



# KOOLAIR

Fire

# protection



ISO 9001

BUREAU VERITAS  
Certification

Sistema de Gestión



[www.koolair.com](http://www.koolair.com)

# Fire protection

Rectangular and circular fire dampers

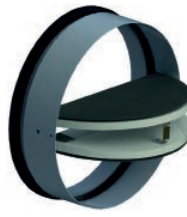


SCFR



SCFC

Circular terminal fire damper



BDK

Smoke extract louvre



RPK

Smoke extract dampers



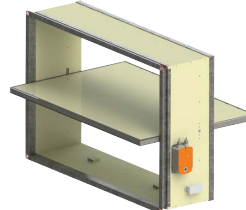
SMLD



CEVH



CEVH-1P



SCDC

KOOLCOM fire damper monitoring system



GRAPHIC CONSOLE

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## Rectangular and circular fire dampers



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## Rectangular and circular fire dampers



**SCFR-PD with motor**

### Description

KOOLAIR rectangular fire dampers, models SCFR-PD, SCFR-GD, SCFR-3H and circular fire dampers, models SCFC-PD and SCFC-GD, are approved in accordance with the Technical Building Code according to test standard UNE EN 1366-2 and classified according to EN 13501-3. Fire dampers close automatically to prevent fire and smoke from spreading through ventilation ductwork to adjacent fire compartments.

The frame consists of a single sheet of sheet metal with an internal recess reinforced by a slot sheet metal support that prevents a thermal bridge.

The blade is made of a heat-resistant material with a thickness that varies depending on the model, intumescent joints and a perimeter seal.

Symmetrical dampers are designed to be installed in vertical or horizontal enclosures irrespective of the direction of the airflow. Damper closure is operated by the breaking or smelting of a bimetallic fusible link (-TH70) when the temperature exceeds 72 °C.

It is reset manually in all instances except when incorporating a servomotor with return spring and a thermoelectric fusible link calibrated at 72 °C.

**All dampers comply with requirements of the cold smoke leakage standard (-S).**



**SCFC-PD with manual operation  
with fixing strips (optional)**

### Operation

The components of the manual operating mechanism are made of zinc plated steel and are housed in a plastic enclosure (manual reset).

The operating mechanism acts on the blade through a reverse pulley and does not act directly on the blade shaft, which serves only as a pivot. The blade operating mechanism therefore has greater solidity and reliability.

The mechanism is offset from the blade shaft, allowing access to the unit for maintenance and testing.

The mechanism housing is evolutive, i.e. all the operating options can be interchanged without having to send it to the factory.

Dampers incorporating a TH-70 fusible link and/or shunt or undervoltage release require a manual "on-site" reset device that allows the damper to be reset (opening) after it has been closed. Dampers with electric motors can be reset remotely by means of an electrical supply (24V or 230V).

## Circular fire dampers

### CE Marking

Koolair fire dampers carry the CE marking in compliance with RPC-305/2011/EU, according to EN15650:2010.

### NF Marking

The SCFR-PD, SCFR-GD, SCFC-PD and SCFC-GD models are certified under NF (NF537 Certification Standard, NF S 61-937-5 fire dampers).

### Standards

The dampers are approved in accordance with European Test Standard UNE-EN 1366-2 and European classification standard UNE-EN 13501-3, where:

- (E) Integrity
- (I) Isolation
- (ho) Installed in Horizontal slab. Mounted in horizontal enclosure.
- (ve) Installed in wall or stud wall. Mounted in vertical enclosure.
- (i ↔ o) Symmetric (independent of airflow direction). Suitable for fire in both directions (interior-exterior and exterior-interior)
- (S) Airtightness. Leakage through the damper closing blade  $<200 \text{ m}^3/\text{h}\cdot\text{m}^2$

Option for fire dampers to be supplied with airtightness C to comply with EN 1751.

Motor-driven fire dampers can be integrated into the building management system (BMS) and/or fire panel with the KOOLCOM system from KOOLAIR.



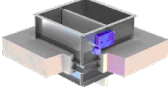

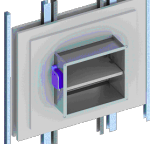



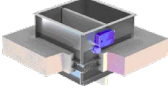



To guarantee the correct fire damper operation, it is essential to read and follow the recommendations in the installation and operation manual. In addition, the installation must comply with all current national standards.

Further information and updates, as well as the installation and operating manual, can be found on our website ([www.koolair.com](http://www.koolair.com)).

## Declared performance

The performance specifications of our range of fire dampers (rectangular and circular) are shown in the table below.

### Rectangular fire dampers

SCFR-PD CPR-2245-16		Dimensions (mm)	Construction details	Installation location	Installation	Classification
		L: 200 → 800 H: 100 → 600	d = 150 mm $\rho = 1200 \text{ kg/m}^3$	Brick Wall	Mortar	EI-120 (ve i↔o) S (500 Pa)
		L: 200 → 800 H: 100 → 600	d = 150 mm $\rho = 2100 \text{ kg/m}^3$	Floor slab	Mortar	EI-180 (ho i↔o) S (500 Pa)
		L: 200 → 800 H: 100 → 600	d ≥ 100 mm	Stud wall	Plasterboard	EI-120 (ve i↔o) S (500 Pa)
SCFR-GD CPR-2591-16		Dimensions (mm)	Construction details	Installation location	Installation	Classification
		L: 200 → 1500 H: 200 → 800	d = 150 mm $\rho = 1200 \text{ kg/m}^3$	Brick Wall	Mortar	EI-120 (ve i↔o) S (500 Pa)
		L: 850 → 1500 H: 200 → 800	d = 150 mm $\rho = 2400 \text{ kg/m}^3$	Floor slab	Mortar	EI-120 (ho i↔o) S (500 Pa)
SCFR-3H CPR-3851-20		Dimensions (mm)	Construction details	Installation location	Installation	Classification
		L: 200 → 1500 H: 200 → 800	d = 150 mm $\rho = 1300 \text{ kg/m}^3$	Brick Wall	Mortar	EI-180 (ve i↔o) S (500 Pa)

# Declared performance

## Circular fire dampers

SCFC-PD CPR-2244-16		Dimensions (mm)	Construction details	Installation location	Installation	Classification
		Ø: 100 → 355	d = 150 mm ρ = 1200 kg/m <sup>3</sup>	Brick Wall	Mortar	EI-120 (ve i↔o) S (500 Pa)
		Ø: 100 → 355	d = 150 mm ρ = 2100 kg/m <sup>3</sup>	Floor slab	Mortar	EI-180 (ho i↔o) S (500 Pa)
		Ø: 100 → 355	d ≥ 100 mm	Stud wall	Plasterboard	EI-120 (ve i↔o) S (500 Pa)
SCFC-GD CPR-2592-16		Dimensions (mm)	Construction details	Installation location	Installation	Classification
		Ø: 200 → 800	d = 150 mm ρ = 1200 kg/m <sup>3</sup>	Brick Wall	Mortar	EI-180 (ve i↔o) S (500 Pa)
		Ø: 200 → 630	d = 150 mm ρ = 2100 kg/m <sup>3</sup>	Floor slab	Mortar	EI-180 (ho i↔o) S (500 Pa)

### Key

- L: Length
- H: Height
- Ø: Diameter
- d: Wall thickness
- ρ: Density

### Details of supporting structure, tested on Stud wall (plasterboard):

- Fire resistance rating: EI 90.
- 2 sheets of laminated fireproof plasterboard ref. KNAUF cortafuego DF thickness 12.5 mm.
- Rock wool panel ref. ProRox SL960 (ROCKWOOL).
- 2 sheets of laminated fireproof plasterboard ref. KNAUF cortafuego DF thickness 12.5 mm.
- 48 mm U-shaped channels and uprights in 400 mm modules.

# Applications

## FIXED WALL EI-120 ( $v_e$ i↔o) S (RECTANGULAR)

		L (mm)													
		200	300	400	500	600	700	800	850	900	1000	1100	1200	1300	1400
H (mm)	100														
	200														
	300														
	400	<b>SCFR-PD</b>													
	500														
	600								<b>SCFR-GD</b>						
	650														
	700	<b>SCFR-GD</b>													
	800														

## STUD WALL EI-120 ( $v_e$ i↔o) S (RECTANGULAR)

		L (mm)						
		200	300	400	500	600	700	800
H (mm)	100							
	200							
	300							
	400	<b>SCFR-PD</b>						
	500							
	600							

## FIXED WALL EI-180 EI-180 ( $v_e$ i↔o) S (RECTANGULAR)

		L (mm)													
		200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500
H (mm)	200														
	300														
	400														
	500	<b>SCFR-3H</b>													
	600														
	700														
	800														

The length and height of all models of rectangular fire dampers increases in 50mm increments.



## Applications

### SLAB EI-120 ( $h_o \leftrightarrow o$ ) S / EI-180 ( $h_o \leftrightarrow o$ ) S (RECTANGULAR)

		L (mm)															
		200	300	400	500	600	700	800	850	900	1000	1100	1200	1300	1400	1500	
H (mm)	100	SCFR-PD (EI-180-S)								SCFR-GD (EI-120-S)							
	200	SCFR-PD (EI-180-S)								SCFR-GD (EI-120-S)							
	300	SCFR-PD (EI-180-S)								SCFR-GD (EI-120-S)							
	400	SCFR-PD (EI-180-S)								SCFR-GD (EI-120-S)							
	500	SCFR-PD (EI-180-S)								SCFR-GD (EI-120-S)							
	600	SCFR-PD (EI-180-S)								SCFR-GD (EI-120-S)							
	650	SCFR-PD (EI-180-S)								SCFR-GD (EI-120-S)							
	700	SCFR-PD (EI-180-S)								SCFR-GD (EI-120-S)							
	800	SCFR-PD (EI-180-S)								SCFR-GD (EI-120-S)							

### STUD WALL EI-120 ( $v_e \leftrightarrow o$ ) S (CIRCULAR)

Ø (mm)									
100	125	150	160	200	225	250	300	315	355
SCFC-PD									

### FIXED WALL EI-120 ( $v_e \leftrightarrow o$ ) S / EI-180 ( $v_e \leftrightarrow o$ ) S (CIRCULAR)

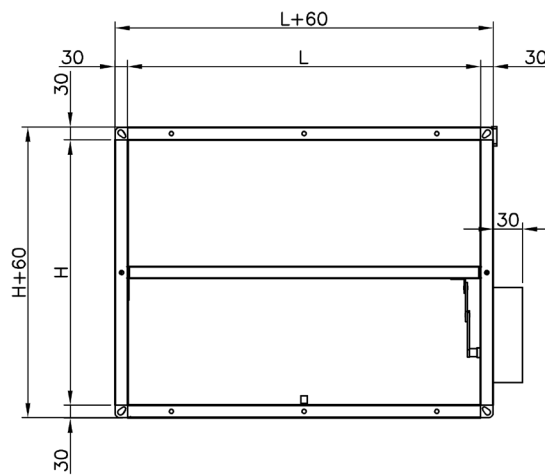
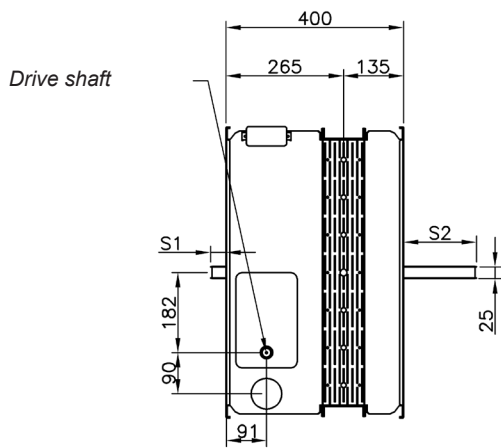
Ø (mm)																			
100	125	150	160	200	225	250	300	315	355	400	450	500	560	630	650	700	710	750	800
SCFC-PD (EI-120-S)										SCFC-GD (EI-120-S)									
										SCFC-GD (EI-180-S)									

### SLAB EI-180 ( $h_o \leftrightarrow o$ ) S (CIRCULAR)

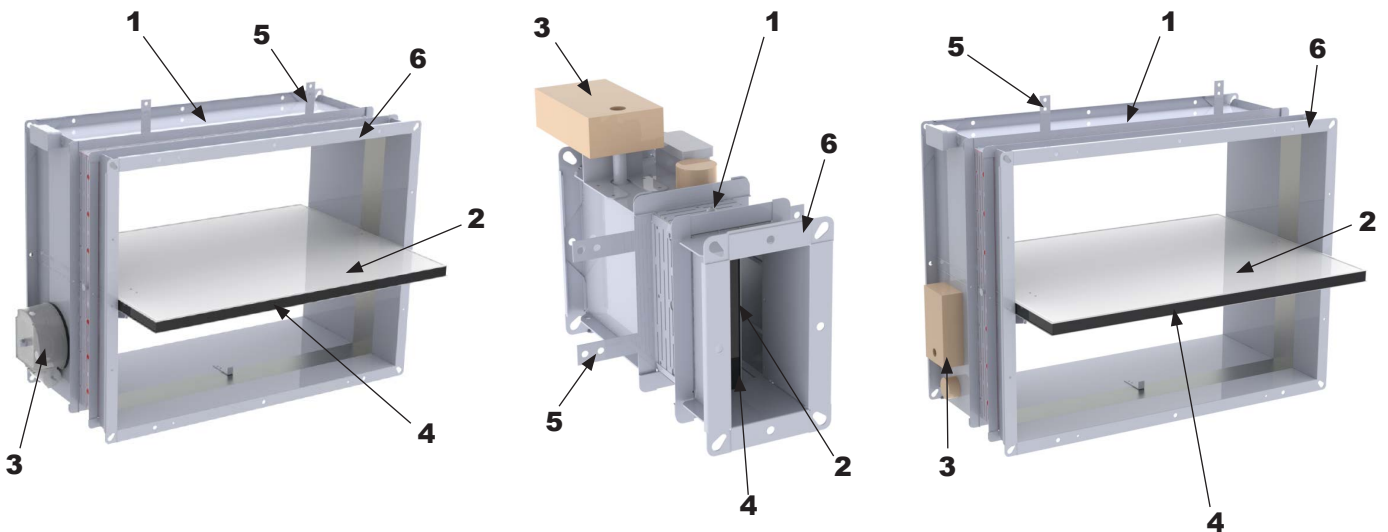
Ø (mm)														
100	125	150	160	200	225	250	300	315	355	400	450	500	560	630
SCFC-PD										SCFC-GD				

## SCFR-PD Model and dimensions

SCFR-PD fire dampers are available in standard sizes (duct size) with a length (L dimension) from 200 to 800 mm increasing in 50mm increments and a height (dimension H) from 100 to 600 mm increasing in 50mm increments.



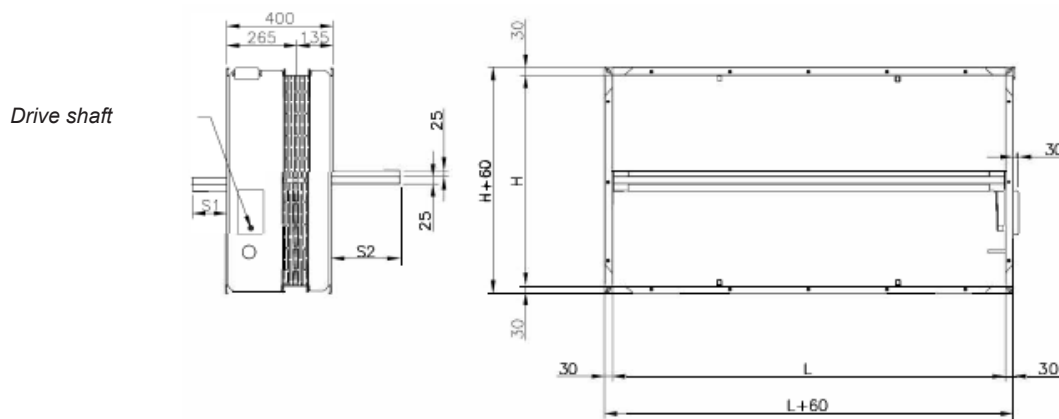
H	S1	S2
100	-	-
150	-	-
200	-	-
250	-	-
300	-	14
350	-	39
400	-	64
450	-	89
500	-	114
550	10	139
600	35	164



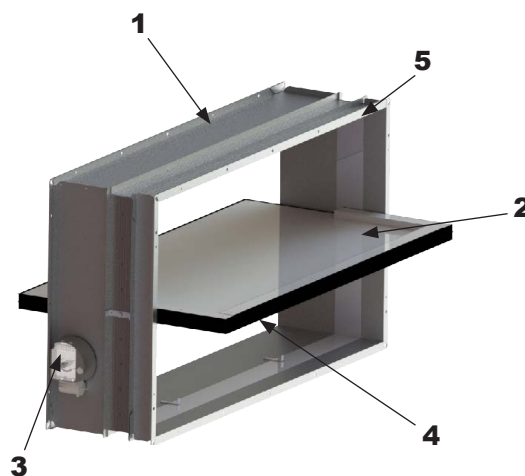
- 1- Galvanised steel frame
- 2- Damper blade
- 3- Mechanism/motor housing
- 4- Intumescent seal
- 5- Fixing lug for installing in slab floor (optional)
- 6- 30 mm flange

# SCFR-GD Model and dimensions

SCFR-GD fire dampers are available in standard sizes (duct size) with a length (L dimension) from 850 to 1500 mm increasing in 50mm increments and a height (dimension H) from 200 to 800 mm increasing in 50mm increments.



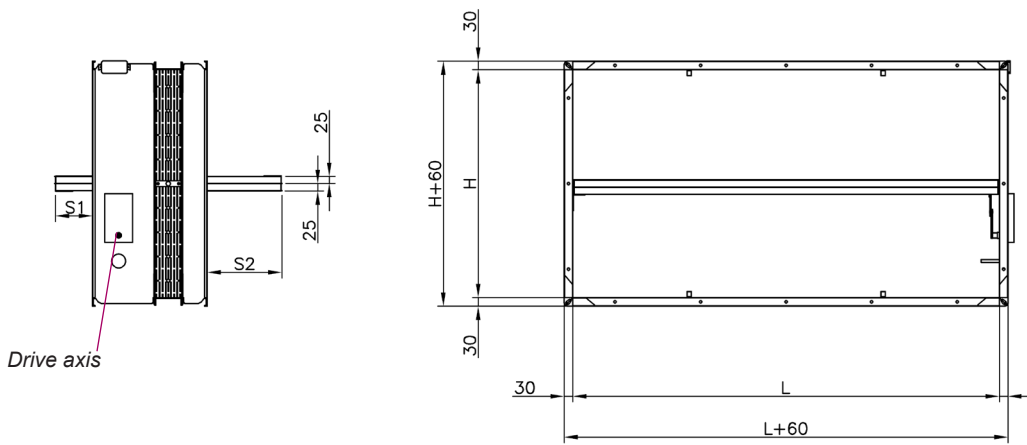
H	S1	S2
200	-	-
250	-	-
300	-	14
350	-	39
400	-	64
450	-	89
500	-	114
550	10	139
600	35	164
650	60	189
700	85	214
750	110	239
800	135	264



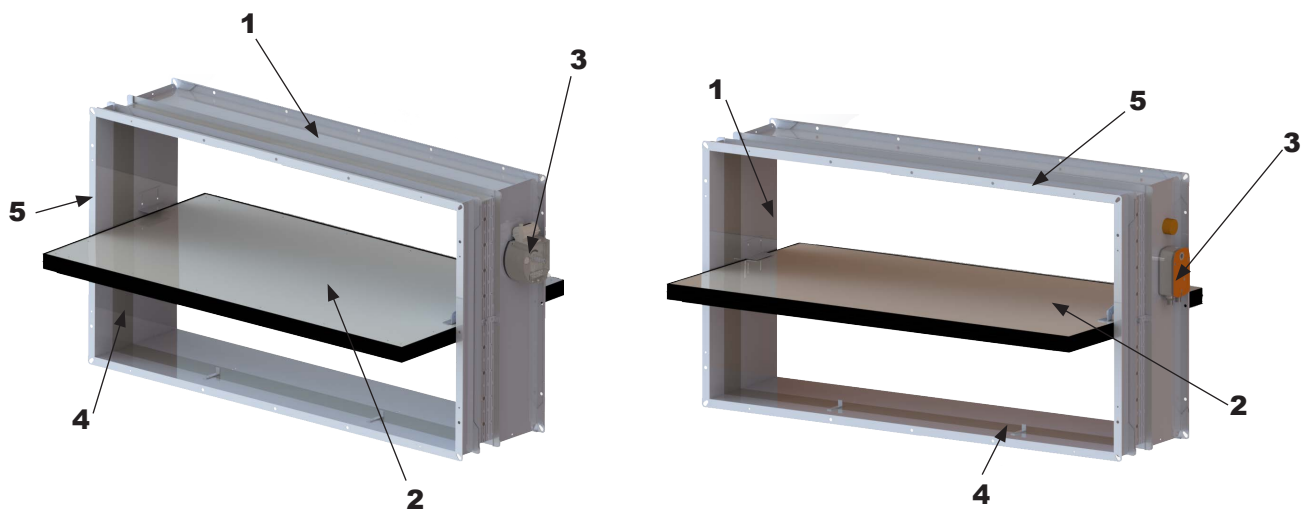
- 1- Galvanised steel frame
- 2- Damper blade
- 3- Mechanism/motor housing
- 4- Intumescent seal
- 5- 30 mm flange

# SCFR-3H Model and dimensions

SCFR-3H fire dampers are available in standard sizes (duct size) with a length (L dimension) from 200 to 1500 mm increasing in 50mm increments and a height (dimension H) from 200 to 800 mm increasing in 50mm increments.



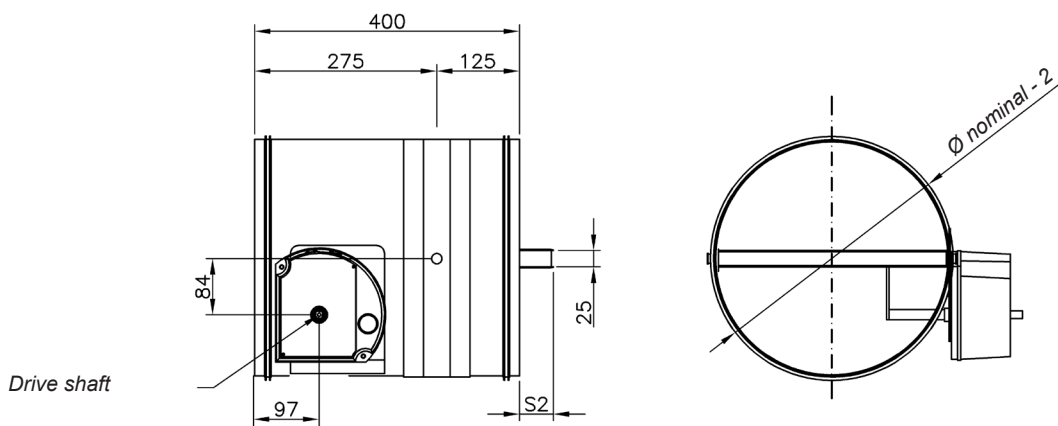
H	S1	S2
200	-	-
250	-	-
300	-	9
350	-	34
400	-	59
450	-	84
500	-	109
550	4	134
600	29	159
650	54	184
700	79	209
750	104	234
800	129	259



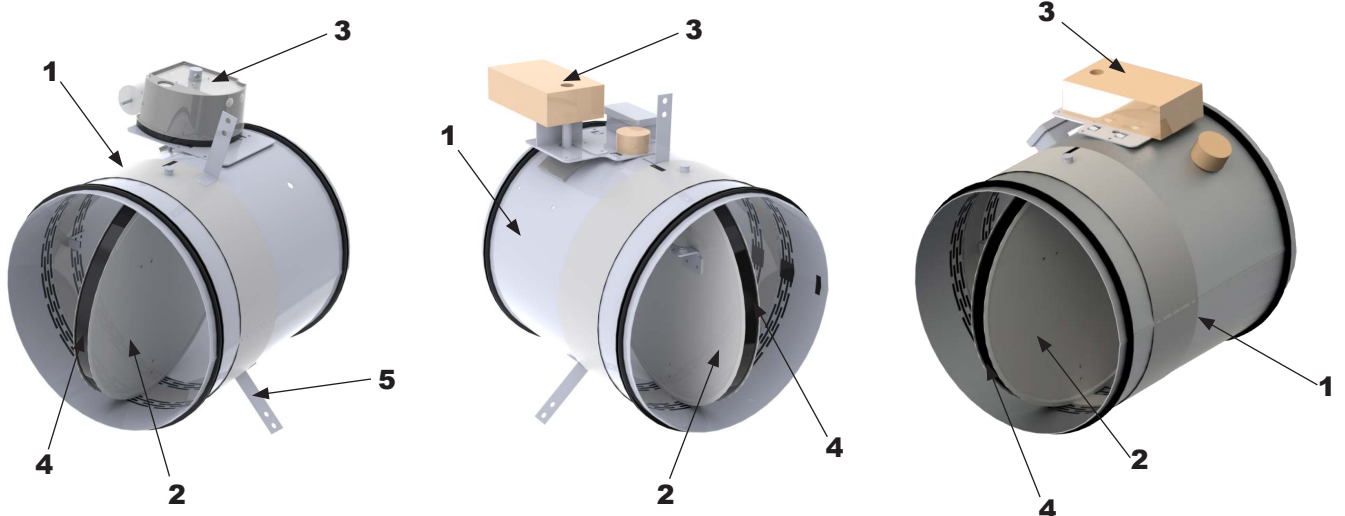
- 1- Galvanised steel frame
- 2- Blade
- 3- Mechanism/motor housing
- 4- Intumescent seal
- 5- 30 mm flange

## SCFC-PD Model and dimensions

The standard dimensions (duct dimensions) of SCFC-PD fire dampers are: 100, 125, 150, 160, 200, 225, 250, 300, 315 and 355 mm.



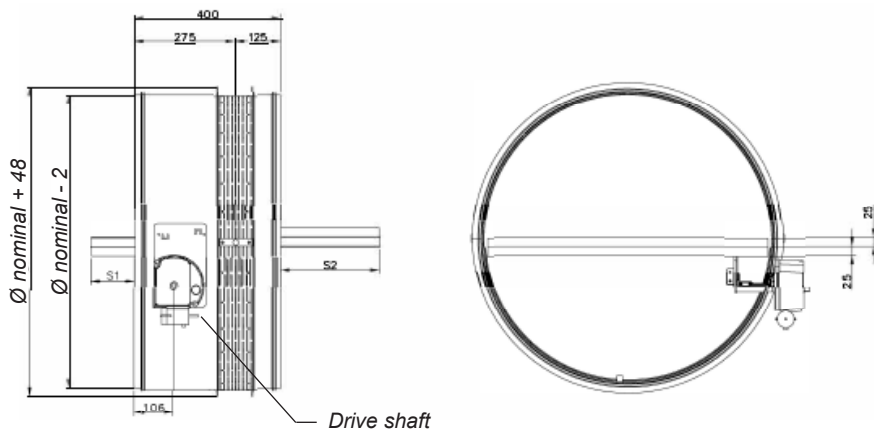
Ø NOMINAL	S2
100	-
125	-
150	-
160	-
200	-
225	-
250	-
300	14
315	25
355	50



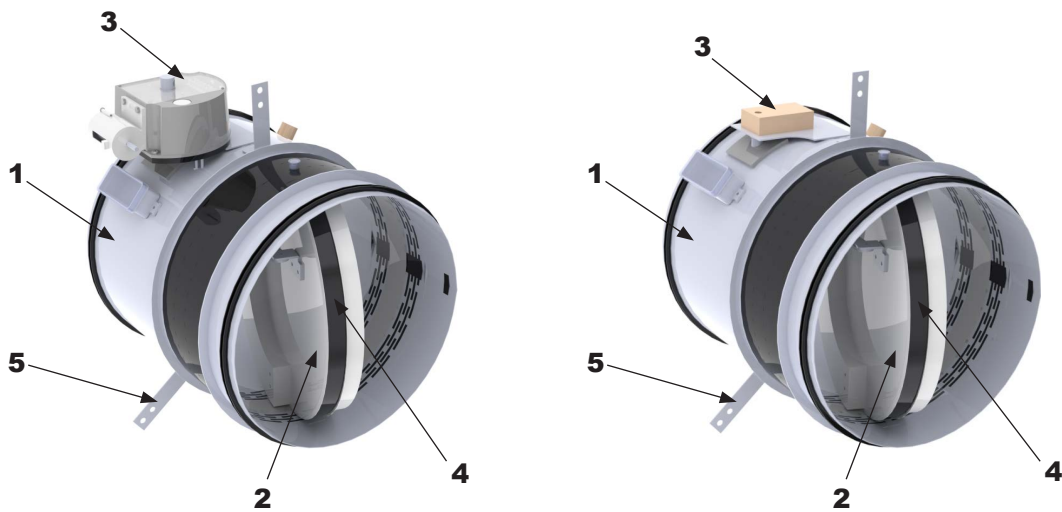
- 1- Galvanised steel frame
- 2- Blade
- 3- Mechanism/motor housing
- 4- Intumescent seal
- 5- Fixing lug for installing in slab (optional)

# SCFC-GD Model and dimensions

The standard dimensions (duct dimensions) of SCFC-GD fire dampers are: 400, 450, 500, 560, 630, 650, 700, 710, 750 and 800 mm.



Ø NOMINAL	S1	S2
400	-	73
450	-	98
500	-	123
560	3	153
630	38	188
650	48	198
700	73	223
710	78	228
750	98	248
800	123	273



- 1- Galvanised steel frame
- 2- Damper blade
- 3- Mechanism/motor housing
- 4- Intumescent seal
- 5- Fixing lug for installing in slab (optional)

## Accessories

### SAFETY OPERATING DEVICES (DAS) AND ACCESSORIES

[As per ISO 10294-4: 2012, NF S 61937-1: 2003 and NF S 61937-5: 2012]

#### Fusible link (DAS)

Alloy type (bimetallic) fusible link, which acts when the air flow temperature exceeds 72 °C (EN 10294) causing the fusible link to smelt. In all the operating mechanism arrangements it is incorporated as standard in the internal assembly of the trigger mechanism except where a servomotor with a reset spring is fitted.



FUSIBLE LINK (DAS)

#### Electromagnetic coil (shunt or undervoltage release) (DAS)

There are two types: shunt release or undervoltage release.

Shunt releases are normally de-energised and act via an electric signal (electric supply)

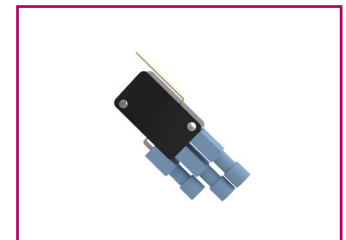
Undervoltage releases are normally energised and act by removing or breaking the current supply.

Available in:

Voltage	Shunt release	Ruptura
220 V.a.c.	CE 0370	CE 0370
24 V.a.c.	CE 0370	CE 0370
24 V.d.c.	CE NF 0370	CE NF 0370
48 V.a.c.	CE 0370	CE 0370
48 V.d.c.	CE NF 0370	CE NF 0370



ELECTRIC COIL (DAS)



CONTACT POSITION

#### Start and end of run position contacts

Electrical devices that indicate the position of the damper, i.e. whether it is open or closed, by connected control systems, detection modules, etc.

PC = Start of run

FC = End of run

#### Servomotor with reset spring and thermoelectric fusible link (DAS)

Allows the damper to be both reset (opened) and activated (closed) remotely. Fitted with a thermoelectric fusible link set at 72 °C (EN 10294) and its own signalling contacts (start and end of run).

The servomotors are supplied for 24 V operation CE NF 0370 230 V operation CE 0370 available on request. KOOLAIR incorporates motors from different manufacturers (Belimo, Siemens, etc.).



SIEMENS  
SERVOMOTOR  
(DAS)



BELIMO SERVOMOTOR (DAS)



BELIMO SERVOMOTOR + BSIA (DAS)

# Installation

Fire dampers are part of a building's fire safety system and therefore special care must be taken with their installation.

To install the dampers a perforation in the wall that is 100 mm greater than the nominal dimensions of the damper is required. No additional space is required for the mechanism box as it sits outside the wall or partition. As such, when the fire damper blade is in the closed position, it will be exactly vertical in the firewall, as if it were an extension of this wall, as required by UNE-EN 1366-2.

Likewise, the dimensions indicated on the drawings must be respected in order to allow fitting of the operating mechanism box. It is important not to force the damper blade open or closed by hand; activation must be via the mechanism, whether mechanical or electric.

## Positioning in wall

### SCFR-PD, SCFR-GD, SCFR-3H

	A	B	C	D
SCFR-PD	35	70	150	190
SCFR-GD	35	70	150	190
SCFR-3H	35	70	150	190

*L nominal = damper length  
H nominal = damper height*

### SCFC-PD, SCFC-GD

	E
SCFC-PD	65
SCFC-GD	70

*Ø nominal = Ø damper*

## Positioning in slab

### SCFR-PD, SCFR-GD

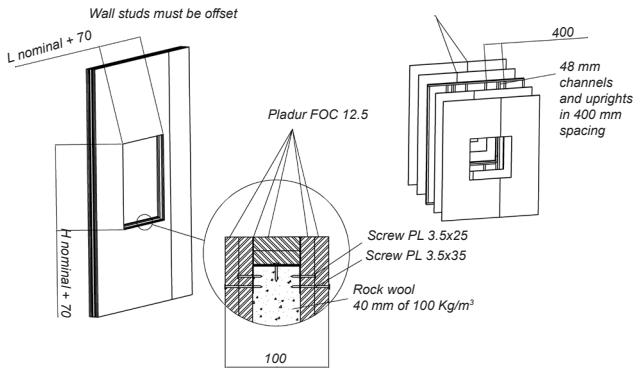
### SCFC-PD, SCFC-GD



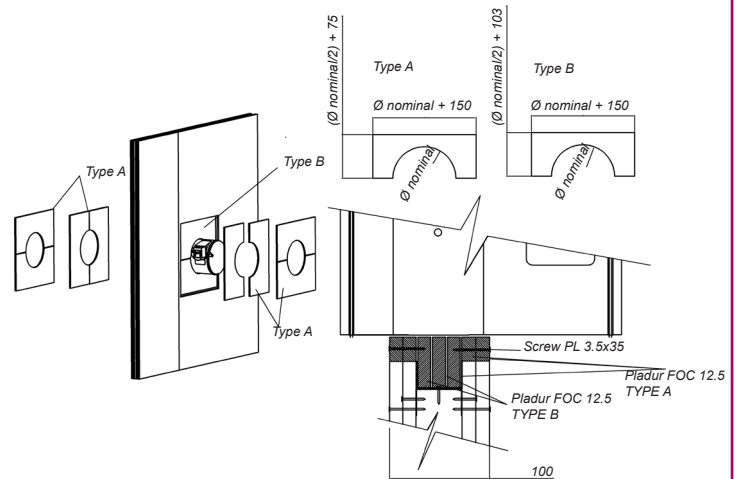
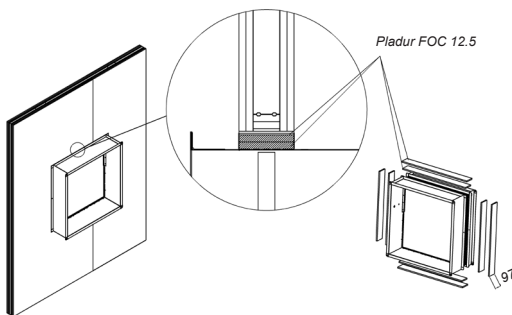
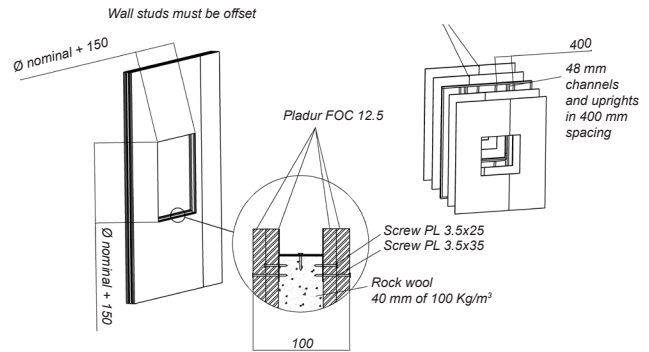
## Installation

### Mounting in stud wall

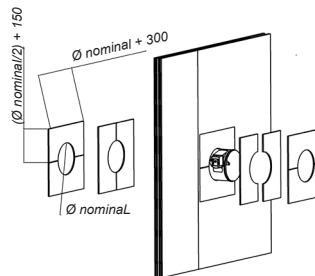
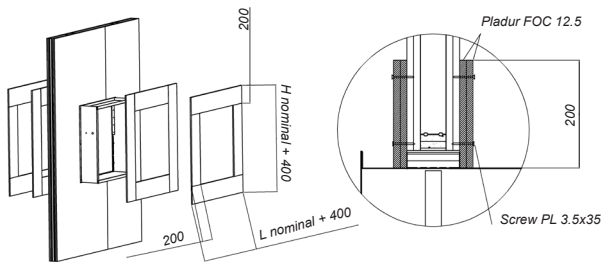
#### SCFR-PD



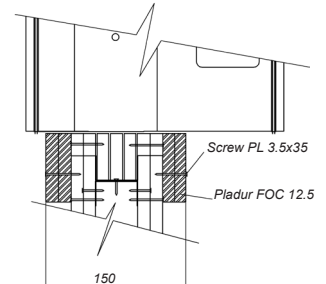
#### SCFC-PD



NOTE: The distance between screws should not exceed 150 mm



NOTE: The distance between screws should not exceed 150 mm



Test conditions:

- 15-8577-939 (SCFC-PD): KNAUF "cortafuego DF" fireboard.
- 15-8577-1076 (SCFR-PD): KNAUF "cortafuego DF" fireboard.

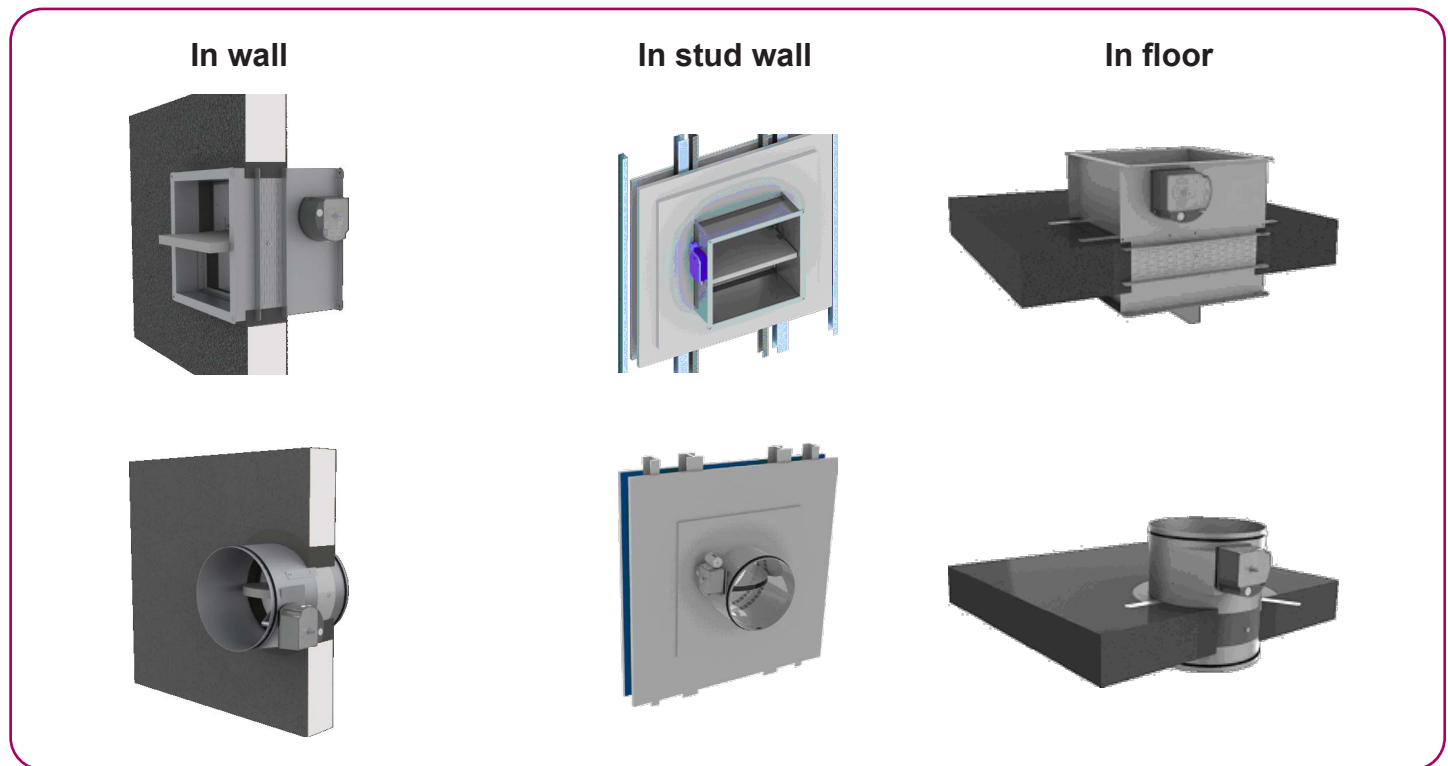
To guarantee the correct fire damper operation, it is essential to read and follow the recommendations in the installation and operation manual. In addition, the installation must comply with all current national standards.

# Installation

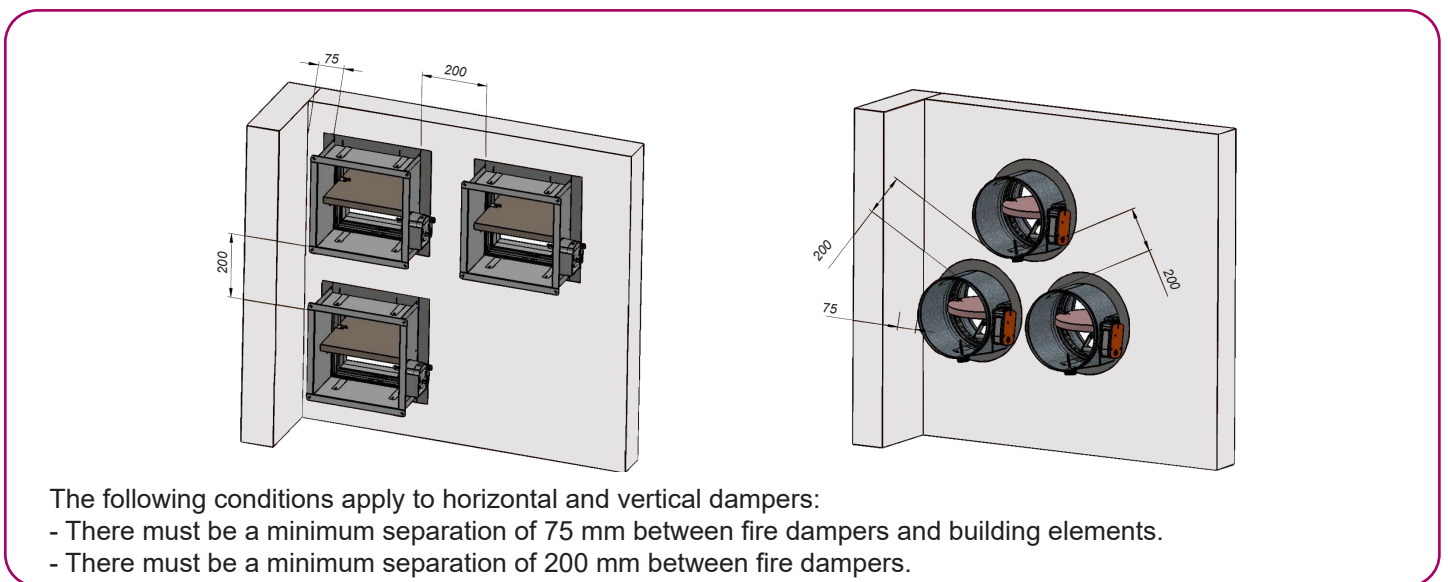
## Precautions during assembly

The slot section of the damper frame must be sealed in when fitted both horizontally or vertically.

There is an option to use fixing lugs fitted on the damper frame for installation in slab.



## Arrangement of damper and building elements according to DB-SI (CTE).



- The following conditions apply to horizontal and vertical dampers:
- There must be a minimum separation of 75 mm between fire dampers and building elements.
  - There must be a minimum separation of 200 mm between fire dampers.

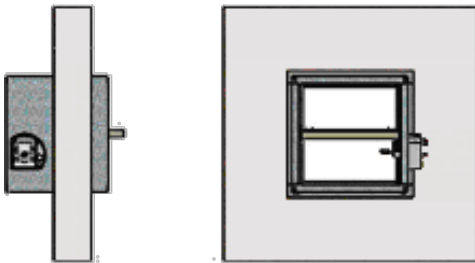
# Installation

## CORRECT INSTALLATION

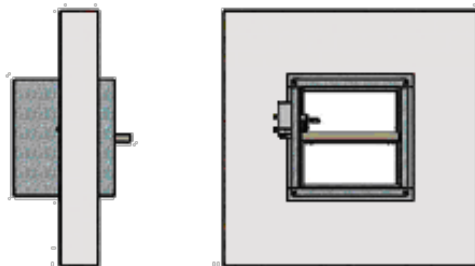
Airflow direction is not critical  
 $(v_e \leftrightarrow o) \text{ o } (h_o \leftrightarrow o)$

### Manual

Manual device at 0°

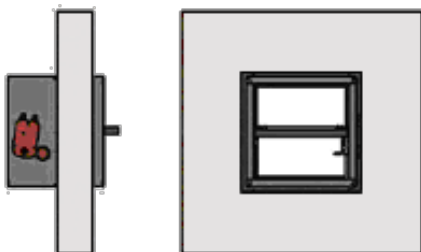


Manual device at 180°

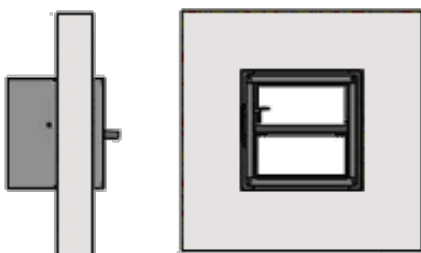


### Motor-driven

Motor-driven device at 0°



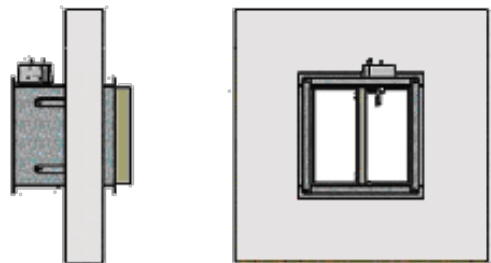
Motor-driven device at 180°



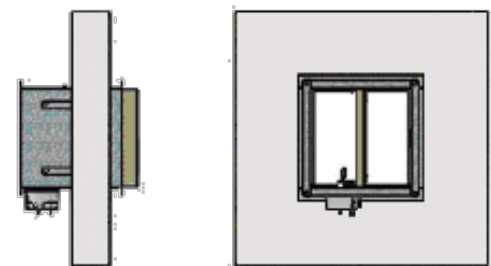
## INCORRECT INSTALLATION

### Manual

Manual device at top

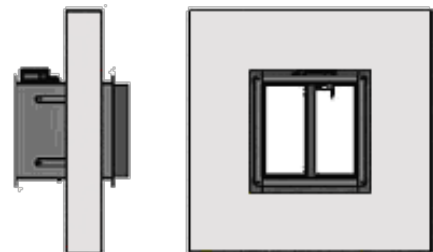


Manual device at bottom

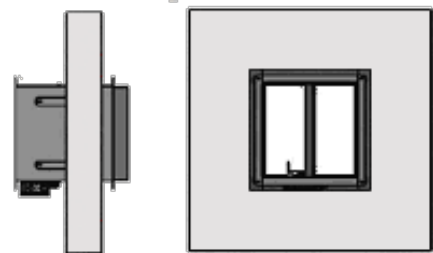


### Motor-driven

Motor-driven device at top



Motor-driven device at bottom



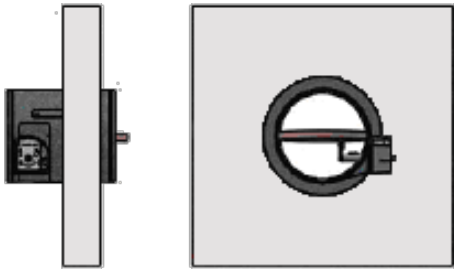
# Installation

## CORRECT INSTALLATION

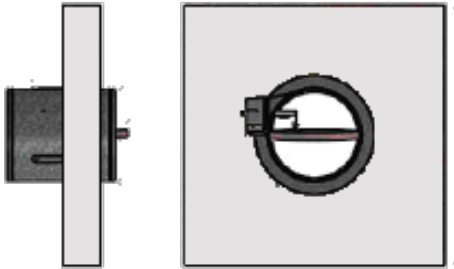
Airflow direction is not critical  
 $(v_e \leftrightarrow o)$  o  $(h_o \leftrightarrow o)$

### Manual

Manual device at 0°

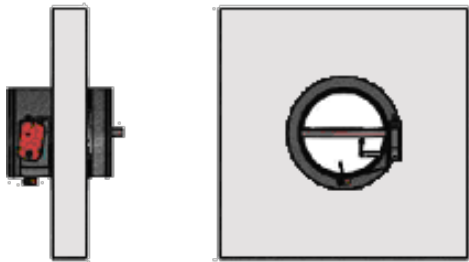


Manual device at 180°

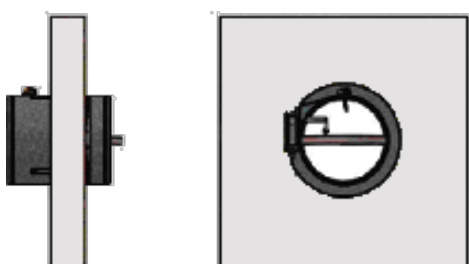


### Motor-driven

Moto-driven device at 0°



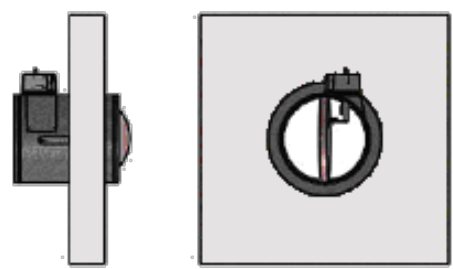
Motor-driven device at 180°



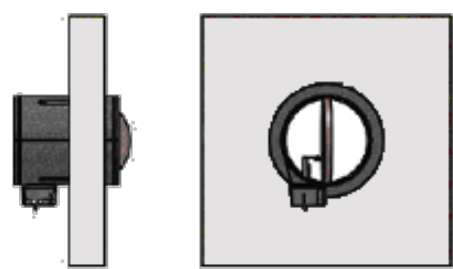
## INCORRECT INSTALLATION

### Manual

Manual device at top

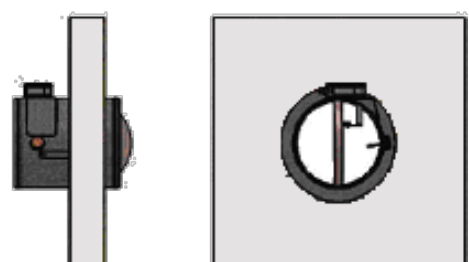


Manual device at bottom

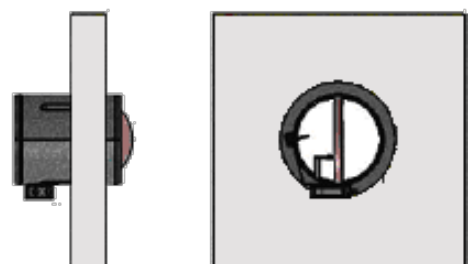


### Motor-driven

Motor-driven device at top



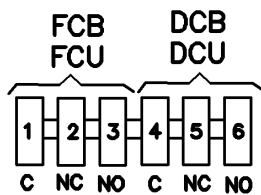
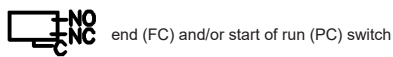
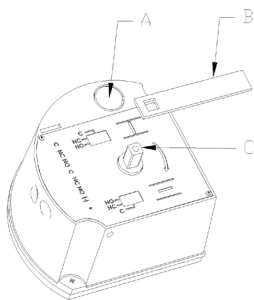
Motor-driven device at bottom



## Operating mechanisms

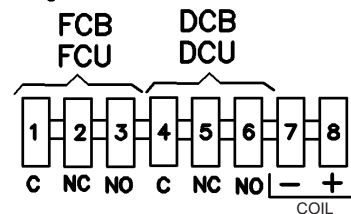
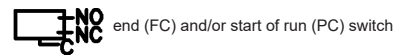
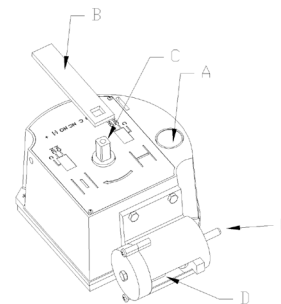
### Operating mechanisms and electrical connections

#### OPERATION BY MEANS OF TH-70 BIMETALIC FUSE (MANUAL RESET)



- Closing (operating) of the damper when button "A" is pressed or alloy fuse is triggered by a temperature over 72 °C.
- The damper is reset (opened) manually by inserting key "B" in housing "C" and turning clockwise.

#### OPERATION BY MEANS OF TH-70 BIMETALIC FUSE + COIL (MANUAL RESET)

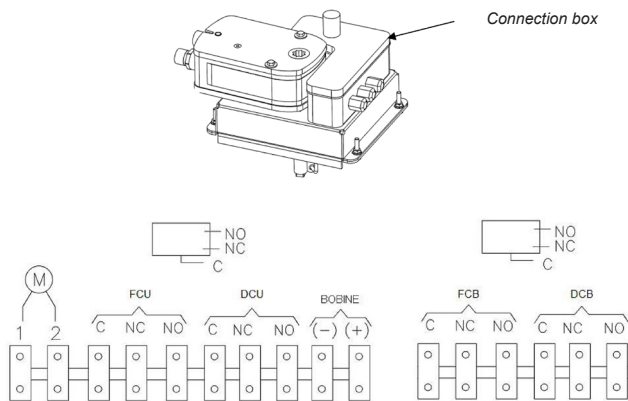


- Damper is closed (operated) by providing electric supply if coil "D" is an shunt release or by switching off supply if coil "D" is an undervoltage release, or when alloy fuse is triggered by temperatures over 72 °C
- The damper is reset (opened) by pressing the "E" shaft until the electromagnet is energised (undervoltage release) or de-energised (shunt release) and inserting key "B" in housing "C" and turning clockwise.

# Operating mechanism

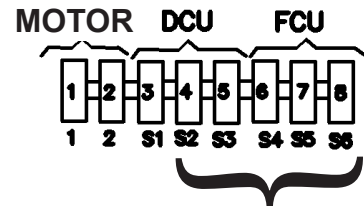
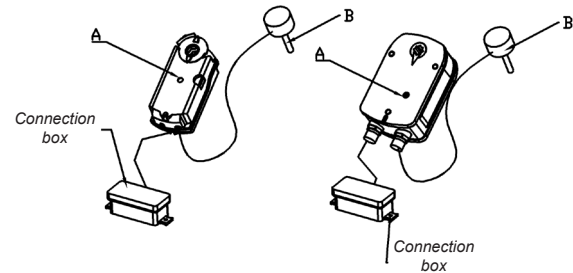
## Operating mechanisms and electrical connections

### OPERATION BY BIMETALLIC FUSE TH-70 + COIL + RESET MOTOR (AUTOMATIC RESET)



- Damper is closed (operated) by providing electric supply to shunt release of 24V or 48V DC or when alloy fuse is triggered by temperatures over 72 °C.  
*See p. 11 types of electrical power available in coils.*
- Damper is reset (opened) by providing electric supply to servomotor BL24-48 (24...48 V AC/DC) or BL110-230 (110 ...230 V AC) until fully opened.

### SERVOMOTOR WITH RETURN SPRING (AUTOMATIC RESET)

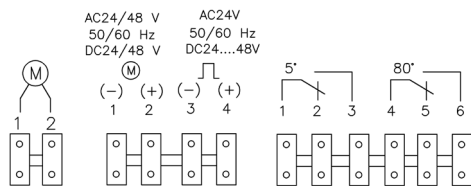
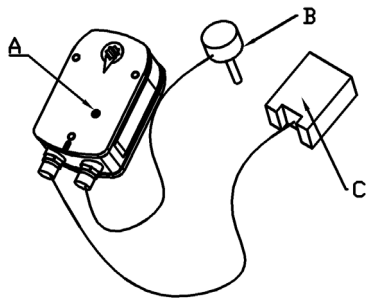


- Damper is closed (activated) by removing the power supply (24 V or 230 V) to the servomotor with return spring ("A" or "D") or by switching off power by means of a thermoelectric fusible link "B" when the temperature exceeds 72° C inside or outside the damper.
- Damper is reset (opened) by providing electric supply (24 V or 230 V) to servomotor with return spring ("A" or "D").  
Manually inserting the lever in hole "A" and turning clockwise.

# Activation

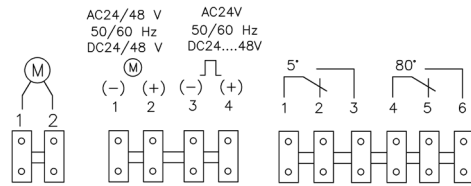
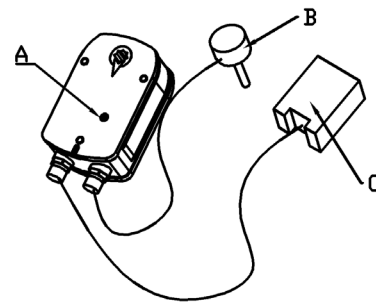
## Activation mechanisms and electrical connections

### SERVOMOTOR WITH RETURN SPRING + BSIA24-48 (SHUNT RELEASE) (AUTOMATIC RESET) NF MARKING



- Damper is closed (operated) by providing an electrical supply (24 V AC or 24...48 V DC) to terminals 3-4 of the BSIA "C" interface as shown in the diagram or by switching off power by means of thermoelectric fusible link "B" when the temperature exceeds 72 °C inside or outside the damper.
- Damper is automatically reset by switching off supply to terminals 1 and 2 for more than 5 seconds and then supplying power (24...48 V AC/DC) to the same terminals, as shown in the electrical wiring diagram. Manually inserting the lever in hole "A" and turning clockwise.

### SERVOMOTOR WITH RETURN SPRING + BSIA24-48 (UNDervoltage RELEASE) (AUTOMATIC RESET) NF MARKING



- Damper is closed (activated) by switching off the supply (24 V AC or 24...48 V DC) to terminals 3-4 of the BSIA24-48-R "C" interface as shown in the electrical wiring diagram or by switching off power by means of thermoelectric fusible link "B" when the temperature exceeds 72 °C inside or outside the damper.
- Damper is automatically reset by switching off supply to terminals 1 and 2 for more than 5 seconds and then supplying power (24...48 V AC/DC) to the same terminals, as shown in the electrical wiring diagram. Manually inserting the lever in hole "A" and turning clockwise.

Servomotors and thermoelectric fusible links compatible for this solution:

BF24-T-ST (24 V AC/DC)

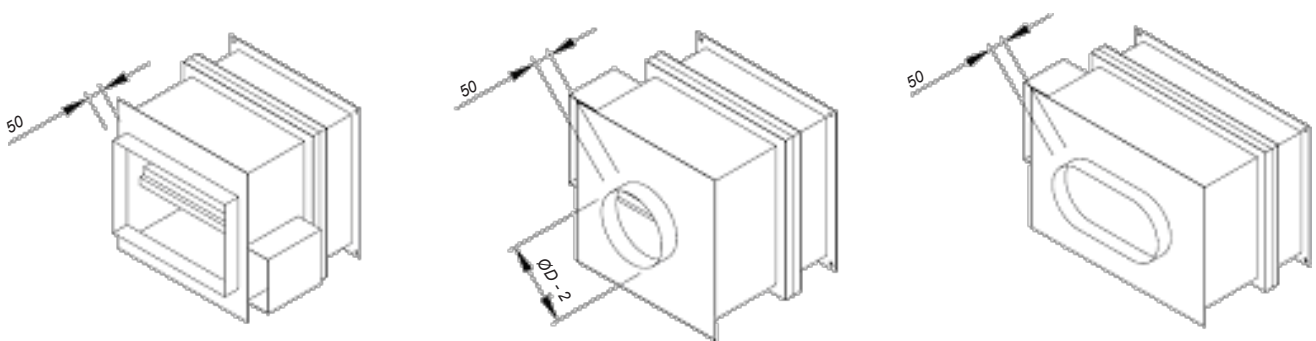
BF48-T-ST (48 V AC/DC)

BAE72-F-ST (thermoelectric fusible link)

# Special finishes with duct connection spigots and truncated conical transformations

Subject to checking with the Commercial Department, it is possible to supply rectangular and circular dampers with transformation spigots on request as a non-standard finish.

These couplings may require a longer frame length than the defined standard in order to avoid the opening/closing of the blade from interfering with the spigot connections.



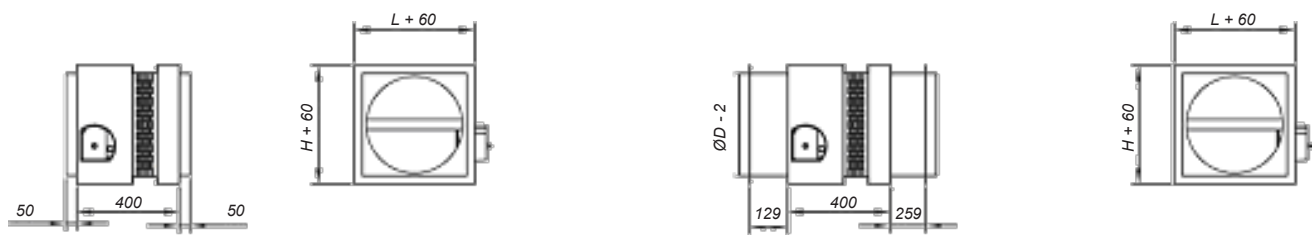
Rectangular

Circular

Oval

Length of the frame assembly in relation to the height of the damper.

## Reducers



If  $H < 250$

If  $H \ge 300$



# Technical data

**SCFR-PD Table**

H \ L	200	250	300	350	400	450	500	550	600	650	700	750	800	
100	0,015	0,019	0,023	0,026	0,030	0,034	0,038	0,041	0,045	0,049	0,053	0,056	0,060	$A_L$ (m <sup>2</sup> )
	0,53	0,50	0,47	0,45	0,42	0,39	0,37	0,35	0,32	0,30	0,28	0,26	0,25	$k_p$
	-8	-7	-7	-7	-6	-6	-6	-6	-5	-5	-5	-5	-5	$k_{dB(A)}$
150	0,025	0,031	0,038	0,044	0,050	0,056	0,063	0,069	0,075	0,081	0,088	0,094	0,100	$A_L$ (m <sup>2</sup> )
	0,45	0,41	0,37	0,33	0,30	0,26	0,23	0,21	0,19	0,17	0,15	0,14	0,13	$k_p$
	-7	-6	-6	-6	-5	-5	-5	-5	-4	-4	-4	-4	-4	$k_{dB(A)}$
200	0,035	0,044	0,053	0,061	0,070	0,079	0,088	0,096	0,105	0,114	0,123	0,131	0,140	$A_L$ (m <sup>2</sup> )
	0,39	0,33	0,28	0,24	0,20	0,17	0,15	0,14	0,14	0,14	0,14	0,14	0,14	$k_p$
	-6	-6	-5	-5	-4	-4	-4	-4	-4	-3	-3	-3	-3	$k_{dB(A)}$
250	0,045	0,056	0,068	0,079	0,090	0,101	0,113	0,124	0,135	0,146	0,158	0,169	0,180	$A_L$ (m <sup>2</sup> )
	0,32	0,26	0,21	0,17	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	$k_p$
	-5	-5	-5	-4	-4	-4	-3	-3	-3	-3	-3	-3	-2	$k_{dB(A)}$
300	0,055	0,069	0,083	0,096	0,110	0,124	0,138	0,151	0,165	0,179	0,193	0,206	0,220	$A_L$ (m <sup>2</sup> )
	0,27	0,21	0,16	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	$k_p$
	-5	-5	-4	-4	-4	-3	-3	-3	-3	-2	-2	-2	-2	$k_{dB(A)}$
350	0,065	0,081	0,098	0,114	0,130	0,146	0,163	0,179	0,195	0,211	0,228	0,244	0,260	$A_L$ (m <sup>2</sup> )
	0,22	0,17	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	$k_p$
	-5	-4	-4	-3	-3	-3	-3	-2	-2	-2	-2	-2	-2	$k_{dB(A)}$
400	0,075	0,094	0,113	0,131	0,150	0,169	0,188	0,206	0,225	0,244	0,263	0,281	0,300	$A_L$ (m <sup>2</sup> )
	0,19	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	$k_p$
	-4	-4	-3	-3	-3	-3	-2	-2	-2	-2	-2	-1	-1	$k_{dB(A)}$
450	0,085	0,106	0,128	0,149	0,170	0,191	0,213	0,234	0,255	0,276	0,298	0,319	0,340	$A_L$ (m <sup>2</sup> )
	0,16	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	$k_p$
	-4	-4	-3	-3	-3	-2	-2	-2	-2	-1	-1	-1	-1	$k_{dB(A)}$
500	0,095	0,119	0,143	0,166	0,190	0,214	0,238	0,261	0,285	0,309	0,333	0,356	0,380	$A_L$ (m <sup>2</sup> )
	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	$k_p$
	-4	-3	-3	-3	-2	-2	-2	-2	-1	-1	-1	-1	-1	$k_{dB(A)}$
550	0,105	0,131	0,158	0,184	0,210	0,236	0,263	0,289	0,315	0,341	0,368	0,394	0,420	$A_L$ (m <sup>2</sup> )
	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	$k_p$
	-4	-3	-3	-2	-2	-2	-2	-1	-1	-1	-1	-1	-1	$k_{dB(A)}$
600	0,115	0,144	0,173	0,201	0,230	0,259	0,288	0,316	0,345	0,374	0,403	0,431	0,460	$A_L$ (m <sup>2</sup> )
	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	0,14	$k_p$
	-3	-3	-3	-2	-2	-2	-1	-1	-1	-1	-1	-1	0	$k_{dB(A)}$

**Key:**

L	width in mm
H	height in mm
$A_L$	free area in m <sup>2</sup>
$v_{eff}$	effective velocity in relation to the free surface in m/s
$\Delta P$	pressure loss in Pa
$L_{wA}$	sound level in dB(A)
$k_p$	pressure loss correction factor
$k_{dB(A)}$	sound-level correction factor

**Correction factors:**

$k_p$	pressure loss factor
$k_{dB(A)}$	sound correction factor
$L_{wA} - dB(A)_{damper} = dB(A)_{diagram} + k_{dB(A)}$	

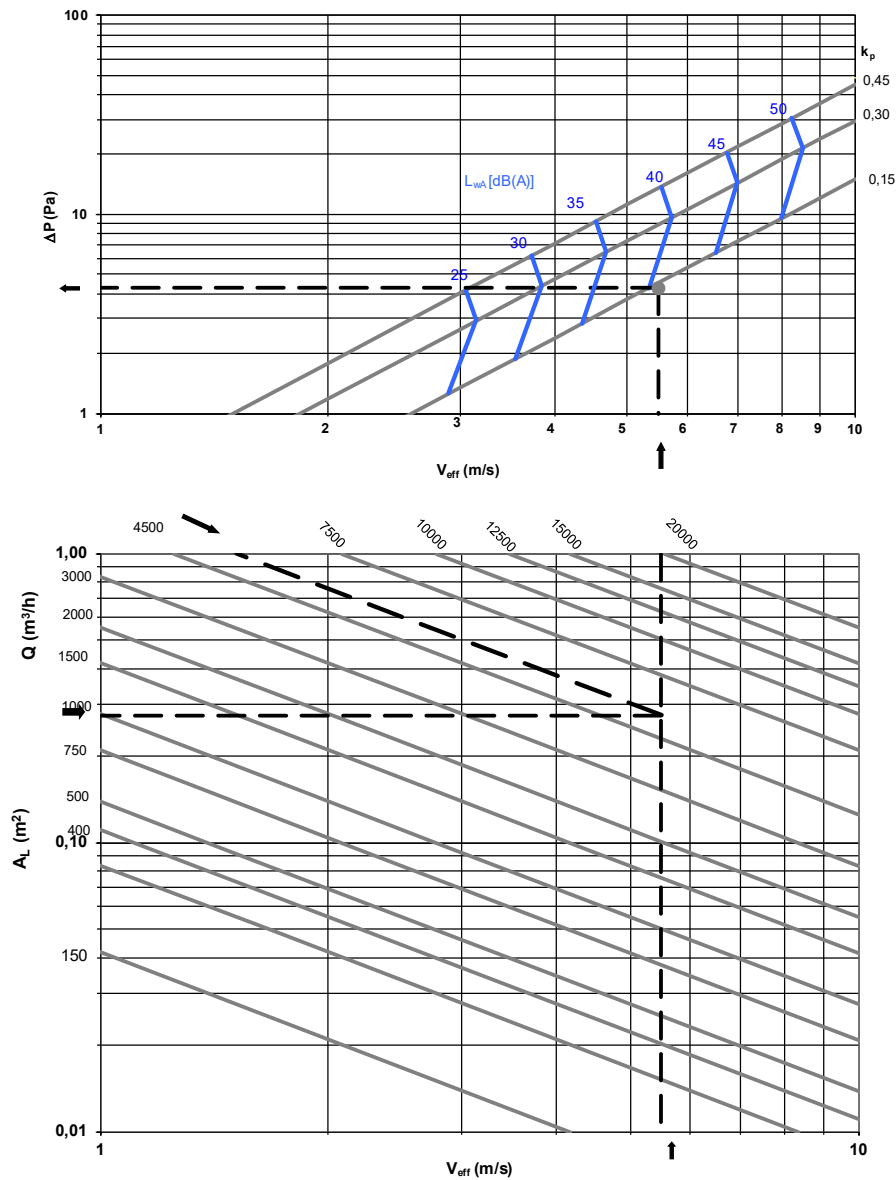
To determine the technical parameters of the dampers we must apply the following expressions (see example):

$\Delta P = \Delta P_{diagram}$  depending on the  $k_p$  indicated in the above table

$L_{wA} = L_{wA\ diagram} + k_{dB(A)}$  indicated in the above table

# Technical data

## SCFR-PD Diagram



### Selection example:

For the given duct dimensions, we select a 600 x 500 mm SCFR-PD damper.

We use the table on the previous page to find the following data:

$$A_L = 0,285 \text{ m}^2 \quad k_p = 0,14 \quad k_{dB(A)} = -1$$

The technical data to achieve a flow rate of 5450 m<sup>3</sup>/h is required. Referring to the diagram above using the this flow rate and an area of 0,285 m<sup>2</sup>, we find a  $V_{eff}$  of 5,5 m/s. With this speed and taking into account the value of  $k_p$  we are given:

Differential pressure: 4 Pa

Noise level: 41 dB(A)

Applying  $L_{wA} - dB(A) = 41 + (-1) = 40 \text{ dB(A)}$

# Technical data

**SCFR-GD Table**

H \ L	200	250	300	350	400	450	500	550	600	650	700	750	800	
<b>650</b>	0,120	0,150	0,180	0,210	0,240	0,270	0,300	0,330	0,360	0,390	0,420	0,450	0,480	$A_L$ (m <sup>2</sup> )
	0,84	0,75	0,69	0,63	0,58	0,53	0,49	0,45	0,42	0,39	0,36	0,34	0,31	$k_p$
	-3	-3	-2	-2	-2	-2	-1	-1	-1	-1	-1	0	0	$k_{dB(A)}$
<b>700</b>	0,130	0,163	0,195	0,228	0,260	0,293	0,325	0,358	0,390	0,423	0,455	0,488	0,520	$A_L$ (m <sup>2</sup> )
	0,81	0,67	0,60	0,54	0,49	0,44	0,40	0,37	0,34	0,30	0,28	0,25	0,23	$k_p$
	-3	-3	-2	-2	-2	-1	-1	-1	-1	-1	0	0	0	$k_{dB(A)}$
<b>750</b>	0,140	0,175	0,210	0,245	0,280	0,315	0,350	0,385	0,420	0,455	0,490	0,525	0,560	$A_L$ (m <sup>2</sup> )
	0,78	0,70	0,63	0,57	0,52	0,47	0,43	0,39	0,36	0,33	0,30	0,28	0,25	$k_p$
	-3	-2	-2	-2	-1	-1	-1	-1	-1	0	0	0	0	$k_{dB(A)}$
<b>800</b>	0,150	0,188	0,225	0,263	0,300	0,338	0,375	0,413	0,450	0,488	0,525	0,563	0,600	$A_L$ (m <sup>2</sup> )
	0,75	0,67	0,60	0,54	0,49	0,44	0,40	0,37	0,34	0,30	0,28	0,25	0,23	$k_p$
	-3	-2	-2	-2	-1	-1	-1	-1	0	0	0	0	0	$k_{dB(A)}$

**Key:**

L	width in mm
H	height in mm
$A_L$	free area in m <sup>2</sup>
$v_{eff}$	effective velocity in relation to the free surface in m/s
$\Delta P$	pressure loss in Pa
$L_{wA}$	sound level in dB(A)
$k_p$	pressure loss correction factor
$k_{dB(A)}$	sound-level correction factor

**Correction factors:**

$k_p$	pressure loss factor
$k_{dB(A)}$	sound correction factor
$L_{wA} - dB(A)_{dampner} = dB(A)_{diagram} + k_{dB(A)}$	

To determine the technical parameters of the dampers we must apply the following expressions (see example):

$\Delta P = \Delta P_{diagram}$  depending on the  $k_p$  indicated in the above table

$L_{wA} = L_{wA\ diagram} + k_{dB(A)}$  indicated in the above table

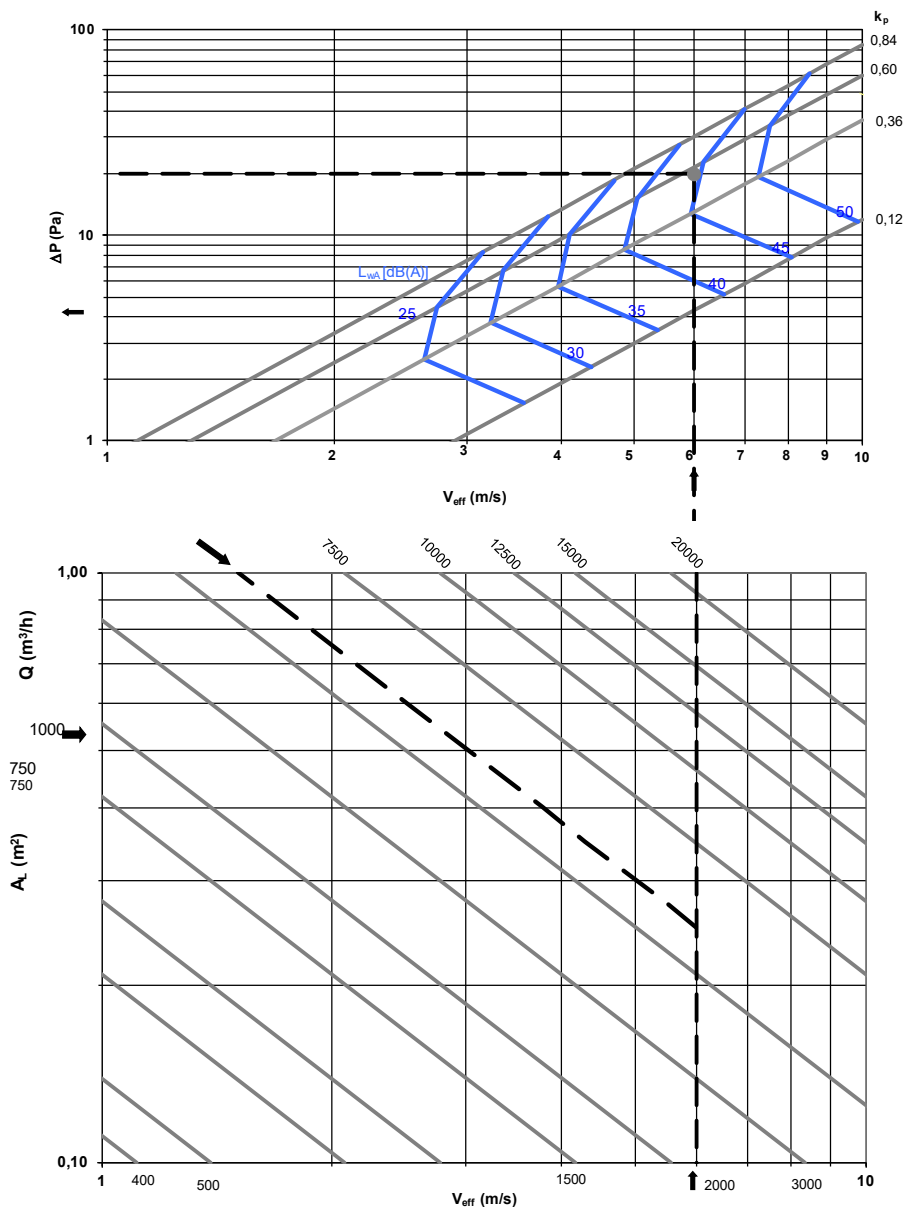
# Technical data

SCFR-GD Table

H \ L	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400	1450	1500	
200	0,128	0,135	0,143	0,150	0,158	0,165	0,173	0,180	0,188	0,195	0,203	0,210	0,218	0,225	A <sub>L</sub> (m <sup>2</sup> )
	0,82	0,79	0,77	0,75	0,74	0,72	0,70	0,69	0,67	0,65	0,64	0,63	0,61	0,60	k <sub>p</sub>
	-3	-3	-3	-3	-3	-3	-3	-2	-2	-2	-2	-2	-2	-2	k <sub>dB(A)</sub>
250	0,170	0,180	0,190	0,200	0,210	0,220	0,230	0,240	0,250	0,260	0,270	0,280	0,290	0,300	A <sub>L</sub> (m <sup>2</sup> )
	0,71	0,69	0,66	0,64	0,63	0,61	0,59	0,58	0,56	0,54	0,53	0,52	0,50	0,49	k <sub>p</sub>
	-3	-2	-2	-2	-2	-2	-2	-2	-2	-2	-2	-1	-1	-1	k <sub>dB(A)</sub>
300	0,213	0,225	0,238	0,250	0,263	0,275	0,288	0,300	0,313	0,325	0,338	0,350	0,363	0,375	A <sub>L</sub> (m <sup>2</sup> )
	0,62	0,60	0,58	0,56	0,54	0,52	0,51	0,49	0,47	0,46	0,44	0,43	0,42	0,40	k <sub>p</sub>
	-2	-2	-2	-2	-2	-2	-1	-1	-1	-1	-1	-1	-1	-1	k <sub>dB(A)</sub>
350	0,255	0,270	0,285	0,300	0,315	0,330	0,345	0,360	0,375	0,390	0,405	0,420	0,435	0,450	A <sub>L</sub> (m <sup>2</sup> )
	0,55	0,53	0,51	0,49	0,47	0,45	0,44	0,42	0,40	0,39	0,38	0,36	0,35	0,34	k <sub>p</sub>
	-2	-2	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	-1	0	k <sub>dB(A)</sub>
400	0,298	0,315	0,333	0,350	0,368	0,385	0,403	0,420	0,438	0,455	0,473	0,490	0,508	0,525	A <sub>L</sub> (m <sup>2</sup> )
	0,49	0,47	0,45	0,43	0,41	0,39	0,38	0,36	0,35	0,33	0,32	0,30	0,29	0,28	k <sub>p</sub>
	-1	-1	-1	-1	-1	-1	-1	-1	0	0	0	0	0	0	k <sub>dB(A)</sub>
450	0,340	0,360	0,380	0,400	0,420	0,440	0,460	0,480	0,500	0,520	0,540	0,560	0,580	0,600	A <sub>L</sub> (m <sup>2</sup> )
	0,44	0,42	0,40	0,38	0,36	0,34	0,33	0,31	0,29	0,28	0,27	0,25	0,24	0,23	k <sub>p</sub>
	-1	-1	-1	-1	-1	0	0	0	0	0	0	0	0	0	k <sub>dB(A)</sub>
500	0,383	0,405	0,428	0,450	0,473	0,495	0,518	0,540	0,563	0,585	0,608	0,630	0,653	0,675	A <sub>L</sub> (m <sup>2</sup> )
	0,40	0,38	0,35	0,34	0,32	0,30	0,28	0,27	0,25	0,23	0,22	0,21	0,19	0,18	k <sub>p</sub>
	-1	-1	-1	0	0	0	0	0	0	0	0	0	0	0	k <sub>dB(A)</sub>
550	0,425	0,450	0,475	0,500	0,525	0,550	0,575	0,600	0,625	0,650	0,675	0,700	0,725	0,750	A <sub>L</sub> (m <sup>2</sup> )
	0,36	0,34	0,31	0,29	0,28	0,26	0,24	0,23	0,21	0,19	0,18	0,17	0,15	0,14	k <sub>p</sub>
	-1	0	0	0	0	0	0	0	0	0	0	1	1	1	k <sub>dB(A)</sub>
600	0,468	0,495	0,523	0,550	0,578	0,605	0,633	0,660	0,688	0,715	0,743	0,770	0,798	0,825	A <sub>L</sub> (m <sup>2</sup> )
	0,32	0,30	0,28	0,26	0,24	0,22	0,20	0,19	0,17	0,16	0,14	0,13	0,12	0,12	k <sub>p</sub>
	0	0	0	0	0	0	0	0	0	1	1	1	1	1	k <sub>dB(A)</sub>
650	0,510	0,540	0,570	0,600	0,630	0,660	0,690	0,720	0,750	0,780	0,810	0,840	0,870	0,900	A <sub>L</sub> (m <sup>2</sup> )
	0,29	0,27	0,24	0,23	0,21	0,19	0,17	0,16	0,14	0,12	0,11	0,12	0,12	0,12	k <sub>p</sub>
	0	0	0	0	0	0	0	1	1	1	1	1	1	1	k <sub>dB(A)</sub>
700	0,553	0,585	0,618	0,650	0,683	0,715	0,748	0,780	0,813	0,845	0,878	0,910	0,943	0,975	A <sub>L</sub> (m <sup>2</sup> )
	0,20	0,18	0,16	0,14	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	k <sub>p</sub>
	0	0	0	0	0	1	1	1	1	1	1	1	1	1	k <sub>dB(A)</sub>
750	0,595	0,630	0,665	0,700	0,735	0,770	0,805	0,840	0,875	0,910	0,945	0,980	1,015	1,050	A <sub>L</sub> (m <sup>2</sup> )
	0,23	0,21	0,19	0,17	0,15	0,13	0,11	0,12	0,12	0,12	0,12	0,12	0,12	0,12	k <sub>p</sub>
	0	0	0	1	1	1	1	1	1	1	1	1	1	1	k <sub>dB(A)</sub>
800	0,638	0,675	0,713	0,750	0,788	0,825	0,863	0,900	0,938	0,975	1,013	1,050	1,088	1,125	A <sub>L</sub> (m <sup>2</sup> )
	0,20	0,18	0,16	0,14	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	0,12	k <sub>p</sub>
	0	0	1	1	1	1	1	1	1	1	1	1	1	2	k <sub>dB(A)</sub>

## Technical data

### SCFR-GD Diagram



#### Selection example:

For the given duct dimensions, we select a 1000 x 300 mm SCFR-GD damper.

We use the table on the previous page to find the following data:

$$A_L = 0,25 \text{ m}^2 \quad k_p = 0,56 \quad k_{dB(A)} = -2$$

The technical data to achieve a flow rate of 5500  $m^3/h$  is required. Referring to the diagram above using the this flow rate and an area of 0,25  $m^2$ , we find a  $V_{eff}$  of 6 m/s. With this speed and taking into account the value of  $k_p$  we are given:

Differential pressure: 20 Pa

Noise level: 44 dB(A)

Applying  $L_{WA} - dB(A) = 44 - 2 = 42 \text{ dB(A)}$

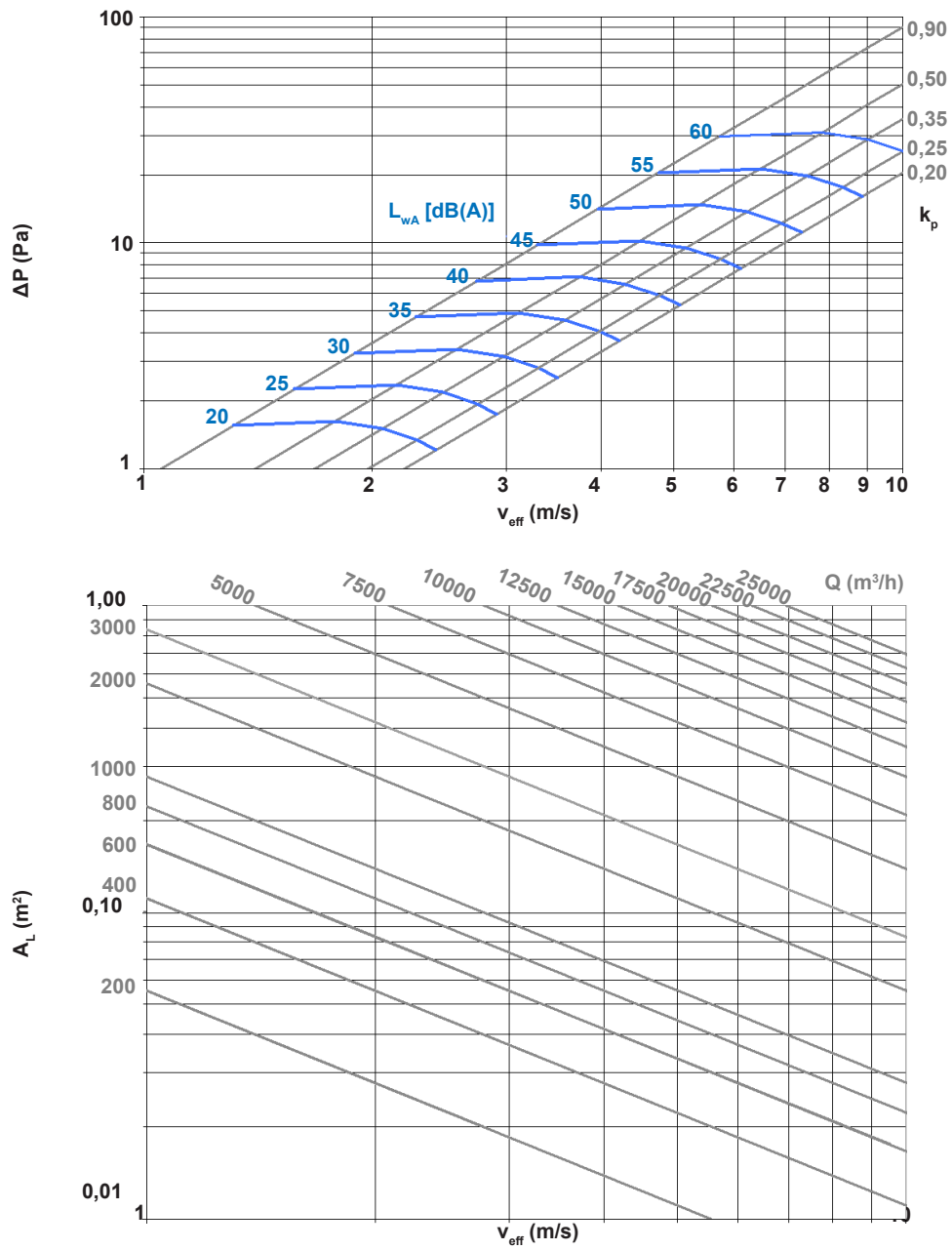
# Technical data

SCFR-3H Table

L \ H	200	250	300	350	400	450	500	550	600	650	700	750	800	
200	0,024	0,033	0,042	0,051	0,060	0,068	0,077	0,086	0,095	0,104	0,112	0,121	0,130	A <sub>L</sub> (m <sup>2</sup> )
	0,84	0,75	0,68	0,64	0,60	0,57	0,54	0,52	0,50	0,49	0,47	0,46	0,45	k <sub>p</sub>
	-27	-24	-21	-19	-17	-16	-14	-13	-12	-11	-10	-9	-9	k <sub>dB(A)</sub>
300	0,038	0,052	0,066	0,079	0,093	0,107	0,121	0,135	0,148	0,162	0,176	0,190	0,204	A <sub>L</sub> (m <sup>2</sup> )
	0,71	0,63	0,58	0,54	0,51	0,48	0,46	0,44	0,43	0,41	0,40	0,39	0,38	k <sub>p</sub>
	-22	-19	-16	-14	-12	-11	-9	-8	-7	-6	-5	-5	-4	k <sub>dB(A)</sub>
400	0,052	0,070	0,089	0,108	0,127	0,146	0,164	0,183	0,202	0,221	0,240	0,258	0,277	A <sub>L</sub> (m <sup>2</sup> )
	0,63	0,56	0,52	0,48	0,45	0,43	0,41	0,39	0,38	0,37	0,36	0,35	0,34	k <sub>p</sub>
	-19	-15	-13	-11	-9	-7	-6	-5	-4	-3	-2	-1	0	k <sub>dB(A)</sub>
500	0,065	0,089	0,113	0,137	0,160	0,184	0,208	0,232	0,256	0,279	0,303	0,327	0,351	A <sub>L</sub> (m <sup>2</sup> )
	0,58	0,52	0,47	0,44	0,41	0,39	0,38	0,36	0,35	0,34	0,33	0,32	0,31	k <sub>p</sub>
	-16	-13	-10	-8	-6	-5	-4	-2	-1	0	1	1	2	k <sub>dB(A)</sub>
600	0,079	0,108	0,136	0,165	0,194	0,223	0,252	0,280	0,309	0,338	0,367	0,396	0,424	A <sub>L</sub> (m <sup>2</sup> )
	0,54	0,48	0,44	0,41	0,39	0,37	0,35	0,34	0,32	0,31	0,30	0,30	0,29	k <sub>p</sub>
	-14	-11	-8	-6	-4	-3	-1	0	1	2	3	4	4	k <sub>dB(A)</sub>
700	0,092	0,126	0,160	0,194	0,228	0,261	0,295	0,329	0,363	0,397	0,430	0,464	0,498	A <sub>L</sub> (m <sup>2</sup> )
	0,51	0,45	0,41	0,39	0,36	0,34	0,33	0,32	0,30	0,29	0,29	0,28	0,27	k <sub>p</sub>
	-12	-9	-6	-4	-3	-2	-1	1	2	3	3	4	5	k <sub>dB(A)</sub>
800	0,106	0,145	0,184	0,222	0,261	0,300	0,339	0,378	0,416	0,455	0,494	0,533	0,572	A <sub>L</sub> (m <sup>2</sup> )
	0,48	0,43	0,39	0,37	0,34	0,33	0,31	0,30	0,29	0,28	0,27	0,26	0,26	k <sub>p</sub>
	-11	-7	-5	-3	-1	0	0	1	2	3	4	5	6	k <sub>dB(A)</sub>
900	0,120	0,163	0,207	0,251	0,295	0,339	0,382	0,426	0,470	0,514	0,558	0,601	0,645	A <sub>L</sub> (m <sup>2</sup> )
	0,46	0,41	0,38	0,35	0,33	0,31	0,30	0,29	0,28	0,27	0,26	0,25	0,25	k <sub>p</sub>
	-10	-6	-4	-1	0	1	1	1	2	3	4	5	6	k <sub>dB(A)</sub>
1000	0,133	0,182	0,231	0,280	0,328	0,377	0,426	0,475	0,524	0,572	0,621	0,670	0,719	A <sub>L</sub> (m <sup>2</sup> )
	0,44	0,39	0,36	0,34	0,32	0,30	0,29	0,28	0,27	0,26	0,25	0,24	0,24	k <sub>p</sub>
	-8	-5	-2	0	2	2	2	3	4	5	6	6	7	k <sub>dB(A)</sub>
1100	0,147	0,201	0,254	0,308	0,362	0,416	0,470	0,523	0,577	0,631	0,685	0,739	0,792	A <sub>L</sub> (m <sup>2</sup> )
	0,43	0,38	0,35	0,32	0,31	0,29	0,28	0,27	0,26	0,25	0,24	0,23	0,23	k <sub>p</sub>
	-7	-4	-1	1	3	3	3	2	3	4	5	5	6	k <sub>dB(A)</sub>
1200	0,160	0,219	0,278	0,337	0,396	0,454	0,513	0,572	0,631	0,690	0,748	0,807	0,866	A <sub>L</sub> (m <sup>2</sup> )
	0,41	0,37	0,34	0,31	0,30	0,28	0,27	0,26	0,25	0,24	0,23	0,23	0,22	k <sub>p</sub>
	-6	-3	0	2	4	4	4	3	4	3	4	4	5	k <sub>dB(A)</sub>
1300	0,174	0,238	0,302	0,365	0,429	0,493	0,557	0,621	0,684	0,748	0,812	0,876	0,940	A <sub>L</sub> (m <sup>2</sup> )
	0,40	0,36	0,33	0,30	0,29	0,27	0,26	0,25	0,24	0,23	0,23	0,22	0,21	k <sub>p</sub>
	-5	-2	1	3	4	5	5	4	5	4	0	1	2	k <sub>dB(A)</sub>
1400	0,188	0,256	0,325	0,394	0,463	0,532	0,600	0,669	0,738	0,807	0,876	0,944	1,013	A <sub>L</sub> (m <sup>2</sup> )
	0,39	0,35	0,32	0,30	0,28	0,26	0,25	0,24	0,23	0,23	0,22	0,21	0,21	k <sub>p</sub>
	-5	-1	1	4	5	6	6	4	5	4	1	1	2	k <sub>dB(A)</sub>
1500	0,201	0,275	0,349	0,423	0,496	0,570	0,644	0,718	0,792	0,865	0,939	1,013	1,087	A <sub>L</sub> (m <sup>2</sup> )
	0,38	0,34	0,31	0,29	0,27	0,26	0,25	0,24	0,23	0,22	0,21	0,21	0,20	k <sub>p</sub>
	-4	0	2	4	6	7	7	5	6	5	2	2	3	k <sub>dB(A)</sub>

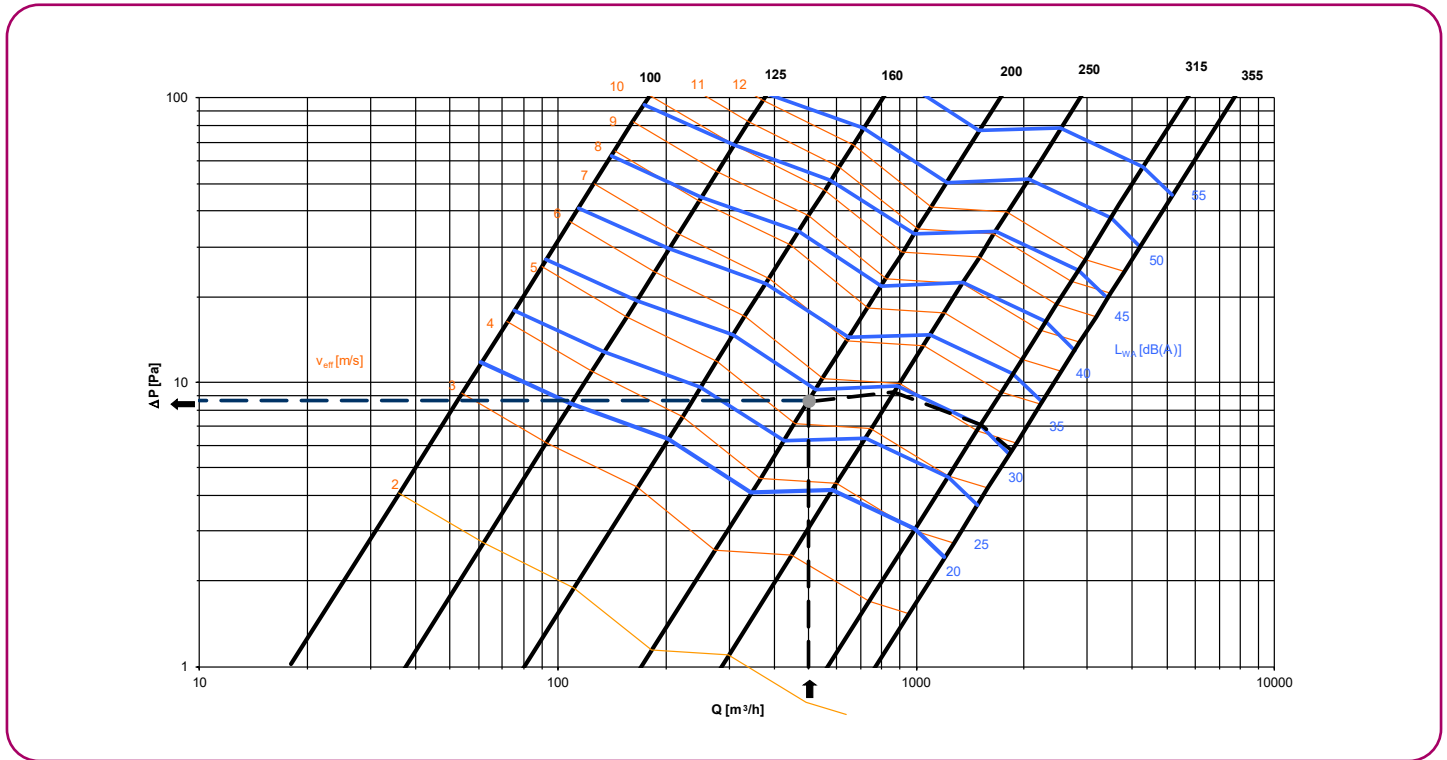
# Technical data

## SCFR-3H Diagram



# Technical data

## SCFC-PD Diagram



Note: Sizes Ø150, Ø225 and Ø300 mm are also available. The technical data can be obtained by interpolating sizes in the graph.

### Selection example:

For the given duct dimensions, we select a SCFC-PD damper with a diameter of 200 mm for a flow rate of 500 m³/h.

Referring to the diagram above using this flow rate we find the following data:

$V_{eff}$ : 5,3 m/s.

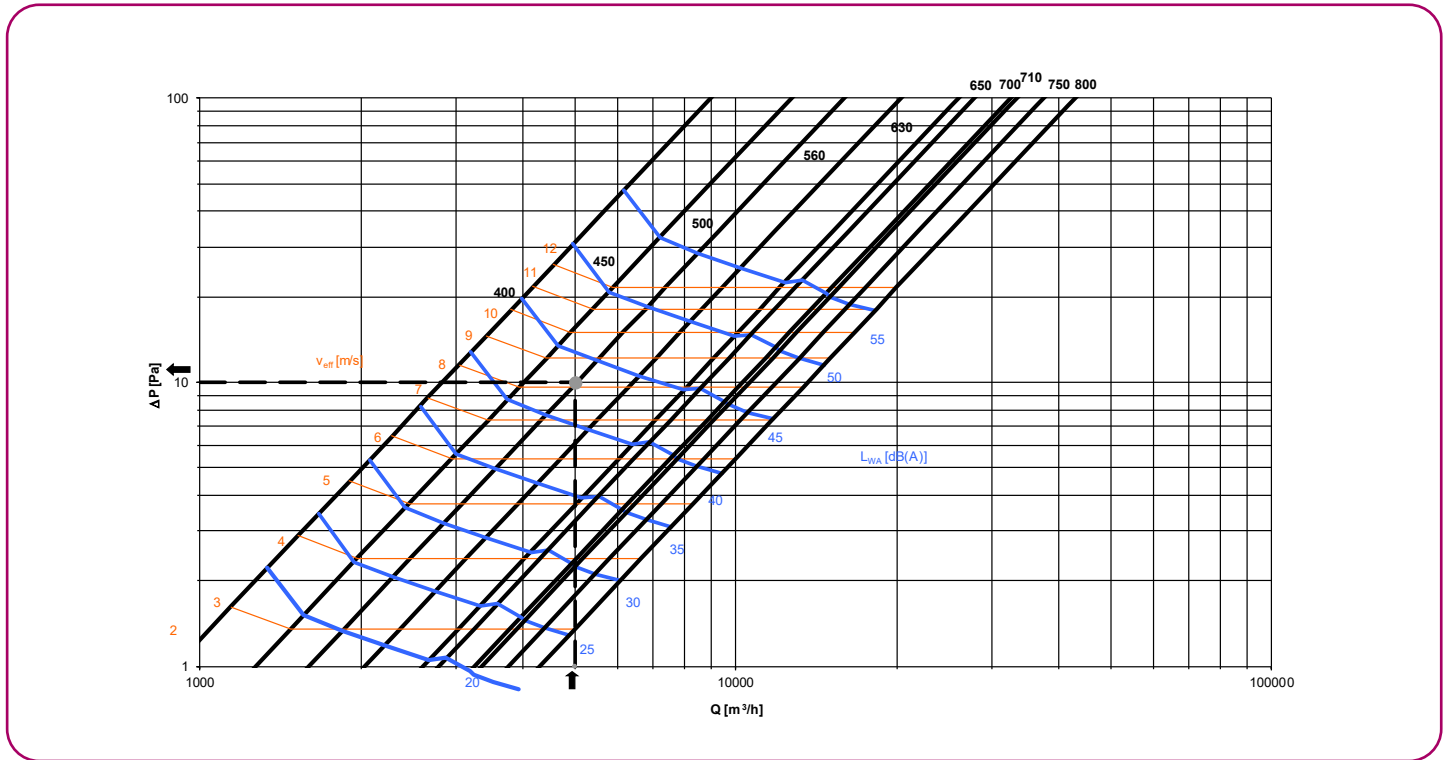
Differential pressure: 9 Pa

Noise level: 28 dB(A)



# Technical data

## SCFC-GD Diagram



### Selection example:

For the given duct dimensions, we select a SCFC-GD damper with a diameter of 500 mm for a flow rate of 5000  $m^3/h$ .

Referring to the diagram above using this flow rate we find the following data:

$v_{eff}$ : 8,1 m/s.

Differential pressure: 10 Pa

Noise level: 43 dB(A)

## Coding

### Damper model *(see table p. 5 declared performance)*

SCFR-PD  
 SCFR-GD  
 SCFR-3H  
 SCFC-PD  
 SCFC-GD

### Activation. Components

+ TH-70	+ 24 V CC R+ FCU/DCU + M BL 24/48 RESET
+ TH-70 + FCU	+ 48 V CC R+ FCU/DCU + M BL 24/48 RESET
+ TH-70 + DCU/FCU	+ 24 V AC R+ FCU/DCU + M BL 24/48 RESET
+ 24 V CC E+ FCU	+ 48 V AC R+ FCU/DCU + M BL 24/48 RESET
+ 48 V CC E+ FCU	+ 220 V AC R+ FCU/DCU + M BL 110/230 RESET
+ 24 V CA E+ FCU	+ M BLF 24 V CC + BSIA24-48 (NF Marking)
+ 48 V CA E+ FCU	+ M BLF 48 V CC + BSIA24-48 (NF Marking)
+ 220 V E+ FCU	+ M BLF 24 V CC + BSIA-R-24-48 (NF Marking)
+ 24 V CC R+ FCU	+ M BLF 48 V CC + BSIA-R-24-48 (NF Marking)
+ 48 V CC R+ FCU	
+ 24 V CA R+ FCU	
+ 48 V CA R+ FCU	
+ 220 V CA R+ FCU	
+ M BLF 24 V CC	
+ M BLF 230 V CC	
+ 24 V CC E+ FCU/DCU + M BL 24/48 RESET	
+ 48 V CC E+ FCU/DCU + M BL 24/48 RESET	
+ 24 V AC E+ FCU/DCU + M BL 24/48 RESET	
+ 48 V AC E+ FCU/DCU + M BL 24/48 RESET	
+ 220 V AC E+ FCU/DCU + M BL 110/230 RESET	

### Accessories

without mounting lugs  
 with lugs for slab floor  
 without mounting lugs, with inspection panels  
 with lugs for slab floor, with inspection panels

### Size

Length x height  
 Diameter

## Circular terminal fire damper



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## Circular terminal fire damper



### Description

Koolair's BDK circular terminal fire dampers are approved with respect to RPC305, according to EN 15650 and according to testing standard UNE-EN 1366-2.

They are installed in circular ventilation and air conditioning ductwork installations where the ductwork penetrates walls to prevent the propagation of fire.

### Operation

The BDK damper is held open by a fusible link. When the temperature exceeds 72 °C the fuse melts and the mechanism activates automatically closing the damper blades. Two strips ensure that the damper remains close

### Modelos

**BDK-60:** Circular terminal fire damper with 60 min fire integrity and insulation and prevention of smoke leakage. EI 60 (ve i → o) S, according to EN 13501-3.

**BDK-120:** Circular terminal fire damper with 120 min integrity and insulation and prevention of smoke leakage. EI 120 (ve i → o) S, according to EN 13501-3.

### Accesorios

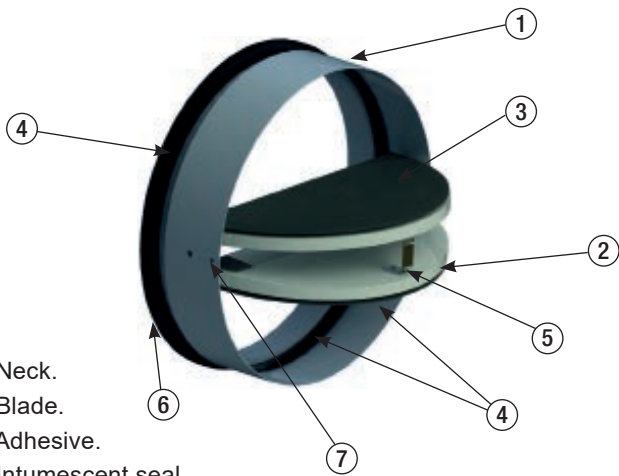
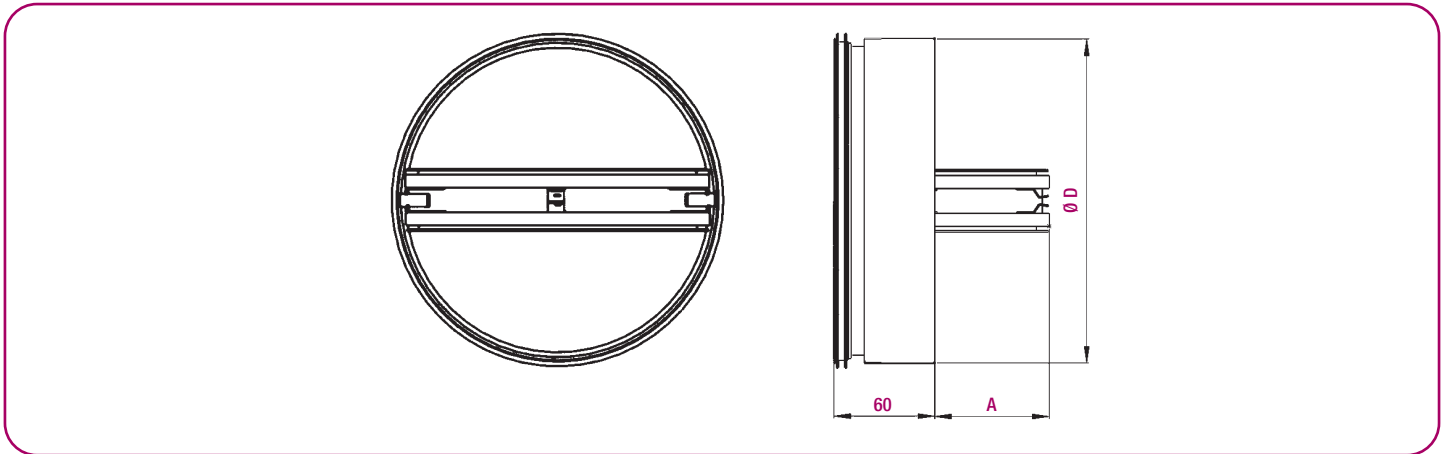
**FC.** End of run switch.

**GPD-Ø.** Extract louvre and mounting frame.

**AM.** Mounting ring.



## Dimensions



- 1. Neck.
- 2. Blade.
- 3. Adhesive.
- 4. Intumescent seal.
- 5. Fusible link 72°C.
- 6. Rubber seal.
- 7. Strip.

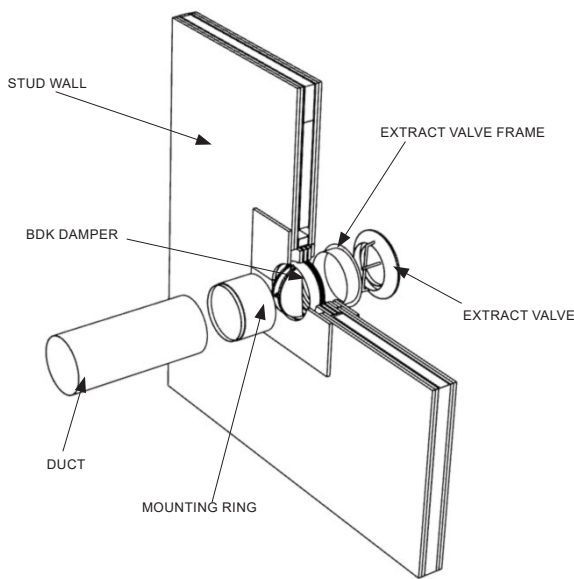
NOMINAL	D	A	ØGAP1	GAP2
100	99	20	150	200x200
125	124	33	175	225x225
150	149	41	200	250x250
160	159	51	210	260x260
180	179	61	230	280x280
200	199	71	250	300x300

Units in mm  
 ØGap1 Fixed wall  
 Gap2 Stud wall

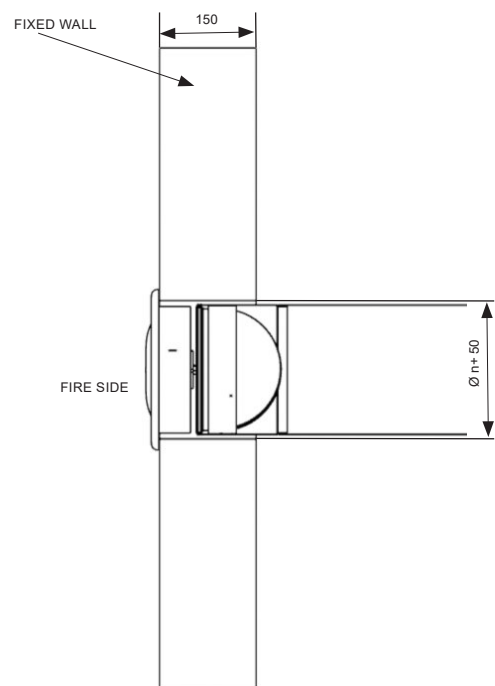
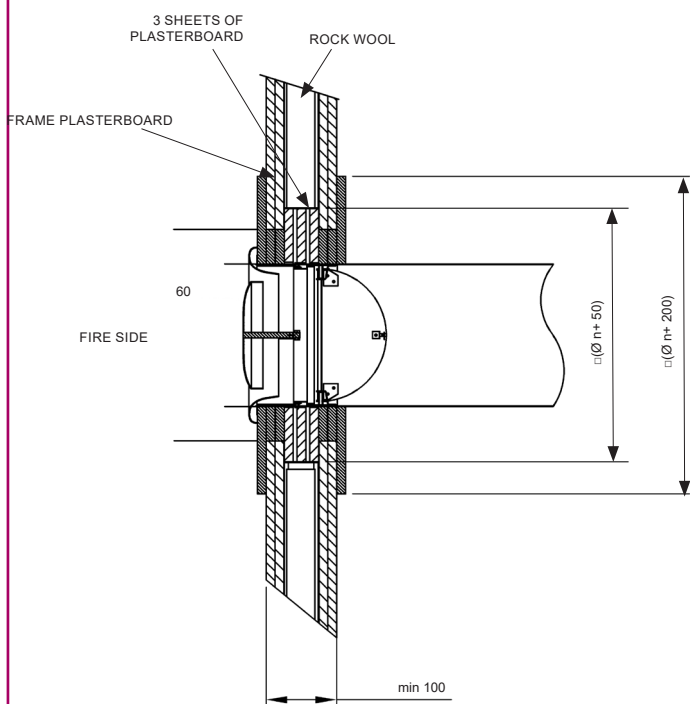
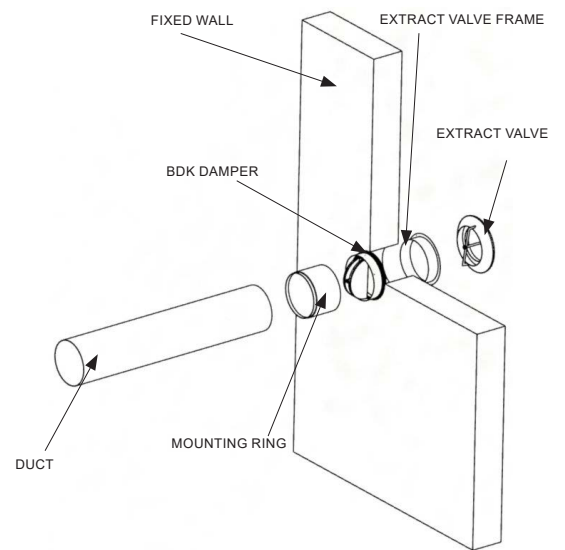
# BDK damper installation with direct connection to GPD extract louvre

The BDK circular terminal fire damper can be installed in a fixed wall or a stud wall with a direct connection to a GPD extract louvre. The characteristics of both types of installation are shown below.

## Stud wall



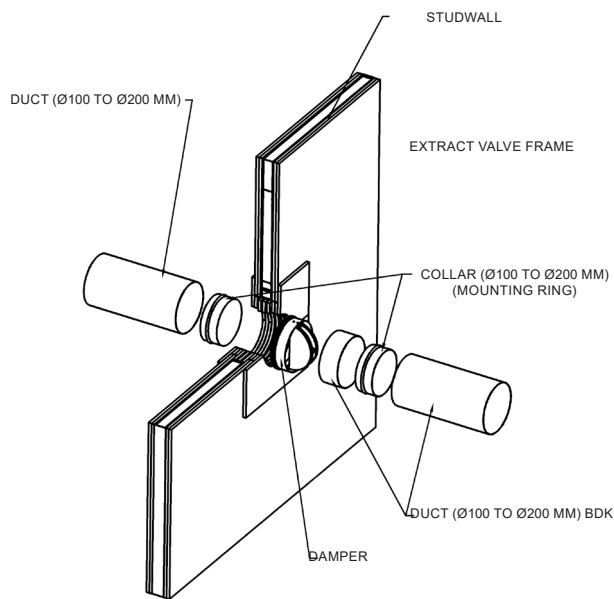
## Fixed wall



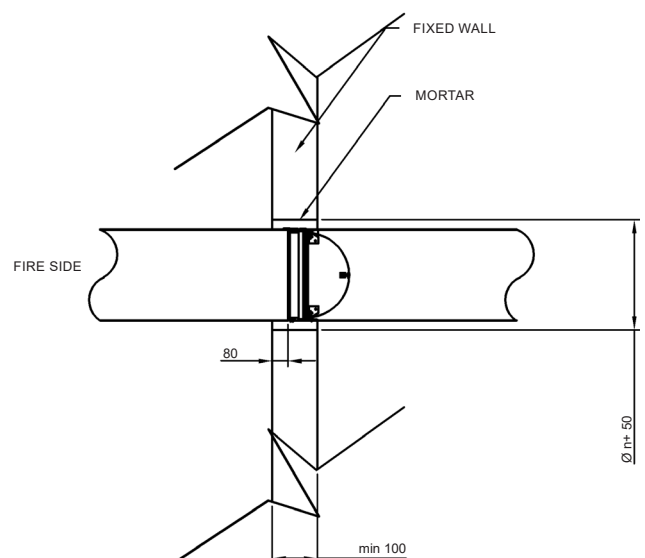
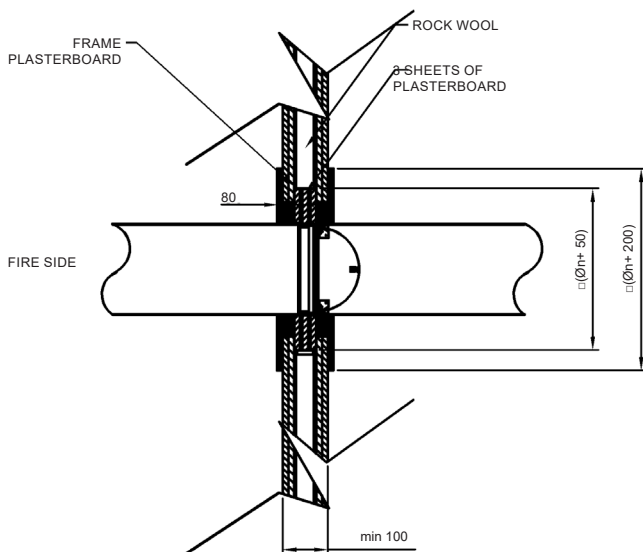
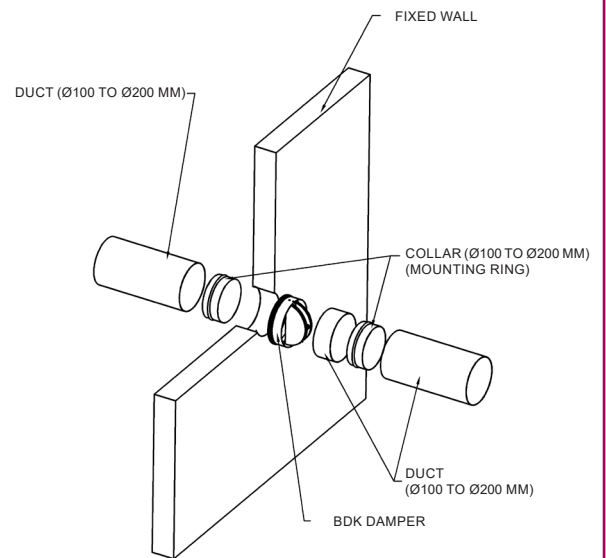
# BDK damper installation with ductwork connection

The BDK circular terminal fire damper can be installed in a fixed wall or a stud wall with a ductwork connection. The characteristics of both types of installation are shown below.

## Stud wall



## Fixed wall



# Technical data

## Quick selection tables

TAMAÑO	Q (m³/h)	L <sub>wa</sub> [dB(A)]	ΔP (Pa)	V <sub>k</sub> (m/s)
100	88	30	17	3,1
	109	35	27	3,9
	136	40	41	4,8
	168	45	64	6,0
125	150	30	17	3,4
	186	35	26	4,2
	231	40	40	5,2
	287	45	61	6,5
150	231	30	16	3,6
	287	35	25	4,5
	357	40	38	5,6
	444	45	59	7,0
160	270	30	16	3,7
	335	35	24	4,6
	417	40	38	5,8
	518	45	58	7,2
180	357	30	15	3,9
	444	35	24	4,8
	552	40	37	6,0
	686	45	57	7,5
200	460	30	15	4,1
	571	35	23	5,1
	710	40	36	6,3
	882	45	56	7,8

**KEY**

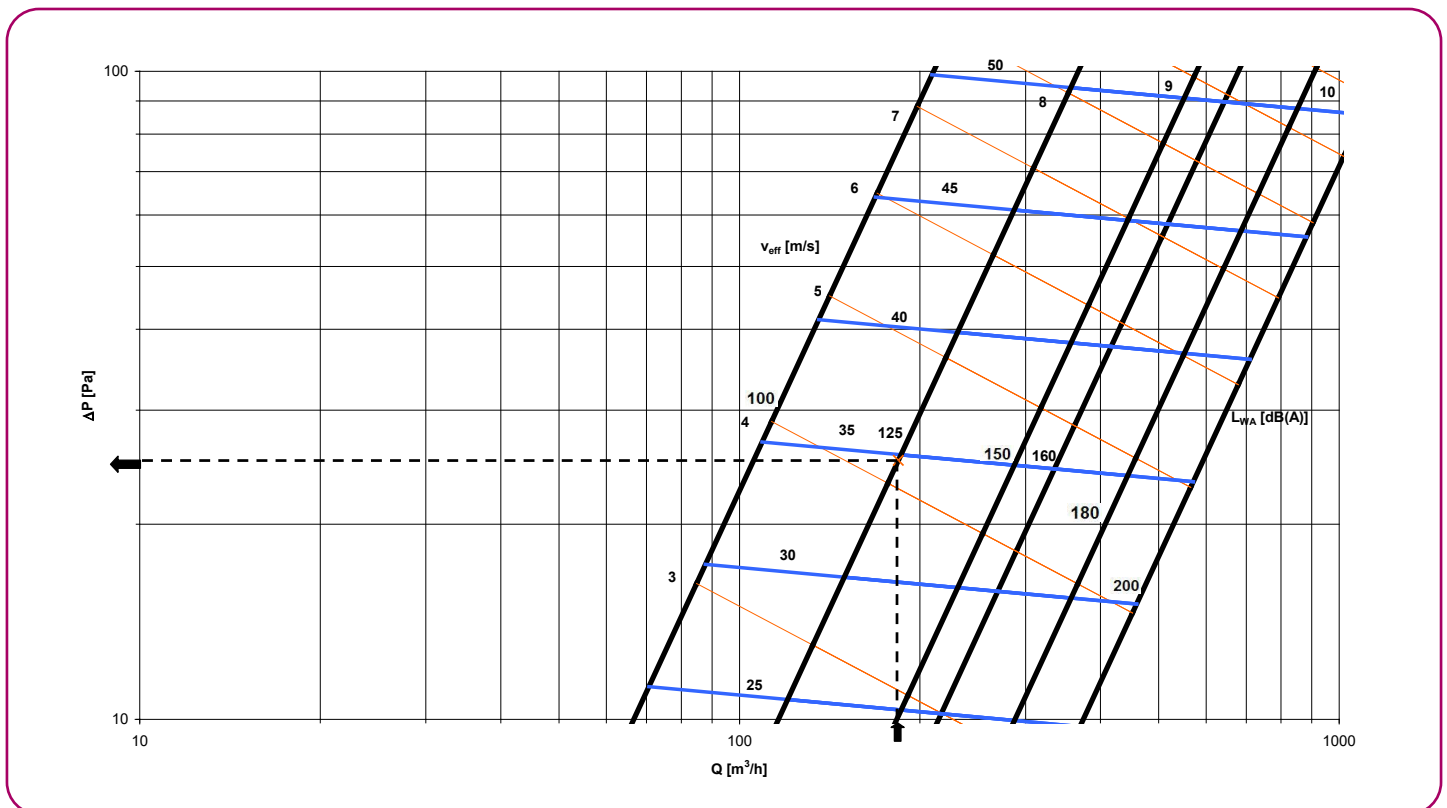
Q (m³/h): Flow rate.

ΔP (Pa): Pressure loss.

L<sub>wa</sub> [dB(A)]: Sound power level.

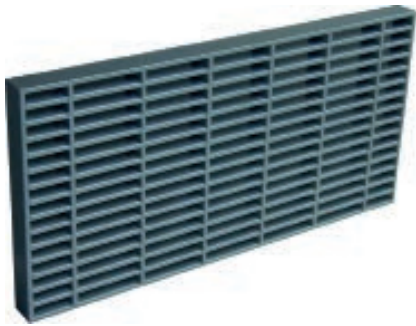
V<sub>k</sub> (m/s): Duct velocity.

## Selection chart





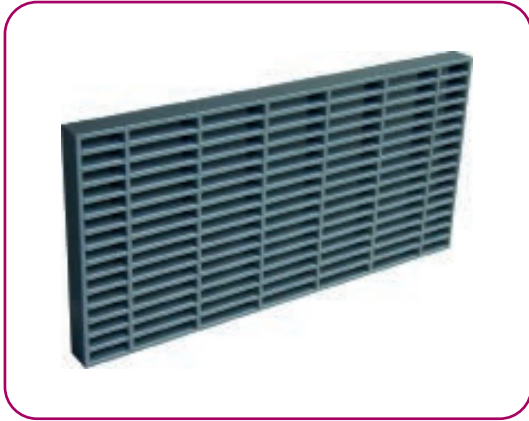
## Intumescent air transfer grilles



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## Intumescent air transfer grilles



### Description

Koolair intumescent grilles, model **V** for rectangular ducts and model **VC** for round ducts, are used to compartmentalise zones in the event of a fire or high temperature gases.

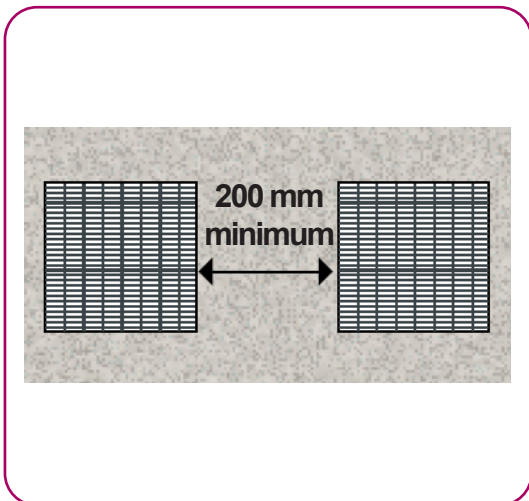
### Characteristics

The V and VC grilles contain an intumescent material that expands when exposed to heat (usually within 5 minutes) to seal the ventilation duct and prevent flames, smoke or gases from getting through. They comply with European Test Standard EN1364-5.

The grilles are made of thermoplastic sleeves filled with PALUSOL® intumescent strips that are activated at temperatures of 100 °C and above. They are recommended for use indoors (avoiding contact with water and sustained temperatures over 40 °C). They are designed to facilitate efficient airflow without excessive noise.

The grilles allow air to flow in both directions and can be mounted both vertically and horizontally depending on the application: the free area is approximately 60%. The intumescent grilles have been tested when centred in the test wall to obtain an approved fire rating on each side. They are maintenance-free and should be stored in a dry and well-ventilated location.

They are available in a wide range of sizes and thicknesses: V40 rated EI60, V50 rated EI90, V60 rated EI120 and VC60 rated EI90. The default colour of the slats and frame is grey although other colours are available on request. The V and VC grilles are manufactured in a 50mm raster and can be supplied with a decorative grille to hide the intumescent grille for aesthetic reasons.



## Intumescent air transfer grilles

### Installation

The V and VC grilles are easy to install. They should be screwed to the walls and sealed using a specific intumescent mastic. Any gaps smaller than 5 mm after installation should be filled with intumescent mastic in order to ensure the grille is completely airtight when cold or during a fire.

If several intumescent grilles are to be installed, they should be set 200 mm apart in accordance with current standards. The actual dimensions of the V intumescent grille are 3mm less than the nominal dimensions (LxH). It should be positioned centrally with respect to the thickness of the concrete wall. It should be fixed to the wall with 4 screws on both sides of the grille. The actual dimension of the VC intumescent grille is 3mm less than the nominal diameter ( $\emptyset$ ). It should be positioned centrally with respect to the thickness of the wall.

### Models

**V40.** E160 rectangular grille manufactured using an intumescent material and thermoplastic sleeves filled with PALUSOL intumescent strips.

**V50.** E190 rectangular grille manufactured using an intumescent material and thermoplastic sleeves filled with PALUSOL intumescent strips.

**V60.** E1120 rectangular grille manufactured using an intumescent material and thermoplastic sleeves filled with PALUSOL intumescent strips.

**VC60.** E190 circular grille manufactured using an intumescent material and thermoplastic sleeves filled with PALUSOL intumescent strips.

## Summary of declared performance

Model	Dimensions (mm)	Construction	Classification
V40	Length: 100 to 600 mm * Height: 100 to 600 mm * Thickness: 40 mm	Intumescent material and thermoplastic sleeves filled with PALUSOL intumescent strips	E160
V50	Length: 100 to 600 mm * Height: 100 to 600 mm * Thickness: 50 mm	Intumescent material and thermoplastic sleeves filled with PALUSOL intumescent strips	E190
V60	Length: 100 to 600 mm * Height: 100 to 600 mm * Thickness: 60 mm	Intumescent material and thermoplastic sleeves filled with PALUSOL intumescent strips	E1120
VC60	$\emptyset$ : 100 to 400 mm * Thickness: 60 mm Available in $\emptyset$ 125 mm	Intumescent material and thermoplastic sleeves filled with PALUSOL intumescent strips	E190

\*in 50 mm raster

# Intumescent air transfer grilles

## Dimensions

### V40:

Length: 100 mm to 600 mm (in 50 mm increments)  
 Height: 100 mm to 600 mm (in 50 mm increments)  
 Thickness: 40 mm

### V50:

Length: 100 mm to 600 mm (in 50 mm increments)  
 Height: 100 mm to 600 mm (in 50 mm increments)  
 Thickness: 50 mm

### V60:

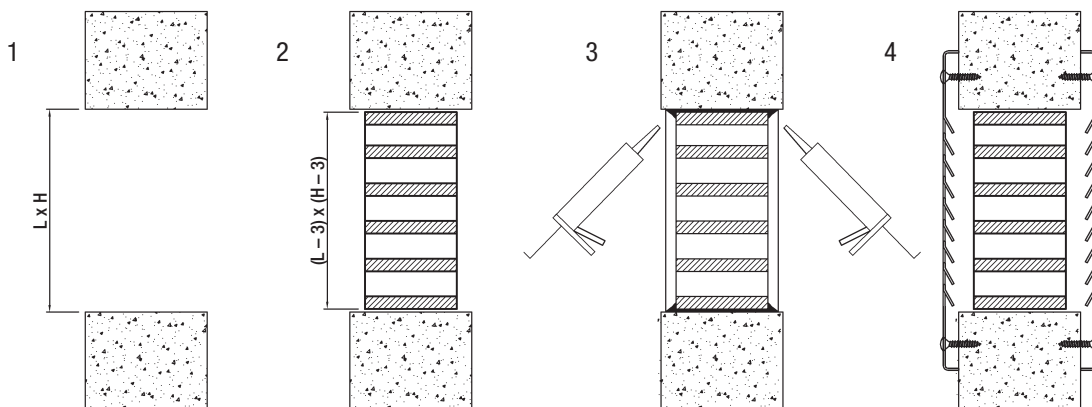
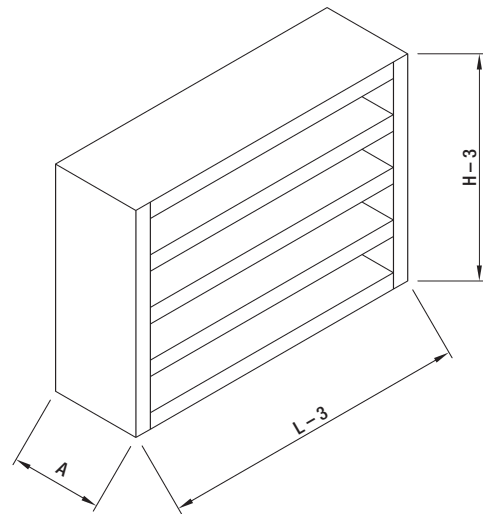
Length: 100 mm to 600 mm (in 50 mm increments)  
 Height: 100 mm to 600 mm (in 50 mm increments)  
 Thickness: 60 mm

### VC60:

Diameter:  $\varnothing$  100 mm to  $\varnothing$  600 mm (in 50 mm increments available in  $\varnothing$  125 mm)  
 Thickness: 60 mm

## Installation

1. Opening
2. Intumescent grille
3. Seal between grille and wall
4. External grille (optional)



# SMLD Smoke Evacuation Damper



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## SMLD Smoke Evacuation Damper



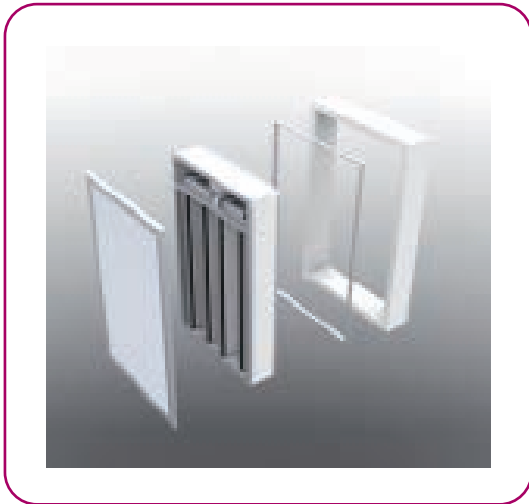
### Description

Multi-blade smoke damper, suitable for use in low profile ductwork, approved in accordance with test standard UNE EN 1366-10 and classified according to EN 13501-4: EI 120 (ved i↔o) S 1500 AA multi.

Designed according to EN 12101-8 specifications. Structure made from refractory material with an external cover made from sheet steel and blades made from refractory material. Installed vertically within the wall, with a vertical smoke evacuation duct, with the option of a mounting assembly frame previously fixed to the duct.

Includes an RPK protective and decorative grille, specific for smoke evacuation and manufactured with anodised aluminium profiles, fitted to the front side of the damper, i.e. the side on display in the building.

Can be used for smoke extraction and air intake (air flow in either direction).



### Operation

The operating mechanism/s are incorporated in the upper part of the damper where they are protected from smoke and high temperatures.

- Automatic operation (closing) and resetting (opening) by means of a servomotor (CE Marking):

SMLD smoke extract dampers are operated and reset by means of a servomotor with a supply voltage of 24 V AC/DC (model BLE24) or 230 V AC (model BLE230).

These motors include start and end of stroke limit switches to monitor the opening/closing status of the damper.

Other operating options:

- Operation (opening) by means of electric coil with manual reset (closing) (CE marking). Optional limit switch/es:

- 24V DC electric shunt release coil
- 48V DC electric shunt release coil
- 24V AC electric shunt release coil
- 48V AC electric shunt release coil

- Automatic reset by means of servomotor BL24-48, with a supply voltage of 24 ... 48 V AC/DC, operation by previously mentioned electric coils. Limit switch/es can be optionally incorporated. (CE Marking)

## SMLD Smoke Evacuation Damper

### CE Marking

The Koolair SMLD smoke evacuation damper, has CE marking, No. 0370-CPR-1688 in compliance with RPC-305/2011/EU, according to EN15650:2010.

### Regulations

The SMLD damper is approved according to the European Test Standard UNE-EN 1366-10 and European classification standard UNE-EN 13501-4, where EI 120 (ved i↔o) S 1500 AA multi:


- (E) Integrity
- (I) Isolation
- (120) : 120 minute resistance
- (ved) Installed vertically in duct
- (i ↔ o) Symmetric. Suitable for fire in both directions (interior-exterior and exterior-interior)
- (S) Airtightness. Leakage through the damper closing blades <math><200 \text{ m}^3/\text{h}\cdot\text{m}^2</math>
- (1500) Suitable for a working pressure range from 1500 Pa negative (extract) to 500 Pa positive (supply). (AA) Automatic intervention.
- (multi) Suitable for multi-compartment systems

The SMLD smoke damper can be associated with KOOLAIR's KOOLCOM management and monitoring system for fire dampers.

To guarantee correct fire damper operation, it is essential to read and follow the recommendations in the installation and operation manual. In addition, the installation must comply with all current national standards.

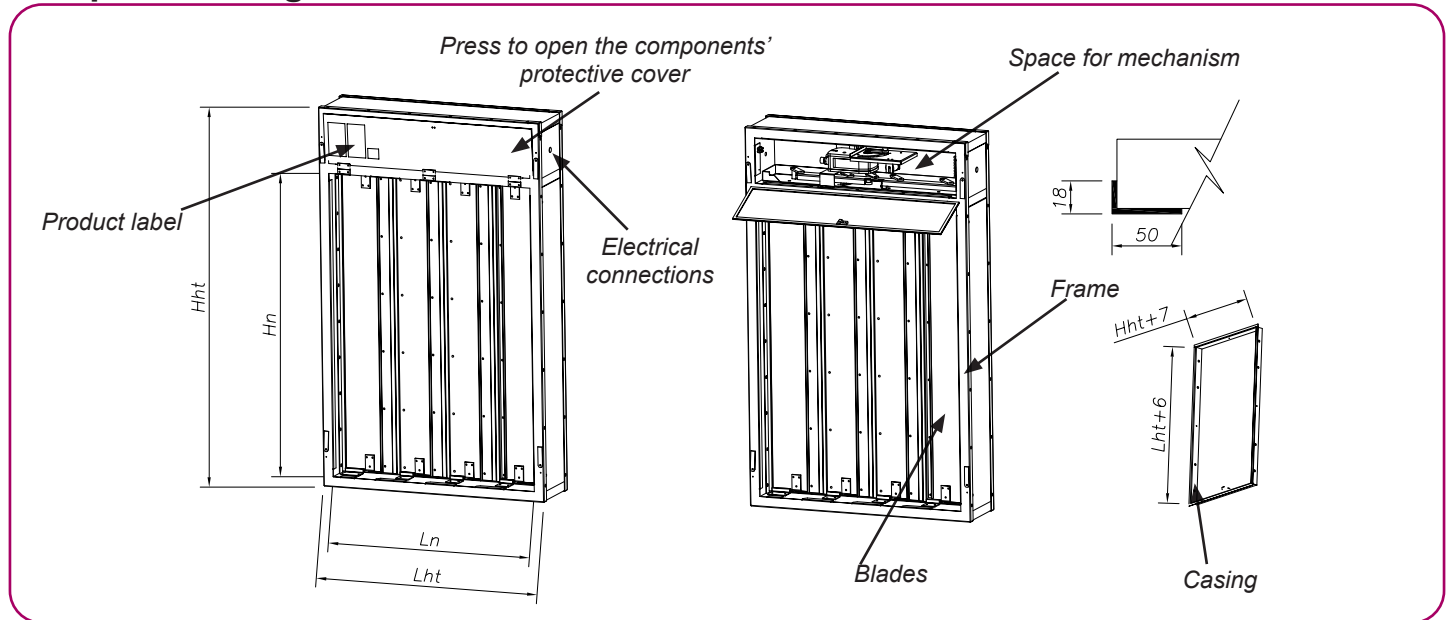
Further information and updates, as well as the installation and operating manual, can be found on our website ([www.koolair.com](http://www.koolair.com)).

### Declared smoke extraction performance

SMLD CPR-1688		Dimensions (mm)	Installation location	Installation	Classification
CE		L: 2 → 4 lamas H: 200 → 1000	Smoke extract duct	1366-8 certified vertical duct	EI-120 (ved i↔o) S 1500 AA multi (500 Pa)

# SMLD Smoke Evacuation Damper Dimensions

## Damper Drawing



## Fire resistance according to EN 13501 - 4

EI 120 (Ved - i ↔ o) S 1500 AA MULTI

## Dimensions and openings

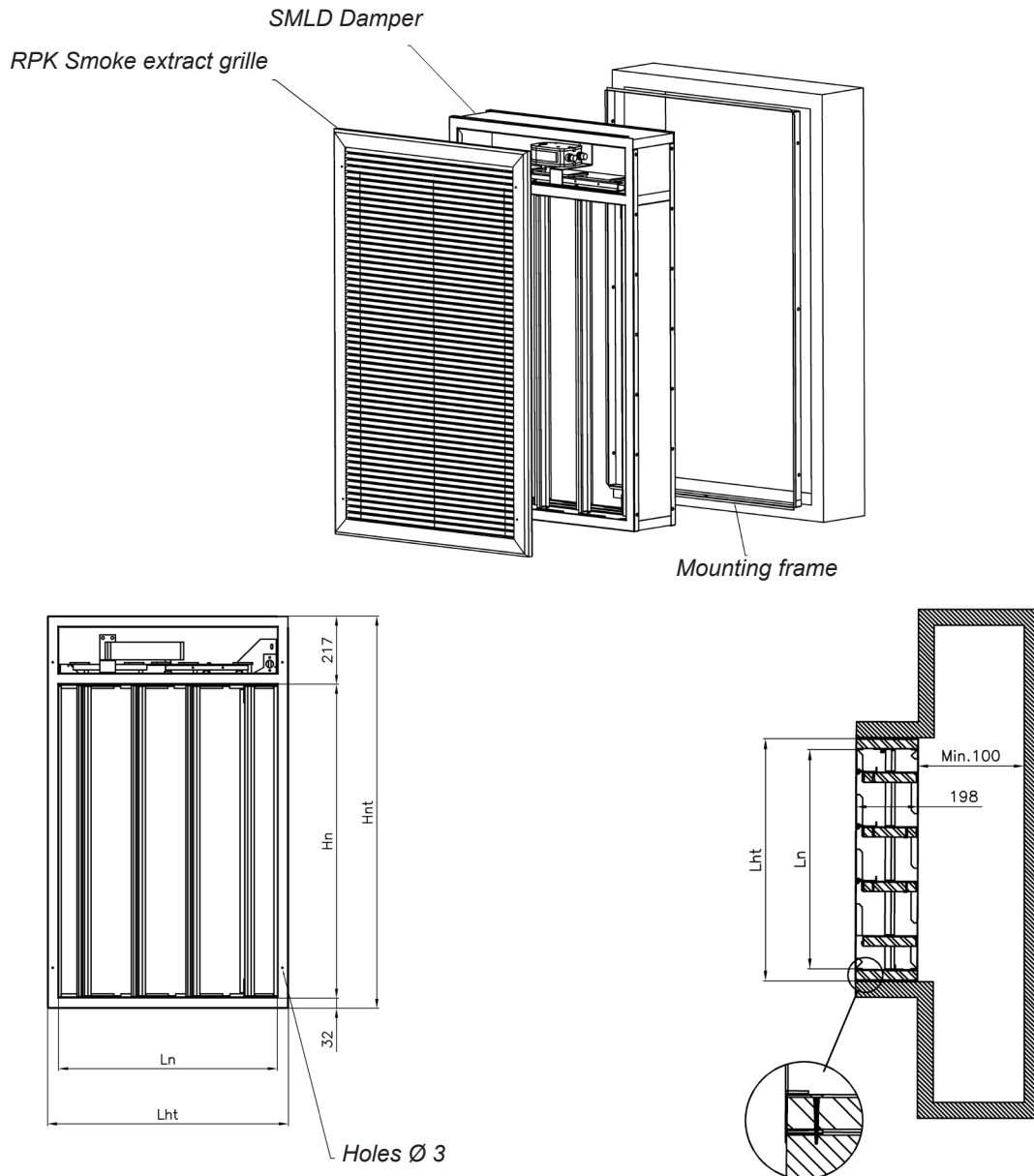
L Dimensions (see drawing)		
Number of blades (N)	Nominal dimensions $L_n$ (mm)	External dimensions $L_{ht}$ (mm)
2	354	418
3	527	591
4	700	764
H Dimensions (see diagram)		
Nominal dimensions $H_n$ (mm)		
De 200 a 1000 pasos de 50 en 50		

Dimensions in mm



# SMLD Smoke Evacuation Damper Dimensions

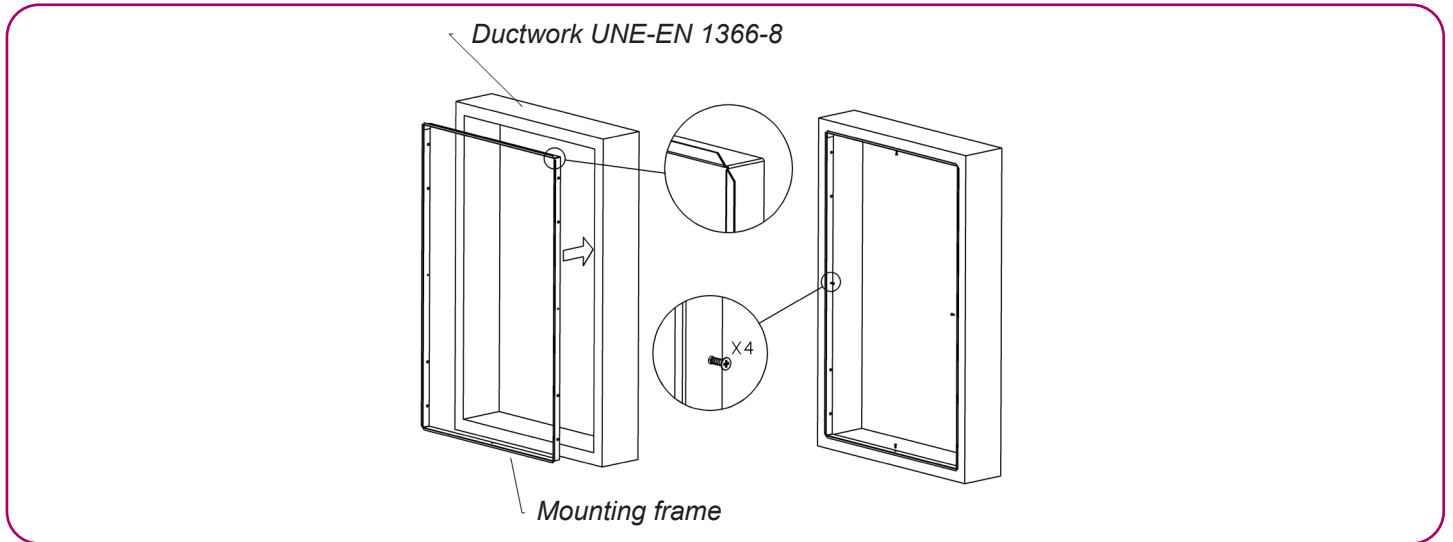
## Installation and commissioning



SMLD damper application in installations which employ ductwork different from that which has been submitted for certification testing: SMLD smoke control dampers, for use in multi-compartment systems (multi), are applicable in ducts that are tested in accordance with EN1366-8 as appropriate for each particular case or manufactured from materials with the same density or greater thickness than those used in the certification test. Ductwork must be installed in accordance with the manufacturer's latest drawings.

# SMLD Smoke Evacuation Damper Installation

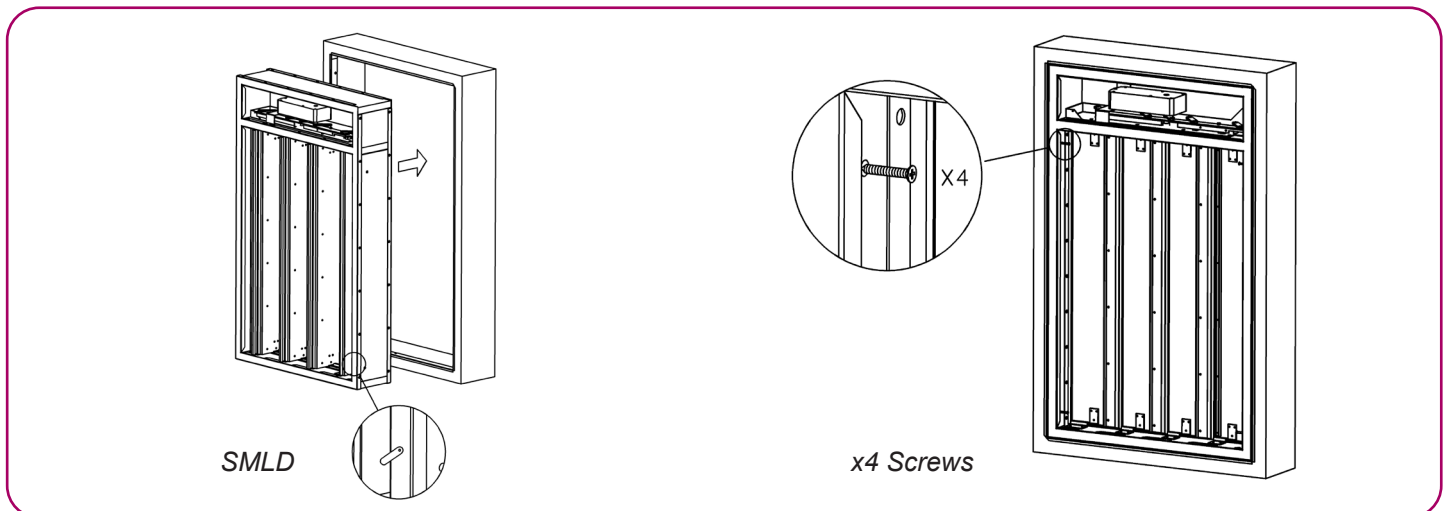
## Use of mounting frame



### Precautions:

- Make sure the mounting frame is perpendicular before installation.
- Fix the frame to the duct using the 4 screws provided with the frame.
- Drill a hole to allow ductwork connections to pass.

## SMLD assembly



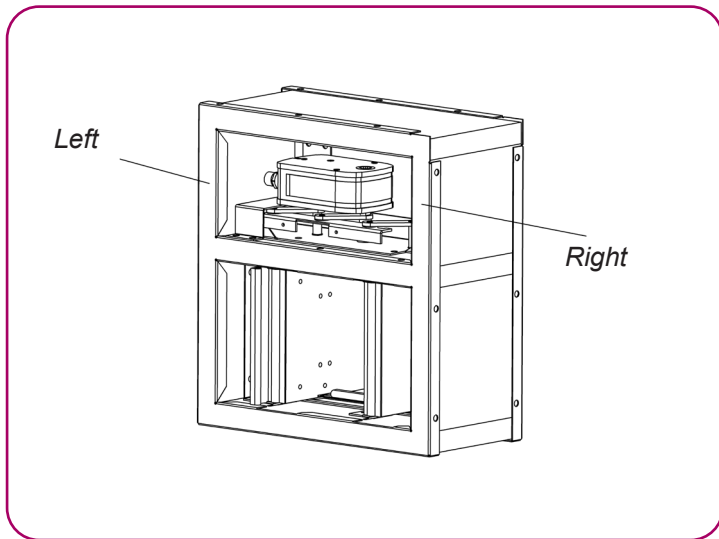
- Install the damper in the mounting frame. Use the collapsible pins included in the damper frame as a stop.
- Fix the damper to the frame using the 4 screws provided with the damper.
- Complete the assembly by filling all the screw holes with intumescent putty.

As it is a critical safety item, the damper must be stored and handled with care. Precautions:

- Store in a place protected from moisture.
- Avoid contact with water.
- Avoid deformation of the damper body during installation and sealing.
- Prevent the damper from being knocked or swung during transport.

# SMLD Smoke Evacuation Damper Connections

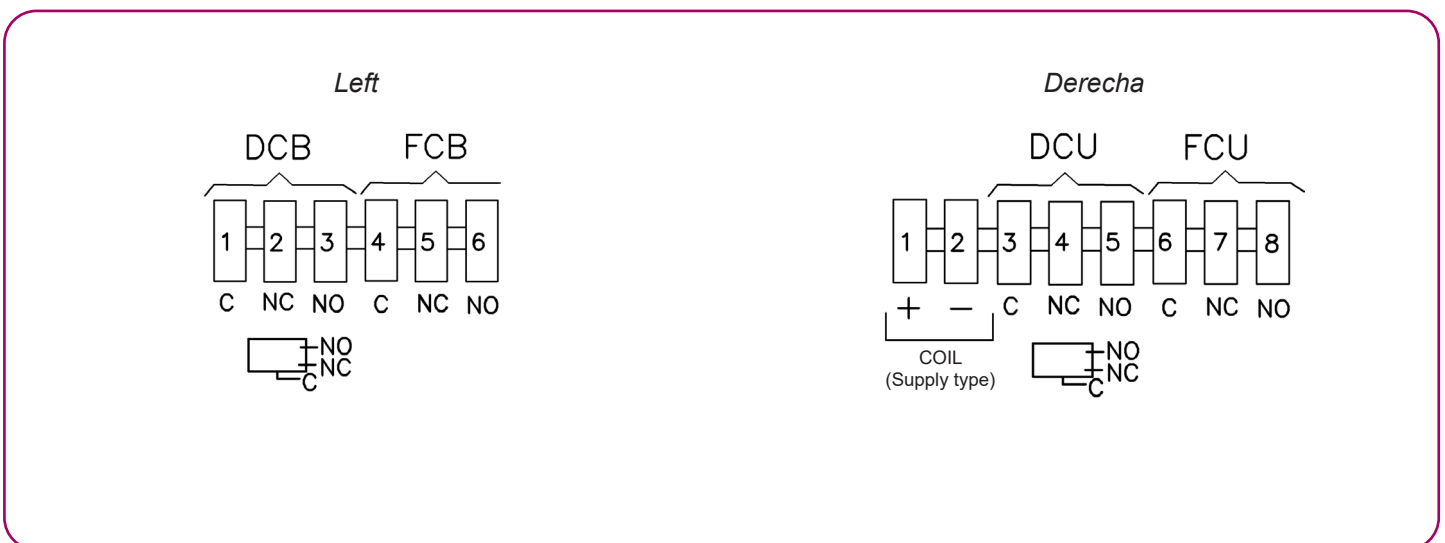
## Operating mechanism electrical connections



FCU: safety position (end of run) one-pole contact.  
 DCU: waiting position (start of run) one-pole contact.  
 FCB: safety position (end of run) two-pole contact.  
 DCB: waiting position (start of run) two-pole contact.

• Operated by electric shunt release (current driven) coil (CE Marking): Power supply options:

- 24V DC electric shunt release coil
- 48V DC electric shunt release coil
- 24V AC electric shunt release coil
- 48V AC electric shunt release coil

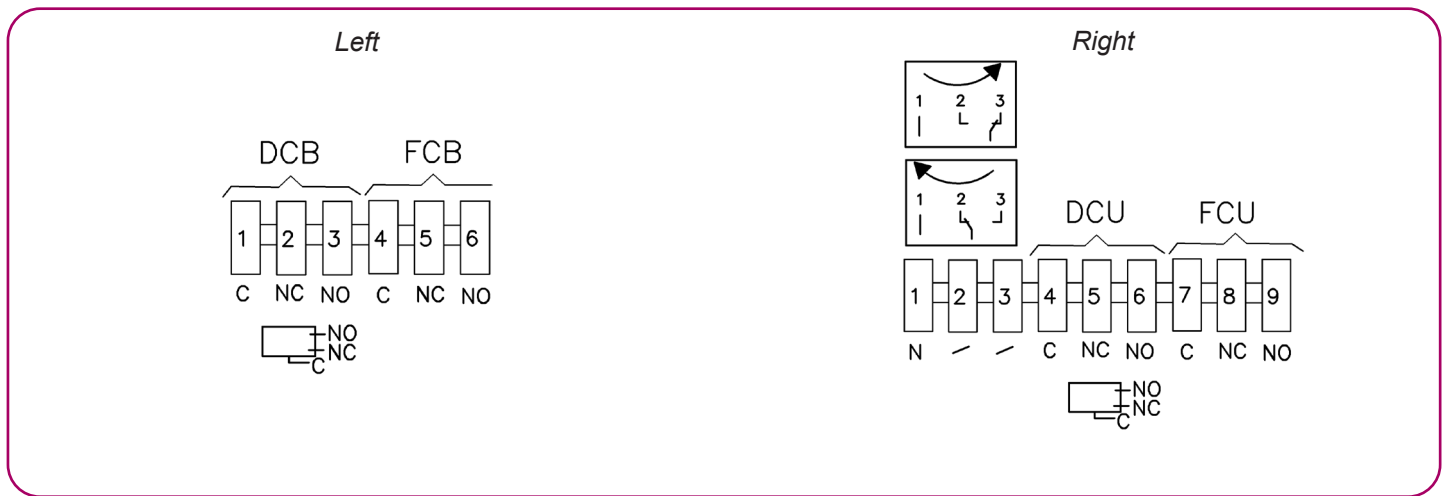


Option to incorporate two start of run limit switches (DCU, DCB) and two end of run limit switches (FCU, FCB).

# SMLD Smoke Evacuation Damper Connections

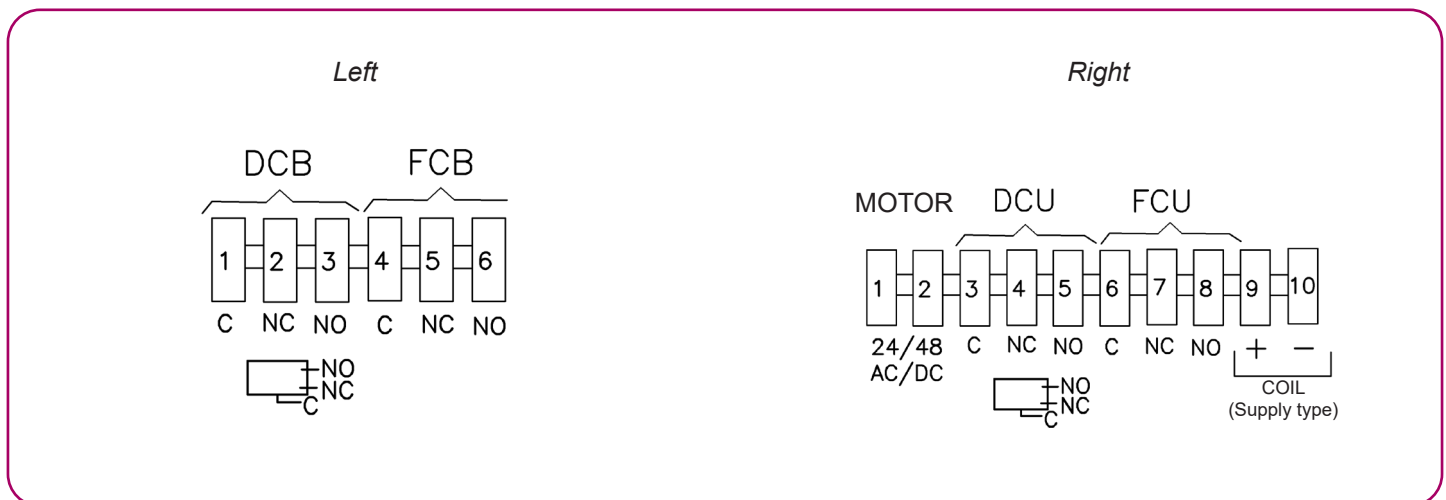
• Operation and reset by electric servomotor (CE Marking):

Supply voltage 24 V AC/DC (model BLE24) or 230 V AC (model BLE230). These motors integrate start of run (DCU) and end of run limit switches (FCU). The motor supply must be of SES (Safe Electrical Supply) type. A second start of run (DCB) and end of run limit switch (FCB) can be optionally included.



Operated by shunt release coil and reset with an electric servomotor (CE marking):

- 24 V DC electric shunt release coil.
- 48V DC electric shunt release coil
- 24V AC electric shunt release coil
- 48V AC electric shunt release coil
- Servomotor to reset (close) damper, BL24-48, with 24 ... 48 V AC/DC supply voltage



Option to incorporate two start of run limit switches (DCU, DCB) and two end of run limit switches (FCU, FCB).

## SMLD Smoke Evacuation Damper Technical Data

Blades	Ln	Lt	Lm	Lh
2	354	418	427	429
3	527	591	600	602
4	700	764	773	775

Units in mm

### Free area table (dm<sup>2</sup>)

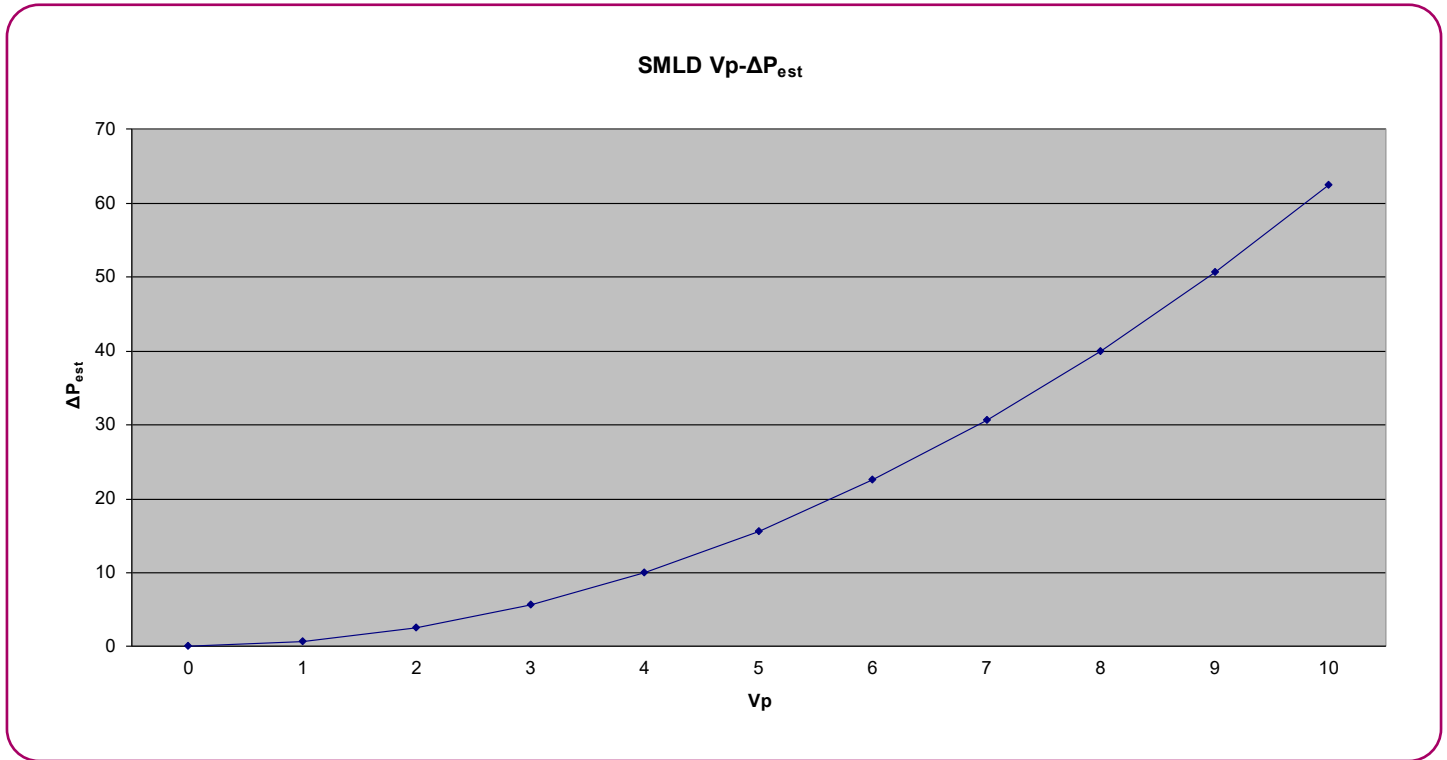
Blades	Ln (mm)	Height Hn (mm)																
		200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
2	354	4,9	6,1	7,3	8,5	9,8	11,0	12,2	13,4	14,6	15,9	17,1	18,3	19,5	20,7	22,0	23,2	24,4
3	527	7,3	9,2	11,0	12,8	14,6	16,5	18,3	20,1	22,0	23,8	25,6	27,5	29,3	31,1	32,9	34,8	36,6
4	700	9,8	12,2	14,6	17,1	19,5	22,0	24,4	26,8	29,3	31,7	34,2	36,6	39,0	41,5	43,9	46,4	48,8

#### KEY

- L** = Length
- H** = Height
- Ln** = Nominal length
- Hn** = Nominal height
- Lt** = Total length
- Ht** = Total height
- Lm** = Mounting frame length
- Hm** = Mounting frame height
- Lh** = Opening length
- Hh** = Opening height

# SMLD Smoke Evacuation Damper Technical Data

## SMLD Graph



**Key:**

V<sub>p</sub> damper air velocity in m/s.  
 ΔP<sub>est</sub> damper static pressure loss in Pa.

**Selection example:**

To calculate the static pressure loss across an SMLD damper for a given flow rate Q(m<sup>3</sup>/h) the air velocity V<sub>p</sub>(m/s) is calculated in relation to the damper air passage (dm<sup>2</sup>) as free area table. Using this area and a given flow rate, the air velocity is obtained, which, when introduced in the previous graph gives the pressure loss.

Example:

A damper with 2 slats and a height of 500mm we will have a free area of 12.2 dm<sup>2</sup>. For a design flow rate of 2000 m<sup>3</sup>/h<sup>3</sup>, the flow velocity is calculated using the formula V<sub>p</sub> = (Q / air pass) / 36.

In this case the V<sub>p</sub> = 4.55 m/s that introduced in the previous table would give us a static load loss ΔP<sub>est</sub> = 14 Pa.

# SMLD Smoke Evacuation Damper Coding

## Damper dimensions and model

SMLD – L x H (mm)

## Activation. Components

- + MOTOR-BLE24
- + MOTOR-BLE230
- + SHUNT REL 24 V DC + SoR/EoR LS
- + SHUNT REL 48 V DC + SoR/EoR LS
- + SHUNT REL 24 V AC + SoR/EoR LS
- + SHUNT REL 48 V AC + SoR/EoR LS
- + SHUNT REL 24 V DC + SoR/EoR LS + MOTOR RESET-BL24/48
- + SHUNT REL 48 V DC + SoR/EoR LS + MOTOR RESET-BL24/48
- + SHUNT REL 24 V AC + SoR/EoR LS + MOTOR RESET-BL24/48
- + SHUNT REL 48 V AC + SoR/EoR LS + MOTOR RESET-BL24/48

## Accessories

- MM (Metal mounting frame)
- RPK (protective smoke evacuation grille)

# CEVH Smoke Evacuation Damper



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## CEVH Smoke Evacuation Damper



### Description

Smoke evacuation damper with 2-blade (2P), double door type swiveling closure, designed to be used for the supply of primary air and smoke evacuation in buildings with high levels of public footfall and in high-rise buildings. Approved in accordance with test standard UNE EN 1366-10 and classified according to EN 13501-4: E1120 (ved i↔o) S 1500 AA multi.

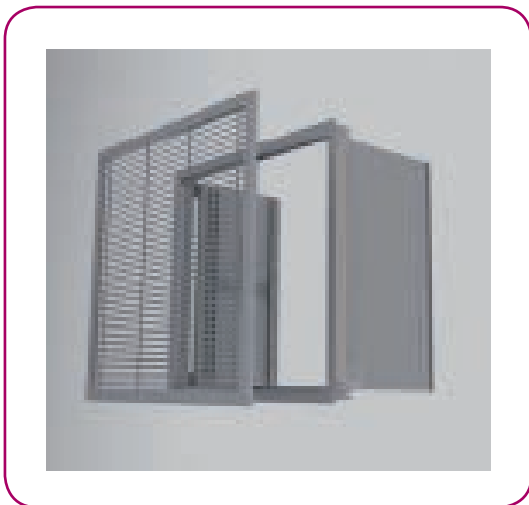
Designed according to EN 12101-8 specifications. Composed of a structure with a refractory material externally, sheet steel internally and two hinged doors made of a refractory material.

Installed vertically within the wall or in a vertical smoke evacuation duct, with the optional of a metal mounting frame previously fastened to the duct.

Includes an RPK protective and decorative grille, specific for smoke evacuation and manufactured with anodised aluminium profiles, fitted to the front side of the damper, i.e. the side on display in the building.

Can be used for smoke extraction and air intake (air flow in either direction).

CEVH smoke evacuation dampers carry CE marking No. 0370-CPR-1687 in accordance with the Construction Product Directive 89/106/EEC, according to EN12101-8.



### Operation

Operation (opening) by means of electric shunt release coil with manual reset (closing) (CE and NF marking). Optional limit switch/es:

Types of coil (electromagnet) available:

- 24V electric shunt release coil DC
- 48V electric shunt release coil DC
- 24V electric shunt release coil AC
- 48V electric shunt release coil AC

The operating and reset mechanism is incorporated in the central part of the damper where it is protected from smoke and high temperatures.

# CEVH Smoke Evacuation Damper

## CE Marking

The Koolair CEVH smoke evacuation damper, carries CE marking, no. 0370-CPR-1687 in compliance with RPC-305/2011/EU, according to EN15650:2010.

## NF Marking

The Koolair CEVH smoke evacuation damper, is certified for NF marking. (NF264 Certification Standard, NF S 61-937-10 smoke evacuation dampers).

## Standard

The CEVH damper is approved according to the European Test Standard UNE-EN 1366-10 and European classification standard UNE-EN 13501-4, where EI 120 (ved i↔o) S 1500 AA multi:

(E) Integrity

(I) Isolation

(120) 120 minute resistance (ved)

Installed vertically in duct

(i ↔ o) Symmetric. Suitable for fire in both directions (interior-exterior and exterior-interior)

(S) Airtightness. Leakage through the damper closing blades <math><200 \text{ m}^3/\text{h}\cdot\text{m}^2</math>

(1500) Suitable for a working pressure range from 1500 Pa negative (extract) to 500 Pa positive (supply). (AA) Automatic intervention.

(multi) Suitable for multi-compartment systems.

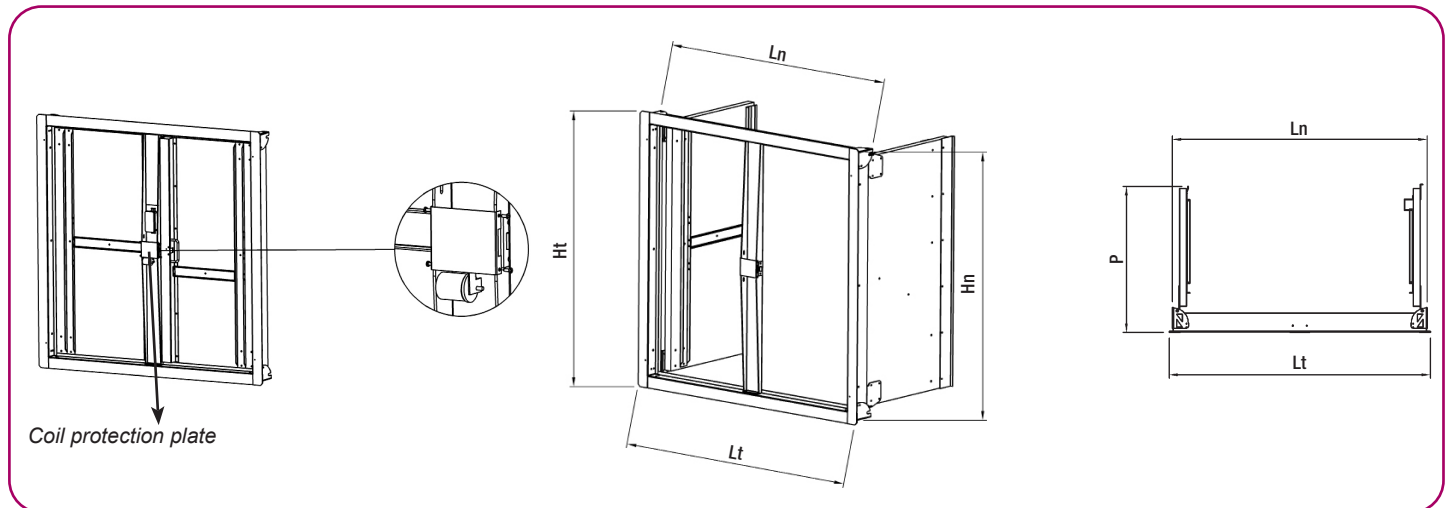
To guarantee correct fire damper operation, it is essential to read and follow the recommendations in the installation and operation manual. In addition, the installation must comply with all current national standards. Further information and updates, as well as the installation and operating manual, can be found on our website ([www.koolair.com](http://www.koolair.com)).

## Declared smoke extraction performance

CEVH CPR-1687		Dimensions (mm)	Installation location	Installation	Classification
 		L: 400 → 1100 H: 400 → 1100	Smoke extract duct	1366-8 certified vertical duct	EI-120 (ved i↔o) S 1500 AA multi (500 Pa)

# CEVH Smoke Evacuation Damper Dimensions

## Damper Drawing

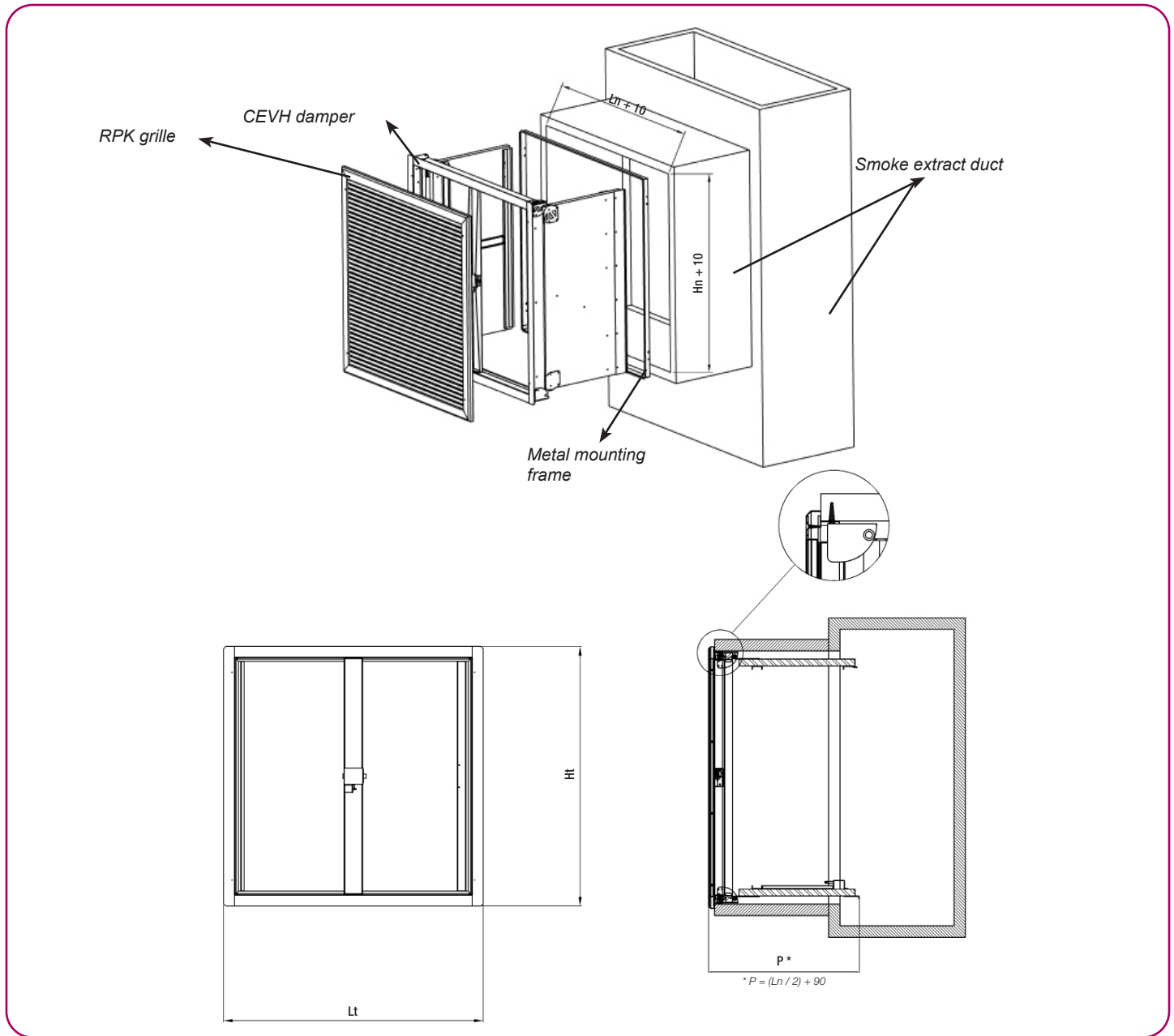


## Dimensions and openings

Nominal length $L_n$ (mm)	Exterior length $L_t$ (mm)	Nominal height $H_n$ (mm)	Exterior height $H_t$ (mm)
400	429	400	429
450	479	450	479
500	529	500	529
550	579	550	579
600	629	600	629
650	679	650	679
700	729	700	729
750	779	750	779
800	829	800	829
850	879	850	879
900	929	900	929
950	979	950	979
1000	1029	1000	1029
1050	1079	1050	1079
1100	1129	1100	1129

Dimensions in mm

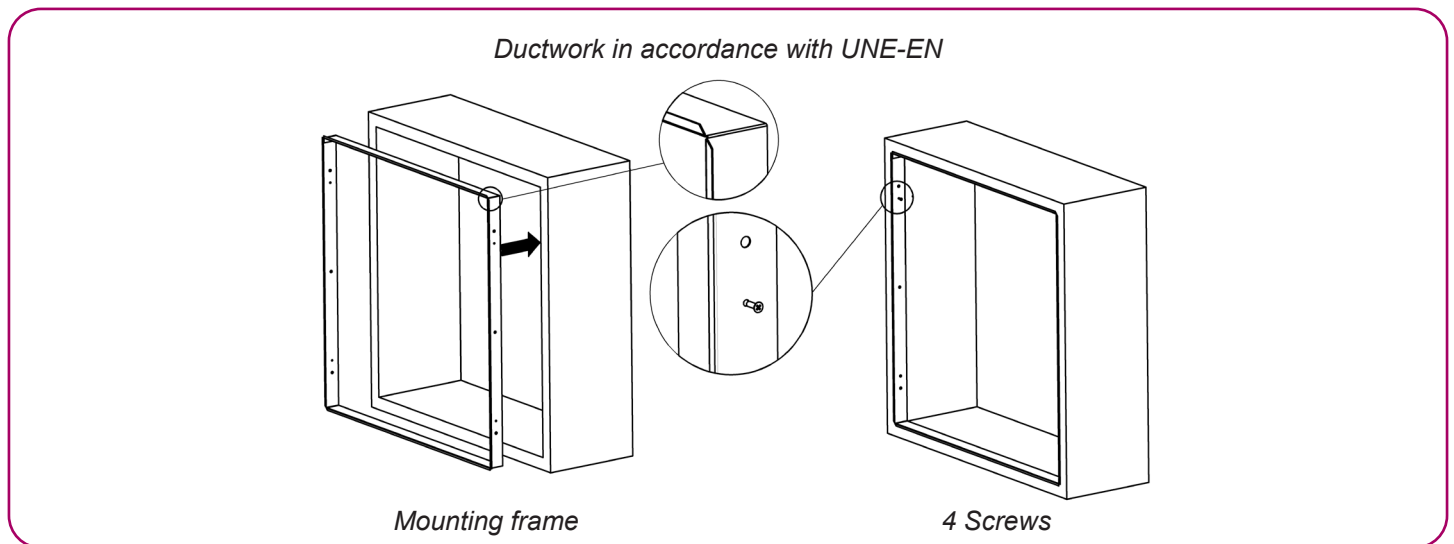
# CEVH Smoke Evacuation Damper Installation



CEVH damper application in installations which employ ductwork different from that which has been submitted for certification testing: CEVH smoke control dampers, for use in multi-compartment systems (multi), are applicable in ducts that are tested in accordance with EN1366-8 as appropriate for each particular case or manufactured from materials with the same density or greater thickness than those used in the certification test. Ductwork must be installed in accordance with the manufacturer's latest drawings.

# CEVH Smoke Evacuation Damper Assembly

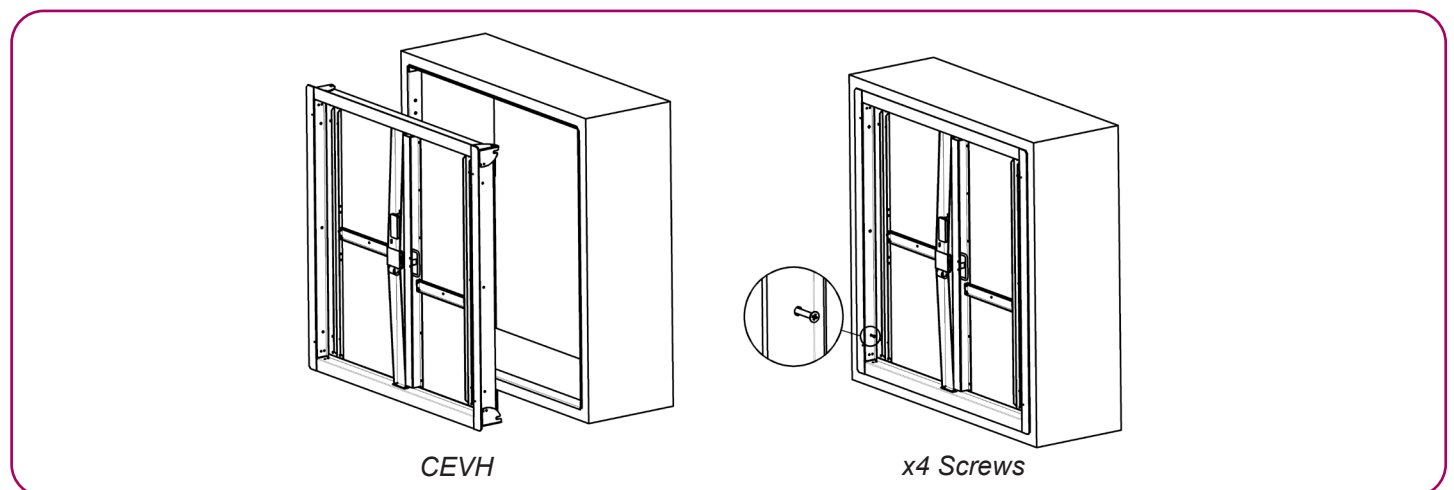
## Use of mounting frame



### Precautions:

- Make sure the mounting frame is perpendicular before installation.
- Fix the frame to the duct using the 4 screws provided with the frame.
- Drill a hole to allow ductwork connections to pass.

## CEVH damper installation



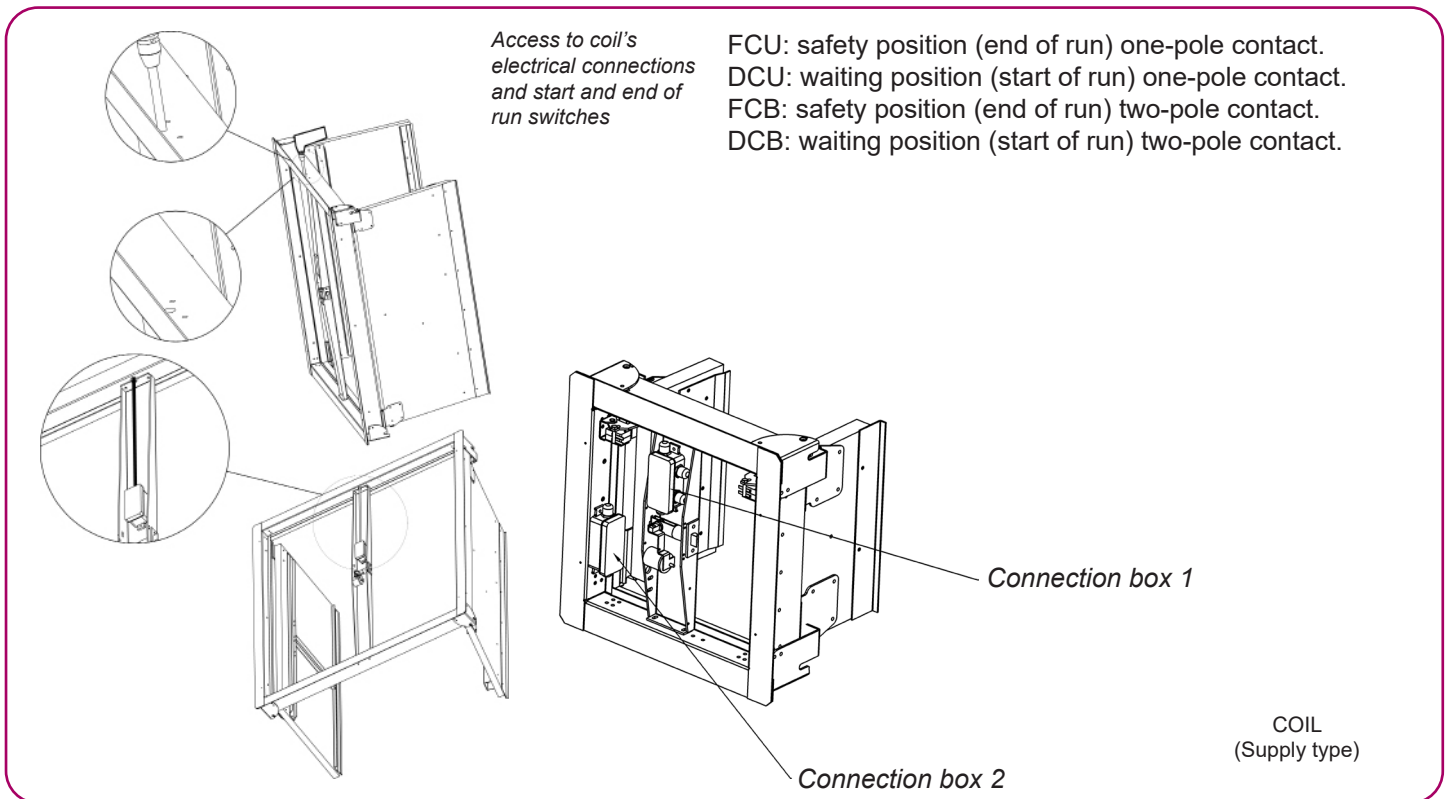
- Install the damper in the mounting frame or duct. Use the collapsible pins included in the damper frame as a stop.
- Fasten the damper to the frame using the 4 screws provided with the damper.
- Complete the assembly by filling all the screw holes with intumescent putty.

As it is a critical safety item, the damper must be stored and handled with care. Precautions:

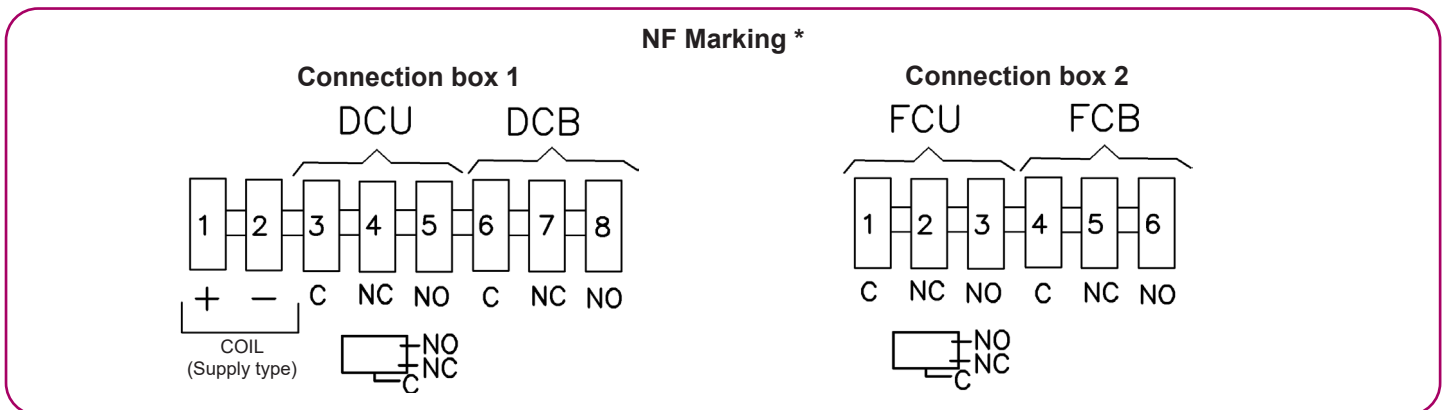
- Store in a place protected from moisture.
- Avoid contact with water.
- Avoid deformation of the damper body during installation and sealing.
- Prevent the damper from being knocked or swung during transport.
- Use of the metal mounting frame is recommended to make damper installation easy.

# CEVH Smoke Evacuation Damper Connections

## Electrical connections

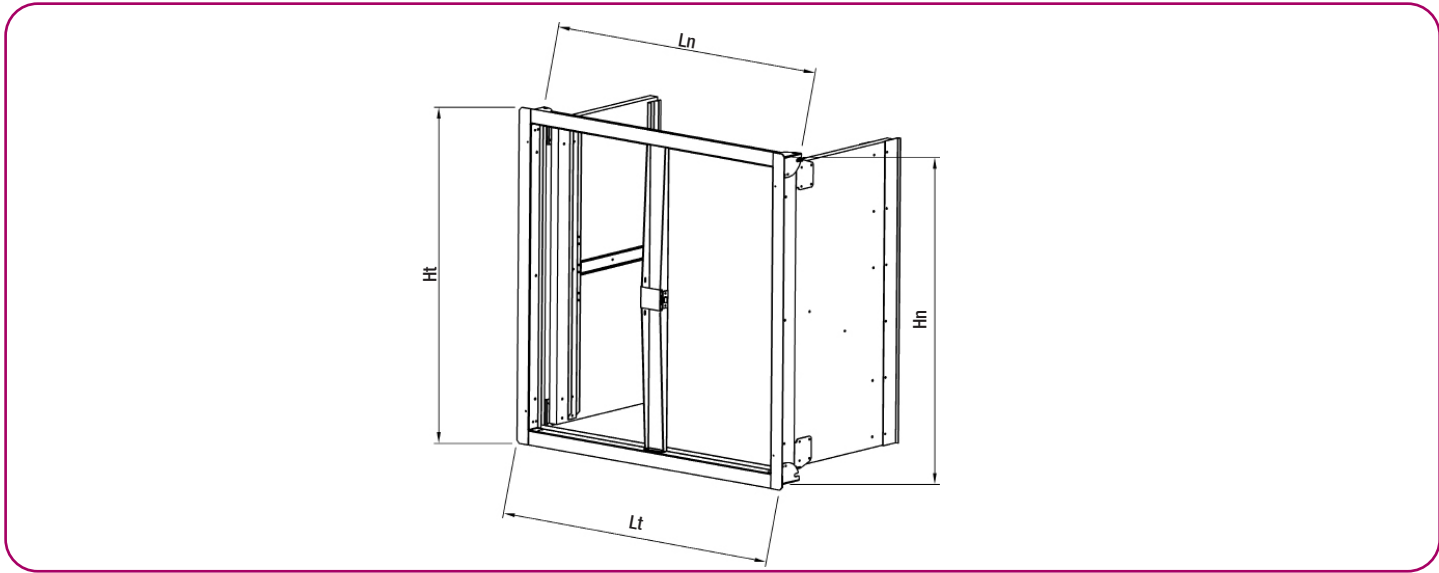


- Activation by electric shunt release (current driven) coil:
  - Power supply options
    - 24V DC electric shunt release coil
    - 48V DC electric shunt release coil
    - 24V AC electric shunt release coil
    - 48V AC electric shunt release coil



\* CE Marking does not require duplication of the start (DCU, DCB) and end of run limit switch (FCU, FCB).

# CEVH Smoke Evacuation Damper Technical Data



## Free area table (dm<sup>2</sup>)

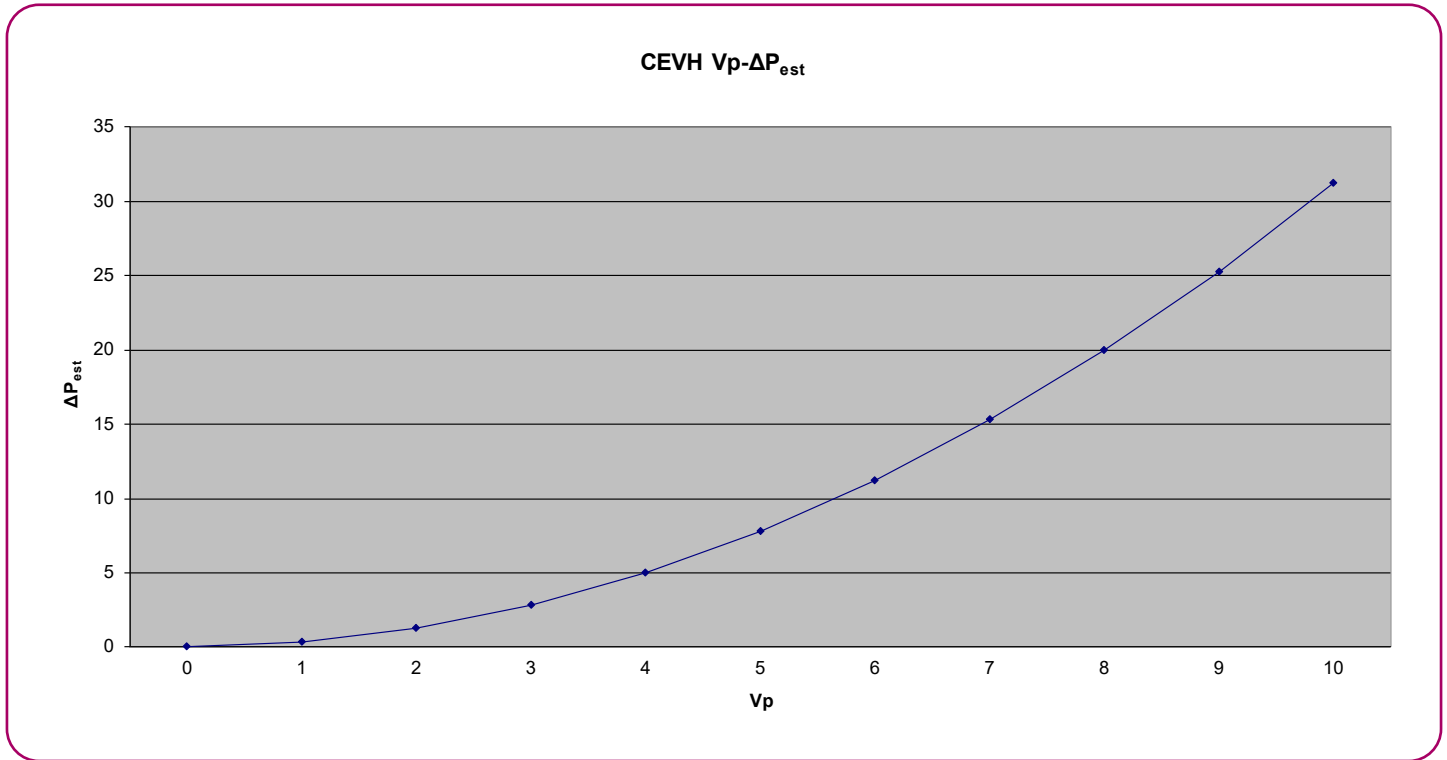
	Length Ln (in mm)														
	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100
400	9,24	10,76	12,28	13,80	15,3	16,8	18,4	19,9	21,4	22,9	24,4	26,0	27,5	29,0	30,5
450	10,76	12,53	14,30	16,07	17,8	19,6	21,4	23,2	24,9	26,7	28,5	30,2	32,0	33,8	35,5
500	12,28	14,30	16,32	18,34	20,4	22,4	24,4	26,4	28,4	30,5	32,5	34,5	36,5	38,5	40,6
550	13,80	16,07	18,34	20,61	22,9	25,2	27,4	29,7	32,0	34,2	36,5	38,8	41,0	43,3	45,6
600	15,32	17,84	20,36	22,88	25,4	27,9	30,4	33,0	35,5	38,0	40,5	43,0	45,6	48,1	50,6
650	16,84	19,61	22,38	25,15	27,9	30,7	33,5	36,2	39,0	41,8	44,5	47,3	50,1	52,9	55,6
700	18,36	21,38	24,40	27,42	30,4	33,5	36,5	39,5	42,5	45,5	48,6	51,6	54,6	57,6	60,6
750	19,88	23,15	26,42	29,69	33,0	36,2	39,5	42,8	46,0	49,3	52,6	55,9	59,1	62,4	65,7
800	21,40	24,92	28,44	31,96	35,5	39,0	42,5	46,0	49,6	53,1	56,6	60,1	63,6	67,2	70,7
850	22,92	26,69	30,46	34,23	38,0	41,8	45,5	49,3	53,1	56,9	60,6	64,4	68,2	71,9	75,7
900	24,44	28,46	32,48	36,50	40,5	44,5	48,6	52,6	56,6	60,6	64,6	68,7	72,7	76,7	80,7
950	25,96	30,23	34,50	38,77	43,0	47,3	51,6	55,9	60,1	64,4	68,7	72,9	77,2	81,5	85,7
1000	27,48	32,00	36,52	41,04	45,6	50,1	54,6	59,1	63,6	68,2	72,7	77,2	81,7	86,2	90,8
1050	29,00	33,77	38,54	43,31	48,1	52,9	57,6	62,4	67,2	71,9	76,7	81,5	86,2	91,0	95,8
1100	30,52	35,54	40,56	45,58	50,6	55,6	60,6	65,7	70,7	75,7	80,7	85,7	90,8	95,8	101

### KEY

- P** = Blade depth.
- Lt** = Total exterior length.
- Ht** = Total exterior height.
- Lh** = Interior duct length.
- Hh** = Interior duct height.
- Ln** = Nominal damper length.
- Hn** = Nominal damper height.

# CEVH Smoke Evacuation Damper Technical Data

## CEVH Graph



**Key:**

V<sub>p</sub> damper air velocity in m/s. damper static pressure.  
 ΔP<sub>est</sub> loss in Pa.

**Selection example:**

To calculate the static pressure loss across a CEVH damper for a given flow rate Q(m<sup>3</sup>/h) the air velocity V<sub>p</sub>(m/s) is calculated in relation to the damper air passage (dm<sup>2</sup>) as free area table. Using this area and a given flow rate, the air velocity is obtained, which, when introduced in the previous graph gives the pressure loss.

Example:

A damper with nominal dimensions of 600x600 mm we will have a free area of 25.4 dm<sup>2</sup>. For a design flow rate of 5000 m<sup>3</sup>/h<sup>3</sup>, the flow velocity is calculated using the formula V<sub>p</sub> = (Q / air pass) / 36.

In this case the V<sub>p</sub> = 5.46 m / s that introduced in the previous table would give us a static load loss ΔP<sub>est</sub> = 9Pa.



# CEVH Smoke Evacuation Damper Coding

## Damper dimensions and model

CEVH – L x H (mm)

## Activation. Components

- + SHUNT RELEASE 24 V DC + ER/SR LS
- + SHUNT RELEASE 48 V DC + ER/SR LS
- + SHUNT RELEASE 24 V AC + ER/SR LS
- + SHUNT RELEASE 48 V AC + ER/SR LS

## Accessories

MM (Metal mounting frame)  
RPK (protective smoke evacuation grille)

# Smoke Evacuation Damper CEVH-1P



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## CEVH-1P Smoke Evacuation Damper



### Description

Smoke evacuation damper with 1-blade (1P), single door type swiveling closure, designed to be used for the supply of primary air and smoke evacuation in buildings with high levels of public footfall and in high-rise buildings. Approved in accordance with test standard UNE EN 1366-10 and classified according to EN 13501-4: E1120 (ved i↔o) S 1500 AA multi.

Designed according to EN 12101-8 specifications. Composed of a structure with a refractory material externally, sheet steel internally and one hinged door made of a refractory material.

Installed in a vertical smoke evacuation duct, with the optional of a metal mounting frame previously fastened to the duct.

The rearm of the damper can be manual or motorized.

Can include an RPK protective and decorative grille, specific for smoke evacuation and manufactured with anodised aluminium profiles, or a DECO decorative plate, manufactured with refractory material. Both fitted to the front side of the damper, i.e. the side on display in the building.

Can be used for smoke extraction and air intake (air flow in either direction).

CEVH-1P smoke evacuation dampers carry CE marking No. 0370-CPR-3051 in accordance with the Construction Product Directive RPC-305, according to EN12101-8.

### Operation

Operation (opening) by means of electric shunt release coil with manual reset (closing) (CE marking). Optional limit switch/es:

Types of coil (electromagnet) available:

- 24V electric shunt release coil DC
- 48V electric shunt release coil DC
- 24V electric shunt release coil AC
- 48V electric shunt release coil AC
- 220V electric shunt release coil AC

The operating and reset mechanism is incorporated in the front part of the damper where it is protected from smoke and high temperatures.

# CEVH-1P Smoke Evacuation Damper

## CE Marking

The Koolair CEVH-1P smoke evacuation damper, carries CE marking, no. 0370-CPR-3051 in compliance with RPC-305, according to EN12101-8.

## Standard



The CEVH-1P damper is approved according to the European Test Standard UNE-EN 1366-10 and European classification standard UNE-EN 13501-4, where EI 120 (ved i↔o) S 1500 AA multi:

- (E) Integrity
- (I) Isolation
- (120) 120 minute resistance
- (ved) Installed vertically in duct
- (i ↔ o) Symmetric. Suitable for fire in both directions (interior-exterior and exterior-interior)
- (S) Airtightness. Leakage through the damper closing blades <math><200 \text{ m}^3/\text{h}\cdot\text{m}^2</math>
- (1500) Suitable for a working pressure range from 1500 Pa negative (extract) to 500 Pa positive (supply).
- (AA) Automatic intervention.
- (multi) Suitable for multi-compartment systems.

To guarantee correct fire damper operation, it is essential to read and follow the recommendations in the installation and operation manual. In addition, the installation must comply with all current national standards.

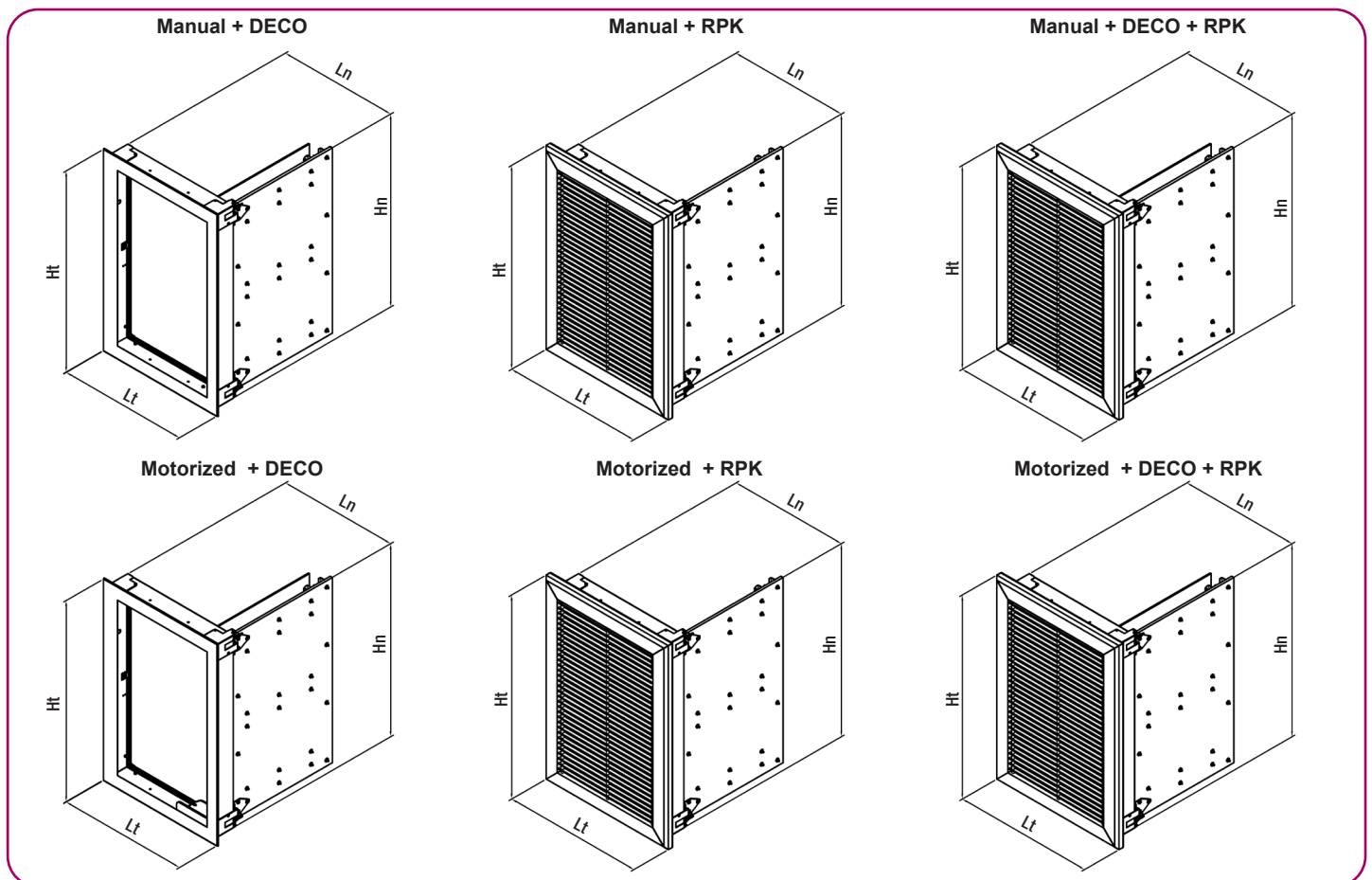
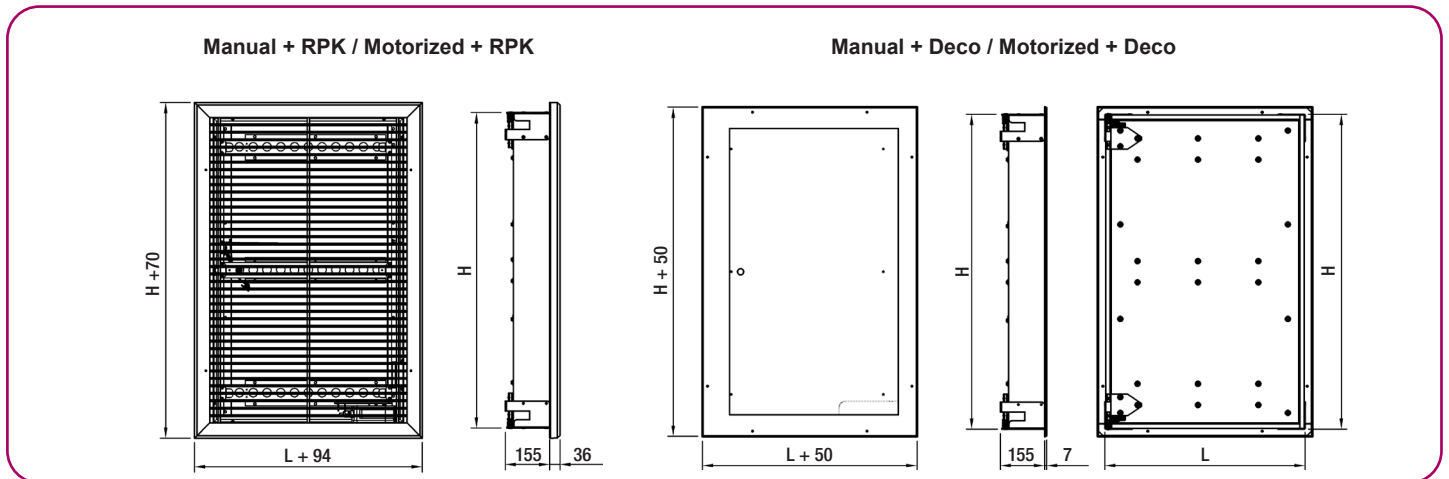
Further information and updates, as well as the installation and operating manual, can be found on our website ([www.koolair.com](http://www.koolair.com)).

## Declared smoke extraction performance

CEVH-1P CPR-3051		Dimensions (mm)	Installation location	Installation	Classification
		L: 300 → 700 H: 385 → 1100	Smoke extract duct	1366-8 certified vertical duct	EI-120 (ved i↔o) S 1500 AA multi (500 Pa)

# CEVH-1P Smoke Evacuation Damper Dimensions

## Damper Drawing



### Symbology

- P = Blade depth.
- Lt = Total exterior length.
- Ht = Total exterior height.
- Ln = Nominal damper length.
- Hn = Nominal damper height.

# CEVH-1P Smoke Evacuation Damper Dimensions

## Dimensions and openings

Nominal length Ln (mm)	Outside length Lt [mm]						
	DECO	RPK	RPK-1A	RPK-2A	RPK-X	RPK-P	RPK-S
[mm]							
300	350	394	394	434	410	434	394
350	400	444	444	484	460	484	444
400	450	494	494	534	510	534	494
450	500	544	544	584	560	584	544
500	550	594	594	634	610	634	594
550	600	644	644	684	660	684	644
600	650	694	694	734	710	734	694
650	700	744	744	784	760	784	744
700	750	794	794	834	810	834	794

Nominal height Hn	Exterior height Ht [mm]						
	DECO	RPK	RPK-1A	RPK-2A	RPK-X	RPK-P	RPK-S
[mm]							
385	435			455			
400	450			470			
450	500			520			
500	550			570			
550	600			620			
600	650			670			
650	700			720			
700	750			770			
750	800			820			
800	850			870			
850	900			920			
900	950			970			
950	1000			1020			
1000	1050			1070			
1050	1100			1120			
1100	1150			1170			

## Symbology

**DECO.** Decorative frame and decorative plate.

**RPK.** Protection grille with fixed core and visible screws.

**RPK-1A.** Protection grille with removable core and visible screws.

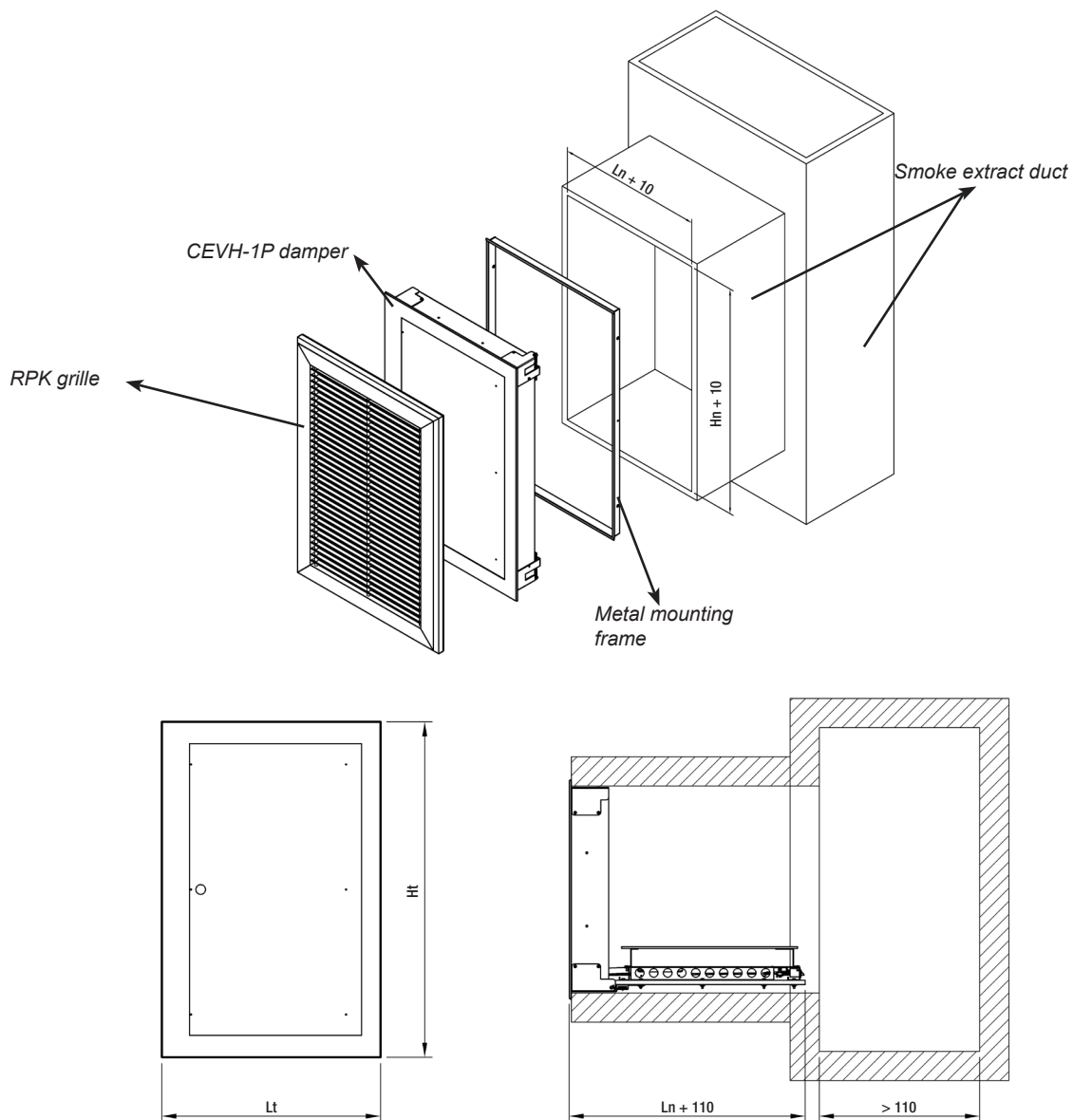
**RPK-2A.** Protection grille with removable core and hidden screws.

**RPK-S.** Protection grille S.

**RPK-P.** Protection grille P.

**RPK-X.** Protection grille X.

# CEVH-1P Smoke Evacuation Damper Installation

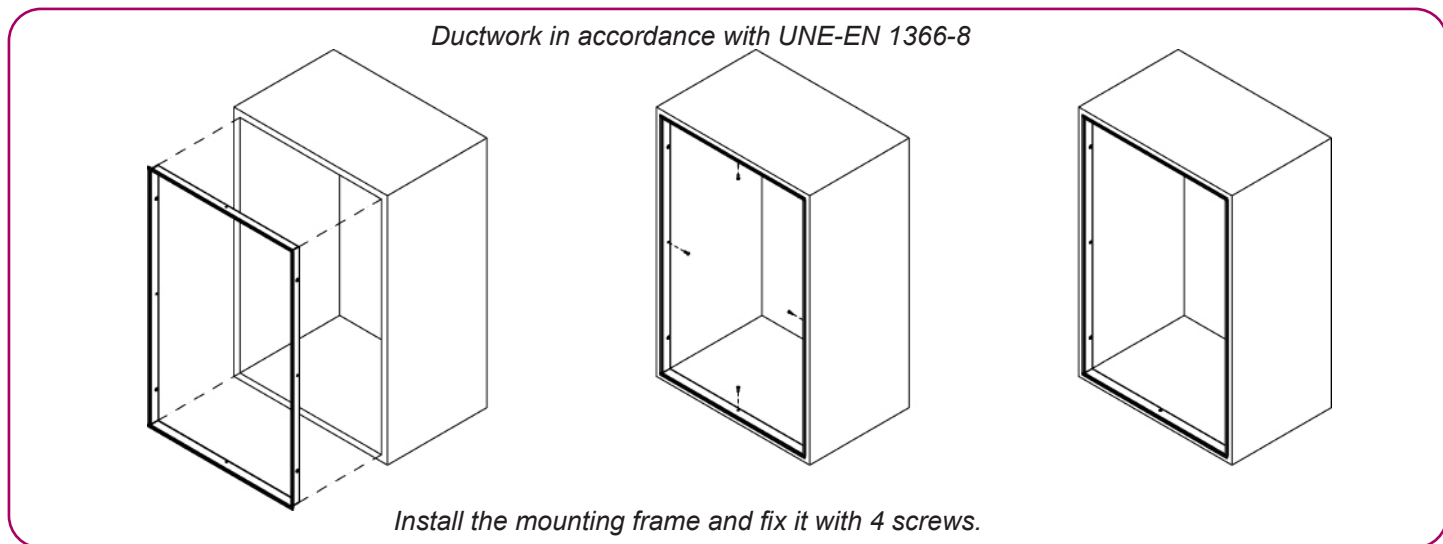


CEVH-1P damper application in installations which employ ductwork different from that which has been submitted for certification testing:

CEVH-1P smoke control dampers, for use in multi-compartment systems (multi), are applicable in ducts that are tested in accordance with EN1366-8 as appropriate for each particular case or manufactured from materials with the same density or greater thickness than those used in the certification test. Ductwork must be installed in accordance with the manufacturer's latest drawings.

# CEVH-1P Smoke Evacuation Damper Assembly

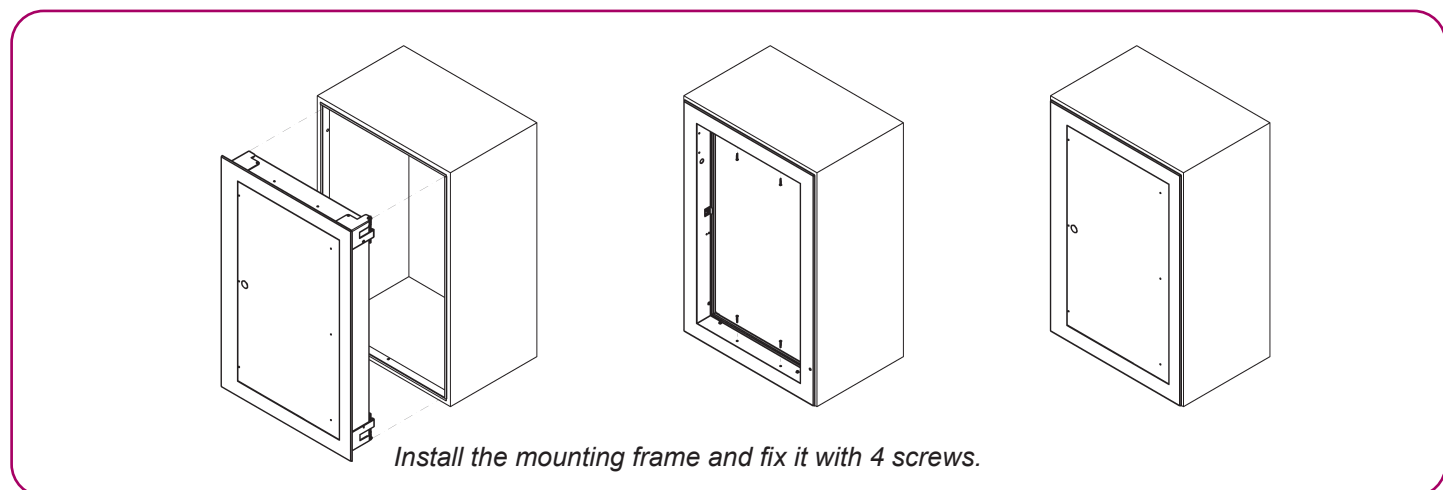
## Use of mounting frame



### Precautions:

- Make sure the mounting frame is perpendicular before installation.
- Fix the frame to the duct using the 4 screws provided with the frame.
- Drill a hole to allow ductwork connections to pass.

## CEVH-1P damper installation



- Install the damper in the mounting frame or duct. Use the collapsible pins included in the damper frame as a stop.
- Fasten the damper to the frame using the 4 screws provided with the damper.
- Complete the assembly by filling all the screw holes with intumescent putty.

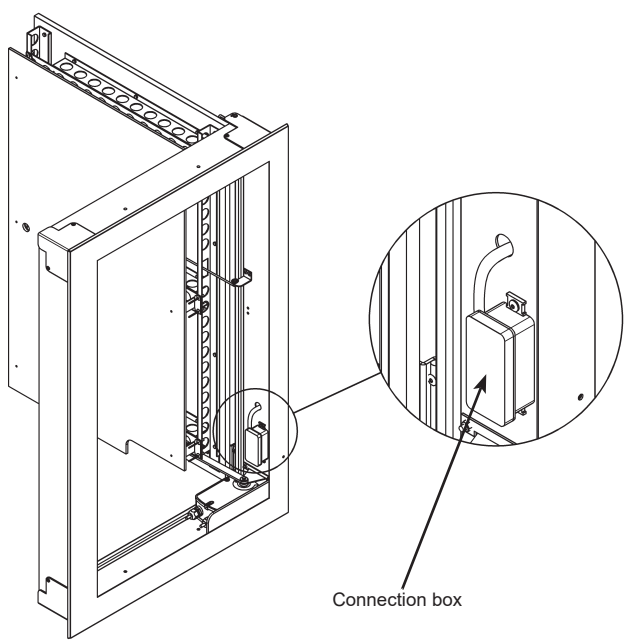
As it is a critical safety item, the damper must be stored and handled with care. Precautions:

- Store in a place protected from moisture.
- Avoid contact with water.
- Avoid deformation of the damper body during installation and sealing.
- Prevent the damper from being knocked or swung during transport.
- Use of the metal mounting frame is recommended to make damper installation easy.



# CEVH-1P Smoke Evacuation Damper Connections

## Electrical connections



Access to coil's inside the connection box:

- Shunt
- Start and end switches.
- Motor (Depending on model).

B-IMP (Shunt rel).

FDCU (beginning and end of run): security position contact and waiting.

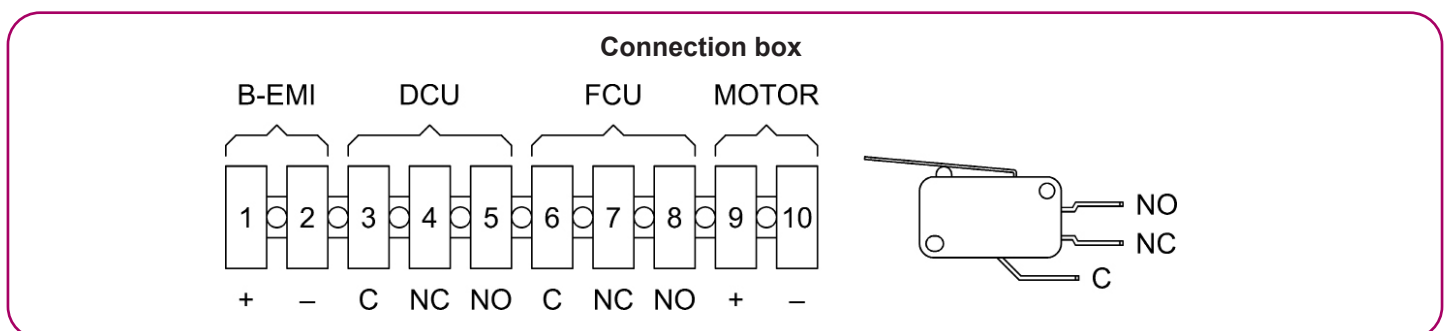
FCU: safety position (end of run) one-pole contact.

DCU: waiting position (start of run) one-pole contact.

Connection box

Operated by electric shunt release (current driven) coil and manual rearm or motorized:

- Power supply options for manual and motorized reset:
  - o 24V electric shunt release coil DC
  - o 48V electric shunt release coil DC
  - o 24V electric shunt release coil AC
  - o 48V electric shunt release coil AC
  - o 220V electric shunt release coil AC
- Motor for motorized rearming:
  - o Servomotor BL-24/48 V – DC / AC



\* CE Marking does not require duplication of the start (DCU, DCB) and end of run limit switch (FCU, FCB).

# Smoke Evacuation Damper Technical Data

## Free area table (m<sup>2</sup>) Manual CEVH-1P / CEVH-1P+RPK

Height Hn (mm)	Length Ln (mm)								
	300	350	400	450	500	550	600	650	700
385	0,078	0,094	0,111	0,127	0,143	0,159	0,176	0,192	0,208
400	0,082	0,099	0,116	0,133	0,150	0,167	0,184	0,201	0,218
450	0,094	0,113	0,133	0,152	0,172	0,191	0,211	0,230	0,250
500	0,106	0,128	0,150	0,172	0,194	0,216	0,238	0,260	0,282
550	0,118	0,142	0,167	0,191	0,216	0,240	0,265	0,289	0,314
600	0,130	0,157	0,184	0,211	0,238	0,265	0,292	0,319	0,346
650	0,142	0,171	0,201	0,230	0,260	0,289	0,319	0,348	0,378
700	0,154	0,186	0,218	0,250	0,282	0,314	0,346	0,378	0,410
750	0,166	0,200	0,235	0,269	0,304	0,338	0,373	0,407	0,442
800	0,178	0,215	0,252	0,289	0,326	0,363	0,400	0,437	0,474
850	0,190	0,229	0,269	0,308	0,348	0,387	0,427	0,466	0,506
900	0,202	0,244	0,286	0,328	0,370	0,412	0,454	0,496	0,538
950	0,214	0,258	0,303	0,347	0,392	0,436	0,481	0,525	0,570
1000	0,226	0,273	0,320	0,367	0,414	0,461	0,508	0,555	0,602
1050	0,238	0,287	0,337	0,386	0,436	0,485	0,535	0,584	0,634
1100	0,250	0,302	0,354	0,406	0,458	0,510	0,562	0,614	0,666

## Free area table (m<sup>2</sup>) Motorized CEVH-1P / CEVH-1P+RPK

Height Hn (in mm)	Length Ln (in mm)						
	400	450	500	550	600	650	700
400	0,109	0,126	0,143	0,160	0,177	0,194	0,211
450	0,126	0,145	0,165	0,184	0,204	0,223	0,243
500	0,143	0,165	0,187	0,209	0,231	0,253	0,275
550	0,160	0,184	0,209	0,233	0,258	0,282	0,307
600	0,177	0,204	0,231	0,258	0,285	0,312	0,339
650	0,194	0,223	0,253	0,282	0,312	0,341	0,371
700	0,211	0,243	0,275	0,307	0,339	0,371	0,403
750	0,228	0,262	0,297	0,331	0,366	0,400	0,435
800	0,245	0,282	0,319	0,356	0,393	0,430	0,467
850	0,262	0,301	0,341	0,380	0,420	0,459	0,499
900	0,279	0,321	0,363	0,405	0,447	0,489	0,531
950	0,296	0,340	0,385	0,429	0,474	0,518	0,563
1000	0,313	0,360	0,407	0,454	0,501	0,548	0,595
1050	0,330	0,379	0,429	0,478	0,528	0,577	0,627
1100	0,347	0,399	0,451	0,503	0,555	0,607	0,659

# Smoke Evacuation Damper Technical Data

**Free area table (m<sup>2</sup>) Manual CEVH-1P+DECO / CEVH-1P+DECO+RPK**

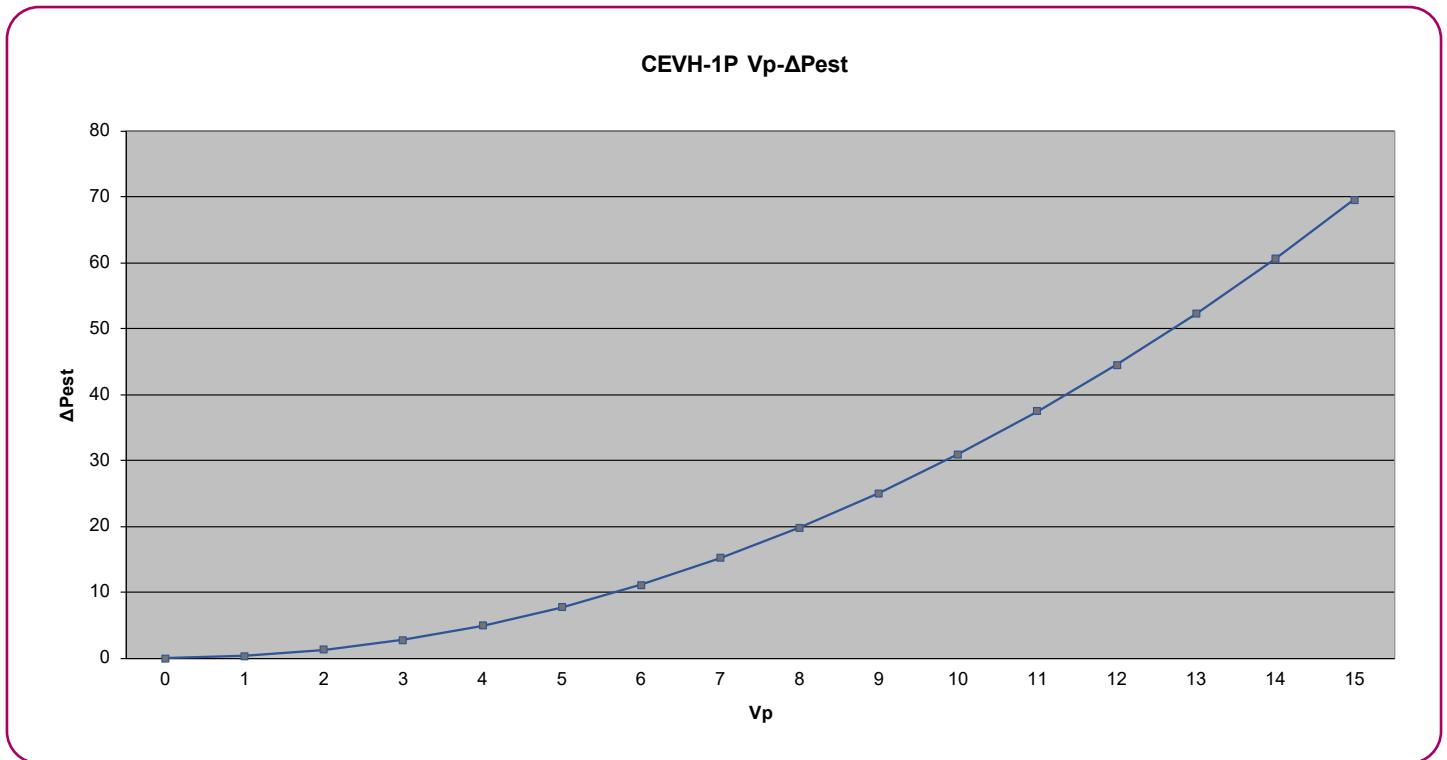
Height Hn (mm)	Length Ln (mm)								
	300	350	400	450	500	550	600	650	700
385	0,078	0,094	0,111	0,127	0,143	0,159	0,176	0,192	0,208
400	0,082	0,099	0,116	0,133	0,150	0,167	0,184	0,201	0,218
450	0,094	0,113	0,133	0,152	0,172	0,191	0,211	0,230	0,250
500	0,106	0,128	0,150	0,172	0,194	0,216	0,238	0,260	0,282
550	0,118	0,142	0,167	0,191	0,216	0,240	0,265	0,289	0,314
600	0,130	0,157	0,184	0,211	0,238	0,265	0,292	0,319	0,346
650	0,142	0,171	0,201	0,230	0,260	0,289	0,319	0,348	0,378
700	0,154	0,186	0,218	0,250	0,282	0,314	0,346	0,378	0,410
750	0,166	0,200	0,235	0,269	0,304	0,338	0,373	0,407	0,442
800	0,178	0,215	0,252	0,289	0,326	0,363	0,400	0,437	0,474
850	0,190	0,229	0,269	0,308	0,348	0,387	0,427	0,466	0,506
900	0,202	0,244	0,286	0,328	0,370	0,412	0,454	0,496	0,538
950	0,214	0,258	0,303	0,347	0,392	0,436	0,481	0,525	0,570
1000	0,226	0,273	0,320	0,367	0,414	0,461	0,508	0,555	0,602
1050	0,238	0,287	0,337	0,386	0,436	0,485	0,535	0,584	0,634
1100	0,250	0,302	0,354	0,406	0,458	0,510	0,562	0,614	0,666

**Free area table (m<sup>2</sup>) Motorized CEVH-1P+DECO / CEVH-1P+DECO+RPK**

Height Hn (mm)	Length Ln (mm)						
	400	450	500	550	600	650	700
400	0,105	0,122	0,139	0,156	0,173	0,190	0,207
450	0,122	0,141	0,161	0,180	0,200	0,219	0,239
500	0,139	0,161	0,183	0,205	0,227	0,249	0,271
550	0,156	0,180	0,205	0,229	0,254	0,278	0,303
600	0,173	0,200	0,227	0,254	0,281	0,308	0,335
650	0,190	0,219	0,249	0,278	0,308	0,337	0,367
700	0,207	0,239	0,271	0,303	0,335	0,367	0,399
750	0,224	0,258	0,293	0,327	0,362	0,396	0,431
800	0,241	0,278	0,315	0,352	0,389	0,426	0,463
850	0,258	0,297	0,337	0,376	0,416	0,455	0,495
900	0,275	0,317	0,359	0,401	0,443	0,485	0,527
950	0,292	0,336	0,381	0,425	0,470	0,514	0,559
1000	0,309	0,356	0,403	0,450	0,497	0,544	0,591
1050	0,326	0,375	0,425	0,474	0,524	0,573	0,623
1100	0,343	0,395	0,447	0,499	0,551	0,603	0,655

# CEVH-1P Smoke Evacuation Damper Technical Data

## CEVH-1P Graph



### Symbology:

$V_p$  Damper air velocity in m/s.  
 $\Delta P_{est}$  Damper static pressure loss in Pa.

### Selection example:

To calculate the static pressure loss across a CEVH-1P damper for a given flow rate  $Q$  [m<sup>3</sup>/h] the air velocity  $V_p$  [m/s] is calculated in relation to the damper air passage [m<sup>2</sup>] as free area table. Using this area and a given flow rate, the air velocity is obtained, which, when introduced in the previous graph gives the pressure loss.

Example:

A damper with nominal dimensions of 700x1000 mm we will have a free area of 0,602 m<sup>2</sup>. or a design flow rate of 10000 m<sup>3</sup>/h the flow velocity is calculated using the formula:

$$V_p = \frac{Q}{A} = \frac{\left( \frac{10000 \frac{m^3}{h}}{3600 \frac{s}{h}} \right)}{0,602 \text{ m}^2} = 4,61 \text{ m/s}$$

In this case the  $V_p = 4,61$  m/s that introduced in the previous table would give us a static load los  $\Delta P_{est} = 8$  Pa.

# CEVH-1P Smoke Evacuation Damper Coding

## Model

CEVH - 1P L x H [mm]

## Type

Manual (L: 300 to 700 mm, H: 385 to 1100 mm)	MANUAL
Motorized (L: 400 to 700 mm, H: 400 to 1100 mm)	MOTOR

## Accessories

24V electric shunt release coil DC	T24E CC
48V electric shunt release coil DC	T48E CC
24V electric shunt release coil AC	T24E CA
48V electric shunt release coil AC	T48E CA
220V electric shunt release coil AC	T230E CA

## Components

Without component	
Beginning and end of stroke switch	FDCU
Contact start of career	DCU
End of career contact	FCU

## Accessories 1

Without accessorie	
With metal mounting frame	MM

## Accessories 2

Without accessorie	
With decorative plate and decorative frame	DECO

## Grille

Without grille  
 RPK  
 RPK-1A  
 RPK-2A  
 RPK-X  
 RPK-P  
 RPK-S

Note: Accessories combinable with each other.

# CEVH-1P Smoke Evacuation Damper Coding

## Finishes

Without treatment  
Anodised natural matt  
Painted RAL-9016 matt  
Painted RAL-9016 shine  
Painted RAL-9005 matt  
Painted RAL-9005 shine  
Prepared for painting  
Painted RAL-9010 matt  
Painted RAL-9010 shine  
Painted RAL-7042  
Anodised s/note  
Painted s/note

## Length

300  
350  
400  
450  
500  
550  
600  
650  
700

## Height

385  
400  
450  
500  
550  
600  
650  
700  
750  
800  
850  
900  
950  
1000  
1020  
1100

## RPK Cover grille for smoke dampers



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# Cover grille RPK for smoke dampers



## Description

RPK Cover grille manufactured from natural anodised aluminium, specifically developed for protection of Koolair smoke dampers SMLD & CEVH.

The grille has been designed for surface mounting and its central core has been developed to reduce pressure drop.

Two versions are currently available: Fixed central core and removable central core (with 2 fixing variations).

## Application

For protection of Koolair smoke dampers types SMLD and CEVH.

They can be used in both supply and extract applications. Grille comprises of an aluminium frame with curved aluminium blades.

The grille can be fixed by screws in the versions with fixed core and removable core, the removable core version can also be fixed with concealed fixings.



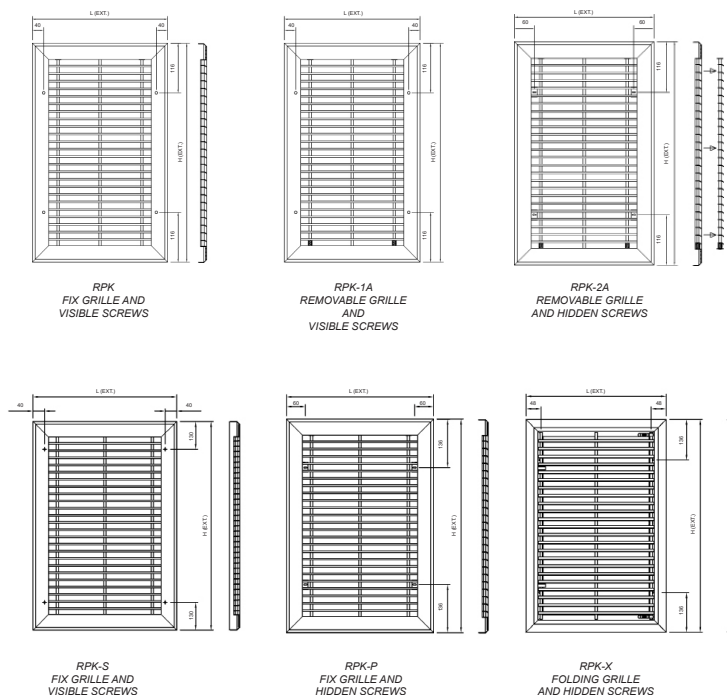
## Finishes

Anodised natural aluminium, special finishes available upon request.

## Identification

RPK Series, aluminium grille.

# Dimensions





### Coding

- RPK:** Protection grille with fixed central core.
- RPK - 1A:** Protection grille with removable core (visible screws).
- RPK - 2A:** Protection grille with removable core (hidden screws).
- RPK-X:** Protection grille with folding core (hidden screws).
- RPK-P:** Protection grille with fixed central core (hidden screws).
- RPK-S:** Protection grille with fixed central core (visible screws).

### Mounting and technical data

#### RPK + SMLD

**Legend**

- L:** Length
- H:** Height
- Ln:** Nominal length
- Hn:** Nominal height
- Lt:** Total length
- Ht:** Total height
- Lm:** Mounting frame length
- Hm:** Mounting frame height
- Lh:** Opening length
- Hh:** Opening height

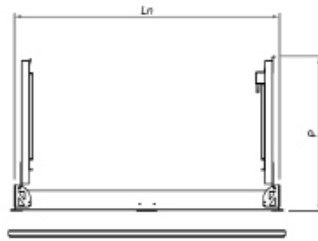
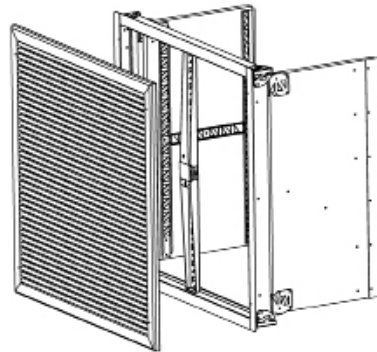
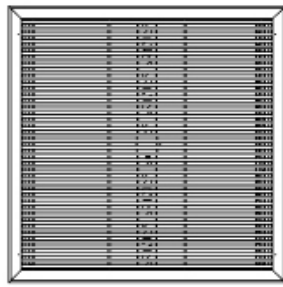
**Height dimensions**

- H** = Hn
- Ht** = Hn + 249
- Hm** = Hn + 255
- Hh** = Hn + 257

FREE AREA TABLE RPK (dm <sup>2</sup> )																	
Ln (mm)	Height Hn (mm)																
	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000
354	5,7	7,1	8,6	10,0	11,4	12,9	14,3	15,7	17,2	18,6	20,0	21,4	22,9	24,3	25,7	27,2	28,6
527	8,5	10,6	12,8	14,9	17,0	19,2	21,3	23,4	25,5	27,7	29,8	31,9	34,1	36,2	38,3	40,4	42,6
700	11,3	14,1	17,0	19,8	22,6	25,4	28,3	31,1	33,9	36,8	39,6	42,4	45,2	48,1	50,9	53,7	56,5

# Mounting and technical data

RPK + CEVH



**Formulary**

- P** =  $(Ln / 2) - 5 + 93$
- Lt** =  $Ln + 28$
- Ht** =  $Hn + 28$
- Lh** =  $Ln + 10$
- Hh** =  $Hn + 10$

**Legend**

- P:** Blade depth
- Lt:** Overall length
- Ht:** Overall height
- Lh:** Duct internal length
- Hh:** Duct internal height
- Lh:** Damper nominal length
- Hh:** Damper nominal height

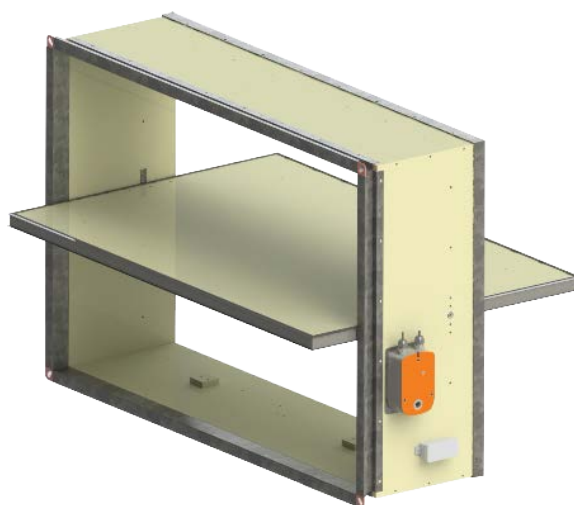
		FREE AREA TABLE RPK (dm <sup>2</sup> )														
		Length Ln (mm)														
		400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100
Height Hn (mm)	400	12,9	14,5	16,2	17,8	19,4	21,0	22,6	24,2	25,8	27,5	29,1	30,7	32,3	33,9	35,5
	450	14,5	16,4	18,2	20,0	21,8	23,6	25,4	27,3	29,1	30,9	32,7	34,5	36,3	38,2	40,0
	500	16,2	18,2	20,2	22,2	24,2	26,3	28,3	30,3	32,3	34,3	36,3	38,4	40,4	42,4	44,4
	550	17,8	20,0	22,2	24,4	26,7	28,9	31,1	33,3	35,5	37,8	40,0	42,2	44,4	46,6	48,9
	600	19,4	21,8	24,2	26,7	29,1	31,5	33,9	36,3	38,8	41,2	43,6	46,0	48,5	50,9	53,3
	650	21,0	23,6	26,3	28,9	31,5	34,1	36,8	39,4	42,0	44,6	47,3	49,9	52,5	55,1	57,8
	700	22,6	25,4	28,3	31,1	33,9	36,8	39,6	42,4	45,2	48,1	50,9	53,7	56,5	59,4	62,2
	750	24,2	27,3	30,3	33,3	36,3	39,4	42,4	45,4	48,5	51,5	54,5	57,5	60,6	63,6	66,6
	800	25,8	29,1	32,3	35,5	38,8	42,0	45,2	48,5	51,7	54,9	58,2	61,4	64,6	67,8	71,1
	850	27,5	30,9	34,3	37,8	41,2	44,6	48,1	51,5	54,9	58,4	61,8	65,2	68,7	72,1	75,5
	900	29,1	32,7	36,3	40,0	43,6	47,3	50,9	54,5	58,2	61,8	65,4	69,1	72,7	76,3	80,0
950	30,7	34,5	38,4	42,2	46,0	49,9	53,7	57,5	61,4	65,2	69,1	72,9	76,7	80,6	84,4	
1000	32,3	36,3	40,4	44,4	48,5	52,5	56,5	60,6	64,6	68,7	72,7	76,7	80,8	84,8	88,8	
1050	33,9	38,2	42,4	46,6	50,9	55,1	59,4	63,6	67,8	72,1	76,3	80,6	84,8	89,0	93,3	
1100	35,5	40,0	44,4	48,9	53,3	57,8	62,2	66,6	71,1	75,5	80,0	84,4	88,8	93,3	97,7	

# Technical data

CEVH + RPK AIR FLOW 8 m/s																
		Length Ln (mm)														
		400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100
Height Hn (mm)	400	4611	5187	5764	6340	6916	7493	8069	8645	9222	9798	10374	10951	11527	12104	12680
	450	5187	5836	6484	7132	7781	8429	9078	9726	10374	11023	11671	12320	12968	13617	14265
	500	5764	6484	7205	7925	8645	9366	10086	10807	11527	12248	12968	13689	14409	15129	15850
	550	6340	7132	7925	8717	9510	10302	11095	11887	12680	13472	14265	15057	15850	16642	17435
	600	6916	7781	8645	9510	10374	11239	12104	12968	13833	14697	15562	16426	17291	18155	19020
	650	7493	8429	9366	10302	11239	12176	13112	14049	14985	15922	16859	17795	18732	19668	20605
	700	8069	9078	10086	11095	12104	13112	14121	15129	16138	17147	18155	19164	20173	21181	22190
	750	8645	9726	10807	11887	12968	14049	15129	16210	17291	18371	19452	20533	21614	22694	23775
	800	9222	10374	11527	12680	13833	14985	16138	17291	18444	19596	20749	21902	23054	24207	25360
	850	9798	11023	12248	13472	14697	15922	17147	18371	19596	20821	22046	23271	24495	25720	26945
	900	10374	11671	12968	14265	15562	16859	18155	19452	20749	22046	23343	24639	25936	27233	28530
	950	10951	12320	13689	15057	16426	17795	19164	20533	21902	23271	24639	26008	27377	28746	30115
	1000	11527	12968	14409	15850	17291	18732	20173	21614	23054	24495	25936	27377	28818	30259	31700
	1050	12104	13617	15129	16642	18155	19668	21181	22694	24207	25720	27233	28746	30259	31772	33285
1100	12680	14265	15850	17435	19020	20605	22190	23775	25360	26945	28530	30115	31700	33285	34870	

CEVH + RPK EXTRACTION PRESSURE DROP A 8 m/s																
		Length Ln (mm)														
		400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100
Height Hn (mm)	400	188	184	182	181	180	180	181	181	182	182	183	184	185	185	186
	450	180	171	170	169	170	170	170	171	171	172	173	174	174	175	176
	500	175	167	161	161	161	162	162	163	163	164	165	166	166	167	168
	550	172	165	159	154	155	155	156	156	157	158	158	159	160	160	161
	600	170	163	158	153	149	150	150	151	152	152	153	154	154	155	156
	650	169	162	157	152	149	145	146	147	147	148	149	149	150	151	151
	700	168	161	156	152	148	145	142	143	143	144	145	145	146	147	147
	750	167	161	156	151	148	145	142	139	140	141	141	142	143	143	144
	800	167	160	155	151	148	145	142	139	137	138	138	139	140	140	141
	850	167	160	155	151	148	144	142	139	137	135	136	137	137	138	138
	900	166	160	155	151	148	145	142	139	137	135	134	134	135	135	136
	950	166	160	155	151	148	145	142	140	137	135	134	132	133	133	134
	1000	167	161	156	151	148	145	142	140	138	136	134	132	131	131	132
	1050	167	161	156	152	148	145	142	140	138	136	134	132	131	130	130
1100	167	161	156	152	148	145	143	140	138	136	134	133	131	130	128	

## SCDC Smoke Evacuation Damper



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# SCDC Smoke Evacuation Damper



**SCDC Damper**

## Description

KOOLAIR's SCDC rectangular smoke evacuation damper is composed of a single body of heat-resistant material, with steel flanges on either side (optional) to facilitate mounting in rectangular ducts, and a single heat resistant closing blade. Tunnel type damper for in-line installation in horizontal ducts for use with both supply and extract, certified according to EN 1366-10, classified according to EN 13501-4; EI 120 (ved i o) S 1500 AA multi. The SCDC smoke damper has the 0370 - CPR - 2600 certificate of constancy of performance according to EU Regulation (CE marking) Designed according to EN 12101-8 specifications.



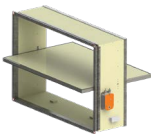
Dimensions: 200x200 to 1200x800 mm.

The design of the damper enclosure, which is composed of joining pieces of sheet metal with intumescent seals in the interior, guarantees the airtightness between the frame/blade and frame/ duct required by regulations. For use in smoke extract systems:

- High rise buildings –IGH
- Areas of public gathering - ERP
- Collective places
- ....

The SCDC smoke evacuation damper can be associated with KOOLAIR's KOOLCOM management and monitoring system for fire dampers and other available models of smoke evacuation dampers.

## Declared smoke extraction performance

SCDC CPR-2600		Dimensions (mm)	Installation location	Installation	Classification
 		L: 200 → 1200 H: 200 → 800	Smoke extract duct	Horizontal + vertical duct certified 1366-8	EI-120 (ved i↔o) S 1500 AA multi (500 Pa)

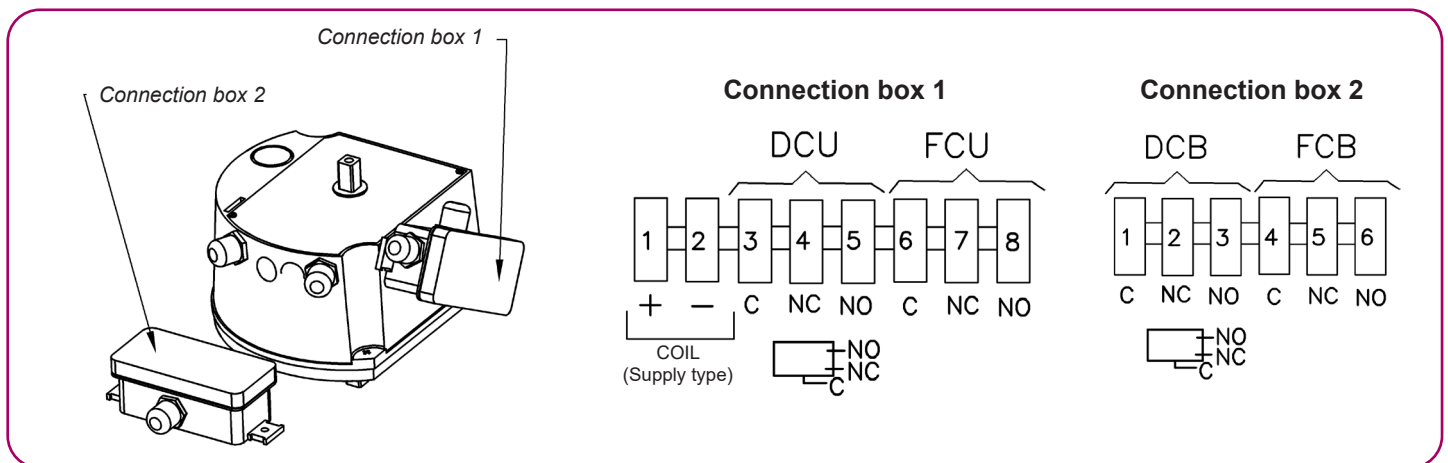
# SCDC Smoke Evacuation Damper Connections

## Operating mechanism electrical connections

- FCU: safety position (end of run) one-pole contact.
- DCU: waiting position (start of run) one-pole contact.
- FCB: safety position (end of run) two-pole contact.
- DCB: waiting position (start of run) two-pole contact.

- Manual reset, activated by electric coil (CE and NF marking).

- 24 V DC. electric shunt release coil.
- 48V DC electric shunt release coil
- 24V AC electric shunt release coil
- 48V AC electric shunt release coil

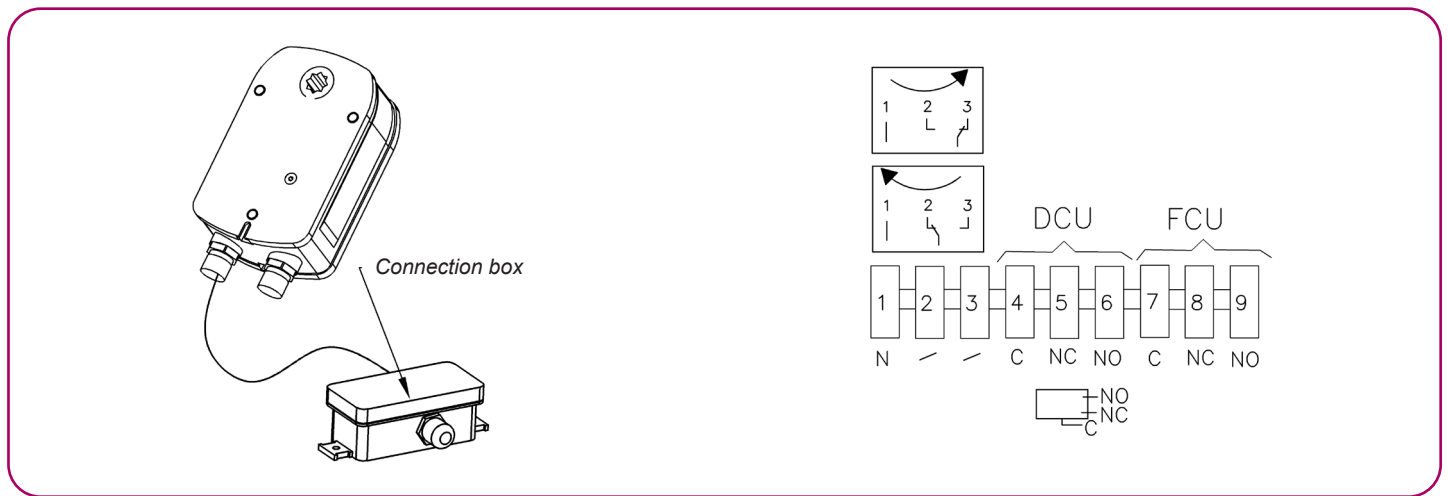


Option to incorporate two start of run limit switches (DCU, DCB) and two end of run limit switches (FCU, FCB). The NF Marking requires at least one start of run limit switch (DCU) and one end of run limit switch (FCU).

## SCDC Smoke Evacuation Damper Connections

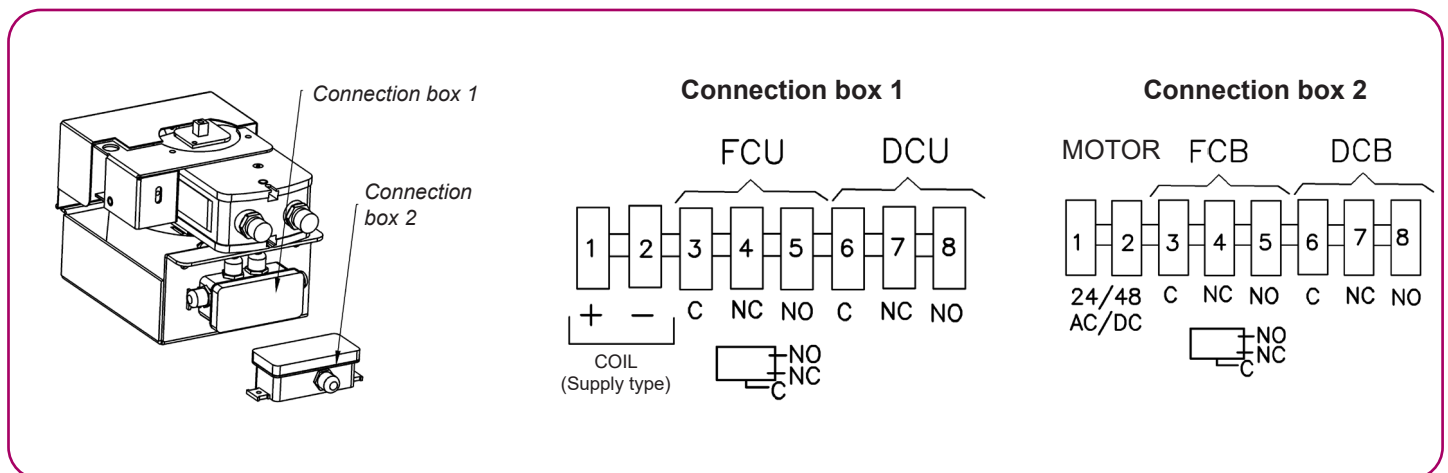
- Automatic activation and reset by servomotor (CE Marking):

SCDC smoke extract dampers are activated and reset by means of a servomotor with a supply voltage of 24 V AC/DC (model BLE24) or 230 V AC (model BLE230). These motors include start and end of run limit switches to monitor the opening/closing status of the damper.



• Activated by shunt release coil and reset with electric servomotor (CE and NF marking):

- 24 V DC electric shunt release coil.
- 48V DC electric shunt release coil
- 24V AC electric shunt release coil
- 48V AC electric shunt release coil
- Servomotor to reset (close) damper, BL24-48, with 24 ... 48 V AC/DC supply voltage



Option to incorporate two start of run limit switches (DCU, DCB) and two end of run limit switches (FCU, FCB). The NF Marking requires at least one start of run limit switch (DCU) and one end of run limit switch (FCU).

# SCDC Smoke Evacuation Damper Dimensions

NOMINAL H	H	S1	S2
200	200	0	0
250	250	25	0
300	300	50	0
350	350	75	0
400	400	100	0
450	450	125	0
500	500	150	0
550	550	175	7
600	600	200	32
650	650	225	57
700	700	250	82
750	750	275	107
800	800	300	132

SCDC SMOKE DAMPER FREE AREA TABLE dm <sup>2</sup>																						
		Length Ln (mm)																				
		200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200
Height Hn (mm)	200	2,9	3,7	4,5	5,3	6,0	6,8	7,6	8,4	9,1	9,9	10,7	11,5	12,2	13,0	13,8	14,6	15,3	16,1	16,9	17,7	18,4
	250	3,9	4,9	5,9	7,0	8,0	9,0	10,0	11,1	12,1	13,1	14,1	15,2	16,2	17,2	18,2	19,3	20,3	21,3	22,3	23,4	24,4
	300	4,8	6,1	7,4	8,7	9,9	11,2	12,5	13,8	15,0	16,3	17,6	18,9	20,1	21,4	22,7	24,0	25,2	26,5	27,8	29,1	30,3
	350	5,8	7,3	8,8	10,4	11,9	13,4	14,9	16,5	18,0	19,5	21,0	22,6	24,1	25,6	27,1	28,7	30,2	31,7	33,2	34,8	36,3
	400	6,7	8,5	10,3	12,1	13,8	15,6	17,4	19,2	20,9	22,7	24,5	26,3	28,0	29,8	31,6	33,4	35,1	36,9	38,7	40,5	42,2
	450	7,7	9,7	11,7	13,8	15,8	17,8	19,8	21,9	23,9	25,9	27,9	30,0	32,0	34,0	36,0	38,1	40,1	42,1	44,1	46,2	48,2
	500	8,6	10,9	13,2	15,5	17,7	20,0	22,3	24,6	26,8	29,1	31,4	33,7	35,9	38,2	40,5	42,8	45,0	47,3	49,6	51,9	54,1
	550	9,6	12,1	14,6	17,2	19,7	22,2	24,7	27,3	29,8	32,3	34,8	37,4	39,9	42,4	44,9	47,5	50,0	52,5	55,0	57,6	60,1
	600	10,5	13,3	16,1	18,9	21,6	24,4	27,2	30,0	32,7	35,5	38,3	41,1	43,8	46,6	49,4	52,2	54,9	57,7	60,5	63,3	66,0
	650	11,5	14,5	17,5	20,6	23,6	26,6	29,6	32,7	35,7	38,7	41,7	44,8	47,8	50,8	53,8	56,9	59,9	62,9	65,9	69,0	72,0
700	12,4	15,7	19,0	22,3	25,5	28,8	32,1	35,4	38,6	41,9	45,2	48,5	51,7	55,0	58,3	61,6	64,8	68,1	71,4	74,7	77,9	
750	13,4	16,9	20,4	24,0	27,5	31,0	34,5	38,1	41,6	45,1	48,6	52,2	55,7	59,2	62,7	66,3	69,8	73,3	76,8	80,4	83,9	
800	14,3	18,1	21,9	25,7	29,4	33,2	37,0	40,8	44,5	48,3	52,1	55,9	59,6	63,4	67,2	71,0	74,7	78,5	82,3	86,1	89,8	

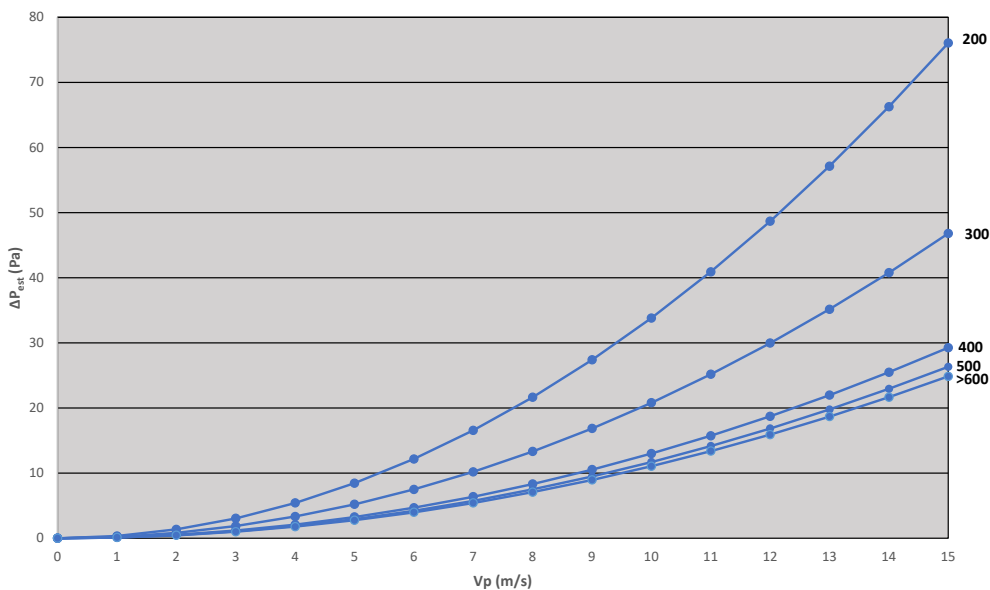
### Key

- L: Interior damper length.
- H: Interior damper height.



# SCDC Smoke Evacuation Damper Selection Chart

SCDC  $V_p$ - $\Delta P_{est}$   
H=200 300 400 500 >600 mm



## Key

$V_p$  = damper air velocity in m/s.

$\Delta P_{est}$  = static pressure loss across the damper in Pa.

## Selection example:

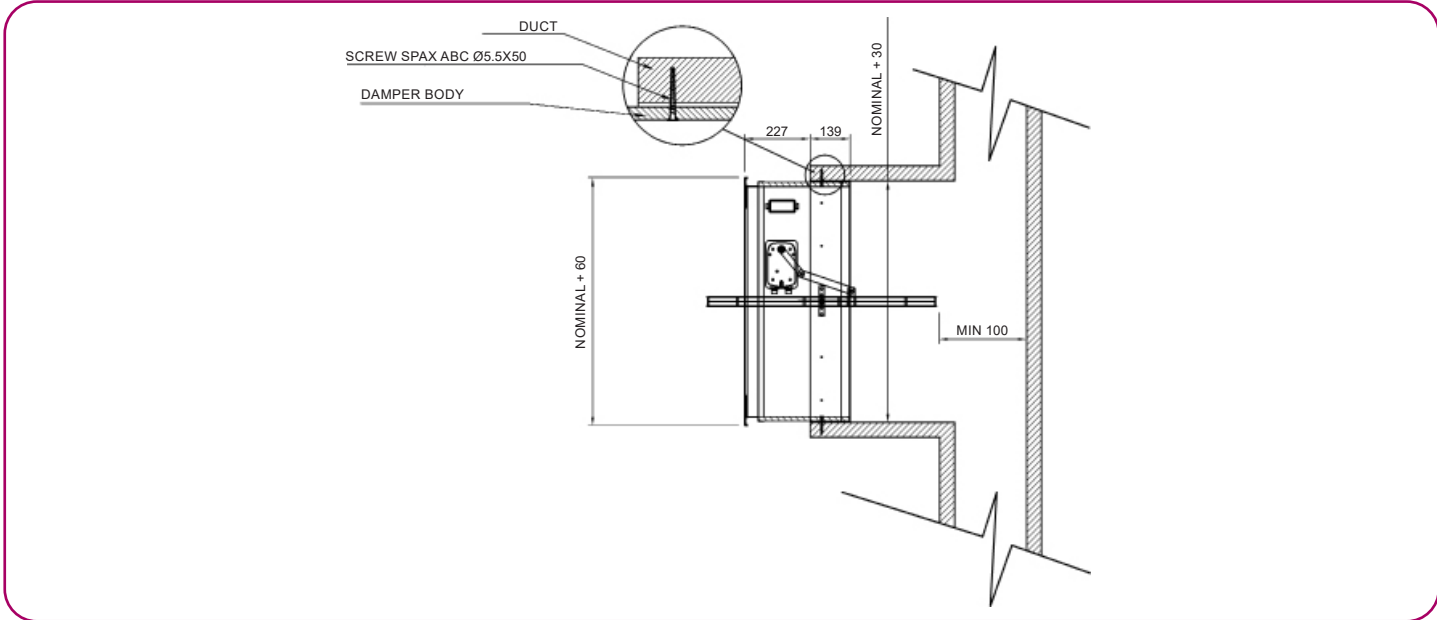
To calculate the static pressure loss across a damper for a given flow rate  $Q$  ( $m^3/h$ ) the air velocity  $V_p$  (m/s) is calculated in relation to the free area  $A_f$  ( $dm^2$ ) of the damper as set out in the above table "Free area table in  $dm^2$ " using the formula  $V_p = (Q/A_f)/36$ .

By entering this velocity in the previous table, and following the curve according to its height  $H$ , the static pressure loss is obtained  $\Delta P_{est}$ .

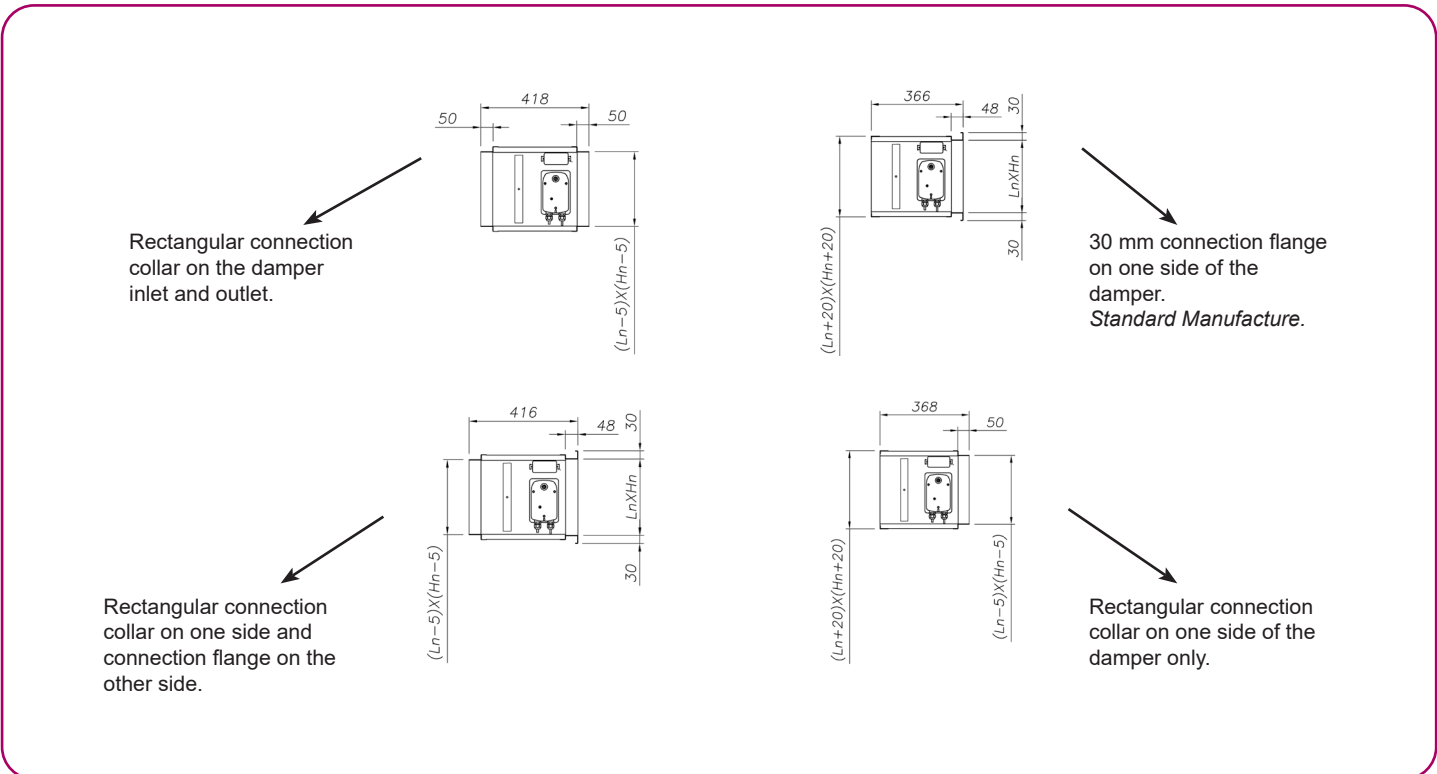
Example: for a flow rate of  $2500 m^3/h$  in a  $500 \times 300$  SCDC damper with  $A_f = 12,5 dm^2$ , a velocity  $V_p = 5,5 m/s$  is obtained. If this data is entered in the table the static pressure loss is obtained  $\Delta P_{est} = 6 Pa$ .

# SCDC Smoke Evacuation Damper Installation

The approval and the certification requirements for the installation of the damper are shown below.



SCDC damper application in installations which employ ductwork different from that which has been submitted for certification testing: SCDC smoke control dampers, for use in multi-compartment systems (multi), are applicable in ducts that are tested in accordance with EN1366-8 as appropriate for each particular case or manufactured from materials with the same density or greater thickness than those used in the certification test. Ductwork must be installed in accordance with the manufacturer's latest drawings.



# SCDC Smoke Evacuation Damper Coding

**Damper model** (see table p. 5 Declared Performance)

SCDC – L x H (mm)

## Activation. Components

- + MOTOR-BLE24
- + MOTOR-BLE230
- + SHUNT RELEASE 24 V DC + ER/SR LS
- + SHUNT RELEASE 48 V DC + ER/SR LS
- + SHUNT RELEASE 24 V AC + FC/PC
- + SHUNT RELEASE 48 V AC + FC/PC
- + SHUNT RELEASE 24 V DC + FC/PC + MOTOR RESET-BL24/48
- + SHUNT RELEASE 48 V DC + FC/PC + MOTOR RESET-BL24/48
- + SHUNT RELEASE 24 V AC + FC/PC + MOTOR RESET-BL24/48
- + SHUNT RELEASE 48 V AC + FC/PC + MOTOR RESET-BL24/48

## Accessories

- C1+C2 (rectangular collars on both sides of damper)
- C1 (rectangular collar on one side of damper)
- B1 (connection flange on one side of damper)
- C1 + B1 (rectangular collars on one side of damper and connection flange on the other side of damper)

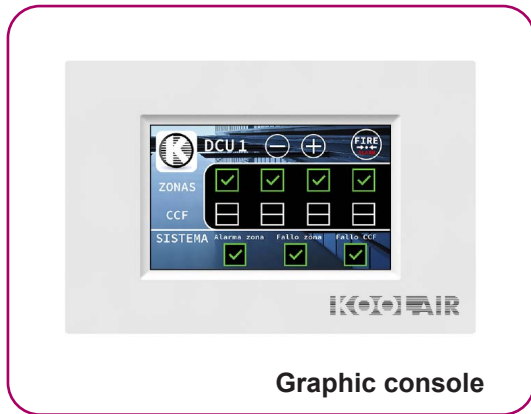
## KOOLCOM fire damper monitoring system



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KHUK connection schematic diagram	95
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## KOOLCOM fire damper monitoring system.



Graphic console

### Introduction

KOOLCOM is an electronic control system for fire dampers that allows the condition and functionality of each fire damper to be periodically and automatically monitored and checked. It can also close the dampers should the fire alarm be activated.

While this system is capable of being managed by a BMS (Building Management System) system, KOOLCOM can also work in Standalone mode, i.e., operate autonomously without the need for a BMS or any external maintenance personnel.



Communication control unit  
KHUK

### HUB Design Concept

KOOLCOM is the only system on the market whose installation is based on the HUB design concept (a central communications hub). This allows:

- Control of up to 31,616 fire dampers.
- Greater data communication speed (32 times faster than systems without this arrangement).
- Simple alarm wiring.



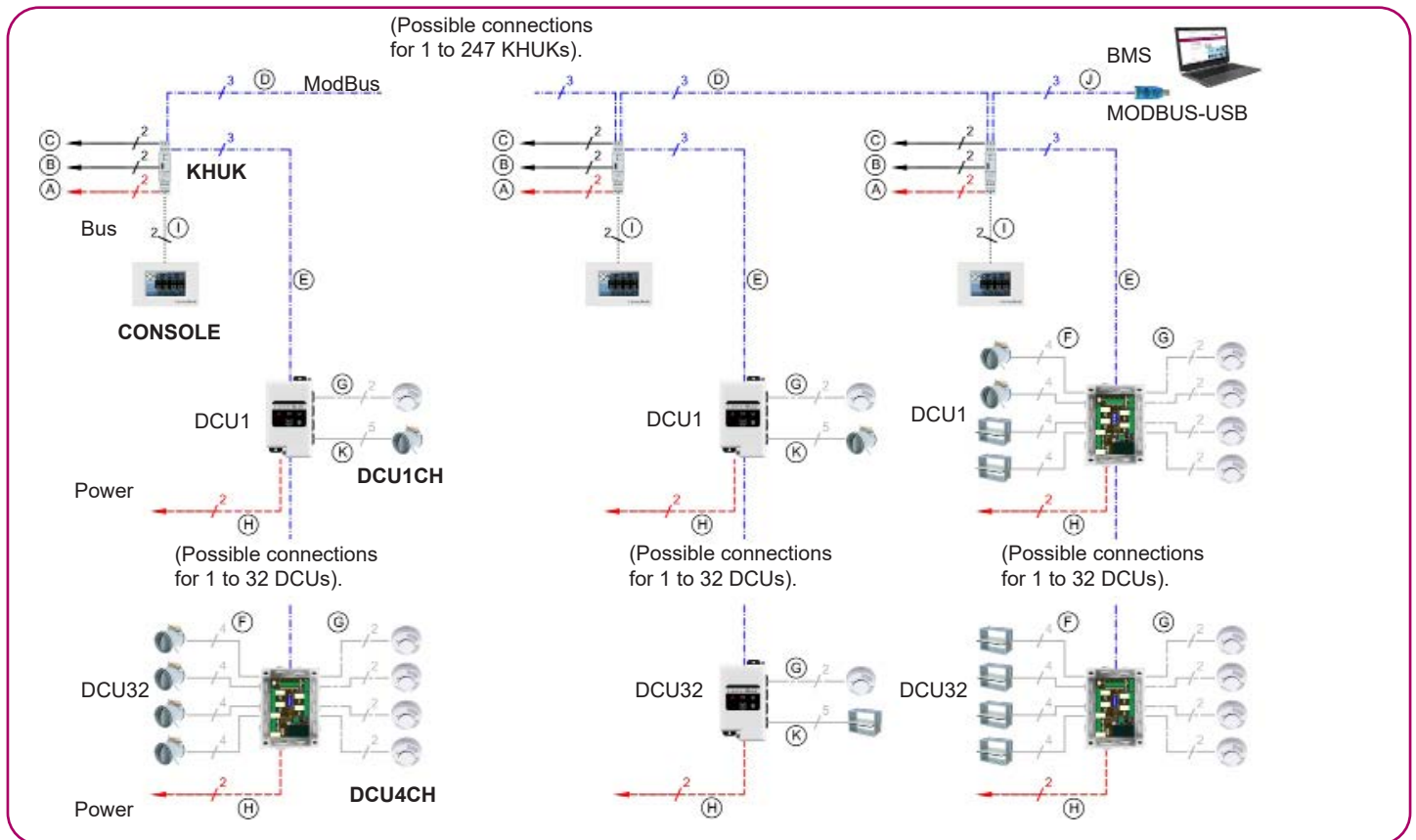
Fire damper control unit  
DCU 1CH

### Technical specifications

- Control electronics for 1 to 4 fire dampers (DCU)
- Control electronics for 24 V (AC and DC) and 230 V AC dampers
- Autonomous or interactive with the central fire alarm system
- Programmable periodic checks
- Supply fan actuator, configurations for extract fans and smoke extract by means of an external contact.
- MODBUS Communication. Adjustable velocity. Integrated bus terminator.
- Alarm input/output. Dry contact.
- Test mode for smoke detectors
- Segregated graphic console.

# General schematic diagram of the KOOLCOM monitoring system.

**Note:** If the KHUK alarm input is connected to a fire panel, the modbus wiring between KHUK and DCUs, and between KHUK and the BMS, must be **flame retardant**.



- A - Power Connection-KHUK. 24V. 2 Wires. Observe polarity +24V and GND(-). AWG20 (0.5mm<sup>2</sup>).
- B - KHUK-RESET PUSH BUTTON. 24V.2 Wires. Observe polarity RESET and +24V AWG26 (0.13mm<sup>2</sup>).
- C - KHUK- INPUT FROM ALARM PANEL. 2 Wires. Observe polarity. +24V and ALARM. AWG26 (0.13mm<sup>2</sup>).
- D - KHUK-KHUK. ModBus. 3 Wires. Observe polarity A+, B- and GND. 0.2mm<sup>2</sup>.
- E - KHUK-DCU. ModBus. 3 Wires. Observe polarity A+, B- and GND. 0.2mm<sup>2</sup>.
- F - DCU-FIRE DAMPER. 2 Wires contacts + 2 Wire Motor. Contacts AWG206 (0.13mm<sup>2</sup>) / Motor AWG20 (0.5mm<sup>2</sup>).
- G - DCU-SMOKE DETECTOR. 2 Wires. AWG20 (0.5mm<sup>2</sup>).
- H - DCU-Power 220V. 2 Wires. AWG20 (0.5mm<sup>2</sup>).
- I - KHUK-CONSOLE. 2 Wires. No polarity. AWG20 (0.5mm<sup>2</sup>).
- J - KHUK-BMS. ModBus. 0.2mm<sup>2</sup>.
- K - DCU-GATE. 3 wires + 2 wires Motor. Contacts AWG206 (0.13mm<sup>2</sup>) / Motor AWG20 (0.5mm<sup>2</sup>).

**Minimum cross sections for a maximum length of 100m.** For longer lengths refer to standard values A.W.G. ModBus: 3 Wires. RS-485 specific cable, minimum 3 conductors + screen. Nominal impedance 100-120 ohms. AWG24 (0.2mm<sup>2</sup> section, 0.51mm diameter, twisted).

*Note:* If the Alarm Input of the DCU is used, use 2 wires AWG26 (0.13mm<sup>2</sup>).

## System components. Damper Control Unit (DCU 1CH)

The DCU contains the control electronics for the different fire dampers. KOOLCOM offers two models which allow either 1, or up to 4 dampers to be controlled by the same device.



### DAMPER CONTROL UNIT 1 CHANNEL (DCU 1CH)

DCU 1CH (Damper Control Unit, 1 Channel) are devices used to send commands and supervise motorised fire dampers, which by means of commands sent through the ModBus allow them to be automated and controlled.

They are integrated in the KOOLCOM fire damper control and supervision system. This system is completed with KHUK units (KoolCom Hub Unit KoolAir), which allow DCUs (1CH or 4CH) to be grouped in sets of 32 units, and connects the colour, touch screen consoles.

Each DCU 1CH has:

- 1 input for a conventional smoke detector (zone).
- 1 output for fire damper in two available formats:
  - Direct connection for Belimo motors.
  - Universal motor connection.
- 1 power input.
- 1 ModBus connection.
- Models:
  - 24V (AC/DC) - 100-DCK300: For 24V fire damper motor.
  - 230V AC - 100-DCK400: For 230V power supply damper motor.

81

144

52

**Materials:**

- Casing: ABS (-40°C | 100°C).
- Cable inlet: Nylon 6/6 and TPE.

**Waterproofing:**

- Box: IP 54
- Cable inlet: IP 67/68

## Specifications (DCU 1CH)

- **Maximum load** on the damper motor output:

24V (AC/DC) model: 3A  
230V AC model: 0.5A

- **Maximum load** in the detection zone: 100mA

- **Maximum power consumption** (without detector or damper):

24V (AC/DC) model: 100mA@24V 0.72W  
230V AC model: 70mA@230V 0.88W

- **Protected against short circuits and ESDs** at zone connections, fire damper contacts, and ModBus.

- **MODBUS:**

- Device type: Slave
- ModBus implementation: RTU on RS-485
- Maximum number of DCUs (without repeater): 32
- Default configuration: 9600bps 8E1
- Bus data transfer speed can be configured both on the PCB and via ModBus.
- Integrated termination in PCB, can be activated by jumper.
- Typical response time: <10 ms.

- **Installer push-button** on the front panel to:

- Perform tests and set up from the front panel.
- Reset alarms from the DCU itself: a laptop is not required to reset alarms if the operator is present at the DCU.

- **Zone Connection:**

- Protected against short circuits and ESDs.
- Monitored: If there is a wiring failure or the detector is disassembled, monitoring allows the problem to be detected and highlighted.
- Most smoke detectors are supported, including both those that are self-limiting and those that need current to be limited in the control panel.
- Automatic detection in the zone: it is not necessary to place a resistance at the terminals or to simulate a fault if the zone is not in use.
- Smoke detector test mode: allows smoke detectors to be tested without the DCU triggering the fire alarms.

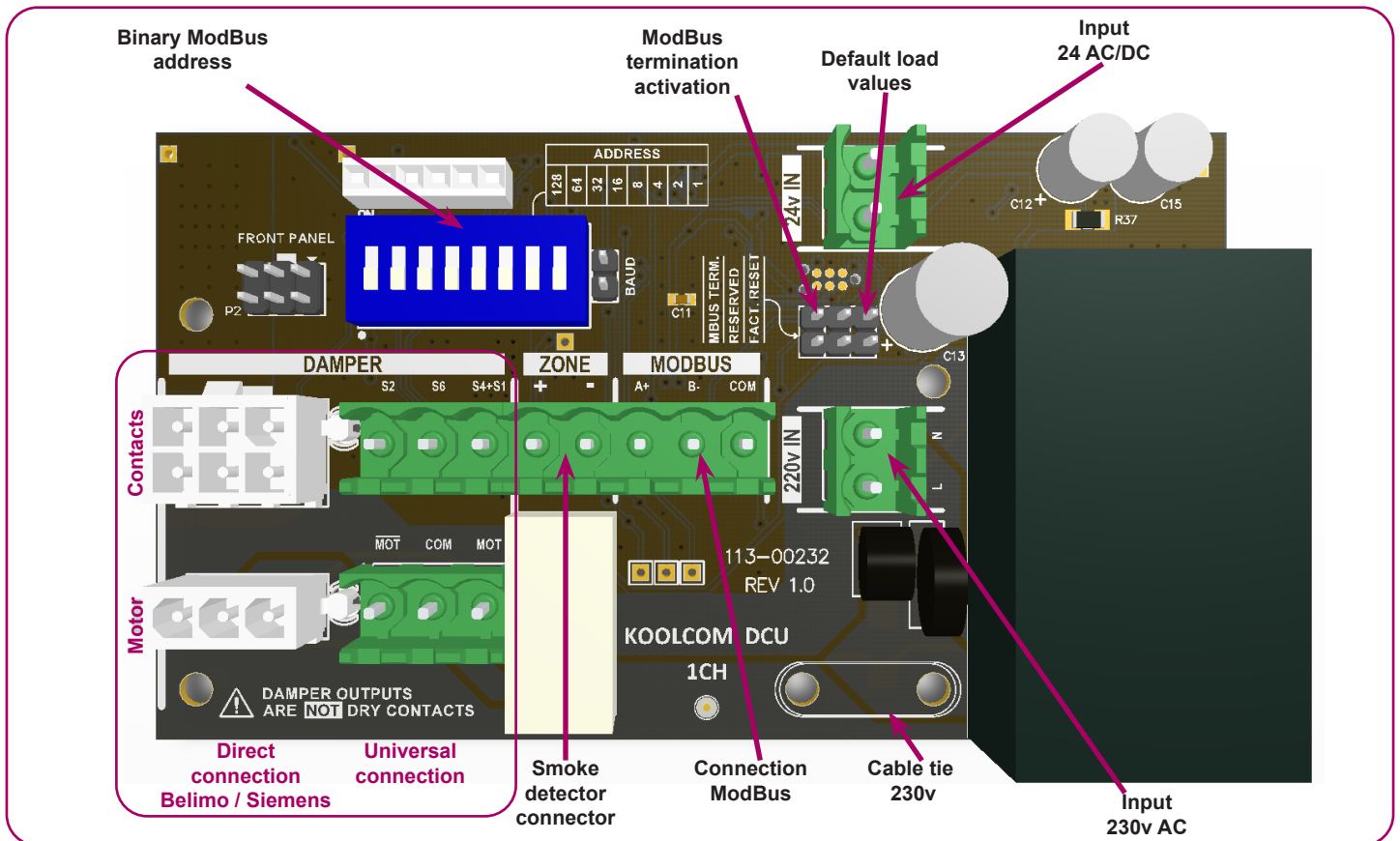
- **Automatic fire damper testing** with programmable test intervals.

- **Automatic detection of fire damper and zone:** it is not necessary to bypass the damper or simulate a fault if the zone is not in use.

- **Clearly indicated connections** next to each connector.



## Damper Control Unit 1 channel (DCU 1CH)



The universal damper connection is a 5-wire connection:

o Contacts:

- S4+S1: can be connected inside the damper.
- S2 and S6: Are the normally open contacts of the matching limit switches.

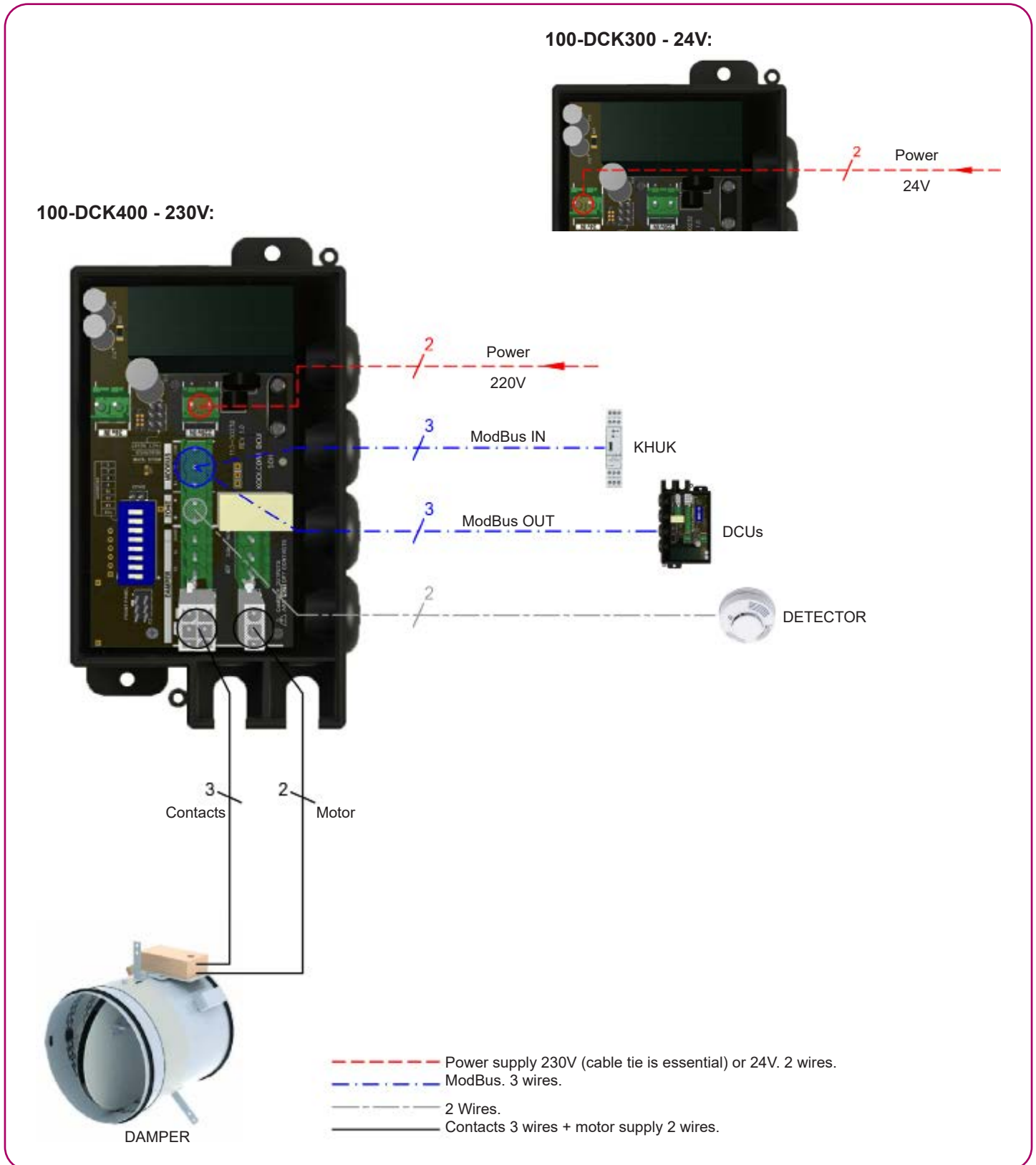
o Motor:

- COM: common, negative (or neutral in DCU 230V)
- MOT: positive (or phase in DCU 230V)

$\overline{\text{MOT}}$ : normally not used, it is the same signal as MOT but with inverse logic.

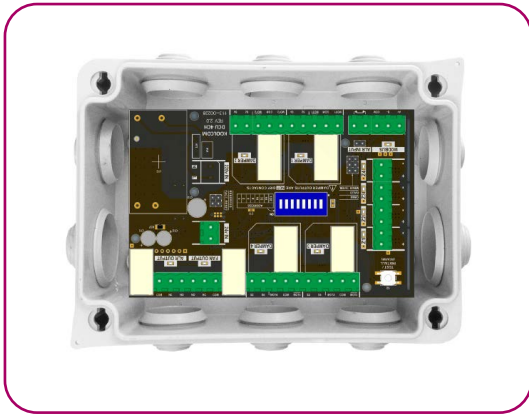
The output connections to the damper motor are not dry contacts, but are already powered to supply the voltage needed to power the motor: 24V o 230V, as per the DCU model.

# Damper Control Unit 1 channel connection (DCU 1CH): two versions (24V / 230V)



## System components

### Damper Control Unit 4 channel (DCU 4CH)

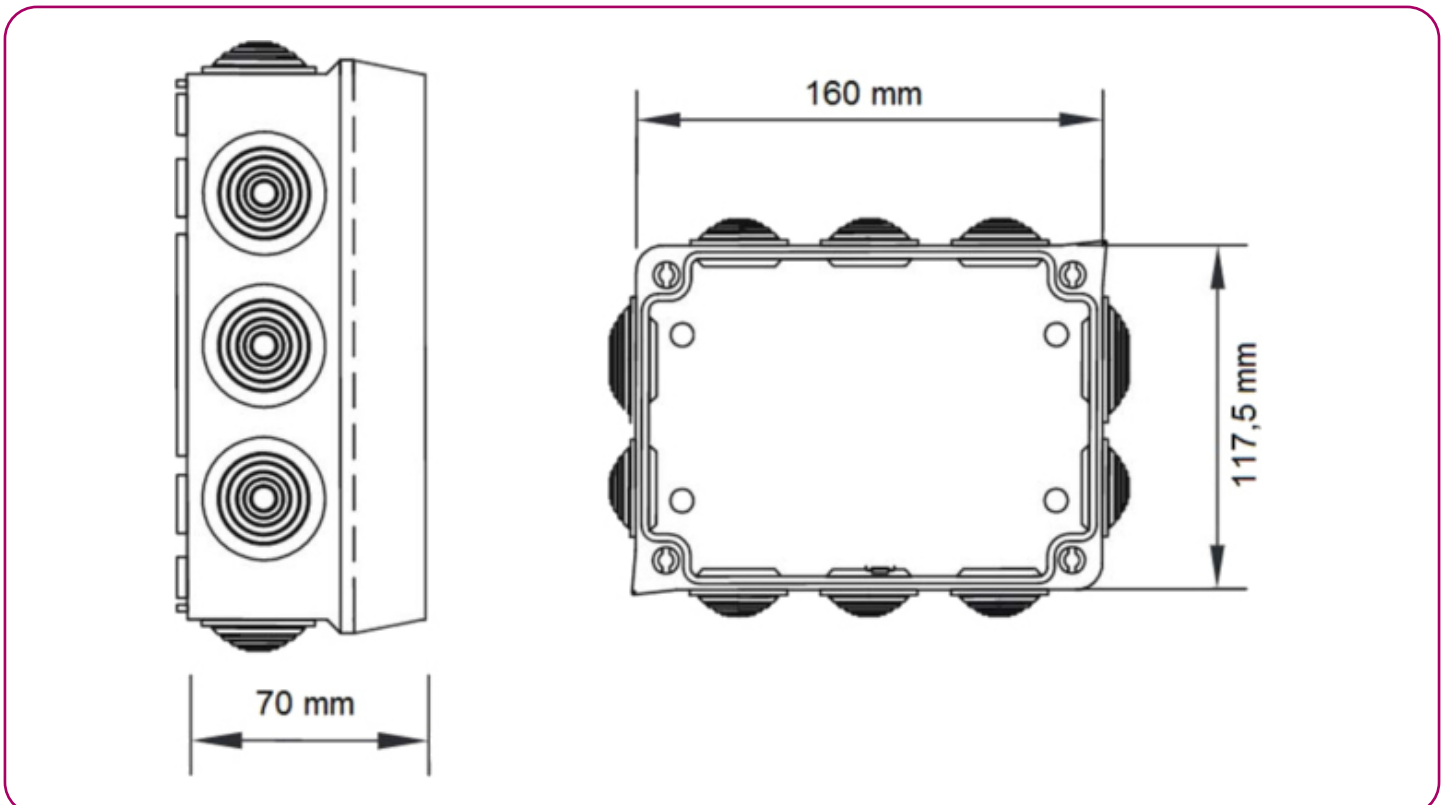


DCU 4CH (Damper Control Unit, 4 Channel) are devices used to send commands and supervise up to 4 motor-driven fire dampers and 4 smoke detectors, which, by means of commands sent through the ModBus, allow them to be automated and controlled

They are integrated in the KOOLCOM system for controlling and supervising motor-driven fire dampers and four smoke detectors (zones). This system is completed with KHUK units (KoolCom Hub Unit KoolAir), which allow DCUs to be grouped (1CH or 4CH) in sets of 32 units, in addition to connecting the colour, touch screen consoles.

Each DCU 4CH has:

- 4 inputs for a conventional smoke detector.
- 4 outputs for fire dampers. Direct connection from motors.
- 1 power input.
- 1 ModBus connection.
- 24V (AC/DC) and 230V AC models
- Damper test button
- Dry contact for external alarm input
- Dry contact for supply/extract fan
- Dry contact indicating alarm detected
- Visual indication of the status of all the elements by means of LEDs on the board



## Specifications (DCU 4CH)

- **Maximum joint load** on the damper motor outputs:

24V (AC/DC) model: 3A  
230V AC model: 0.5A

- **Maximum load** in the detection zone: 100mA per zone / 300 mA combined

- **Maximum consumption** (without detector or damper):

24V (AC/DC) model: 100mA@24V DC  
230V AC model: 70mA@230V AC

- **Auxiliary Relays** (FAN AND ALARM):

24V (AC/DC) model: 5 A@24V DC  
230V AC model: 5 A@230V AC (for resistive loads)

- **Protected against short circuits and ESDs** at zone connections, fire damper contacts and ModBus.

- **MODBUS:**

- Device type: Slave
- ModBus implementation: RTU on RS-485
- Maximum number of DCUs (without repeater): 32
- Default configuration: 9600bps 8E1
- Bus data transfer speed can be configured both on the PCB and via ModBus.
- Termination integrated in internal PCB, can be activated by jumper.
- Typical response time: <10 ms.

- **Installer push-button** on the panel to:

- Perform tests and set up.
- Reset alarms from the DCU itself: a laptop is not required to reset alarms if the operator is at the DCU.

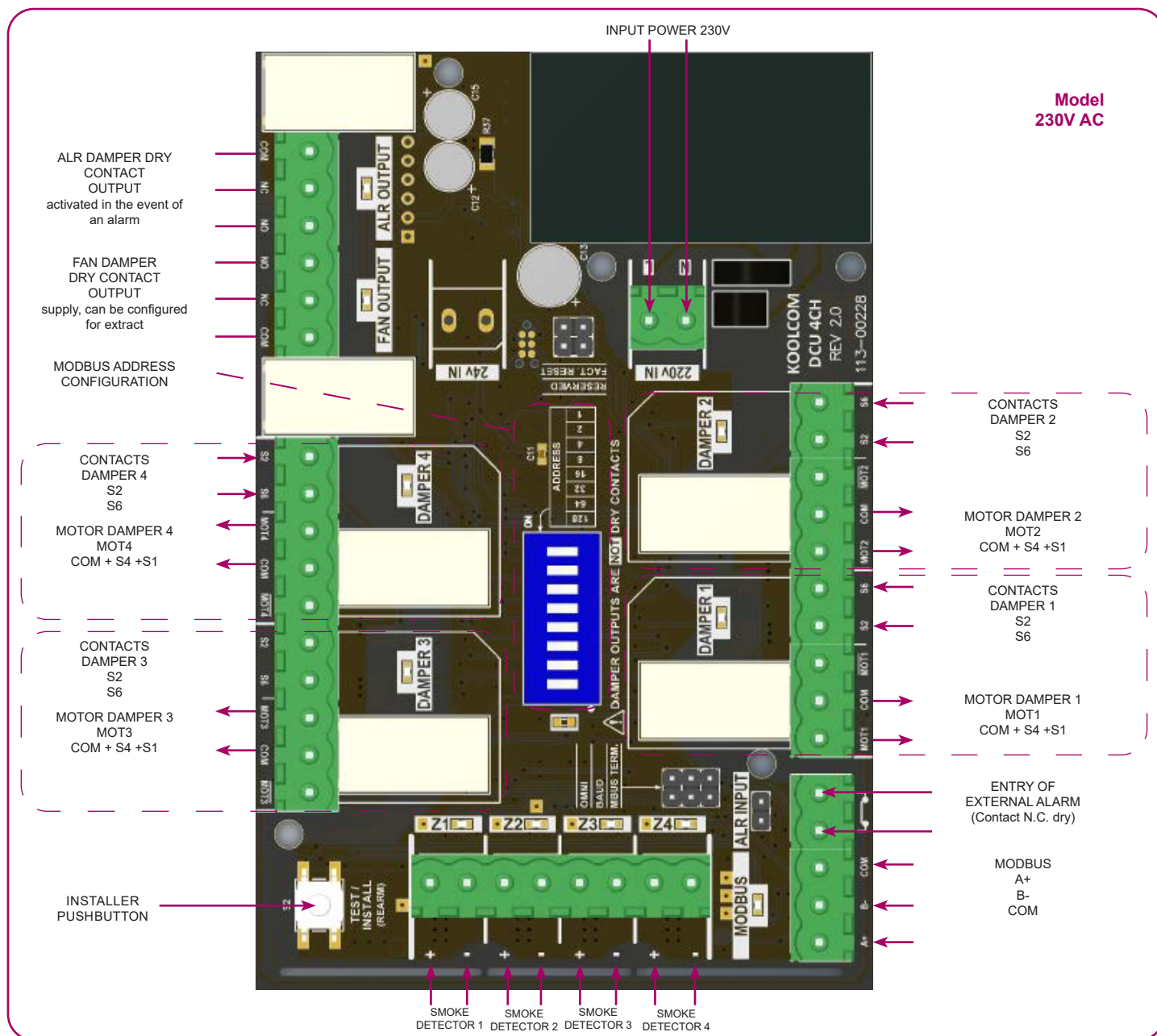
- **Zone Connection:**

- Protected against short circuits and ESDs.
- Monitored: If the wiring fails or the detector is disassembled, monitoring allows problems to be detected and highlighted.
- Most smoke detectors are supported, including both those that are self-limiting and those that need current to be limited in the control panel.
- Automatic detection in the zone: it is not necessary to place a resistance at the terminals or to simulate a fault if the zone is not in use.
- Smoke detector test mode: allows smoke detectors to be tested without the DCU activating the fire alarms.

- **Automatic fire damper testing** with programmable test periods.

- **Automatic detection of dampers and zones:** it is not necessary to bridge or to simulate a fault if the zone is not in use.

## Damper Control Unit 4 channel (DCU 4CH)



The universal damper connection uses 4 wires:

o Contacts:

- S2 and S6: are the normally open contacts of the matching limit switches.

o Motor:

- COM + S4 + S1: common, negative (or neutral in DCU 230V) attached to cables S4 and S1 of the motor contacts.

- MOTX: positive (or phase in DCU 230V)

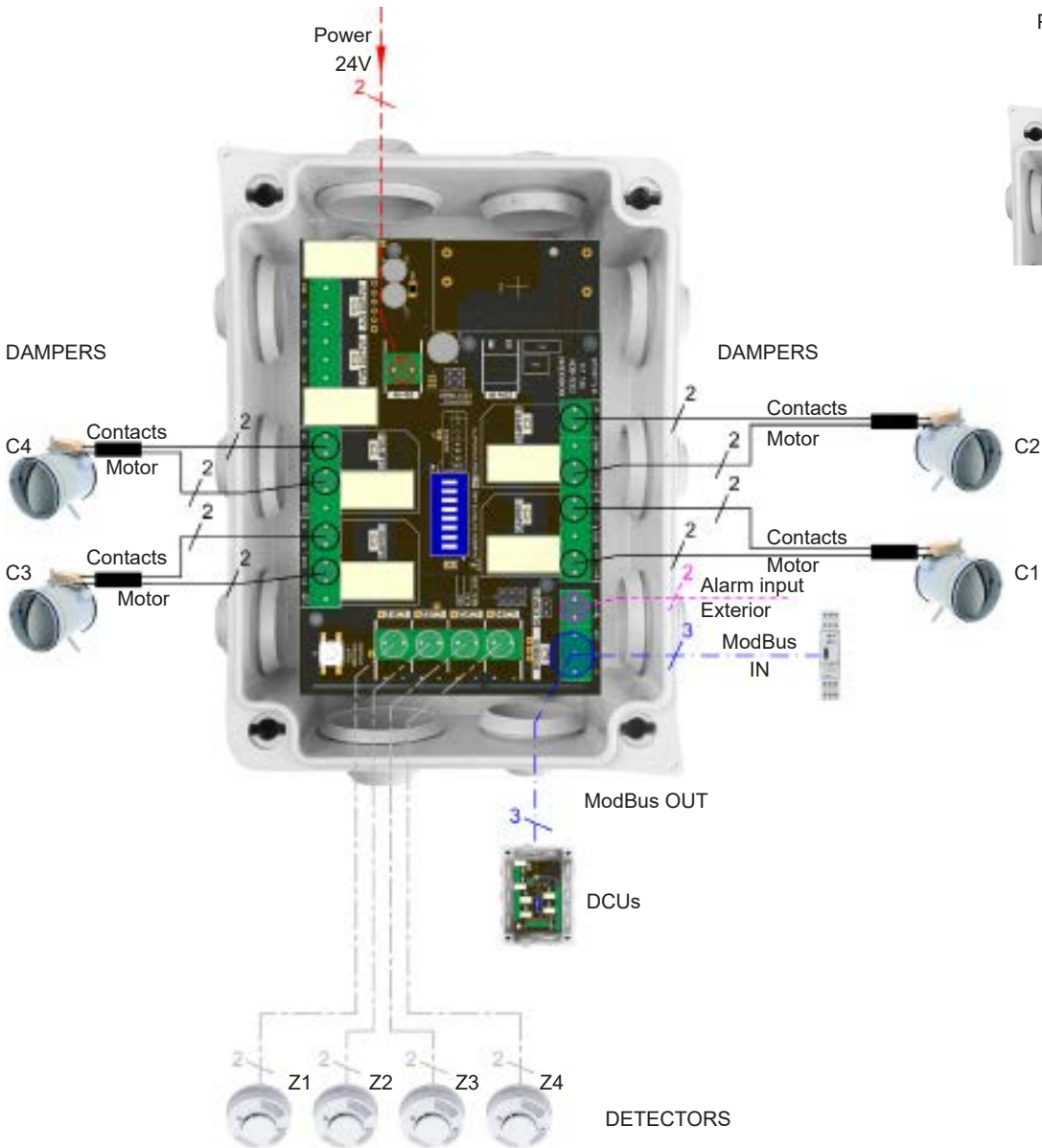
MOTX: normally not used, it is the same signal as MOT but with inverse logic.

The output connections to the damper motor **are not dry contacts**, but are already powered to supply the voltage needed to power the motor: 24V o 230V, as per the DCU model.

# Damper Control Unit 1 channel connection (DCU 4CH): two models (24V / 230V)

100-DCK500 - 24V AC/DC:

100-DCK600 - 230V AC:



- - - 230V AC or 24V AC/DC supply. 2 wires.
- - - ModBus. 3 wires.
- 2 wires.
- - - 2 wires.
- 2 wires contacts (S2, S6) + 2 wires motor supply (COM+S4+S1), MOTx.

## System components. KHUK (HUB)



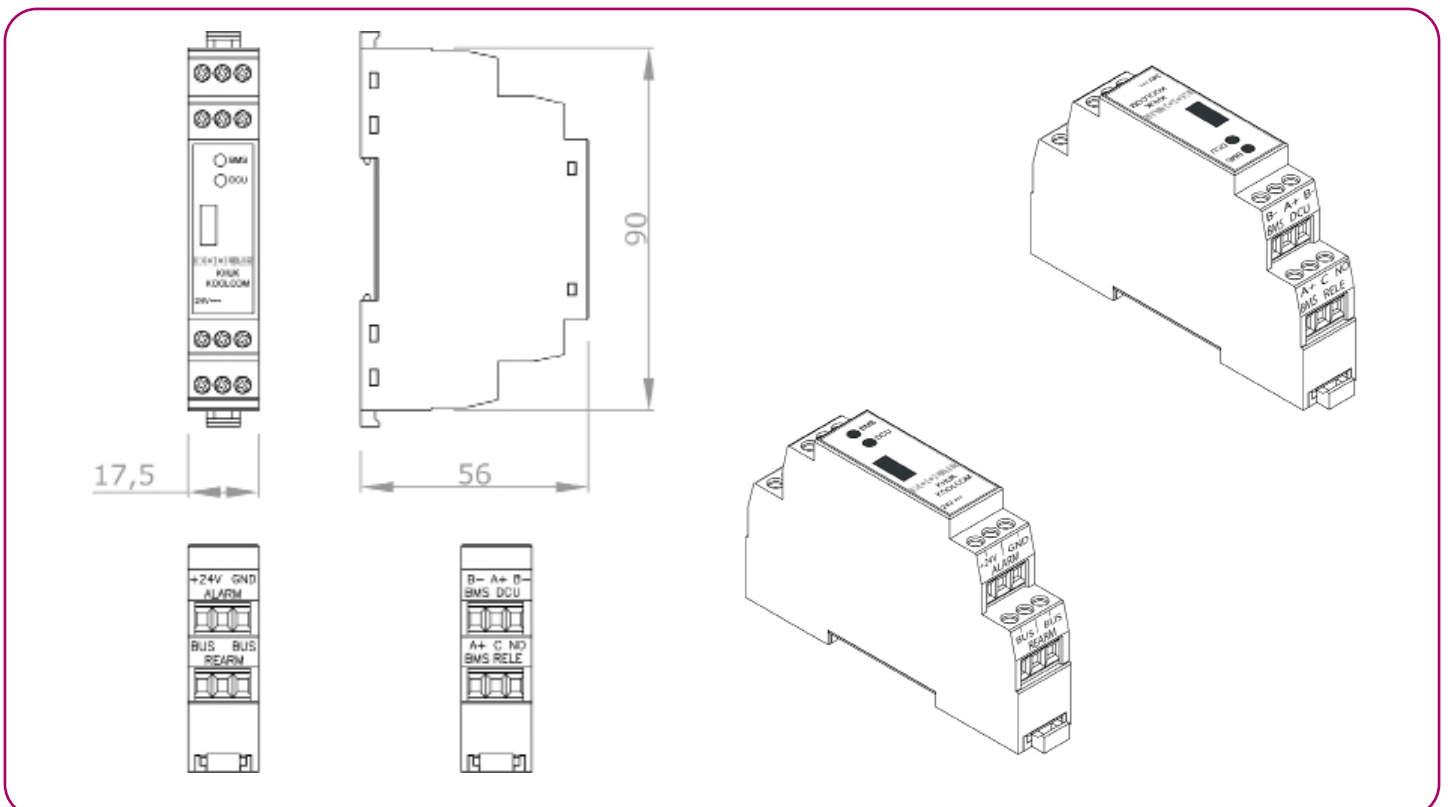
The KHUK is a Modbus hub device that occupies a single address, allows up to 128 fire dampers and 128 smoke detectors (32 DCU-4CH units) to be managed.

Each KHUK has:

- 1 connection to the Koolcom console.
- Direct connection to fire panel:
  - Alarm activation input.
  - Alarm reset input.
  - NO alarm relay output (Max 8Amp).
- 1 24V DC power input.
- Maximum consumption: 100-UCK000: 125mA@24v
- 1 ModBus connection on RS485 for DCUs.
- 1 ModBus connection on RS485 for BMS.
- ModBus:

Type of device going to DCUs:	Master
Type of device going to the BMS:	Slave
ModBus implementation:	ModBus RTU on RS-485
Maximum number of DCUs:	32
Default configuration:	9600bps 8E1

The KHUK is always powered by a 24V DC power supply.



## System components. Graphic console

The KOOLCOM graphic console allows monitoring and control of DCUs connected to the associated KHUK, facilitating the monitoring and control of fire dampers and smoke detectors (zones).

The console allows information on the overall status of the system and each connected DCU to be displayed, as well as the basic parameters to be configured and managed. (\* Only available in installations that include KHUKs).



KOOLCOM Graphic Console with 3.2" display. Surface mounted version. Specific flush mounted box available for flush mounting.

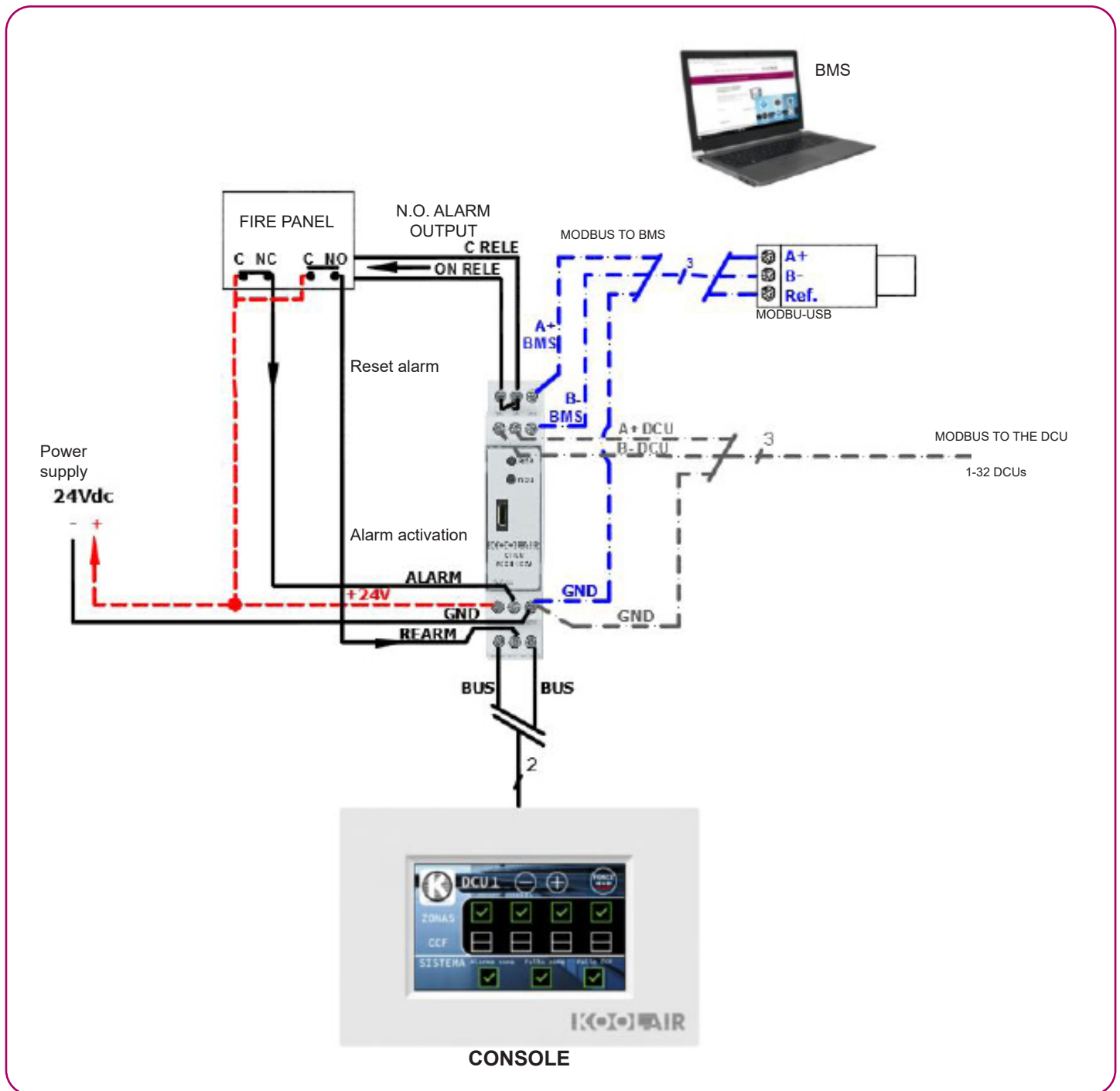
### CHARACTERISTICS:

- Surface mounted or flush (optional)
- Powered from the KHUK (No external power supply required).
- Dimensions: 79x119x16 mm.
- TFT 3.2" display. 65,536 colours. 4R resistant touch panel.
- Resolution: 400x240 pixels.
- Testing, control and monitoring of up to 128 fire dampers and 128 smoke detectors (32 No. DCU 4CH).
- Autonomous or integrated with the central fire alarm system
- Programmable periodic checks
- Global and localised indication of the state of the zones (smoke detectors) and the fire dampers.



# KHUK connection schematic

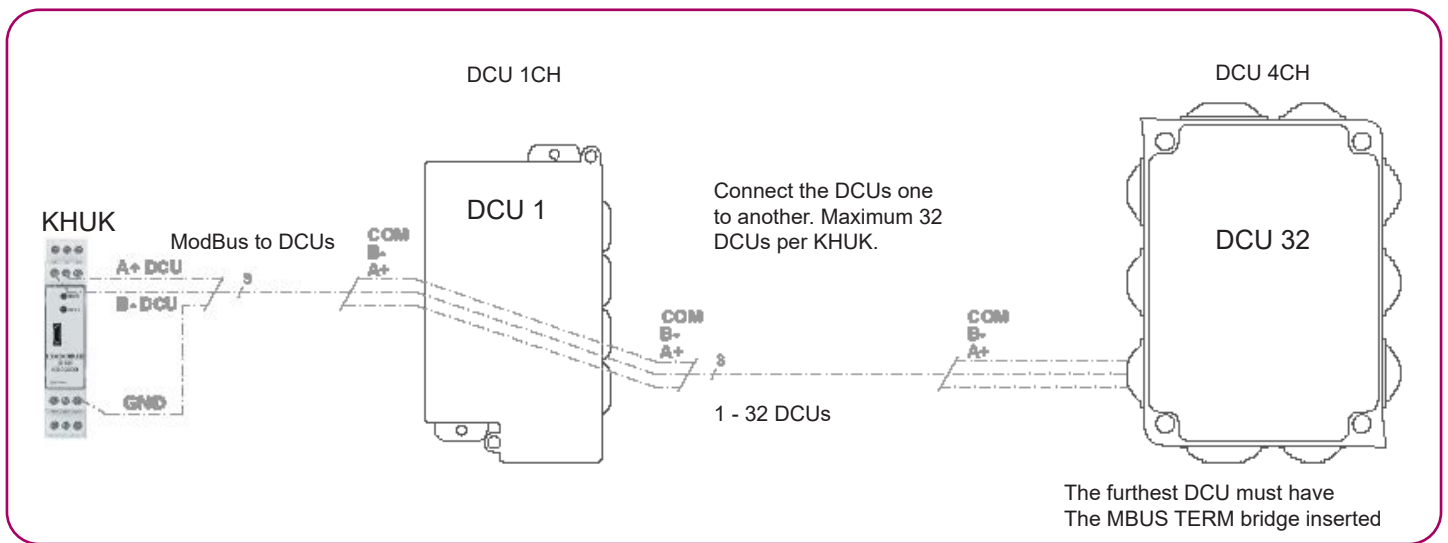
One KHUK has connections for up to 32 DCUs (maximum 128 dampers and 128 detectors), the wall mounted graphic console and a BMS. It can interact with the central fire alarm system with external alarms going to the KHUK and detected alarm coming from the KHUK.



## KHUK AND DCUs

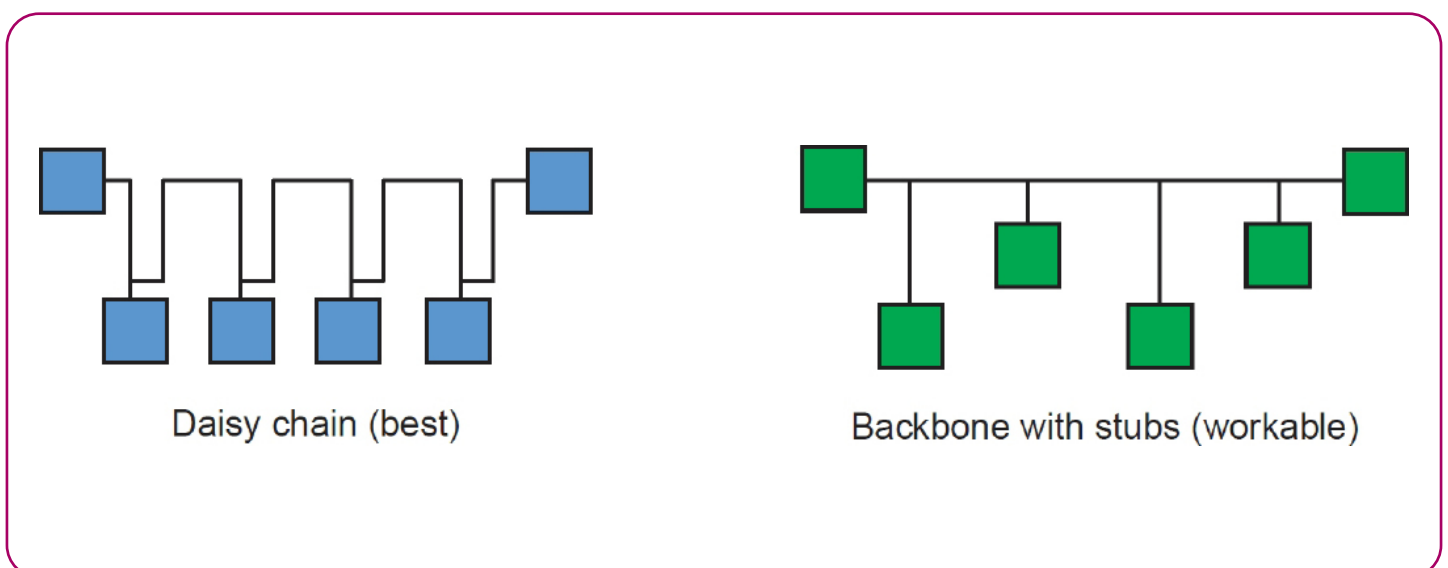
Three wires with polarity that connect exclusively to the DCUs. The KHUK contains the MODBUS termination. By inserting the MBUS TERM bridge into the furthest DCU, the two necessary terminations are achieved. Different DCU models (DCU-1CH and DCU-4CH) can be mixed in the same bus.

For the modbus wiring, RS-485 cable must always be used; available from various manufacturers.



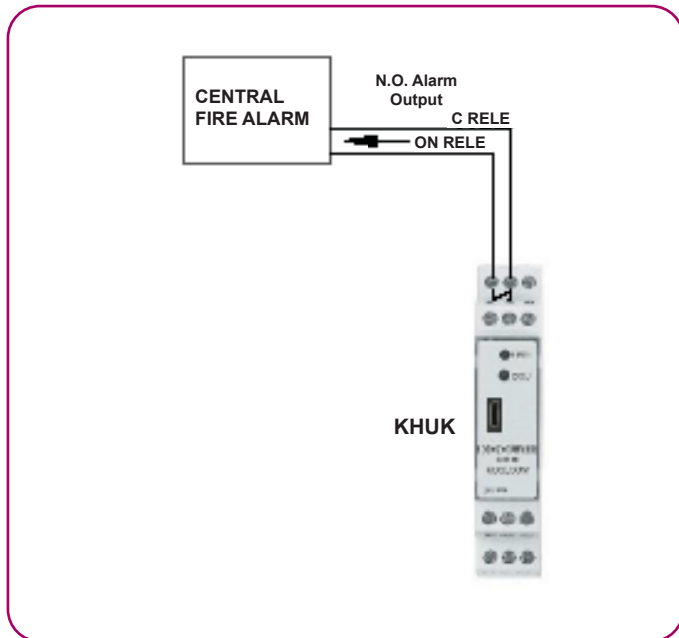
## MOD-BUS Topology

**Daisy Chain** topology must be used wherever possible. If this is not feasible at any point, a **Backbone with stubs** can also be used.

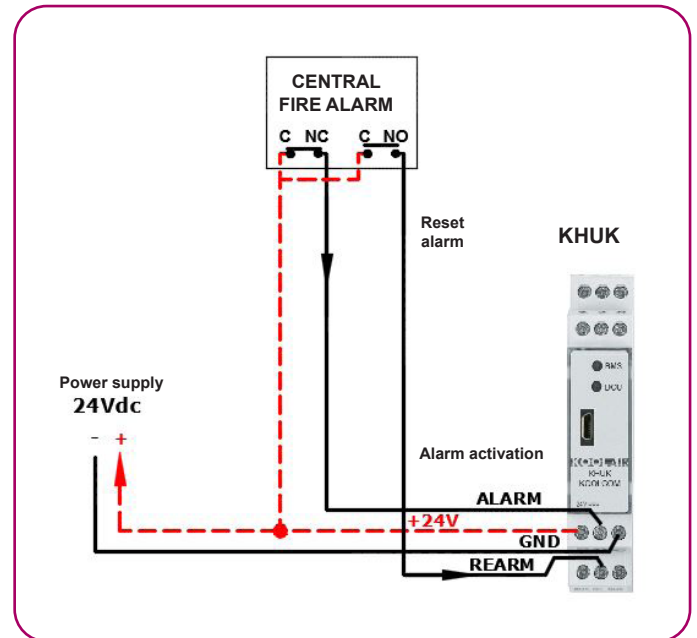


In cases where backbone with stubs topology is used, the stubs should be as short as possible and **never exceed 10 meters**.

## KHUK and alarms



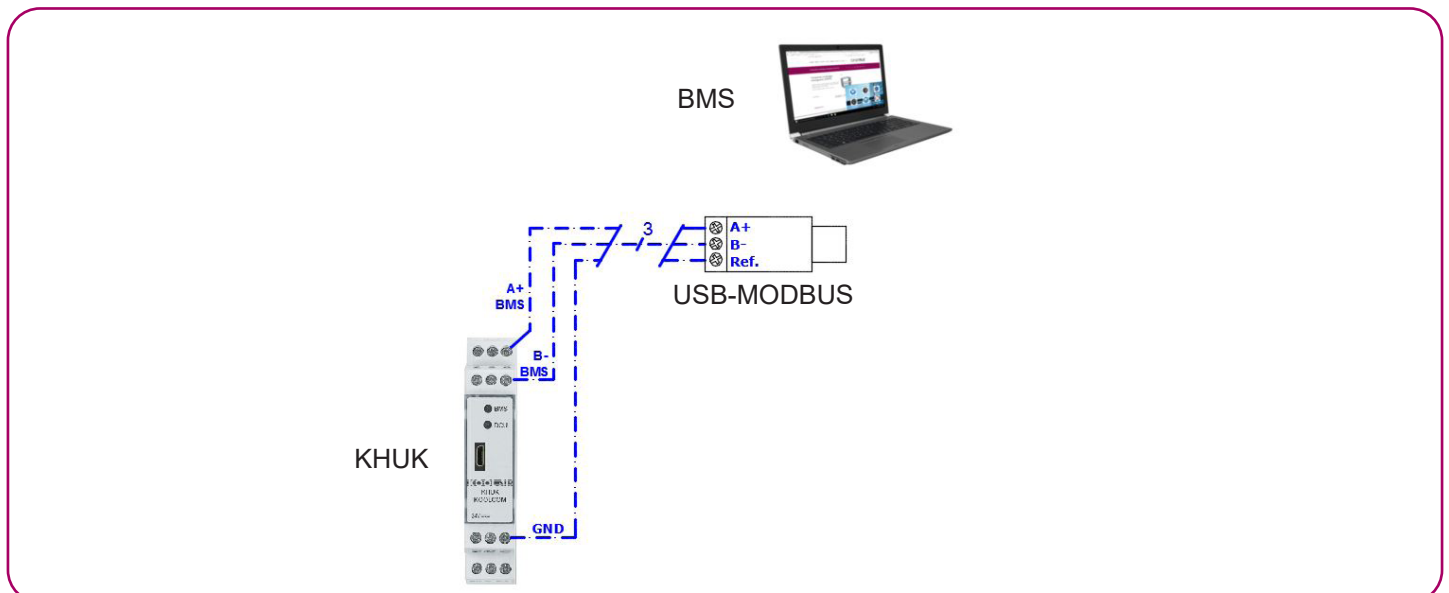
**N.O. Alarm Relay Output:** Volt-free contacts with a maximum switching capacity of 8Amp, which are closed when any DCU informs the KHUK of the occurrence of an alarm. They are usually connected to the central fire alarm system, which awaits the closure of these contacts.



**Fire Alarm and Reset Input:** When the +24V from the source is received at the alarm input, the KHUK considers there to be a fire alarm external to the system (not activated by the smoke detectors). It will activate the alarm input on each DCU connected to the KHUK, resulting in the closing of all connected dampers.

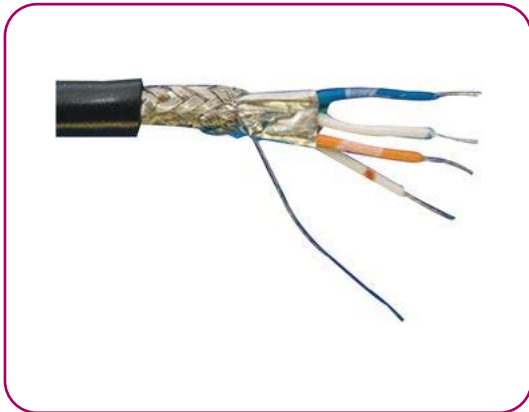
## KHUK and BMS

Three wires with polarity that are connected to a PC that contains an available RS485 port. The third wire COM (Ref.) is the negative of the KHUK supplier (GND).



## Accessories

This section describes the accessories that may be necessary during installation.



### Cable MODBUS

This depends on the specific conditions of each installation, especially the level of electrical noise in the zones which the wiring passes through, the distance to be covered and the chosen connection speed. We recommend that RS-485-specific cable always be used.

In general the cable specifications will comply with:

- be twisted pair (or pairs) cable.
- have at least three conductors + screen.
- nominal impedance: 100-120 ohms
- AWG24 (section 0.2mm<sup>2</sup>, diameter 0.51mm)
- screened



### MODBUS Extender/Isolator

Optical MODBUS Extender / Isolator. In cases with long cable runs, or even to facilitate easy fault detection in the installation, this allows the connection wiring between the KHUK and the different DCUs to be expanded and isolated.



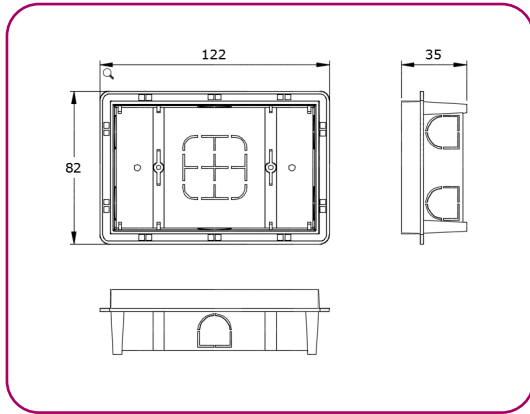
### USB-MODBUS Interface

Allows the KOOLCOM system and a computer to be connected if there is no integrated RS485 port.

## Accessories

### Graphic console back box

Non-standard back box for installations where the graphic console is to be flush mounted instead of surface mounted.



## Coding

CODE	DESCRIPTION
100-UCK000	KOOLCOM HUB
100-TCK000	KOOLCOM GRAPHIC DISPLAY
100-DCK500	DAMPER CONTROL UNIT KOOLCOM, 4 DAMPERS, 24V (AC/DC) (fire dampers only)
100-DCK600	DAMPER CONTROL UNIT KOOLCOM, 4 DAMPERS, 230V AC (fire dampers only)
100-DCK500-01	DAMPER CONTROL UNIT KOOLCOM, 4 DAMPERS, 24V (AC/DC) (fire and smoke dampers)
100-DCK600-01	DAMPER CONTROL UNIT KOOLCOM, 4 DAMPERS, 230V AC (fire and smoke dampers)
100-DCK300	DAMPER CONTROL UNIT KOOLCOM, 1 DAMPER, 24V (AC/DC)
100-DCK400	DAMPER CONTROL UNIT KOOLCOM, 1 DAMPER, 230V AC
100-MBUS00	CABLE MODBUS TWISTED KOOLCOM, 3 CONDUCTORS+MESH
100-MBUS01	KOOLCOM SYSTEM OPTICAL ISOLATOR / EXTENDOR
100-MBUS02	MODBUS INTERFACE TO KOOLCOM USB
100-TCK001	KOOLCOM GRAPHIC CONSOLE BACK BOX

## Environment, guarantee and safety.

### ENVIRONMENT

Never dispose of this equipment together with household waste. Electrical and electronic products contain substances that can be harmful to the environment if not disposed of properly. The symbol of a crossed out rubbish bin indicates the special collection of electrical appliances, differing from other urban rubbish. For correct environmental disposal, they should be taken to specially designed collection centres at the end of their useful life. Their constituent parts are recyclable. Therefore, observe the applicable environmental protection regulations.

You must return them to your dealer if they are being replaced by another, or dispose of them at a specialised collection centre.

Violators are subject to the sanctions and measures established by the Law on environmental protection.



### GUARANTEE

This product is covered by a legal guarantee; please contact your seller for more information.

KOOLCOM guarantees the products will conform to the technical specifications for a period of 2 years, including parts and labour, from the date of purchase included on the purchase document. The user can put the guarantee into effect at the distributor or point of sale or by calling the customer service number. The nonconforming part or product will be repaired or replaced by an equivalent piece or product at no cost to the customer. Any part or product changed becomes the property of KOOLCOM. The remedied defect of the repaired product is guaranteed for a period of 6 months from the date of repair.

However, this guarantee does not apply in the following cases:

Installation or use that is not in accordance with the instructions given in this manual; incorrect connection or improper use of the product, in particular, with accessories not designed for the purpose; abnormal wear; failure to comply with the technical and safety standards in force in the geographical area of use; products that have received shocks or falls; products damaged by lightning, electrical overloads, heat sources or radiation, water damage, exposure to excessive humidity or any other outside cause; misuse or negligence; intervention, modification or repair by any person not approved by the manufacturer or distributor **CONDITIONAL TO THE LEGAL PROVISIONS, ALL WARRANTIES DIFFERENT FROM THOSE DESCRIBED IN THIS SECTION ARE SPECIFICALLY EXCLUDED.**

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