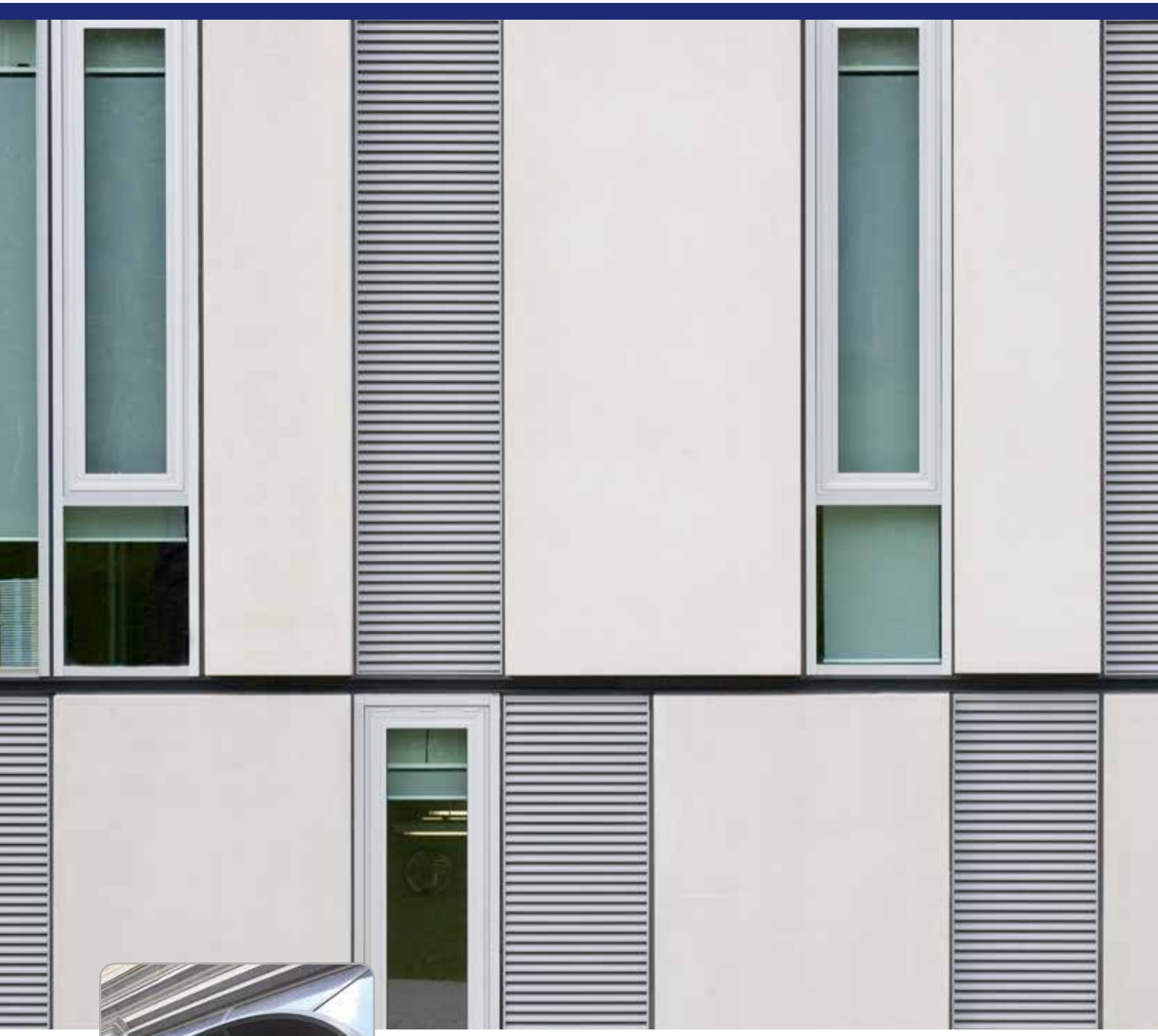
RENSON®

Creating healthy spaces



Louvre panels & grilles

Contents < Introduction

Contents

Why choose Renson® louvres?

- RENSON® innovates.Having an in-house R&D team
- RENSON® widens. Offering the widest range of louvres
- RENSON® integrates.through vertical integration
- RENSON® specializes. Since 1909 and is represented worldwide

The acoustic properties of the RENSON®-blades have been tested by the internationally recognized laboratory, IFT Lab Rosenheim (Germany)

Water resistance tested by BSRIA laboratories.

Material

All louvres in this brochure have been manufactured from aluminium-profiles **AlMgSi 0,5** (according EN 12020-2).

Light, strong & durable
Aluminium is a very light metal, about one third of the weight of steel. This evolves in a lighter product, more efficient use of transport, high loading capacity, lower material usage…

Anti-corrosion
The finished aluminium louvre is corrosion persistent. In order to improve this persistency, the louvre can be anodized or powder-coated. On top of that, aluminium is UV- resistant and can easily handle fluctuation in temperature.

100% recyclable
Aluminium is 100% recyclable without loss of quality. The energy used to fuse the product takes only about 5% of the energy used to produce the original product. Did you know that 75% of the produced aluminium is still circulating the world?

Finishing

Anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron).

For UK: Marine grade and special colour paint finishes available upon request. Alternative anodising finsihes and thicknesses available upon request.

Maintenance

The only maintenance required is cleaning the louvre.

Warranty

Renson Ventilation nv provides a 10 year warranty on the aluminium parts of the product related to mechanical strength and colour. A 5 year warranty is applicable on the gloss of the powder-coated profiles and the rubber & synthetic elements.

Packing

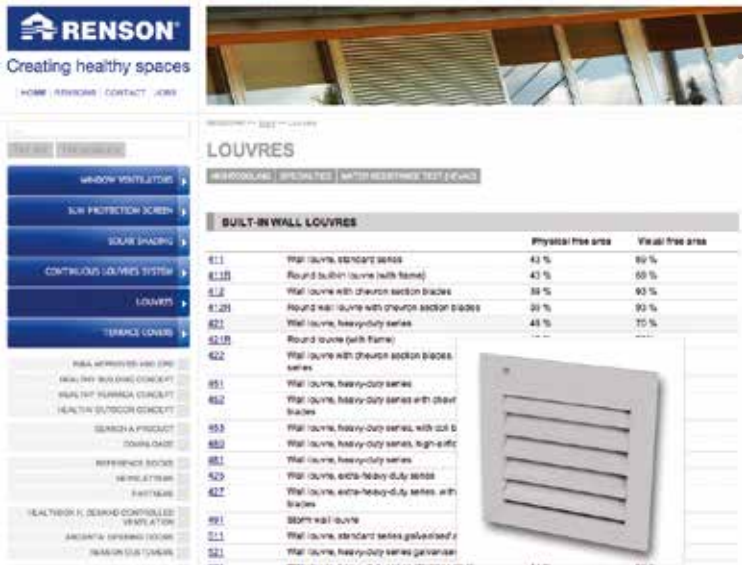
Louvres will be packed in a transparent plastic foil. In case the louvre is larger than 500 mm on one side, expanded polystyrene will be added on the framework as protection. For very large louvres, an additional carton packaging ensures the right protection.

How to select the correct louvre for your application?

The tools and data below provide you an overview of the available services to select the correct louvre and required information.

Website

On the website you can find an overview of all louvres including technical drawings, leaflets and product summaries (NBS specs).



Selection and calculation software

Selection and calculation of the right louvre making use of the louvre software available on www.rensonlouvres.eu

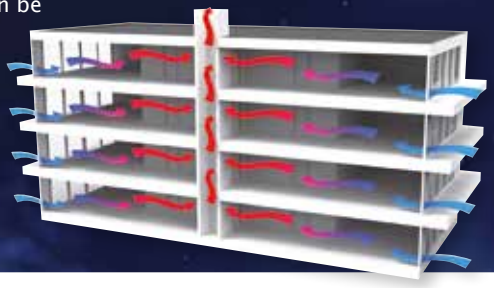
In order to calculate a made-to-measure louvre, please provide at least two of the following parameters:

- Surface of the opening
- Pressure drop over the louvre in Pa
- Required airflow in m³/h

Specific louvre characteristics

Nightcooling

By passing large amounts of natural air through the building during nighttime and blocking the sun during the day, the buildingmass gets cooled and the indoor temperature remain stable during the day. Nightcooling can be achieved by placing specific louvres at the suction and discharge side Type 432 would be advised for suction, type 440 for discharge.



Burglarproof: louvre tested according to official WK (Widerstandsklasse) classification

Acoustic damping: louvre equiped with acoustic mineral wool to reduce noise

Water-proof: louvre with high HEVAC classification
(ref page 9)

Stick-proof: this louvre has been IP certified (EN 60529)

Test reports

Louvres with specific requirements have been tested according to EN norms.
Test reports for IP-classification, burglarproof, acoustic damping and weatherability are available on demand.

Louvre selector guide < Introduction

Family					Airflow				Page
Blade type Linius	Louvre type	Product type	Blade pitch	Physical free area	K-factor (supply)	K-factor (discharge)	Coeffi-cient C_e	Coeffi-cient C_d	
V20-blade	Built-in wall louvres	412	20	39	33,8	33,8	0,172	0,172	14
V20-blade	Built-in wall louvres	412R	20	39	33,8	33,8	0,172	0,172	77
V20-blade	Glazed-in louvres	415	20	39	33,8	33,8	0,172	0,172	37
V20-blade	Controllable glazed-in louvres	415/VA	20	n.a.	n.a.	n.a.	n.a.	n.a.	38
V20-blade	Round glazed-in louvres	415R	20	39	33,8	33,8	0,172	0,172	81
L.033.01	Built-in wall louvres	411	33,3	45	23,56	25,51	0,206	0,198	12
L.033.07	Built-in wall louvres	411R	33,3	40,5	23,56	25,51	0,206	0,198	76
L.033.01	Glazed-in louvres	414	33,3	45	23,56	25,51	0,206	0,198	33
L.033.07	Round glazed-in louvre	414R	33,3	40,5	23,56	25,51	0,206	0,198	80
L.033.01	Glazed-in louvres	414/D	33,3	n.a.	n.a.	n.a.	n.a.	n.a.	35
L.033.01	Controllable glazed-in louvre	414/VA	33,3	n.a.	n.a.	n.a.	n.a.	n.a.	35
L.033.01	Glazed-in louvres	414THF	33,3	45	33,56	25,51	0,206	0,198	36
L.033.01	Surface-mounted louvres	431	33,3	45	23,56	25,51	0,206	0,198	29
L.033.01	Surface-mounted louvres	431R	33,3	40,5	23,56	25,51	0,206	0,198	79
L.033.01	Surface-mounted louvres	432	33,3	45	23,56	25,51	0,206	0,198	31
L.033.01	Louvre box	440/11	33,3	45	23,56	25,51	0,206	0,198	56
L.033.08	Built-in wall louvres	491	33,3	26	123,5	118,1	0,09	0,092	25
L.033.08	Glazed-in louvres	494	33,3	26	123,5	118,1	0,09	0,092	43
L.033V	Built-in wall louvres	422	33,3	43	61,04	61,04	0,128	0,128	16
L.033V	Glazed-in louvres	428	33,3	43	61,04	61,04	0,128	0,128	40
L.050.00	Built-in wall louvres	421	50	49	12,57	8,91	0,282	0,335	15
L.050.00	Round built-in wall louvres	421R	50	47	12,57	8,91	0,282	0,335	78
L.050.00	Louvre box	440/21	50	49	12,57	8,91	0,282	0,335	56
L.050.00	Glazed-in louvres	424	50	49	12,57	8,91	0,282	0,335	39
L.050HF	Built-in wall louvres	481	50	60	8,75	8,45	0,338	0,344	24
L.050HF	Glazed-in louvres	484	50	60	8,75	8,45	0,338	0,344	42
L.050W	Built-in wall louvres	450	50	57	10,47	16,50	0,310	0,246	
L.060HF	Built-in wall louvres	480	60	76	4,81	4,52	0,456	0,470	23
L.060HF	Glazed-in louvres	483	60	76	4,81	4,52	0,456	0,470	41
L.066.01	Built-in wall louvres	451	66	49	12,71	11,77	0,280	0,291	20
L.066V	Built-in wall louvres	452	66	41	66,1	79,7	0,123	0,112	21
L.066V	Built-in wall louvres	452v	66	41	60,1	79,9	0,129	0,114	21
L.065AL	Built-in wall louvres	453	65	55	13,32	17,08	0,274	0,242	22

Remark: test results according to louvres including mesh

Family					Airflow				Page
Blade type Linius	Louvre type	Product type	Blade pitch	Physical free area	K-factor (supply)	K-factor (discharge)	Coeffi-cient C_e	Coeffi-cient C_d	
L.095.01	Built-in wall louvres	425	95	55	11,41	11,65	0,296	0,293	17
L.095.01	Glazed-in louvres	425/GL	95	55	11,41	11,65	0,296	0,293	44
mouvable blade	Built-in wall louvres	427	100	53	11,41	11,65	0,296	0,293	18
mouvable blade	Glazed-in louvres	427/GL	100	53	11,41	11,65	0,296	0,293	45
L.060AC	Acoustic louvres	445/86	60	34	9,22	13,29	0,329	0,274	46
L.150ACS.01	Acoustic louvres	446/150	150	34,3	38,46	34,48	0,161	0,169	48
L.150ACL.01	Acoustic louvres	446/225	150	34,3	37,3	41,9	0,164	0,15	48
L.150ACS.01	Acoustic louvres	446/300	150	34,3	45,93	45,93	0,148	0,148	48
L.150ACS.01	Acoustic louvres	447/150	170	37	25,46	25,15	0,198	0,200	50
L.150ACL.01	Acoustic louvres	447/225	170	37	28,58	30,88	0,187	0,180	50
acoustic	Acoustic louvres	468AK	85	29	86,85	89,35	0,107	0,106	52
floor grille	Floor grilles	311	16,5	76	n.a.	n.a.	n.a.	n.a.	64
floor grille	Floor grilles	371	20,5	61	n.a.	n.a.	n.a.	n.a.	65
punched	Ventilation grilles	381	n.a.	80	n.a.	n.a.	n.a.	n.a.	63
bar blade	Linear bar grilles	392	13	76	n.a.	n.a.	n.a.	n.a.	66
bar blade	Linear bar grilles	394	16,5	59	n.a.	n.a.	n.a.	n.a.	67
punched	Punched grilles	435R	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	61
slide blade	Controllable internal louvres	4032	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	59
slide blade	Controllable internal louvres	441	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	58
slide blade	Controllable internal louvres	442	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	57
door blade	Door grilles	461	20	39	33,8	33,8	0,172	0,172	68
extractor	Surface-mounted louvres	433	3 6,5 or 99	n.a.	n.a.	n.a.	n.a.	n.a.	32
door blade	Door grilles	469 Invisido	n.a.	n.a.	17,03	17,03	0,24	0,24	70
door blade	Door grilles	461AK Silendo	n.a.	27	6,13	6,13	0,40	0,40	69
burglarproof blade	Burglarproof louvres	421WK2	50	43	13,82	12,85	0,269	0,279	53
burglarproof blade	Burglarproof louvres	423WK4	50	22	27,06	27,28	0,193	0,192	55
L.033.07	Burglarproof louvres	431WK2	33,3	40,5	23,56	25,51	0,206	0,198	54
fire blade	Fire blade	464 Incendo	20	51	10,27	10,27	0,312	0,312	72
fire blade	Fire blade	465	17,5	57	8,16	8,16	0,350	0,350	73
fire blade	Fire blade	466	20	70	6,80	6,80	0,383	0,383	74
galvanised blade	Built-in wall louvres	511	33,3	43	92,13	84,73	0,104	0,109	26
galvanised blade	Built-in wall louvres	521	33,3	47	24,21	21,26	0,203	0,217	27
stainless blade	Built-in wall louvres	621	50	47	26,27	22,59	0,195	0,210	28
controllable	Controllable internal louvres	XD	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	60

Watertightness tests < Introduction

Method for watertightness (HEVAC) testing

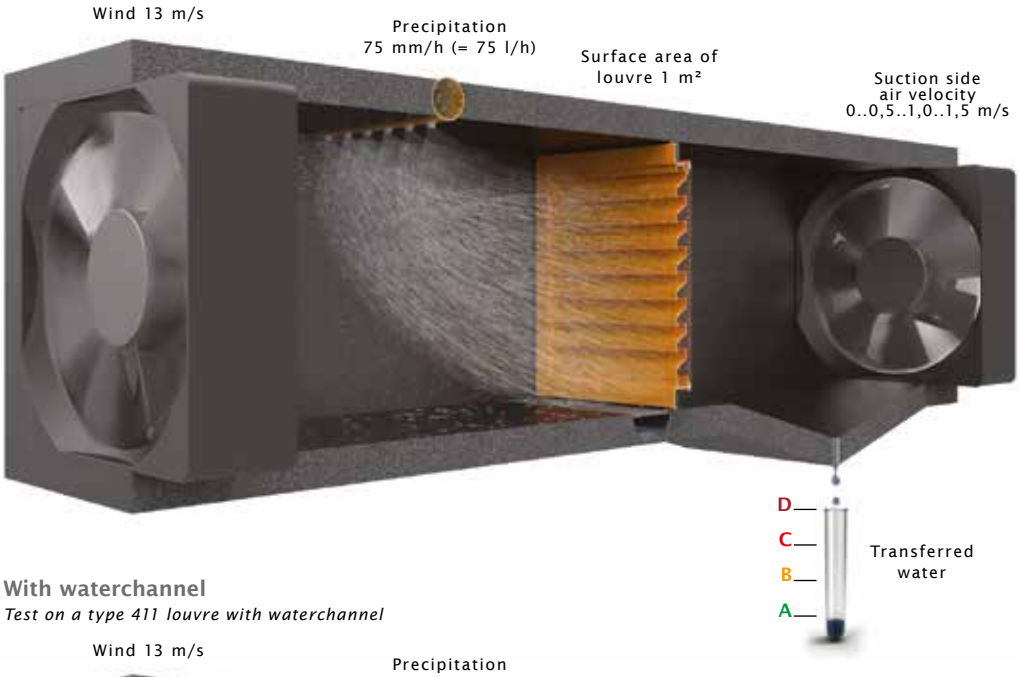
All RENSON® louvres have been subjected to European HEVAC testing(according to EN 13030) by the internationally accredited corporation BSRIA Ltd. During these tests, a louvre equipped with stainless steel insect mesh of 1m² is subjected to simulated heavy rain by being sprayed with water at a rate of 75 litres per hour at a wind speed of 13.5 m/second. HEVAC classification is based on the results obtained, i.e. the quantity of water infiltrating through the louvre.

Attention: The reference "air speed" in this document always refers to the air speed at suction side. In case a louvre gets classified a certain watertightness, this suction side air speed always needs to be indicated. The outside wind speed is fixed to 13m/s and is never mentioned.

Remark:
In case of a weatherable louvre, RENSON® advises to apply a drainage profile and waterchannel sealing the seams of the frame will guarantee an even better weatherability.

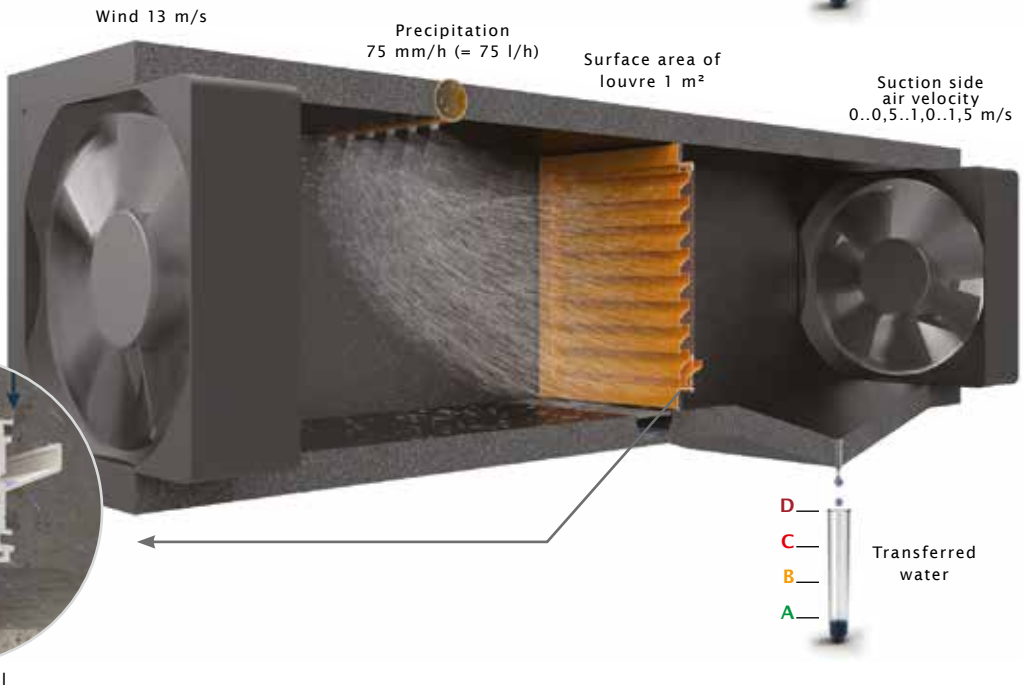
Without waterchannel

Test on a standard type 411 louvre



With waterchannel

Test on a type 411 louvre with waterchannel



Waterchannel

RENSON®
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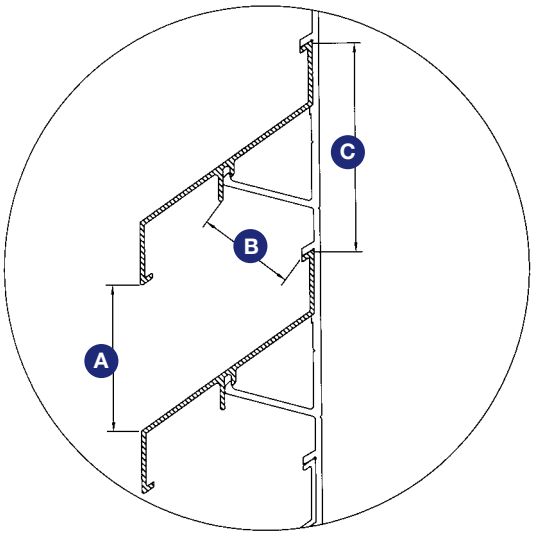
	Class	% water infiltration	Air resistance class
Very good rain protection	A	0 - 1%	C_e > 0,4 :1
Good rain protection	B	1,1 - 5%	0,3 < C_e < 0.4 : 2
Average rain protection	C	5,1 - 20%	C_e: 0,2 - 0,299 : 3
Low rain protection	D	> 20%	C_e < 0.199 : 4

Type of louvre	Suction air speed (m/s)	Standard design		With water channel		Suction air resistance class (C_e-coefficiënt)
		%	Class	%	Class	
With 2.3 x 2.3 mm insect screen						
411/414 L.033.01	0,0	96,7	B	98,7	B	4
	0,5	95,0	B	98,0	B	4
	1,0	93,3	C	96,4	B	4
	1,5	< 80	D	88,5	C	4
	2,0					
412/415 V20-blade	0,0	98,1	B	99,5	A	4
	0,5	96,9	B	99,0	A	4
	1,0	89,96	C	98,0	B	4
421/424 L.050.00	0,0	90,6	C	96,9	B	3
	0,5	87,7	C	95,6	B	3
	1,0	< 80	D	93,7	C	3
	1,5	< 80	D	89,0	C	3
	2,0					
425 L.095.01	0,0	82,0	C	96,6	B	3
	0,5	74,8	D	93,9	C	3
	1,0	< 80	D	90,0	C	3
	1,5	< 80	D	83,5	C	3
	2,0	< 80	D	76,3	D	3
451 L.066.01	0,0	91,0	C	98,0	B	3
	0,5	89,3	C	96,1	B	3
	1,0	87,1	C	94,2	C	3
	1,5	81,6	C	89,5	C	3
	2,0	70,7	D			
452 L.066	0,0	-	-	100,0	A	4
	0,5	-	-	99,9	A	4
	1,0	-	-	99,6	A	4
	1,5	-	-	94,0	B	4
	2,0	-	-	56,9	D	4
	2,5	-	-	28,3	D	4
452V L.066V	0,0	-	-	100,0	A	4
	0,5	-	-	100,0	A	4
	1,0	-	-	100,0	A	4
	1,5	-	-	99,7	A	4
	2,0	-	-	80,2	C	4
	2,5	-	-	11,3	D	4
	3,0	-	-	7,9	D	4
491/494 L.033.08	0,0	-	-	100,0	A	4
	0,5	-	-	99,7	A	4
	1,0	-	-	91,6	B	4
	1,5	-	-	50,1	D	4
	2,0	-	-	16,3	D	4
	2,5	-	-	14,7	D	4
431 L.033.01	0,0	96,7	B	-	-	4
	0,5	95,0	B	-	-	4
	1,0	93,3	C	-	-	4
	1,5	< 80	D	-	-	4
	2,0			-	-	
450 L.050W	0,0	-	-	100	A	2
	0,5	-	-	100	A	2
	1,0	-	-	100	A	2
	1,5	-	-	100	A	2
	2,0	-	-	99,9	A	2
	2,5	-	-	99,9	A	2
	3,0	-	-	99,2	A	2
With 6 x 6 mm insect mesh						
421/424 L.050.00	0,0	84,2	C	94,2	C	3
	0,5	81,0	C	91,8	C	3
	1,0	< 80	D	89,5	C	3
	1,5			85,7	C	3
	2,0					
422/428 L.033V	0,0	99,3	A	99,93	A	4
	0,5	98,11	B	99,46	A	4
	1,0	93,39	C	96,91	B	4
	1,5	87,46	C	87,92	C	4
	2,0	59,97	D	62,24	D	4
	2,5	25,03	D	21,99	D	4
	3,0	17,94	D	18,08	D	4
425 L.095.01	0,0	< 80	D	91,3	C	3
	0,5			88,3	C	3
	1,0			85,1	C	3
	1,5			79,4	D	3
	2,0					
451 L.066.01	0,0	85,4	C	92,0	B	3
	0,5	83,6	C	90,1	B	3
	1,0	< 80	D	88,2	C	3
	1,5			83,5	C	3
	2,0					



Geometric terms for louvres

Visual free area = determined by the ratio between the visual distance between two blades (A) and the blade pitch (C).

Physical free area = determined by the ratio between the smallest gap between two blades (B) and the blade pitch (C). Owing to peripheral effects and assembly, a maximum deviation of 5% must be considered.

Remark: The top and bottom blades are not taken into account in the two free area definitions.

All louvre characteristics can be calculated making use of free software on the website www.rensonlouvres.eu

Airflow

K-factor = a value describing aerodynamic resistance to airflow. Contrary to the free area, this value describes the link between the airflow through the louvre and the pressure drop over it.

C_e = entry loss coefficient = a value describing the aerodynamic channelling of the airflow on entry. This value represents the ratio between the actual airflow compared to the theoretical airflow.

C_d = discharge loss coefficient = a value describing the aerodynamic channelling of the airflow on discharge. This value represents the ratio between the actual airflow compared with the theoretical airflow.

Acoustic terms

dB(a) = the decibel (dB) in this brochure is used to characterize the noise reduction of a louvre. The A-weight (dB(a)) shows that the acoustic tests have been taken out according to the sensitivity of the human sound spectrum.

$D_{n,e,w}$ = weighted, element-normalized sound level difference, used to characterise a single element like louvres.

R_w (C;Ctr) = weighted sound reduction index, used to characterise glazing, brick walls, wall louvres, etc.

C = *spectrum correction* term for pink noise, always added to R_w or $D_{n,e,w}$ when the source of the noise is, for example, fast-moving traffic.

C_{tr} = *spectrum correction term for traffic noise,* always added to R_w or $D_{n,e,w}$ when the source of the noise is, for example, urban traffic.

Frequency = pitch expressed in Hertz (Hz), or the number of vibrations per second.

Remark: in order to select the correct louvre for your application please refer to local building regulations.

Technical terms

IP-class = international protection rating, protection rate to classify intruding objects and water penetration. Distance to the electrical installation is measured from the outside surface of the louvre.

Building technical terms

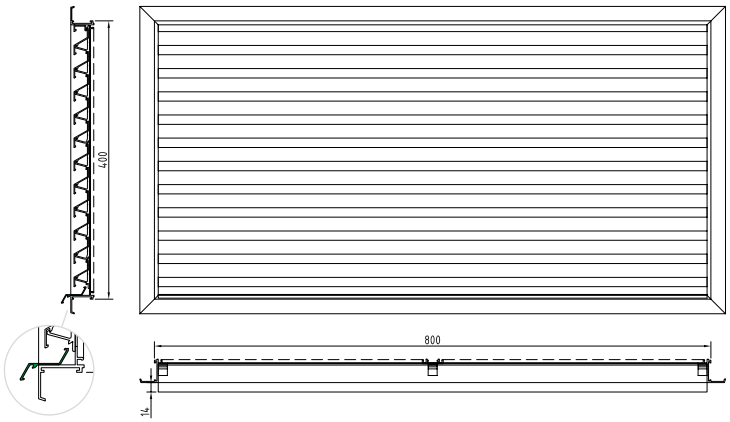
Wall anchor = aluminium bar used to mount and fix louvre to the wall.

Flange = part of the louvre visible on the front.

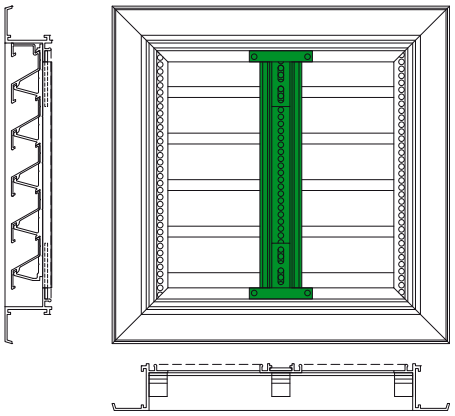
Aluminium extrusion = technique to shape an aluminium element by pressing it through a mold.

Drainage profiel

This profile is designed for all types of aluminium rectangular wall louvres

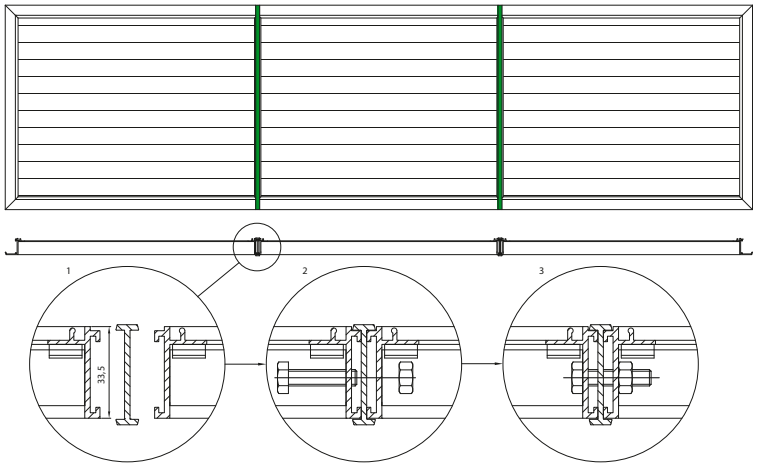


Louvre with strengthening support



Remark: a strengthening support will be provided for a louvre wider than 700mm.

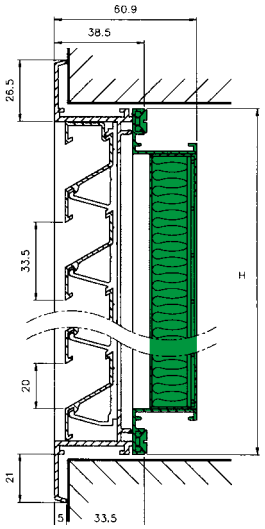
Coupled louvres



- Louvres can be coupled both vertically and horizontally
- Standard vertical

Dust filter

- This profile is designed for all louvre types
- Equipped with dust filter class G4



Removable mosquito mesh 401

Material

- Pick-up angle (non-visible) in polyamide
- Mesh in stainless steel 304
  - 6x6 mm
  - 2.3x2.3 mm
  - 10x10 mm

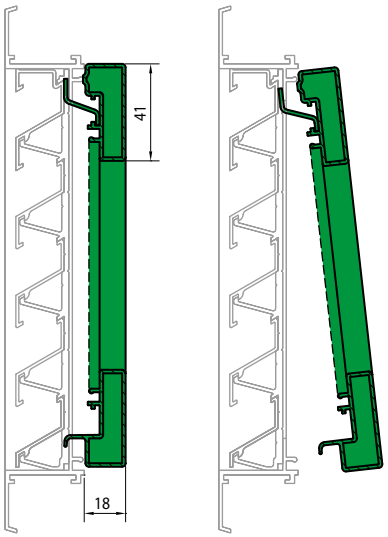
Dimensions

- Minimum dimensions: 190x190 mm
- Maximum dimensions : 1500x1200 mm

Advantages

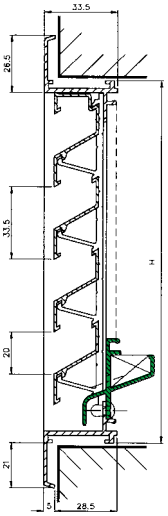
- Integrated water channel
- Aesthetical mesh
- No technical details visible
- Applicable to louvres with water channel

Remark: not applicable to surface-mounted louvres



Water channel

- This profile is designed for many louvre types
- It collects any water infiltration and channels it outside.



411 with thermal insulation panel

Wall louvre, standard series, pitch 33

Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 insect screen (2.3 x 2.3 mm) or mesh (6 x 6 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

Dimensions
- Blade pitch: 33,3 mm
- Depth to fit: 29 mm
- Flange size: 21 mm
- Minimum dimensions: 100 x 100 mm

Fixing
- Brackets ref. 418
- Spring clips ref. 419 available on request (small dimensions)
- For louvres larger than approx. 3 m², a reinforcing mullion is required to suit span and windload

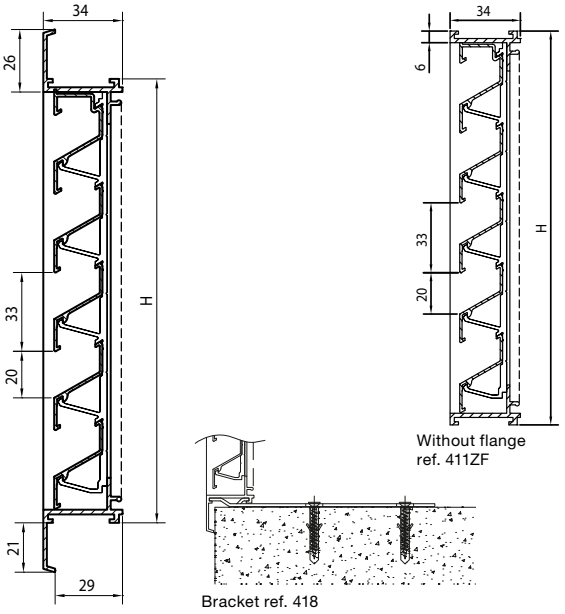
Options *(page 11)*
- Water channel
- Drainage profile
- Removable insect mesh
- Backframe
- Filter
- Special shape *(see next page)*
- Controllable *(see next page)*
- Without flange *(see next page)*

Typical applications
- Every application without specific needs

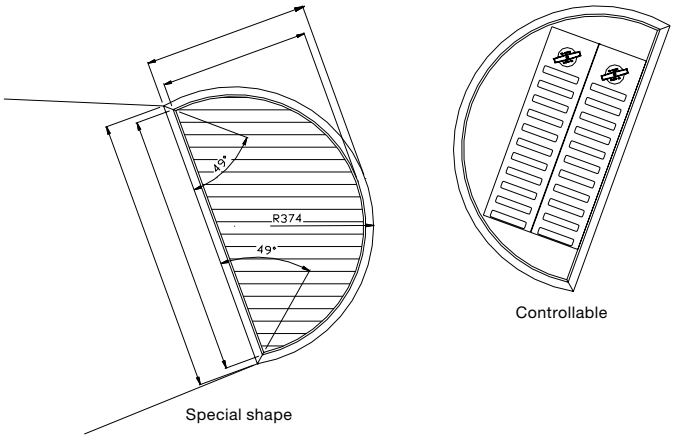
Stock models

Dimensions	Satin anodised	RAL 9010
200 x 200	•	•
300 x 200	•	
300 x 300	•	•
400 x 200	•	•
400 x 300	•	•
400 x 400	•	•
500 x 300	•	
500 x 400	•	
500 x 500	•	•
600 x 300	•	
600 x 400	•	
600 x 600	•	•
700 x 700	•	
1000 x 500	•	
1000 x 1000	•	
142 x 142	•	

Cross-sections

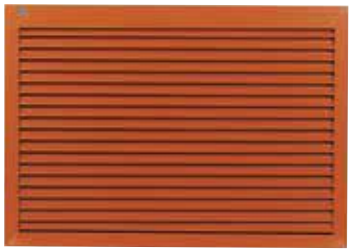


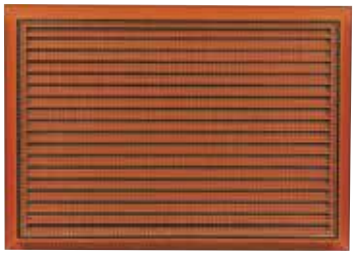
Options



Technical specifications

	411
Airflow	(EN 13030)
K-factor (supply)	23,56
K-factor (discharge)	25,51
C_e coefficient	0,206
C_d coefficient	0,198
Technical data	
Visual free area	59 %
Physical free area	45 %
IP class (louvre with mesh; electrical installation at least 100mm from louvre)	IP2XD





412 with dust filter

Wall louvre with chevron section blades, pitch 20

Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 mesh (6 x 6 mm) or insect screen (2.3 x 2.3 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)
- Equipped with earthing lug

Dimensions
- Blade pitch: 20 mm chevron
- Depth to fit: 29 mm
- Flange size: 21 mm
- Minimum dimensions: 100 x 100 mm

Fixing
- Brackets ref. 418
- Spring clips ref. 419 available on request (small dimensions)
- For louvres larger than approx. 3 m², a reinforcing mullion is required to suit span and windload

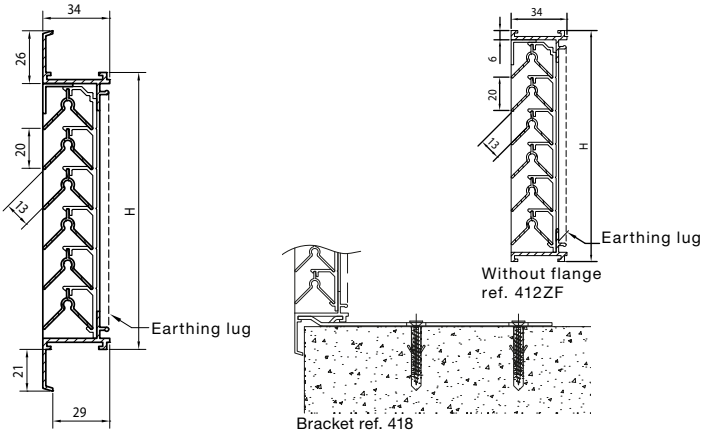
Options
- Water channel
- Drainage profile
- Removable insect mesh
- Backframe
- Filter
- Without flange

Typical applications
- High-voltage stations
- IT rooms

Stock models

Dimensions	Satin anodised
200 x 200	•
300 x 300	•
400 x 300	•
500 x 300	•
600 x 400	•

Cross-sections



Technical specifications

	412
Airflow	(EN 13030)
K-factor (supply)	33,80
K-factor (discharge)	33,80
C_e coefficient	0,172
C_d coefficient	0,172
Technical data	
Visual free area	93 %
Physical free area	39 %
IP class	IP2XD

Wall louvre, heavy-duty series, pitch 50

Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 insect screen (2.3 x 2.3 mm) or mesh (6 x 6 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

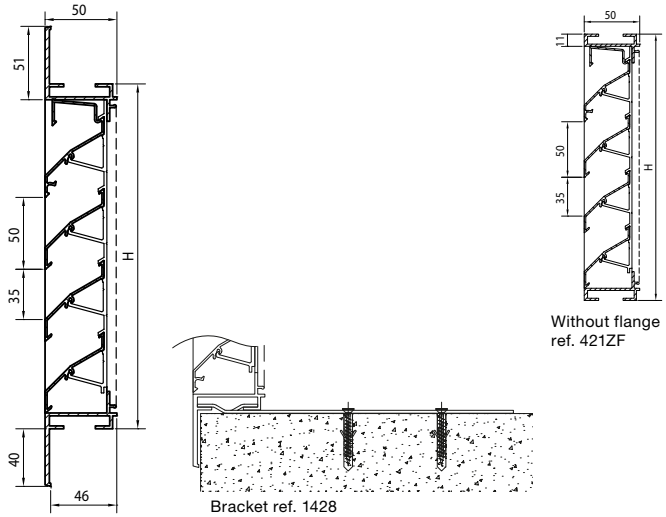
Dimensions
- Blade pitch: 50 mm
- Depth to fit: 46 mm
- Flange size: 40 mm
- Minimum dimensions: 150 x 150 mm

Fixing
- Brackets ref. 1428
- For louvres larger than approx. 3 m², a reinforcing mullion is required to suit span and windload

Options
- Water channel
- Drainage profile
- Removable insect mesh
- Filter
- Burglarproof louvre 421WK2 (ref page 53)
- Without flange

Typical applications
- Applications where aesthetics and strength are key parameters.

Cross-sections



Technical specifications

	421
Airflow	(EN 13030)
K-factor (supply)	12,57
K-factor (discharge)	8,91
C_e coefficient	0,282
C_d coefficient	0,335
Technical data	
Visual free area	70 %
Physical free area	49 %
IP class (louvre with mesh; electrical installation at least 100mm from louvre)	IP2XD

Wall louvre with chevron section blades, heavy-duty series, pitch 33

Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 insect screen (6 x 6 mm) or mesh (2.3x 2.3 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

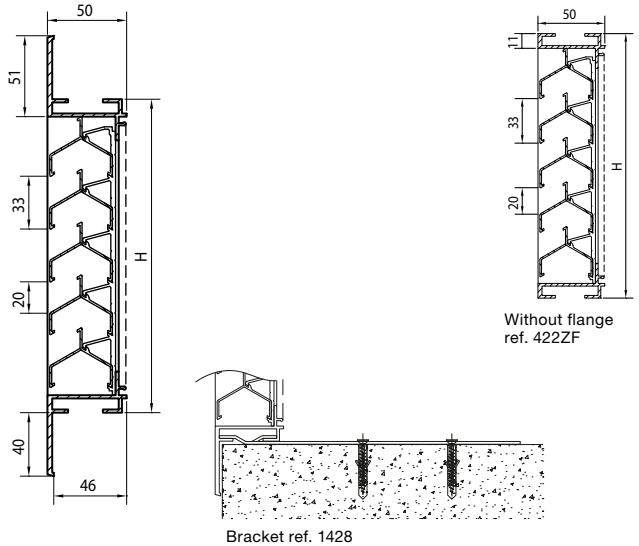
Dimensions
- Blade pitch: 33 mm
- Depth to fit: 46 mm
- Flange size: 40 mm
- Minimum dimensions: 150 x 150 mm

Fixing
- Brackets ref. 1428
- For louvres larger than approx. 3 m², a reinforcing mullion is required to suit span and windload

Options
- Water channel
- Drainage profile
- Removable insect mesh
- Filter
- Without flange

Typical applications
- Applications where extreme strength and stick-proof are key parameters.

Cross-sections



Technical specifications

	422
Airflow	(EN 13030)
K-factor (supply)	61,04
K-factor (discharge)	61,04
C_e coefficient	0,128
C_d coefficient	0,128
Technical data	
Visual free area	59 %
Physical free area	43 %

Wall louvre, extra-heavy-duty series, pitch 95

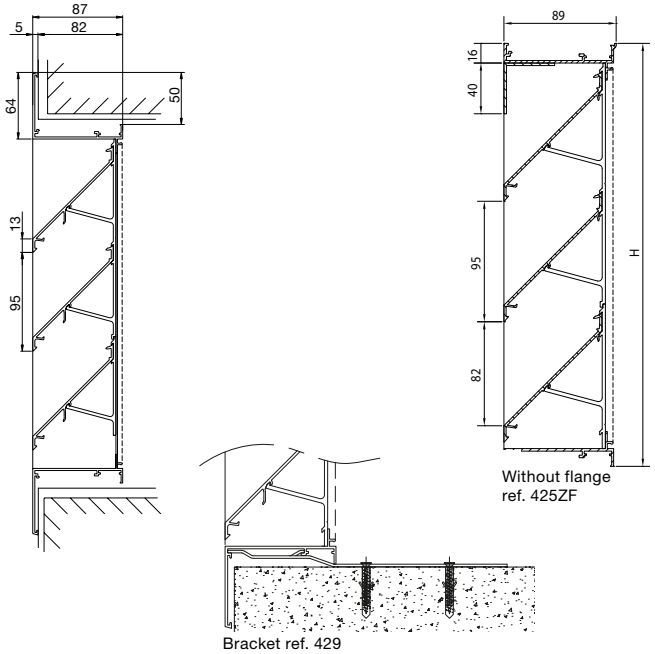
Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 mesh (6 x 6 mm) or mesh (2.3 x 2.3 mm) on demand
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

Dimensions
- Blade pitch: 95 mm
- Depth to fit: 81,5 mm
- Flange size: 50 mm
- Minimum dimensions: 300 x 300 mm

Fixing
- Brackets ref. 429
- For louvres larger than approx. 3 m², a reinforcing mullion is required to suit span and windload

Options
- Water channel
- Drainage profile
- Removable insect mesh
- Filter
- Without flange

Cross-sections



Technical specifications

	425
Airflow	(EN 13030)
K-factor (supply)	11,41
K-factor (discharge)	11,65
C_e coefficient	0,296
C_d coefficient	0,293
Technical data	
Visual free area	86 %
Physical free area	55 %

Type 427/1

427/1 - 427/2 - 427/3 - 427/4 - 427/5
Wall louvre, extra-heavy-duty series,
with adjustable blades

Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 mesh (6 x 6 mm) or mesh 304 (2.3 x 2.3 mm) on demand
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

Dimensions
- Depth to fit: 82 mm
- Maximum width in one piece: 1300 mm
- Minimum dimensions: 300 x 290 mm
- Flange size: 50 mm
- Height = (multiple of 100) + 90 mm

Fixing
- Brackets ref. 429

Options
- Without flange

Control options
- Manual 427/1
- Cable 427/2
- Ultraflex 427/3
- Motor 230 - 24V / Spring-return actuator 24V 427/4
- Air pressure 427/5

Typical applications
- Powers stations
- High buildings
- Controlled ventilation
- Production halls

Type 427/2

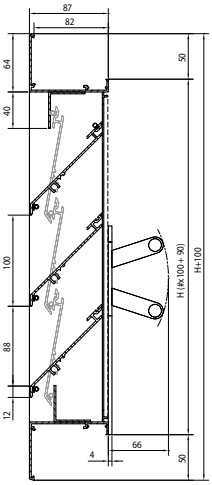
Type 427/3

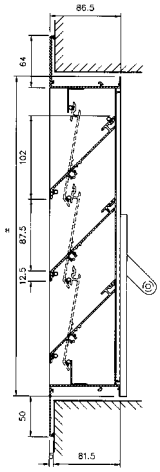
Type 427/4

Type 427/5

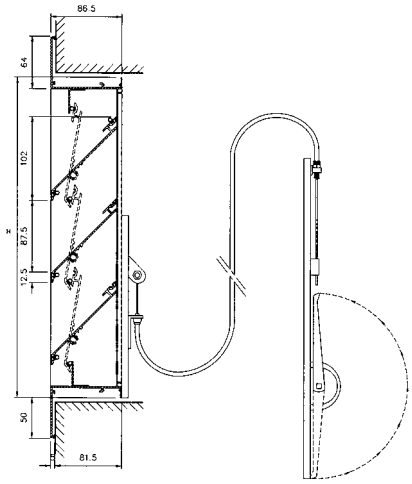
Technical specifications	
	427
Airflow (in open position)	(EN 13030)
K-factor (supply)	11,41
K-factor (discharge)	11,65
C_e coefficient	0,296
C_d coefficient	0,293
Technical data	
Visual free area	88 %
Physical free area	53 %

Cross-sections

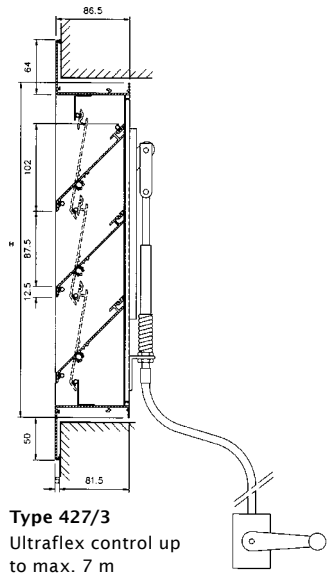




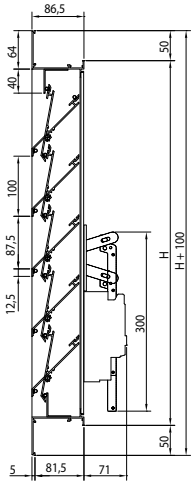
Type 427/1
Manual control
Minimum louvre
height: 290 mm



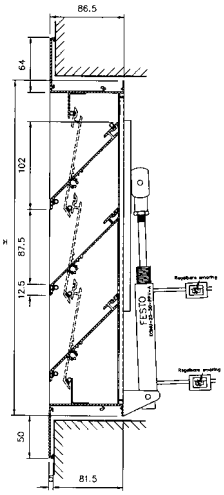
Type 427/2
Cable control up to 5000 mm
Minimum louvre
height: 390 mm



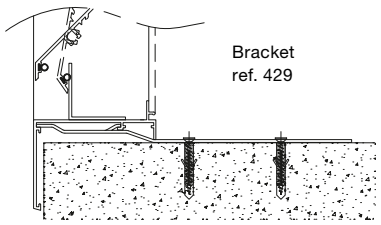
Type 427/3
Ultraflex control up
to max. 7 m
Minimum louvre
height: 690 mm



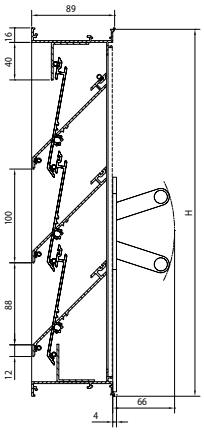
Type 427/4
220 V/24 V motor
control
Minimum louvre
height: 390 mm



Type 427/5
Air pressure control
Minimum louvre
height: 390 mm



Bracket
ref. 429



Without flange
ref. 427ZF

Wall louvre, heavy-duty series, pitch 66

Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 mesh (6 x 6 mm) or insect screen (2.3 x 2.3 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

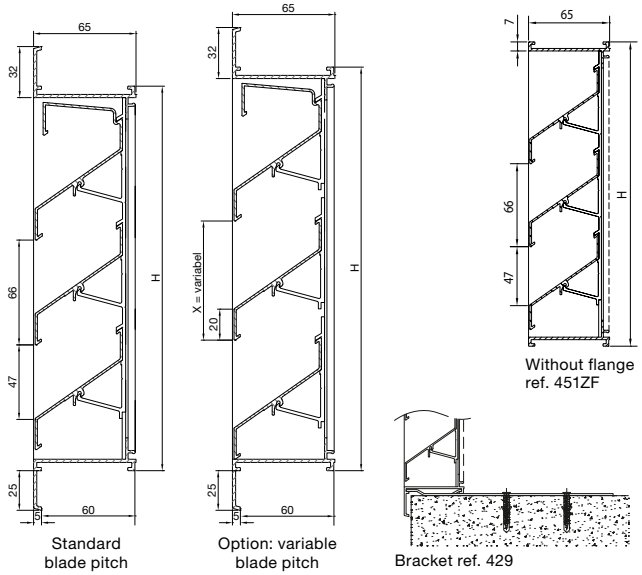
Dimensions
- Blade pitch: 66 mm
- Depth to fit: 60 mm
- Flange size: 25 mm
- Minimum dimensions: 300 x 300 mm

Fixing
- Brackets ref. 429
- For louvres larger than approx. 3 m², a reinforcing mullion is required to suit span and windload

Options
- Water channel
- Drainage profile
- Removable insect mesh
- Filter
- Without flange

Typical applications
- Industrial, commercial with large blade pitch

Cross-sections



Technical specifications

	451
Airflow	(EN 13030)
K-factor (supply)	13,62
K-factor (discharge)	14,91
C_e coefficient	0,271
C_d coefficient	0,259
Technical data	
Visual free area	70 %
Physical free area	49 %

Wall louvre, heavy-duty series with chevron section blades, pitch 66

Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 mesh (6 x 6 mm) or insect screen (2.3 x 2.3 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

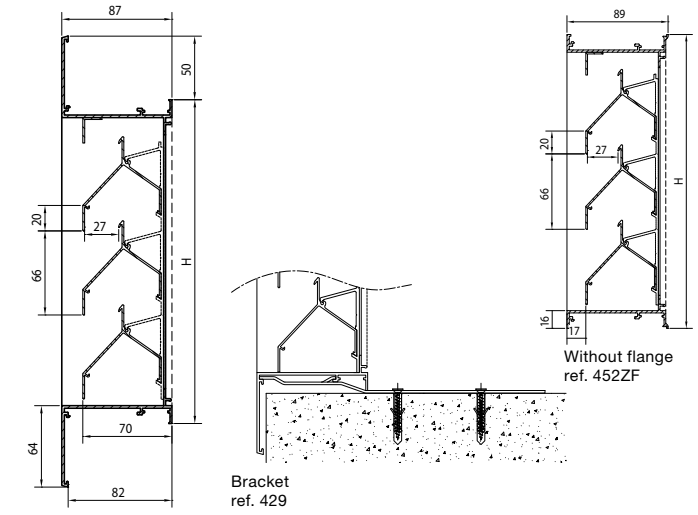
Dimensions
- Blade pitch: 66 mm
- Depth to fit: 82 mm
- Flange size: 50 mm
- Minimum dimensions: 305 x 305 mm

Fixing
- Brackets ref. 429
- For louvres taller than approx. 3 m², a reinforcing mullion is required to suit span and windload

Options
- Water channel, drainage profile, removable insect mesh, filter, without flange

Typical applications
- Application where strength, stick-proof and excellent weatherability are important selection criteria.
- High-voltage cabins
- HVAC
- No see-through

Cross-sections



452V

Technical specifications

	452	452V
Airflow	(EN 13030)	(EN 13030)
K-factor (supply)	66,1	60,1
K-factor (discharge)	79,7	79,9
C_e coefficient	0,123	0,129
C_d coefficient	0,112	0,114
Technical data		
Visual free area	70 %	70 %
Physical free area	41 %	41 %
IP class (louvre with mesh)	IP2XD	IP2XD
HEVAC class	A (1m/s)	A (1,5m/s)

Wall louvre, heavy-duty series,
with aluminium coil blades, pitch 65

Material
- Frame made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Roll-formed aluminium coil blades
- Stainless steel 304 mesh (6 x 6 mm) or insect screen (2.3 x 2.3 mm) on request
- Finishing: powder-coated in any RAL or Syntha Pulvin colour (40 micron)

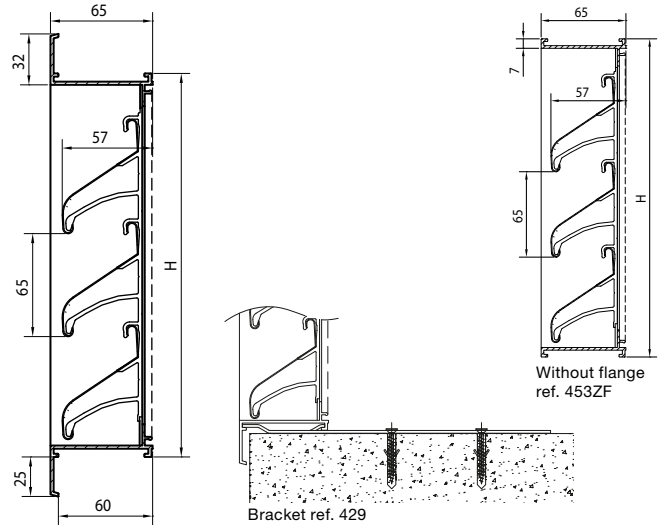
Dimensions
- Blade pitch: 65 mm
- Depth to fit: 60 mm
- Flange size: 25 mm
- Minimum dimensions: 300 x 300 mm

Fixing
- Brackets ref. 429
- For louvres larger than approx. 3 m², a reinforcing mullion is required to suit span and windload

Options
- Water channel
- Drainage profile
- Filter
- Without flange

Typical applications
- Aesthetical

Cross-sections



Technical specifications

	453
Airflow	(EN 13030)
K-factor (supply)	13,32
K-factor (discharge)	17,08
C_e coefficient	0,274
C_d coefficient	0,242
Technical data	
Visual free area	69 %
Physical free area	55 %

High-airflow wall louvres, pitch 60

Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 mesh (6 x 6 mm) or insect screen (2.3 x 2.3 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

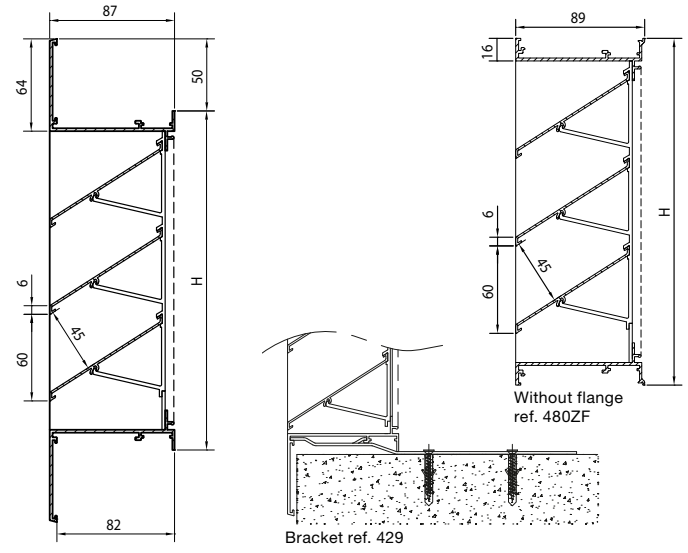
Dimensions
- Blade pitch: 60 mm
- Depth to fit: 82 mm
- Flange size: 50 mm
- Minimum dimensions: 300 x 300 mm

Fixing
- Brackets ref. 429
- For louvres larger than approx. 3 m², a reinforcing mullion is required to suit span and windload

Options
- Water channel
- Drainage profile
- Removable mesh
- Filter
- Without flange

Typical applications
- Underground parkings
- Industrial applications

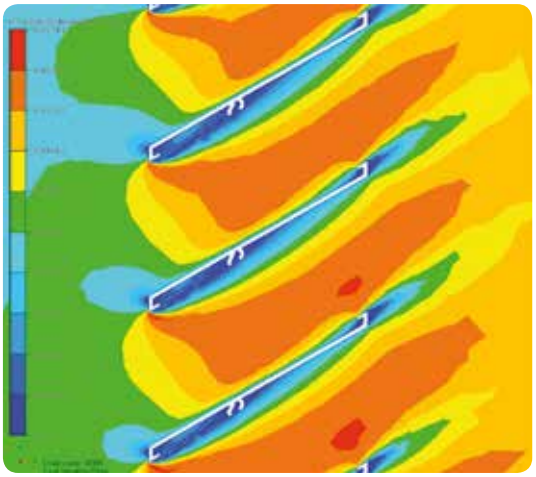
Cross-sections



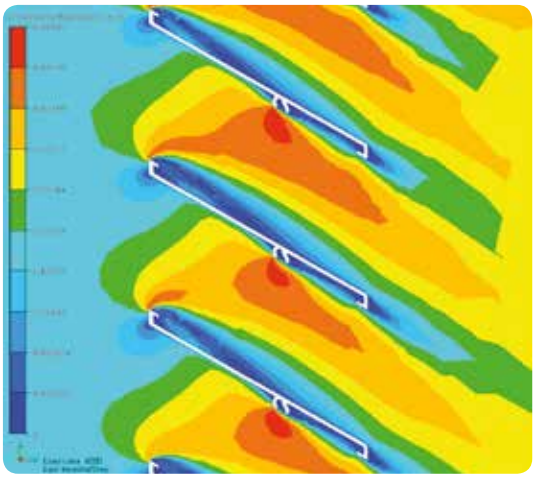
Technical specifications

	480
Airflow	(EN 13030)
K-factor (supply)	4,81
K-factor (discharge)	4,59
C_e coefficient	0,456
C_d coefficient	0,470
Technical data	
Visual free area	90 %
Physical free area	76 %
IP class (louvre with mesh; electrical installation at least 180mm from louvre	IP2XD

AIRFLOW



Supply



Discharge

Wall louvre, heavy-duty series, pitch 50

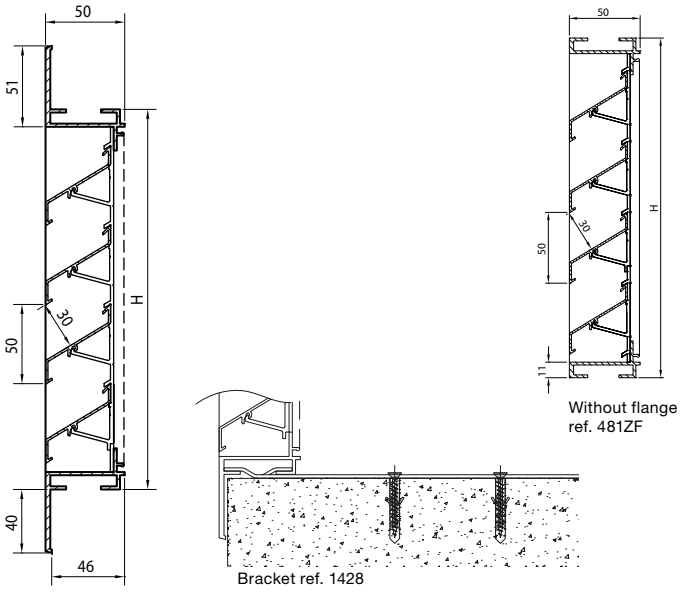
Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 mesh (2.3 x 2.3 mm) or insect screen (6 x 6 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

Dimensions
- Blade pitch: 50 mm
- Depth to fit: 46 mm
- Flange size: 40 mm
- Minimum dimensions: 150 x 150 mm

Fixing
- Brackets ref. 1428
- For louvres larger than approx. 3 m², a reinforcing mullion is required to suit span and windload

Options
- Water channel
- Drainage profile
- Removable mesh
- Filter
- Without flange

Cross-sections



Technical specifications

	481
Airflow	(EN 13030)
K-factor (supply)	8,75
K-factor (discharge)	8,45
C_e coefficient	0,338
C_d coefficient	0,344
Technical data	
Visual free area	70 %
Physical free area	60 %
IP class (louvre with mesh; electrical installation at least 105mm from louvre)	IP2XD

"Storm" wall louvre, pitch 33

Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 mesh (6 x 6 mm) or insect screen (2.3 x 2.3 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

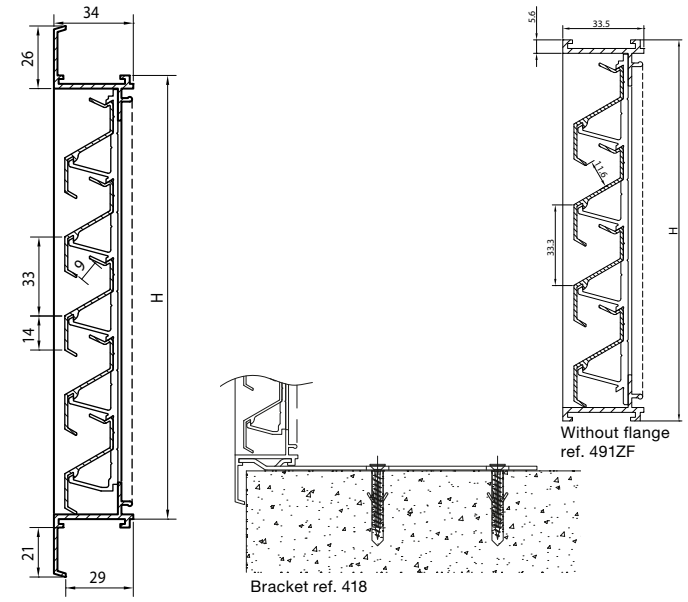
Dimensions
- Blade pitch: 33 mm
- Depth to fit: 29 mm
- Flange size: 21 mm
- Minimum dimensions: 100 x 100 mm

Fixing
- Brackets ref. 418

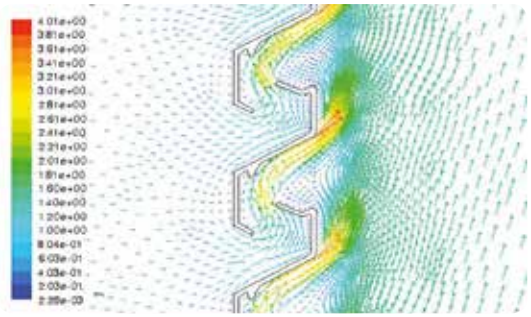
Options
- Water channel
- Removable mesh
- Filter
- Without flange
- Welded blades on frame (only RAL finish)

Typical applications
- Good weatherability combined with low airflow, applications with a lot of wind, coastal area
- Snow resistant

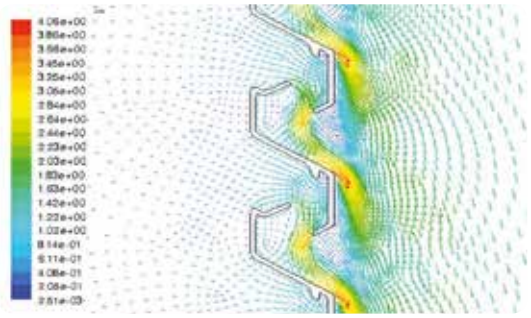
Cross-sections



AIRFLOW



Supply



Discharge

Technical specifications

	491
Airflow	(EN 13030)
K-factor (supply)	123,5
K-factor (discharge)	118,1
C_e coefficient	0,090
C_d coefficient	0,092
Technical data	
Visual free area	57 %
Physical free area	26 %

Wall louvre, galvanised steel, pitch 34

Material
- Made from steel plate
- Electroplating: 10 micron FeZn12C
- Steel mesh (5 x 5 mm)
- Finishing: no powder-coating possible

Dimensions
- Blade pitch: 34 mm
- Depth to fit: 28 mm
- Flange size: 25 mm
- No made to measure

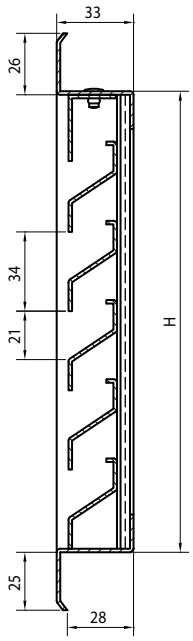
Typical applications
- Basic louvre
- Economical solution
- No power-coating possible
- Stronger than aluminium
- Anti-vandalism
- Sports centre

Stock models

Dimensions	Galvanised steel
200 x 200	•
300 x 300	•
400 x 200	•

Remark: only available in above mentioned sizes.

Cross-section



Technical specifications

	511
Airflow	(EN 13030)
K-factor (supply)	92,91
K-factor (discharge)	84,73
C_e coefficient	0,104
C_d coefficient	0,109
Technical data	
Visual free area	61 %
Physical free area	43 %

Wall louvre, heavy-duty series, galvanised steel, pitch 50

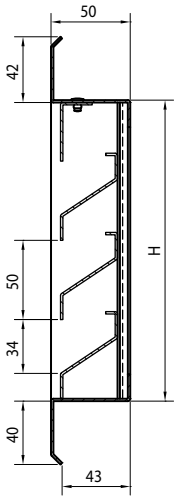
Material
- Made from steel plate
- Electroplating: 10 micron FeZn12C
- Finishing: powder coating in any RAL or Syntha PulvinR colour (min 40 microns)
- Steel mesh (13 x 13 mm)

Dimensions
- Blade pitch: 50 mm
- Depth to fit: 43 mm
- Flange size: 40 mm
- Minimum dimensions: 200 x 200 mm
- Maximum dimensions: 2000 x 2000 mm

Fixing
- Brackets pre-fitted to the frame

Typical applications
- Basic louvre
- Economical solution
- Containers

Cross-section



Stock models

Dimensions	Galvanised steel
400 x 400	•
500 x 500	•
600 x 600	•
1000 x 1000	•

Remark: available in standard sizes and made-to-measure.

Technical specifications

	521
Airflow	(EN 13030)
K-factor (supply)	24,21
K-factor (discharge)	21,26
C_e coefficient	0,203
C_d coefficient	0,217
Technical data	
Visual free area	68 %
Physical free area	47 %

Wall louvre, stainless steel, pitch 50

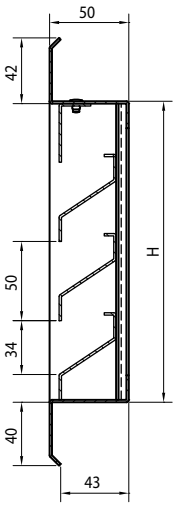
Material
- Made from stainless steel 316 L
- Stainless steel 304 mesh (6 x 6 mm)

Dimensions
- Blade pitch: 50 mm
- Depth to fit: 43 mm
- Flange size: 40 mm
- Minimum dimensions: 200 x 200 mm

Fixing
- Brackets pre-fitted to the frame

Typical applications
- Food sector
- Chemical sector
- Hospitals
- Environment with high corrosion

Cross-section



Technical specifications

	621
Airflow	(EN 13030)
K-factor (supply)	26,27
K-factor (discharge)	22,59
C_e coefficient	0,195
C_d coefficient	0,210
Technical data	
Visual free area	68 %
Physical free area	47 %

Surface-mounted wall louvre, pitch 33

Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 insect screen (2.3 x 2.3 mm) or mesh (6 x 6 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

Dimensions
- Blade pitch: 33,3 mm
- Thickness: 29 mm
- Minimum dimensions: 120 x 120 mm

Fixing
- Screws and plugs are included
- Louvre 432 is the removable version of louvre 431 *(pag. 31)*

Options
- Burglarproof louvre 431WK2 *(ref page 54)*

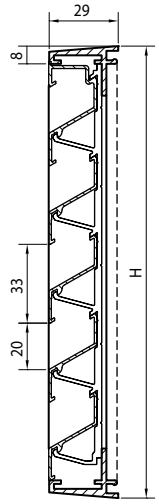
Typical applications
- Fixed louvre
- Nightcooling
- Standard surface-mounted louvre

Nightcooling

Stock models

Dimensions	Satin anodised	RAL 9010
165 x 165 mm	•	•
225 x 225 mm	•	•
325 x 325 mm	•	•
425 x 425 mm	•	
525 x 525 mm	•	

Cross-section



Technical specifications

	431
Airflow	(EN 13030)
K-factor (supply)	23,56
K-factor (discharge)	25,51
C_e coefficient	0,206
C_d coefficient	0,198
Technical data	
Visual free area	59 %
Physical free area	45 %
IP class (louvre with mesh; electrical installation at least 100mm from louvre)	IP2XD

Surface-mounted, glazed-in louvre with frame

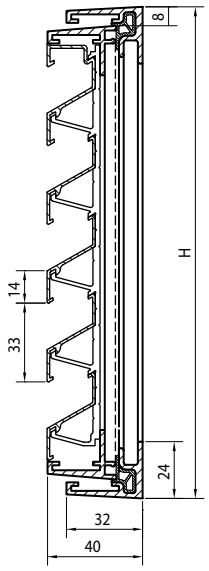
Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 insect screen (2.3 x 2.3 mm) or mesh (6 x 6 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

Dimensions
- Blade pitch: 33 mm
- Thickness: 40 mm
- Minimum dimensions: 136 x 136 mm
- Maximum dimensions: 1500 x 1500 mm

Fixing
- Screws and plugs are included

Typical applications
- Removable louvre

Cross-section



Technical specifications	
	432
Airflow	(EN 13030)
K-factor (supply)	23,56
K-factor (discharge)	25,51
C_e coefficient	0,206
C_d coefficient	0,198
Technical data	
Visual free area	59 %
Physical free area	45 %

Stock models

Length x Height (L) x (H)	Satin anodised	RAL 9010	RAL 8019
Extractor hood louvres			
173 x 173 mm	•	•	•
210 x 210 mm	•	•	•
246 x 246 mm	•	•	•
Pressure-relief louvres			
328 x 328 mm	•		
428 x 428 mm	•		
528 x 528 mm	•		

Pressure-relief damper

Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Finishing: anodized in satin colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)
- Extractor hood louvres: the blades open at the same time
- Pressure-relief louvres: the blades open individually
- Without insect screen
- Opening pressure: 10 Pa standard, 20 Pa with enhanced blade

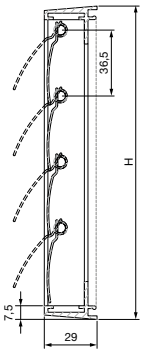
Dimensions
- The size is fixed with a minimum height of 228 mm + multiple of 100 mm
- In length, the blades are in one piece up to 800 mm

Fixing
- Invisible fixing
- Screws and plugs are included

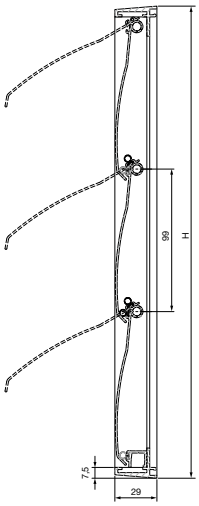
Typical applications
- Extractor hood
- Drying cabinet

Cross-sections

Renson® Technology extractor hood louvre



Pressure-relief louvre



Glazed-in louvre, pitch 33

Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 insect screen (2.3 x 2.3 mm) or mesh (6 x 6 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

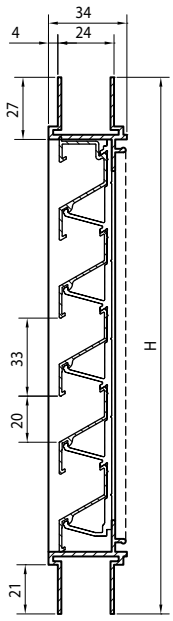
Dimensions
- Blade pitch: 33,3 mm
- Frame thickness: 24, 28 or 32 mm
- Minimum dimensions: 130 x 130 mm
- Specify on ordering: width x height in mm (overall dimensions)

Fixing
- Suitable for 24, 28, 32 mm glazing sections. Other thicknesses on request.

Options
- Water channel
- Removable mesh
- Filter
- Pressure-relief louvre

Typical applications
- Nightcooling

Cross-section

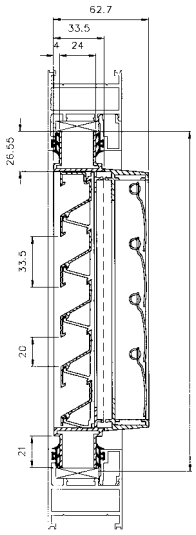


Technical specifications

	414
Airflow	(EN 13030)
K-factor (supply)	23,56
K-factor (discharge)	25,51
C_e coefficient	0,206
C_d coefficient	0,198
Technical data	
Visual free area	59 %
Physical free area	45 %
IP class (louvre with mesh; electrical installation at least 100mm from louvre)	IP2XD

Pressure-relief grille

Combination of a pressure-relief louvre type 433 and a louvre type 414



Controllable louvre

Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 mesh (2.3 x 2.3 mm) or insect screen (6 x 6 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

Dimensions
- Blade pitch: 33,3 mm
- Frame thickness: 24, 28 or 32 mm
- Minimumdimensions: 130x130 mm
- Specify on ordering: width x height in mm (overall dimensions)
- Controllable in combination with 100, 130 and 150 mm hit-and-miss ventilators or with insulated aluminium door (414/D) (max size 800 x 800 mm H)

Fixing
- Suitable for 24, 28, 32 mm glazing sections. Other thicknesses on request.

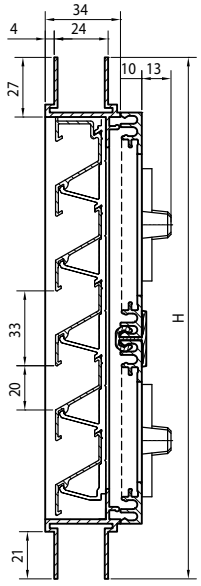
Controloptions (1 controlpanel per module)
- Knob control (standard)
- Rod
- Cord
- Motor

414VA

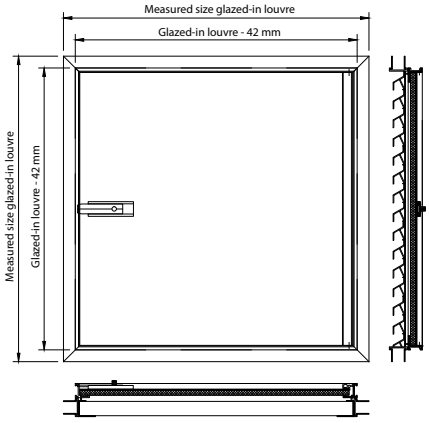
414/D

Cross-sections

414VA



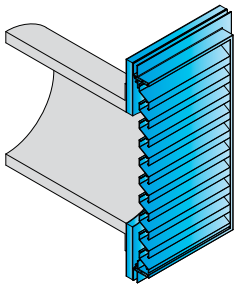
414/D

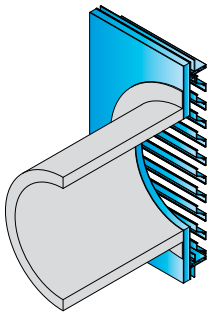


Technical specifications

	414VA
Airflow	(EN 13030)
K-factor (supply)	28,13
C_e coefficient	0,189
(For combination with 130 and 150 mm vents)	

414THF < Glazed-in louvres





Thermally insulated window grille

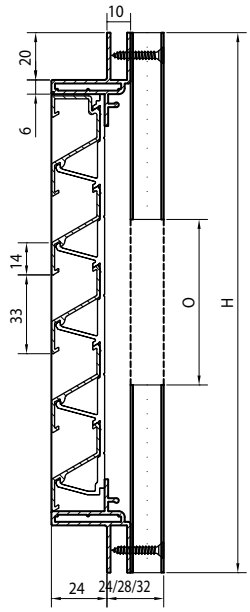
Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)
- Thermal insulation panel with PUR foam composite
- Sandwichpanel can also be powdercoated on both sides

Dimensions
- Blade pitch: 33,3 mm
- Minimum size: 130 x 130mm
- Flange width: 24, 28 and 32

Fixing
- Suitable for 24, 28, 32 mm glazing sections. Other thicknesses on request.

Typical applications
- Curtain walls
- Thermally insulated air duct

Cross-section



Technical specifications *(for cut-out part of thermal insulation)*

	414THF
Airflow	(EN 13030)
K-factor (supply)	23,56
K-factor (discharge)	25,51
C_e coefficient	0,206
C_d coefficient	0,198
Technical data	
Visual free area	59 %
U-value	1,1 W/m²K

Glazed-in louvre with chevron section blades, pitch 20

Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 mesh (6 x 6 mm) or insect screen (2.3 x 2.3 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

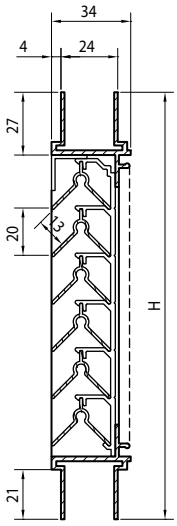
Dimensions
- Blade pitch: 20 mm
- Frame thickness: 24, 28 or 32 mm
- Minimum dimensions: 130 x 130 mm
- Specify on ordering: width x height in mm (Overall dimensions)

Fixing
- Suitable for 24, 28, 32 mm glazing sections. Other thicknesses on request.

Opties
- Water channel
- Drainage profile
- Removable mesh
- filter

Typical applications
- Window Louvre with no look-through and stick-proof

Cross-section



Technical specifications

	415
Airflow	(EN 13030)
K-factor (supply)	33,80
K-factor (discharge)	33,80
C_e coefficient	0,172
C_d coefficient	0,172
Technical data	
Visual free area	93 %
Physical free area	39 %
IP class	IP2XD

415VA < Glazed-in louvres

Controllable louvre with chevron section blade

Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 mesh (6 x 6 mm) or insect screen (2.3 x 2.3 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

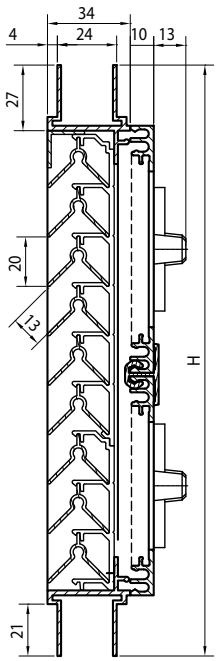
Dimensions
- Blade pitch: 20 mm
- Frame thickness: 24, 28 or 32 mm
- Specify on ordering: width x height in mm (overall dimensions)
- Controllable in combination with 100, 130 and 150 mm hit-and-miss ventilators or with insulated aluminium door (415/D)
- Minimum dimensions: 130 x 130 mm

Fixing
- Suitable for 24, 28, 32 mm glazing sections. Other thicknesses on request.

Controloptions (1 controlpanel per module)
- Standard: knob control
- Rod
- Cord
- Motor

Typical applications
- Classrooms

Cross-section



Technical specifications

	415VA
Airflow	(EN 13030)
K-factor (supply)	34,24
C_e coefficient	0,171
(For combination with 100, 130 and 150 vents)	

Glazed-in louvre, heavy-duty series, pitch 50

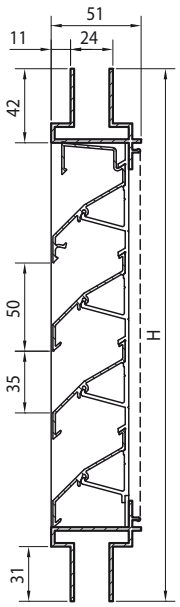
Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 insect screen (2.3 x 2.3 mm) or mesh (6 x 6 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

Dimensions
- Blade pitch: 50 mm
- Frame thickness: 24 or 28 mm
- Specify on ordering: full width x height in mm
- Minimum dimensions: 220 x 220 mm

Fixing
- Suitable for 24, 28, 32 mm glazing sections. Other thicknesses on request.

Options
- Water channel
- Drainage profile
- Removable mesh
- Filter

Cross-section



Technical specifications

	424
Airflow	(EN 13030)
K-factor (supply)	12,57
K-factor (discharge)	8,91
C_e coefficient	0,282
C_d coefficient	0,335
Technical data	
Visual free area	70 %
Physical free area	49 %
IP class (louvre with mesh; electrical installation at least 105mm from louvre)	IP2XD

Glazed-in louvre with chevron section blades, heavy-duty series, pitch 33

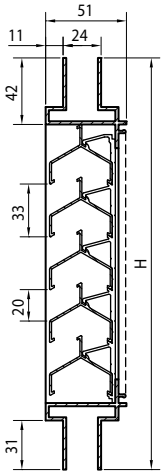
Materiaal
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 insect screen (2.3 x 2.3 mm) or mesh (6 x 6 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

Dimensions
- Blade pitch: 33,3 mm
- Frame thickness: 24 or 28 mm
- Specify on ordering: full width x height in mm
- Minimum dimensions: 220 x 220 mm

Fixing
- Suitable for 24, 28, 32 mm glazing sections. Other thicknesses on request.

Options
- Water channel
- Drainage profile
- Removable mesh
- Filter
- Controllable louvre 428/VA

Cross-section



Technical specifications

	428
Airflow	(EN 13030)
K-factor (supply)	61,04
K-factor (discharge)	61,04
C_e coefficient	0,128
C_d coefficient	0,128
Technical data	
Visual free area	59 %
Physical free area	43 %

High-airflow glazed-in louvre, pitch 60

Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 mesh (6 x 6 mm) or insect screen (2.3 x 2.3 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

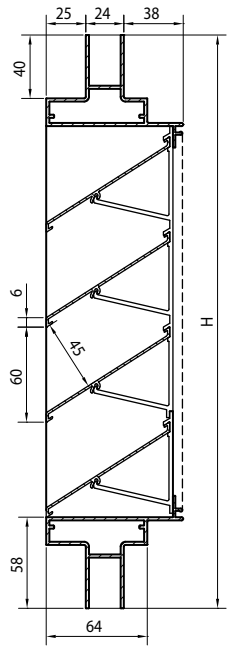
Dimensions
- Blade pitch: 60 mm
- Frame thickness: 24 mm (frame thickness of 8 to 50 mm on request)
- Specify on ordering: full width x height in mm
- Minimum dimensions: 385 x 385 mm

Fixing
- Suitable for 24, 28, 32 mm glazing sections. Other thicknesses on request.

Options
- Water channel
- Drainage profile
- Removable mesh
- Filter

Typical applications
- Applications with request for high air-flow

Cross-section



Technical specifications

	483
Airflow	(EN 13030)
K-factor (supply)	4,81
K-factor (discharge)	4,52
C_e coefficient	0,456
C_d coefficient	0,470
Technical data	
Visual free area	90 %
Physical free area	76 %

Glazed-in louvre, heavy-duty series, pitch 50

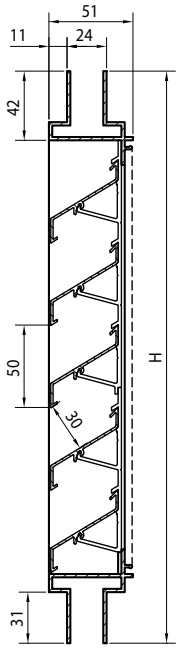
Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 insect screen (2.3 x 2.3 mm) or mesh (6 x 6 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

Dimensions
- Blade pitch: 50 mm
- Frame thickness: 24 or 28 mm
- Specify on ordering: full width x height in mm
- Minimum dimensions: 220 x 220 mm

Fixing
- Suitable for 24, 28, 32 mm glazing sections. Other thicknesses on request.

Options
- Water channel
- Removable mesh
- Filter
- Controllable type 484/VA – same build as type 414/VA

Cross-section



Technical specifications

	484
Airflow	(EN 13030)
K-factor (supply)	8,75
K-factor (discharge)	8,45
C_e coefficient	0,338
C_d coefficient	0,344
Technical data	
Visual free area	70 %
Physical free area	60 %
IP class (louvre with mesh; electrical installation at least 100mm from louvre)	IP2XD

Glazed-in "storm" louvre, pitch 33

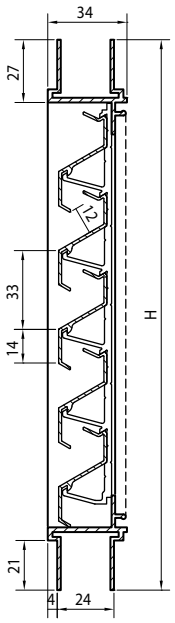
Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 mesh (6 x 6 mm) or insect screen (2.3 x 2.3 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

Dimensions
- Blade pitch: 33,3 mm
- Frame thickness: 24, 28 or 32 mm
- Specify on ordering: full width x height in mm
- Minimum dimensions: 130 x 130 mm

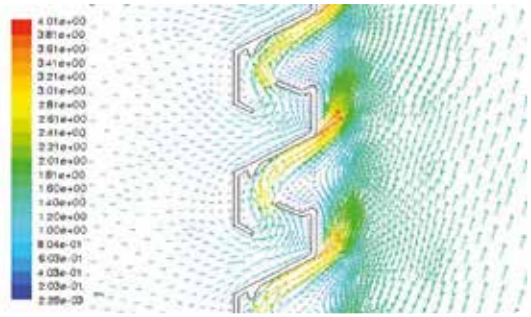
Fixing
- Suitable for 24, 28, 32 mm glazing sections. Other thicknesses on request.

Options
- Water channel
- Drainage profile
- Removable mesh
- Filter
- Welded blades on frame (only RAL finish)

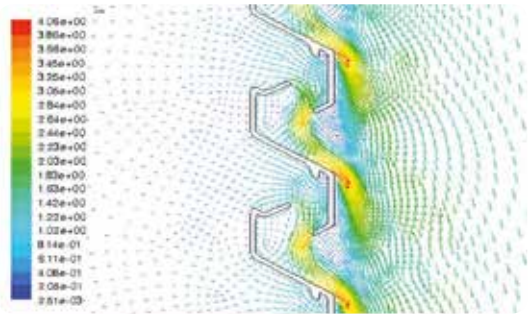
Cross-section



AIRFLOW



Supply



Discharge

Technical specifications

	494
Airflow	(EN 13030)
K-factor (supply)	123,5
K-factor (discharge)	118,1
C_e coefficient	0,090
C_d coefficient	0,092
Technical data	
Visual free area	57 %
Physical free area	26 %

Glazed-in louvre, extra-heavy-duty series

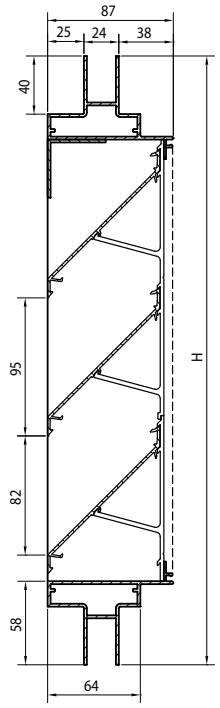
Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 mesh (6 x 6 mm) or insect screen (2.3 x 2.3 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

Dimensions
- Blade pitch: 95 mm
- Depth to fit: 81.5 mm
- Frame thickness: 24 mm (frame thickness of 8 to 50 mm on request)
- Specify on ordering: full width x height in mm
- Minimum dimensions: 385 x 385 mm

Fixing
- Suitable for 24, 28, 32 mm glazing sections. Other thicknesses on request.

Options
- Water channel
- Drainage profile
- Removable mesh
- Filter

Cross-section



Technical specifications

	425GL
Airflow	(EN 13030)
K-factor (supply)	11,41
K-factor (discharge)	11,65
C_e coefficient	0,296
C_d coefficient	0,293
Technical data	
Visual free area	86 %
Physical free area	55 %

Glazed-in louvre with adjustable blades, extra-heavy-duty series

Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 mesh (6 x 6 mm) or insect screen (2.3 x 2.3 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

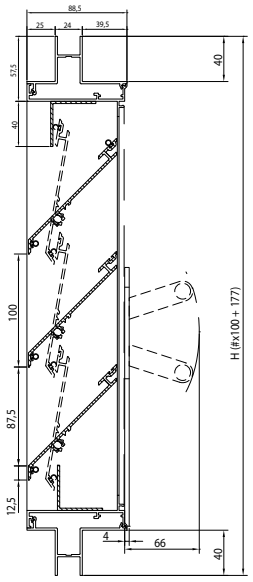
Dimensions
- Blade pitch: 95 mm
- Height = (number of blades x 100) + 177 mm
- Maximum width in one piece: 1300 mm
- Frame thickness: 24 mm (frame thickness of 8 to 50 mm on request)
- Specify on ordering: full width x height in mm
- Minimum dimensions: 377 x 377 mm

Fixing
- Suitable for 24, 28, 32 mm glazing sections. Other thicknesses on request.

Control options
- Manual 427/1
- Cable 427/2
- Ultraflex 427/3
- 220V/24V motor 427/4
- Air pressure 427/5

For more information on the different control modes, please refer to page 18.

Cross-section



Technical specifications

	427GL
Airflow	(EN 13030)
K-factor (supply)	11,41
K-factor (discharge)	11,65
C_e coefficient	0,296
C_d coefficient	0,293
Technical data	
Visual free area	86 %
Physical free area	53 %

445/86 < Acoustic louvres

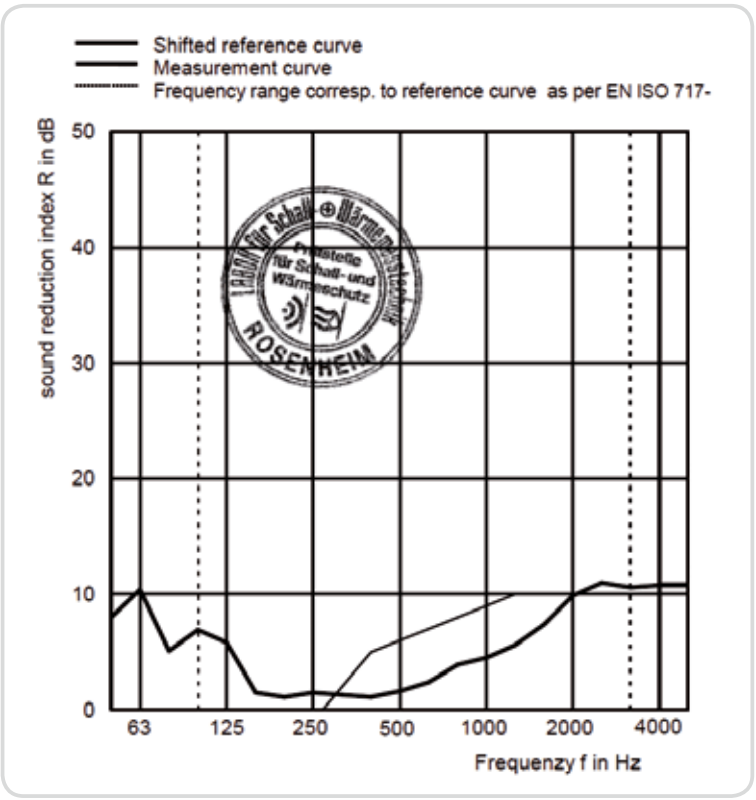
Acoustic wall louvre

Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 mesh (6 x 6 mm) or insect screen (2.3 x 2.3 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)
- 100% stainless

Dimensions
- Blade pitch: 60 mm
- Dimensions: depth to fit: 81.5mm
- Frame thickness: 50mm
- Height in steps of 60 mm (space between blades)
- Minimum dimensions: 170x170mm

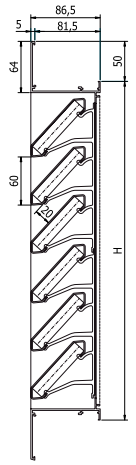
Fixing
- Brackets ref. 429

Options
- Water channel
- Drainage profile
- Removable mesh



The acoustic properties of the RENSON®-blades have been tested by the internationally recognized laboratory, IFT Lab Rosenheim (Germany)

Cross-section



Technical specifications

	445/86
Airflow	(EN 13030)
K-factor (supply)	9,22
K-factor (discharge)	13,29
C_e coefficient	0,329
C_d coefficient	0,274
Comfort	(EN ISO 140-10, EN ISO 717-1)
Sound reduction in open position R_w ($C;C_{tr}$)	6 (-1;-2) dB
Technical data	
Visual free area	77 %
Physical free area	34 %
Depth to fit	86 mm

Sound reduction in dB per frequency

	445/86
f in Hz	R in dB
63	10,4
125	5,8
250	1,5
500	1,6
1000	4,5
2000	9,9
4000	10,8

446/150, 446/225, 446/300 < Acoustic louvres

446/150

446/225

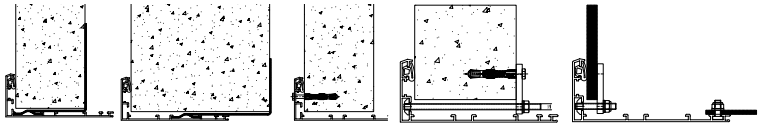
446/300

Acoustic wall louvre, blade pitch 150 mm

Material
- Aluminum profiles AlMgSi 0,5 (according to EN 12020-2)
- Acoustic insulation material: non-flammable mineral wool
- Stainless steel mesh 304 6x6mm
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)
- 100% stainless

Dimensions
- Blade pitch: 150 mm
- Depth to fit: 446/150: 143 mm
  446/225: 218 mm
  446/300: 293 mm
- Frame thickness: 55mm
- Height in steps of 150 mm (space between blades)
- Minimum dimensions: 446/150: 300 W x 410 H
  446/225: 300 W x 500 H
  446/300: 300 W x 410 H

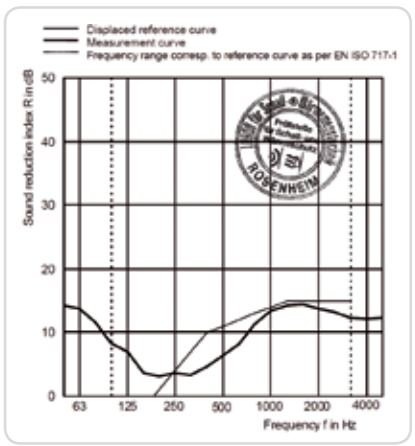
Fixing
- Fixing bracket: installation with bracket no. 1428 possible
  - position 1: up to 100 mm wall thickness
  - position 2: for wall thickness up to 200 mm
- Screws: Fix the screws from the outside through the flange (screw holes upon request)
- Pull bracket: fixation with a long pull bracket and expander bolts for wall mounting or a short pull bracket for connection to a ventilation channel (pull bracket rod optional)
- Fixation on the backside: by screwing a hammerhead bolt to a structural backframe.
- For louvres 446/300 larger than 3m², a backframe structure is required



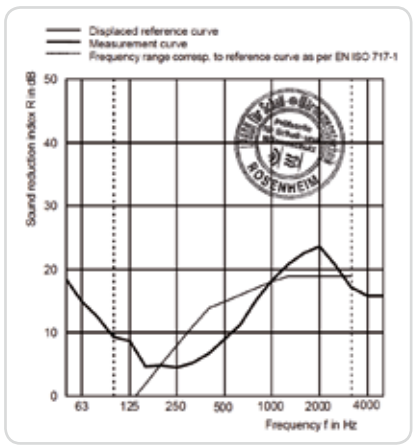
Fixing bracket pos. 1 | Fixing bracket pos.2 | Screw from the outside | Long pull bracket | Short pull bracket | Fastening backside with hammerhead bolts

Sealing possibilities
- Sealing gasket: suitable for reduction of contact sounds (option sealing gasket)
- PU sealing tape: against water infiltration (option PU sealing tape)
- Silicone seal: seal the flange on the outside with silicone. (option silicone)

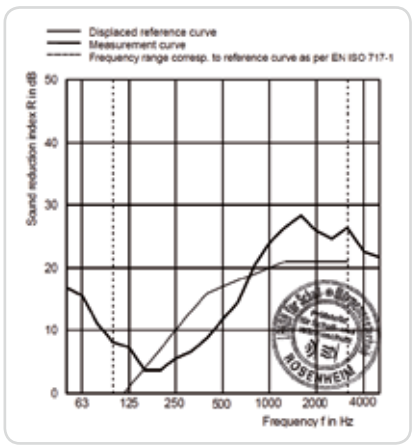
Options
- Drainage profile



446/150

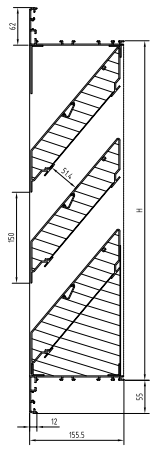


446/225

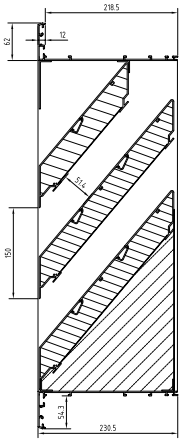


446/300

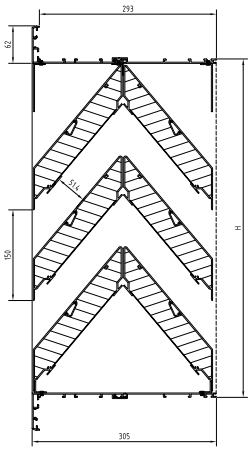
Cross-sections



446/150

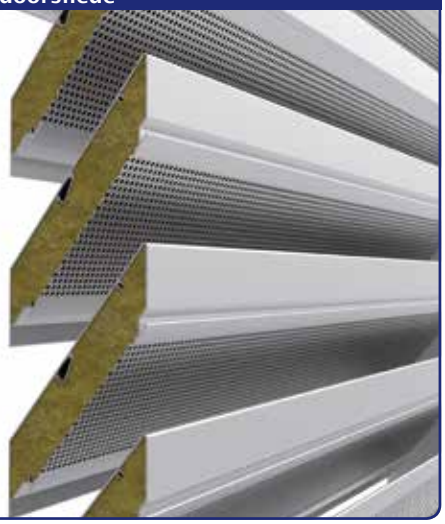


446/225



446/300

Detaildoorsnede



Technical specifications

	446/150	446/225	446/300
Airflow		(EN 13030)	
K-factor (supply)	38,46	37,30	45,93
K-factor (discharge)	34,48	41,90	45,93
C_e coefficient	0,161	0,164	0,148
C_d coefficient	0,169	0,150	0,148
Comfort		(EN ISO 140-10, EN ISO 717-1)	
Sound reduction in open position R_w ($C;C_{tr}$)	11 (-1;-2) dB	15 (-1;-4) dB	17 (-1;-4) dB
Technical data			
Visual free area	54 %	54 %	54 %
Physical free area	34,3 %	34,3 %	34,3 %
Watertightness	A (1 m/s)	A (1 m/s)	A (1 m/s)
Depth to fit	150 mm	225 mm	300 mm

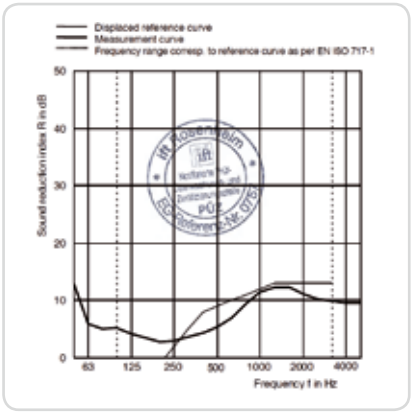
Sound reduction in dB per frequency

	446/150	446/225	446/300
f in Hz	R in dB	R in dB	R in dB
63	13,8	15,0	15,7
125	6,9	8,7	7,3
250	3,6	4,5	5,5
500	6,4	9,1	11,8
1000	13,4	18,2	24,0
2000	13,8	23,7	25,9
4000	12,1	15,8	22,6

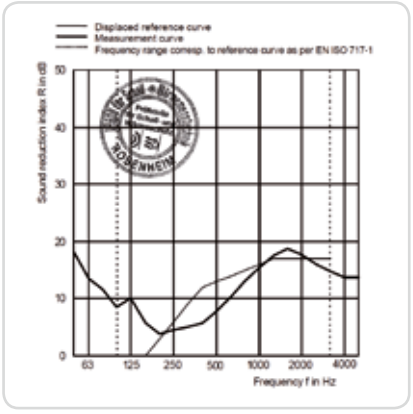
The acoustic properties of the RENSON®-blades have been tested by the internationally recognized laboratory, IFT Lab Rosenheim (Germany)

Water resistance tested by BSRIA laboratories.

447/150, 447/225 < Acoustic louvres



447/150



447/225

Acoustic wall louvre, blade pitch 170 mm

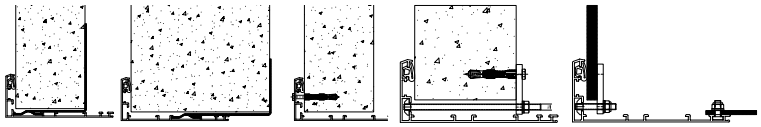
Material

- Aluminum profiles AlMgSi 0,5 (according to EN 12020-2)
- Acoustic insulation material: non-flammable mineral wool
- Stainless steel mesh 304 6x6mm
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

Dimensions

- Blade pitch: 170 mm
- Depth to fit: 447/150: 143 mm
  447/225: 218 mm
- Frame thickness: 55mm
- Height in steps of 150 mm (space between blades)
- Minimum dimensions: 447/150: 300 W x 430 H
  447/225: 300 W x 520 H

- Fixing bracket: installation with bracket no. 1428 possible
  - position 1: up to 100 mm wall thickness
  - position 2: for wall thickness up to 200 mm
- Screws: Fix the screws from the outside through the flange (screw holes upon request)
- Pull bracket: fixation with a long pull bracket and expander bolts for wall mounting or a short pull bracket for connection to a ventilation channel (pull bracket rod optional)
- Fixation on the backside: by screwing a hammerhead bolt to a structural backframe.



Fixing bracket pos. 1 | Fixing bracket pos.2 | Screw from the outside | Long pull bracket | Short pull bracket | Fastening backside with hammerhead bolts

Sealing possibilities

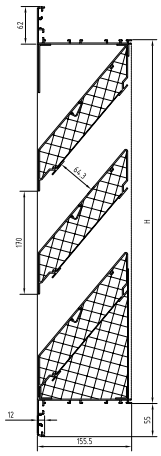
- Sealing gasket: suitable for reduction of contact sounds (option sealing gasket)
- PU sealing tape: against water infiltration (option PU sealing tape)
- Silicone seal: seal the flange on the outside with silicone. (option silicone)

Options

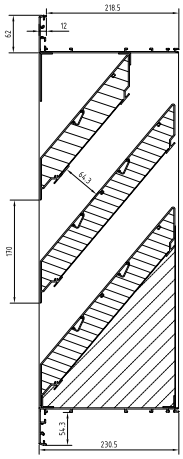
- Drainage profile

The acoustic properties of the RENSON®-blades have been tested by the internationally recognized laboratory, IFT Lab Rosenheim (Germany)

Cross-sections

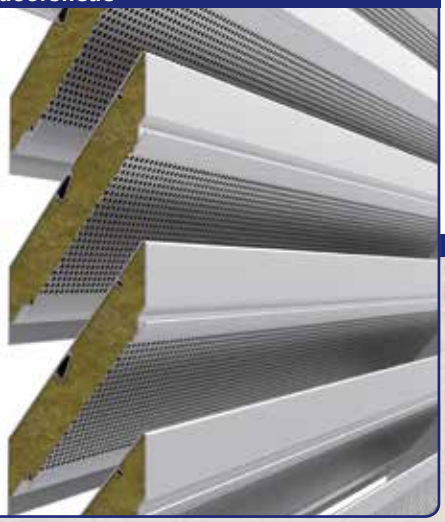


447/150



447/225

Detaildoorsnede



Technical specifications

	447/150	447/225
Airflow	(EN 13030)	
K-factor (supply)	25,46	28,58
K-factor (discharge)	25,15	30,88
C_e coefficient	0,198	0,187
C_d coefficient	0,200	0,180
Comfort	(EN ISO 140-10, EN ISO 717-1)	
Sound reduction in open position R_w ($C;C_{tr}$)	9 (0;-1) dB	13 (-1;-3) dB
Technical data		
Visual free area	59 %	59 %
Physical free area	37 %	37 %
Depth to fit	150 mm	225 mm

Sound reduction in dB per frequency

	447/150	447/225
f in Hz	R in dB	R in dB
63	5,9	13,6
125	4,2	10,1
250	2,9	4,6
500	5,4	7,8
1000	11,5	15,4
2000	11,2	17,8
4000	9,6	13,7

468AK/1 - front view

468AK/1 - rear view

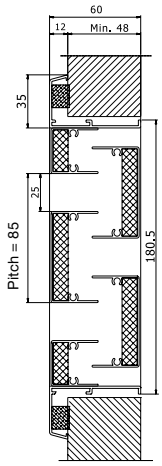
Interior acoustic wall louvre

Material
- Made from aluminium sec tions: AlMgSi 0.5 (according to EN 12020-2)
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)
- Sound absorbing material: synthetic foam
- Labyrinth type blades

Dimensions
- Minimum dimensions: 200 x 180 mm H
- Maximum dimensions: 800 x 775 mm H
- Height in 85 mm steps (blade pitch)
- Depth to fit: 48 mm
- Flange size: 30 mm

Typical applications
- Schools
- Hospitals
- Elderly homes

Cross-section



Technical specifications

	447/150	
Airflow	(EN 13030)	Comfort - $D_{n,e,w}$ ($C;C_{tr}$)
K-factor (supply)	86,85	
K-factor (discharge)	89,35	
C_e coefficient	0,107	
C_d coefficient	0,106	
Q at 2 Pa – louvre 292 x 180 mm	25 m³/h	30 (-1;-2) dB
Q at 2 Pa – louvre 382 x 265 mm	50 m³/h	28 (-1;-2) dB
Q at 2 Pa – louvre 432 x 350 mm	75 m³/h	26 (-1;-2) dB
Q at 2 Pa – louvre 452 x 435 mm	100 m³/h	25 (-1;-2) dB
Comfort	(EN ISO 140-10, EN ISO 717-1)	
Sound reduction R_w ($C;C_{tr}$)	8 (-1;-2) dB	
Technical data		
Visual free area	29 %	
Physical free area	29 %	
Ip class (louvre with mesh)	IP2XD	

Burglarproof louvre class WK2 (RC2)

Material
- Made from aluminum profiles AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel insect mesh 304 - 2.3 x 2.3 mm or stainless steel mesh 304 6 x 6 mm upon request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

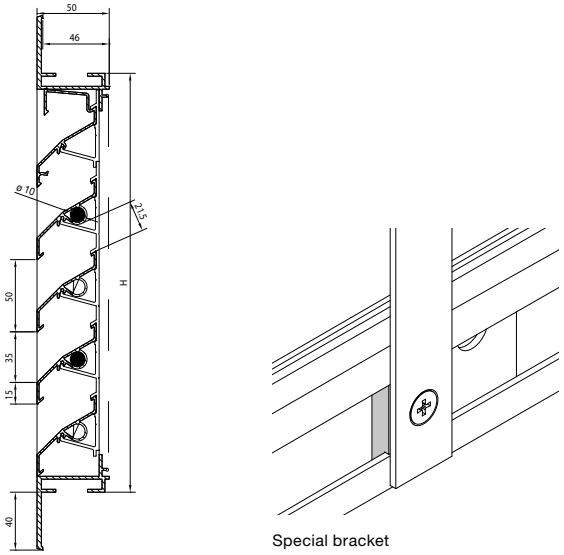
Dimensions
- Blade pitch: 50 mm
- Depth: 46 mm
- Flange size: 40 mm
- Minimum dimensions: 200 x 200 mm

Options
- Water channel
- Drainage profile

Features
- Aesthetical and functional high-quality louvre:
  - Burglarproof according to class WK2 (RC2), certificate surface 0.44 <o <1.225 m2, in accordance to prEN 1627 till 1630 (May 2009)
- Easy to install using brackets.
- 100% stainless:
  - Entirely assembled of aluminum profiles
  - All connecting pieces in aluminum and stainless steel

Typical applications
- Schools
- Shops
- Apartments

Cross-sections

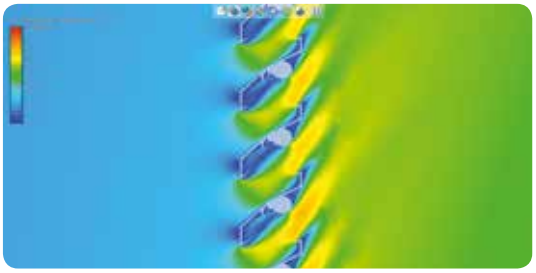


Special bracket

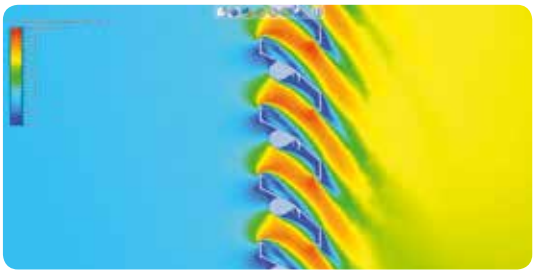
Technical specifications

	421WK2
Airflow	(EN 13030)
K-factor (supply)	13,82
K-factor (discharge)	12,85
C_e coefficient	0,269
C_d coefficient	0,279
Technical data	
Visual free area	70 %
Physical free area	43 %
Aesthetically identical to the standard louvre 421	

AIRFLOW



Supply



Discharge

Burglarproof louvre class WK2 (RC2)

Material
- Made from aluminum profiles AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel insect mesh 304 - 2.3 x 2.3 mm or stainless steel mesh 304 6 x 6 mm upon request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

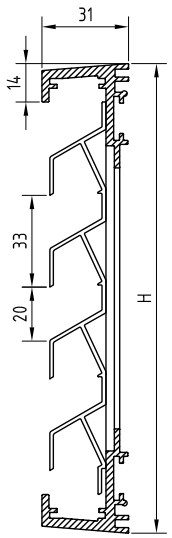
Dimensions
- Blade pitch: 33,3 mm
- Thickness: 31 mm
- Minimum dimensions: 200 x 200 mm

Fixing
- By means of burglarproof screws type SecuFast® Pin Hexagon diam. 4,2 x 38 mm A2 (included)

Features
- Aesthetical and functional high-quality louvre:
  - Burglarproof according to class WK2 (RC2), certificate surface 0.44 <o <1.225 m², in accordance with prEN 1627 till 1630 (May 2009)
- 100% stainless:
  - Entirely assembled of aluminum profiles
  - All connecting pieces in aluminum and stainless steel

Typical applications
- Schools
- Shops
- Nightcooling

Cross-section



Technical specifications

	431WK2
Airflow	(EN 13030)
K-factor (supply)	23,56
K-factor (discharge)	25,51
C_e coefficient	0,206
C_d coefficient	0,198
Technical data	
Visual free area	59 %
Physical free area	40,5 %
Aesthetically identical to the standard louvre 431	

Burglarproof louvre class WK4 (RC4)

Material
- Made from aluminum profiles AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel insect mesh 304 - 2.3 x 2.3 mm or stainless steel mesh 304 6 x 6 mm upon request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)
- Every second blade has a bi-chromatised steel bar of diam. 20 mm

Dimensions
- Blade pitch: 50 mm
- Depth: 50 mm
- Frame without flange
- Minimum dimensions: 200 x 200 mm
- Maximum width: 2800 mm

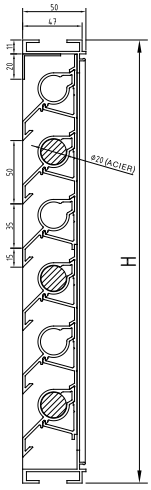
Fixing
- The steel bars of the louvre need to be built into the wall.
- Frame without flange

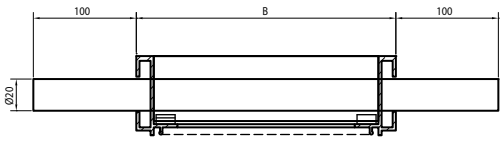
Options
- Water channel
- Filter

Features
- Aesthetical and functional high-quality louvre:
  - Burglarproof class WK4 (RC4), in accordance with prEN 1627 till 1630 (May 2009).
  - Official test report No. DE78A982

Typical applications
- Banks, IT rooms, museums and jewellers.

Cross-sections





Technical specifications

	423
Airflow	(EN 13030)
K-factor (supply)	27,06
K-factor (discharge)	27,28
C_e coefficient	0,193
C_d coefficient	0,192
Technical data	
Visual free area	70 %
Physical free area	22 %
IP class	IP2XD

440 < Louvre box

Turret

Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)
- Cover plate
  - In aluminium sheet
  - Acoustic version optional

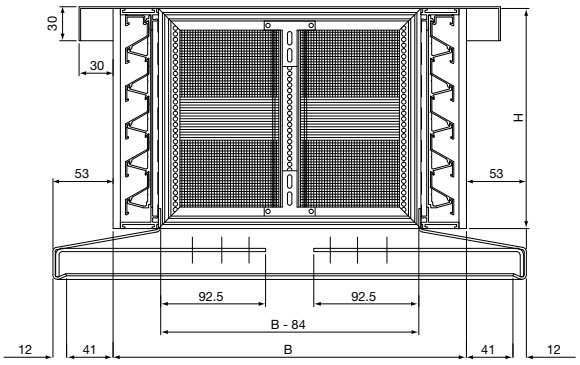
Dimensions
- Maximum dimensions in one piece up to 4m² ground surface
- Larger sizes possible on request

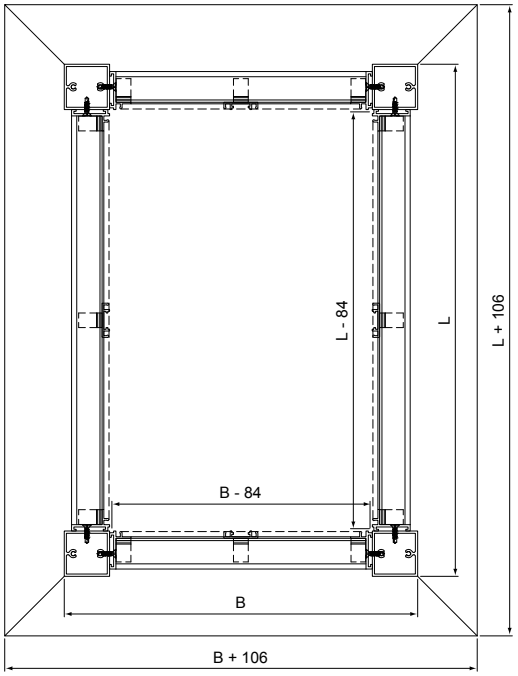
Types
All blade types possible, for example:
440/11: with blade n° 8 of louvre 411 (blade pitch 33 mm)
440/21: with blade n° 17 of louvre 421 (blade pitch 50 mm)

Options
- Waterchannel

Typical applications
- Office ventilation (Nightcooling)
- Manufacturing plants

Cross-sections





RENSON®
Creating healthy spaces

Cavity wall ventilator

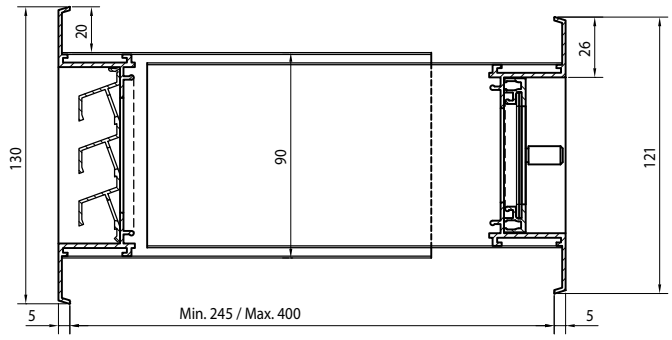
Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 insect screen (2.3 x 2.3 mm)
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)
- Connecting sleeve made from galvanised steel

Dimensions
- Size to fit: 265 x 90 mm (L x H)
- Flange size: 21 mm
- Controllable internal louvre
- Adjustable sleeve for wall thickness of 245 till 400 mm

Options
- Optional sound absorbing material

Fixing
- Spring clips are included

Cross-section



Stock models

Dimensions length x height (L) x (H)	Satin anodised	RAL 9010	Airway opening in cm²	Airflow at 2 Pa in m³/h	Airflow at 20 Pa in m³/h
265 x 90 mm	•	•	38	15	49,4

Register with frame

Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 insect screen (2.3 x 2.3 mm)
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

Dimensions
- Depth to fit: 28.5 mm
- Flange size: 21 mm
- Rotating knob for louvre lengths of 500 mm and above (possibility of pull-cord or rod operation)

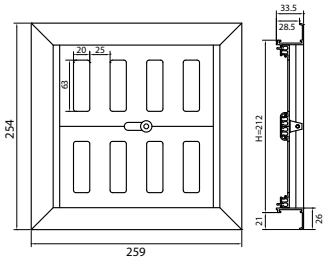
Fixing
- Spring clips available on request

Stock models

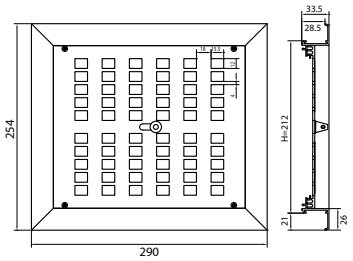
Dimensions length x height (L) x (H)	Satin anodised	RAL 9010	Airway opening in cm²	Airflow at 2 Pa in m³/h
217 x 212 mm	•	•	113	34
248 x 212 mm	•	•	140	38
307 x 312 mm	•	•	260	87

Cross-sections

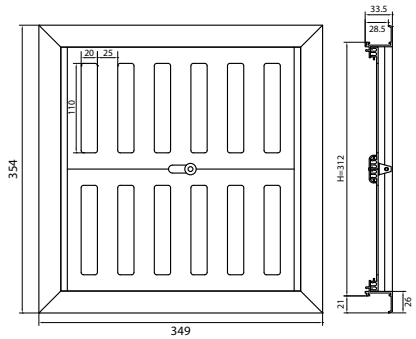
441 (217x212 mm)



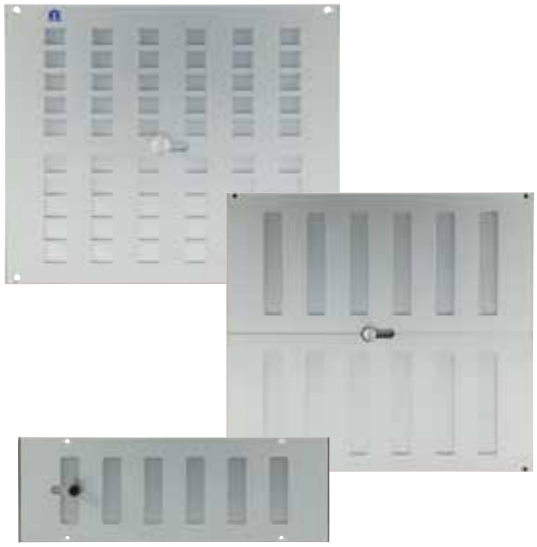
441 (248x212 mm)



441 (307x212 mm)



Register to fix



Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 insect screen (2.3 x 2.3 mm)
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

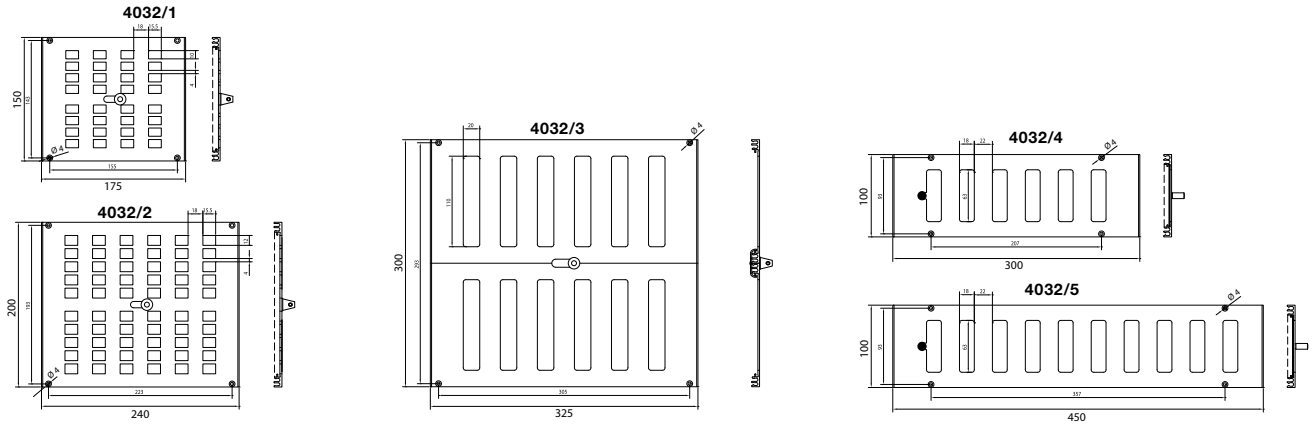
Dimensions
- Slide knob control
- Rotating knob for louvre lengths of 500 mm and above (possibility of pull-cord operation)
- Special heights on request
- The louvre height must fit within 100, 130 or 150 mm modules

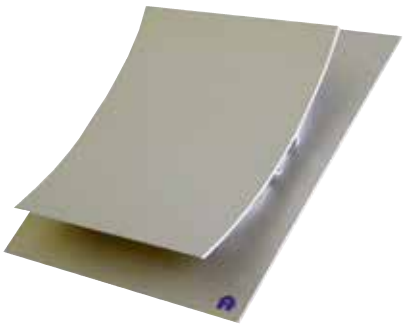
Fixing
- Screws and plugs are included

Stock models

Dimensions length x height (L) x (H)	Satin anodised	RAL 9010	Airway opening in cm²	Airflow at 2 Pa in m³/h
4032/1: 175 x 150 mm	•	•	49	17,6
4032/2: 240 x 200 mm	•	•	113	40,7
4032/3: 325 x 300 mm	•	•	260	93,6
4032/4: 300 x 100 mm	•	•	68	24,5
4032/5: 450 x 100 mm	•	•	113	40,7

Cross-sections





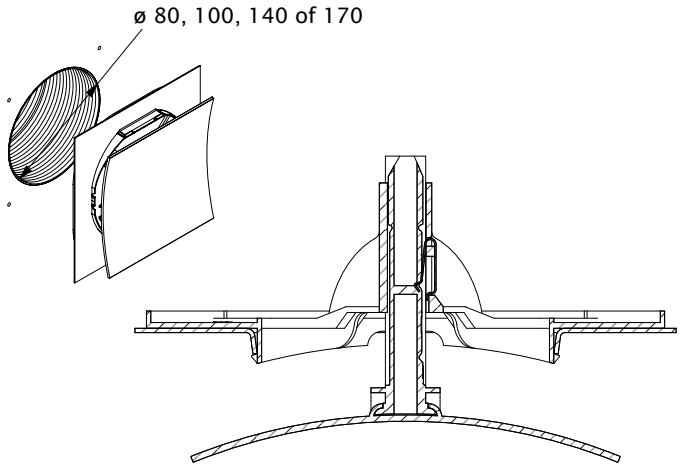
Stylish extraction louvre

Material
- Cover plate: aluminium AlMgSi 0.5 (according to EN 12020-2)
- Finishing: powder coating in any RAL or Syntha Pulvin® colour (40 microns)
- Base and sliding part: POM (polyoxymethylene)

Dimensions
- XD1: 152 x 152 mm
- XD2: 188 x 188 mm
- XD3: 233 x 233 mm
- Depth (in closed position): 79 mm

Typical applications
- Aesthetical internal louvre for wall or ceiling

Cross-sections



Technical specifications

	XD1	XD2	XD3
Use			
	System C all wet areas	**System A** Toilet Closed area ≤ 14 m²	**System A** Openspace kitchen Close area ≤ 14 m²
Airflow		(EN 13141-1)	
	Position I: not possible *Position II:* 22 m³/h at 2 Pa	*Position I:* 39,2 m³/h at 2 Pa *Position II:* 50,4 m³/h at 2 Pa	*Position I:* 63,0 m³/h at 2 Pa *Position II:* 87,1 m³/h at 2 Pa
Duct diameter			
	80 mm (max ø 140 mm)	100 mm, 140 mm (max ø 160 mm)	140 mm, 170 mm (max ø 200 mm)
Colors			
RAL 9006	•	•	•
RAL 9010	•	•	•

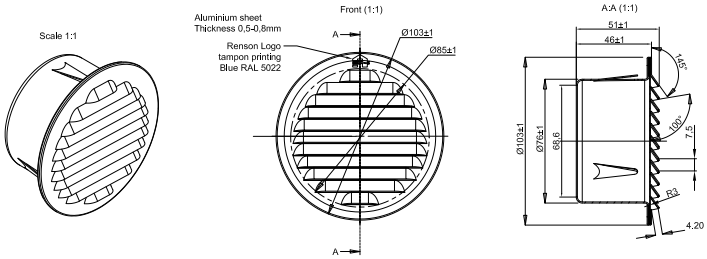
(other colors on demand)

Circular built-in punched grille

Material

- Made from punched aluminium sheet
- Finishing: powder-coated in white (RAL 9010), brown (RAL 8019) and aluminium (RAL 9006) colours
- Insect mesh included

Cross-sections



Stock models

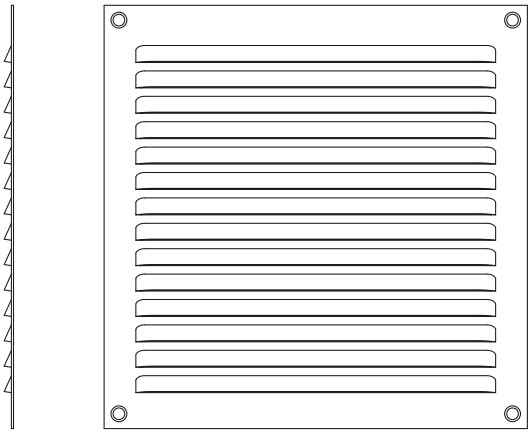
Diameter	RAL 9010	RAL 8019	RAL 9006	RAL 7016	Airway opening in cm²	Airflow at 2 Pa in m³/h
ø 80 mm	•	•	•	•	27	8,3
ø 100 mm	•	•	•	•	51	15,2
ø 115 mm	•	•	•	•	75	23,6
ø 145 mm	•	•	•	•	119	35,2
ø 190 mm	•	•	•	•	204	53,1
ø 245 mm	•	•	•	•	339	74,0

Punched grille

Material
- Punched aluminium sheet
- Without insect mesh

Fixing
- Screw-mounted (screws and plugs not provided)

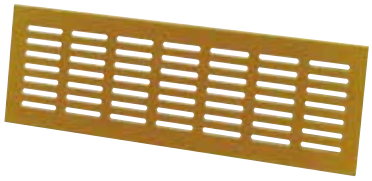
Cross-section

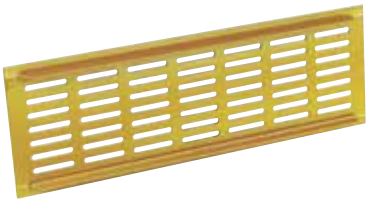


Stock models

Dimensions (L x H)	F1	RAL 9010	RAL 8019	Airflow at 2 Pa m³/h
150 x 150	•	•	•	16 m³/h
150 x 200	•	•	•	21,9 m³/h
200 x 100	•	•	•	12 m³/h
200 x 200	•	•	•	22,1 m³/h
200 x 250	•	•	•	36,7 m³/h
250 x 100	•	•	•	18,5 m³/h
250 x 250	•	•	•	46,6 m³/h
300 x 100	•	•	•	20,2 m³/h
300 x 300	•	•	•	73,5 m³/h
400 x 100	•	•	•	28,8 m³/h
400 x 400	•	•	•	86,4 m³/h
500 x 500	•	•	•	125,9 m³/h

Built-in ventilation grille



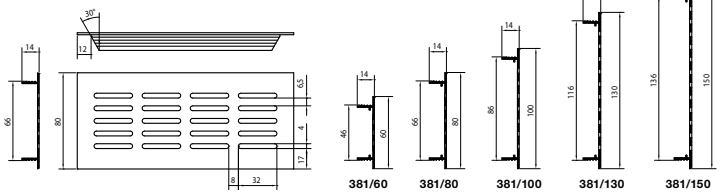


Fixing
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)

Typical applications
- Kitchens, refrigerators, counters

Packaging quantity: 10 pieces

Cross-sections



Stock models

Dimensions length x height (L) x (H)	Satin anodised	Gold anodised	Ral 9010	RAL 8022	RAL 9005	Net free area cm²
400 x 60 mm	•		•	•		44
500 x 60 mm	•		•	•		59
2000 x 60 mm	•		•	•		244
300 x 80 mm	•	•	•	•		43
400 x 80 mm	•	•	•	•	•	56
500 x 80 mm	•	•	•	•	•	74
600 x 80 mm	•	•	•	•		87
1000 x 80 mm	•		•	•		149
2000 x 80 mm	•	•	•	•		305
300 x 100 mm	•		•	•		61
400 x 100 mm	•	•	•	•		78
500 x 100 mm	•	•	•	•		104
600 x 100 mm	•		•	•		122
1000 x 100 mm	•		•	•		209
2000 x 100 mm	•	•	•	•		427
500 x 130 mm	•		•	•		149
1000 x 130 mm	•		•	•		298
2000 x 130 mm	•		•	•		610
500 x 150 mm	•		•	•		179
2000 x 150 mm	•	•	•	•		732

Other finishes and dimensions are available upon request, only for large quantities.

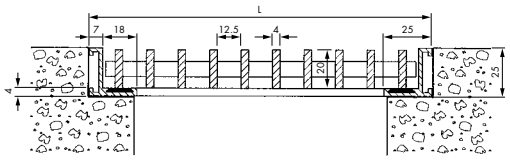
Convector grille

Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Finishing: anodised in satin colour (20 microns) or powder-coated in any RAL or Syntha PulvinR colour (40 microns)
- The frame is lined with a rubber gasket to guarantee a reduced noise level

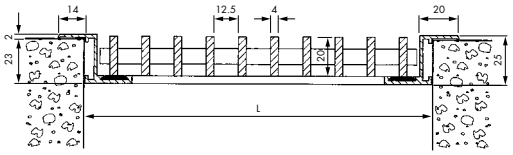
Dimensions
- Bar spacing: 12.5 mm
- Grille section: 20 x 4 mm
- Maximum dimensions:
  - Frame length: 3500 mm
  - Louvre length in pieces of ± 1000 mm
  - Max length per louvre: 1400 mm
  - Width of frame: 1200 mm
- Effective opening = length and width – 50 mm
- Bars arranged crosswise

Fixing
- Brackets ref. 231

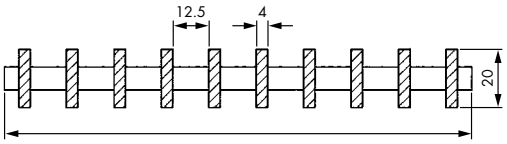
Cross-sections



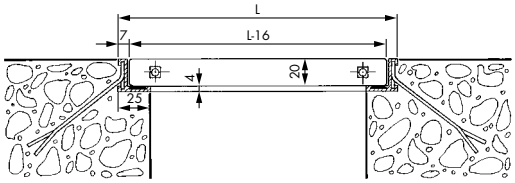
- 311/1: Floor grille or convector cover with flangeless “L” frame



- 311/2: Floor grille or convector cover with flanged “Z” frame



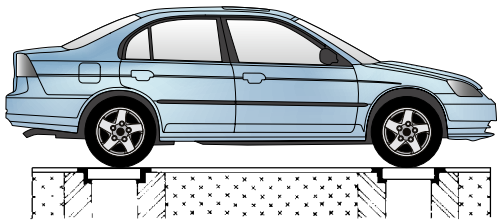
- 311/3: Frameless floor grille or convector cover



Technical specifications

	311
Technical data	
Visual free area	76 %
Physical free area	76 %

Floor grille, heavy-duty series



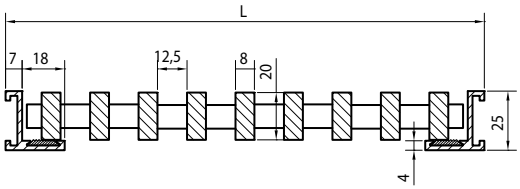
Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)
- The frame is lined with a rubber gasket to guarantee a reduced noise level

Dimensions
- Bar spacing: 12.5 mm
- Grille section: 20 x 8 mm
- Maximum dimensions:
  - Frame length: 3500 mm
  - Louvre length in pieces of ± 1000 mm
  - Max length per louvre: 1400 mm
  - Width of frame: 900 mm
- Effective opening = length and width – 50 mm
- Bars arranged crosswise

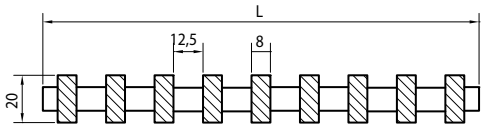
Fixing
- Brackets ref. 231

Typical applications
- Grilles for swimming pool drains, cellars, garages, car parks, abattoirs, etc.
- To cover underfloor wiring ducts in computer rooms.

Cross-sections



- 371 /1: Floor grille with flangeless “L” frame



- 371 / 3: Frameless floor grille

Technical specifications

	371
Technical data	
Visual free area	61 %
Physical free area	61 %

Linear bar grille

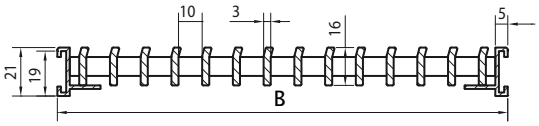
Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

Dimensions
- Bar spacing: 10 mm
- Grille section: 16 x 3 mm
- Maximum dimensions:
  - Frame length: 3500 mm
  - Louvre length in pieces of ± 1600 mm
  - Width of frame: 300 mm
- Effective opening = length and width – 50 mm
- Deflection: 15°
- Bars arranged lengthwise

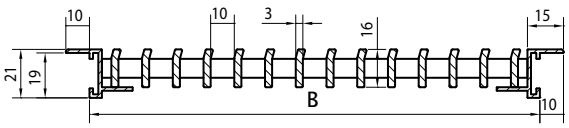
Fixing
- No fasteners

Typical applications
- Radiator frame

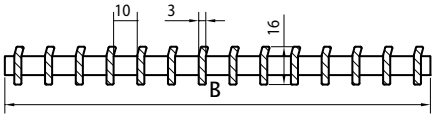
Cross-sections



- 392/1: Linear bar grille without flanged “Z” frame



- 392/2: Linear bar grille with flanged “Z” frame



- 392/3: Frameless linear bar grille

Technical specifications

	392
Technical data	
Visual free area	76 %
Physical free area	76 %

Remark: Not designed to walk on!

Linear bar grille for self-assembly

Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

Dimensions
- Bar spacing: 9.5 mm
- Section length: 3 or 6 metres
- Maximum dimensions:
  - Frame length: 3500 mm
  - Width of louvre: 210 mm
- Clip length: 209 mm
- Bars arranged lengthwise

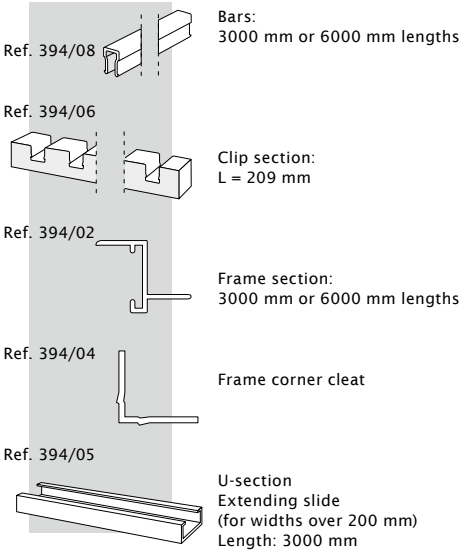
Fixing
- No fasteners

Number of clip sections/length

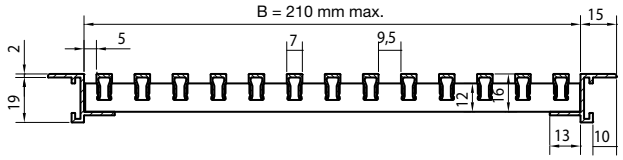
300 – 500 mm: 2 pieces
501 – 900 mm: 3 pieces
901 – 1300 mm: 4 pieces
1301 – 1700 mm: 5 pieces
1701 – 2100 mm: 6 pieces
2101 – 2600 mm: 7 pieces
2601 – 3000 mm: 8 pieces

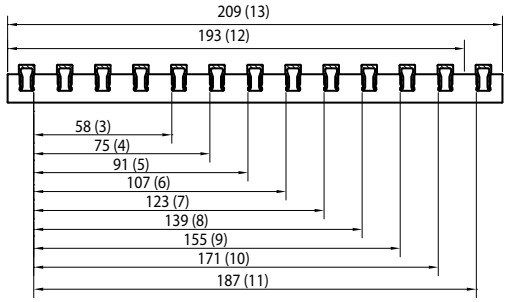
Elements
- Simple clip assembly

Typical applications
- Counters, radiator frame



Cross-sections





Technical specifications	
	394
Technical data	
Visual free area	59 %
Physical free area	59 %

Not designed to walk on!

Door grille

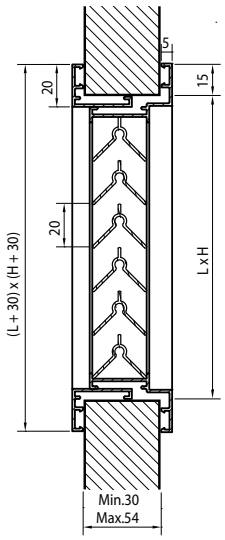
Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)
- Opaque grille with backframe and fixing screws

Dimensions
- Door thickness: 30 to 54 mm
- Maximum width (in one piece): 800 mm

Fixing
- Screws are included

Options
- Controllable version (type 463)
- Frame for 55 to 80 mm thickness on request

Cross-section



Stock models

Dimensions length x height (L) x (H)	Satin anodised	RAL 9010	RAL 8019	Airflow at 2 Pa in m³/h	Airflow at 20 Pa in m³/h	Visual free area	Physical free area
200 x 100 mm	•			13,6	43,0	93%	39%
400 x 200 mm	•	•	•	72,4	228,9		
400 x 300 mm	•			117,6	371,9		
500 x 300 mm	•			147,0	464,9		
600 x 400 mm	•			244,2	772,2		
425 x 76 mm	•	•	•	19,2	60,7		

Acoustic door grille for residential sector

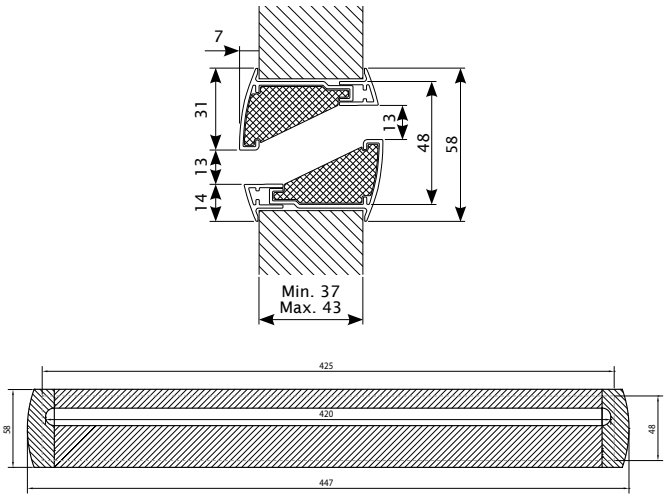
Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Sound absorbing material: synthetic foam
- End caps: in Luran S ASA polymer (colourfast, weatherproof and UV-resistant)
- End caps: available in grey, black or white

Dimensions
- Length: 425 mm
- Height: 48 mm
- Door thickness: 37 to 43 mm

Available models
- The Silendo R is available in a standard 425 x 48 mm size in the following standard colours: RAL 9010 (with matching white end caps), RAL 8019 (black end caps) and natural colour (grey end caps).
- Other lengths and colours available on request.

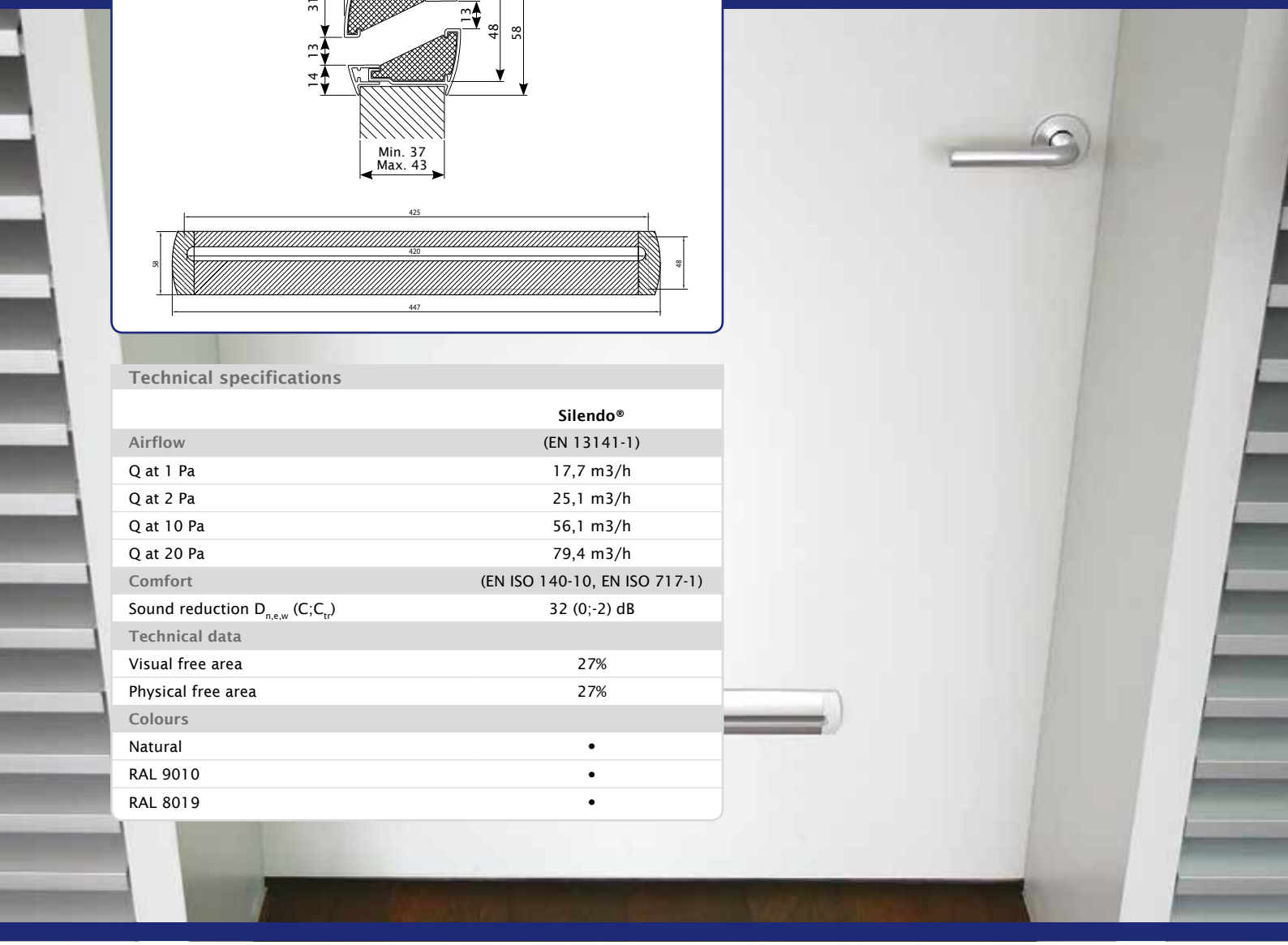
Typical applications
- offices, commercial buildings, toiletdoors

Cross-sections



Technical specifications

	Silendo®
Airflow	(EN 13141-1)
Q at 1 Pa	17,7 m3/h
Q at 2 Pa	25,1 m3/h
Q at 10 Pa	56,1 m3/h
Q at 20 Pa	79,4 m3/h
Comfort	(EN ISO 140-10, EN ISO 717-1)
Sound reduction $D_{n,e,w}$ ($C;C_{tr}$)	32 (0;-2) dB
Technical data	
Visual free area	27%
Physical free area	27%
Colours	
Natural	•
RAL 9010	•
RAL 8019	•



Invisido® 469 < Door grilles

Acoustic door grille for residential sector

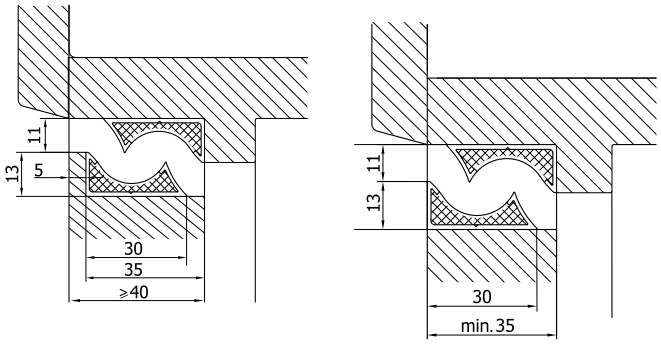
Material
- Sound absorbing material: synthetic foam
- End caps: in Luran S ASA polymer (colourfast, weatherproof and UV-resistant)
- End caps: available in grey, black, cream or white; other colors available on demand

Dimensions
- maximum length: 2000 mm
- Standard length: 725 mm (type 730), 825 mm (type 830), 925 mm (type 930)
- Door thickness: 35 mm

Fixing
- Screws included

Typical applications
- No look-through
- Residential, aesthetical
- In combination with Renson system C⁺ and System C^{+EVO}

Cross-sections



Technical specifications

	Invisido® type 469			
Airflow	(EN 13141-1)			
Q at 1 Pa	17,6 m³/h (4,9 dm³/s)			
Q at 2 Pa	25,3 m³/h			
Q at 10 Pa	58,8 m³/h			
Q at 20 Pa	84,7 m³/h			
Comfort	(EN ISO 140-10, EN ISO 717-1)			
Sound reduction $D_{n,e,w}$ ($C;C_{tr}$)	28 (-1;0) dB			
Dimensions (L)	**Natural**	**RAL 9010**	**RAL 9005**	**RAL 1015**
725 mm	•	•	•	•
825 mm	•	•	•	•
925 mm	•	•	•	•

Internal acoustic door grille

Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)
- Sound absorbing material: synthetic foam

Dimensions
- Minimum dimensions: 200 x 193 mm H
- Maximum dimensions: 800 x 788 mm H
- Height in 85 mm steps (blade pitch)
- Door thickness: from 37.5 to 92 mm

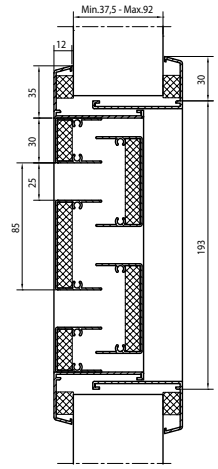
Available models
- The 468 AK/2 is available in RAL 9910 in the following standard sizes: 292 x 193 mm, 382 x 278 mm, 432 x 363 mm and 452 x 448 mm.
- Other sizes and colours available on request.

Fixing
- Screws included

Typical applications
- Schools, dressing rooms, garagedoors, central heating system rooms, hospitals

Remark: for internal use only!

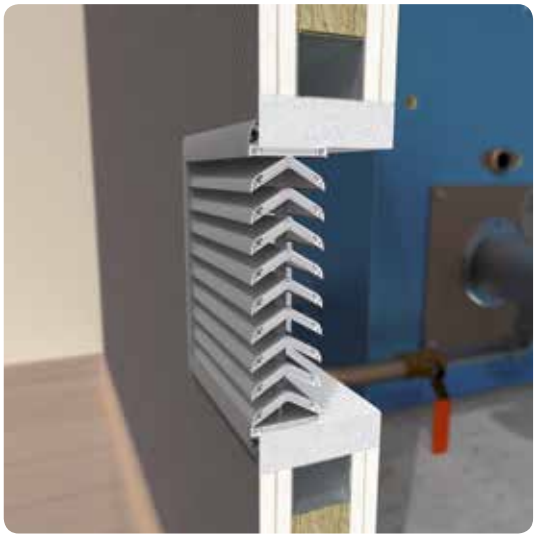
Cross-section



Technical specifications

	468 AK/2	
Airflow	(EN 13030)	(EN 13030)
K-factor (supply)	86,85	
K-factor (discharge)	89,35	
C_e coefficient	0,107	
C_d coefficient	0,106	
Q at 2 Pa - grille 292 x 193 mm	25 m³/h	30 (-1;-2) dB
Q at 2 Pa - grille 382 x 278 mm	50 m³/h	28 (-1;-2) dB
Q at 2 Pa - grille 432 x 363 mm	75 m³/h	26 (-1;-2) dB
Q at 2 Pa - grille 452 x 448 mm	100 m³/h	25 (-1;-2) dB
Comfort	(EN ISO 140-10, EN ISO 717-1)	
Sound reduction in open position R_w ($C;C_{tr}$)	8 (-1;-2) dB	
Technical data		
Visual free area	29 %	
Physical free area	29 %	
Ip class (louvre with mesh)	IP2XD	

Incendo® 464 < Fire-resistant louvres



Fire-resistant louvre with angled blades, fire-resistance 60'

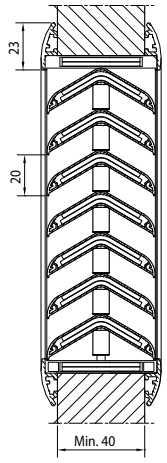
Material
- Blades filled with intumescent material
- Outer frame in Polystyrene
- Available in RAL 7024 (anthracite grey), RAL 9016 (traffic white) en RAL 9022 (pearl light grey)

Dimensions
- Maximum dimension: 800 x 400 mm
- Minimum dimensions: 100 x 100 mm
- 464/1: with frame, 464/2: with frame and adjustable counterframe

Fixing
- With sealant and adhesive neoprene mastic

Typical applications
- Aesthetic finish, no visible vertical posts
- Tested according to EN1634-1, EN1364-1 and EN1364-2
- Fire resistance EI 60 (Integrity and thermal insulation for 1 hour) according to EN13501-2
- Suitable for installation in a wooden door panel, flexible wall, massive wall, floor or ceiling.
- No visual see through
- Avoid contact with water, for indoor use only

Cross-section



Technical specifications

	Incendo® 464
Airflow	(EN 13030)
K-factor (supply)	10,27
K-factor (discharge)	10,27
C_e coefficient	0,312
C_d coefficient	0,312
Technical specifications	
Visual free area	61 %
Physical free area	51 %
Ip class	IP2XD
Fire resistance	(EN 13501-2)
Massive (concrete) wall (100 mm)	EI 60/ EW 90 (ve i<->o)
Massive (concrete) floor (100 mm)	EI 60 (ho i<->o)
Flexible wall (metal stud gypsum plasterboard 100 mm)	EI 60 (ve i<->o)
(wooden) doorpanel (50 mm)	EI 60 / EW 60 (ve i<->o)
(wooden) doorpanel (40 mm)	EI 30 / EW 30 (ve i<->o)

Fire-resistant louvre with angled blades, fire-resistance 60'

Material
- Blades filled with intumescent materials (PALUSOL)
- Protection by grey-coloured synthetic sheath
- Outer frame in satin anodised aluminium (20 microns)
- Other framecolors on request.

Dimensions
- Maximum dimensions: 600 x 300 mm
- Special dimensions on request

Purpose
- Ventilation between two adjacent rooms.
- In case of fire, cuts off the airflow and fulfils a firebreak function.

Applications
- Fire-resistant constructions
- Fire-resistant conduit
- Fire doors
- For indoor use only

Function
- At a temperature of 120°C, the blades swell to close the vent.
- Forms a static fire valve for 60 minutes.

Technical specifications
- Fire resistance: Rf 1 hour
- Testreport on request (Belgian BBRI test)
- Visual free area: 67%
- Physical free area: 57%

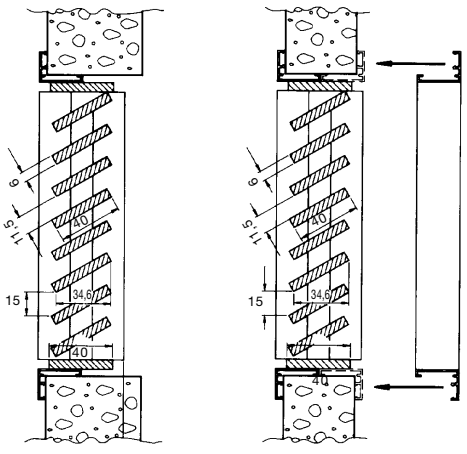
Fixing
- Secure the louvre in the opening
- Fill the gap between the louvre and the door/wall with fire-resistant mortar.

Typical applications
- Fire door apartments

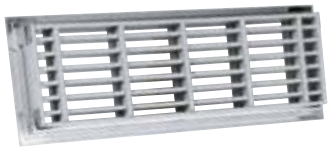
Stock models

Dimensions length x high (L) x (H)	465/1 (with frame)	465/2 (with frame and backframe)
200 x 200 mm	•	
300 x 300 mm	•	
400 x 200 mm	•	•
500 x 200 mm	•	

Cross-sections



465/1 with frame *465/2 with frame and backframe*



Fire-resistant louvre with horizontal blades

Material
- Blades filled with intumescent materials (PALUSOL)
- Protection by grey-coloured synthetic sheath
- Outer frame in satin anodised aluminium (20 microns)
- Other framecolors on request.

Dimensions
- Maximum dimensions: 600 x 400 mm
- Dimensions on request

Purpose
- At normal temperature, guarantees ventilation between two adjacent rooms.
- In case of fire, cuts off the airflow and fulfils a firebreak function.

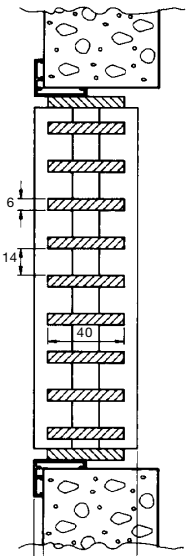
Applications
- Fire-resistant constructions
- Fire-resistant conduit
- Fire doors
- For indoor use only

Function
- At a temperature of 120°C, the blades swell to close the vent.
- Forms a static fire valve for 60 minutes.

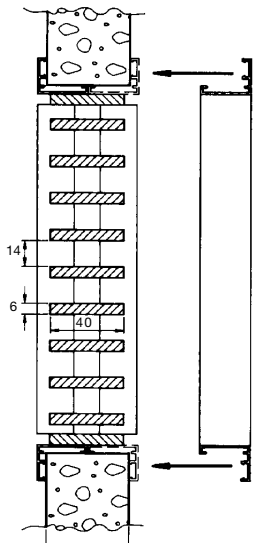
Technical specifications
- Fire resistance: Rf 1 hour
- Testreport on request (Belgian BBRI test)
- Visual free area: 70%
- Physical free area: 70%

Fixing
- Secure the louvre in the opening
- Fill the gap between the louvre and the door/wall with fire-resistant mortar.

Cross-sections



466/1 with frame



466/2 with frame and backframe

Round louvres

411R < Built-in wall louvres

Round wall louvre (with frame)

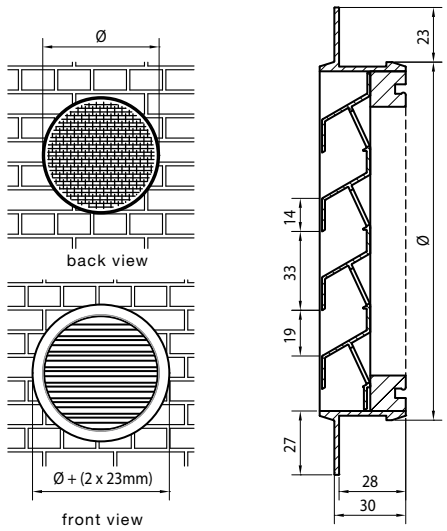
Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 insect screen (2.3 x 2.3 mm) or mesh (6 x 6 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)
- Frame assembled by a single weld

Dimensions
- Blade pitch: 33,3 mm
- Depth to fit: 28 mm
- Flange size: 23 mm
- Minimum diameter: 300 mm
- Maximum diameter:
  - 1400 mm if anodised in satin colour
  - 1500 mm if powder-coated in RAL or Syntha Pulvin colour
  - over 1500 mm: in two parts

Fixing
- Brackets pre-fitted to the frame

Typical applications
- Every application without specific needs

Cross-sections



Technical specifications

	411R
Airflow	(EN 13030)
K-factor (supply)	23,56
K-factor (discharge)	25,51
C_e coefficient	0,206
C_d coefficient	0,198
Technical data	
Visual free area	59 %
Physical free area	40,5 %
IP class (louvre with mesh; electrical installation at least 100mm from louvre)	IP2XD

Round wall louvre with chevron section blades

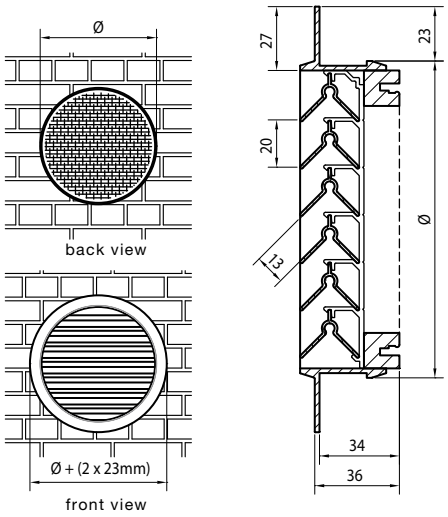
Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 mesh (6 x 6 mm) or insect screen (2.3 x 2.3 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)
- Frame assembled by a single weld

Dimensions
- Blade pitch: 20 mm chevron
- Depth to fit: 34 mm
- Flange size: 23 mm
- Minimum diameter: 300 mm
- Maximum diameter:
  - 1400 mm if anodised in satin colour
  - 1500 mm if powder-coated in RAL or Syntha Pulvin colour
  - over 1500 mm: in two parts

Fixing
- Brackets pre-fit to the frame

Typical applications
- High-voltage stations
- IT rooms

Cross-sections



Technical specifications

	412R
Airflow	(EN 13030)
K-factor (supply)	33,80
K-factor (discharge)	33,80
C_e coefficient	0,172
C_d coefficient	0,172
Technical data	
Visual free area	93 %
Physical free area	39 %
IP class	IP2XD

Round wall louvre, heavy-duty series

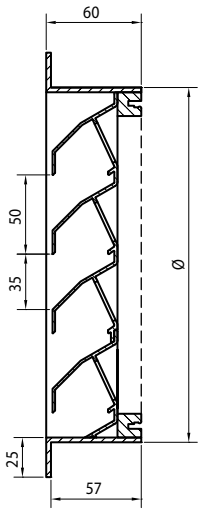
Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Finishing: anodised in satin colour (20 microns) or powder-coated in any RAL or Syntha PulvinR colour (40 microns)
- Stainless steel 304 insect screen (2.3 x 2.3 mm) or mesh (6 x 6 mm) on request
- Frame assembled by a single weld

Dimensions
- Blade pitch: 50 mm
- Depth to fit: 57 mm
- Flange size: 22 mm
- Minimum diameter: 400 mm
- Maximum diameter:
  - 1400 mm if anodised in satin colour
  - 1500 mm if powder-coated in RAL or Syntha Pulvin colour
  - over 1500 mm: in two parts

Fixing
- Brackets pre-fit to the frame

Typical applications
- Applications where aesthetics and strength are key parameters.

Cross-section



Technical specifications

	421R
Airflow	(EN 13030)
K-factor (supply)	12,57
K-factor (discharge)	8,91
C_e coefficient	0,282
C_d coefficient	0,335
Technical data	
Visual free area	70 %
Physical free area	47 %
IP class (louvre with mesh; electrical installation at least 100mm from louvre)	IP2XD

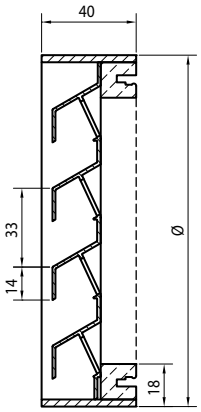
Round louvre without frame

Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 insect screen (2.3 x 2.3 mm) or mesh (6 x 6 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

Dimensions
- Blade pitch: 33,3 mm
- Depth to fit: 40 mm
- Minimum diameter: 300 mm
- Maximum diameter:
  - 1400 mm if anodised in satin colour
  - 1500 mm if powder-coated in RAL or Syntha PulvinR colour
  - over 1500 mm: in two parts

Fixing
- Screws included

Cross-section



Technical specifications

	431R
Airflow	(EN 13030)
K-factor (supply)	23,56
K-factor (discharge)	25,51
C_e coefficient	0,206
C_d coefficient	0,198
Technical data	
Visual free area	59 %
Physical free area	40,5 %
IP class (louvre with mesh; electrical installation at least 100mm from louvre)	IP2XD

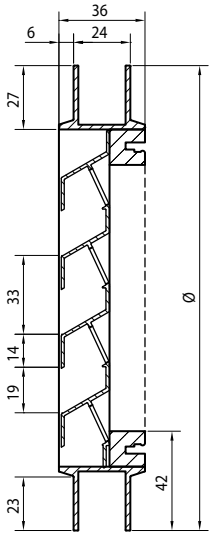
Round glazed-in louvre

Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 insect screen (2.3 x 2.3 mm) or mesh (6 x 6 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)

Dimensions
- Blade pitch: 33,3 mm
- Frame thickness: 24 mm
- Minimum diameter: 340 mm
- Maximum diameter:
  - 1400 mm if anodised in satin colour
  - 1500 mm if powder-coated in RAL or Syntha PulvinR colour
  - over 1500 mm: in two parts

Fixing
- Suitable for 24, 28, 32 mm glazing sections. Other thicknesses on request.

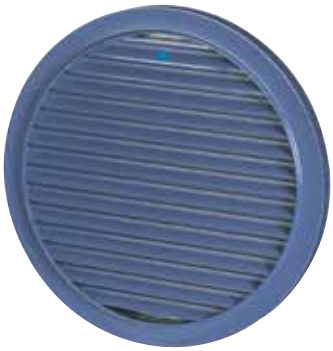
Cross-section



Technical specifications

	414R
Airflow	(EN 13030)
K-factor (supply)	23,56
K-factor (discharge)	25,51
C_e coefficient	0,206
C_d coefficient	0,198
Technical data	
Visual free area	59 %
Physical free area	40,5 %
IP class (louvre with mesh; electrical installation at least 100mm from louvre)	IP2XD

Round louvre with chevron section blade

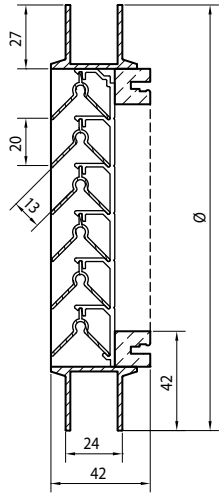


Material
- Made from aluminium sections: AlMgSi 0.5 (according to EN 12020-2)
- Stainless steel 304 mesh (6 x 6 mm) or insect screen (2.3 x 2.3 mm) on request
- Finishing: anodized in satin/bronze colour (20 micron) or powder-coated in any RAL or Syntha Pulvin colour (40 micron)
- Frame assembled by a single weld

Dimensions
- Blade pitch: 20 mm
- Frame thickness: 24 mm
- Minimum diameter: 340 mm
- Maximum diameter:
  - 1400 mm if anodised in satin colour
  - 1500 mm if powder-coated in RAL or Syntha Pulvin colour
  - over 1500 mm: in two parts

Fixing
- Suitable for 24, 28, 32 mm glazing sections. Other thicknesses on request.

Cross-section



Technical specifications

	415R
Airflow	(EN 13030)
K-factor (supply)	33,80
K-factor (discharge)	33,80
C_e coefficient	0,172
C_d coefficient	0,172
Technical data	
Visual free area	93 %
Physical free area	39 %
IP class	IP2XD

References

Creating healthy spaces

RENSON®: your partner in ventilation and sun protection

RENSON®, headquartered in Waregem (Belgium), is a trendsetter in Europe in natural ventilation and sun protection.

- ***Creating healthy spaces***
  From 1909, we've been developing energy efficient solutions assuring a healthy and comfortable indoor climate. Our remarkable headquarters - built according to the 'Healthy Building Concept' – is a beautiful example portraying our corporate mission.
- ***No speed limit on innovation***
  A multidisciplinary team of more than 50 R&D employees continually optimize our products and develop new and innovative concepts.
- ***Strong in communication***
  Contact with the customer is of the utmost importance. A group of 70 in-the-field employees worldwide and a powerful international distribution network are ready to advise you on site. EXIT 5 at Waregem gives you the possibility to experience our products on your own and provides necessary training for installers.
- ***A reliable partner in business***
  We can guarantee our customers optimal quality and service thanks to our environmentally friendly and modern production sites (with automated powder coating line, anodisation line, uPVC injection molding machinery and mold making shop) covering an area of 75.000 m².

Dealer

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