,9	6,4	12,6
8					4,9	10,1
9						7,8
10						
11						
12						
13						
14						

SIRIa – k-factor for each size dependent of damper position					
Damper position	315	400	500	630	800
1	85,3	119	218	325	540
2	65,3	95,3	176	272	446
3	52,1	78,5	148	233	379
4	42,9	65,7	124	202	325
5	35,6	55,6	107	177	282
6	29,8	47,2	93,1	156	247
7	24,9	40,1	81,2	139	216
8	20,7	34	71	123	190
9	17	28,7	62	109	167
10	13,9	23,8	54	63,7	147
11	11,1	19,5	46,7	85,8	129
12		15,6	40,4	75,6	112
13		12,3	34,4	66,8	98,7
14			29,4	58,9	85,6

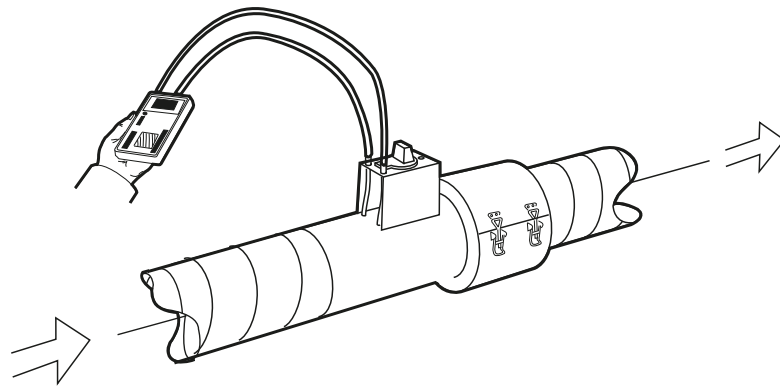


Figure 9. Example with a commissioning damper. Measurement with two tubes.

Straight sections requirements before the diffuser in order to secure that the stated method error 5 %, will be obtained, see table:

1 · 90° bend	3 · Ød
2 · 90° bends	4 · Ød
T-joints	4 · Ød
Damper 45°	6 · Ød



CRM 1



CRM 5

Size	CRMc 1	CRMc 5
100	9,2	9,2
125	9,6	9,6
160	15,8	15,8
200	23,5	23,5
250	35,6	35,6
315	59,2	59,2
400	95,6	95,6
500	147,0	147,0
630	230,0	230,0

Measuring tubes: 2

Climate systems

Calculation formula

$$q = k \cdot \sqrt{p_i} \quad (l/s)$$

q = primary air flow in l/s

p = balancing pressure in Pa

k = the pressure constant (k-factor) of the unit

The pressure constant is valid by 20°C and 1013 mbar

Measuring point

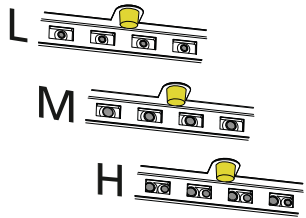
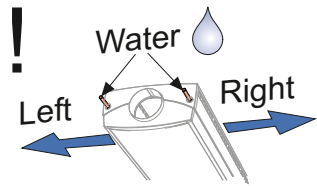
All climate beams and comfort modules are equipped with a tube where the nozzle pressure can be measured. When commissioning connect a manometer to the tube (inside diameter: 4 mm).

The positioning of the tube depends on the type of product:

- ADRIATIC VF – centre of the beam.
- PARAGON and PACIFIC – near an air connection.
- PARASOL – one of the corners.



ADRIATIC VF



$$q = k \cdot \sqrt{p_i} \text{ [l/s]}$$

$$p_i = (q/k)^2 \text{ [Pa]}$$

L: $k_{600\text{mm (1side)}} = 0,314$

M: $k_{600\text{mm (1side)}} = 0,694$

H: $k_{600\text{mm (1side)}} = 0,969$

1

Rum 203
ADRIATIC VF b 1,8
22 l/s

2

ADRIATIC VF b 1,8

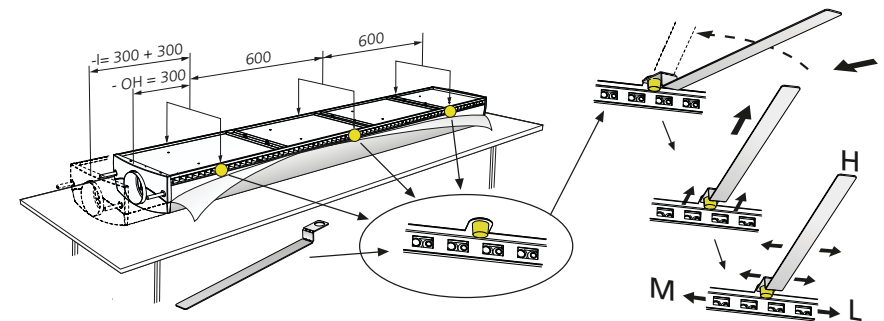
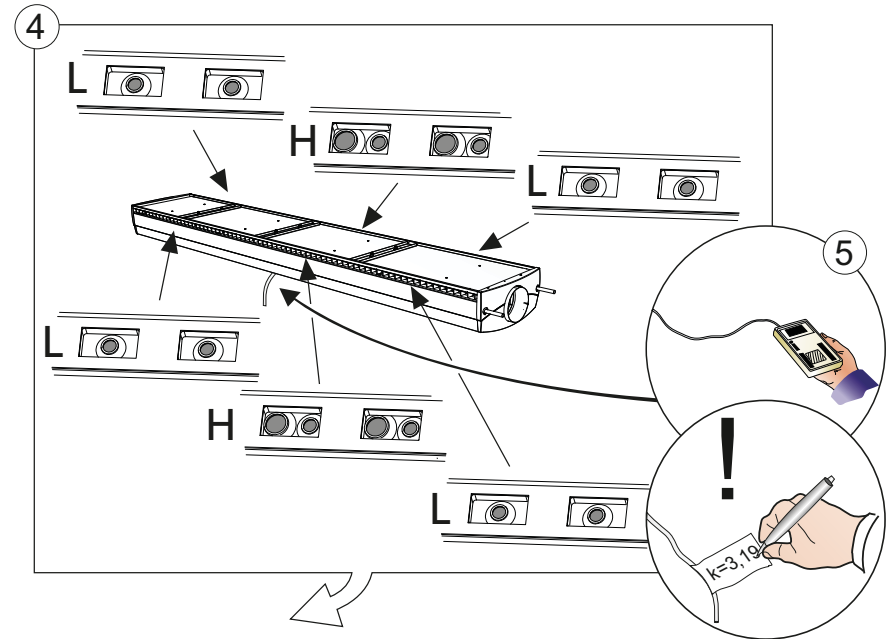
q [l/s]	q50% [l/s]	q50% [l/s]
17,5	2	2
20	2,5	2,5
22	3	3
24	3,5	3,5
26,5	4	4

q=17,5-26,5 (l/s)
k=3,19
q50%=>2LH
q50%=>2LH


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
ADRIATIC VF

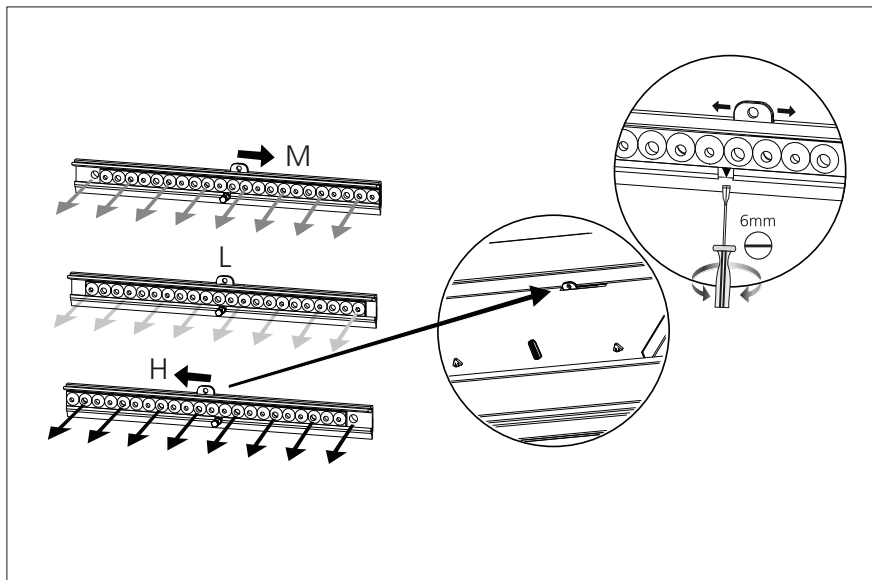
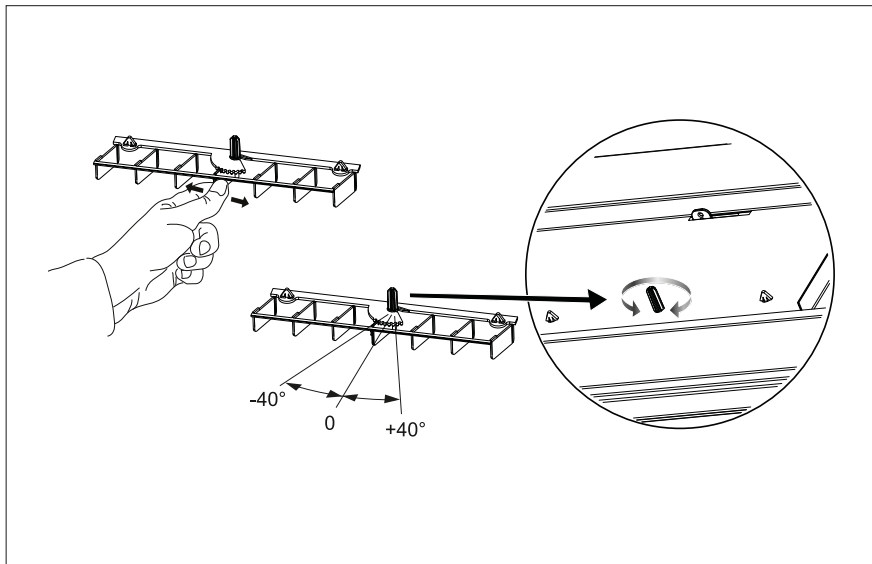


ADRIATIC VF

	Symmetric (q=50%/50%)				
	pi (Pa)	q (l/s)	k	q=50%	q=50%
ADRIATIC VF 1,2-OH	30-70Pa	7-10,5	1,25	2L	2L
	30-70Pa	11-17	2,01	LM	LM
	30-70Pa	14-21,5	2,57	LH	LH
ADRIATIC VF 1,5-I	30-70Pa	15,5-23,5	2,77	2M	2M
	30-70Pa	18,5-27,5	3,33	MH	MH
	30-70Pa	21,5-32,5	3,88	2H	2H
ADRIATIC VF 1,8-OH	30-70Pa	10,5-15,5	1,88	3L	3L
	30-70Pa	14,5-22	2,64	2LM	2LM
	30-70Pa	17,5-26,5	3,19	2LH	2LH
	30-70Pa	21,5-33	3,95	LMH	LMH
ADRIATIC VF 2,1-I	30-70Pa	24,5-37,5	4,5	L2H	L2H
	30-70Pa	28,5-44	5,26	M2H	M2H
	30-70Pa	31,5-48,5	5,81	3H	3H
ADRIATIC VF 2,4-OH	30-70Pa	13,5-21	2,51	4L	4L
	30-70Pa	18-27	3,27	3LM	3LM
	30-70Pa	22-33,5	4,03	2L2M	2L2M
	30-70Pa	26,5-40	4,79	L3M	L3M
ADRIATIC VF 2,7-I	30-70Pa	30,5-46	5,55	4M	4M
	30-70Pa	36,5-...	6,65	2M2H	2M2H
	30-70Pa	42,5-...	7,75	4H	4H
ADRIATIC VF 3,0-OH	30-70Pa	17,5-26	3,14	5L	5L
	30-70Pa	21,5-32,5	3,9	4LM	4LM
	30-70Pa	25,5-38,5	4,66	3L2M	3L2M
ADRIATIC VF 3,3-I	30-70Pa	30-45	5,42	2L3M	2L3M
	30-70Pa	34-51,5	6,18	L4M	L4M
	30-70Pa	41-...	7,49	4MH	4MH
ADRIATIC VF 3,6-OH	30-70Pa	47-...	8,59	2M3H	2M3H
	30-70Pa	20,5-31,5	3,76	6L	6L
	30-70Pa	25-37,5	4,52	5LM	5LM
	30-70Pa	29-44	5,28	4L2M	4L2M
	30-70Pa	33-50,5	6,04	3L3M	3L3M
	30-70Pa	39,5-...	7,14	3LM2H	3LM2H
ADRIATIC VF 3,9-I	30-70Pa	43,5-..	7,9	2L2M2H	2L2M2H
	30-70Pa	47,5-...	8,66	L3M2H	L3M2H

ADRIATIC VF

	Asymmetric (q≈70%/30%)				
	pi (Pa)	q (l/s)	k	q≈70%	q≈30%
	30-70Pa	11-17	2,01	2M	2L
	30-70Pa	14-21,5	2,57	2H	2L
	30-70Pa	16-24,5	2,95	2H	LM
	30-70Pa	14,5-22	2,64	L2M	3L
	30-70Pa	19,5-30	3,57	M2H	3L
	30-70Pa	21-32	3,85	3H	3L
	30-70Pa	23-35,5	4,23	3H	2LM
	30-70Pa	25,5-38,5	4,61	3H	L2M
	30-70Pa	18-27	3,27	2L2M	4L
	30-70Pa	22-33,5	4,03	4M	4L
	30-70Pa	25-38	4,58	2M2H	4L
	30-70Pa	28-42,5	5,13	4H	4L
	30-70Pa	34,5-52	6,27	4H	L3M
	30-70Pa	25,5-39	4,66	L4M	5L
	30-70Pa	30,5-46,5	5,59	3M2H	5L
	30-70Pa	35,5-...	6,41	5H	5L
	30-70Pa	39-...	7,17	5H	3L2M
	30-70Pa	26,5-40	4,8	4LMH	6L
	30-70Pa	33-50,5	6,04	6M	6L
	30-70Pa	37,5-...	6,87	3M3H	6L
	30-70Pa	40,5-...	7,42	M5H	6L



PACIFIC Airflow variant – LF		
Nozzle position		K-factor/strip
Low flow	L	0.104
Medium flow	M	0.168
High flow	H	0.224

Number of variflow nozzle strips		
Size	Side 2	Side 4
1100	4	4
1600	6	6
2200	8	8
2700	10	10

PACIFIC Airflow variant – MF		
Nozzle position		K-factor/strip
Low flow	L	0.152
Medium flow	M	0.256
High flow	H	0.328

PACIFIC Airflow variant – HF		
Nozzle position		K-factor/strip
Low flow	L	0,152
Medium flow	M	0,296
High flow	H	0,392

Example for MF: Pacific 1792-1600 MF, Nozzle position L2M3H/3LM2H

Total K-factor = $0,152 + 2 \times 0,256 + 3 \times 0,328 + 3 \times 0,152 + 0,256 + 2 \times 0,328 = 3,016$

PARAGON / PARAGON WALL



1.

Room 203
PARAGON 1300
22 l/s



2. PARAGON 1300

Size	Pressure	Flow	Pa	l/s
900	50	10,6 - 21,2	1,5	L / L
900	50	12 - 24	1,7	L / M
900	50	13,4 - 26,7	1,89	M / M
900	50	16,8 - 33,5	2,37	L / H
900	50	18,2 - 36,3	2,57	M / H
900	50	22,9 - 45,8	3,24	H / H
1100	50	13,7 - 27,4	1,94	L / L
1100	50	15,5 - 31	2,19	L / M
1100	50	17,3 - 34,5	2,44	M / M
1100	50	21,7 - 43,4	3,07	L / H
1100	50	23,5 - 47	3,32	M / H
1100	50	29,6 - 59,3	4,19	H / H
1300	50	16,4 - 32,8	2,32	L / L
1300	50	18,5 - 37,1	2,62	L / M
1300	50	20,6 - 41,3	2,92	M / M
1300	50	25,9 - 51,8	3,66	L / H
1300	50	28 - 56	3,96	M / H
1300	50	35,4 - 70,7	5	H / H
1500	50	13,9 - 27,9	1,97	L / L
1500	50	18,8 - 37,6	2,66	L / M
1500	50	23,7 - 47,4	3,35	M / M
1500	50	25,1 - 50,2	3,55	L / H
1500	50	30 - 60	4,24	M / H
1500	50	36,2 - 72,4	5,12	H / H

$$q = 16,4 - 28,4 \text{ (l/s)}$$

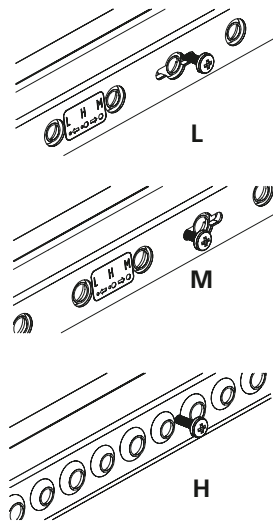
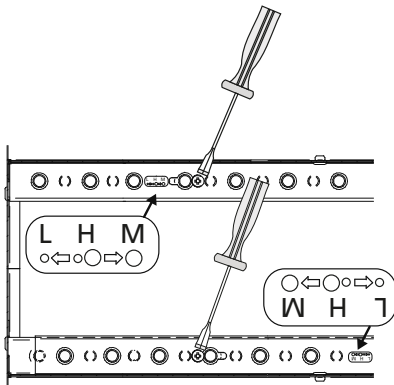
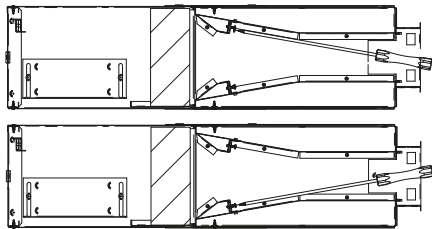
$$k = 2,32$$

$$q = L/L$$

$$q = k \cdot \sqrt{p_i} \text{ [l/s]}$$

$$p_i = (q/k)^2 \text{ [Pa]}$$

3.



PARAGON / PARAGON WALL

Size (mm)	Nozzle pressure (Pa)	Airflow (l/s)	K_{p_i}	Nozzle setting
900	50 - 200 Pa	10,6 - 21,2	1,5	L / L
900	50 - 200 Pa	12 - 24	1,7	L / M
900	50 - 200 Pa	13,4 - 26,7	1,89	M / M
900	50 - 200 Pa	16,8 - 33,5	2,37	L / H
900	50 - 200 Pa	18,2 - 36,3	2,57	M / H
900	50 - 200 Pa	22,9 - 45,8	3,24	H / H
1100	50 - 200 Pa	13,7 - 27,4	1,94	L / L
1100	50 - 200 Pa	15,5 - 31	2,19	L / M
1100	50 - 200 Pa	17,3 - 34,5	2,44	M / M
1100	50 - 200 Pa	21,7 - 43,4	3,07	L / H
1100	50 - 200 Pa	23,5 - 47	3,32	M / H
1100	50 - 200 Pa	29,6 - 59,3	4,19	H / H
1300	50 - 200 Pa	16,4 - 32,8	2,32	L / L
1300	50 - 200 Pa	18,5 - 37,1	2,62	L / M
1300	50 - 200 Pa	20,6 - 41,3	2,92	M / M
1300	50 - 200 Pa	25,9 - 51,8	3,66	L / H
1300	50 - 200 Pa	28 - 56	3,96	M / H
1300	50 - 200 Pa	35,4 - 70,7	5	H / H
1500	50 - 200 Pa	13,9 - 27,9	1,97	L / L
1500	50 - 200 Pa	18,8 - 37,6	2,66	L / M
1500	50 - 200 Pa	23,7 - 47,4	3,35	M / M
1500	50 - 200 Pa	25,1 - 50,2	3,55	L / H
1500	50 - 200 Pa	30 - 60	4,24	M / H
1500	50 - 200 Pa	36,2 - 72,4	5,12	H / H



PARASOL 600

PARASOL 600 MF		
Nozzle setting per side	Nozzle size	k_{pl} per side
L	Small	0,253
M	Large	0,440
H	Small + Large	0,693
C	Closed	0

PARASOL 600 MF	
Nozzle setting ^{*)}	k_{pl}
LLLL	1,01
LLMM	1,39
MMMM	1,76
MMHH	2,27
HHHH	2,77

^{*)}All four sides of the unit can be adjusted individually. The description of the nozzle setting follows the order shown in figure 10. See example shown in figure 11.

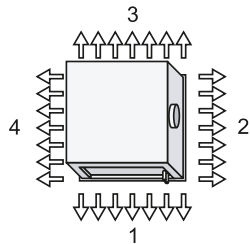


Figure 10. Top view of nozzle setting for a single-module unit, sides 1-4.

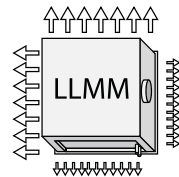


Figure 11. Example of nozzle setting for a single-module unit, LLMM.



PARASOL 1200

PARASOL 1200 LF			
Nozzle setting per side	Side	Nozzle size	k_{pl} per side
L	Short side	Small	0,124
L	Long side	Small	0,328
M	Short side	Large	0,176
M	Long side	Large	0,464
H	Short side	Small + Large	0,3
H	Long side	Small + Large	0,792
C	Short side	Closed	0
C	Long side	Closed	0

PARASOL 1200 LF	
Nozzle setting ^{*)}	k_{pl}
LLLL	0,9
LLMM	1,09
MMMM	1,28
MMHH	1,73
HHHH	2,18

^{*)}All four sides of the unit can be adjusted individually. The description of the nozzle setting follows the order shown in figure 12. See example shown in figure 13.

PARASOL 1200 MF			
Nozzle setting per side	Side	Nozzle size	k_{pl} per side
L	Short side	Small	0,176
L	Long side	Small	0,464
M	Short side	Large	0,253
M	Long side	Large	0,667
H	Short side	Small + Large	0,429
H	Long side	Small + Large	1,131
C	Short side	Closed	0
C	Long side	Closed	0

PARASOL 1200 MF	
Nozzle setting ^{*)}	k_{pl}
LLLL	1,28
LLMM	1,56
MMMM	1,84
MMHH	2,48
HHHH	3,12

^{*)}All four sides of the unit can be adjusted individually. The description of the nozzle setting follows the order shown in figure 12. See example shown in figure 13.

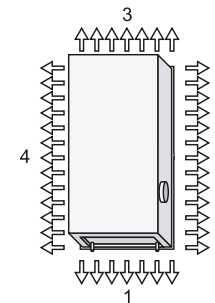


Figure 12. Top view nozzle setting for a double-module unit, sides 1-4.

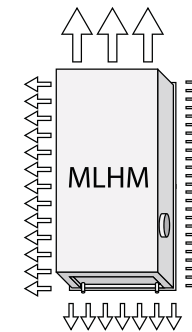


Figure 13. Example of nozzle setting for a double-module unit, MLHM.



PARASOL 1200

PARASOL 1200 HF			
Nozzle setting per side	Side	Nozzle size	k_{pl} per side
L	Short side	Small	0,253
L	Long side	Small	0,667
M	Short side	Large	0,44
M	Long side	Large	1,16
H	Short side	Small + Large	0,693
H	Long side	Small + Large	1,827
C	Short side	Closed	0
C	Long side	Closed	0

PARASOL 1200 HF	
Nozzle setting**)	k_{pl}
LLLL	1,84
LLMM	2,52
MMMM	3,2
MMHH	4,12
HHHH	5,04

**All four sides of the unit can be adjusted individually. The description of the nozzle setting follows the order shown in figure 14. See example shown in figure 15a.

PARASOL 1200 PF			
Nozzle setting per side	Side	Nozzle size	k_{pl} per side
L	Short side	Small	0,842
L	Long side	Small	2,221
M	Short side	Large	0,991
M	Long side	Large	2,612
H	Short side	Small + Large	1,211
H	Long side	Small + Large	3,192
C ^{*)}	Short side	Closed	0,556
C ^{*)}	Long side	Closed	1,467

^{*)} Parasol PF with nozzle C is not entirely closed.

PARASOL 1200 PF	
Nozzle setting***)	k_{pl}
LLLL	6,126
LLMM	6,666
MMMM	7,206
MMHH	8,006
HHHH	8,806

***All four sides of the unit can be adjusted individually. The description of the nozzle setting follows the order shown in figure 14. See example shown in figure 15b.

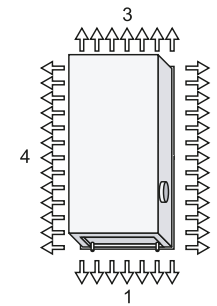


Figure 14. Top view nozzle setting, double-module unit, sides 1-4.

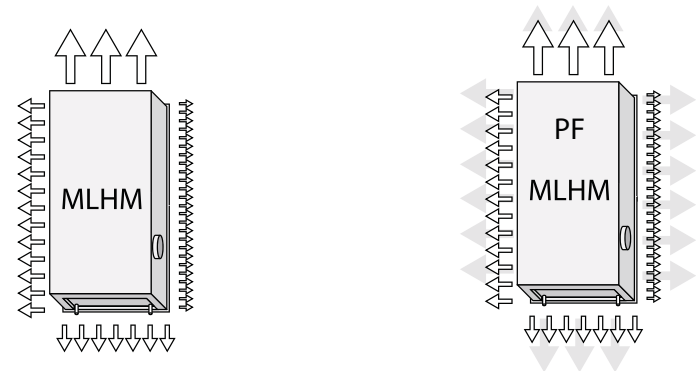


Figure 15a. Example of nozzle setting for a double-module unit, MLHM.

Figure 15b. Example of nozzle setting for a double-module unit, PARASOL PF - MLHM.



PARASOL EX 690

PARASOL EX 690 MF		
Nozzle setting per side	Nozzle size	k_{pl} per side
L	Small	0,253
M	Large	0,44
H	Small + Large	0,693
C	Closed	0

PARASOL EX 690 MF	
Nozzle setting ^{*)}	k_{pl}
LLLL	1,01
LLMM	1,39
MMMM	1,76
MMHH	2,27
HHHH	2,77

^{*)}All four sides of the unit can be adjusted individually. The description of the nozzle setting follows the order shown in figure 16. See example shown in figure 17.

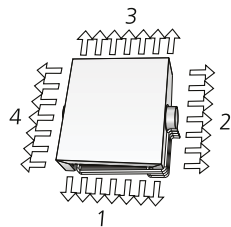


Figure 16. Top view of nozzle setting for a Parasol EX single-module unit, sides 1-4.

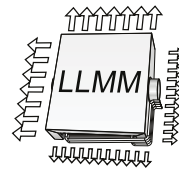


Figure 17. Example of nozzle setting for a Parasol EX single-module unit, LLMM



PARASOL EX 1290

PARASOL EX 1290 MF			
Nozzle setting per side	Side	Nozzle size	k_{pl} per side
L	Short side	Small	0,176
L	Long side	Small	0,464
M	Short side	Large	0,253
M	Long side	Large	0,667
H	Short side	Small + Large	0,429
H	Long side	Small + Large	1,131
C	Short side	Closed	0
C	Long side	Closed	0

PARASOL EX 1290 MF	
Nozzle setting ^{*)}	k_{pl}
LLLL	1,28
LLMM	1,56
MMMM	1,84
MMHH	2,48
HHHH	3,12

^{*)}All four sides of the unit can be adjusted individually. The description of the nozzle setting follows the order shown in figure 18. See example shown in figure 19.

PARASOL EX 1290 HF			
Nozzle setting per side	Side	Nozzle size	k_{pl} per side
L	Short side	Small	0,253
L	Long side	Small	0,667
M	Short side	Large	0,44
M	Long side	Large	1,16
H	Short side	Small + Large	0,693
H	Long side	Small + Large	1,827
C	Short side	Closed	0
C	Long side	Closed	0

PARASOL EX 1290 HF	
Nozzle setting ^{*)}	k_{pl}
LLLL	1,84
LLMM	2,52
MMMM	3,2
MMHH	4,12
HHHH	5,04

^{*)}All four sides of the unit can be adjusted individually. The description of the nozzle setting follows the order shown in figure 18. See example shown in figure 19.

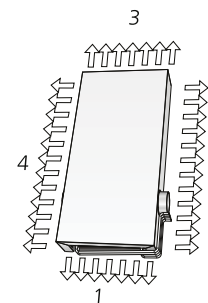


Figure 18. Top view of nozzle setting for a Parasol EX double-module unit, sides 1-4.

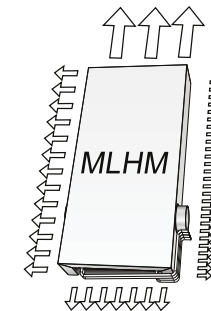


Figure 19. Example of nozzle setting for a Parasol EX double-module unit, MLHM.

Complete documentation is available from
www.swegon.com

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