

KWP-P

Smoke control
damper -
rectangular

Installation manual



Version 6.2

SMAY reserves the right to make changes to this document.

TABLE OF CONTENT

INSTALLATION TECHNOLOGY.....	3
1. INSTALLATION TECHNOLOGY - RIGID WALL.....	4
2. INSTALLATION TECHNOLOGY - CEILING.....	8
3. INSTALLATION TECHNOLOGY - DUCT.....	10
4. INSTALLATION TECHNOLOGY FOR SMOKE CONTROL DAMPERS IN BATTERIES.....	11



INSTALLATION TECHNOLOGY

Before installing smoke control dampers, check whether the damper has been damaged during transport or storage. Place the damper straight on a flat surface and check that the damper opens and closes properly throughout its full range of motion. Opening and full closing must be smooth, and the movement of rotating elements must not be hindered. If the damper partition is blocked, further installation is not allowed. In the case of dampers with an actuator, open the damper with the key attached to the actuator. Do not pull the damper by its partition to open/close, this may cause permanent damage to the device which is not covered by the warranty.

The damper must be protected with covering material before montage, so it will be protected from soiling, and consequently damaging the elements of the damper.

ATTENTION: Distance between smoke control dampers or smoke control damper and construction elements must be compatible with standard 1366-2:

- a. Minimal 200 mm between smoke control damper, which are installed in different ventilating wires, and between flaps and openings in the building partition;
- b. Minimal 75 mm between smoke control damper and construction element (wall/ceiling).

Before installing smoke control dampers please read assembly technology recommended by the manufacturer. The way of installing recommended by one manufacturer may not be the same for other dampers. Recommended material and dimensions of the openings follow from experience from conducted research. Moreover, in rectangular dampers, it is necessary to use assembly wedges and a spacer to protect the body against compression during assembly. Squeezing the housing can change the dimensions of slot between baffle and housing, correct dimensions of this slot is needed to keep correct way of opening and closing the damper. Correct preparation of the damper for installation is presented on the figure 2 and figure 3.



Figure 1. Correct preparation of the damper for installation (using spreader securing the housing)



Figure 2. Correct preparation of the damper for installation (using mounting wedge)

ATTENTION:

- a. The damper must be installed in such way, that the axis of baffle must be in horizontal or vertical position,
- b. Damper can not be used as formwork for the wall,
- c. Ventilation ducts should be installed that they cannot put any load on the damper, their suspension must ensure their full load capacity,
- d. The suspensions of the ventilation ducts connected to the dampers batteries must be made in accordance with the instruction of the manufacturer of ventilation ducts,
- e. In place of Z1 and Z2 suspensions, which are installed for the time of assembly of the damper and in place of mortar binding, it is possible to use mounting brackets, paying attention to the immobilization of the damper.

1. INSTALLATION TECHNOLOGY – RIGID WALL

- a. Make an opening in the wall with the 100 [mm] (acceptable 80 ÷ 120 [mm]) greater than the nominal dimensions of the smoke control damper = B+100 and H+100.
- b. Put the closed smoke control damper into the installation opening on the depth marked by undercuts on the damper body (dimension 60 mm), from one side fix it with suspension Z1, and from other side fix it to the ventilation duct on Z2 suspension.
- c. After setting the smoke control damper as described, fill the gap between the smoke control damper and the wall with cement, cement-lime mortar, concrete, or PROMASTOP MG III of production of the PROMAT company.
- d. After 48 hours from the installation, the suspensions and supports used during installation of the smoke control damper, may be removed.

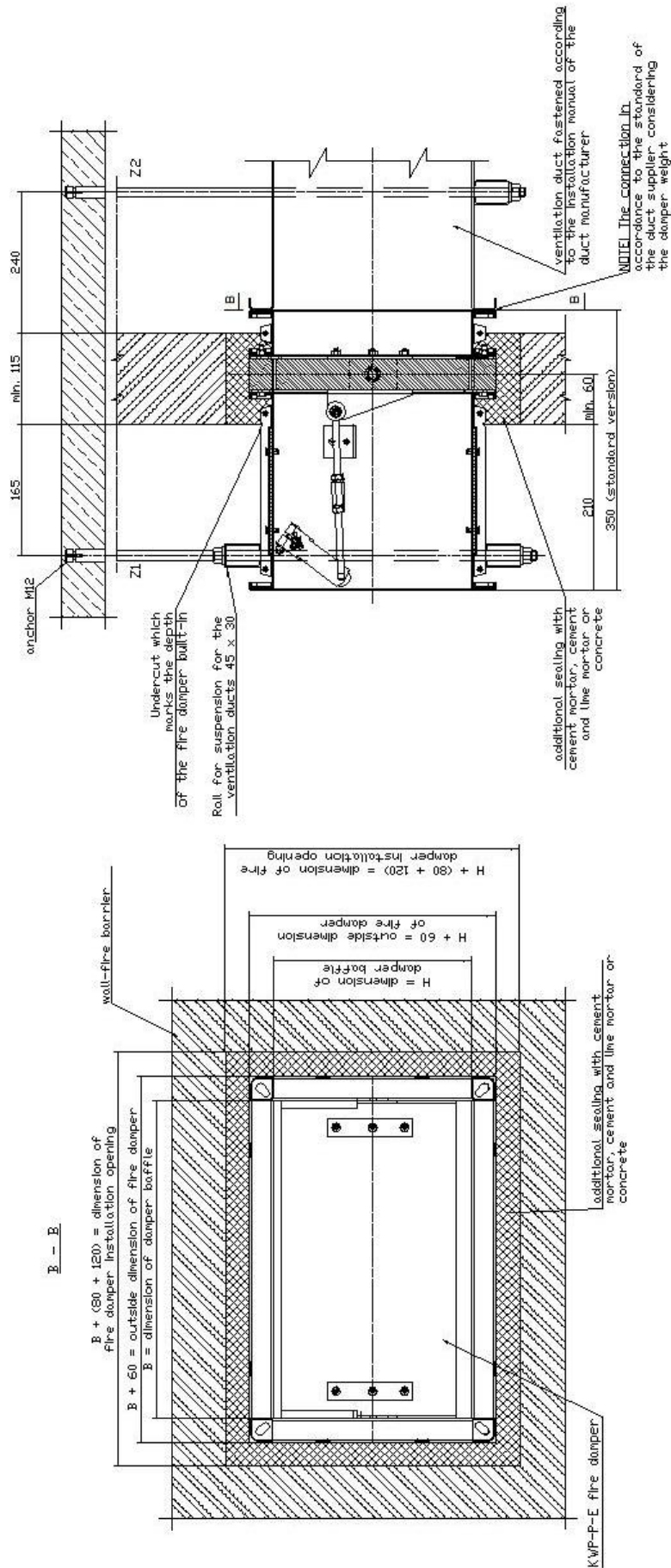
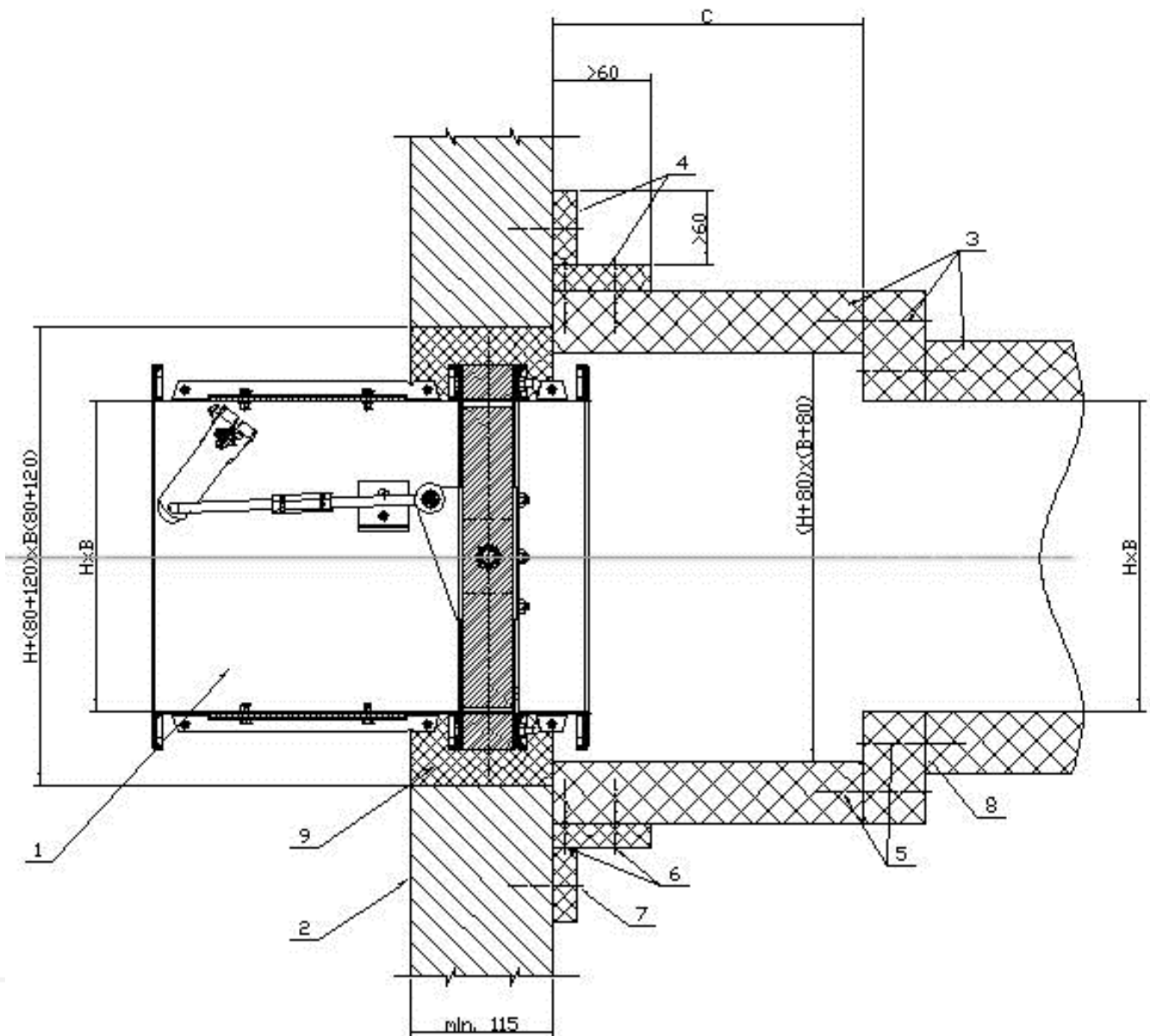
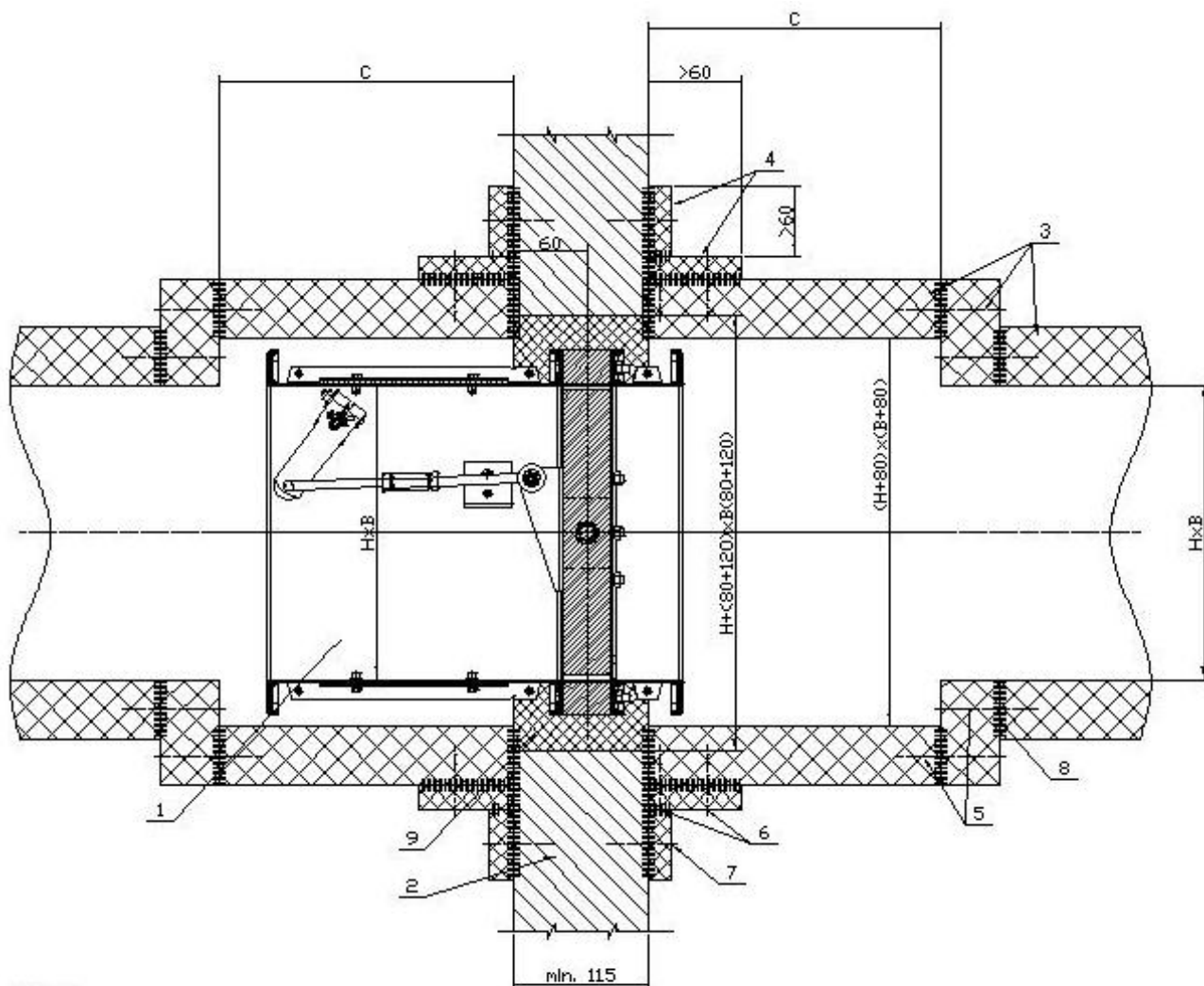


Figure 3. Installation method of smoke control dampers KWP-P in rigid wall


NOTES:

1. Smoke control damper KWP-P-E,
2. Wall, fire compartment,
3. PROMATECT L500 50mm,
4. PROMATECT -H 20mm,
5. Countersunk screw. UNIX 6x90j $\alpha=200$,
6. Countersunk screw. UNIX 4x35j $\alpha=200$,
7. Mounting anchor FPX M81j $\alpha=200$,
8. PROMAT K-84 glue,
9. Cement mortar, cement and lime mortar or concrete $C=H/2-50\text{mm}$,

Figure 4. Installation method of the damper in rigid wall with one-sidedly connected self-supporting smoke extract duct.


NOTES:

1. Smoke control damper KWP-P-E,
2. Wall, fire compartment,
3. PROMATECT L500 50mm,
4. PROMATECT -H 20mm,
5. Countersunk screw, UNIX 6x90; $\alpha=200$,
6. Countersunk screw, UNIX 4x35; $\alpha=200$,
7. Mounting anchor FPX MS1; $\alpha=200$,
8. PROMAT K-84 glue,
9. Cement mortar, cement and lime mortar or concrete
 $C=H/2-50\text{mm}$

Figure 5. Installation method of the damper in rigid wall with one-sidedly connected self-supporting smoke extract duct connected on both sides.

2. INSTALLATION TECHNOLOGY - CEILING

- a. Make an opening in the ceiling with the 100 [mm] (acceptable $80 \div 120$ [mm]) greater than the nominal dimensions of the smoke control damper = $B+100$ and $H+100$. In case of other dimensions than $B+100 \times H+100$, adjust dimensions of mounting brackets.
- b. Put the closed smoke control damper into the wall on the depth marked by undercuts on the damper body (dimension 60mm)
- c. After setting the smoke control damper as described, with use mounting brackets, fill the gap between the smoke control damper and the wall with cement, cement-lime mortar, concrete or with use mineral wool with density greater than 100kg/m^3 (item 1).
- d. Mount the mounting brackets properly:
 - a. Side length up to 500 mm – 1 pcs.
 - b. Side length from 500 to 800 mm – 2 pcs.

PROMAT self-supporting duct:

- a. Make the duct with 50 mm thick PROMATECT-L500 panels (item 3).
- b. Make a band around the duct with 50 mm thick, 60 mm width PROMATECT-L500 panels (item 4).
- c. Make a band around the duct (under ceiling) with 20 mm thick, 200 mm width PROMATECT-H (item 5). *This band is required only when mineral wool was used to seal the damper in point 3.
- d. Make a connection between the duct and ceiling likewise the duct with the band using glue K84.
- e. Connect the sides of the channel and sides the band with use screws 4.2×90 - 4.8×120 .
- f. Housing montage with actuator similarly as in the picture. Only the length of the mounting brackets will change. Mount the mounting brackets to the ceiling using raw bolts.

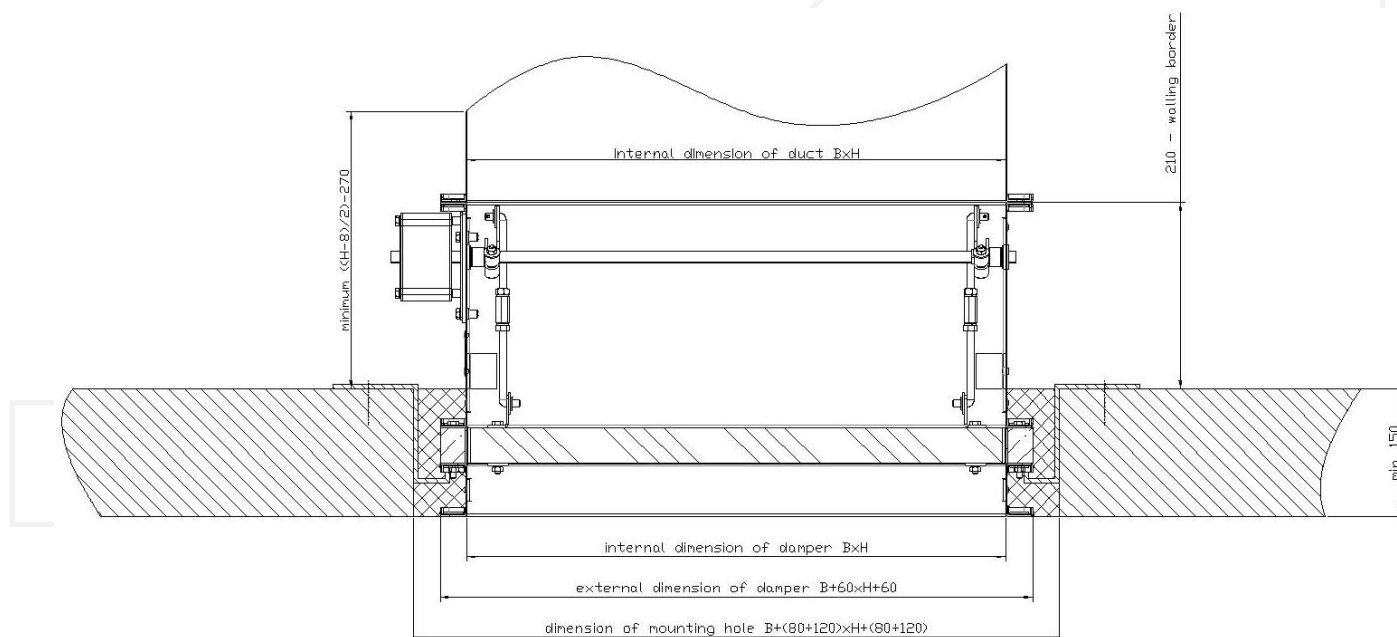


Figure 6. Installation method of smoke control dampers KWP-P in ceiling with a fire ventilation duct with sealing of cement mortar

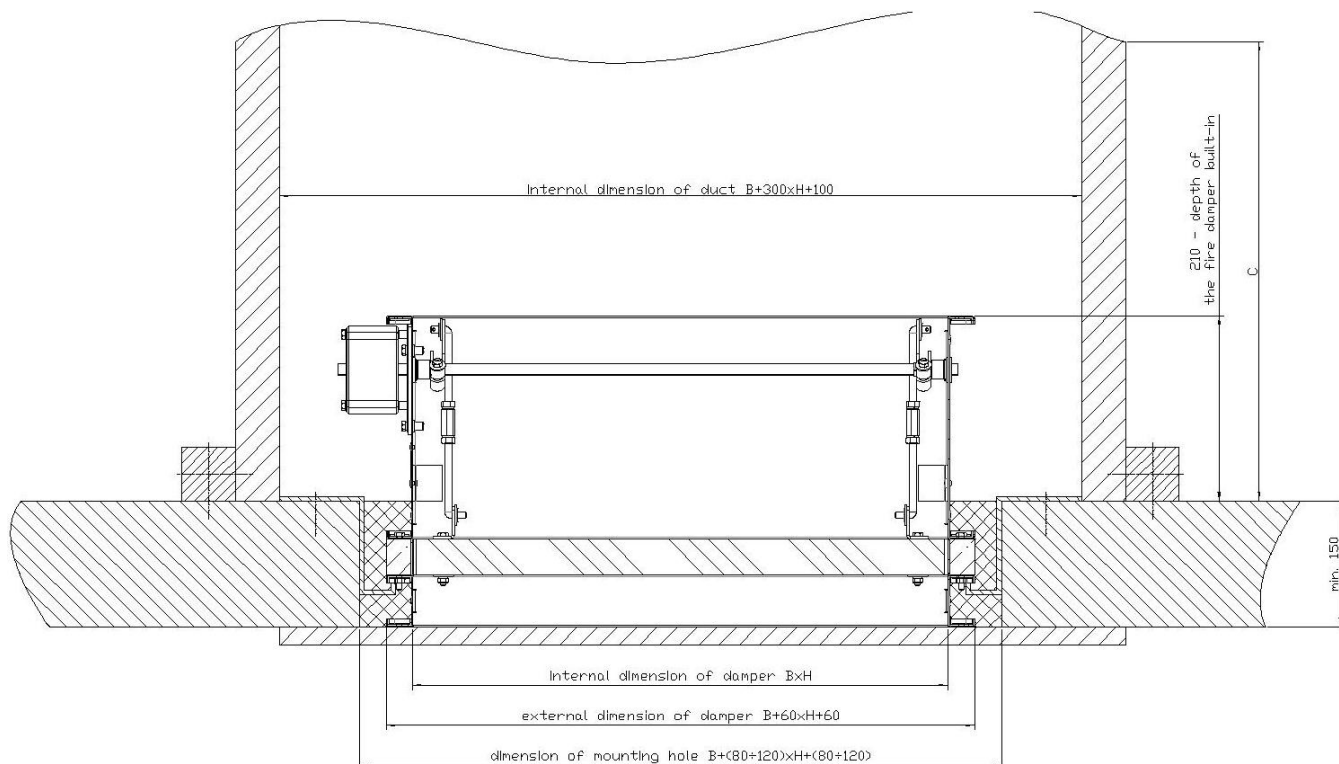


Figure 7. Installation method of smoke control dampers KWP-P in ceiling with a duct made of PROMAT boards with sealing of mineral wool

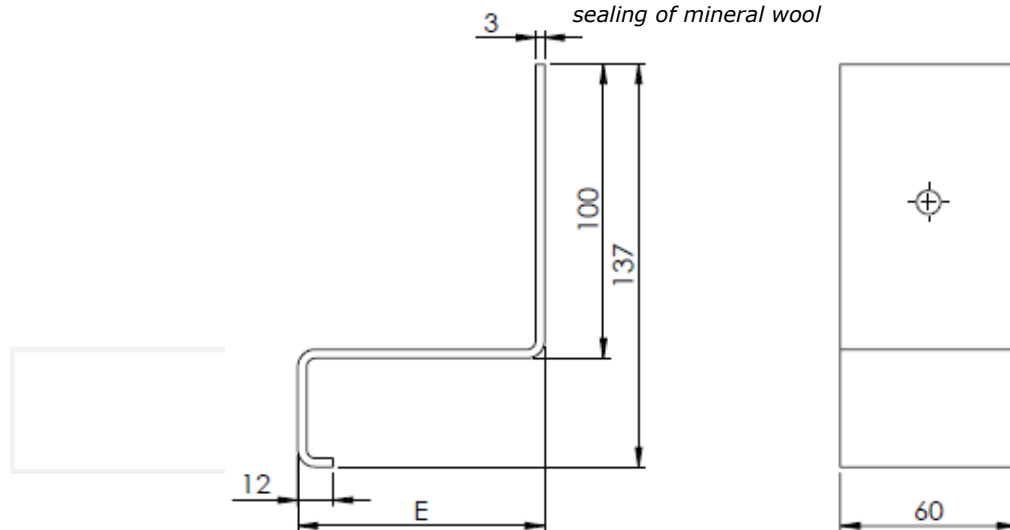


Figure 8. Proposed dimensions of mounting brackets for installation in a ceiling

	Actuator under ceiling	Actuator above ceiling
E [mm]	=Thickness of ceiling - 28	=96

For ceiling with thickness greater than 150 [mm]: connect the damper to the duct before the damper isolation with cement mortar (the damper frame will be bricked up along with a part of the duct).

3. INSTALLATION TECHNOLOGY - DUCT

- Make an opening in the PROMAT duct with the dimensions allowing for installing connection duct into them. (item 7),
- Connection duct which have been connect with a damper, connect with the duct with using screws and PROMAT L500 AND PROMATECT-H, and insulate according to Fig. 7.

The damper must be insulated at least to the minimum depth marked with cutouts on the housing.

- Suspend the housing taking into account its weight and ceiling load-bearing capacity
- Duct with a minimal length of C connect to the damper with a duct manufacturer's standard.
- Entire construction: duct, fasteners and insulation made in accordance with the National Technical Assessment No. ITB-KOT-2021/1823 and PROMAT guidelines

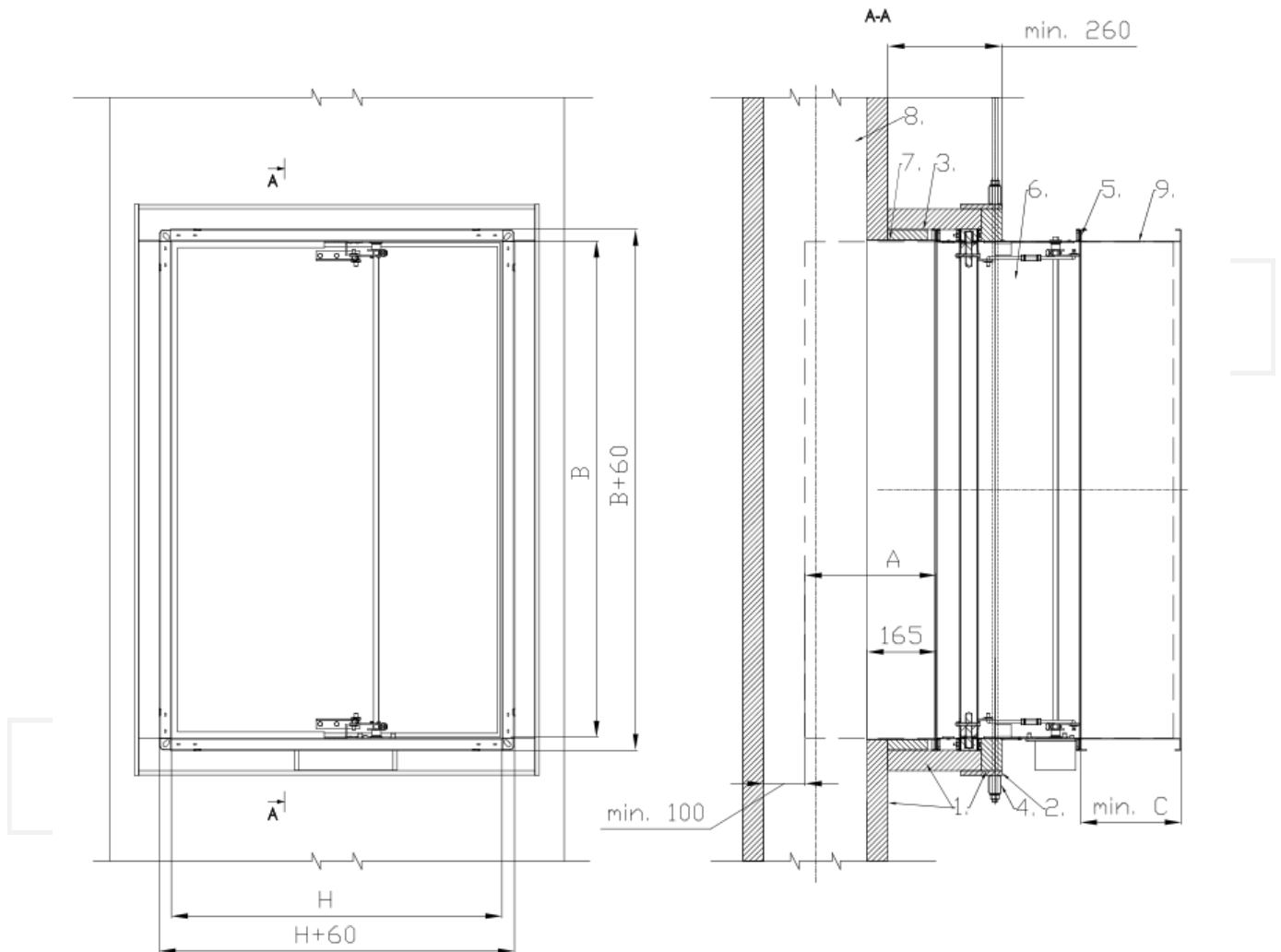


Figure 9. Installation method of dampers on the tee

- Promatect L-500 board with thickness of 50mm,
 - Insulation of PROMATECT-H board with minimal thickness of 10mm,
 - Insulation of PROMATECT-H board with thickness of 25mm,
 - The support rail must take into account the magnitude of the load
 - Connection in accordance with the standard of the supplier of the ventilation duct, taking into account the weight of the damper,
 - KWP-P-E damper,
 - Connection stub DX51D-Z275 thickness of 1,5mm with dimensions B+5, H+5 [mm] and of length L (in the example 165 [mm]), (Length of connection stub should be select in way that distance between bottom of duct and open baffle totals minimal 100 [mm]),
 - Multi-zone cable of the class EIS120,
 - Multi-zone / single-zone / ventilation duct or, if the damper completes the installation, a connector with a steel mesh 19x19x1,4mm.
- C- length of connector with a steel mesh,
 when $H/2-270 < 100\text{mm}$ then $C \geq 100\text{mm}$,
 when $H/2-270 > 100\text{mm}$ then $C \geq H/2-270+50$

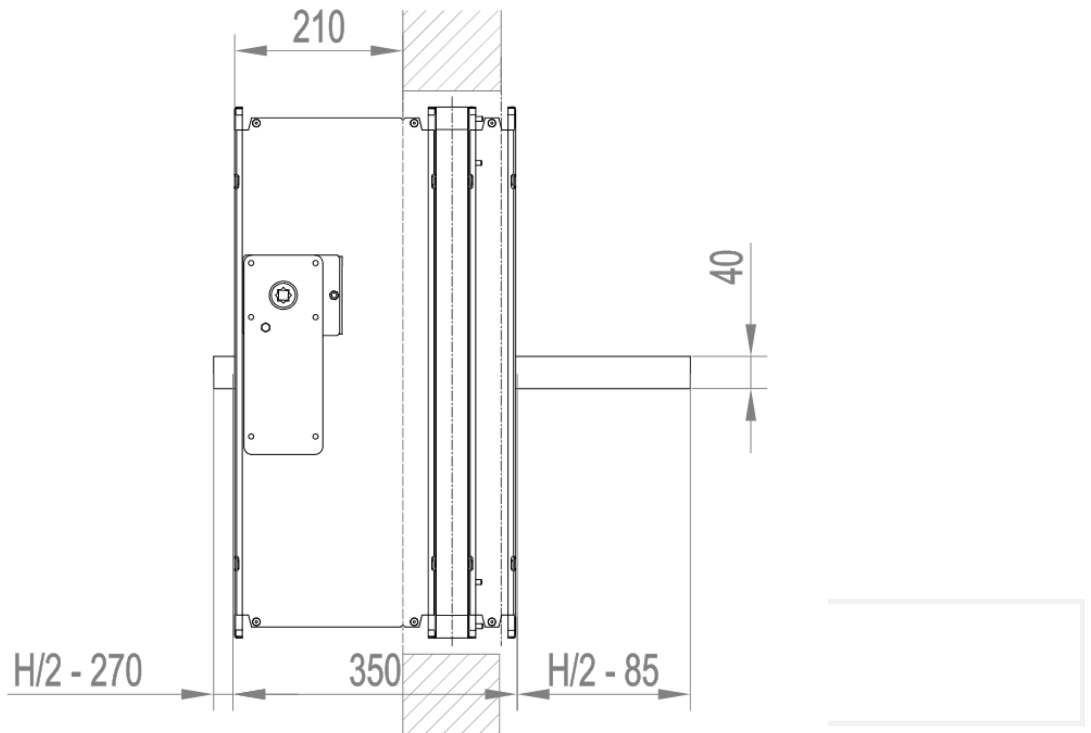


Figure 10. Dimensions of the building partition depending on the high of a damper

4. INSTALLATION TECHNOLOGY FOR SMOKE CONTROL DAMPERS IN BATTERIES

The assembly of smoke control dampers in batteries is possible only after previous delivery of the information (at the stage of ordering) about which smoke control dampers and in which arrangement (horizontal or vertical) would be installed in a wall, in order to prepare suitable opening for self-tapping screws in the smoke control damper body.

There are two possibilities of realizing the order of smoke control damper batteries: basic and complete. First one covers the set of smoke control dampers, assembly strips and complete set of self-tapping screws. The purchase of other materials needed such as: intumescent gasket (PROMASEAL-PL 20x1,8 mm), mineral wool for thermal insulation (with minimum density of 60 kg/m³) and aluminum tape remains with the Customer. The second variant provides for supply by the Manufacturer of complete set of smoke control dampers and all the elements needed for installation.

The smoke control dampers are assembled into batteries with use of assembly strips with length of 1200 [mm]. In case when total dimension of their battery is smaller than multiple of the length of the assembling strip, the last one should be cut with angle grinder on the construction site to match the dimension of the battery (basic variant) or cut in manufacturing facility by Manufacturer (complete variant)

Smoke control dampers should be marked with letters: A, B, C, D.

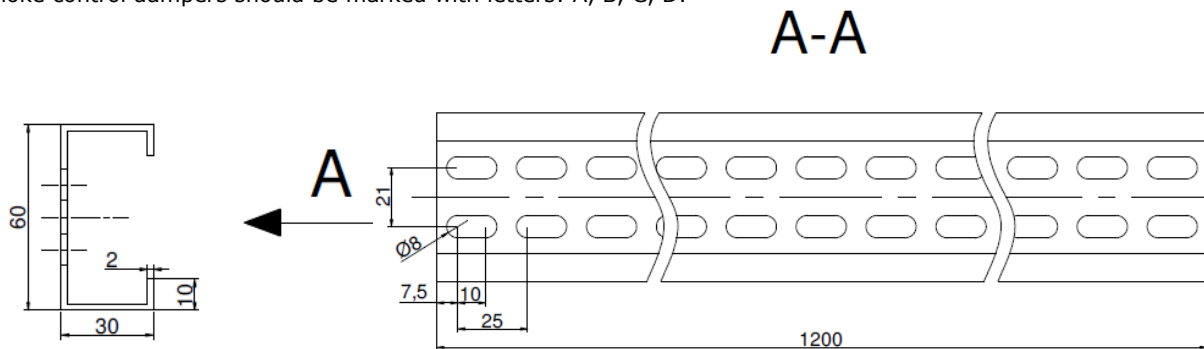


Figure 11. Connection strip

SMAY offers four basic types of damper battery systems.

Arrangement 1 – vertical battery consisting of two smoke control dampers KWP

- First, fix two strips of PROMASEAL-PL gasket with a minimum cross-section of 20×1.8 mm (alternatively one strip with a minimum cross-section of 40×1.8 mm) to the insulating spacer of one of the adjoining fire dampers (position **1**) in the drawing) along the entire length of their joint.
- Put Place non-combustible mineral wool with a thickness of 60 mm and a density of at least 60 kg/m^3 on the upper recessed surface of fire damper B so that, after assembling the dampers together, the insulation wool fills the entire free space between them, as shown in detail (**w1**). Alternatively, two layers of mineral wool with a thickness of 30 mm and a density of at least 60 kg/m^3 may be used, with each layer fixed to the converging sides of the fire dampers. To fill any gaps or to bond the wool, a fire-resistant sealant or adhesive shall be used (e.g. PROMASTOP-CC or Conlit Glue).
- Place the smoke control damper A on the smoke control damper B and assemble them together on the front and back with use of perforated assembly strips (2) and self-tapping screws M6x10 (3), which should be tightened into the openings in smoke control damper body. In order to carry out the correct assembly, 4 self-tapping screws should be used per each assembly strip with length of 1200 [mm].

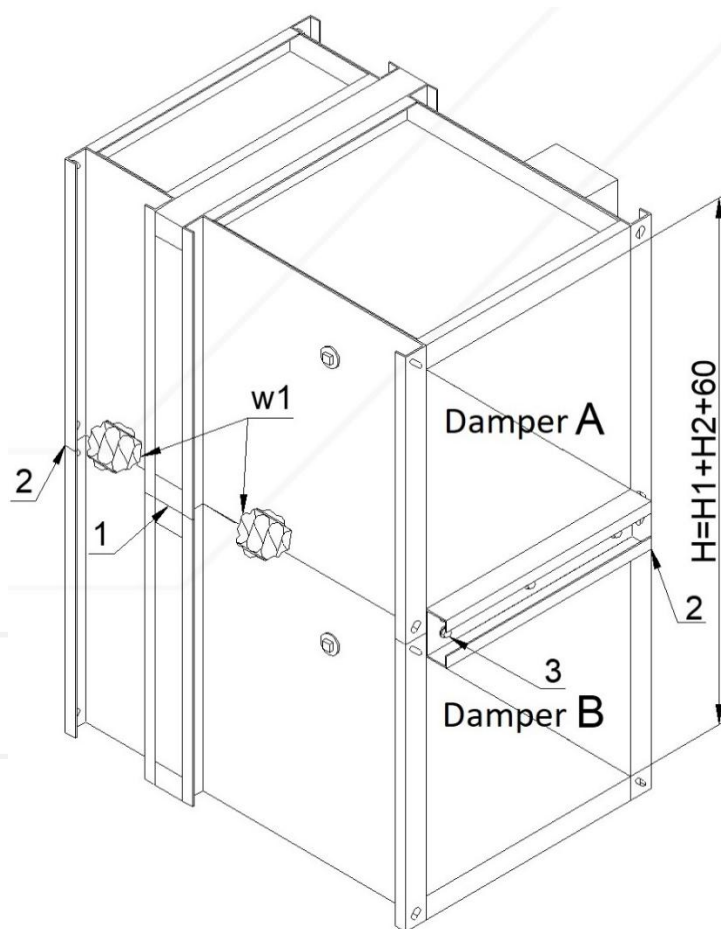


Figure 12. Arrangement 1 - vertical battery consisting of two smoke control dampers KWP

Arrangement 2 - vertical battery consisting of three smoke control dampers KWP-P

- First, fix two strips of PROMASEAL-PL gasket with a minimum cross-section of 20×1.8 mm (alternatively one strip with a minimum cross-section of 40×1.8 mm) to the insulating spacer of one of the adjoining fire dampers (position **(1)** in the drawing) along the entire length of their joint.
- Place non-combustible mineral wool with a thickness of 60 mm and a density of at least 60 kg/m^3 on the upper recessed surface of fire damper B so that, after assembling the dampers together, the insulation wool fills the entire free space between them, as shown in detail **(w1)**. Alternatively, two layers of mineral wool with a thickness of 30 mm and a density of at least 60 kg/m^3 may be used, with each layer fixed to the converging sides of the fire dampers. To fill any gaps or to bond the wool, a fire-resistant sealant or adhesive shall be used (e.g. PROMASTOP-CC or Conlit Glue).
- Place the smoke control damper B on the smoke control damper C and assemble them together on the front and back with use of perforated assembly strips (2) and self-tapping screws M6x10 (3), which should be tightened into the openings in smoke control damper body. In order to carry out the correct assembly, 4 self-tapping screws should be used per each assembly strip with length of 1200 [mm].
- Repeat accordingly paragraphs 2 and 3 to assemble smoke control damper A on smoke control damper B.

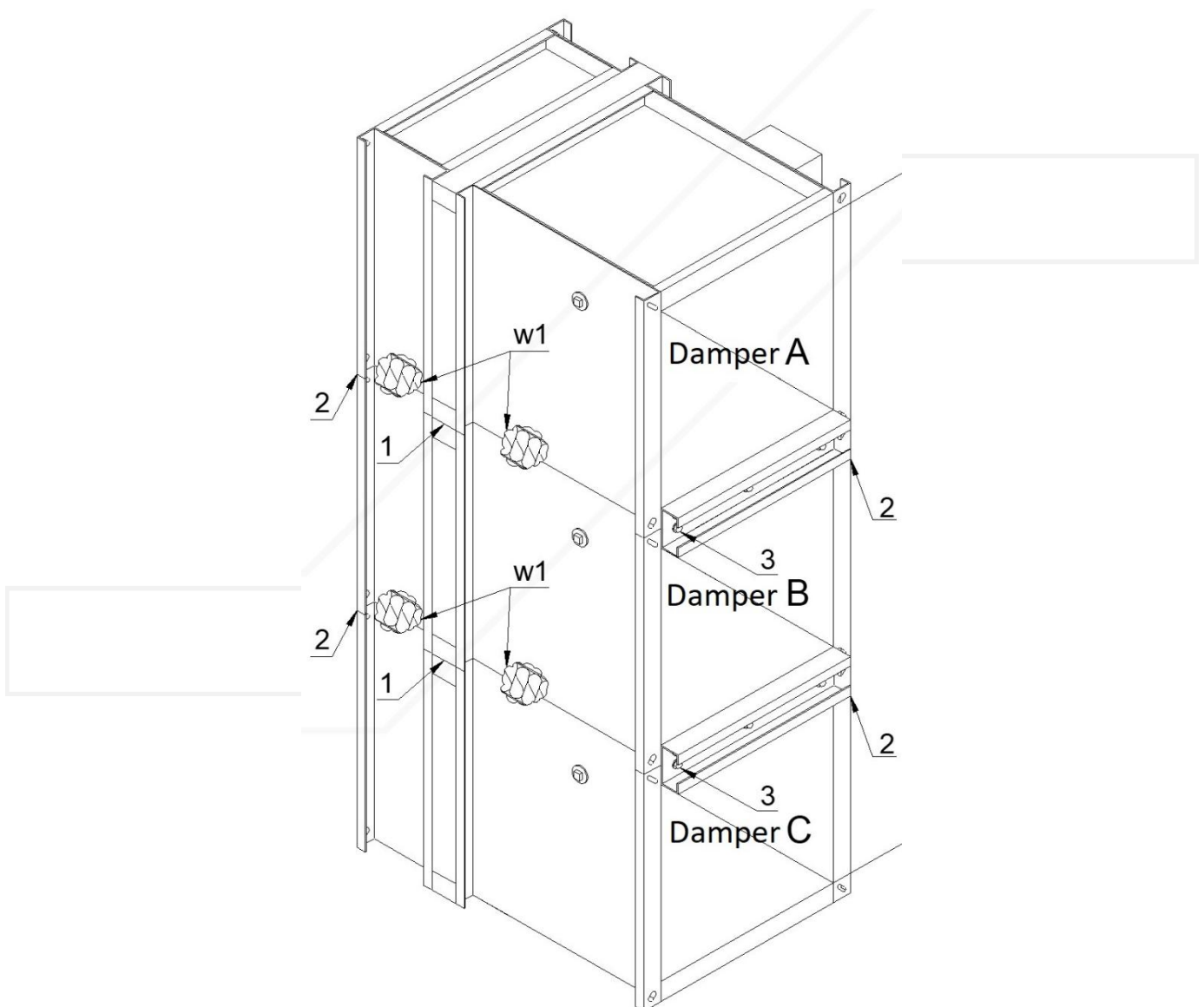


Figure 13. Arrangement 2 - vertical battery consisting of three smoke control dampers KWP-P

Arrangement 3 - horizontal battery consisting of two smoke control dampers KWP

- a. First, fix two strips of PROMASEAL-PL gasket with a minimum cross-section of 20×1.8 mm (alternatively one strip with a minimum cross-section of 40×1.8 mm) to the insulating spacer of one of the adjoining fire dampers (position **(1)** in the drawing) along the entire length of their joint.
- b. Set together the sides of smoke control damper A and the smoke control damper B (where the gasket was fixed) and assemble them together on the front and back with use of perforated assembly strips (2) and self-tapping screws M6x10 (3), which should be tightened into the openings in smoke control damper body. In order to carry out the correct assembly, 4 self-tapping screws should be used per each assembly strip with length of 1200 [mm].
- c. Fill the empty spaces at the joint between the housings of fire dampers A and B with non-combustible mineral wool with a thickness of 60 mm and a density of at least 60 kg/m^3 , as shown in detail (**w1**). Alternatively, two layers of mineral wool with a thickness of 30 mm and a density of at least 60 kg/m^3 may be used, with each layer fixed to the converging sides of the fire dampers. To fill any gaps or to bond the wool, a fire-resistant sealant or adhesive shall be used (e.g. PROMASTOP-CC or Conlit Glue).
- d. The place of sealing the top of the smoke control damper with mineral wool should be sealed with aluminum tape (4).

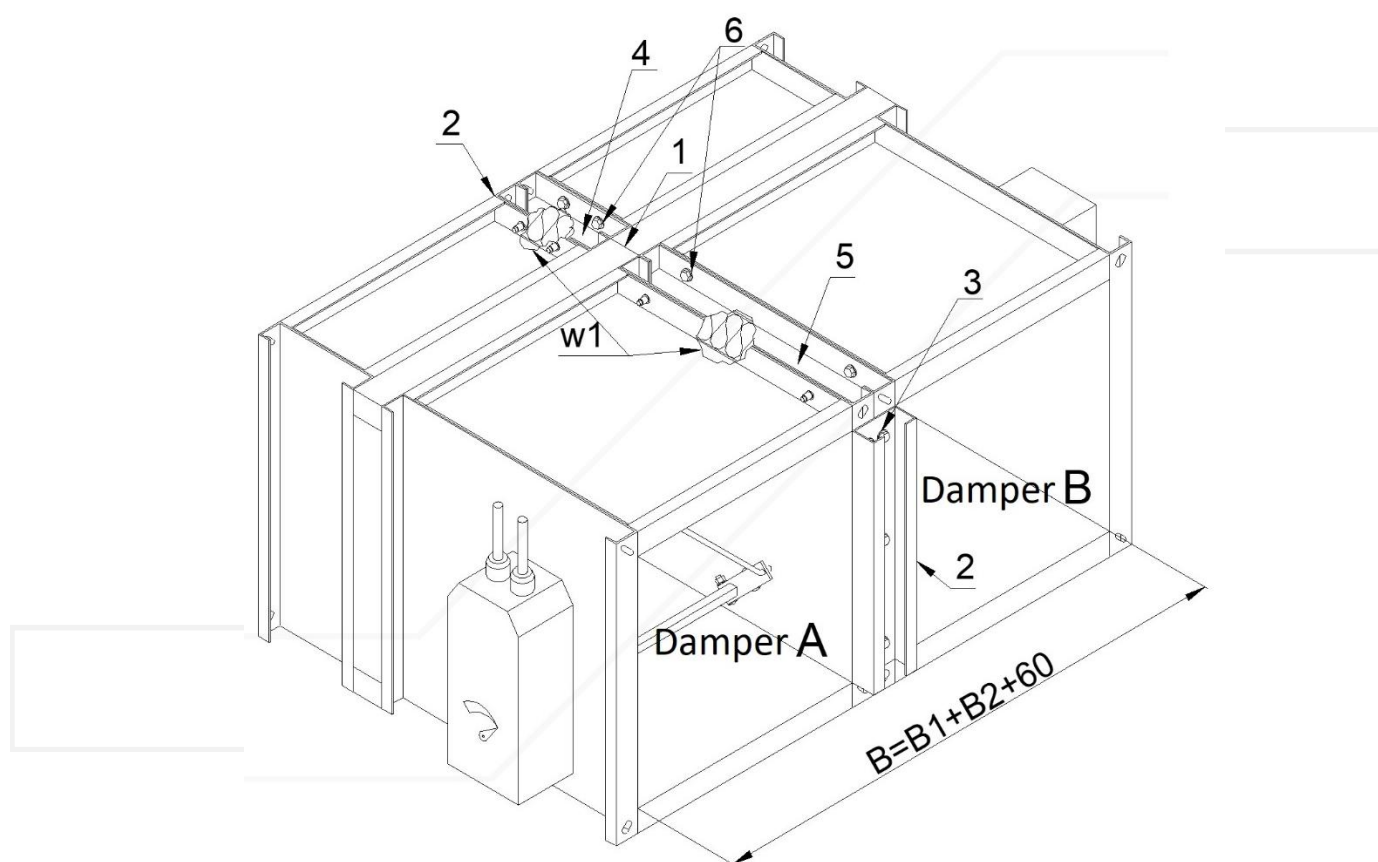


Figure 14. Arrangement 3 – horizontal battery consisting of two smoke control dampers KWP-P

Arrangement 4 – battery consisting of four smoke control dampers KWP-P

The assembly of battery consisting of four smoke control dampers KWP-P is divided into two steps:

- Step 1 – assembly of smoke control damper A and smoke control damper B and assembly of smoke control damper C and smoke control damper D.
- Step 2 – assembly of the set of smoke control dampers A, B and the set of smoke control dampers C, D.

STEP 1:

- a. First, fix two strips of PROMASEAL-PL gasket with a minimum cross-section of 20×1.8 mm (alternatively one strip with a minimum cross-section of 40×1.8 mm) to the insulating spacer of one of the adjoining fire dampers (position **(1)** in the drawing) along the entire length of their joint.
- b. Set together the sides of smoke control damper A and the smoke control damper B (where the gasket was fixed) and assemble them together on the front and back with use of perforated assembly strips (2) and self-tapping screws M6x10 (3), which should be tightened into the openings in smoke control damper body. In order to carry out the correct assembly, 4 self-tapping screws should be used per each assembly strip with length of 1200 [mm].
- c. Repeat paragraph 2 to assemble smoke control damper **C** on the smoke control damper **D**.

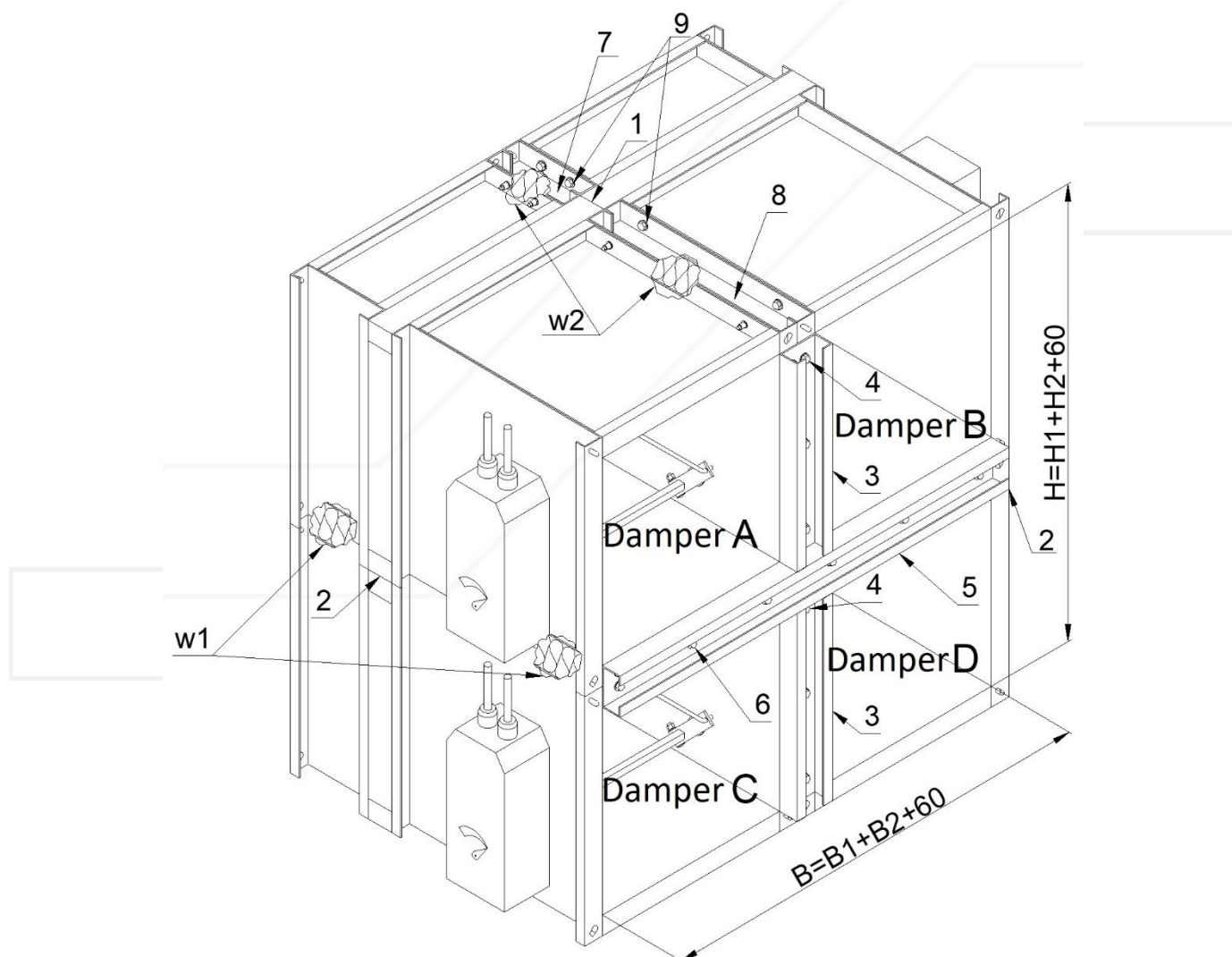


Figure 15. Battery made of four dampers KWP-P

STEP 2:

- a. First, fix two strips of PROMASEAL-PL gasket with a minimum cross-section of 20 × 1.8 mm (alternatively one strip with a minimum cross-section of 40 × 1.8 mm) to the insulating spacer of one of the adjoining fire dampers (position **(1)** in the drawing) along the entire length of their joint.
 - b. Place non-combustible mineral wool with a thickness of 60 mm and a density of at least 60 kg/m³ on the upper recessed surface of fire damper B so that, after assembling the dampers together, the insulation wool fills the entire free space between them, as shown in detail **(w1)**. Alternatively, two layers of mineral wool with a thickness of 30 mm and a density of at least 60 kg/m³ may be used, with each layer fixed to the converging sides of the fire dampers. To fill any gaps or to bond the wool, a fire-resistant sealant or adhesive shall be used (e.g. PROMASTOP-CC or Conlit Glue).
 - c. Place the set of smoke control dampers A and B on the set of smoke control dampers C and D and assemble them together on the front and back with use of perforated assembly strips (5) and self-tapping screws M6x10 (6), which should be tightened into the openings in smoke control damper body. In order to carry out the correct assembly, 4 self-tapping screws should be used per each assembly strip with length of 1200 [mm].
 - d. The empty space between joint of the bodies of smoke control dampers A, B and smoke control dampers C, D should be filled with non-combustible mineral wool (as shown in (w2)).
- NOTE:** The alternative way of wool mounting is to use two layers of wool with thickness of 30mm. In this case, apply the fire resistant PROMASTOP-CC with width of 50 mm. The mass is placed between the strips of wool and between wool and damper housings.
- e. The place of sealing the top of the battery with mineral wool should be sealed with aluminum tape **(7)**.

Installation of KWP smoke control dampers batteries in rigid wall compartment (Figure 13 to 16)

- a. Make an opening in the wall with dimensions depending on the battery size and its arrangement:
 - For vertical battery consisting of two KWP-P smoke control dampers: (B1+120)x(H1+H2+180) (Figure 15),
 - For vertical battery consisting of three KWP-P smoke control dampers: (B1+120)x(H1+H2+H3+240) (Figure 16),
 - For horizontal battery consisting of two KWP-P smoke control dampers: (B1+B2+180)x(H1+120) (Figure 17),
 - For battery consisting of four KWP-P fire: (B1+B2+180)x(H1+H2+180) (Figure 18),
- b. Put the battery of smoke control dampers into the installation opening on depth marked by undercuts on the damper body [dimension 60mm]. From one side fix it with suspension Z1, and from other side, fix it to ventilation duct suspended on suspension Z2 according to the figure).

NOTE: Fixing of the ductwork has to cover the weight of the battery of smoke control dampers. Specifically the bolts, anchors, installation frame of the duct and screws used to join the duct with battery of smoke control dampers should be taken into account. If there is no possibility of ensuring the safe suspension of the battery of smoke control dampers during installation, the battery should be supported from the bottom side.
- c. After setting the smoke control damper as described, fill the gap between the smoke control damper and the wall with cement, cement-lime mortar or concrete or PROMASTOP MG III of production of the PROMAT company.
- d. After 72 hours from the finish of assembly, the temporary suspensions may be removed and then board collars with a width of 100 mm shall be installed around the perimeter of the fire damper assembly.

REMARKS:

- a. Install the smoke control damper in such way, that the damper blades would be in horizontal position.
- b. Smoke control damper cannot be the support for the constructed wall.
- c. Ductwork cannot be the load for the smoke control damper, ductwork suspensions have to provide full load capacity.
- d. Ductwork suspensions fixed to the smoke control damper have to be made in accordance with the ductwork manufacturer instructions.
- e. Selection of mounting rails should be performed in accordance to the guidelines provided by the manufacturer of suspensions, considering weight and arrangement of the battery of smoke control dampers.
- f. In place of suspensions Z1, Z2 and cement mortar, mounting brackets may be applied! Paying special attention for immobilization of the smoke control damper).

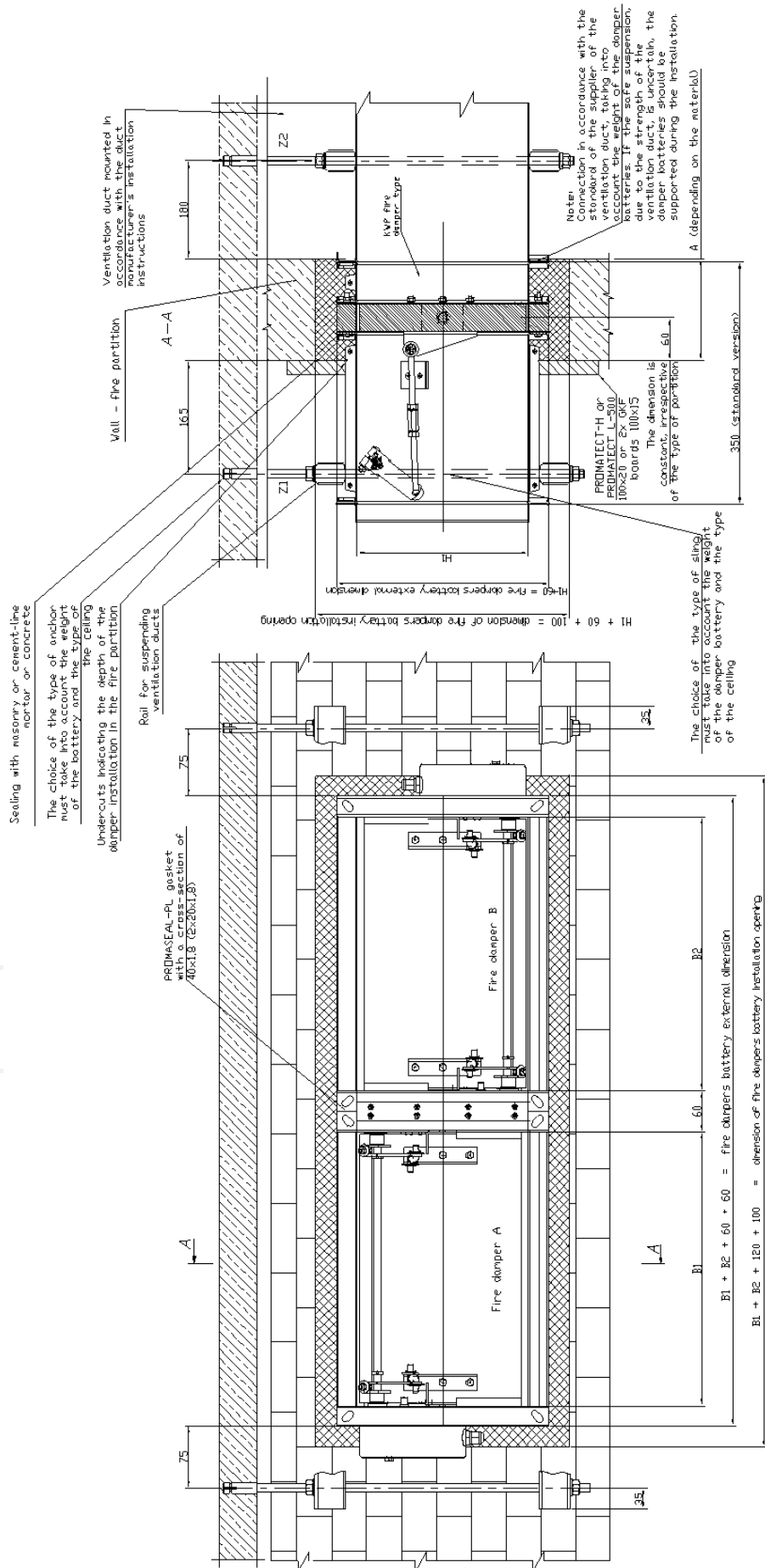


Figure 18. Installation of battery consisting of two smoke control dampers KWP-P in horizontal arrangement in wall

