

# INSTALLATION INSTRUCTIONS FOR FIRE-TESTED DUCT SYSTEMS

Applicable to circular and rectangular ducts

INSTALLATION INSTRUCTIONS

Rev.date: 23/03/2022  
& 16/05/2022 & 12/8-2022



## Installation instructions for fire-tested duct systems

Øland's duct system is fire tested at DBI - The Danish Institute of Fire and Security Technology

Fire test according to DS/EN 1366-1

Classified according to. DS/EN

15301-3

Meets requirements of DS 428:2019 +Till.1+Till.

2:2021 Duct class E 60 (ve ho i → o) A2-s1,d0

Meets requirements of DS 428:2019 +Till.1+Till. 2:2021

### Strength and density classifications:

Circular ducts DS/EN 12237:2003

Airtightness class D (ATC-2)

Pressure class -750 Pa to +2,000 Pa

Rectangular ducts DS/EN 1507:2006

Airtightness class C (ATC-3)

Pressure class -750 Pa to

+1,000 Pa

### Øland has 2 fire tested system solutions for fireproof seals:

A) Flange solution with gap width up to 30 mm

**B) Fire resistant insulation board with gap width up to 400 mm**

Approved construction types	Material	Minimum density [m <sup>3</sup> /kg]	Minimum thickness [mm]
Light walls	Plasterboard wall with steel profiles 2 × 12.5 mm plasterboard on both sides		95
Heavy walls	Concrete	2000	100
	Porous concrete	450	100
	Bricks	2000	100
Deck	Concrete	2000	100
	Porous concrete	450	115

## Circular channel - Flange solution

### Duct sizes:

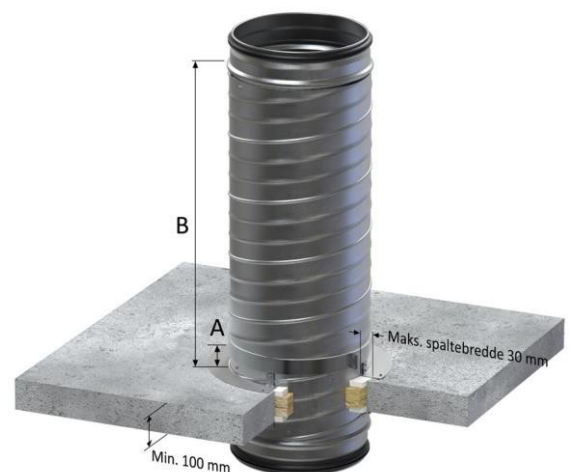
- Wall outlet: up to Ø1000
- Deck outlet: up to Ø1000

### Fireproof seal:

- Opening in construction:
  - 5-30 mm gap
  - Plasterboard walls are made with internal steel profile around the outlet
- Backstop:
  - Fill gap with mineral wool insulation, min. 30 kg/m<sup>3</sup>
- Fire seal on both sides of wall/deck:
  - Type: Altech PFP acrylic
  - Min. depth 15 mm
  - Maximum gap width 30 mm
- Attachment:
  - BLG flange mounted on both sides of wall/deck
  - Screws in wall/deck: 6.5 × 40 mm
  - Duct screws: 4.2 × 13 mm

### Duct joint:

- Duct joint on horizontal ducts through walls:
  - First duct joint 50 mm from wall can be carried out as a standard nipped joint without any additional measures.
  - The first duct joint 25-49 mm from the wall can be made with a fire sealant in the connecting nipple – Type: Altech PFP acrylic.
- Duct joints on vertical ducts through decks:
  - Duct joints 50-2000 mm above deck can be made as a standard nipped joint with retrofitting of fire sleeve band – Type: BMUF.
  - Duct joints 25-2000 mm above deck can be made with a fire sealant in the connecting nipple joint - Type: Altech PFP acrylic.
  - Duct joints 2000 mm above deck and up to the underside of the next deck can be made as a standard nipple joint without additional measures.



## Circular duct - Fire protection board solution

### Duct sizes:

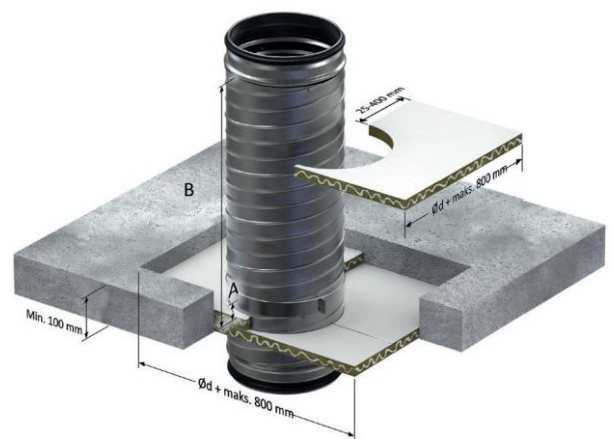
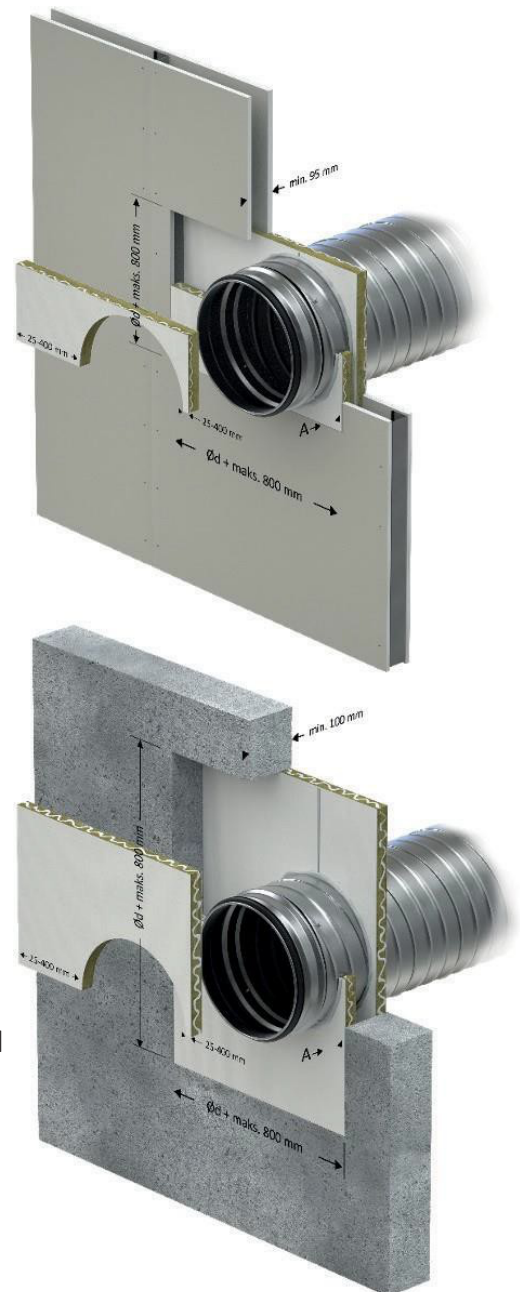
- Wall outlet: up to Ø1000
- Deck outlet: up to Ø1250

### Fireproof seal:

- Opening in construction:
  - 25-400 mm gap between duct and wall/deck
  - Plasterboard walls can be executed WITHOUT an internal steel profile around the outlet
- Advice on installation:
  - Can be performed from one side
  - If there is little room, it is recommended that the duct is run straight through the wall/deck, after which a fireproof seal is carried out where there is plenty of room in front of the duct end before the duct is run further.
- Fireproof seal:
  - Gaps are closed with 2 × 50 mm fire protection boards, which are made with staggered joints and cut as close as possible.
  - Apply fire sealant to board edges against the construction.
  - Before installing fire protection board no. 2, grout ALL joints → Board joints and joints to duct and wall/deck
  - Fire protection board type: Altech PFP fire protection board
  - Fire sealant type: Altech PFP acrylic
- Attachment:
  - None

### Duct joint:

- Duct joint on horizontal ducts through walls:
  - The first duct joint 50 mm from the wall can be made as a standard nipped joint without any additional measures.
  - The first duct joint 25-49 mm from the wall can be made with a fire sealant in the connecting nipple – Type: Altech PFP acrylic.
- Duct joints on vertical ducts through decks:
  - Duct joints 50-2000 mm above deck can be made as a standard nipped joint with retrofitting of fire sleeve band – Type: BMUF.
  - Duct joints 25-2000 mm above deck can be made with a fire sealant in the connecting nipple joint - Type: Altech PFP acrylic.
  - Duct joints 2000 mm above deck and up to the underside of the next deck can be made as a standard connection nipple without additional measures.



## Rectangular duct - Flange solution

### Duct sizes:

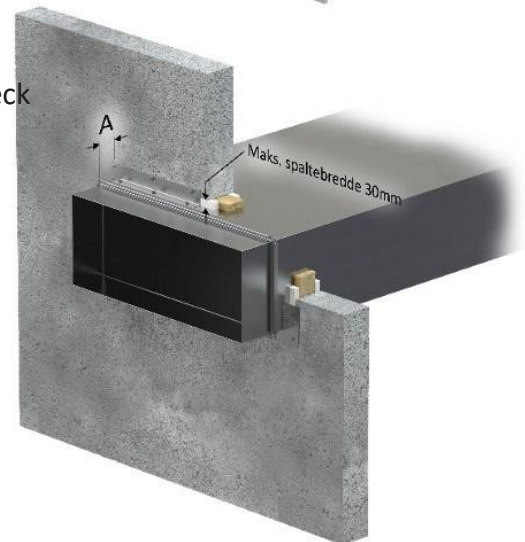
- Wall outlet: up to 1250 × 1250 with OS20 bearing
- Wall outlet: up to 2500 × 2500 with OS30 bearing
- Deck outlet: up to 1250 × 1250 with OS20 bearing

### Fireproof seal:

- Opening in construction:
  - 5-30 mm gap
  - Plasterboard walls are made with internal steel profile around the outlet
- Backstop:
  - Fill gap with mineral wool insulation, min. 30 kg/m<sup>3</sup>
- Fire seal on both sides of wall/deck:
  - Type: Altech PFP acrylic
  - Min. depth 15 mm
  - Maximum gap width 30 mm
- Attachment:
  - Angle bracket BVA/BVB to be mounted on both sides of wall/deck
  - Screws in wall/deck: 6.5 × 40 mm
  - Duct screws: 4.2 × 13 mm

### Duct joint:

- Duct joint on ducts through wall or deck:
  - First duct joint 50 mm from wall or above deck.
  - The duct joint is carried out as a standard joint with an OS bearing with a C rail.
  - Set bolts in corners only necessary on fire-insulated ducts.



## Rectangular duct - Fire protection board solution

### Duct sizes:

- Wall outlet: up to 1250 × 1250 with OS20 bearing
- Wall outlet: up to 2500 × 2500 with OS30 bearing
- Deck outlet: up to 1250 × 1250 with OS20 bearing
- Deck outlet: up to 2500 × 2500 with OS30 bearing

### Duct reinforcement:

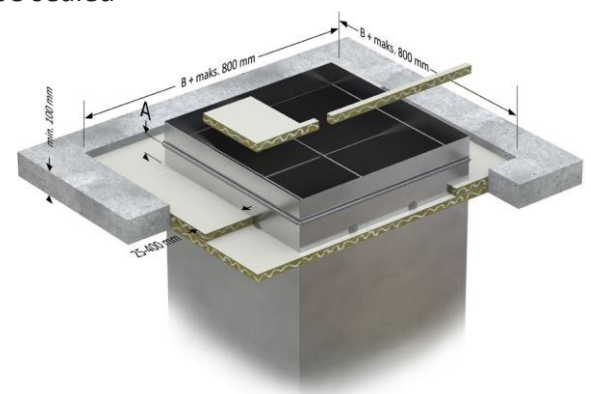
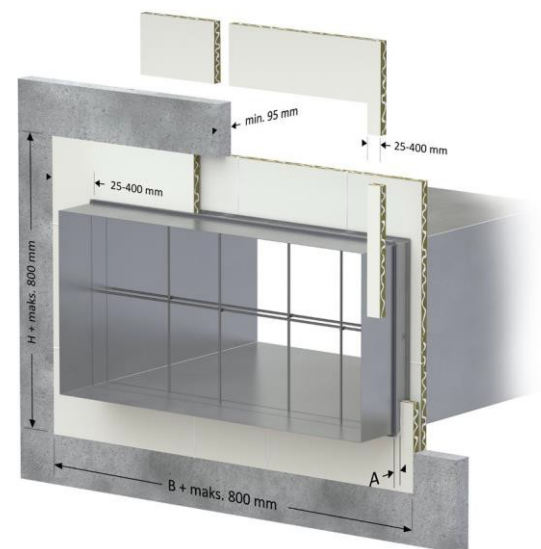
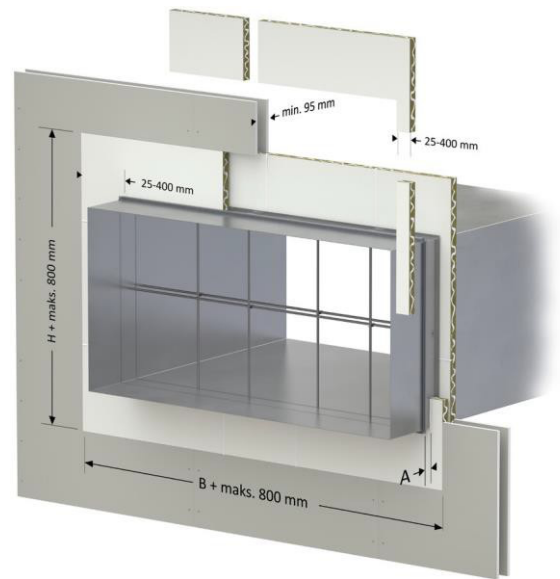
- A reinforced duct piece **MUST** be used for the outlet - Type: KAHGEN
- This is to prevent deformation in the event of a fire. The system solution is chosen without subsequent screwing of flanges or sectional steel, as this is often not possible in terms of space, and it reduces the tightness of the duct.

### Fireproof seal:

- Opening in construction:
  - 25-400 mm gap between duct and wall/deck
  - Plasterboard walls can be executed **WITHOUT** an internal steel profile around the outlet
- Advice on installation:
  - Can be performed from one side – However, the wall outlet is with a raised seam in the middle of the wall, which requires a slightly larger gap if fireproofing is to be carried out from 1 side.
  - If there is little room, it is recommended that the duct is run straight through the wall/deck, after which a fireproof seal is carried out where there is plenty of room in front of the duct end before the duct is run further.
- Fireproof seal:
  - Gaps are closed with 2 × 50 mm fire protection boards, which are made with staggered joints and cut as close as possible.
  - Apply fire sealant to board edges against the construction.
  - Before installing fire protection board no. 2, **ALL** joints must be sealed → Board joints and joints to duct and wall/deck
  - Fire protection board type: Altech PFP fire protection board
  - Fire sealant type: Altech PFP acrylic
- Attachment:
  - None

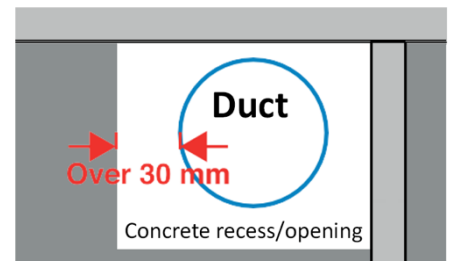
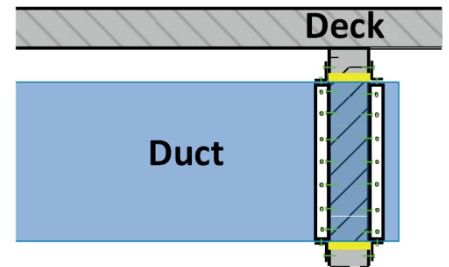
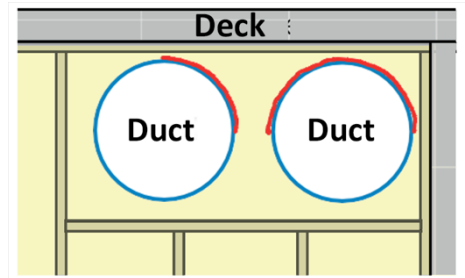
### Duct joint:

- Duct joint on ducts through wall or deck:
  - First duct joint 50 mm from wall or above deck.
  - The duct joint is carried out as a standard joint with an OS bearing with a C rail.
  - Set bolts in corners only necessary on fire-insulated ducts.



## Checking the buildability of the flange solution:

- Is there space to grout and screw flanges on both sides of wall/deck?
- The flange solution cannot be used for shaft walls, as grouting and flange mounting on the back of shaft walls are rarely possible.
- On rectangular ducts, one duct screw is required in the flange per 150 mm all round - on both sides of the wall/deck.
  - Is there room for the work to be conducted?
  - What are the requirements for the airtightness class?
- Flange solution cannot be used for larger holes, e.g. concrete recesses.



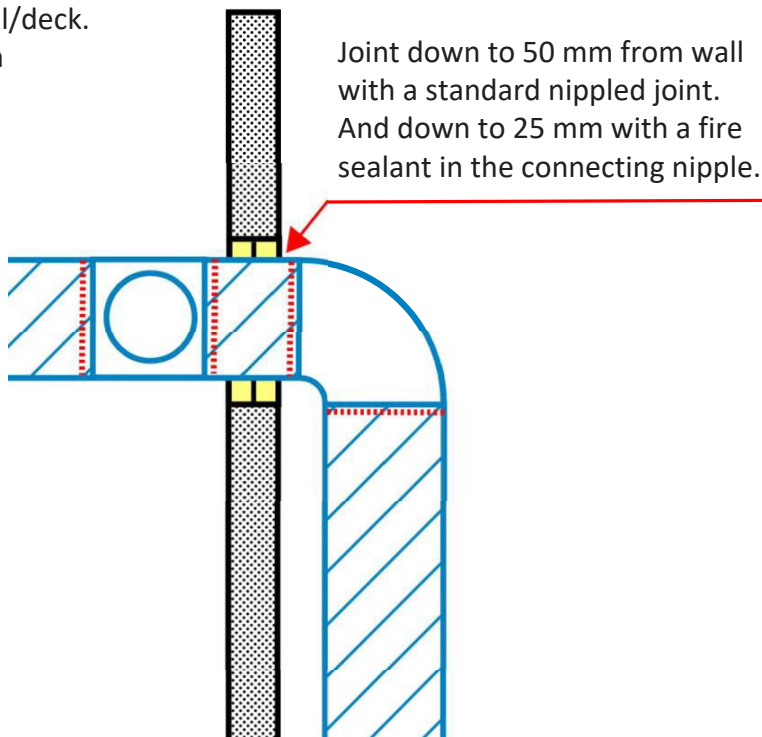
## Special advantages of Øland's system solutions:

- Flange - System solution with 2-30 mm gap:
  - The number of supports is reduced at the outlet. The outlet can be included as a support, since the duct is attached to the construction.
- Fire protection board - System solution with 25-400 mm gap
  - Can be used for square recesses
  - Buildable solution, in the case of fireproofing, can be carried out from the upper side of the deck or from one side of the wall before the duct is run further
  - Single-sided mounting allows use at shaft walls
  - Rectangular ducts are made with a reinforced duct outlet but without external reinforcements to be screwed on the duct.

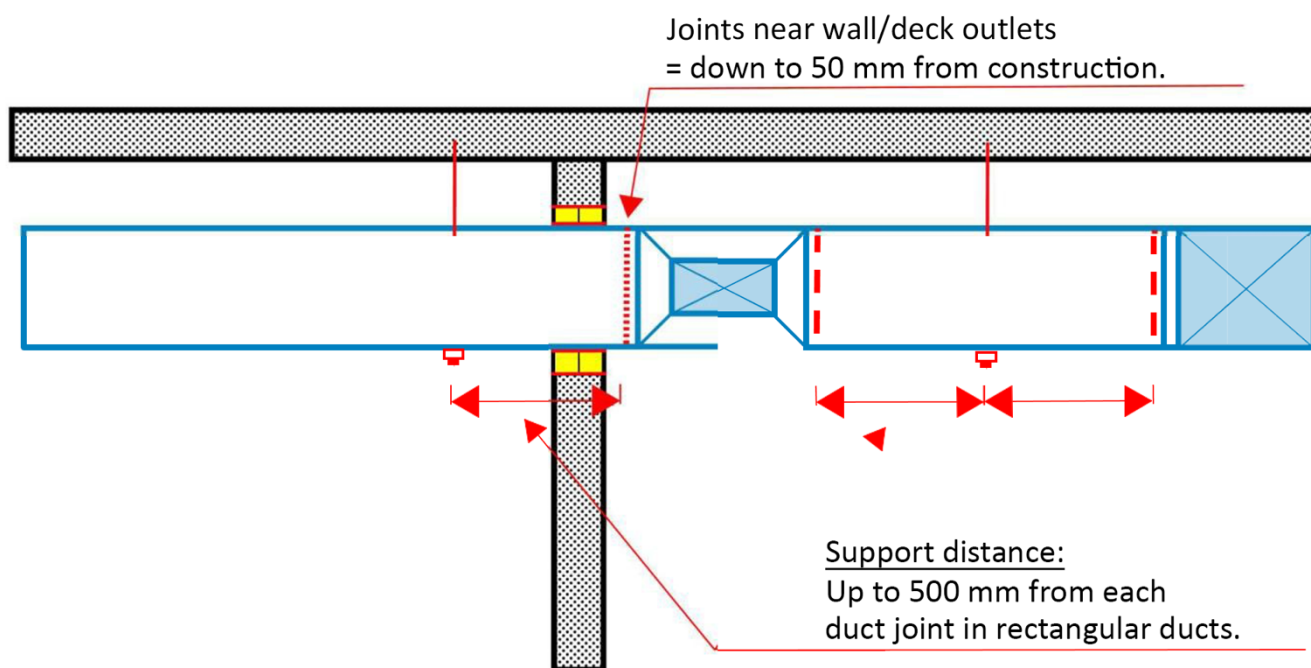


## Special advantages of Øland's system solutions:

- First duct joint:
  - o Circular ducts: down to 25 mm from wall/deck.
  - o Rectangular ducts: down to 50 mm from wall/deck.
 → Greater flexibility for duct design.



- Øland's ducts are approved without stricter requirements for supports right at each duct joint, but the minimum standards of DS 428 can be applied
  - Greater freedom for placement of supports, and if several joints are within 1.0 m, the number of supports can be reduced.



## Special advantages of Øland's system solutions:

- Øland's duct joints do not need both M8 bolts and nut joints in all four corners supplemented with sliding rails (C-rails) but can be done with sliding rails.
- However, fire-insulated ducts must always be fitted with M8 set bolts because the insulation manufacturers have tested the ducts fitted with set bolts.



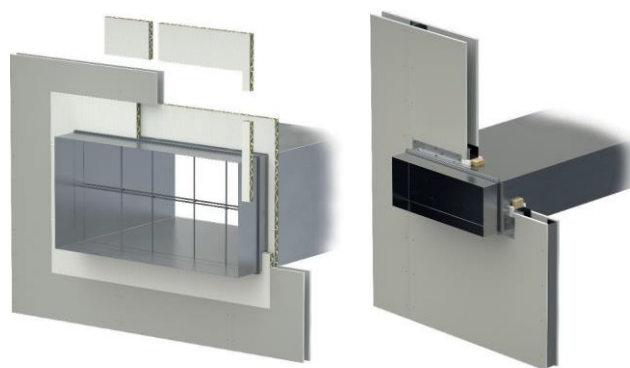
- Approval also covers the fitting of inspection hatches, type INS or LEM.
- Approval also includes the installation of plugs with Altech PFP fire-retardant acrylic joint.



## What type of fireproof seal is cheapest?



Indicative price comparison		Fire protection	Flange solution
Estimated from average net prices and estimated assembly time			Requires sufficient space for sealing and screwing on both sides of wall/deck
Circular Ø160	Opening in wall	220 × 220	Ø200
	Fire protection board: Altech PFP	20% of 1 board	-
	Insulation as backstop	-	2 × 0.7 m
	Fire sealant: Altech PFP acrylic	1/3 tube	1.5 tube
	Flanges on both sides: BLG	-	1 set
	Duct screws 4.2 × 13 mm	-	2 × 4 pcs.
	Wall screws 6.5 × 40 mm	-	2 × 4 pcs.
	Assembly time, hours	0.25	0.50
	Total Price Index	100%	244%
Circular Ø500	Opening in wall	550 × 550	Ø540
	Fire protection board: Altech PFP	1 board	-
	Insulation as backstop	-	2 × 1.7 m
	Fire sealant: Altech PFP acrylic	1/2 tube	3.5 tube
	Flanges on both sides: BLG	-	1 set
	Duct screws 4.2 × 13 mm	-	2 × 6 pcs.
	Wall screws 6.5 × 40 mm	-	2 × 4 pcs.
	Assembly time, hours	0.50	0.75
	Total Price Index	100%	153%
Circular Ø1000	Opening in wall	1100 × 1100	Ø1040
	Fire protection board: Altech PFP	4 boards	-
	Insulation as backstop	-	2 × 3.3 m
	Fire sealant: Altech PFP acrylic	1 tube	6.5 tube
	Flanges on both sides: BLG	-	1 set
	Duct screws 4.2 × 13 mm	-	2 × 8 pcs.
	Wall screws 6.5 × 40 mm	-	2 × 4 pcs.
	Assembly time, hours	1.00	1.25
	Total Price Index	100%	102%



Indicative price comparison	Fire protection board solution	Flange solution
Estimated from average net prices and estimated assembly time		Requires sufficient space for sealing and screwing on both sides of wall/deck

Rectangular 500 × 250	Opening in wall	600 × 350	550 × 300
	Fire protection board: Altech PFP Insulation as backstop Fire sealant: Altech PFP acrylic	50% of 1 board - 1/2 tube	- 2 × 1.7 m 4.5 tube
	Reinforced duct outlet Flanges on both sides: BVA/BVB Duct screws 4.2 × 13 mm Wall screws 6.5 × 40 mm	1 KA-GEN - - -	- 1 set 2 × 12 pcs. 2 × 12 pcs.
	Assembly time, hours	0.50	2.00
	<b>Total Price Index</b>	<b>100%</b>	<b>263%</b>

Rectangular 1000 × 500	Opening in wall	1100 × 600	1050 × 550
	Fire protection board: Altech PFP Insulation as backstop Fire sealant: Altech PFP acrylic	70% of 1 board - 1 tube	- 2 × 3.2 m 8 tubes
	Reinforced duct outlet Flanges on both sides: BVA/BVB Duct screws 4.2 × 13 mm Wall screws 6.5 × 40 mm	1 KA-GEN - - -	- 1 set 2 × 22 pcs. 2 × 22 pcs.
	Assembly time, hours	0.75	2.50
	<b>Total Price Index</b>	<b>100%</b>	<b>165%</b>

Rectangular 2000 × 1000	Opening in wall	2100 × 1100	2050 × 1050
	Fire protection board: Altech PFP Insulation as backstop Fire sealant: Altech PFP acrylic	1.2 board - 2 tubes	- 2 × 6.2 m 15 tubes
	Reinforced duct outlet Flanges on both sides: BVA/BVB Duct screws 4.2 × 13 mm Wall screws 6.5 × 40 mm	1 KA-GEN - - -	- 1 set 2 × 42 pcs. 2 × 42 pcs.
	Assembly time, hours	1.00	3.50
	<b>Total Price Index</b>	<b>100%</b>	<b>185%</b>

## Supplier's declaration

*The supplier's declaration is based on the fact that our duct system has been fire tested at:*  
*DBI - The Danish Institute of Fire and Security Technology*

### The following DBI reports are the basis for these installation instructions:

DBI Fire Test Report	PGA11582A	Vertical circular duct	Test date 18/02/2020
DBI Fire Test Report	PGA11584A	Vertical rectangular duct	Test date 19/02/2020
DBI Fire Test Report	PGA11583A	Horizontal rectangular duct	Test date 21/02/2020
DBI Fire Test Report	PGA11759A	Horizontal circular duct	Test date 22/06/2020
DBI Fire Test Report	PGA11838A	Horizontal rectangular duct	Test date 07/12/2020
DBI Classification Report	PCA10675A	Rectangular duct system	Report date 08/06/2021
DBI Classification Report	PCA10708A	Circular duct system	Report date 11/05/2021
DBI Assessment Report	PHA11455A	Circular duct system	Report date 08/06/2021
DBI Assessment Report	PHA11416A	Rectangular duct system	Report date 08/06/2021
DBI Fire Test Report	PGA12013A	Vertical rectangular duct	Test date 11/10/2021
DBI Fire Test Report	PGA12014A	Horizontal circular duct	Test date 08/11/2021
DBI Fire Test Report	PGA12081A	Horizontal rectangular duct	Test date 17/02/2022
DBI Fire Test Report	PGA12082A	Vertical circular duct	Test date 18/02/2022

Signed on behalf of the manufacturer of:



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Development Manager

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