Description and application

Louvre with movable blades used in ventilation installation intake and exhaust as the end of air intake pipes and ventilation holes in the walls of buildings or directly on the duct. Thanks to a specially designed louvres, ideal where apart from protection against weather conditions required are elevated acoustic parameters. As the material used for silencing was here mineral wool with a veil of fiberglass. On special request it is also possible protective mesh that protects before the bird, rodent and larger impurities (like the leaves) inside the installation. Opening and closing louvre is possible through the manual regulation - type RR and RC or by using actuator - type RS.
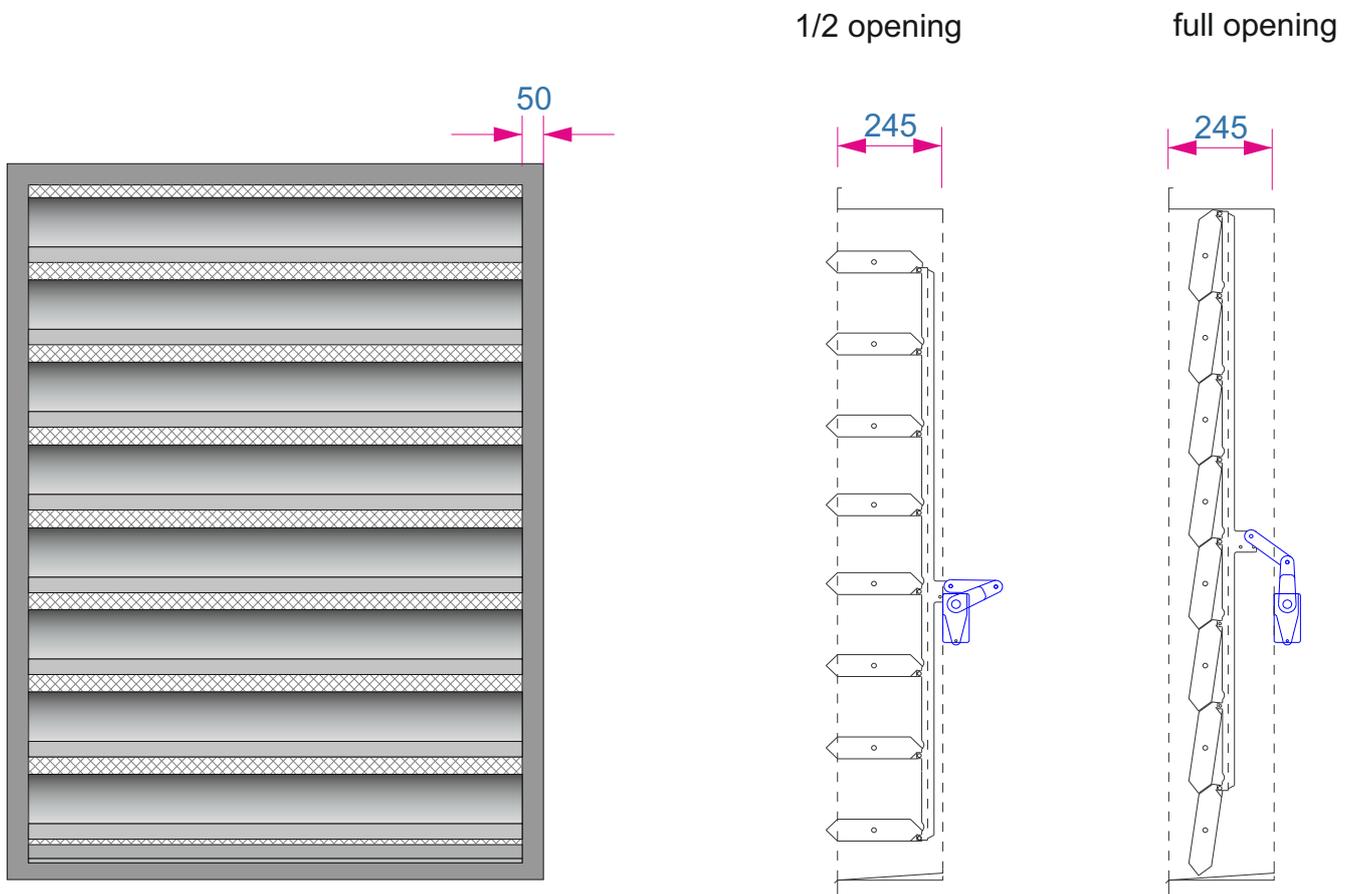
Material and workmanship

Louvre is available in three material variants: galvanized steel, aluminum - powder coated or stainless steel (type 1.4301 or 1.4404). On customer request powder coated to any color from the RAL palette (standard RAL9006). The manual mechanism allows you to set any opening angle. In the case of electrical control, the mechanism is adjusted to the Belimo Round Actuator. It is possible to use your own type of actuator. In this case, please send the technical data sheet of the model. The amount of actuators is dependent on the size of the louvre. As the material used for silencing is mineral wool with a veil of fiberglass. The manufacturer reserves the right to make technological changes.
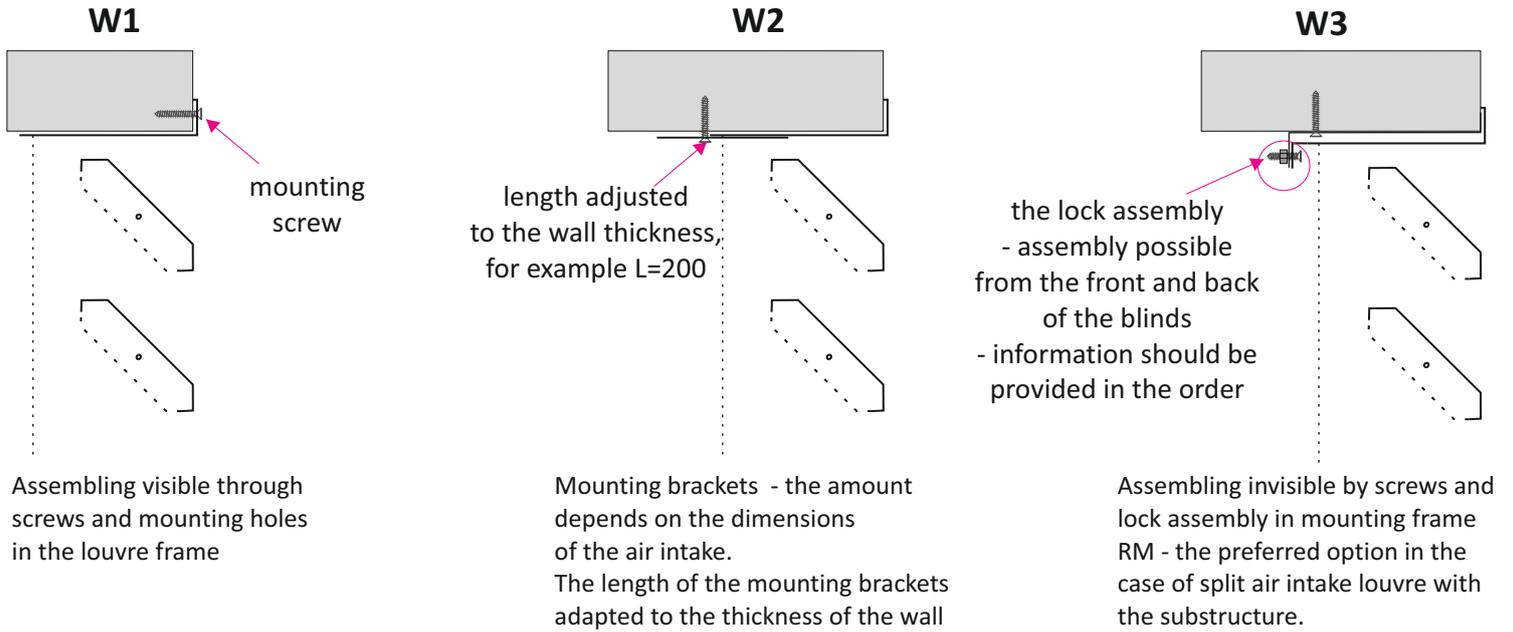
Size

Louvres are manufactured to order. Louvre dimension by the customer request.
The width of the frame depends on the size of louvre:
* 25mm for L or H to 1000mm
* 50mm for L or H above 1000mm

1/2 opening   full opening

SAW-POL

Methods of mounting

W1

mounting screw

Assembling visible through screws and mounting holes in the louvre frame

W2

length adjusted to the wall thickness, for example L=200

Mounting brackets - the amount depends on the dimensions of the air intake.
The length of the mounting brackets adapted to the thickness of the wall

W3

the lock assembly
- assembly possible from the front and back of the blinds
- information should be provided in the order

Assembling invisible by screws and lock assembly in mounting frame RM - the preferred option in the case of split air intake louvre with the substructure.

Options adjusting louvre

Louvre ZSR can be adjusted manually, using pull rope or by using an electric actuator:
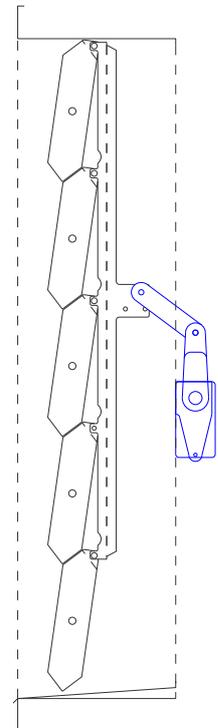
ZSR-T/RR
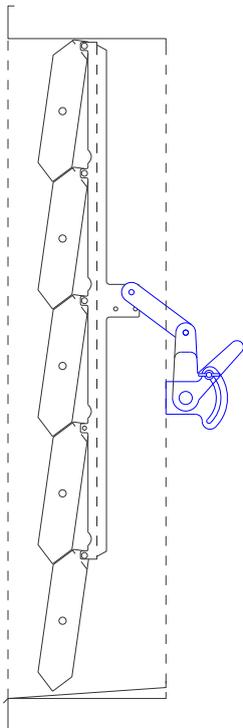
The shutter is adjusted manually using a common guide located behind the blades

ZSR-T/RC
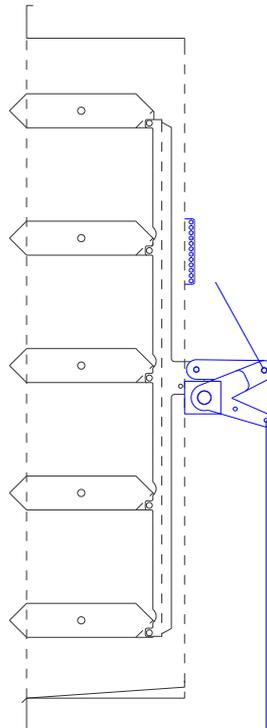
Louvre is controlled manually using pull rope (recommended for blinds installed for hard to reach heights)
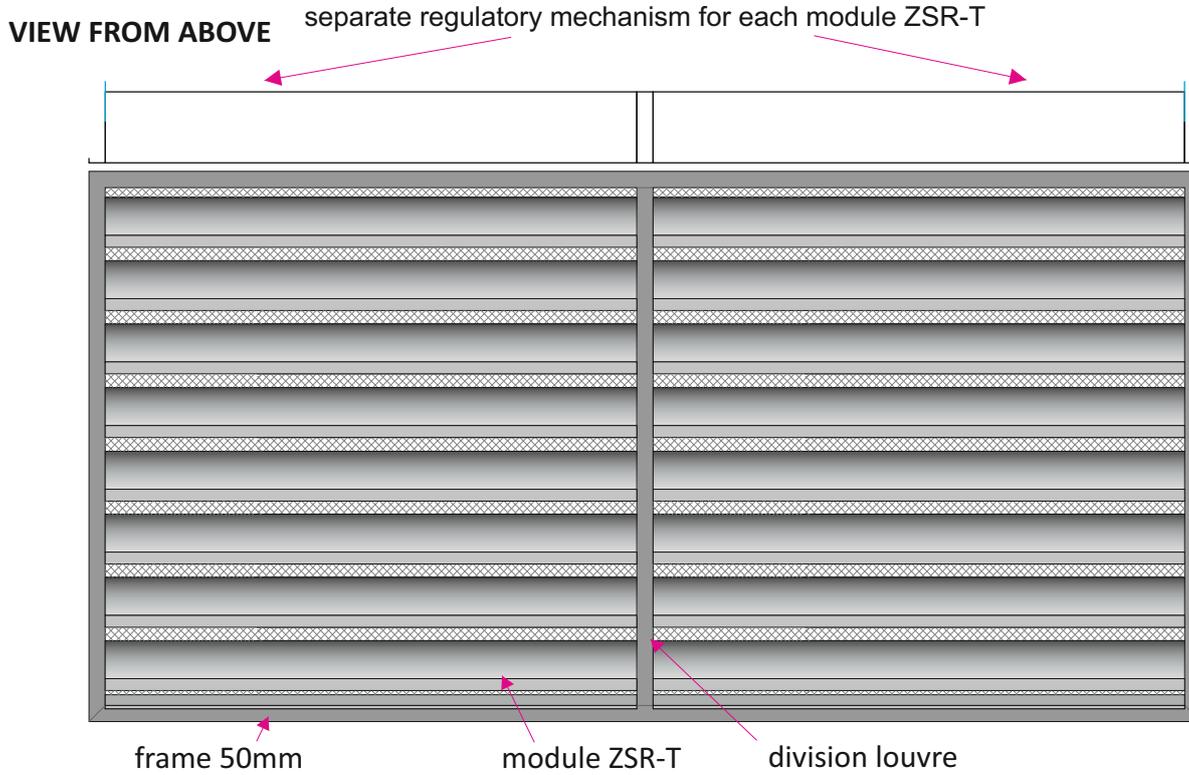
ZSR-T/RS

Louvre is controlled by Belimo electric actuator (way to open blades depends from the type of actuator)
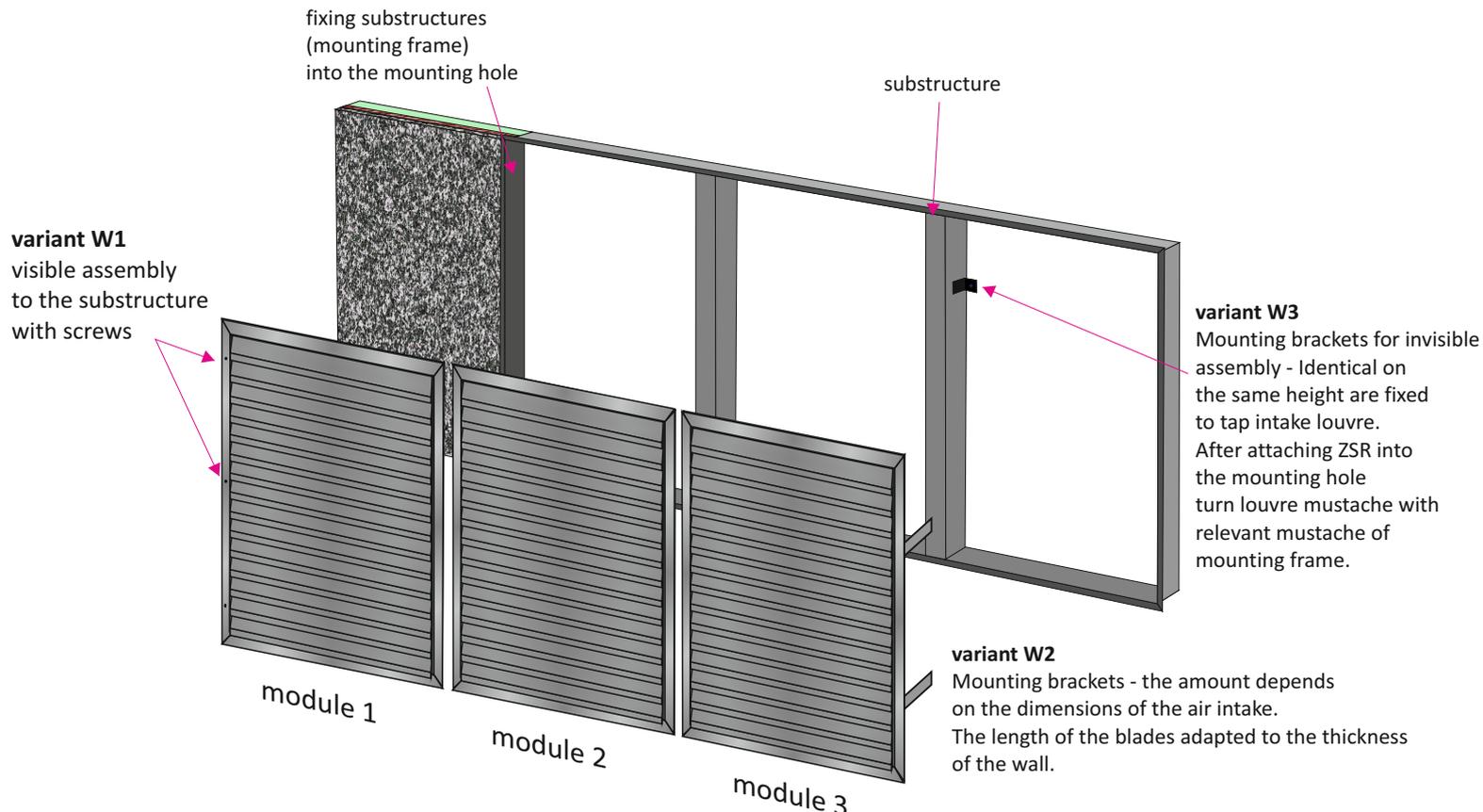
Variant execution - division

If the width of the louvre (blade length) **exceeds 2000mm**, ZSR-T is shared.
We offer two variants of wall louvre shared
1) entirely frame + shared intake louvre - for dimensions to <u>max. L=2800mm and H=1500mm</u>

VIEW FROM ABOVE   separate regulatory mechanism for each module ZSR-T

frame 50mm   module ZSR-T   division louvre

2) louvre ZSR + substructure (mounting frame) - for sizes <u>above L=2800mm and H=1500mm</u>
   (the amount of intake louvre adapted to the overall dimension of the mounting hole)

fixing substructures
(mounting frame)
into the mounting hole

substructure

variant W1
visible assembly
to the substructure
with screws

variant W3
Mounting brackets for invisible
assembly - Identical on
the same height are fixed
to tap intake louvre.
After attaching ZSR into
the mounting hole
turn louvre mustache with
relevant mustache of
mounting frame.

variant W2
Mounting brackets - the amount depends
on the dimensions of the air intake.
The length of the blades adapted to the thickness
of the wall.

module 1   module 2   module 3

Wall external intake acoustic damping louvres ZSR-T

TECHNICAL DATA

H[mm] \ L[mm]	600	800	1000	1200	1400	1600	1800	2000
	Net free area A (m2) of ZSR-T wall louvres when fully open							
600	0,19	0,25	0,32	0,38	0,45	0,51	0,57	0,64
800	0,25	0,34	0,42	0,51	0,59	0,68	0,76	0,85
1000	0,32	0,42	0,53	0,64	0,74	0,85	0,95	1,06
1200	0,38	0,51	0,64	0,76	0,89	1,02	1,14	1,27
1400	0,45	0,59	0,74	0,89	1,04	1,19	1,34	1,48
1600	0,51	0,68	0,85	1,02	1,19	1,36	1,53	1,70
1800	0,57	0,76	0,95	1,14	1,34	1,53	1,72	1,91
2000	064	0,85	1,06	1,27	1,48	1,70	1,91	2,12

Pressure loss graphs depending on the air intake velocity

Full lamella opening:
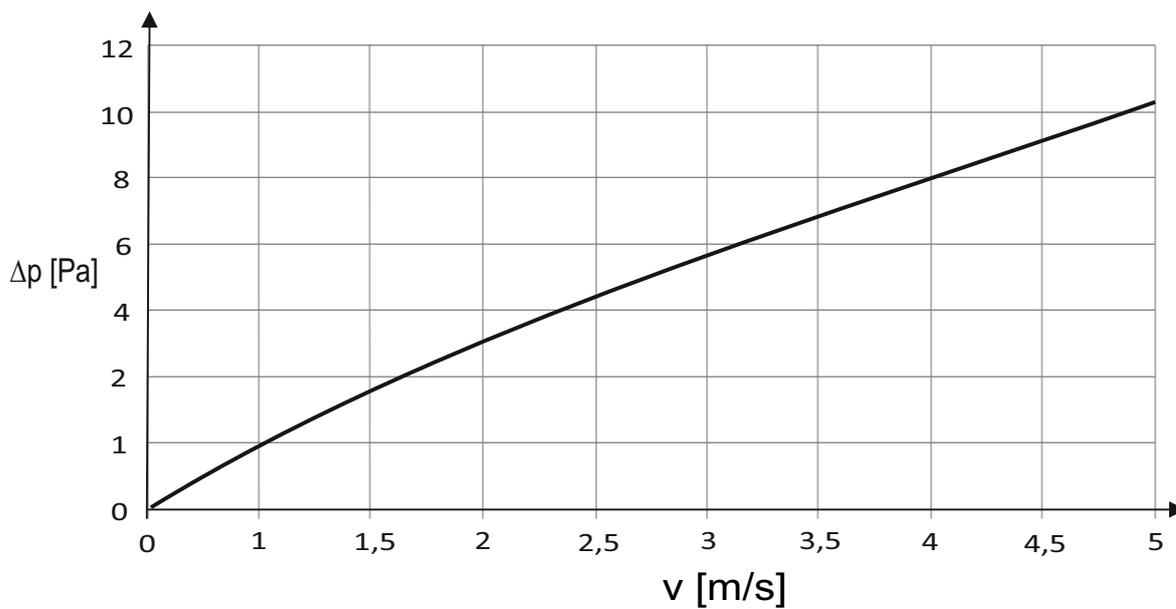
The angle of the slats - 45°:
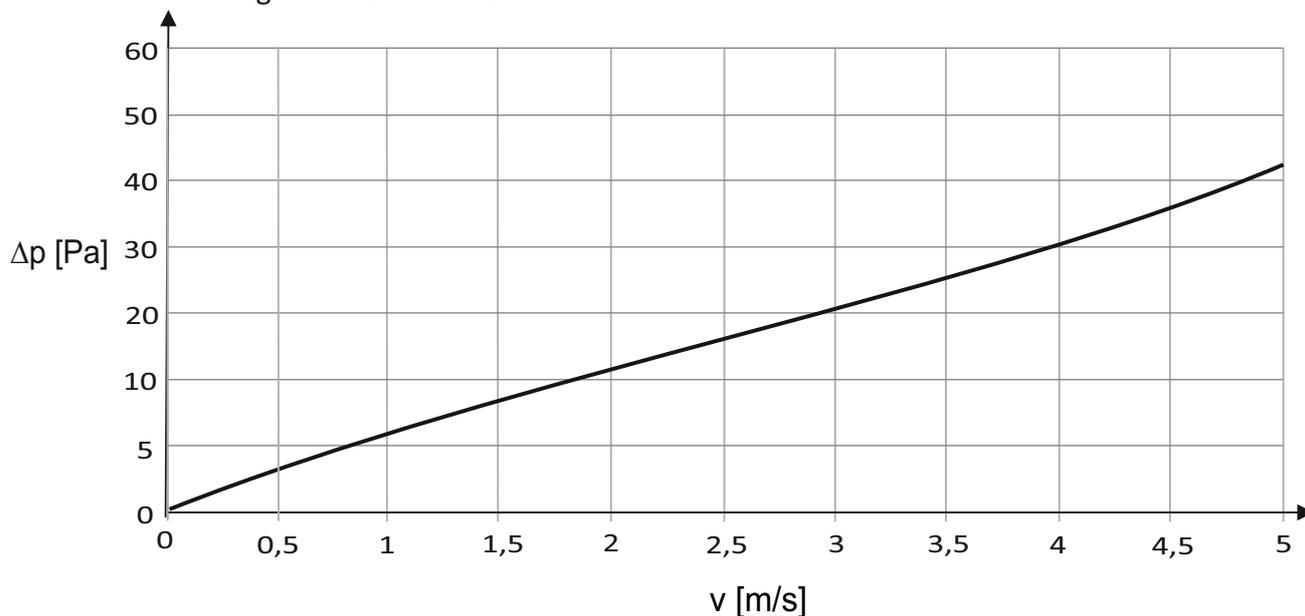
Specific sound insulation determined according to PN-EN ISO 10140-2: 2011
Laboratory measurements of airborne sound insulation for building elements.

Case 1. - FULL CLOSURE

Air temperature:	19,3 °C
Air percentage humidity:	43,8 %
Surface mass:	-
Sample surface:	1,7 m²
The volume of the sending chamber:	191,0 m³
Receiving chamber volume:	212,0 m³

Frequency f [Hz]	R 1/3 Octave [dB]
50	10,1
63	11,7
80	10,7
100	13,7
125	10,7
160	9,6
200	9,6
250	11,3
315	13,0
400	14,5
500	17,1
630	19,5
800	20,6
1000	21,1
1250	20,8
1600	21,1
2000	17,6
2500	15,0
3150	15,0
4000	16,3
5000	16,2

Legend:
- - - Frequency range in accordance with
— Reference value curve (PN-EN ISO 717-1:2013)
— Measured characteristic
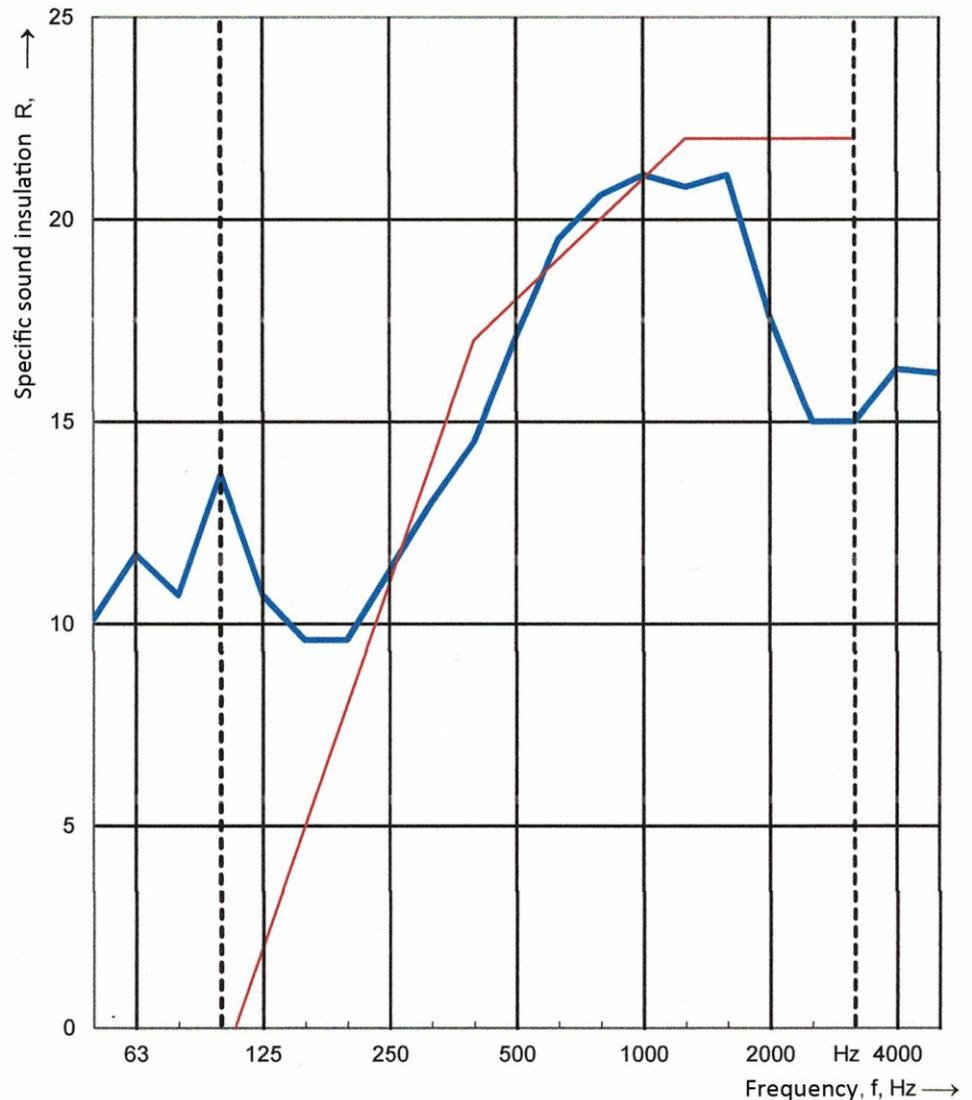
Indicators according to PN-EN ISO 717-1:2013

$R_w(C;C_{tr}) = 18 (-1 ; -1) dB$

Assessment based on the results of laboratory measurements obtained using the engineering method:

$C_{50-3150} = -1$ dB $C_{50-5000} = -1$ dB $C_{100-5000} = -1$ dB
$C_{tr,50-3150} = -2$ dB $C_{tr,50-5000} = -2$ dB $C_{tr,100-5000} = -2$ dB

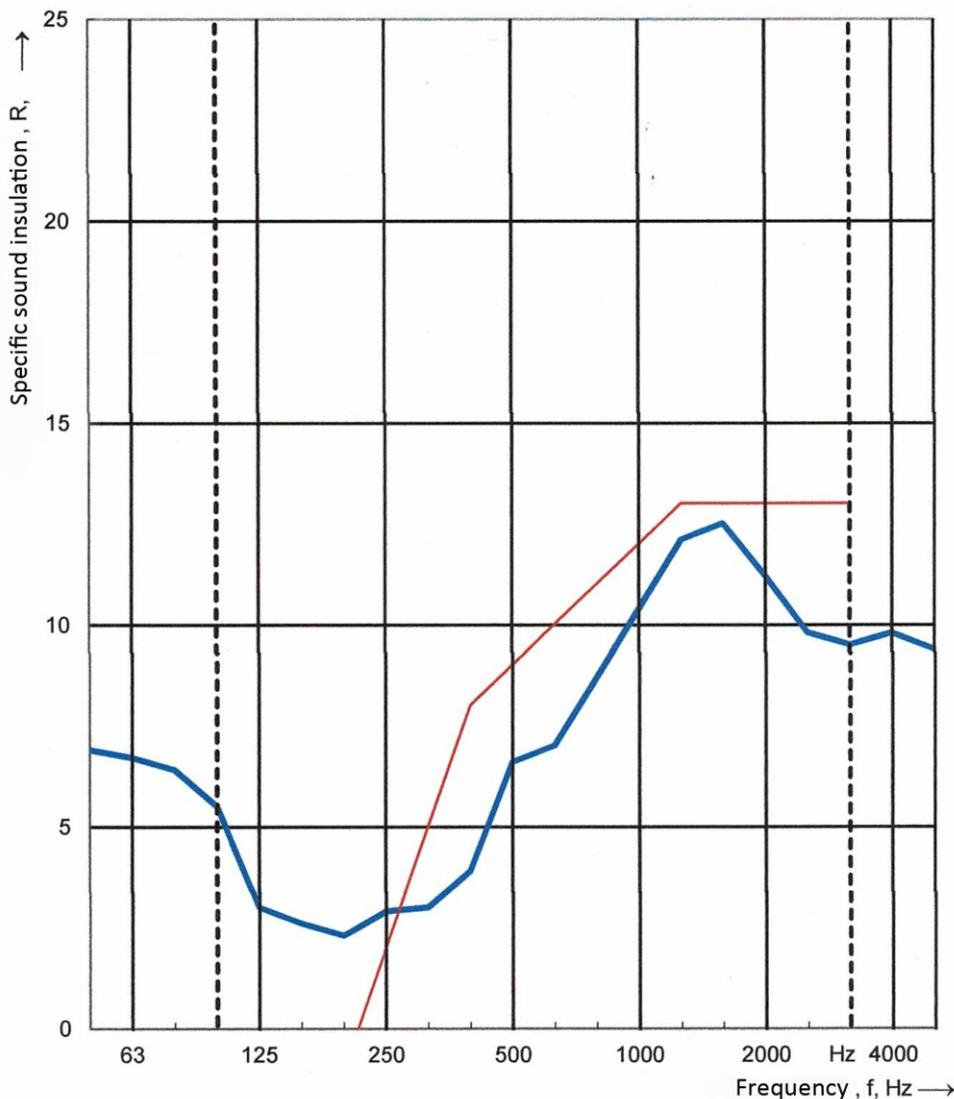## Specific sound insulation determined according to PN-EN ISO 10140-2: 2011

Laboratory measurements of airborne sound insulation for building elements.

Case 2. - 1/4 opening

Air temperature:	19,3 °C
Air percentage humidity:	43,8 %
Surface mass:	-
Sample surface:	1,7 m²
The volume of the sending chamber:	191,0 m³
Receiving chamber volume:	212,0 m³

Frequency f [Hz]	R 1/3 Octave [dB]
50	6,9
63	6,7
80	6,4
100	5,5
125	3,0
160	2,6
200	2,3
250	2,9
315	3,0
400	3,9
500	6,6
630	7,0
800	8,7
1000	10,4
1250	12,1
1600	12,5
2000	11,2
2500	9,8
3150	9,5
4000	9,8
5000	9,4

- - - Frequency range in accordance with
— reference value curve (PN-EN ISO 717-1:2013)
— Measured characteristic

Indicators according to PN-EN ISO 717-1:2013

$R_w(C;C_{tr}) = 9 \ (\ 0 \ ; \ -1 \ )$ dB

Assessment based on the results of laboratory measurements obtained using the engineering method:

$C_{50-3150} = 0$ dB $C_{50-5000} = 0$ dB $C_{100-5000} = 0$ dB

$C_{tr,50-3150} = -2$ dB $C_{tr,50-5000} = -2$ dB $C_{tr,100-5000} = -2$ dB

TECHNICAL DATA

Specific sound insulation determined according to PN-EN ISO 10140-2: 2011
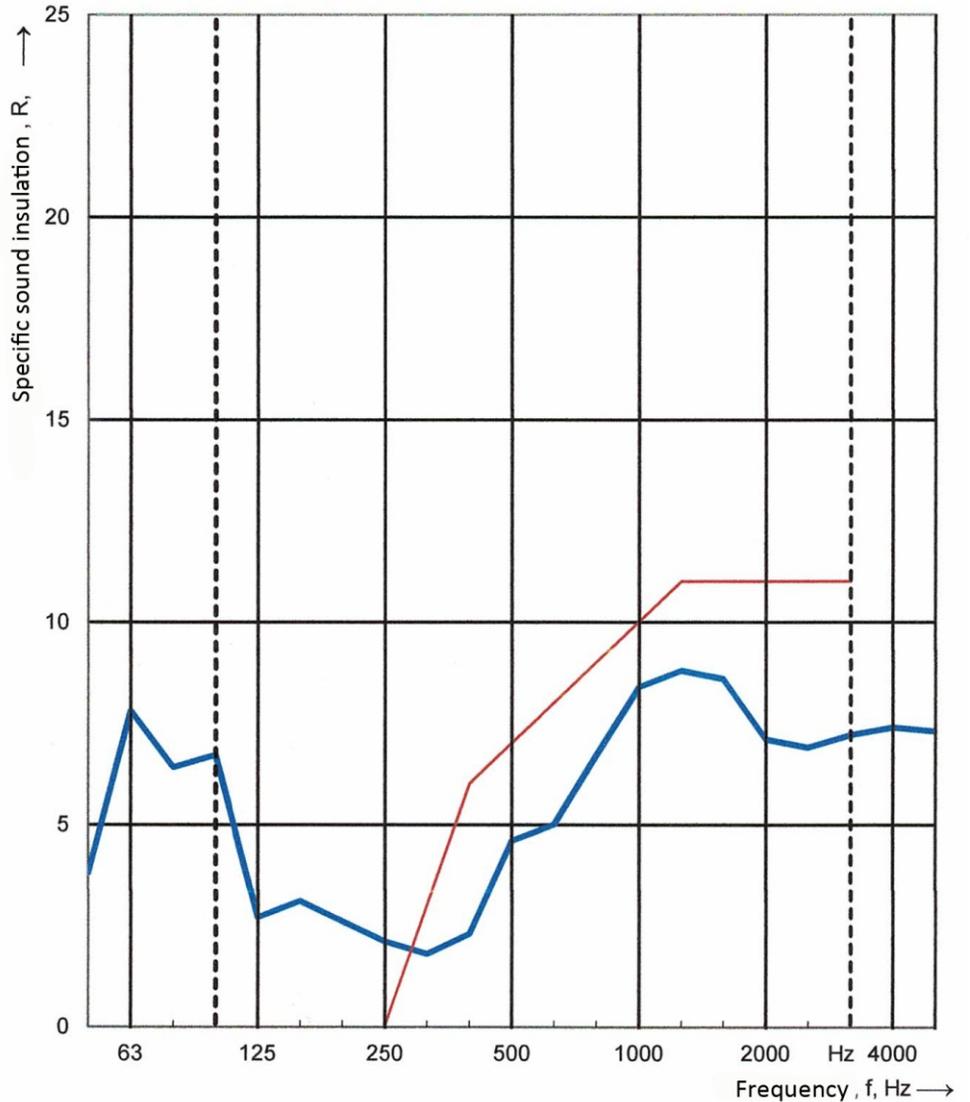
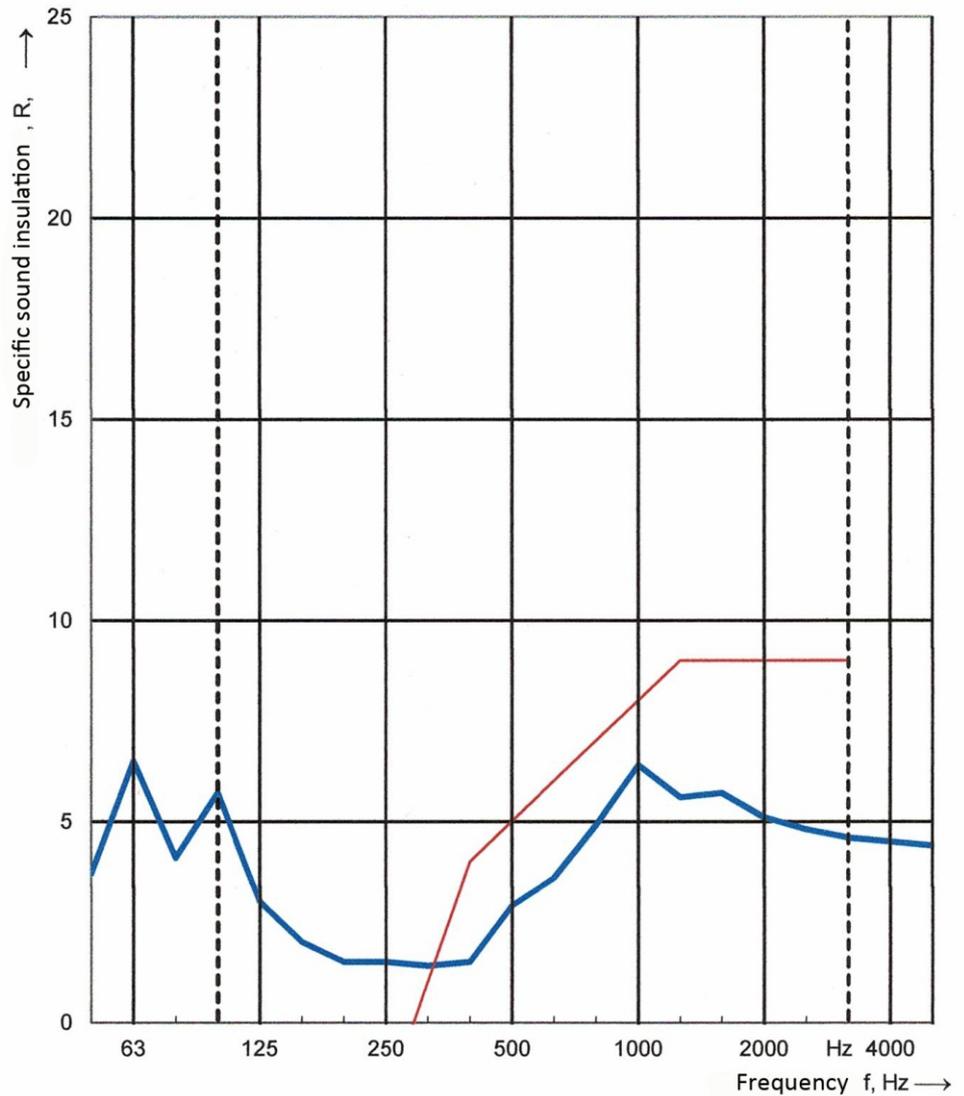Laboratory measurements of airborne sound insulation for building elements.

Case 3. - 1/2 opening

Air temperature:	19,3 °C
Air percentage humidity:	43,8 %
Surface mass:	-
Sample surface:	1,7 m²
The volume of the sending chamber:	191,0 m³
Receiving chamber volume:	212,0 m³

Frequency f [Hz]	R 1/3 Octave [dB]
50	3,8
63	7,8
80	6,4
100	6,7
125	2,7
160	3,1
200	2,6
250	2,1
315	1,8
400	2,3
500	4,6
630	5,0
800	6,7
1000	8,4
1250	8,8
1600	8,6
2000	7,1
2500	6,9
3150	7,2
4000	7,4
5000	7,3

Legend:
- – – – Frequency range in accordance with reference value curve (PN-EN ISO 717-1:2013)
- —— Measured characteristic

Indicators according to PN-EN ISO 717-1:2013

$R_w(C;C_{tr}) = 7 \ (\ -1 \ ; \ -1 \ )$ dB

Assessment based on the results of laboratory measurements obtained using the engineering method:

$C_{50-3150}$ = -1 dB	$C_{50-5000}$ = 0 dB	$C_{100-5000}$ = 0 dB
$C_{tr,50-3150}$ = -1 dB	$C_{tr,50-5000}$ = -1 dB	$C_{tr,100-5000}$ = -1 dB

Specific sound insulation determined according to PN-EN ISO 10140-2: 2011

Laboratory measurements of airborne sound insulation for building elements.

Case 4. - 3/4 opening

Air temperature:	19,3 °C
Air percentage humidity:	43,8 %
Surface mass:	-
Sample surface:	1,7 m²
The volume of the sending chamber:	191,0 m³
Receiving chamber volume:	212,0 m³

Frequency f [Hz]	R 1/3 Octave [dB]
50	3,7
63	6,5
80	4,1
100	5,7
125	3,0
160	2,0
200	1,5
250	1,5
315	1,4
400	1,5
500	2,9
630	3,6
800	4,9
1000	6,4
1250	5,6
1600	5,7
2000	5,1
2500	4,8
3150	4,6
4000	4,5
5000	4,4

Legend:
- - - Frequency range in accordance with
— reference value curve (PN-EN ISO 717-1:2013)
— Measured characteristic

Indicators according to PN-EN ISO 717-1:2013

$R_w(C;C_{tr})$ = 5 (0 ; -1) dB

Assessment based on the results of laboratory measurements obtained using the engineering method:

$C_{50-3150}$ = 0 dB $C_{50-5000}$ = 0 dB $C_{100-5000}$ = 0 dB

$C_{tr,50-3150}$ = -1 dB $C_{tr,50-5000}$ = -1 dB $C_{tr,100-5000}$ = -1 dB

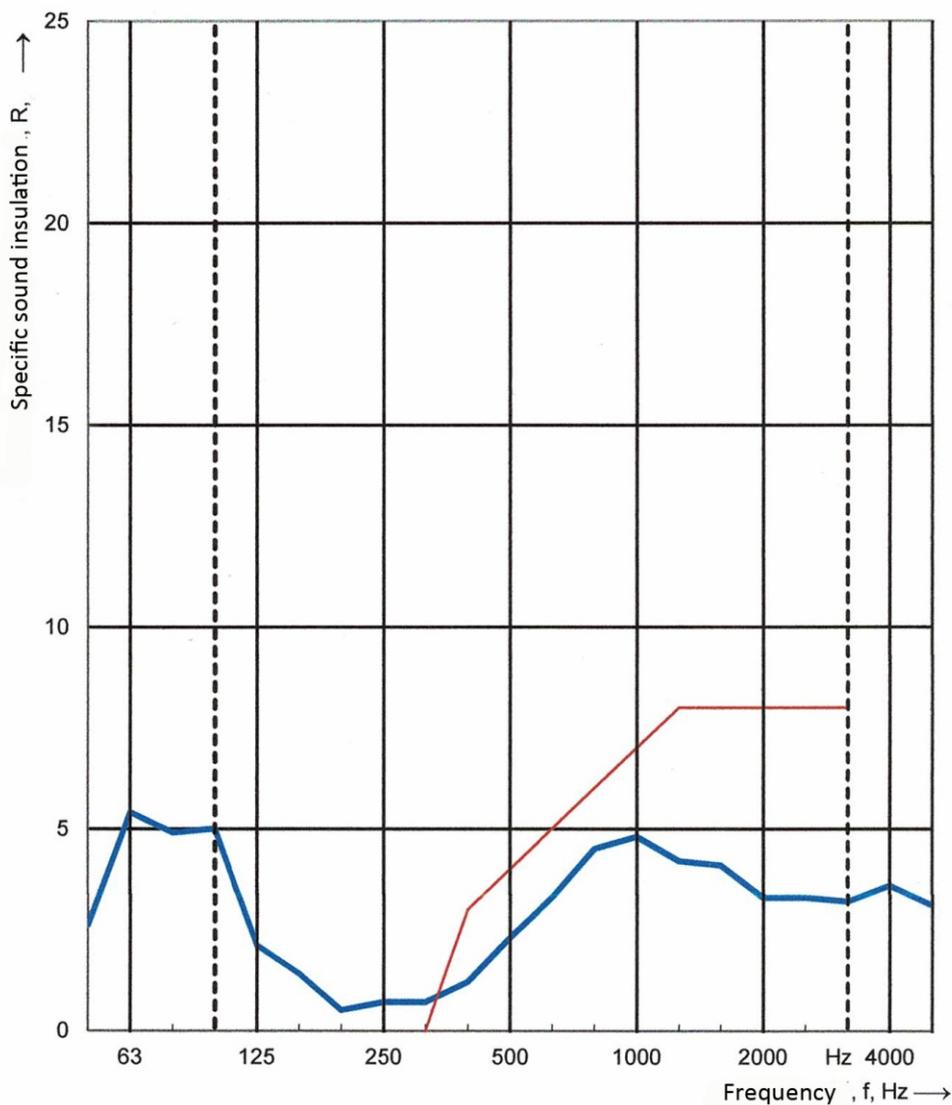## Specific sound insulation determined according to PN-EN ISO 10140-2: 2011

Laboratory measurements of airborne sound insulation for building elements.

Case 5. - FULL OPENING

Air temperature:	19,3 °C
Air percentage humidity:	43,8 %
Surface mass:	-
Sample surface:	1,7 m²
The volume of the sending chamber:	191,0 m³
Receiving chamber volume:	212,0 m³

Frequency f [Hz]	R 1/3 Octave [dB]
50	2,6
63	5,4
80	4,9
100	5,0
125	2,1
160	1,4
200	0,5
250	0,7
315	0,7
400	1,2
500	2,3
630	3,3
800	4,5
1000	4,8
1250	4,2
1600	4,1
2000	3,3
2500	3,3
3150	3,2
4000	3,6
5000	3,1

Legend:
- Frequency range in accordance with reference value curve (PN-EN ISO 717-1:2013)
- Measured characteristic

Indicators according to PN-EN ISO 717-1:2013

$R_w(C;C_{tr}) = 4 (\ -1\ ;\ -1\ )$ dB

Assessment based on the results of laboratory measurements obtained using the engineering method:

$C_{50-3150} = -1$ dB $C_{50-5000} = -1$ dB $C_{100-5000} = -1$ dB

$C_{tr,50-3150} = -1$ dB $C_{tr,50-5000} = -1$ dB $C_{tr,100-5000} = -1$ dB

The method of placing an order

Please make orders according to the following formula:

ZSR-T / 'R' / 'PM' / 'LxH' / 'S' / 'RAL' / 'M' / 'W'

'R'
- method of adjusting louvre:
R - manual
C - manual control with pull rope
S - adjustment using the actuator Belimo (standard actuator is not equipped with louvre)

'PM'
- position of the control mechanism
b - on back of the adjusting louvre*
f - on front of the adjusting louvre

'LxH'
- mounting hole size (width x height) in mm

'S'
- mesh
BS - without protective mesh*
ZS - with protective mesh

'RAL'
- louvre color according to RAL palette (standard RAL9006*)

'M'
- material:
OC -galvanized steel
AL - aluminum
KO - stainless steel (gat. 1.4301 or 1.4404)

'W'
- mounting option:
W1 - visible assembly with screws through the holes in louvre front frame *
W2 - invisible assembly with mounting brackets
W3 - invisible assembly using screws, and an additional mounting frame
(please specify the direction of the blind's final installation: from the back or front between the slats)

* - If you don't give the information will be used standard parameters.