

C-C120

Backdraft smoke closure

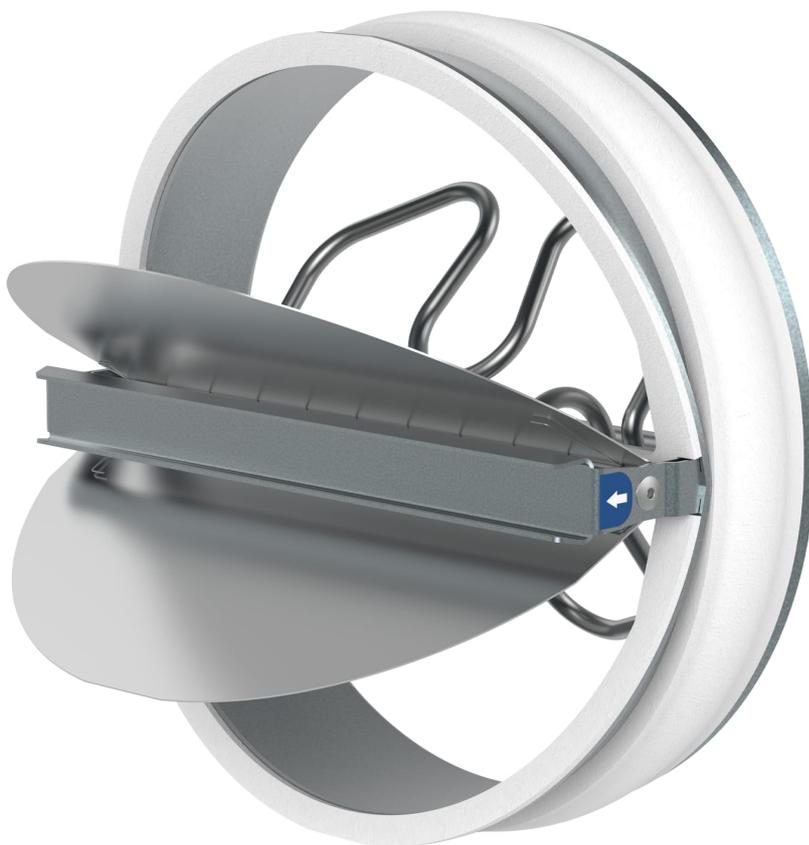


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Description

Protection against smoke spread, cold or hot smoke, occurs by closing the backflow dampers in the event of a change in airflow direction and preventing air and fire gases from spreading through the ventilation system. C-C120 is tested for ES criteria according to EN 1366-2. It closes instantly when the airflow is interrupted. It is fully self-actuated without any external input, thanks to balanced blades. This ensures reliable and economical smoke protection. It also stays closed in the event of a fire, which generates an overpressure in the affected zone. To improve the accessibility for inspection of the backflow closure a flexible duct coupling can be used, or accessory for inspection.

Highlights

- Performance of E120S
- Cold-smoke prevention
- Versatile - Any installation position
- Stable performance, no oscillation (even in the cooling phase)
- Low sound power level and pressure drop
- Ecological - No power needed for activation

Fire Resistivity

C-C120 smoke tight closure follows similar standards as Fire dampers. It is tested according to EN 1366-2:2015. As this product has not yet been covered by a harmonized standard, it follows classification according to EN 13501-3 + A1:2009.

- Smoke tightness in operation following EN 13501-3 + A1:2009 at ambient temperature **S** (follow Product Handling & Application section)
- Standard supporting construction in accordance with EN 1366-2:2015: up to **E120 (ve ho)S** (follow Installation section)

Design

C-C120 closures have casings made from galvanized sheet metal. Blades are from stainless steel. On the perimeter intumescent seal is used, that expands in a fire situation. It is covered by glass-fiber material for better resistance and installation. Same material is used under the blades as a dampening stopper.

Activation Types

- The closure is fully self-actuating and does not require any airflow or pressure to close. The blades are balanced to close at any position.

Material Composition

The product contains galvanized steel, stainless steel, graphite fire-proof laminate, AES wool. These are processed in accordance with local regulations. The product contains no hazardous substances.

List of Installation Accessories

- CBR-C2: Set of cover boards mandatory for dry installation

Detailed information about other accessories is available in accessories section.

Technical Parameters

Durability Test

• 10 000 cycles

• No change of the necessary properties.

Fire Testing Pressure

Under-pressure up to 300 Pa

Safety Position

Closed - The closure closes via balance between spring and counterweights on blades

Possible Installations

Refer to the "Installation" and "Handling" sections

Direction of the Airflow

One direction marked with arrow on the product

Permitted air Velocity

max. 6 m/s

Side with Fire Protection

Fire acted from the side where the blades are located, opposite to direction of airflow marked on product with arrow

Activation Temperature

NPD

Environmental Conditions for Operation

Minimum temperature:

-20 °C

Maximum temperature:

70 °C

Relative humidity:

Less than 95% (3K5, EN 60721-3-3)

Product protected from:

Weather, rain and water from other sources

Condensation:

Cannot form on the product

Icing:

Cannot form on the product

Open/Closed indication

No indication

Closing/Opening time

Approximately 1 second

Access for Inspection

The inspection is possible through duct accessories, or air terminal device

Maintenance

Maintenance is not necessary. A dry-cleaning procedure can be mandatory in some countries or when needed.

Inspections

See "Operation manual" section. Obey local laws for the minimum time between inspection procedures. It is not specified by harmonized standard. For correct operation the recommended maximum interval between inspections is 12 months

Allowed pressure

300 Pa

Tightness of the Housing (EN 1751)

Tightness class is equal to duct tightness. Blade tightness class 2

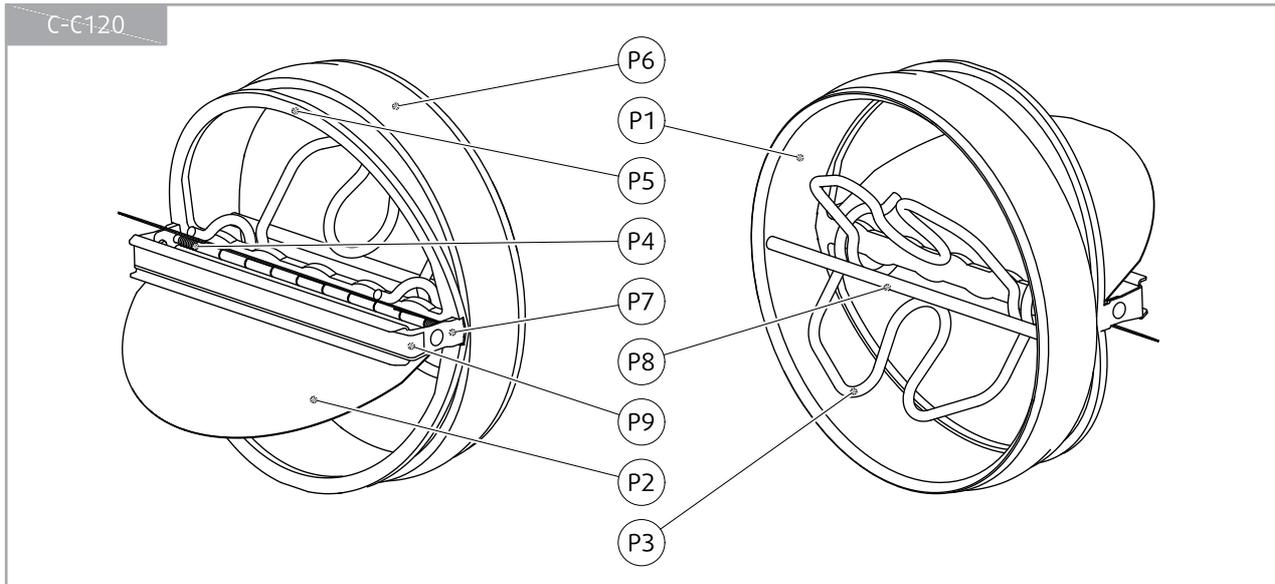
Transportation and Storage

The temperature range must be: -20...70 °C

Make sure that the blade is in the closed position during transportation and protected from weather disruptions. The storage of the product must be indoors.

Product Parts

The C-C120 packaging also includes additional product label, that must be attached to the place, where the C-C120 is installed (e.g. on duct).



Legend:

- P1** - Casing
- P2** - Blades
- P3** - Blade weights
- P4** - Spring
- P5** - Blades sealing
- P6** - Gasket
- P7** - Holder
- P8** - Handle
- P9** - Product label with arrow indicating air flow direction

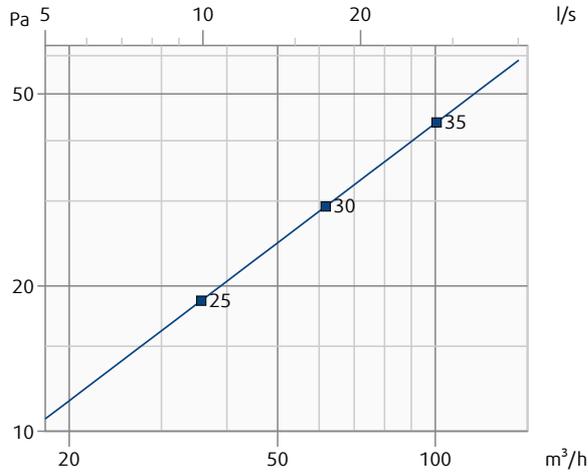
Diagrams

Accessory CBR-C2 and fire resistance class do not affect the pressure drop and A-weighted total discharged sound power level.

The pressure drop and A-weighted total discharged sound power level depend on the nominal diameter of the C-C120 and air flow volume at different duct pressures.

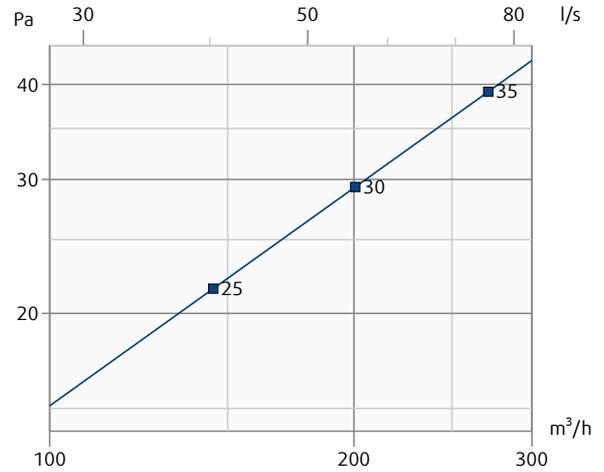
C-C120-100

Pressure drop & A-weighted sound power level in dB(A)



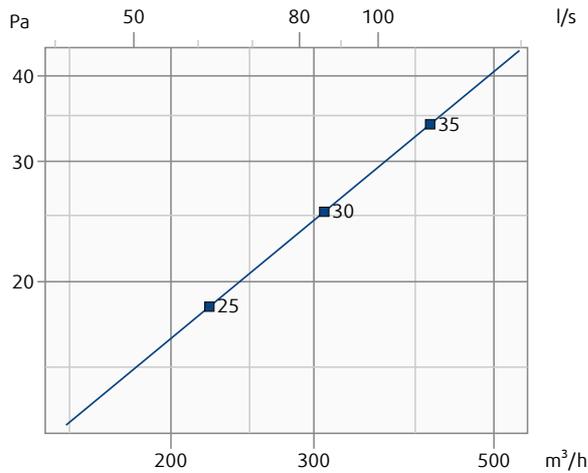
C-C120-125

Pressure drop & A-weighted sound power level in dB(A)



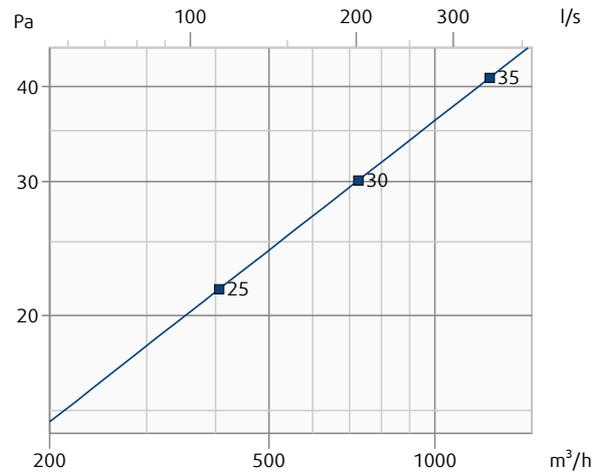
C-C120-160

Pressure drop & A-weighted sound power level in dB(A)



C-C120-200

Pressure drop & A-weighted sound power level in dB(A)



Legend:

p_s (Pa) - Pressure drop

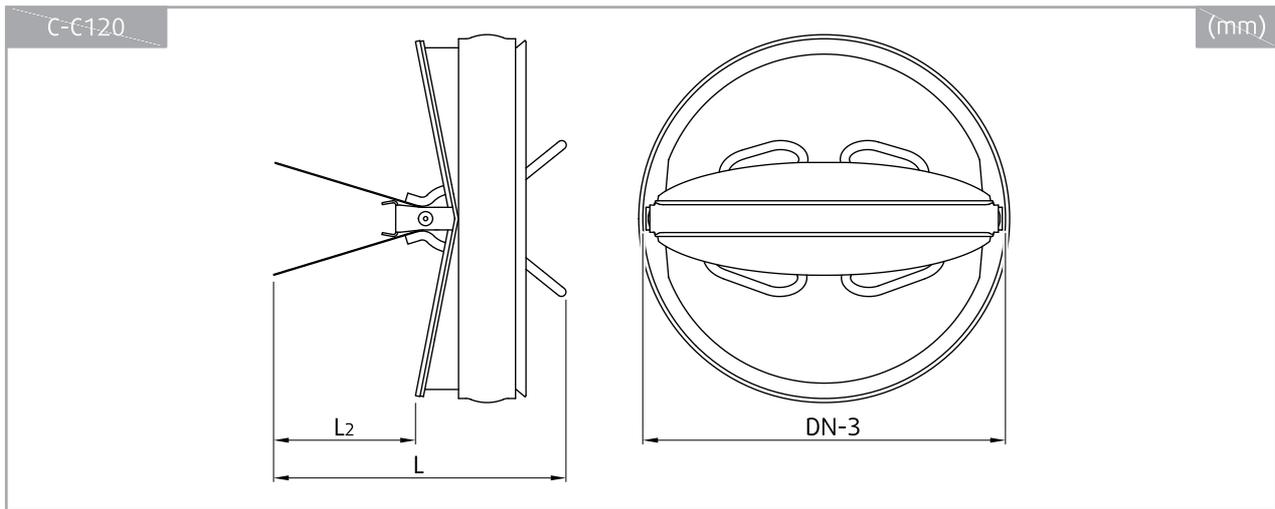
q_v (m³/h), (l/s) - Air flow volume

$\pm\Delta$ (%) - Deviation from measured value

L_{wa} (dB(A)) - A-weighted total sound power level

v (m/s) - Air face velocity

Dimensions



Dimensions and Weights of C-C120

DN	L	L ₂	m
	mm		kg
100	88	44	0,2
125	100	50	0,3
160	136	68	0,4
200	172	86	0,5

Ordering code



DN

Dimension, \varnothing DN:

100, 125, 160, 200 mm

Example of the C-C120 Smoke Tight Closure Ordering Code

C-C120-100

Smoke tight closure, nominal diameter 100 mm

Product Handling & Application

Warning

Some parts can have sharp edges. To prevent injuries, use gloves when you install or move the product.

While manipulating with the product, pay attention to not pull the product by its blades or counter-weights (P3). For pulling and inserting the product use holder (P7) or handle (P8).

Please follow the graphic instructions for product application. To perform the filling please follow the instructions at the "Installation rules" for corresponding installation type.

1. Unpack the closure. The package contains production label, instructions and additional label for duct in the place of installation.

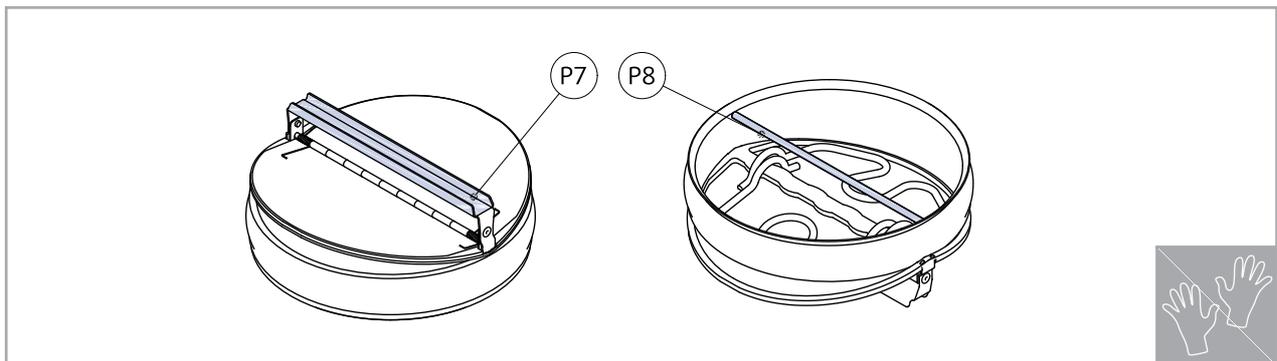
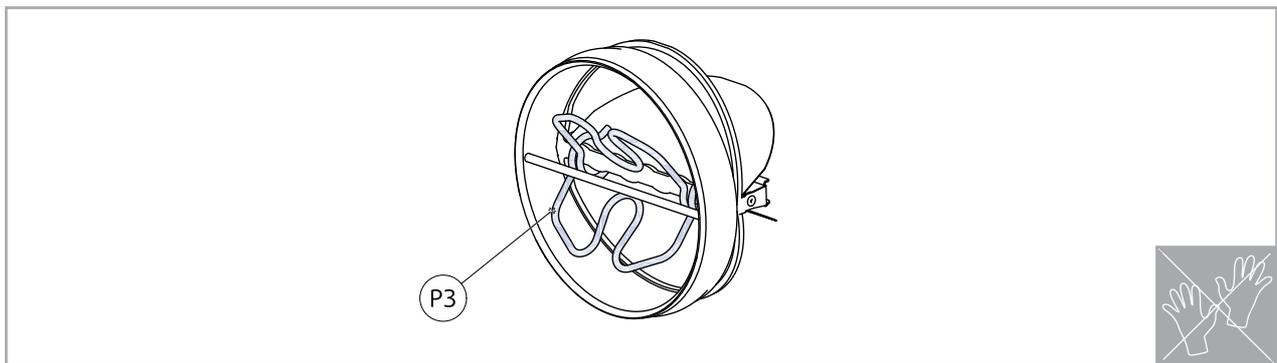
2. Perform product's inspection and functionality check (see "Operation Manual" section).

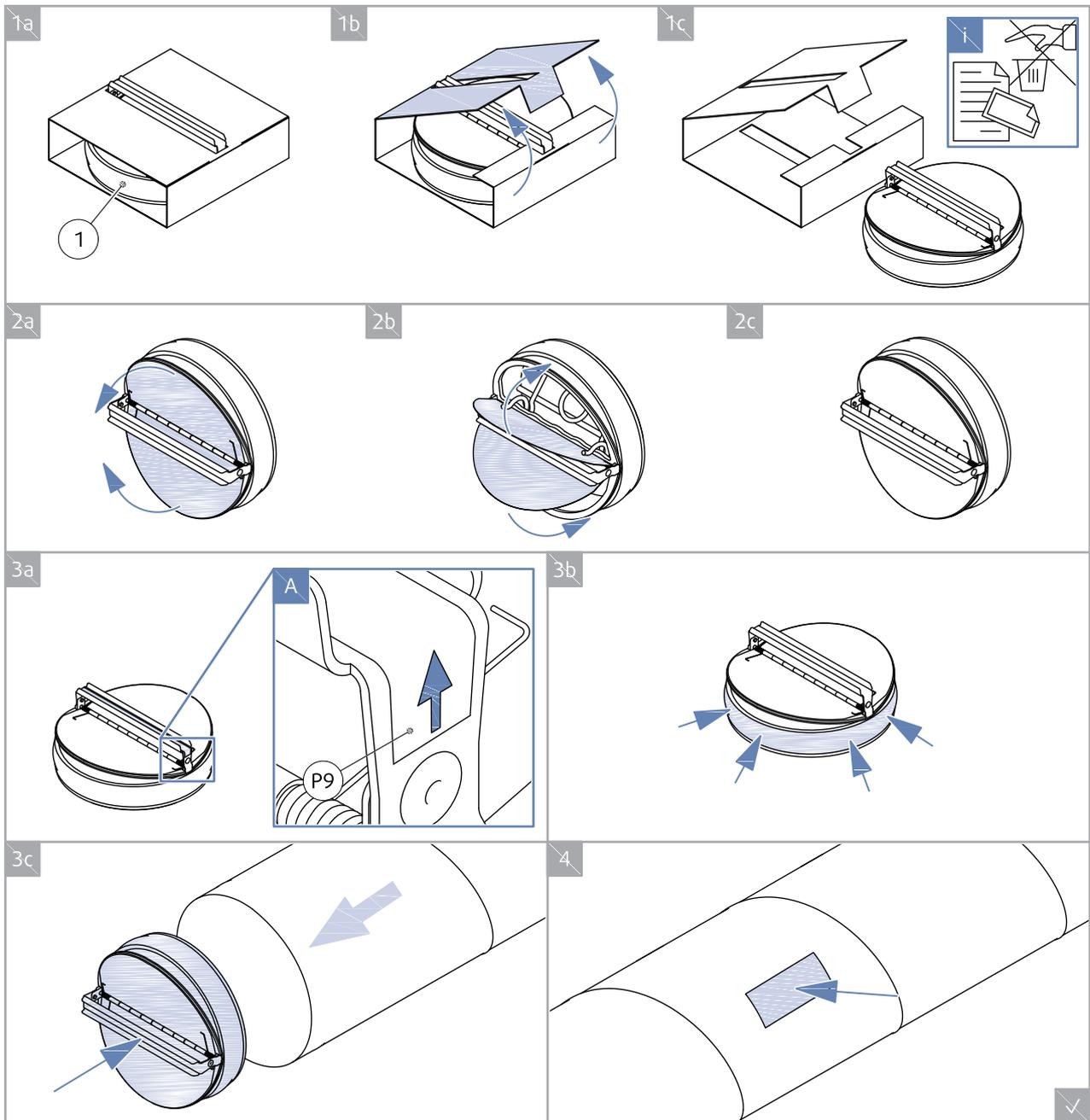
3a. Pay attention to place the product in the right direction - follow the arrow label on the product indicating the air flow.

3b. For easier insertion slightly push the insulation material, when fitting the product into duct. Pay attention not to damage the insulation material.

3c. Insert the closure into duct (or accessory). Use the handles designed for manipulation. Do not use the counter-weights.

4. Add the additional label on the place of installation.





Legend for Product Handling:

P3 - Blades weights

P7 - Holder

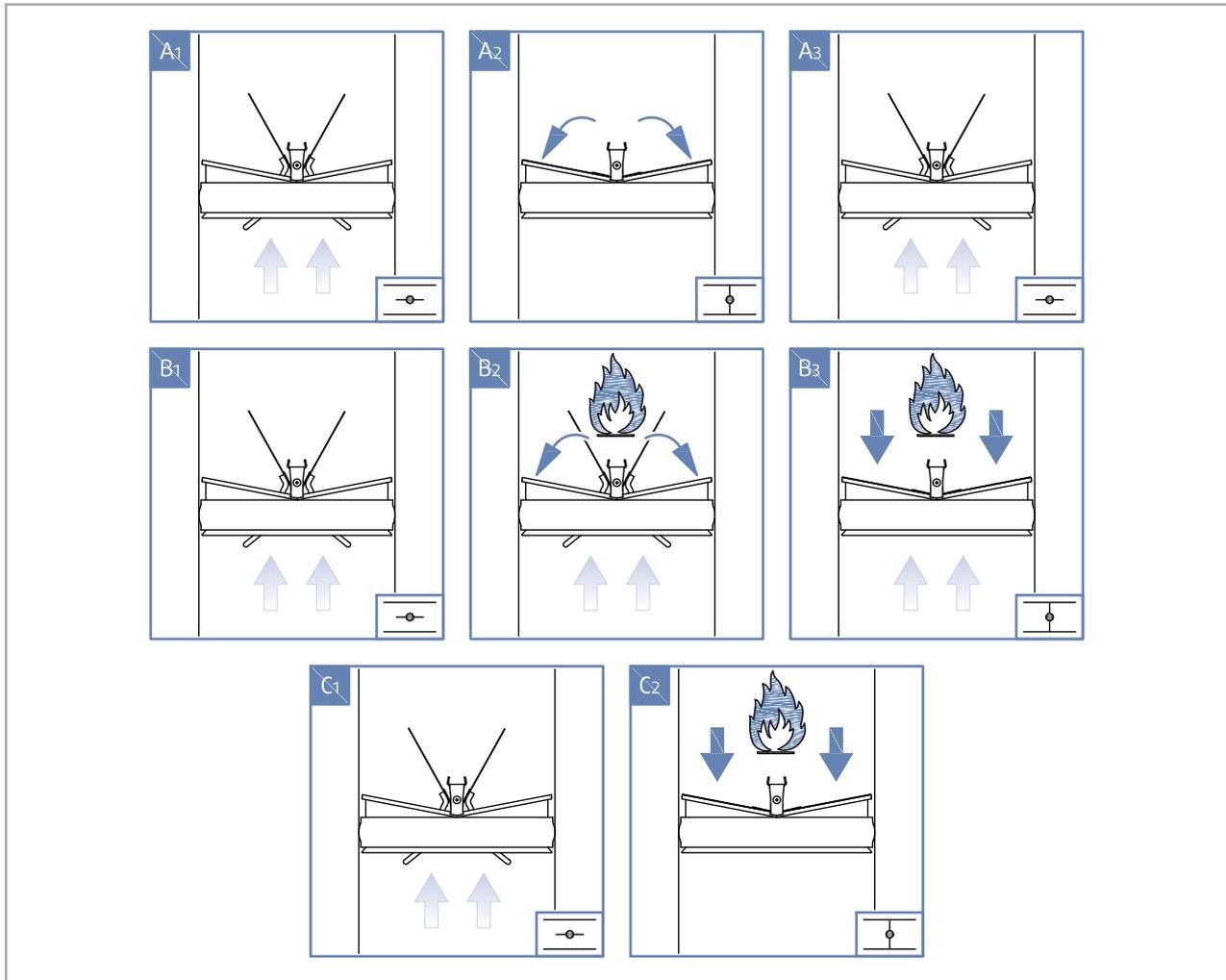
P8 - Handle

P9 - Product label with arrow indicating air flow direction

Functionality

The ventilation system installations must be designed so that satisfactory protection against the spread of fire gases between fire compartments is obtained.

This can be achieved by installing backflow protection on all supply and/or extract air ducts into each fire cell and/or designing the extract air system so that all the fire gases that are pushed into the duct system, duct fire flow, can be evacuated out to the open air without spreading to any other fire compartments.

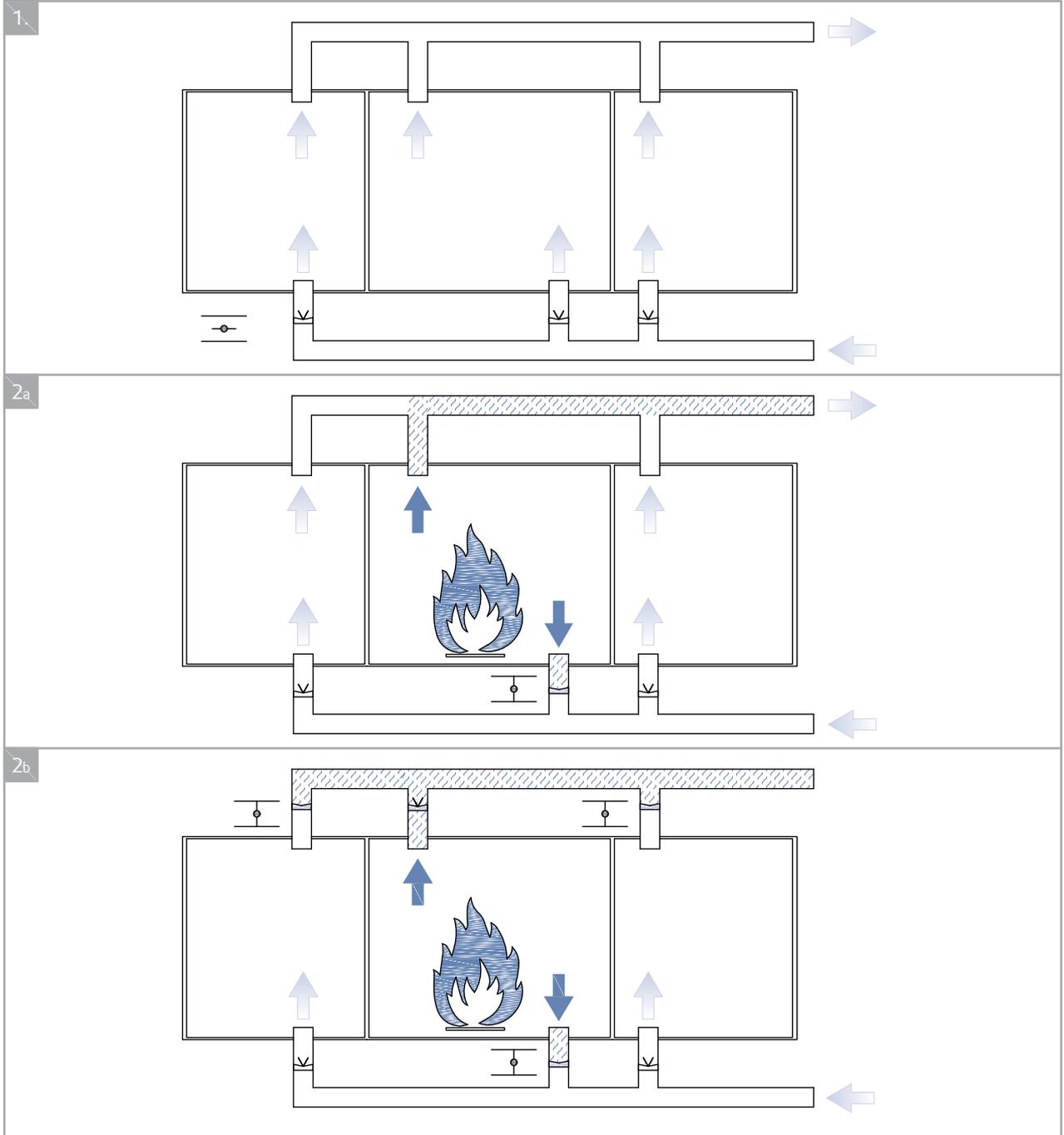


The closure protects as follows:

A The airflow in the system stops. The blades close as a reaction to changed conditions due to balanced blades.

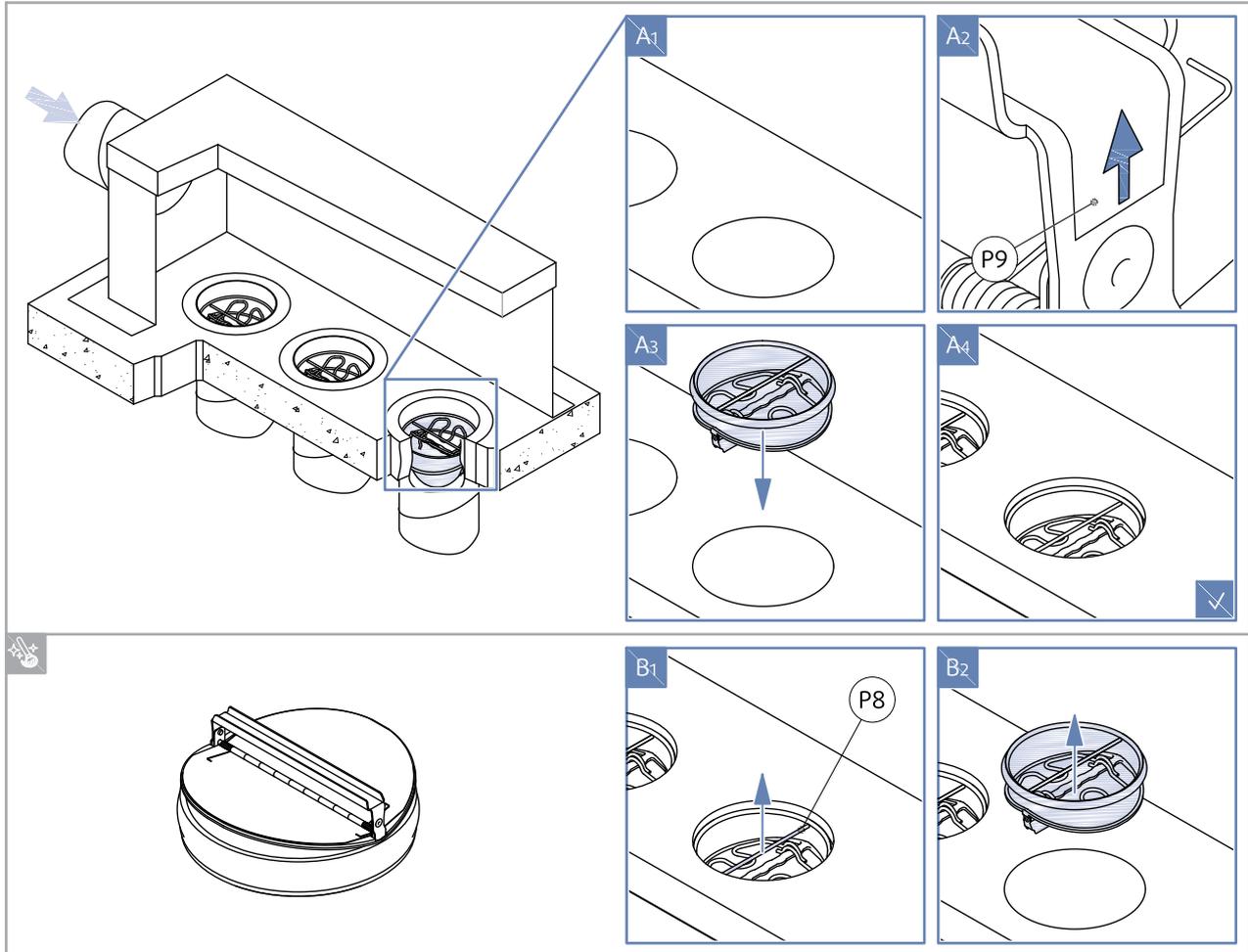
B The air is flowing in the system. Fire creates an overpressure, which surpasses the pressure of the airflow in the system. The blades close as a reaction to changed conditions due to fire-induced pressure rise.

C The airflow in the system is cut. Fire creates an overpressure. The blades close as a reaction to changed conditions due to balanced blades and fire-induced pressure rise.



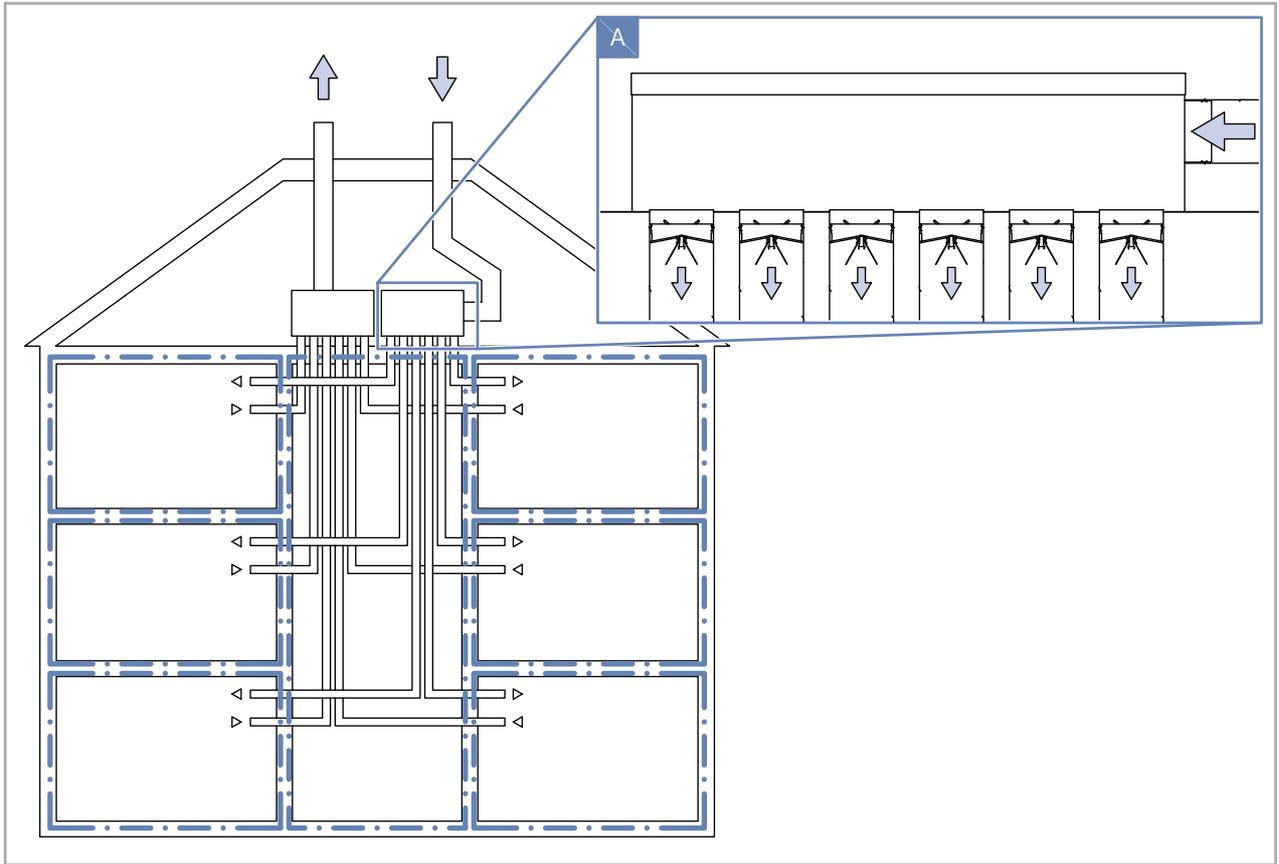
Application

Protection against smoke spread, cold or hot smoke, occurs by closing of blades in the event of changed pressure conditions, thus preventing air and fire gases from spreading through the ventilation system, supply or extract. The closure closes instantly when the airflow is interrupted. It also stays closed in the event of a fire, which generates an overpressure in the affected zone. In case the supply or extract systems are not in operation the closure is closed until air starts to flow through the system.



The extract air system is dimensioned to be able to extract the fire gases that are sucked or pushed into the ductwork without the fire gases spreading to other fire compartments. To achieve this, the ventilation system must be in operation before and throughout the fire process.

The closure is fully self-actuated without any external input, thanks to balanced blades, so it doesn't need a triggering device. In addition, it can be mounted at any installation position, vertical or horizontal. It is designed to withstand high temperatures, with parameters tested according to the same criteria as fire dampers. The closure passed installations inside and outside the fire cell, both wall and ceiling, corresponding to E120S classification. For detailed information see the Installation section.



Legend for Product Application:

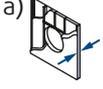
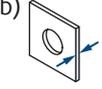
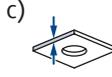
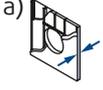
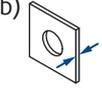
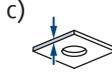
P8 - Handle

P9 - Product label with arrow indicating air flow direction

A - Insertion

B - Removal

Installation

 Wet	C-C120	E120 (v _e) S	 $\geq 100 \text{ mm}$	 $\geq 100 \text{ mm}$	 360°
		E120 (h _o) S	 $\geq 100 \text{ mm}$		
 Dry	C-C120	E120 (v _e) S	 $\geq 100 \text{ mm}$	 $\geq 100 \text{ mm}$	 360°
		E120 (h _o) S	 $\geq 100 \text{ mm}$		

Notes:

1. Wet - Wet Installation, Using Plaster/Mortar/Concrete Filling

2. Dry - Dry Installation, Using Mineral Wool and Coverplates

a) - Flexible (plasterboard) wall

b) - Concrete/masonry/cellular concrete (rigid) wall

c) - Concrete/cellular concrete (rigid) floor/ceiling

v_e - Vertical supporting construction (wall)

h_o - Horizontal supporting construction (floor/ceiling)

Installation Rules

- The C-C120 smoke tight closure is installed into the duct.
- The duct that holds the closure must be supported or hung in such a way that the crossing does not carry its weight. The crossing must not support any part of the surrounding construction or wall which could cause damage and consequent system failure.
- According to the standard EN 1366-2, the distance between ducts that hold C-C120 or between other objects that cross the supporting construction must be at least 200 mm.
- The distance between the wall/ceiling and the duct that holds C-C120 must be at least 75 mm.
- The gap in the installation opening between the duct and the wall/ceiling can be increased by up to 50% of the gap area.
- The gap in the installation opening between the duct and the wall/ceiling can be decreased to the smallest amount possible that still provides sufficient space for the installation of the seal.
- C-C120 closures can be installed with the blade axis in a horizontal position or a vertical position.
- List of all permitted installation methods is provided in SystemairDESIGN or in the HandBook of the product.

TO FULLFILL THE GIVEN CLASSIFICATION, PRODUCT MUST BE INSTALLED ACCORDING TO THE INSTALLATION INSTRUCTIONS PROVIDED BY THE MANUFACTURER!

Installation, Maintenance & Operation

Some parts can have sharp edges. To prevent injuries, use gloves when you install or move the product. While manipulating with the product, pay attention to not pull the product by its blades or counter-weights. For pulling and inserting the product it has handles (or bar) from both sides.

1. ensure that installation is performed by a trained person.
2. follow the written and depicted instructions closely.
3. perform inspection in accordance with inspection instructions.
4. check the product's functionality as per the chapter "Functionality Check" before you install the closure. This procedure prevents the installation of a product that has been damaged during transportation or handling.

Information about installation, maintenance and operation is available in the "HandBook_C-C120" document or more can be found at design.systemair.com.

Installation 1. Wet

Using Plaster/Mortar/Concrete Filling

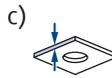
1. The supporting construction opening must be prepared as depicted in wall preparation. Opening surfaces must be even and cleaned off.
2. The opening dimension D1 is driven by the nominal dimensions of the closure with added clearance. The flexible wall opening must be reinforced as per the standards for plasterboard walls when a vertical beam was breached with the opening.
3. Insert the duct in the middle of the opening. The closure must remain accessible for installation and inspection. Additional product label provided in the packaging must be applied on the duct on the inspection side.

NOTE To align the duct in the opening, support the duct piece using underlay. To prevent leakage of the filling material, use paneling boards.

4. Fill in the area between the wall and the duct with plaster or mortar or concrete filling (F3).
5. Let the filling harden.
6. Check the closure's functionality.
7. Apply the included additional product label to the duct or wall next to the closure insertion.

Installation Distances

According to the standard EN 1366-2, the minimum distance from the wall or ceiling to the duct that holds the closure is 75 mm. For multiple crossings through a fire resistive wall the minimum distance between two ducts is 200 mm. This applies for distances between the duct and a nearby foreign object crossing the fire resistive wall.

 Wet	C-C120	E120 (v _e) S	 a) ≥ 100 mm	 b) ≥ 100 mm	 360°
		E120 (h _o) S	 c) ≥ 100 mm		

Notes:

1. Wet - Wet Installation, Using Plaster/Mortar/Concrete Filling

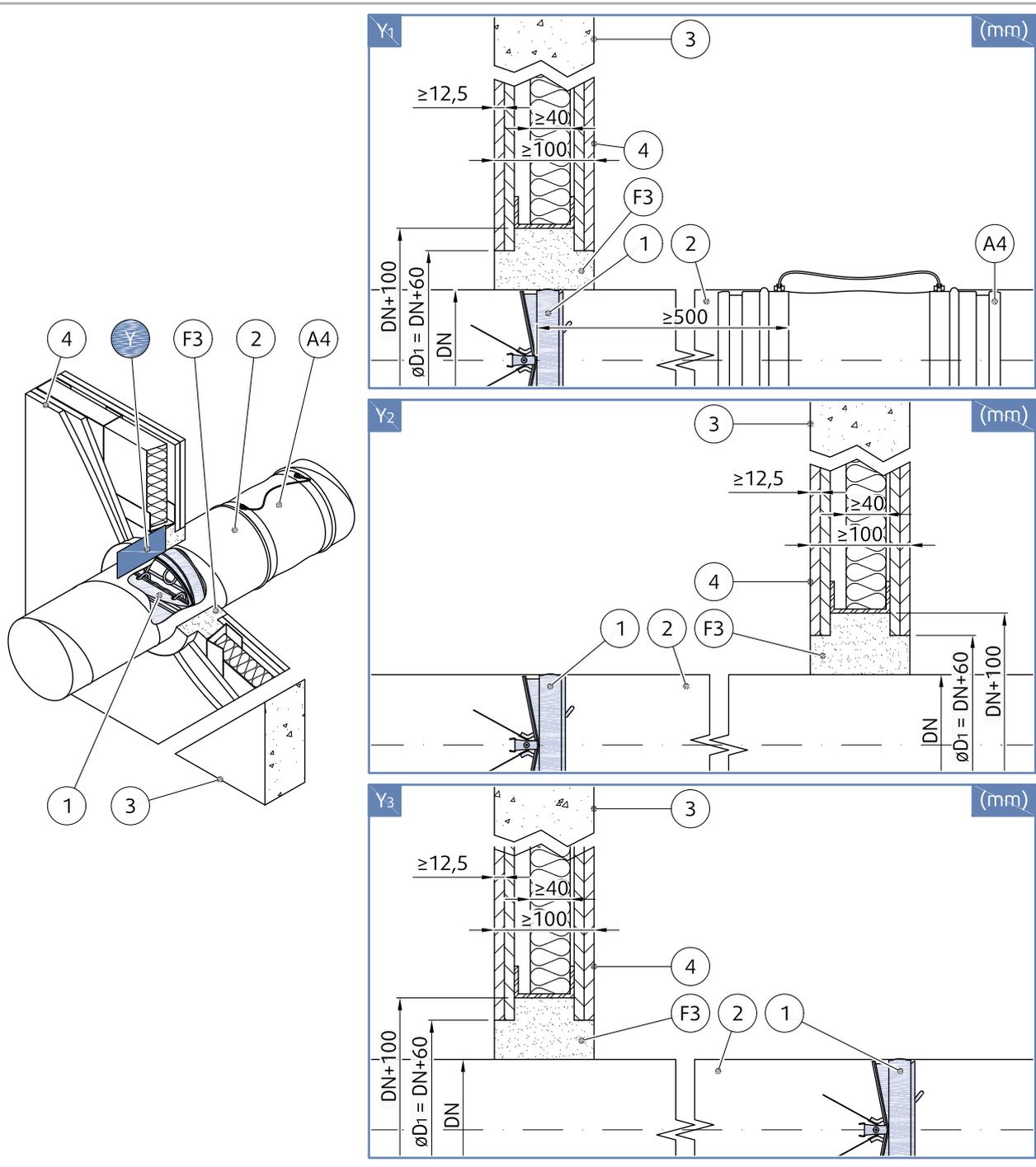
a) - Flexible (plasterboard) wall

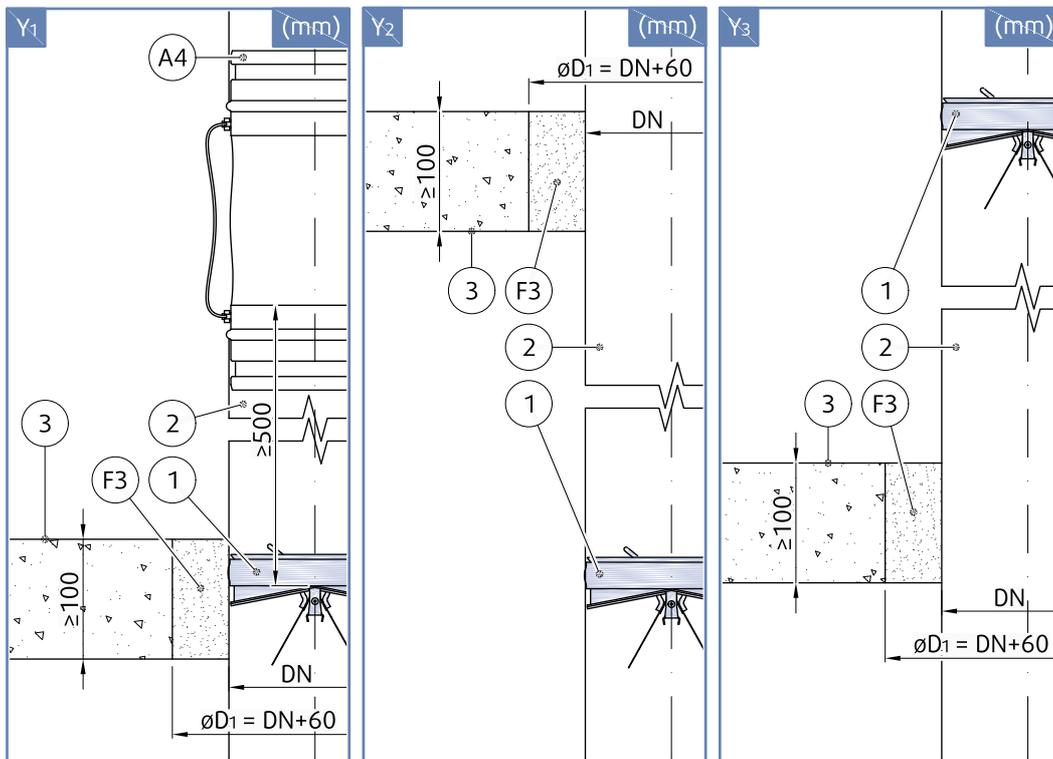
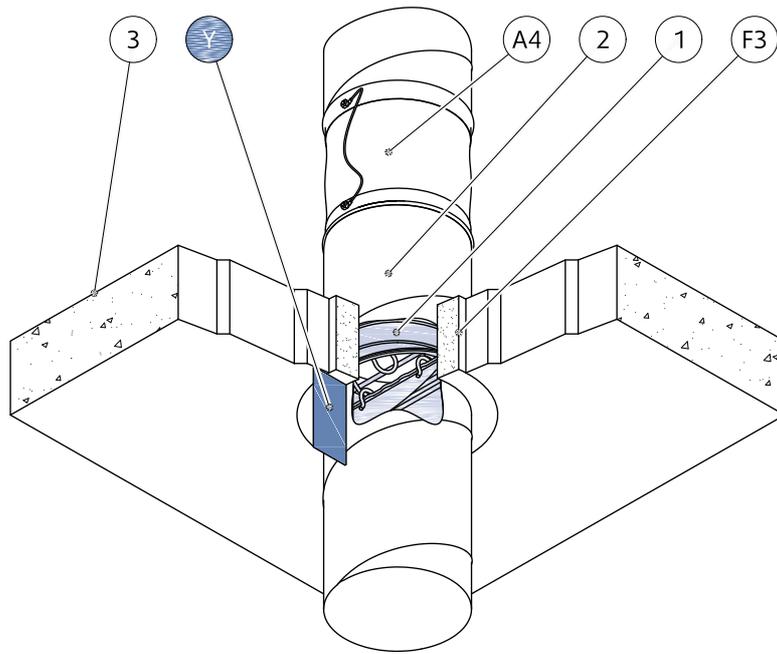
b) - Concrete/masonry/cellular concrete (rigid) wall

c) - Concrete/cellular concrete (rigid) floor/ceiling

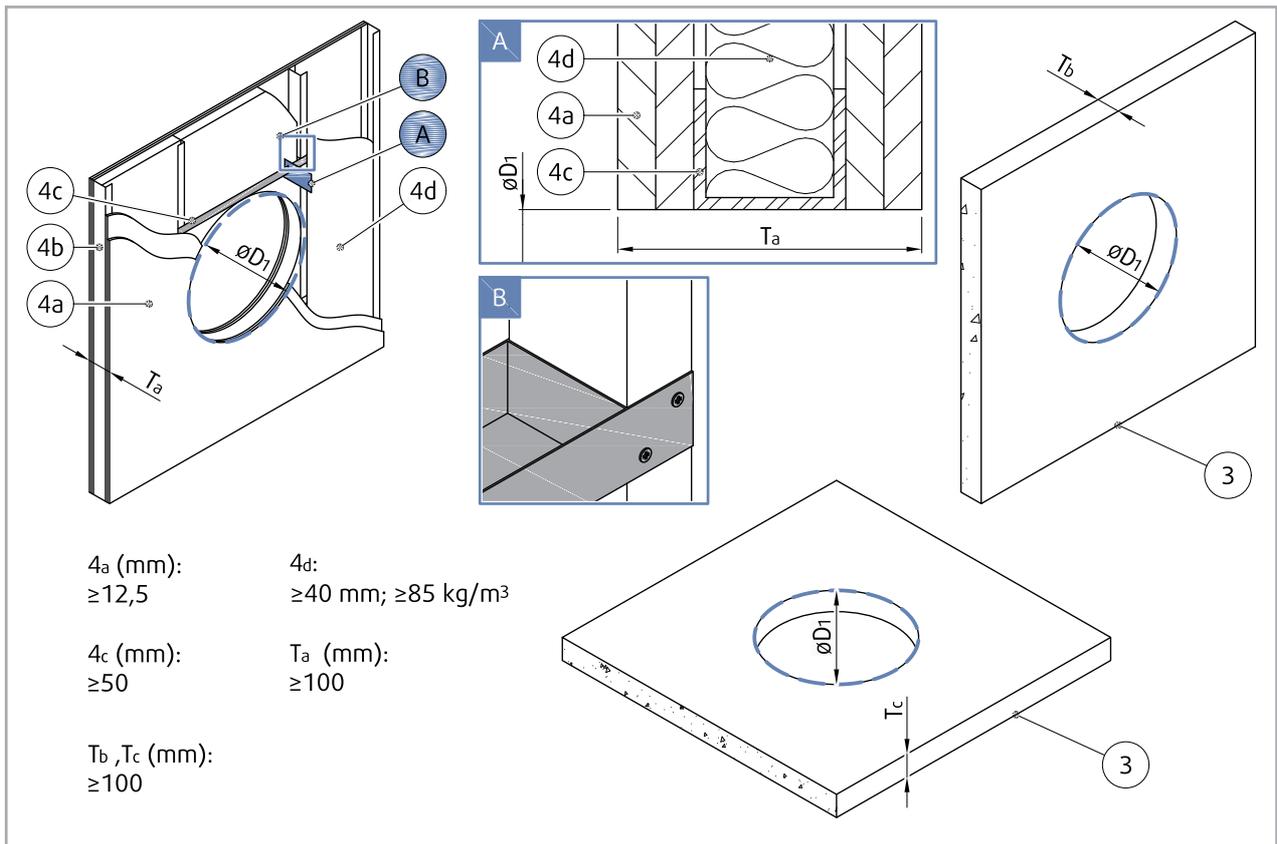
v_e - Vertical supporting construction (wall)

h_o - Horizontal supporting construction (floor/ceiling)

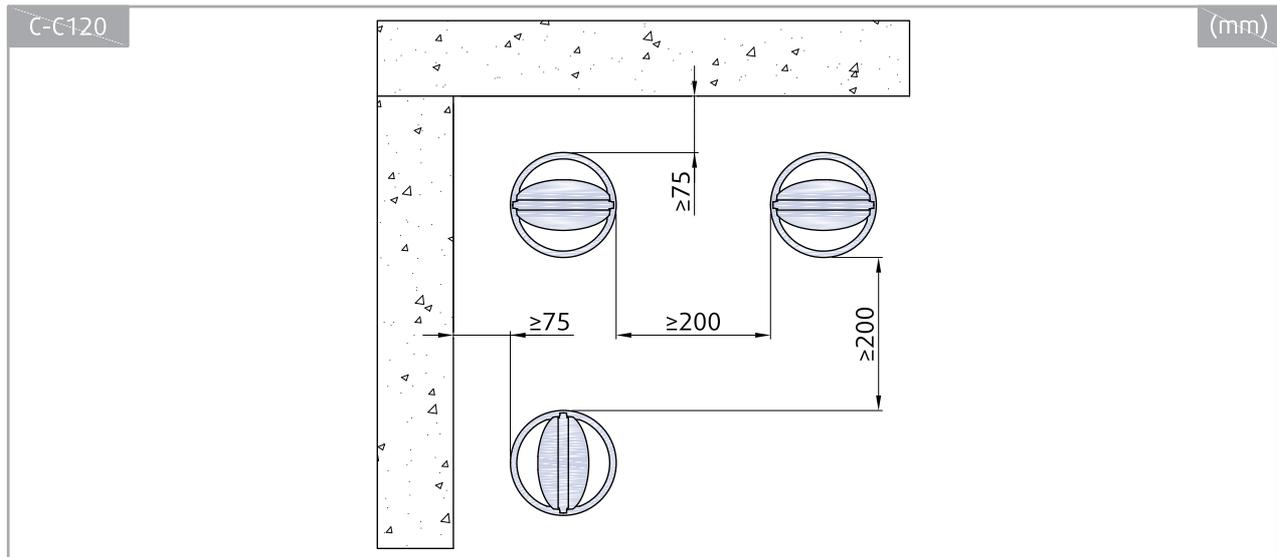




Opening and Wall and/or Ceiling Preparations



Closure Minimum Distances



Legend for Installation 1. Wet

- 1** - Smoke tight closure (C-C120)
- 2** - Connected metal ductwork
- 3** - Concrete/masonry/cellular concrete wall
- 4** - Flexible (plasterboard) wall
- 4a** - 2 layers of plasterboard fireproof plate type F, EN 520
- 4b** - Vertical CW – profiles
- 4c** - Horizontal UW – profiles
- 4d** - Mineral wool; thickness/cubic density see picture
- F3** - Plaster/mortar/concrete filling
- A4** - Flexible duct coupling FCR-C2
- Y, A, B** - Cutting planes

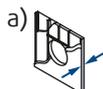
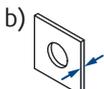
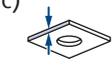
Installation 2. Dry

Using Mineral Wool and Coverplates

1. The supporting construction opening must be prepared as depicted in wall preparation. Opening surfaces must be even and cleaned off.
2. The opening dimension D1 is driven by the nominal dimensions of the closure with added clearance. The flexible wall opening must be reinforced as per the standards for plasterboard walls when a vertical beam was breached with the opening.
3. Insert the duct in the middle of the opening. The closure must remain accessible for installation and inspection. Additional product label provided in the packaging must be applied on the duct on the inspection side.
4. Fill in the area between the wall and the duct with mineral wool (F2) thoroughly but in such a way that will not deform the duct.
5. Close the gap between the duct and the mounting opening, use CBR-C2 cover boards (A1) with screws (F4) through pre-drilled holes.
6. All the gaps between the coverplates, between coverplates and the wall and between coverplates and the duct need to be filled with fire resistive coating (F3).
7. Check the closure's functionality.
8. Apply the included additional product label to the duct or wall next to the closure insertion.

Installation Distances

According to the standard EN 1366-2, the minimum distance from the wall or ceiling to the duct that holds the closure is 75 mm. For multiple crossings through a fire resistive wall the minimum distance between two ducts is 200 mm. This applies for distances between the duct and a nearby foreign object crossing the fire resistive wall.

 Dry	C-C120	E120 (v _e) S		 ≥ 100 mm	 360°
		E120 (h _o) S	 ≥ 100 mm		

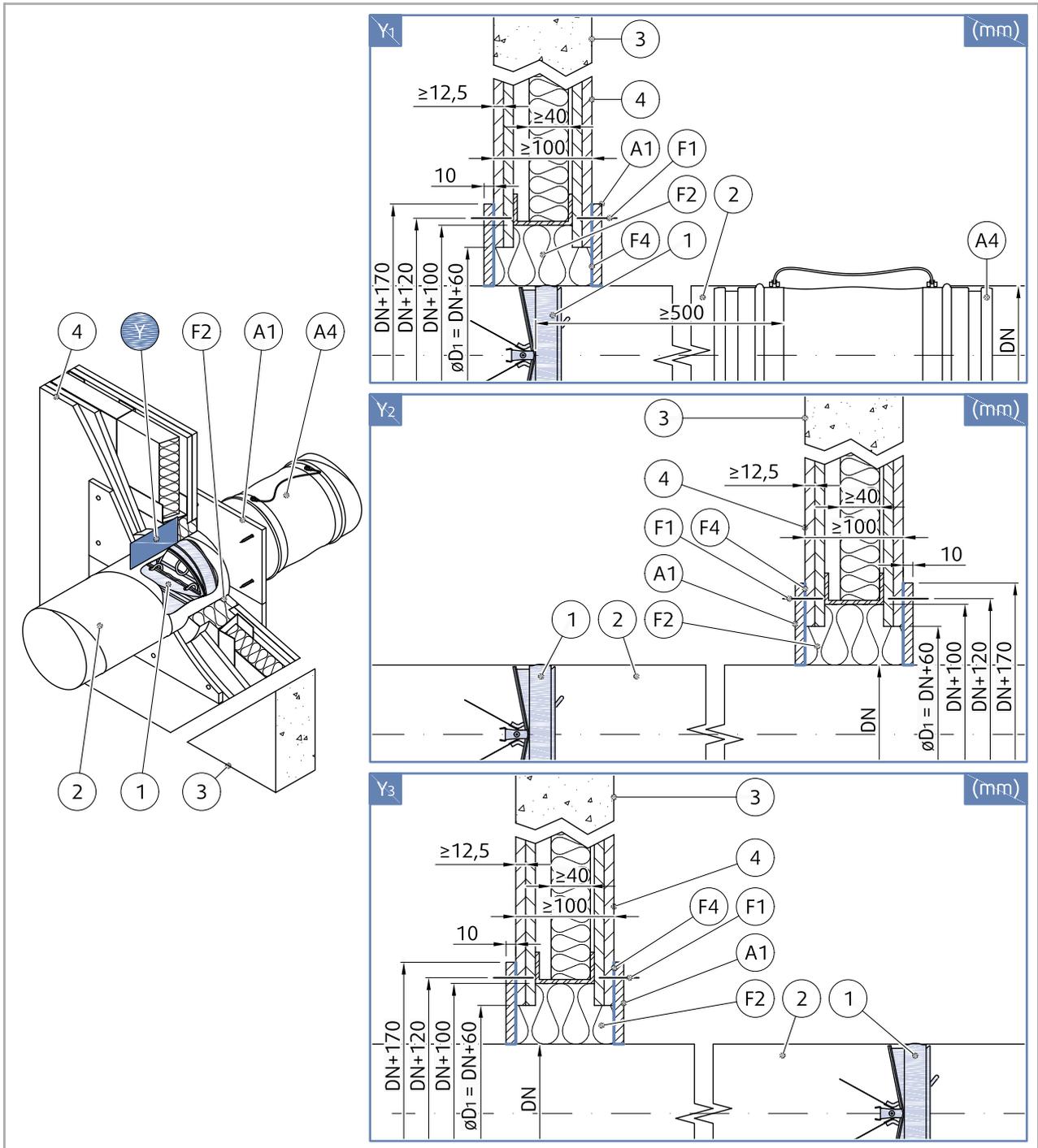
Notes:

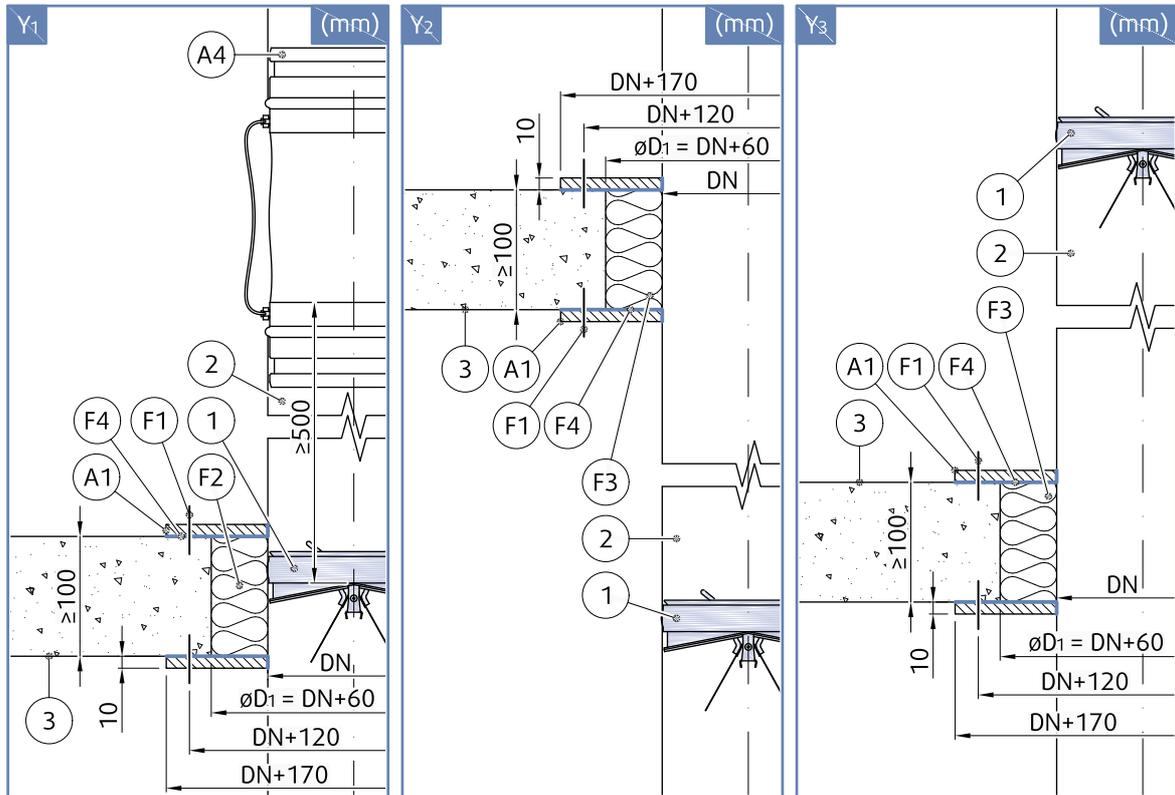
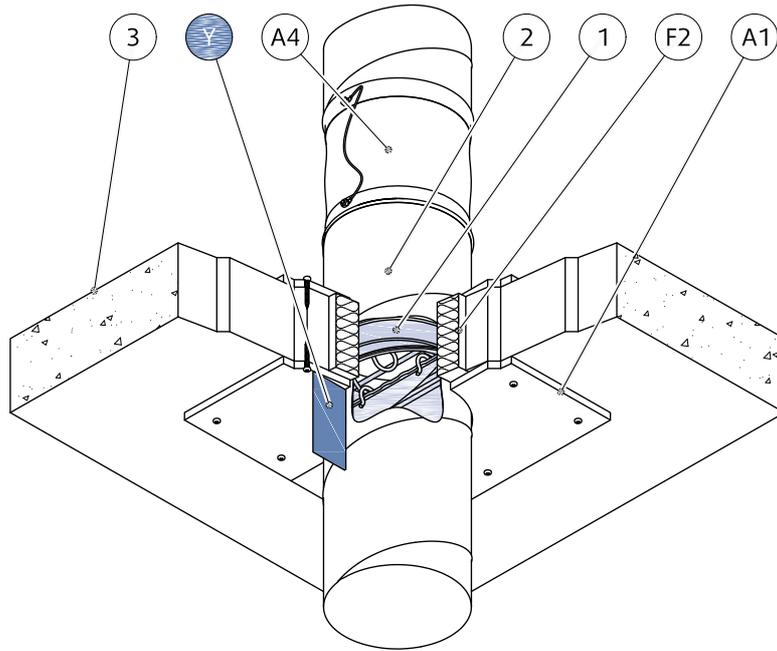
2. Dry - Dry Installation, Using Mineral Wool and Coverplates

a) - Flexible (plasterboard) wall

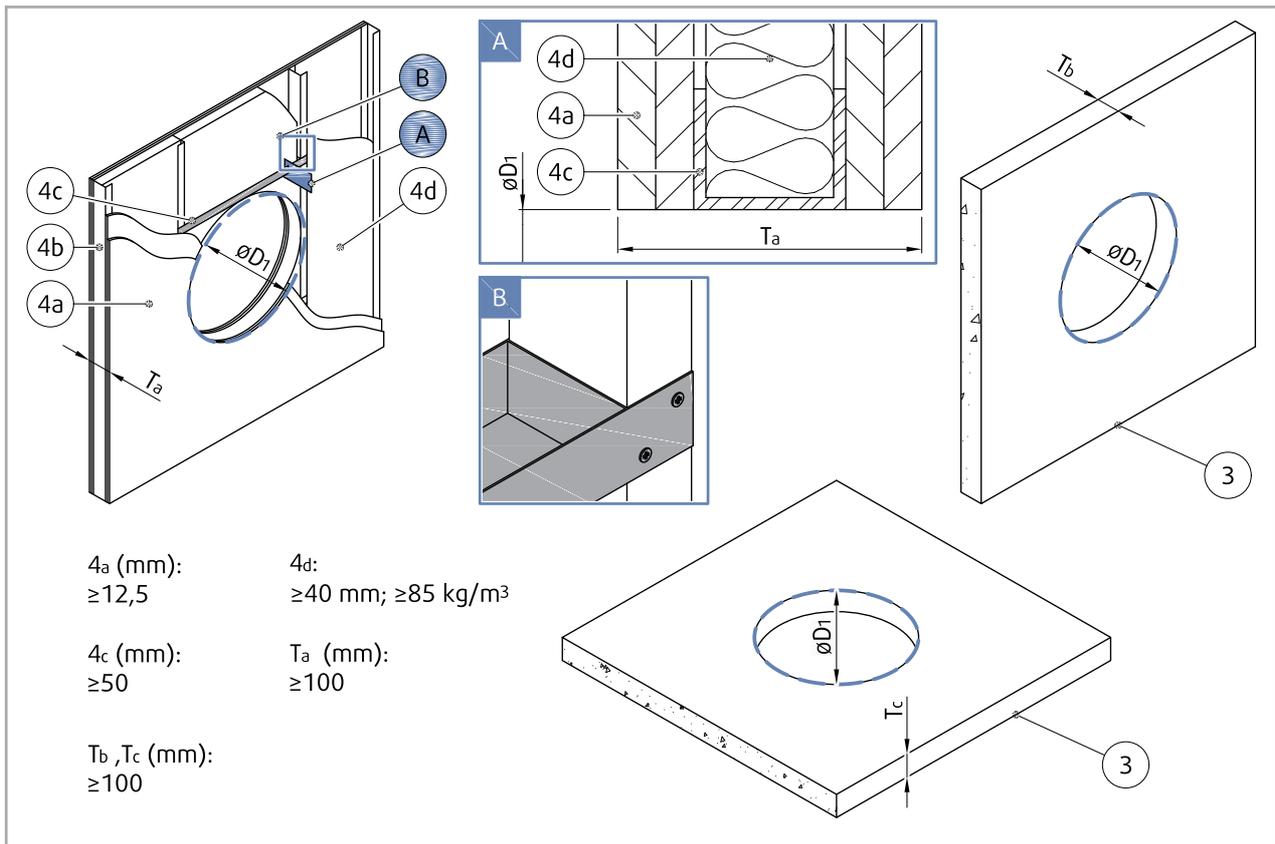
b) - Concrete/masonry/cellular concrete (rigid) wall

v_e - Vertical supporting construction (wall)

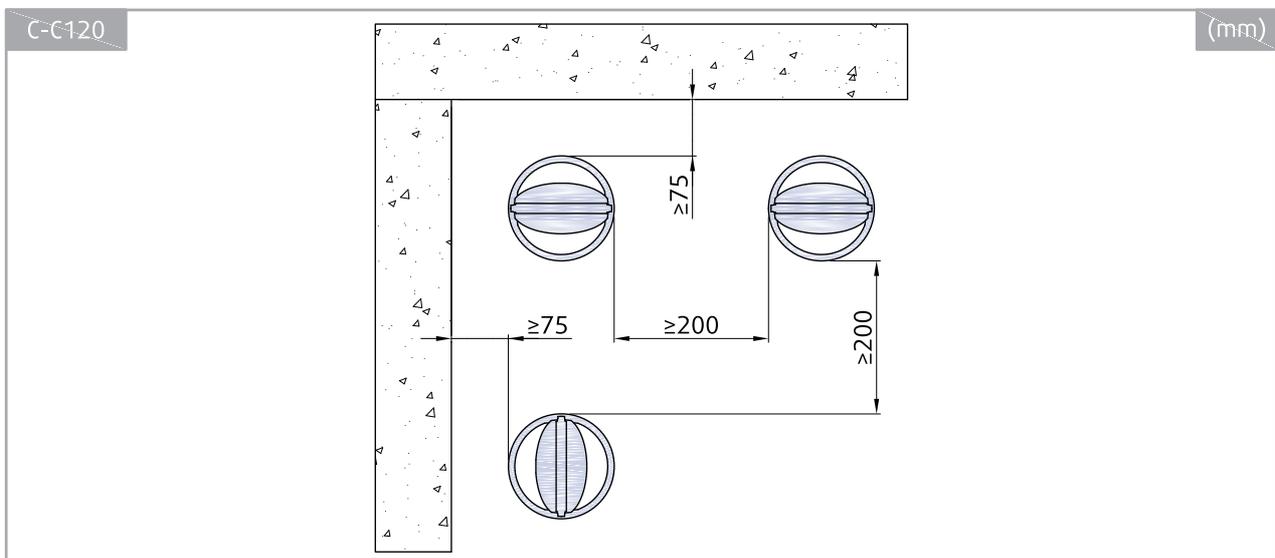




Opening and Wall and/or Ceiling Preparations



Closure Minimum Distances

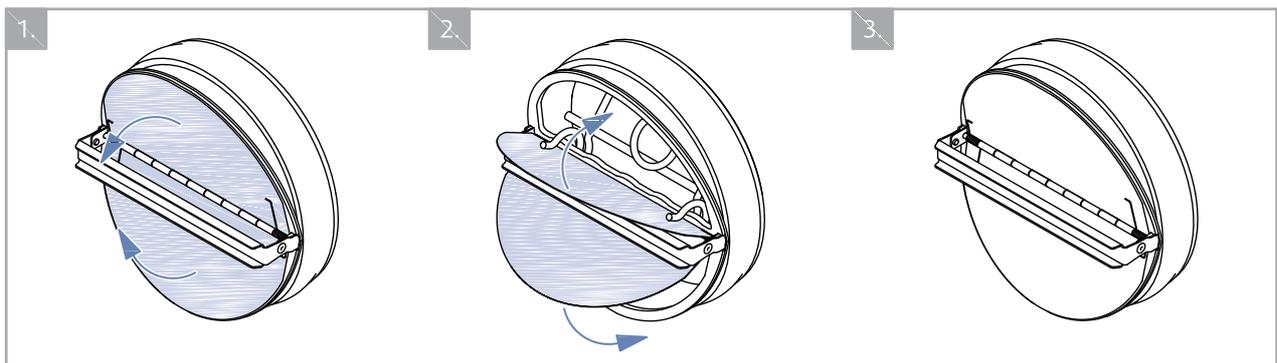
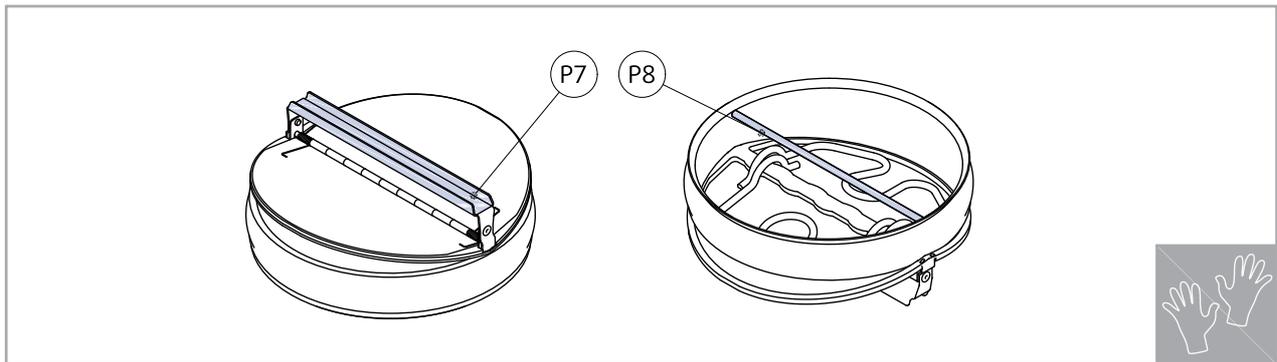
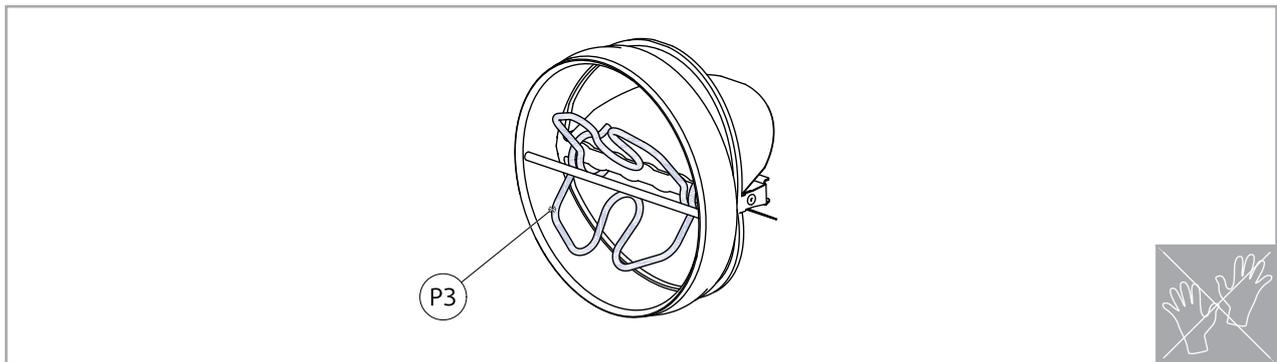


Legend for Installation 2. Dry

- 1** - Smoke tight closure (C-C120)
- 2** - Connected metal ductwork
- 3** - Concrete/masonry/cellular concrete wall
- 4** - Flexible (plasterboard) wall
 - 4a** - 2 layers of plasterboard fireproof plate type F, EN 520
 - 4b** - Vertical CW – profiles
 - 4c** - Horizontal UW – profiles
 - 4d** - Mineral wool; thickness/cubic density see picture
- F1** - Screw 3,9 x 55 mm
- F2** - Mineral wool filling (min. 50 kg/m³)
- F4** - Fire resistive mastic, e.g. Promaseal-A/Promat
- A1** - Cover board CBR-C2 (accessory) obligatory
- A4** - Flexible duct coupling FCR-C2
- Y, A, B** - Cutting planes

Operation Manual

Before you install the product, do an initial check. This check obeys the same conditions as the regular inspections. After you install the product, make sure that the closure's functionality is checked.



Functionality Check

- While manipulating with the product, pay attention to not pull the product by its blades or counter-weights (P3). For pulling and inserting the product use holder (P7) or handle (P8).
- While performing the check, focus on the movement of the blades – they should move freely and not be blocked.
- Perform the closure activity check. Open the blades and release them, they should move back to the closed position spontaneously.
- When remounting the closure into the duct it is also essential to check the sealing on the perimeter. In case it shows deformation, it is needed to replace the seal with a new one in order to guarantee a correct fixation of the closure in the duct.

Closure Inspection

Warning: Some parts can have sharp edges. To prevent injuries, use gloves when you install or move the product.

While manipulating with the product, pay attention to not pull the product by its blades or counter-weights (P3). For pulling and inserting the product use holder (P7) or handle (P8).

The spring together with counter-weights, keep the closure in closed position throughout its entire operational life. Without the producer's permission, there must be no changes or modifications performed on the closure's structure.

The operator obeys the local regulations and standards (or type approval) to do regular checks of the dampers. As this product has not yet been covered by a harmonized standard, for correct operation the recommended minimum interval for the inspection checks is 12 months. The manufacturer and/or government authorities must approve the inspecting person and/or process for this inspection. Operating Journal must be kept during the lifecycle of the smoke control damper. The damper's Operating Journal includes a copy of the approval/s of the inspecting person. If the inspecting person finds differences, the operator must write these differences in the Operating Journal. Then, he must recommend action to remove these differences.

Perform a Functionality check and inspect these elements:

- The housing
- The internal casing of the damper
- The sealing under the blades and on the perimeter of the closure
- The condition of the blades
- The springs and the counter-weights
- How accurately the blades close when they lean to the sealing under them in the closed position
- Make sure that there are no foreign objects or layers of contamination in the air distribution systems of the damper

Recommended Inspection Steps According to the EN 15 650:

- Date of inspection
- Check for product cleanliness and cleaning if needed
- Check of the blades and sealing, correction and record if needed
- Check of product's safe closure – for details please see the previous section
- Check if the product moves while being in its open and closed position, correction and record if needed
- Check if the product is moved in its standard position.

Supplement

Any deviations from the technical specifications contained in SystemairDESIGN or Handbook, and the terms should be discussed with the manufacturer. We reserve the right to make any changes to the product without prior notice, provided that these changes do not affect the quality of the product and the required parameters.



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