RABR-VAP

Circular fire damper with constant pressure retention function

FIRE SAFETY

CE

27/06/2019

BEVENT RASCH

AIR SOLUTIONS – FOR A BETTER TOMORROW

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Quick facts

- Fire resistance class E60S / E90S / E120S
- Sizes from 200 x 200 mm to 1500 x 1500 mm
- Prefitted safety actuator 24V
- Slip joint connection, or Flange connection
- Duct- or wall-mounted
- Easy pressure retention
- Available in MagiCAD
- CE-marked building product in accordance with 15650:2010

Two dampers in one!

Bevent Rasch has developed a fire damper for fire resistance classes E60S / E90S / E120S which is also used for constant pressure retention in all types of ventilation plants whilst providing full protection against the spread of smoke.

Use

Damper in combination with walls or joists for fire-sectioning of heating, ventilation and air conditioning installations in buildings. accordance with the harmonised European Standard EN 15650:2010. Smoke spread is prevented when the damper system design in accordance with the associated documentation, assembly and fitting instructions is used in combination with smoke detectors and the MRB (or equivalent) monitoring system. No further measures against the spread of smoke are required.
As the damper also functions as a constant pressure retention damper, both these functions are combined in the same damper. This saves both time, space and money for installations in, for example, hotels, office and shopping complexes, where both these functions need to be solved.

Performance

EEC certificate in accordance with 15650:2010
402-CPR-SC0899-13

Classification of fire resistance in accordance with EN 13501-3
E120 (ve ho i <–> o) S
E90 (ve ho i <–> o) S
E60 (ve ho i <–> o) S

For complete classification, see the Declaration of Performance.

Installation

RABR-VAP is mounted on horizontal or vertical ducts that run through fire compartment separated sections of the building, in accordance with the adjoining mounting instructions. Wall penetration RBVG is used for installation against building elements.

Design

RABR-VAP is supplied complete with a factory mounted, maintenance-free, 24 V electric safety actuator with thermal sensor featuring built-in signal contacts to indicate the damper position. RABR-VAP is supplied prepared for possible overinsulation of 50 mm. RABR-VAP is supplied calibrated from the factory. Nominal pressure is 100 Pa or 300 Pa depending on the pressure sensor's range of measurement. Desired reference values are set using the regulator's potentiometer between 30-100% of nominal pressure. The reference value can be remotely set with a 2-10V signal from the DUC, for example. The device can be force-controlled to different operational requirements. In case of of a power failure, the damper closes with actuator spring return.

Activation
Smoke detectors must be verified in accordance with the Swedish standard SS-EN 54-7 for damper activation. The mandatory thermal sensor closes the damper at 72°C in accordance with ISO 10294-4.

Control and monitoring
When the damper is used as protection against fire and the spread of fire it shall close on activation of an impulse from smoke detector or thermal sensor. It shall be mounted in a ventilation duct close to the damper or another suitable location.
Smoke detectors are monitored with Bevent Rasch MRB or an equivalent system. The MRB monitoring system also carries out automatic function tests of dampers every 48 hours and is configured so that faults are immediately indicated and the damper is closed. For further information refer to the technical section on the website.

The following Bevent Rasch monitoring units can be used:
- MRB3 with RCTC/RCTU

Size
Horizontal duct and joist-mounting*)
200 x 200 mm to 800 x 900 mm.

Wall-mounting*)
200 x 200 mm to 1500 x 1500 mm.

*) *For wall- or joist-mounting the RABR-VAP should be fitted in combination with the RBVG wall penetration.*

Design
RABR-VAP is supplied calibrated from the factory. Nominal pressure is 100 Pa or 300 Pa depending on the pressure sensor's range of measurement. Desired reference values are set using the regulator's potentiometer between 30-100% of nominal pressure. The reference value can also be remotely set with a 2-10V signal from the DUC, for example. The device can be force-controlled to different operational requirements.

Material and surface finish
The casing and components are supplied as standard in hot-dip galvanized sheet steel in accordance with environmental class C3. For higher environmental classes the casing and components can be supplied in stainless steel.

Miscellaneous
All data presented are for dampers in standard versions. This type of damper shall not be confused with a Pressure Relief Damper which has the opposite function.

Specification
Examples:

Fire damper **RABR-VAP - 600 - 400 - 1 - 1 - 0 - 3**

Size
Width x Height (W x H), mm

Connection, see dimensional diagram
Slip joint (max 800 x 900) = 1
Flange = 2
Slip joint/Flange = 3

Material
Galvanized sheet steel = 1
Stainless AISI 3041 – EN 1.4301 = 2
Stainless AISI 316L – EN 1.4404 = 3

Actuator
Without MRB unit = 0
With MRB3 unit fitted (RCTU) = 5
Note! Factory-fitted actuator is always included.

Pressure sensor
30-100 Pa = 1
90-300 Pa = 3

Note! Slip joint/Flange is adapted for fitting in combination with RBVG wall penetration. Shall be used in conjunction with wall- or joist-mounting.

Accessories
RBVG	Wall penetration
BRAS	Circular sleeve connection for RABR
RCKB	Connection box
RCKD/-RD	Smoke detectors
RCTU/RCTC	MRB3 system, max 236 dampers
BRRM/BRMR	Measuring unit

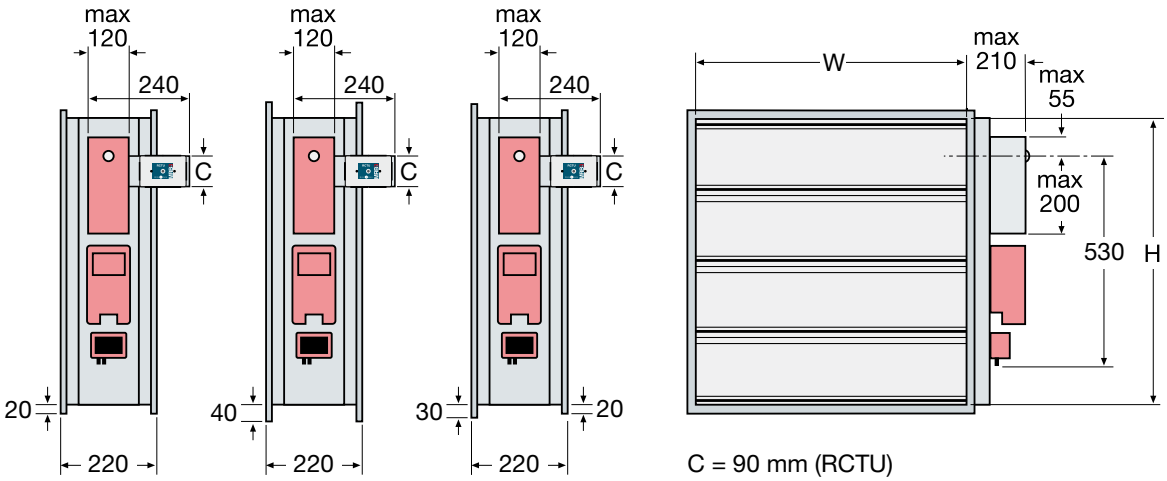
Dimensions and weight

Connection 1
-1 Slip joint

Connection 2
-2 Flange

Connection 3
-3 Slip joint/Flange

Damper shown only in slip joint design



C = 90 mm (RCTU)

RABR-VAP for mounting in combination with RBVG is supplied with Slip joint/Flange type 3 connector. RABR-VAP with height dimensions 250, 450, 650 and so on are supplied with raised slip joint or flange.

Number of damper blades

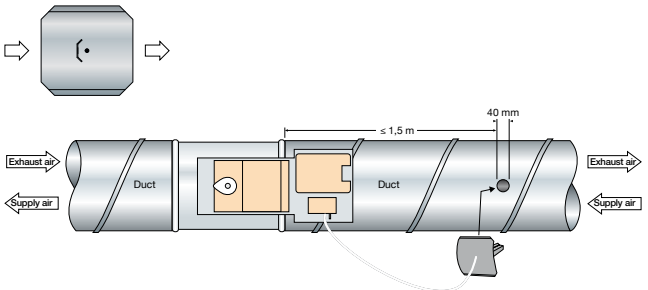
Size W or H	Number of blades
200	1
300	2
400	2
500	3
600	3
700	4
800	4
900	5
1000	5
1100	6
1200	6
1300	7
1400	7
1500	8

Weight incl. actuator, kg

W	B 200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500
200	8	9	11	13	15	17	19	23	26	30	32	37	40	43
300	9	11	13	15	17	19	22	26	28	33	35	41	44	46
400	11	13	15	17	19	22	24	29	32	36	39	45	48	50
500	13	15	17	19	22	24	26	34	37	41	46	51	54	57
600	15	17	19	22	24	26	28	35	38	43	46	52	55	58
700	17	19	22	24	26	28	30	38	40	46	49	56	59	62
800	19	22	24	26	28	30	32	41	44	49	52	60	63	66
900	22	24	26	28	30	32	35	44	47	52	56	63	66	70
1000	24	26	28	30	32	34	36	47	50	56	59	67	70	74
1100	26	28	30	32	34	36	38	50	53	59	62	70	74	77
1200	28	30	32	34	36	38	40	53	56	63	66	74	78	82
1300	30	32	34	36	38	40	42	56	59	66	69	78	82	85
1400	32	34	36	38	40	42	44	59	62	69	73	82	86	89
1500	34	36	38	40	42	44	46	62	65	72	76	85	89	93

Mounting

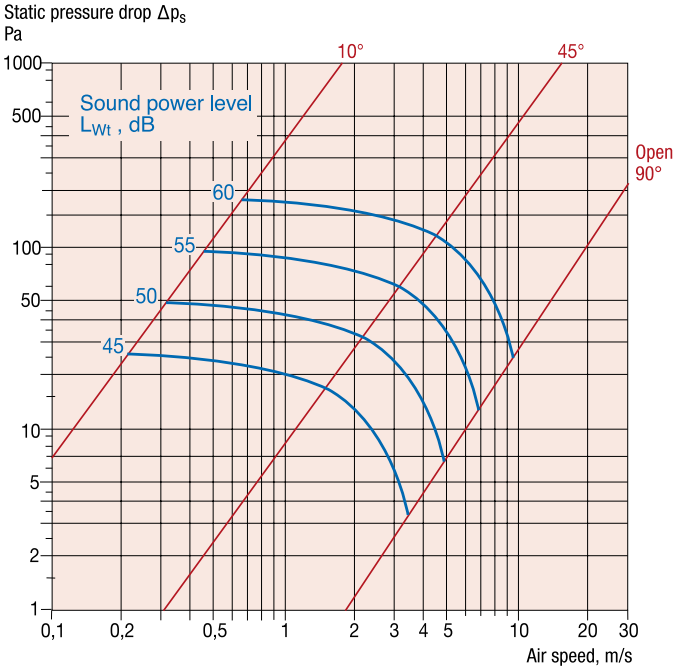
The pressure sensor should be mounted in a representative position in the duct downstream of the damper with the arrow in the direction of the air flow. The measuring hose must be fixed in the duct and in the static pressure sensor on the damper. If the damper is placed in the supply air duct the measuring tube shall be moved to the minus spigot on the static pressure sensor. The pressure sensor is calibrated and mounted in a vertical position. When mounting in another position, post-adjustment on-site is possible.



Electrical data

	RABR-VAP	VRP-STP
Sizing, max	10 VA - BF24-V	2,6 VA
Running time;		
– motor opening	120-300 s	
– spring return, max	approx. 20 s	
Protection class	IP 54	
Power supply	24V~ ±20%, 50/60 Hz	
- Control signal Y		DC 2-10 V DC 0-10 V (option)
- Measuring signal U		DC 2-10 V DC 0-10 V (option)
0-100% U nom		
Ambient temperature		0° to +50°C
End position contacts:		
- load ≤ 300 mW	min 1 mA/5V=, max 100 mA/250V~	
Applicable after exceeding the above values:		
- load > 300 mW	min 100 mA, max 3 A/250~	
Sound level		
- when opening	approx. 45 dB(A)	
- with spring return	approx. 62 dB(A)	

Dimensioning diagram



Valid only for standard dimensions.

Sound data

Correction of sound power level, L_W, for different sizes,

$L_W = L_{Wt} + K_1$

Damper area, m²	0,08	0,16	0,32	0,5	1	2	3	4
K_1	-3	0	3	4,5	7,5	10,5	12	12,8

Correction of sound power level, L_{Wok}, in octave band,

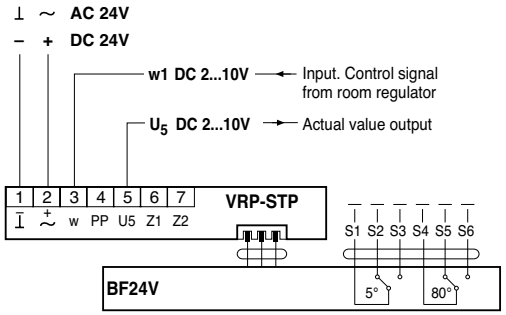
$L_{Wok} = L_W + K_{ok}$

Correction, K_{ok}

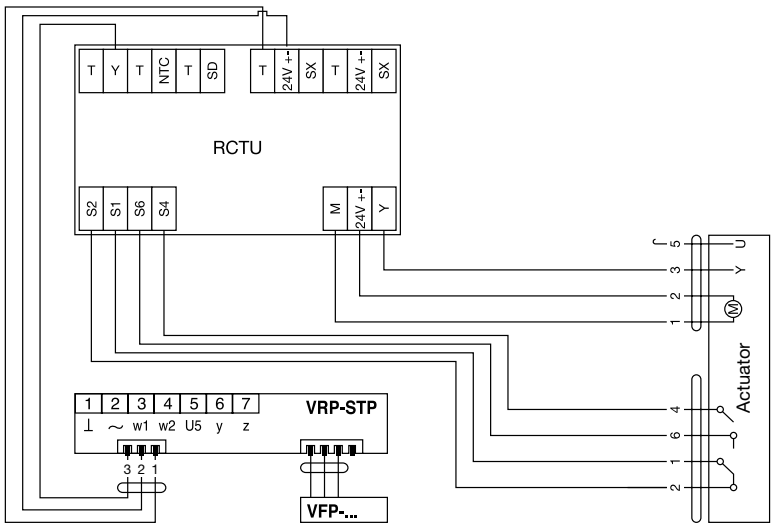
Opening angle	Centre frequency Hz						
	125	250	500	1000	2000	4000	8000
90°	-1	-8	-16	-18	-22	-30	-37
45°	-10	-3	-6	-8	-12	-21	-31
10°	-11	-3	-5	-9	-14	-23	-30
Tol. ± dB	3	2	2	2	2	2	3

Wiring diagram

Option 1 – Connection to master system



Option 2 – Connection to RCTU



Caution!
When connecting several VAV-devices to the same transformer, it is important that all system phases are connected to (~) and all system neutrals are connected to (⊥,

In case of alarm and function tests, the 24V supply must be disconnected!

Installation instructions for RABR-VAP together with wall penetration RBVG

Building element (wall or joist structure) of fire resistance class EI60, EI120.
Damper's fire resistance class: E60 (ve ho i <–> o) S, E120 (ve ho i <–> o) S.
EC certificate 0402-CPR-SC0899-13

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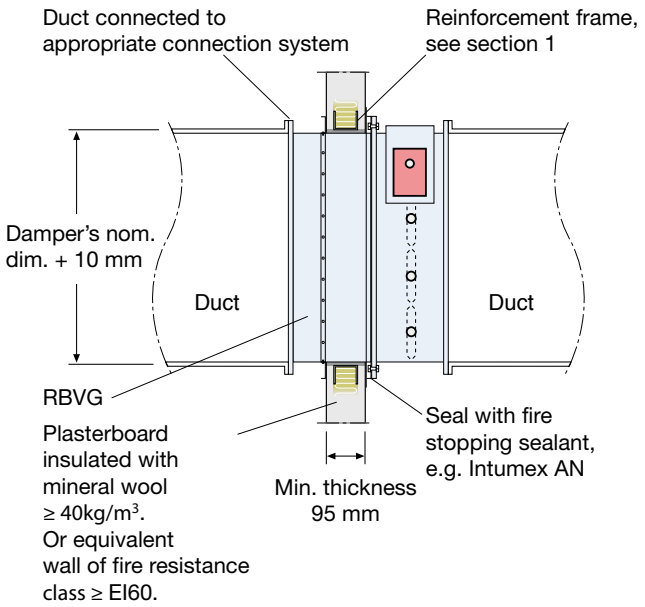
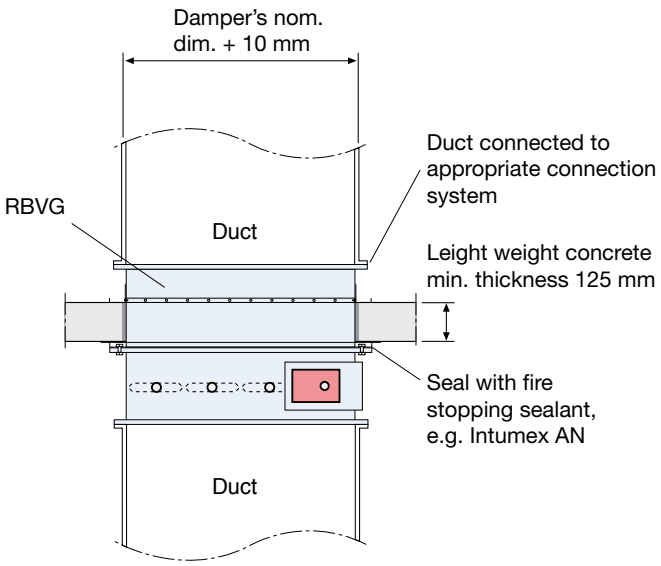


Sizes up to 1500 x 1500 mm



Sizes up to 800 x 900 mm

Options 1 and 2

1. Install wall penetration RBVG in accordance with instructions (see separate installation instructions).

2. Apply fire stopping sealant around the edge of the wall penetration flange.

3. Affix the damper in wall penetration RBVG using M 8x12 screws.

4. Install the thermal sensor in the air stream without obstructing the movement of the damper blades.

5. If the fire damper is not connected to the duct system, fit non-combustible grilles designed for the damper on the unconnected sides.

6. Connect the actuator to the control unit and perform a function test.

7. Install the duct system in accordance with applicable requirements. Ensure that the connecting duct does not affect the damper when under a fire load.

- *Minimum distance between dampers must be 200 mm.*
- *Minimum distance to joist structure/wall must be 75 mm.*
- *Install damper spindle horizontally*
- *Make sure the diagonal measurements of the duct are equal.*

Installation instructions for RABR-VAP in insulated ducts

Installation in insultated horizontal duct section.
Damper's fire resistance class: E60 (ve i <–> o) S, E120 (ve i <–> o) S.
EC certificate 0402-CPR-SC0899-13

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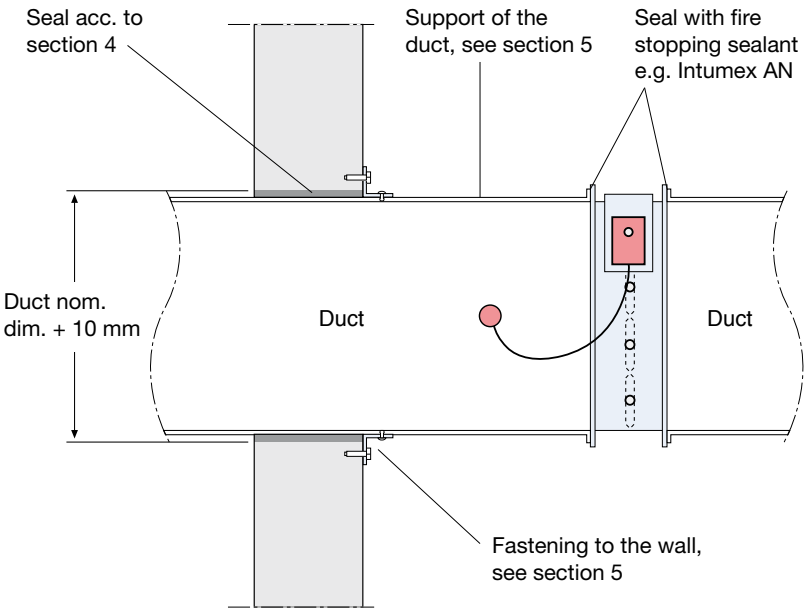


Sizes up to 800 x 900 mm

1. Install the damper in the duct with connection for slip joint or flange. Seal the connection with fire sealant, e.g. Intumex AN.

2. Mount the thermal sensor with the sensor body in the airflow without obstructing the movement of the damper blades.

3. The duct system is fitted in accordance with current requirements. Ensure that connecting ducts do not affect the damper at fire load.

4. Duct going through building element, is sealed using an approved method, such as caulking with mineral wool, min 40kg/m^3 and fire sealant.

5. Duct is fastened/supported according to applicable requirements.

6. Protect the duct according to applicable requirements using instructions from the fire rated duct supplier.

   When installed inside a fire cell the duct is insulated in accordance with an approved method to prevent thermal damage to the structure (ducting system).

- *Minimum distance between dampers must be 200 mm.*
- *Minimum distance to joist structure/wall must be 75 mm.*
- *Horizontal installation of the damper spindle.*
- *Make sure the diagonal measurements of the duct are identical.*

Quick facts

- Sizes from 200 x 200 mm to 1500 x 1500 mm

Use

Penetration in combination with walls or joist structures to achieve an optimal damper or duct system connection. The penetration creates a tidy, sealed connection to the building element and requires neither refinishing nor painting. Also used in combination with smoke dampers for the fire separation of ventilation systems in buildings.

Design

The penetration is supplied complete with fixings for a flange connection and extenders for connection to a duct system.

Material and surface finish

As standard, casing and components of hot-dip galvanized steel sheet in accordance with environmental class C3. For a higher environmental class, stainless steel casing and components can be supplied.

Specification

Example:

Wall penetration **RBVG - 500 - 300 - 300 - 0 - 1**

Size
Width x Height (W x H), mm

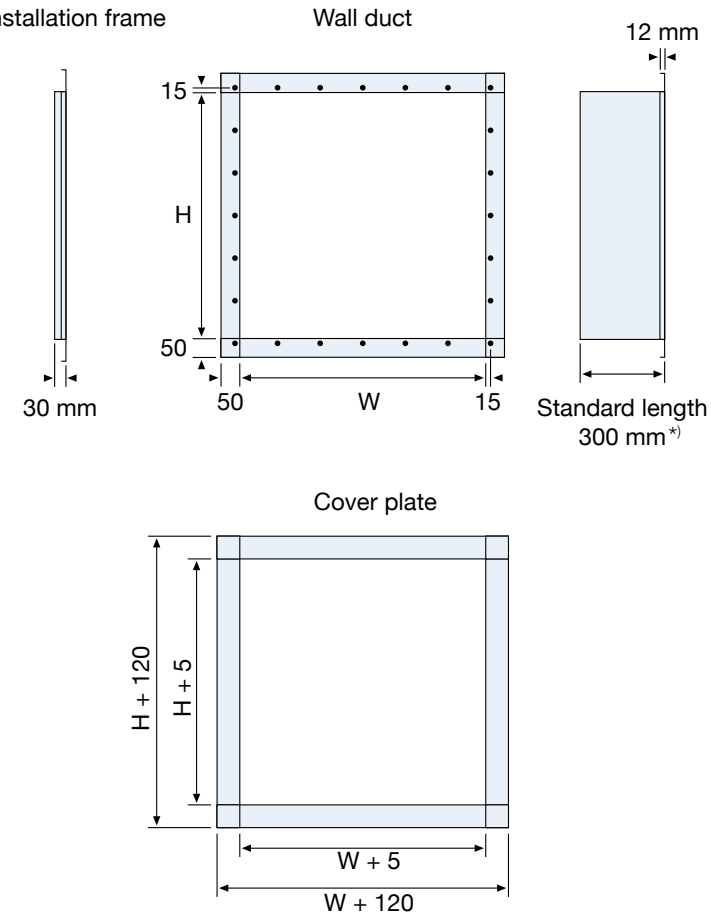
Length, mm

Insulation,
Without insulation = 0

Connection, see dimensional drawing
Flange, 30 mm = 1

Note. Lengths other than 300 mm shall be clearly specified.

Dimensions and weight



*) Clearly specify lengths other than 300 mm when ordering.

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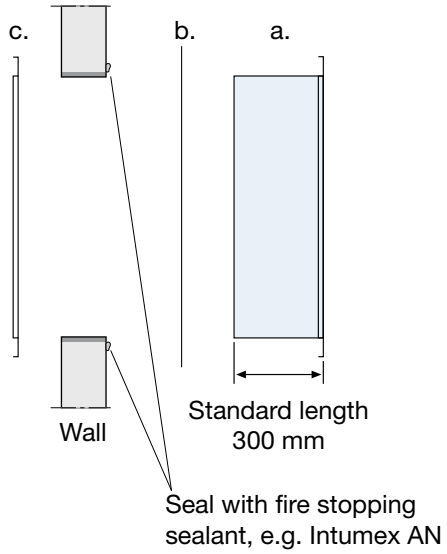
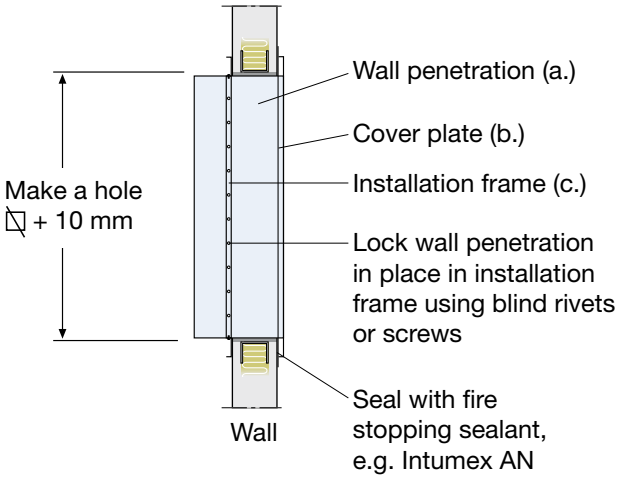
Installation instructions for wall penetration RBVG

RBVG comprises
three components:
a. Wall penetration
b. Cover plate
c. Installation frame





1. Make a hole, corresponding to the duct's nominal dimensions + 10 mm, in the building element.
   If installing in plasterboard, a steel reinforcement frame must be used.
2. Apply fire rated sealant (such as Intumex AN) to the building element around the hole, approx. 10 mm from the edge.
3. Fit the cover plate over the wall penetration and affix the unit to the building element with the fire rated sealant.
4. Slide on the installation frame from the opposite side and affix with clamps or the like. Ensure that the cover plate and the fire rated sealant comprise a tight seal against the building element.
5. Lock the wall penetration in place in the installation frame with screws or blind rivets spaced 100-150 mm apart.
6. Attach the appropriate joint for the duct and connect.
7. If the duct system is not connected, for example, when installed as a termination device or transfer air device, fit non-combustible grilles designed for the damper on the unconnected sides. The minimum distance between the damper blade in the open position and the grille is 50 mm.

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