

# CDH-F

Smoke and heat wall  
exhaust ventilator

## Operation and maintenance manual



TM **SMAY**



Version: 1.3

31.03.2022

Smay company reserves the right to modify this document.

## Table of Contents

<b>1.</b>	<b>INTRODUCTION .....</b>	<b>3</b>
<b>2.</b>	<b>INTENDED USE .....</b>	<b>3</b>
<b>3.</b>	<b>TECHNICAL DESCRIPTION .....</b>	<b>3</b>
<b>4.</b>	<b>INSTALLATION CONDITIONS.....</b>	<b>9</b>
<b>5.</b>	<b>DISASSEMBLY OF THE ELECTRIC ACTUATOR .....</b>	<b>10</b>
<b>6.</b>	<b>TRANSPORT AND STORAGE CONDITIONS .....</b>	<b>11</b>
<b>7.</b>	<b>INSPECTION AND MAINTENANCE PROCEDURE .....</b>	<b>11</b>
<b>8.</b>	<b>WARRANTY TERMS .....</b>	<b>11</b>



1438

**SMAY**

**Sp. z o.o.**

**17**

**1438-CPR-0534**

PN-EN 12101-2:2005

DUAL-FUNCTION SMOKE EXTRACTION UNIT

**CDH-F**

Technical characteristics of the external power source:

Power supply: AC/DC 24 [V] or AC 230 [V]

Aerodynamic free area:  $A_a = 0,1 \div 3,72$  [m<sup>2</sup>]

Wind load class: WL 1500

Reliability: Re1000

Low ambient temperature: T(-15)

Heat exposure: B300

## 1. INTRODUCTION

The purpose of this Operation and Maintenance Manual is to familiarize the user with the intended use, design, operating principle, installation and operation of the product.

## 2. INTENDED USE

CDH-F louvres are used for smoke and heat extraction in natural and mechanical smoke extraction systems.

CDH-F-L louvre can be used in smoke extraction systems as a wall smoke exhaust device with the possibility of measuring the mass flow of air removed by the extraction louvre. This product is dedicated to staircases, elevator shafts, wherever we want to know the mass flow of air being removed.

## 3. TECHNICAL DESCRIPTION

CDH-F louvres are positioned by means of an electric actuator. The lamellas are made of anodised aluminum profiles and an insert mounted between profiles and secured with glazing gasket. In the S version the lamella insert is made of a 20 mm thick multi polycarbonate sheets. In the A version the lamella insert is made of 20 mm thick mineral wool with glass fleece inside and anodised sheet outside.

The exhaust louvers frame is made of aluminum and powder coated in the RAL9006 matt color.

CDH-F electrical control – the lamellas of the exhaust louver are controlled by means of an electric actuator of Belimo, open/close type, with a return spring, 24 V AC/DC or 230 V AC power supply.

**If an actuator with a return spring is in use, a power loss will open the louvre.**

The wiring diagram, power supply and control parameters depend on the type of the electric actuator and control system – see the data sheet of the selected actuator.

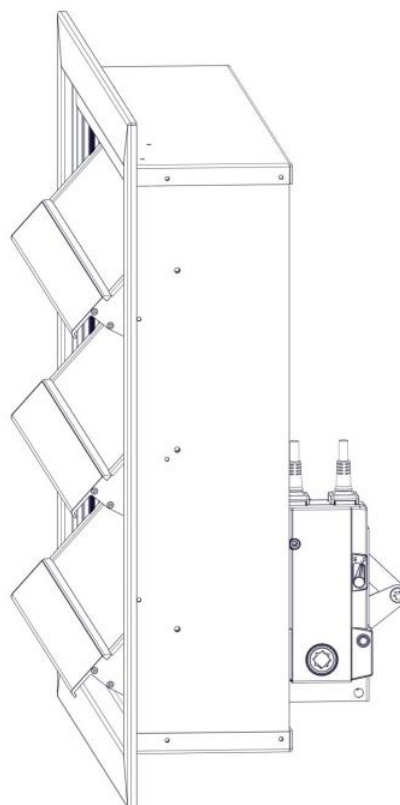


Figure 1 –CDH-F louvre.

### CDH-F-L design (for Zodiac-M System only)

CDH-F-L louvre can be used in smoke extraction systems as a wall smoke exhaust device with the possibility of measuring the mass flow of air removed by the extraction louvre. This product is dedicated to staircases, elevator shafts, wherever we want to know the mass flow of air being removed.

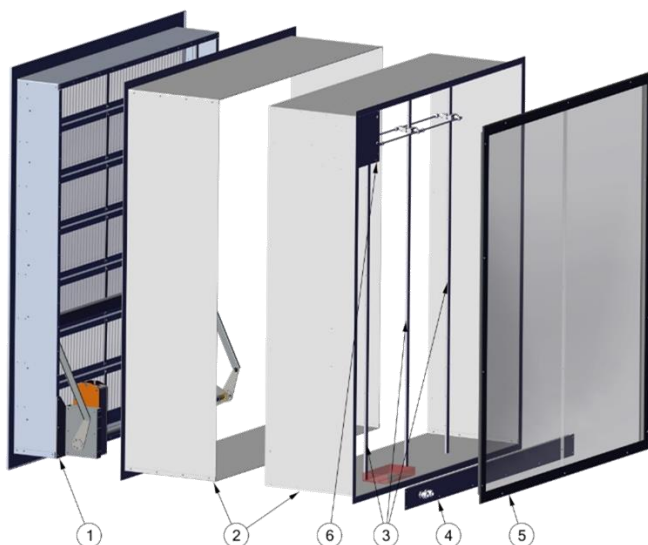


Figure 2 – CDH-F-L design.

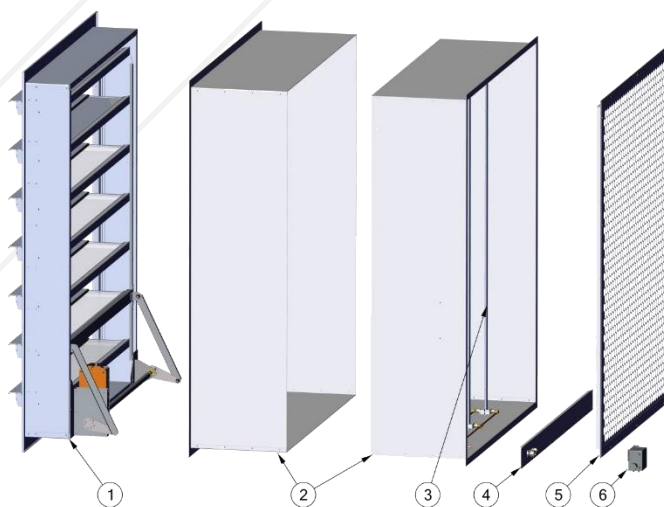


Figure 2 – CDH-F-Lz design.

Tab. 1 – CDH-F-L and CDH-F-Lz description.

Lp.	Description
1	CDH-F louvre
2	Telescopic duct section KT
3	Measuring strips
4	Panel with cable glands (two glands for actuator cables, two glands for copper tubes)
5	Protective mesh ST-ST54 with a perforated steel sheet with Hv20 hexagonal holes
6	The differential pressure transmitter is connected to the measurement strips with Ø6mm copper tubes and is placed in a safe space, or is encased in mineral wool with a thickness of 30mm and a density of not less than 60 kg/m <sup>3</sup> or equivalent.

The louvre must be installed in the exterior wall of the building. It should be placed as high as possible in the space from which it will remove smoke and heat.

An example of the location of the CDH-F louvre:

in a staircase:

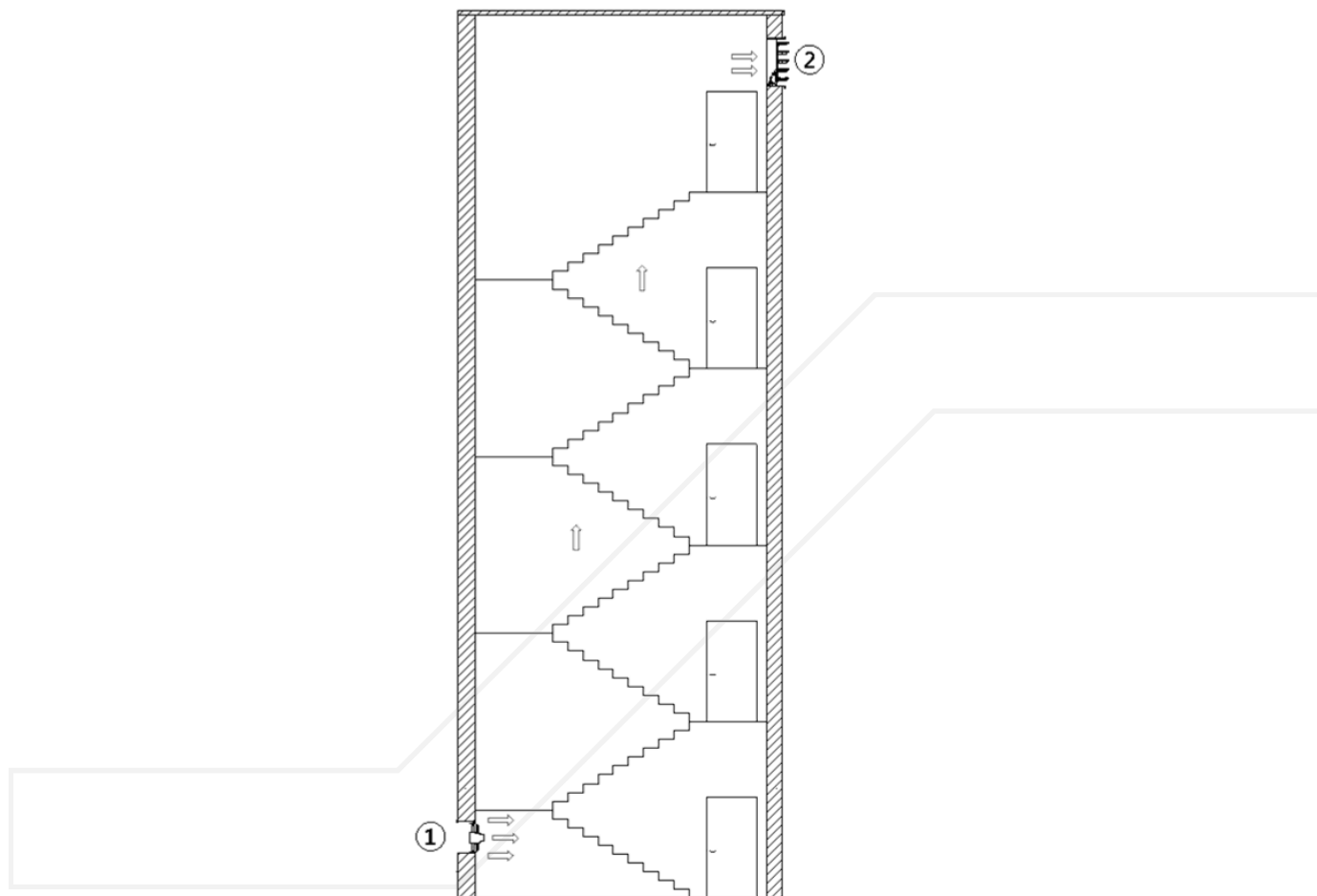


Figure 3 – CDH-F installation places in a staircase.

1 – mechanical air supply  
2 – CDH-F-L

• in a hall:

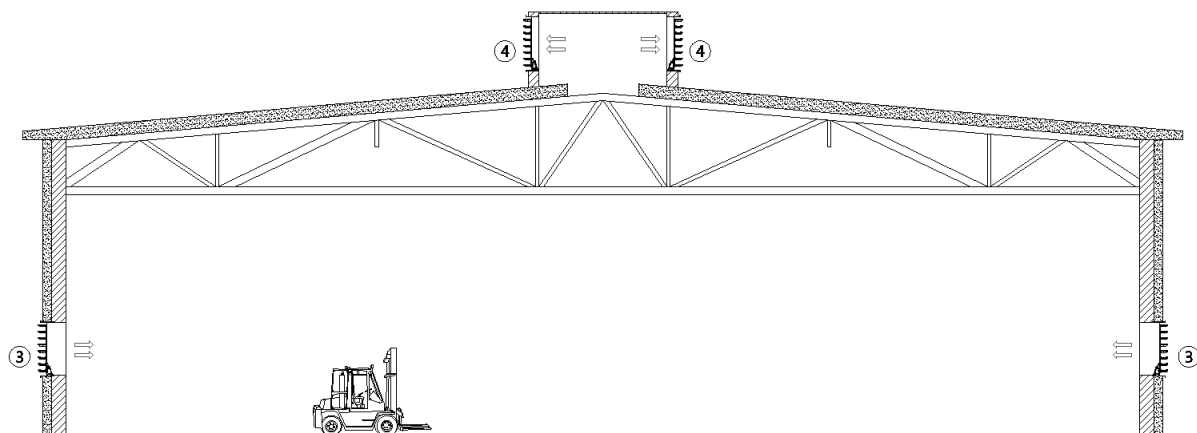


Figure 4 – CDH-F installation places in a hall.

3 – gravitational air supply  
4 – CDH-F louvre

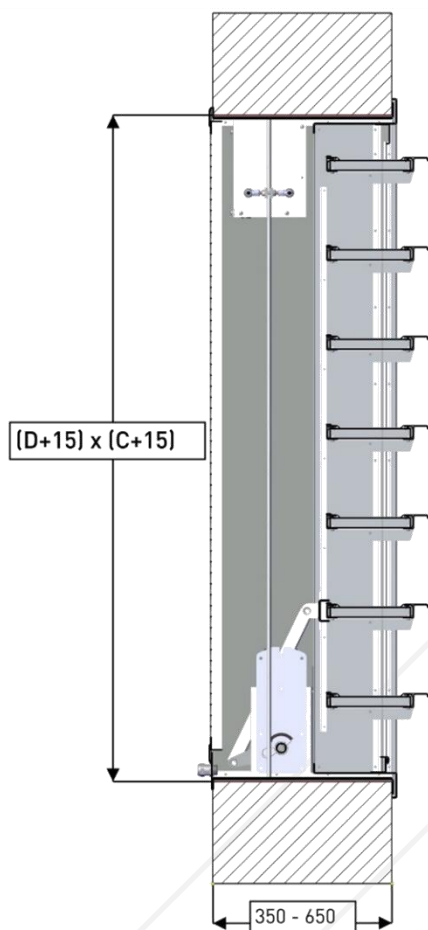


Figure 5 – Installation of CDH-F-L louvre.

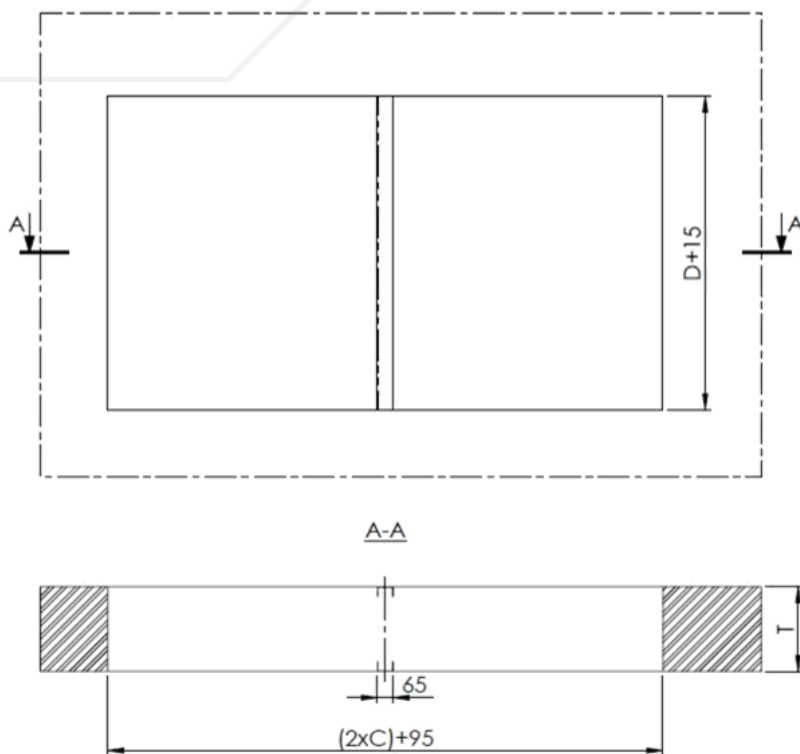


Figure 6 – Mounting opening for CDH-F-L horizontal battery.

Horizontal battery installation.

Example for max. 3095x2005 horizontal battery installation opening:

$[3095-65]/2=1515$  - vertical mounting bar 65x40x2 L =2005mm - 2 pcs on both sides of the wall.

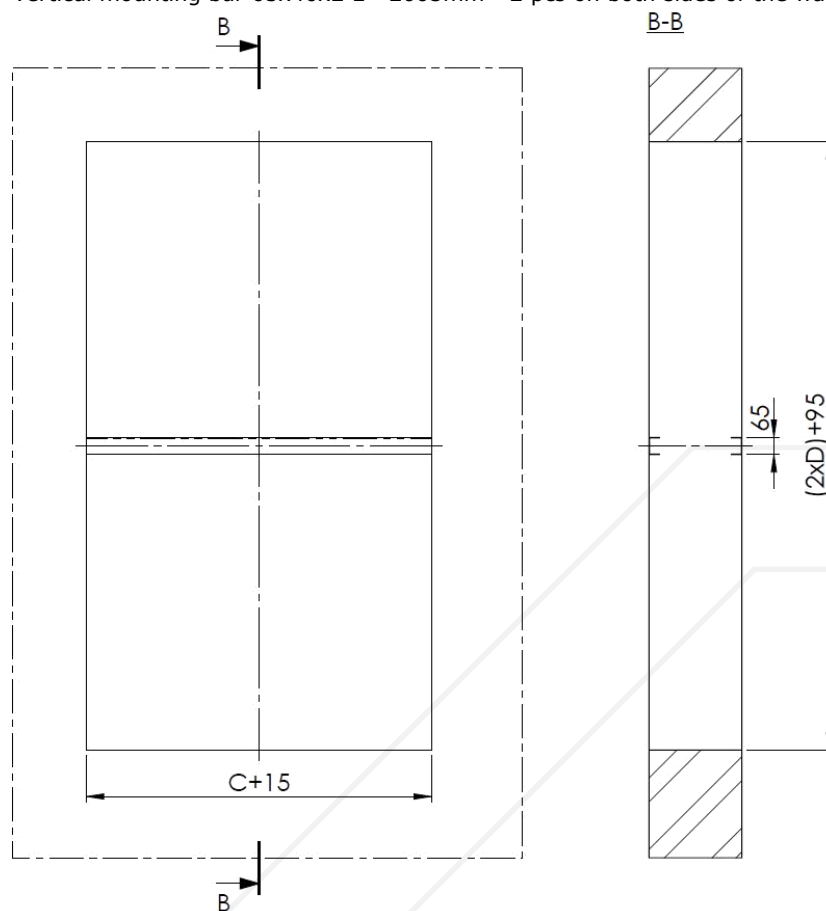


Figure 7 - Mounting opening for CDH-F-L vertical battery.

Vertical battery installation.

Example for max. mounting opening of vertical battery 1515x4075:

$[4075-65]/2=2005$  - horizontal mounting bar 65x40x2 L =1515mm - 2 pcs on both sides of the wall.



Table 2 – Dimensions.

Number of lamellas in a louver [pcs.]	Mounting hole height [mm]	Mounting hole width [mm]																		
		400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100	
		A <sub>a</sub> aerodynamic free area [m²]																		
		Approximate weight without a drive, lamella insert S [kg]																		
3	590	0,10	0,13	0,16	0,20	0,23	0,26	0,29	0,33	0,36	0,39	0,42	0,46	0,50	0,53	0,56	0,59	0,62	0,66	
		6,0	6,7	8,3	9,1	9,9	10,7	11,5	12,3	13,1	13,9	14,7	15,5	16,3	17,1	17,9	18,7	19,5	20,3	
4	765	0,14	0,18	0,22	0,27	0,31	0,35	0,40	0,45	0,49	0,54	0,58	0,63	0,67	0,71	0,76	0,81	0,86	0,90	
		7,2	8,1	9,8	10,7	11,6	12,5	13,4	14,3	15,2	16,1	17,0	17,9	18,8	19,7	20,6	21,5	22,4	23,3	
5	940	0,17	0,23	0,28	0,34	0,40	0,45	0,51	0,56	0,62	0,68	0,74	0,79	0,85	0,90	0,96	1,01	1,08	1,14	
		8,4	9,4	11,0	12,1	13,2	14,3	15,4	16,5	17,6	18,7	19,8	20,9	22,0	23,1	24,2	25,3	26,4	27,5	
6	1115	0,21	0,28	0,34	0,41	0,47	0,55	0,61	0,69	0,75	0,82	0,88	0,97	1,03	1,10	1,17	1,23	1,30	1,37	
		9,5	10,7	12,5	13,7	14,9	16,1	17,3	18,5	19,7	20,9	22,1	23,3	24,5	25,7	26,9	28,1	29,3	30,5	
7	1290	0,25	0,33	0,40	0,48	0,56	0,64	0,72	0,80	0,83	0,91	1,00	1,07	1,14	1,22	1,31	1,39	1,47	1,54	
		10,6	11,9	13,9	15,2	16,5	17,8	19,1	20,4	21,7	23,0	24,3	25,6	26,9	28,2	29,5	30,8	32,1	33,4	
8	1465	0,28	0,38	0,46	0,55	0,64	0,74	0,83	0,91	0,95	1,05	1,14	1,22	1,33	1,41	1,50	1,59	1,70	1,79	
		11,8	13,2	15,3	16,7	18,1	19,5	20,9	22,3	23,7	25,1	26,5	27,9	29,3	30,7	32,1	33,5	34,9	36,3	
9	1640	0,32	0,42	0,52	0,62	0,72	0,83	0,93	1,04	1,09	1,18	1,30	1,40	1,49	1,59	1,71	1,81	1,91	2,01	
		12,9	14,5	16,7	18,3	19,9	21,5	23,1	24,7	26,3	27,9	29,5	31,1	32,7	34,3	35,9	37,5	39,1	40,7	
10	1815	0,36	0,47	0,58	0,69	0,81	0,92	1,05	1,16	1,21	1,34	1,44	1,55	1,69	1,79	1,90	2,01	2,12	2,27	
		14,1	15,8	18,2	19,9	21,6	23,3	25,0	26,7	28,4	30,1	31,8	33,5	35,2	36,9	38,6	40,3	42,0	43,7	
11	1990	0,39	0,52	0,63	0,76	0,89	1,01	1,15	1,27	1,35	1,47	1,59	1,73	1,85	1,97	2,09	2,21	2,37	2,49	
		15,4	17,2	19,6	21,5	23,4	25,3	27,2	29,1	31,0	32,9	34,8	36,7	38,6	40,5	42,4	44,3	46,2	48,1	
12	2165	0,43	0,57	0,69	0,83	0,97	1,12	1,26	1,39	1,47	1,60	1,76	1,89	2,02	2,15	2,32	2,45	2,59	2,72	
		16,6	18,6	21,0	23,0	25,0	27,0	29,0	31,0	33,0	35,0	37,0	39,0	41,0	43,0	45,0	47,0	49,0	51,0	
13	2340	0,46	0,62	0,76	0,90	1,06	1,22	1,36	1,50	1,60	1,74	1,91	2,05	2,19	2,37	2,51	2,66	2,80	2,94	
		17,8	20,0	22,5	24,6	26,7	28,8	30,9	33,0	35,1	37,2	39,3	41,4	43,5	45,6	47,7	49,8	51,9	54,0	
14	2515	0,50	0,67	0,82	0,98	1,14	1,31	1,46	1,62	1,72	1,90	2,05	2,20	2,39	2,55	2,70	2,86	3,01	3,17	
		19,0	21,4	23,9	26,2	28,5	30,8	33,1	35,4	37,7	40,0	42,3	44,6	46,9	49,2	51,5	53,8	56,1	58,4	
15	2690	0,54	0,72	0,88	1,05	1,22	1,40	1,57	1,76	1,84	2,03	2,20	2,36	2,56	2,73	2,90	3,06	3,23	3,45	
		20,2	22,8	25,3	27,7	30,1	32,5	34,9	37,3	39,7	42,1	44,5	46,9	49,3	51,7	54,1	56,5	58,9	61,3	
16	2865	0,57	0,76	0,93	1,12	1,30	1,50	1,67	1,88*	1,99	2,17	2,34	2,56	2,73	2,91	3,09	3,27	3,50	3,68	
		21,6	24,2	26,7	29,3	32,0	34,7	37,4	40,1	42,8	45,5	48,2	50,9	53,6	56,3	59,0	61,7	64,4	67,1	
16	2900	0,58	0,77	0,95	1,14	1,31	1,51	1,69	1,90*	2,02	2,20	2,37	2,59	2,77	2,95	3,13	3,31	3,54	3,72	
		22,8	25,4	27,9	30,5	33,2	35,9	38,6	41,3	44,0	46,7	49,4	52,1	54,8	57,5	60,2	62,9	65,6	68,3	

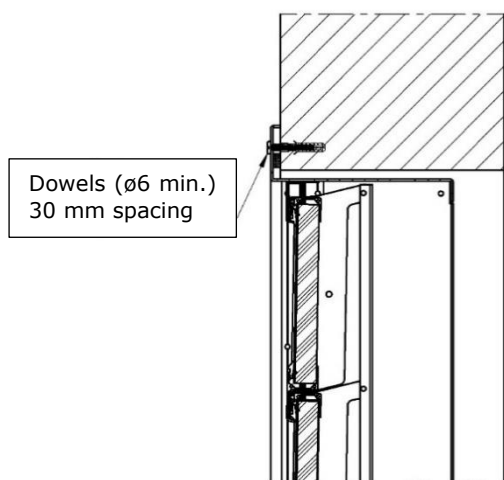
Distinction in tab.2 means the range of dimensions of CDH-F-L louvre with measuring strips. Mounting opening for CDH-F-L according to data from table 2 is made according to formula (C+15) x (D+15) (illustration in Fig. 5).

It is recommended to design mounting holes in an optimal way for the heights D dimensions given in table 2; for the intermediate dimensions, a higher metal sheet cover is being used in the top part of the outlet louver.\*For dimension 1100x2865 from table for drive option with return spring, active area is A<sub>a</sub>=1,79 m<sup>2</sup>.

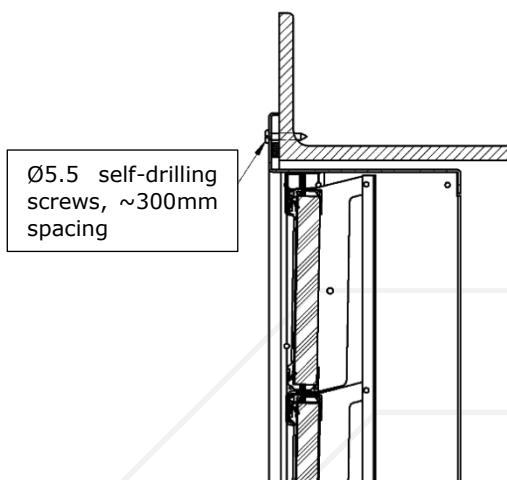
\*For dimension 1100x2900 from table for drive option with return spring, active area is A<sub>a</sub>=1,81 m<sup>2</sup>.

## 4. INSTALLATION CONDITIONS

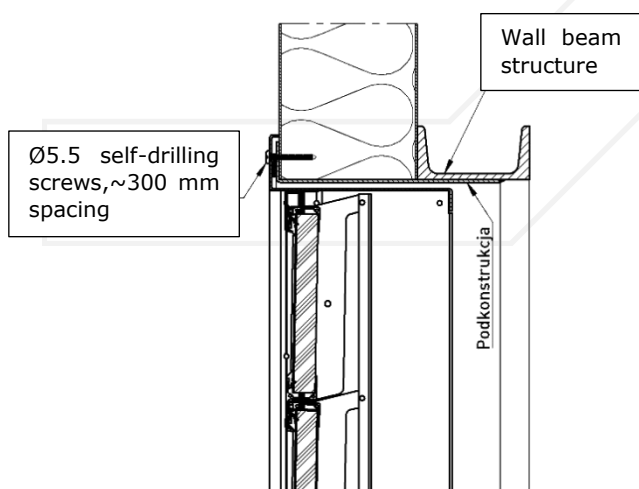
CDH-F units should be installed to a wall with use of screws through the holes in louver frame (the holes should be prepared by the customer on the construction site). The examples of installations are shown below.



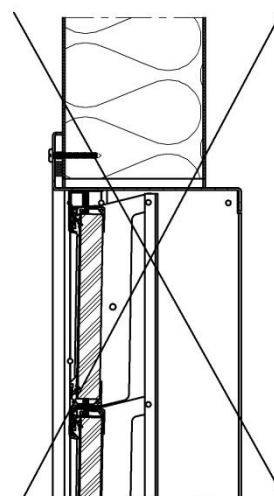
*Installation in a brickwork or concrete wall*



*Installation in a steel structure*



*Correct installation in a sandwich panel wall*



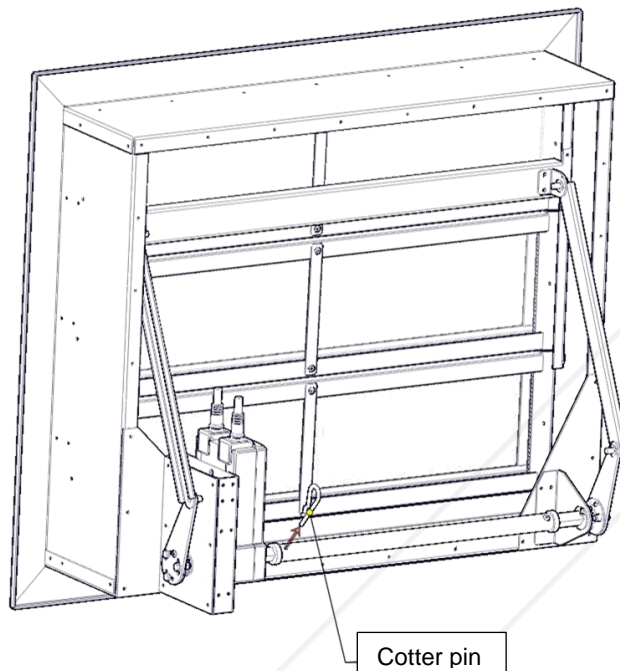
*Incorrect installation in a sandwich panel wall*

In the case of installation of the CDH-F louver in sandwich panel wall it is necessary to prepare additional steel sub-structure in order to fix the louver to the load bearing elements of the wall.

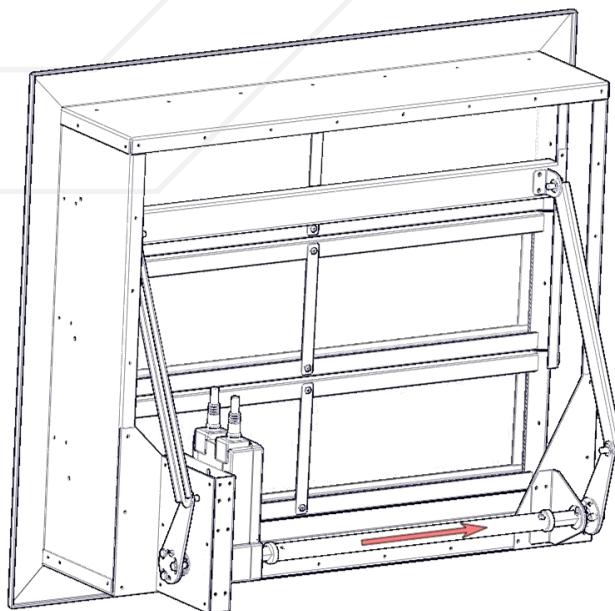
## 5. DISASSEMBLY OF THE ELECTRIC ACTUATOR

In order to disassembly the actuator:

- remove the safety pin with a strong pull,
- pull the pipe out of the actuator axis,
- remove the fixing screws of the actuator and remove the actuator from the axis.



*Removing the cotter pin.*



*Pulling the pipe out of the actuator axis*

In order to install the actuator:

- mount the actuator on the axis and screw the fixing screws in,
- put the pipe onto the actuator axis so that the tie rods on the both sides of the louver are synchronised,
- install the cotter pin.

## 6. TRANSPORT AND STORAGE CONDITIONS

CDH-F louvres are delivered wrapped in foil.

The product should be stored in closed rooms providing protection against weather conditions.

Always secure the product against moving during transport. Stacking products is unacceptable.

During transport products should be protected against weather conditions. After every delivery it is necessary to carry out a visual inspection of the elements. Do not expose to mechanical damage.

## 7. INSPECTION AND MAINTENANCE PROCEDURE

CDH-F louvres installed in ventilation systems must be inspected at least once a year to check their operation. Every inspection shall be recorded in the form of a protocol.

In order to check the correctness of CDH-F louvers operation, in particular, it is necessary to:

Check the lamellas and seals.

Check if the louvres are clean; clean if necessary.

Check the actuator wiring.

Carry out a visual inspection for corrosion of metal parts.

Carry out the opening and closing test of the unit lamellas.

If there is an actuator with a return spring mounted (BFN, BF), turn off its power supply. The outlet louver has to open.

Connect voltage to the louver. The outlet louver should close.

If the damper opens and closes correctly, close it and leave in the closed position.

Of an open-close actuator is installed (BLE, BE), open the louver by means of a controller. The louver has to open.

Then close the louver by means of a controller. The louver should close.

If the louver opens and closes correctly, close it and leave in the closed position.

Make an inspection report.

Notify the Manufacturer in the event of any defects.

## 8. WARRANTY TERMS

- The Manufacturer warrants the products supplied according to the provisions of the Agreement or the General Warranty Terms and Conditions of Smay Sp. z o.o.
- The warranty does not cover defects caused by improper storage, transport, installation of the element and, especially, mechanical damage and defects of the anti-corrosion coatings.
- The Warranty is void when it is found that the User made structural modifications on his own or installed the product not in accordance with the Operation and Maintenance Manual.