


# KWP-P

Smoke control  
damper -  
rectangular

## Technical Documentation



|   |  |
|---|--|
| <br><b>1488</b>  |  |
| <b>SMAY Sp. z o.o.</b><br><b>22</b><br><b>CSWU:1488-CPR-0437/W</b><br><b>DWU: 001-CPR-2014</b>  |  |
| <b>EN 12101-8:2011</b><br><b>Multi-zone smoke control damper</b><br><br>type: KWP-P-E   |  |
| Nominal activation conditions/sensitivity:<br><b>Closing/opening during the test at the right time</b>  | Automatic starting - Pass  |
| <b>Response time/Closure time:</b>  | Automatic starting - Pass  |
| Reliability:  | 10 000 cycles.<120S  |
| Fire resistance:  |  |
| <b>Fire integrity - E</b><br><b>Fire insulation - I</b><br><b>Smoke leakage - S</b><br><b>Mechanical stability (under E)</b><br><b>Maintenance of the cross section (under E)</b> | EI 120 (v <sub>ew</sub> h <sub>ow</sub> i↔o) S1500C <sub>10000</sub><br>AA <sub>multi</sub><br><br>EI 120 (v <sub>ed</sub> i↔o) S1000C <sub>10000</sub><br>AA <sub>multi</sub> |
| Durability:   |  |
| <b>Maintenance of certainty operation with time delay</b>   | Pass<br>10 000 cycles, <120S   |

Version 6.4

SMAY reserves the right to make changes to this document.

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## 1. INTRODUCTION

The purpose of technical documentation is to familiarize the user with the intended use, design, operation principle, installation, periodic maintenance and operation of product..

## 2. LEGAL REGULATIONS

The KWP-P-E smoke control dampers are certified by the Building Research Institute (ITB – Instytut Techniki Budowlanej). **Certificate of Constancy of Performance No. 1488-CPR- 0437/W** along with the attachment No. Z-1488-CPR-0437/W. The set of dampers has been awarded the National Technical Assessment No. **ITB-KOT-2020/1398 edition 2.**

The dampers are designed, manufactured and tested in accordance with the following standards: **PN-EN 12101-8** "Smoke and heat control systems – Part 8: Smoke control dampers" and **PN-EN 13501-4** "Fire classification of construction products and building elements – Part 4: Classification using data from fire resistance tests on components of smoke control systems."

The effectiveness of the dampers is confirmed by tests according to **PN-EN 1366-2** and **PN-EN 1366-10** "Fire resistance tests for service installations – Part 2: Smoke control dampers, Part 10: Smoke control dampers."

The KWP-P-E smoke control dampers are classified as **tightness class C** (Case leakage class of the damper installed in accordance with the Technical Documentation) devices on the basis of tests carried out according to **PN-EN 1751** "Ventilation for buildings. Air terminal devices. Aerodynamic testing of dampers and valves."

## 3. INTENDED USE

The KWP-P-E smoke control dampers are designed to be used in automatically activated fire ventilation system, to support both single fire zones and multiple fire zones. They are installed also in mixed type ventilation system, where they are performing the function of fire ventilation and general/comfort ventilation systems. In fire ventilation systems starting the fans follows after the damper goes to right position (open position in case the damper working in fire-zone, and closed position in case the damper working in other fire-zones).

Maximum overpressure in supply ventilation systems, included in the fire ventilation systems provided with a KWP-P-E is 500 Pa, while the maximum operating negative pressure in fire ventilation systems is 1500 Pa.

KWP-P-E smoke control dampers are classified in the following fire resistance range and can be mounted in the following building partitions:

- **EI 120 (v<sub>ew</sub>-h<sub>ow</sub> -i↔o) S1500C<sub>10000</sub> AAmulti**
- **EI 120 (v<sub>ed</sub>-i↔o) S1000C<sub>10000</sub> AAmulti**
  - concrete wall with thickness 115 mm or more,
  - brick walls having a thickness of 115 mm or more (masonry of solid brick, cellular concrete blocks),
  - concrete ceiling with thickness 150 mm or more,
  - on fire ventilation ducts.

Table 1. Table of fire resistance

| Construction type | Minimum thickness of the building partitions mm           | Fire resistance class   | Sealing type                         |
|-------------------|---|---|--------------------------------------|
| <b>Ceiling</b>    | ≥150 mm   | EI 120 (h <sub>ow</sub> i↔o)<br>S1500 C <sub>10 000</sub><br>AAmulti  | MORTAR / MINERAL WOOL                |
| <b>Rigid wall</b> | ≥115 mm   | EI 120 (v <sub>ew</sub> i↔o)<br>S1500 C <sub>10 000</sub><br>AAmulti  | MORTAR                               |
| <b>Duct</b>       | -   | EI 120 (v <sub>ed</sub> i↔o)<br>S1000 C <sub>10 000</sub><br>AAmulti  | CERAMIC GASKET,<br>CONNECTION CLAMPS |
| <b>Battery</b>    | ≥150 for ≤6m <sup>2</sup><br>≥200 mm for >6m <sup>2</sup> | EI 120 (v <sub>ewd</sub> i↔o)<br>S1000 C <sub>10 000</sub><br>AAmulti | MORTAR                               |

where:

**E** – fire integrity,

**I** – fire insulation,

**120**– duration of fulfilment of E, I and S criteria, expressed in minutes,

**v<sub>ew</sub>** – damper mounted directly in the wall,

**h<sub>ow</sub>** – damper mounted directly in the ceiling,

**v<sub>ed</sub>** – damper mounted directly in the duct,

**i↔o** – operating effectiveness criteria are fulfilled from the inside to the outside (fire inside), and from the outside to the inside (fire outside).

**S** – smoke leakage,

**1500** – allowable negative pressure in the installation, in pascals,

**C<sub>10000</sub>** – the suitability of the damper for use in combined smoke control and general ventilation systems,

**AA** – automatic starting,

**multi** – acceptable installation in installations serving more than one fire zone.

KWP-P-E smoke control dampers may be installed in vertical building partitions with both **horizontal and vertical rotation axis** of baffle, the damper may be rotated in a way enabling on location of actuator on left or right side and on top or bottom.

KWP-P-E smoke control dampers are intended for installation on internal and external building partition and also on fire ventilation ducts. In case of external wall insulation there is required to use the damper with increased anti-corrosion properties and with finishing element (intake or launcher), which will protect from influence of atmospheric factors. Drive system (actuator or spring mechanism) should be installed inside facility.

## 4. TECHNICAL DESCRIPTION

KWP-P-E smoke control dampers comprise with two steel housing, rectangular in profile, separated by isolating divider, moving, single-plane baffle and drive mechanism.

The damper housing and its interacting elements are made of galvanized steel sheet. Both ends of the housing are terminated with connection flanges, allowing easy connection between the duct and the damper.

There is intumescent seal on the inner surface of the housing, in the place of perforation around the closed isolating baffle. Its characteristic feature is the fact that their volume increases at high temperatures, tightly filling all leaks between the baffle and the body. Between housing and insulating spacer there is foamed rubber gasket, ensuring the tightness integrity in the ambient temperature.

The isolating baffle of the damper is made of calcium-silica board, and a aluminum tape is installed on its perimeter, ensuring reduction of friction.

Baffle is rotating on two steel axles located in housing. Baffle movement is limited in the closed position by a stop bar.

KWP-P-E damper is equipped with an electric actuator of the BEN, BLE, BEE or BE series from BELIMO, which constitutes a system Damper drive with a supply voltage of AC 230 V or AC/DC 24 V. After voltage is supplied, the actuator rotates the baffle into the open position.

The actuators are moving in both directions by the voltage given to the individual circuits – actuators do not have return spring and thermal fuse. The dampers can be made with an inspection cover in accordance with the order code.

During normal operation of the system, KWP-P-E dampers are in closed position. If a fire breaks out, the damper's baffle rotates to an open position or stays closed.

The type series of the dampers covers the following dimensions: clear damper width **from 200 to 1500 mm** (50 mm intervals) and clear damper height **from 200 to 1000 mm** (50 mm intervals), with a maximum cross-sectional area for KWP-P-E totals 1,5 m<sup>2</sup>. Length of standard edition of KWP-P-E damper is L=350 [mm] (optional L=600 [mm]).

For special request KWP-P dampers could be made in 10 [mm] interval dimension.

Table 2. Type series of damper dimension KWP-P-E

| KWP-P | Width B [mm] |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
|-------|--------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
|       | 200          | 250   | 300   | 350   | 400   | 450   | 500   | 550   | 600   | 650   | 700   | 750   | 800   | 850   | 900   | 950   | 1000  | 1050  | 1100  | 1150  | 1200  | 1250  | 1300  | 1350  | 1400  | 1450  | 1500  |
| 200   | 0,027        | 0,035 | 0,042 | 0,049 | 0,056 | 0,064 | 0,071 | 0,078 | 0,085 | 0,093 | 0,100 | 0,107 | 0,114 | 0,122 | 0,129 | 0,136 | 0,143 | 0,151 | 0,158 | 0,165 | 0,172 | 0,180 | 0,187 | 0,194 | 0,201 | 0,209 | 0,216 |
| 250   | 0,037        | 0,046 | 0,056 | 0,066 | 0,076 | 0,085 | 0,095 | 0,105 | 0,115 | 0,124 | 0,134 | 0,144 | 0,154 | 0,163 | 0,173 | 0,183 | 0,193 | 0,202 | 0,212 | 0,222 | 0,232 | 0,241 | 0,251 | 0,261 | 0,271 | 0,280 | 0,290 |
| 300   | 0,046        | 0,058 | 0,070 | 0,083 | 0,095 | 0,107 | 0,119 | 0,132 | 0,144 | 0,156 | 0,168 | 0,181 | 0,193 | 0,205 | 0,217 | 0,230 | 0,242 | 0,254 | 0,266 | 0,279 | 0,291 | 0,303 | 0,315 | 0,328 | 0,340 | 0,352 | 0,364 |
| 350   | 0,055        | 0,070 | 0,085 | 0,099 | 0,114 | 0,129 | 0,144 | 0,158 | 0,173 | 0,188 | 0,203 | 0,217 | 0,232 | 0,247 | 0,262 | 0,276 | 0,291 | 0,306 | 0,321 | 0,335 | 0,350 | 0,365 | 0,380 | 0,394 | 0,409 | 0,424 | 0,439 |
| 400   | 0,064        | 0,082 | 0,099 | 0,116 | 0,133 | 0,151 | 0,168 | 0,185 | 0,202 | 0,220 | 0,237 | 0,254 | 0,271 | 0,289 | 0,306 | 0,323 | 0,340 | 0,358 | 0,375 | 0,392 | 0,409 | 0,427 | 0,444 | 0,461 | 0,478 | 0,496 | 0,513 |
| 450   | 0,074        | 0,093 | 0,113 | 0,133 | 0,153 | 0,172 | 0,192 | 0,212 | 0,232 | 0,251 | 0,271 | 0,291 | 0,311 | 0,330 | 0,350 | 0,370 | 0,390 | 0,409 | 0,429 | 0,449 | 0,469 | 0,488 | 0,508 | 0,528 | 0,548 | 0,567 | 0,587 |
| 500   | 0,083        | 0,105 | 0,127 | 0,150 | 0,172 | 0,194 | 0,216 | 0,239 | 0,261 | 0,283 | 0,305 | 0,328 | 0,350 | 0,372 | 0,394 | 0,417 | 0,439 | 0,461 | 0,483 | 0,506 | 0,528 | 0,550 | 0,572 | 0,595 | 0,617 | 0,639 | 0,661 |
| 550   | 0,092        | 0,117 | 0,142 | 0,166 | 0,191 | 0,216 | 0,241 | 0,265 | 0,290 | 0,315 | 0,340 | 0,364 | 0,389 | 0,414 | 0,439 | 0,463 | 0,488 | 0,513 | 0,538 | 0,562 | 0,587 | 0,612 | 0,637 | 0,661 | 0,686 | 0,711 | 0,736 |
| 600   | 0,101        | 0,129 | 0,156 | 0,183 | 0,210 | 0,238 | 0,265 | 0,292 | 0,319 | 0,347 | 0,374 | 0,401 | 0,428 | 0,456 | 0,483 | 0,510 | 0,537 | 0,565 | 0,592 | 0,619 | 0,646 | 0,674 | 0,701 | 0,728 | 0,755 | 0,783 | 0,810 |
| 650   | -            | 0,140 | 0,170 | 0,200 | 0,230 | 0,259 | 0,289 | 0,319 | 0,349 | 0,378 | 0,408 | 0,438 | 0,468 | 0,497 | 0,527 | 0,557 | 0,587 | 0,616 | 0,646 | 0,676 | 0,706 | 0,735 | 0,765 | 0,795 | 0,825 | 0,854 | 0,884 |
| 700   | -            | 0,152 | 0,184 | 0,217 | 0,249 | 0,281 | 0,313 | 0,346 | 0,378 | 0,410 | 0,442 | 0,475 | 0,507 | 0,539 | 0,571 | 0,604 | 0,636 | 0,668 | 0,700 | 0,733 | 0,765 | 0,797 | 0,829 | 0,862 | 0,894 | 0,926 | 0,958 |
| 750   | -            | 0,164 | 0,199 | 0,233 | 0,268 | 0,303 | 0,338 | 0,372 | 0,407 | 0,442 | 0,477 | 0,511 | 0,546 | 0,581 | 0,616 | 0,650 | 0,685 | 0,720 | 0,755 | 0,789 | 0,824 | 0,859 | 0,894 | 0,928 | 0,963 | 0,998 | 1,033 |
| 800   | -            | -     | 0,213 | 0,250 | 0,287 | 0,325 | 0,362 | 0,399 | 0,436 | 0,474 | 0,511 | 0,548 | 0,585 | 0,623 | 0,660 | 0,697 | 0,734 | 0,772 | 0,809 | 0,846 | 0,883 | 0,921 | 0,958 | 0,995 | 1,032 | 1,070 | 1,107 |
| 850   | -            | -     | 0,227 | 0,267 | 0,307 | 0,346 | 0,386 | 0,426 | 0,466 | 0,505 | 0,545 | 0,585 | 0,625 | 0,664 | 0,704 | 0,744 | 0,784 | 0,823 | 0,863 | 0,903 | 0,943 | 0,982 | 1,022 | 1,062 | 1,102 | 1,141 | 1,181 |
| 900   | -            | -     | 0,241 | 0,284 | 0,326 | 0,368 | 0,410 | 0,453 | 0,495 | 0,537 | 0,579 | 0,622 | 0,664 | 0,706 | 0,748 | 0,791 | 0,833 | 0,875 | 0,917 | 0,960 | 1,002 | 1,044 | 1,086 | 1,129 | 1,171 | 1,213 | 1,255 |
| 950   | -            | -     | -     | 0,300 | 0,345 | 0,390 | 0,435 | 0,479 | 0,524 | 0,569 | 0,614 | 0,658 | 0,703 | 0,748 | 0,793 | 0,837 | 0,882 | 0,927 | 0,972 | 1,016 | 1,061 | 1,106 | 1,151 | 1,195 | 1,240 | 1,285 | 1,330 |
| 1000  | -            | -     | -     | 0,317 | 0,364 | 0,412 | 0,459 | 0,506 | 0,553 | 0,601 | 0,648 | 0,695 | 0,742 | 0,790 | 0,837 | 0,884 | 0,931 | 0,979 | 1,026 | 1,073 | 1,120 | 1,168 | 1,215 | 1,262 | 1,309 | 1,357 | 1,404 |
| 1050  | -            | -     | -     | 0,334 | 0,384 | 0,433 | 0,483 | 0,533 | 0,583 | 0,632 | 0,682 | 0,732 | 0,782 | 0,831 | 0,881 | 0,931 | 0,981 | 1,030 | 1,080 | 1,130 | 1,180 | 1,229 | 1,279 | 1,329 | 1,379 | -     | -     |
| 1100  | -            | -     | -     | -     | 0,403 | 0,455 | 0,507 | 0,560 | 0,612 | 0,664 | 0,716 | 0,769 | 0,821 | 0,873 | 0,925 | 0,978 | 1,030 | 1,082 | 1,134 | 1,187 | 1,239 | 1,291 | 1,343 | 1,396 | -     | -     | -     |
| 1150  | -            | -     | -     | -     | 0,422 | 0,477 | 0,532 | 0,586 | 0,641 | 0,696 | 0,751 | 0,805 | 0,860 | 0,915 | 0,970 | 1,024 | 1,079 | 1,134 | 1,189 | 1,243 | 1,298 | 1,353 | 1,408 | -     | -     | -     | -     |
| 1200  | -            | -     | -     | -     | 0,441 | 0,499 | 0,556 | 0,613 | 0,670 | 0,728 | 0,785 | 0,842 | 0,899 | 0,957 | 1,014 | 1,071 | 1,128 | 1,186 | 1,243 | 1,300 | 1,357 | 1,415 | -     | -     | -     | -     | -     |
| 1250  | -            | -     | -     | -     | -     | 0,520 | 0,580 | 0,640 | 0,700 | 0,759 | 0,819 | 0,879 | 0,939 | 0,998 | 1,058 | 1,118 | 1,178 | 1,237 | 1,297 | 1,357 | 1,417 | -     | -     | -     | -     | -     | -     |
| 1300  | -            | -     | -     | -     | -     | 0,542 | 0,604 | 0,667 | 0,729 | 0,791 | 0,853 | 0,916 | 0,978 | 1,040 | 1,102 | 1,165 | 1,227 | 1,289 | 1,351 | 1,414 | -     | -     | -     | -     | -     | -     | -     |
| 1350  | -            | -     | -     | -     | -     | 0,564 | 0,629 | 0,693 | 0,758 | 0,823 | 0,888 | 0,952 | 1,017 | 1,082 | 1,147 | 1,211 | 1,276 | 1,341 | 1,406 | -     | -     | -     | -     | -     | -     | -     | -     |
| 1400  | -            | -     | -     | -     | -     | -     | 0,653 | 0,720 | 0,787 | 0,855 | 0,922 | 0,989 | 1,056 | 1,124 | 1,191 | 1,258 | 1,325 | 1,393 | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 1450  | -            | -     | -     | -     | -     | -     | 0,677 | 0,747 | 0,817 | 0,886 | 0,956 | 1,026 | 1,096 | 1,165 | 1,235 | 1,305 | 1,375 | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |
| 1500  | -            | -     | -     | -     | -     | -     | 0,701 | 0,774 | 0,846 | 0,918 | 0,990 | 1,063 | 1,135 | 1,207 | 1,279 | 1,352 | 1,424 | -     | -     | -     | -     | -     | -     | -     | -     | -     | -     |

BEN actuators are used:

- for  $(B \times H \leq 1,21 \text{ [m}^2\text{]})$  or  $H \leq 1100 \text{ [mm]}$

BEE actuators are used:

- for  $\{(B \leq 1050 \text{ and } 1100 < H \leq 1200) \text{ or } (1,21 \text{ [m}^2\text{]} < B \times H \leq 1,3 \text{ [m}^2\text{]} \text{ and } H \leq 1200 \text{ [mm]})\}$

BE actuators are used:

- for  $(B \times H > 1,3 \text{ [m}^2\text{]})$ , or  $H > 1200 \text{ [mm]}$

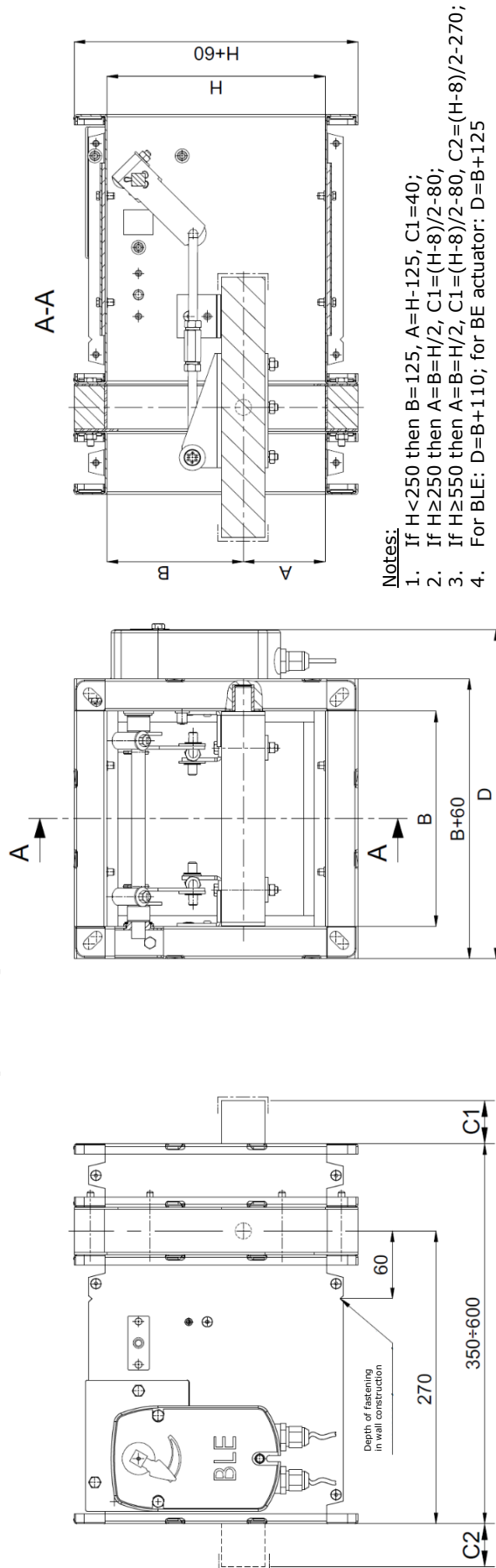


Figure 1. KWP-P-E damper

Table 3. KWP-P-E weight [kg]

| H/B                                  | 200  | 300  | 400  | 500  | 600  | 700  | 800  | 900   | 1000  | 1100  | 1200  | 1300  | 1400  | 1500  |
|--------------------------------------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
| Smoke control damper weight KWP [kg] |      |      |      |      |      |      |      |       |       |       |       |       |       |       |
| 200                                  | 12,4 | 14,6 | 16,8 | 19,0 | 21,2 | 23,4 | 25,6 | 27,8  | 30,0  | 32,2  | 34,4  | 41,4  | 44,0  | 46,5  |
| 300                                  | 14,4 | 17,0 | 19,7 | 22,2 | 24,9 | 27,5 | 30,1 | 32,7  | 35,4  | 38,0  | 40,6  | 48,3  | 51,2  | 54,2  |
| 400                                  | 16,6 | 19,6 | 22,6 | 25,6 | 28,6 | 31,6 | 34,7 | 37,7  | 40,7  | 43,8  | 46,8  | 55,2  | 58,6  | 61,9  |
| 500                                  | 18,7 | 22,1 | 25,6 | 29,0 | 32,4 | 35,8 | 39,3 | 42,7  | 46,1  | 49,5  | 52,9  | 62,2  | 65,9  | 69,6  |
| 600                                  | 20,7 | 24,6 | 28,5 | 32,2 | 36,1 | 39,9 | 43,8 | 47,6  | 51,4  | 55,2  | 59,1  | 69,0  | 73,2  | 77,3  |
| 700                                  | -    | 27,1 | 31,4 | 35,5 | 39,8 | 44,0 | 48,3 | 52,5  | 56,7  | 61,0  | 65,2  | 75,9  | 80,4  | 85,0  |
| 800                                  | -    | 29,6 | 34,3 | 38,8 | 43,5 | 48,1 | 52,8 | 57,4  | 62,1  | 66,7  | 71,3  | 82,8  | 87,7  | 92,7  |
| 900                                  | -    | 32,1 | 37,1 | 42,1 | 47,2 | 52,2 | 57,3 | 62,3  | 67,4  | 72,4  | 77,5  | 89,6  | 96,2  | 101,5 |
| 1000                                 | -    | -    | 40,1 | 45,5 | 51,0 | 56,4 | 61,9 | 67,4  | 72,8  | 78,2  | 83,7  | 97,8  | 103,6 | 109,3 |
| 1100                                 | -    | -    | 43,2 | 48,9 | 54,8 | 60,7 | 66,5 | 72,4  | 78,2  | 84,1  | 90,2  | 104,6 | -     | -     |
| 1200                                 | -    | -    | 46,2 | 52,3 | 58,7 | 64,9 | 71,1 | 77,5  | 83,7  | 90,0  | 104,5 | -     | -     | -     |
| 1300                                 | -    | -    | -    | 61,6 | 68,6 | 75,6 | 82,6 | 89,6  | 97,8  | 104,4 | -     | -     | -     | -     |
| 1400                                 | -    | -    | -    | 65,3 | 72,8 | 80,1 | 87,5 | 96,2  | 103,6 | -     | -     | -     | -     | -     |
| 1500                                 | -    | -    | -    | 69,0 | 76,9 | 84,7 | 92,5 | 101,5 | 109,3 | -     | -     | -     | -     | -     |

## 5. BELIMO ELECTRIC ACTUATORS USED IN KWP-P-E

### Actuator BEN series:

- BEN230,
- BEN24,
- BEN24-ST.

where:  
ST - connection plug



### Actuator BEE series:

- BEE230,
- BEE24,
- BEE24-ST.

where:  
ST - connection plug.



### Actuator BE series:

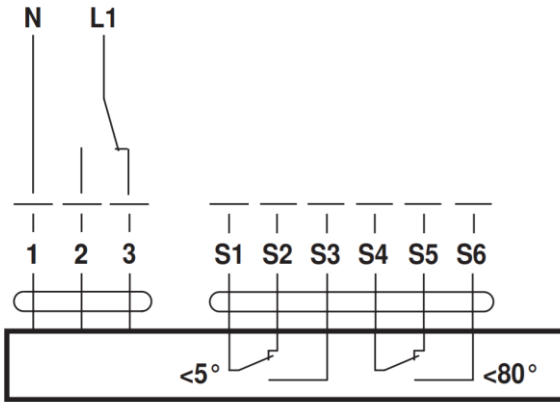
- BE230-12,
- BE24-12,
- BE24-12-ST.

where:  
ST - connection plug.

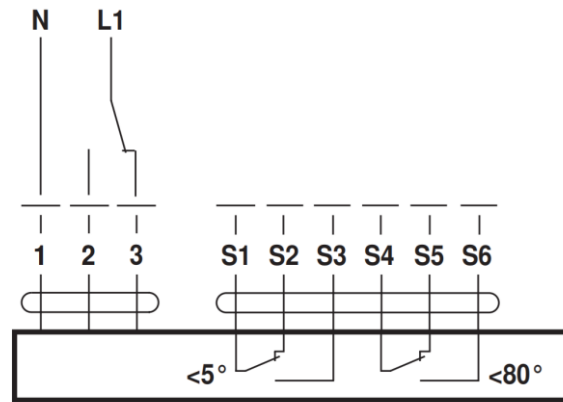


**Wiring diagram BEN230, BEE230 and BE230-12:**
**BEN230:**

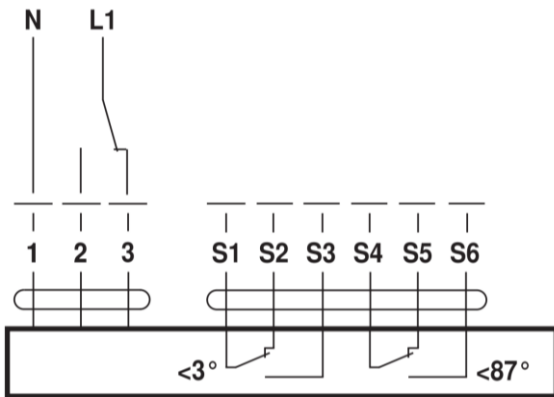
AC 230 V, open-close


**BEE230:**

AC 230 V, open-close

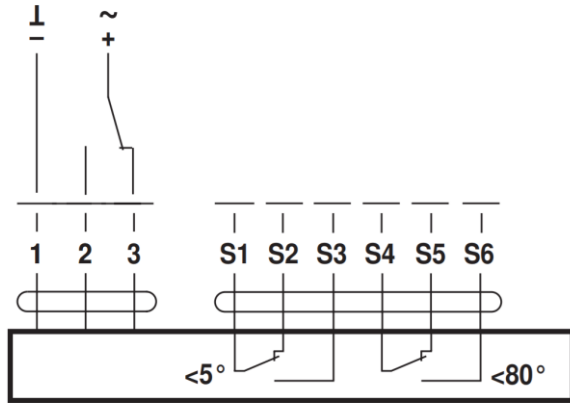

**BE230-12:**

AC 230 V, open-close

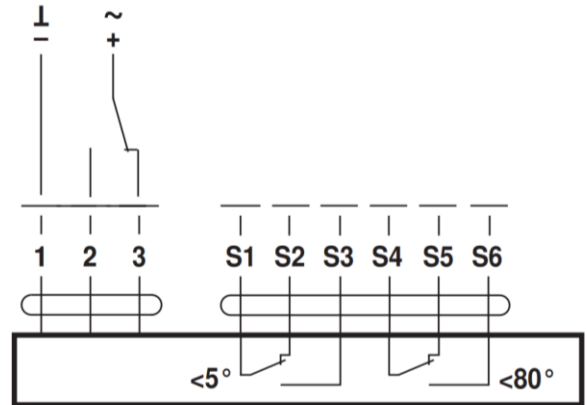


**Wiring diagram BEN24, BEE24 and BE24-12:**
**BEN24:**

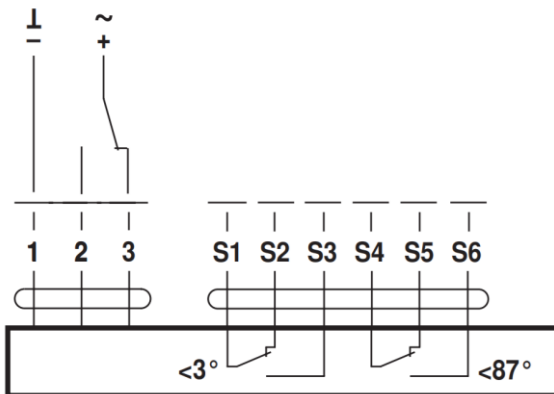
AC/DC 24 V, open-close


**BEE24:**

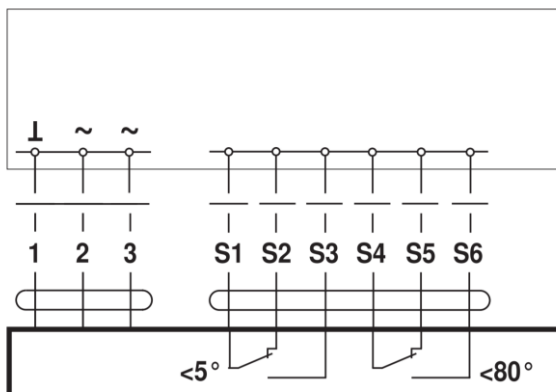
AC/DC 24 V, open-close


**BE24-12:**

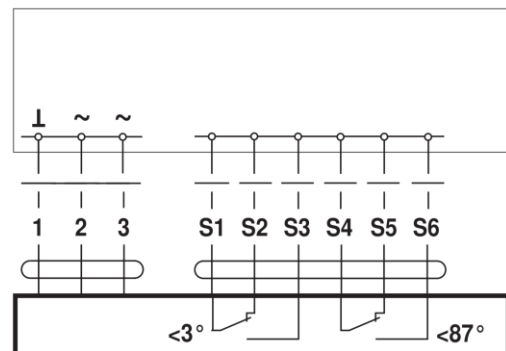
AC/DC 24 V, open-close


**Wiring diagram BEN24-ST, BEE24-ST and BE24-12-ST:**
**BEN24-ST:**

Application with connector plug

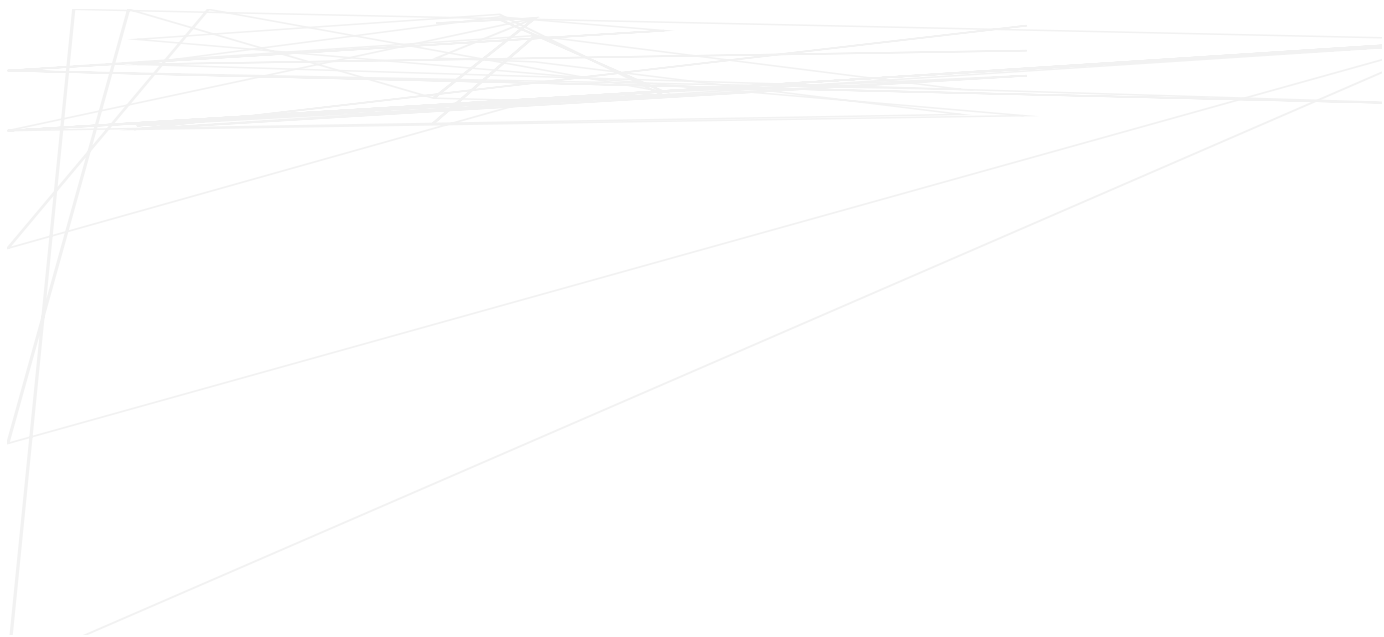
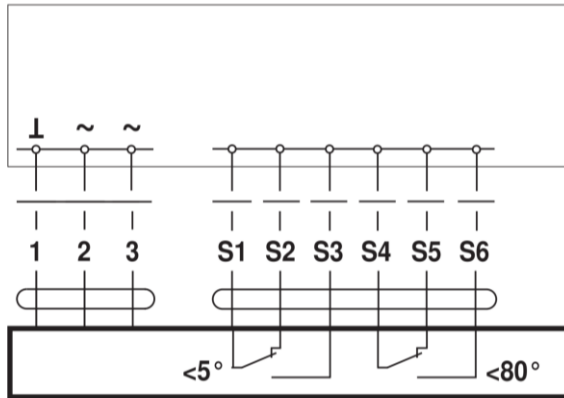


Application with SBSE-Control


**BE24-12-ST:**

**BEE24-ST:**

Application with connector plug



| <b>Technical data:</b>                   | <b>BEN230</b>                                      | <b>BEN24 (-ST)</b>                                 |
|--|--|--|
| Nominal voltage                          | AC 230 V   | AC/DC 24 V   |
| Nominal voltage frequency                | 50/60 Hz   | 50/60 Hz   |
| Nominal voltage range                    | AC 198...264 V                                     | AC 19.2...28.8 V / DC 21.6...28.8 V                |
| Switching thresholds min. ON voltage     | AC 198V  | AC 19.2 V / DC 21.6 V                              |
| Switching thresholds max. OFF voltage    | AC 50 V  | AC 5 V / DC 7 V                                    |
| Power consumption in operation           | 4 W  | 3 W  |
| Power consumption in rest position       | 0.4 W  | 0.1 W  |
| Power consumption for wire sizing        | 7 VA   | 6 VA   |
| Power consumption for wire sizing note   | I <sub>max</sub> 4 A @ 5 ms                        | I <sub>max</sub> 8.2 A @ 5 ms                      |
| Auxiliary switch                         | 2 x SPDT   | 2 x SPDT   |
| Switching capacity auxiliary switch      | 1 mA...3 (0.5 inductive) A, AC 250 V               | 1 mA...3 (0.5 inductive) A, AC 250 V               |
| Switching points auxiliary switch        | 5° / 80°   | 5° / 80°   |
| Tolerance                                | ±3°  | ±3°  |
| Connection supply / control              | Cable 1 m, 3 x 0.75 mm <sup>2</sup> , halogen-free | Cable 1 m, 3 x 0.75 mm <sup>2</sup> , halogen-free |
| Connection auxiliary switch              | Cable 1 m, 6 x 0.75 mm <sup>2</sup> , halogen-free | Cable 1 m, 6 x 0.75 mm <sup>2</sup> , halogen-free |
| Nominal torque                           | 15 Nm  | 15 Nm  |
| Direction of rotation motor              | can be selected by mounting                        | can be selected by mounting                        |
| Manual override                          | with hand crank                                    | with hand crank                                    |
| Angle of rotation                        | Max. 95°   | Max. 95°   |
| Running time motor                       | <30s / 90°   | <30s / 90°   |
| Sound power level, motor                 | 58 dB(A)   | 58 dB(A)   |
| Spindle driver                           | Form fit 12x12 mm, Continuous hollow shaft         | Form fit 12x12 mm, Continuous hollow shaft         |
| Position indication                      | Mechanically, with pointer                         | Mechanically, with pointer                         |
| Service life                             | Min. 10,000 cycles                                 | Min. 10,000 cycles                                 |
| Protection class IEC/EN                  | II reinforced insulation                           | III Safety Extra-Low Voltage (SELV)                |
| Protection class auxiliary switch IEC/EN | II reinforced insulation                           | II reinforced insulation                           |
| Degree of protection IEC/EN              | IP54   | IP54   |
| EMC                                      | CE according to 2014/30/EU                         | CE according to 2014/30/EU                         |
| Low voltage directive                    | CE according to 2014/35/EU                         | CE according to 2014/35/EU                         |
| Certification IEC/EN                     | IEC/EN 60730-1 and IEC/EN 60730-2-14               | IEC/EN 60730-1 and IEC/EN 60730-2-14               |
| Mode of operation                        | Type 1.B   | Type 1.B   |
| Rated impulse voltage supply / control   | 4 kV   | 0.8 kV   |
| Rated impulse voltage auxiliary switch   | 4 kV   | 4 kV   |
| Control pollution degree                 | 3  | 3  |
| Ambient temperature                      | -30...55 °C  | -30...55 °C  |
| Non-operating temperature                | -40...80 °C  | -40...80 °C  |
| Ambient humidity                         | Max. 95% r.h., non-condensing                      | Max. 95% r.h., non-condensing                      |
| Maintenance                              | Maintenance-free                                   | Maintenance-free                                   |
| Weight                                   | 0.9 kg   | 0.9 kg   |

| <b>Technical data:</b>                   | <b>BEE230</b>                                      | <b>BEE24 (-ST)</b>                                 |
|--|--|--|
| Nominal voltage                          | AC 230 V   | AC/DC 24 V   |
| Nominal voltage frequency                | 50/60 Hz   | 50/60 Hz   |
| Nominal voltage range                    | AC 198...264 V                                     | AC 19.2...28.8 V / DC 21.6...28.8 V                |
| Switching thresholds min. ON voltage     | AC 198V  | AC 19.2 V / DC 21.6 V                              |
| Switching thresholds max. OFF voltage    | AC 50 V  | AC 5 V / DC 7 V                                    |
| Power consumption in operation           | 3.5 W  | 2.5 W  |
| Power consumption in rest position       | 0.4 W  | 0.1 W  |
| Power consumption for wire sizing        | 6 VA   | 5 VA   |
| Power consumption for wire sizing note   | I <sub>max</sub> 4 A @ 5 ms                        | I <sub>max</sub> 8.2 A @ 5 ms                      |
| Auxiliary switch                         | 2 x SPDT   | 2 x SPDT   |
| Switching capacity auxiliary switch      | 1 mA...3 (0.5 inductive) A, AC 250 V               | 1 mA...3 (0.5 inductive) A, AC 250 V               |
| Switching points auxiliary switch        | 5° / 80°   | 5° / 80°   |
| Tolerance                                | ±3°  | ±3°  |
| Connection supply / control              | Cable 1 m, 3 x 0.75 mm <sup>2</sup> , halogen-free | Cable 1 m, 3 x 0.75 mm <sup>2</sup> , halogen-free |
| Connection auxiliary switch              | Cable 1 m, 6 x 0.75 mm <sup>2</sup> , halogen-free | Cable 1 m, 6 x 0.75 mm <sup>2</sup> , halogen-free |
| Nominal torque                           | 25 Nm  | 25 Nm  |
| Direction of rotation motor              | can be selected by mounting                        | can be selected by mounting                        |
| Manual override                          | with hand crank                                    | with hand crank                                    |
| Angle of rotation                        | Max. 95°   | Max. 95°   |
| Running time motor                       | <60s / 90°   | <60s / 90°   |
| Sound power level, motor                 | 58 dB(A)   | 58 dB(A)   |
| Spindle driver                           | Form fit 12x12 mm, Continuous hollow shaft         | Form fit 12x12 mm, Continuous hollow shaft         |
| Position indication                      | Mechanically, with pointer                         | Mechanically, with pointer                         |
| Service life                             | Min. 10,000 cycles                                 | Min. 10,000 cycles                                 |
| Protection class IEC/EN                  | II reinforced insulation                           | III Safety Extra-Low Voltage (SELV)                |
| Protection class auxiliary switch IEC/EN | II reinforced insulation                           | II reinforced insulation                           |
| Degree of protection IEC/EN              | IP54   | IP54   |
| EMC                                      | CE according to 2014/30/EU                         | CE according to 2014/30/EU                         |
| Low voltage directive                    | CE according to 2014/35/EU                         | CE according to 2014/35/EU                         |
| Certification IEC/EN                     | IEC/EN 60730-1 and IEC/EN 60730-2-14               | IEC/EN 60730-1 and IEC/EN 60730-2-14               |
| Mode of operation                        | Type 1.B   | Type 1.B   |
| Rated impulse voltage supply / control   | 4 kV   | 0.8 kV   |
| Rated impulse voltage auxiliary switch   | 4 kV   | 4 kV   |
| Control pollution degree                 | 3  | 3  |
| Ambient temperature                      | -30...55 °C  | -30...55 °C  |
| Non-operating temperature                | -40...80 °C  | -40...80 °C  |
| Ambient humidity                         | Max. 95% r.h., non-condensing                      | Max. 95% r.h., non-condensing                      |
| Maintenance                              | Maintenance-free                                   | Maintenance-free                                   |
| Weight                                   | 1.1 kg   | 1.1 kg   |

| <b>Technical data:</b>                  | <b>BE230-12</b>   | <b>BE24-12 (-ST)</b>  |
|---|---|---|
| Nominal voltage                         | AC 230 V  | AC/DC 24 V  |
| Nominal voltage frequency               | 50/60 Hz  | 50/60 Hz  |
| Nominal voltage range                   | AC 198...264 V  | AC 19.2...28.8 V / DC 21.6...28.8 V                         |
| Switching thresholds min. ON voltage    | AC 198 V  | AC 19.2 V / DC 21.6 V                                       |
| Switching thresholds max. OFF voltage   | AC 100 V  | AC 6.5 V / DC 6.5 V   |
| Power consumption in operation          | 8 W   | 12 W  |
| Power consumption in rest position      | 0.5 W   | 0.5 W   |
| Power consumption for wire sizing       | 15 VA   | 18 VA   |
| Power consumption for wire sizing note  | I <sub>max</sub> 7.9 A @ 5 ms                               | I <sub>max</sub> 8.2 A @ 5 ms                               |
| Auxiliary switch                        | 2 x SPDT  | 2 x SPDT  |
| Switching capacity auxiliary switch     | 1 mA...6 (3) A, DC 5 V...AC 250 V (II Protective insulated) | 1 mA...6 (3) A, DC 5 V...AC 250 V (II Protective insulated) |
| Switching points auxiliary switch       | 3° / 87° (in relation to 0...90°)                           | 3° / 87° (in relation to 0...90°)                           |
| Tolerance                               | ±2°   | ±2°   |
| Connection supply                       | Cable 1 m, 3 x 0.75 mm <sup>2</sup> , halogen-free          | Cable 1 m, 3 x 0.75 mm <sup>2</sup> , halogen-free          |
| Connection auxiliary switch             | Cable 1 m, 6 x 0.75 mm <sup>2</sup> , halogen-free          | Cable 1 m, 6 x 0.75 mm <sup>2</sup> , halogen-free          |
| Torque motor                            | Min. 40 Nm  | Min. 40 Nm  |
| Inhibiting torque dynamic               | 40 Nm   | 40 Nm   |
| Inhibiting torque static (voltage-free) | 50 Nm   | 50 Nm   |
| Direction of rotation motor             | Can be selected by mounting L/R                             | Can be selected by mounting L/R                             |
| Angle of rotation                       | 100° (including 5° mechanical overrun at both sides)        | Max. 100° (including 5° mechanical overrun at both sides)   |
| Running time motor                      | <60 s / 90°   | <60 s / 90°   |
| Sound power level motor                 | 62 dB(A)  | 62 dB(A)  |
| Spindle driver                          | Form fit 14 mm  | Form fit 14 mm  |
| Position indication                     | Mechanically, with pointer                                  | Mechanically, with pointer                                  |
| Service life                            | Min. 10,000 cycles  | Min. 10,000 cycles  |
| Protection class IEC/EN                 | II Protective insulated                                     | III Safety extra-low voltage                                |
| Degree of protection IEC/EN             | IP54  | IP54  |
| EMC                                     | CE according to 2004/108/EC                                 | CE according to 2004/108/EC                                 |
| Low voltage directive                   | CE according to 2006/95/EC                                  | CE according to 2006/95/EC                                  |
| Certification IEC/EN                    | IEC/EN 60730-1 and IEC/EN 60730-2-14                        | IEC/EN 60730-1 and IEC/EN 60730-2-14                        |
| Mode of operation                       | Type 1.B  | Type 1.B  |
| Rated impulse voltage supply            | 4 kV  | 0.8 kV  |
| Rated impulse voltage auxiliary switch  | 2.5 kV  | 2.5 kV  |
| Control pollution degree                | 3   | 3   |
| Ambient temperature                     | -30...50°C  | -30...50°C  |
| Non-operating temperature               | -40...80°C  | -40...80°C  |
| Ambient humidity                        | 95% r.h., non-condensing                                    | 95% r.h., non-condensing                                    |
| Maintenance                             | Maintenance-free  | Maintenance-free  |
| Weight                                  | 2.7 kg  | 2.7 kg  |

## 6. CONDITIONS OF TRANSPORT AND STORAGE

Smoke control dampers KWP-P-E should be stored in cardboard boxes and/or on pallets. Dampers should have a pre-protected actuator cardboard box. Smoke control dampers should be stored indoors, providing protection against atmospheric agents, at a minimum temperature of +5°C.

Do not allow mechanical damage of damper, that may be caused e.g. blows or dropping.

During the transport the dampers should be package in cardboard, and/or put on a pallets and should be secured before relocating, and against weather conditions.

After each transport, visual inspection of each smoke control damper must be carried out.

## 7. 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 2. Correct preparation of the damper for installation (using spreader securing the housing)



Figure 3. 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.

### 7.1. INSTALLATION TECHNOLOGY – RIGID WALL

- a. Make an opening in the wall with the 100 [mm] (acceptable  $80 \div 120$  [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.

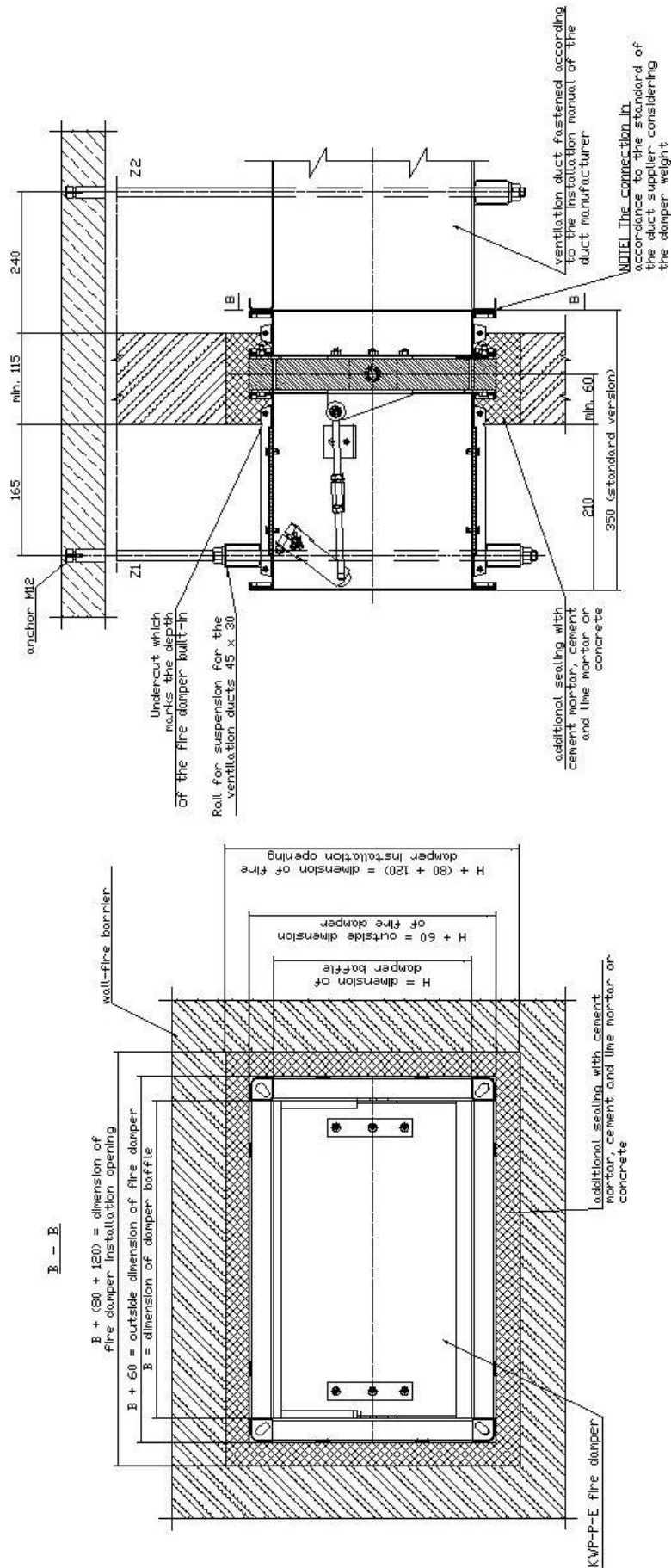
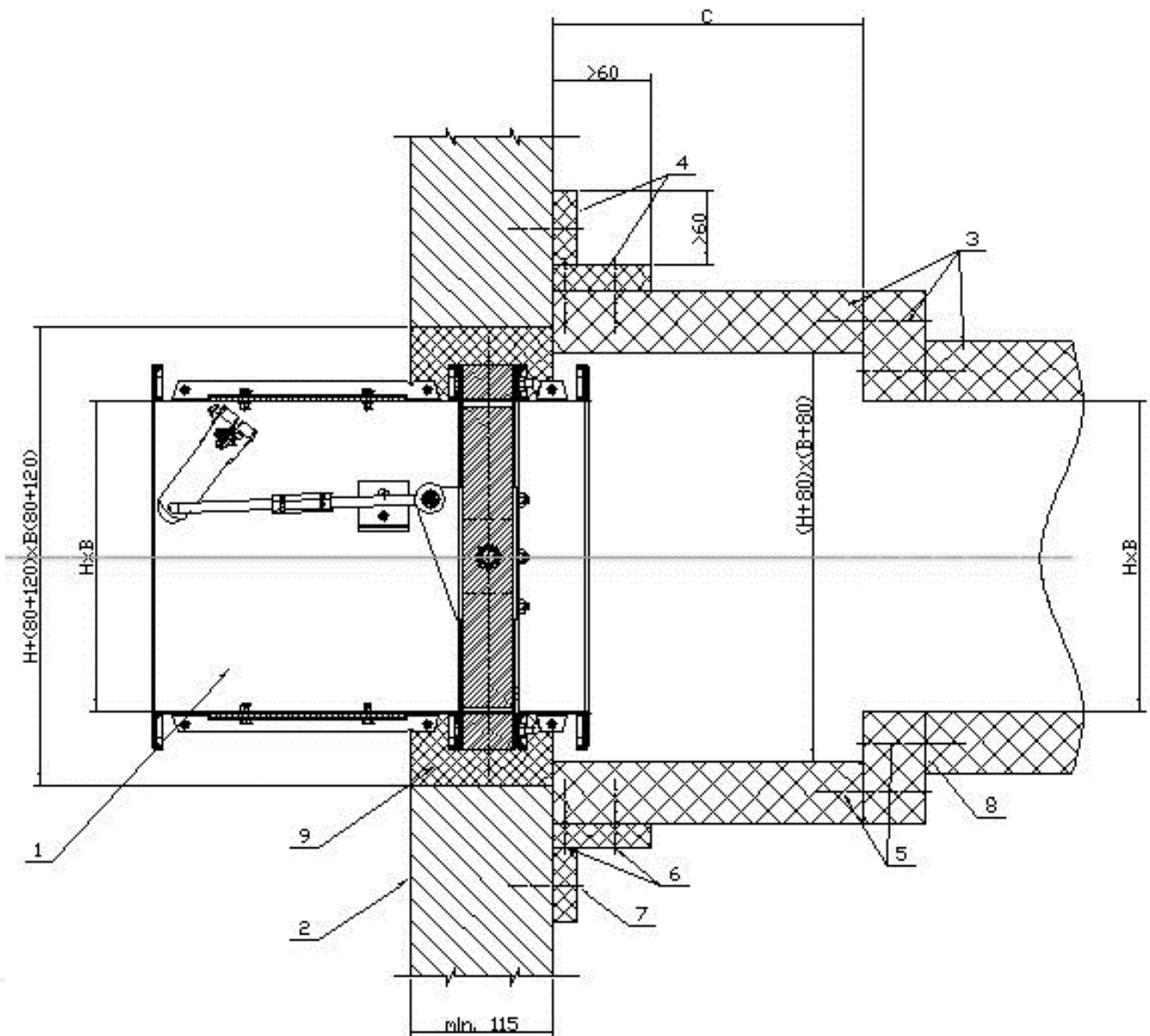
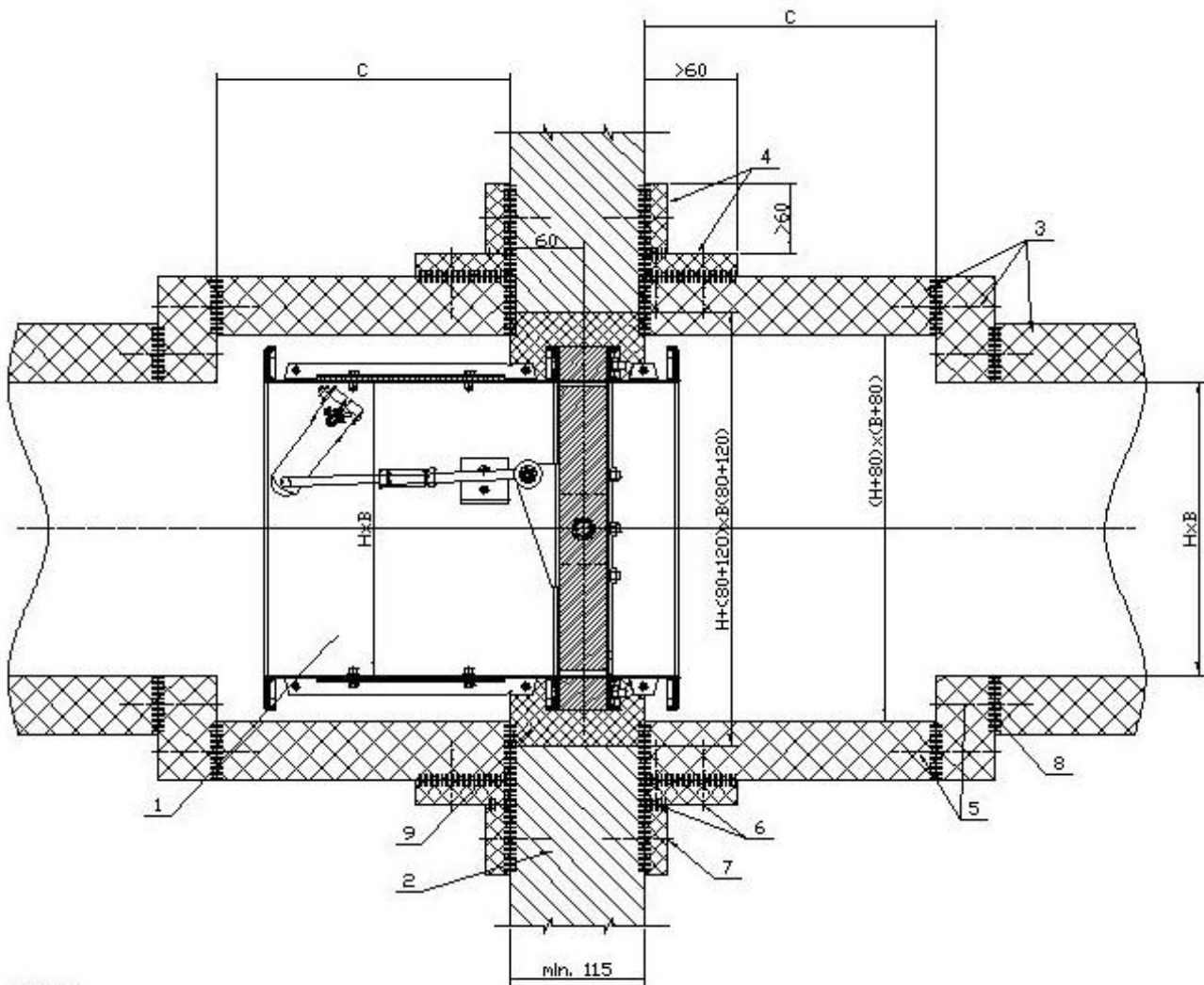


Figure 4. Installation method of smoke control dampers KWP-P in rigid wall


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

## 7.2. 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  $100\text{kg/m}^3$  (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  $4.2 \times 90$  -  $4.8 \times 120$ .
- 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.

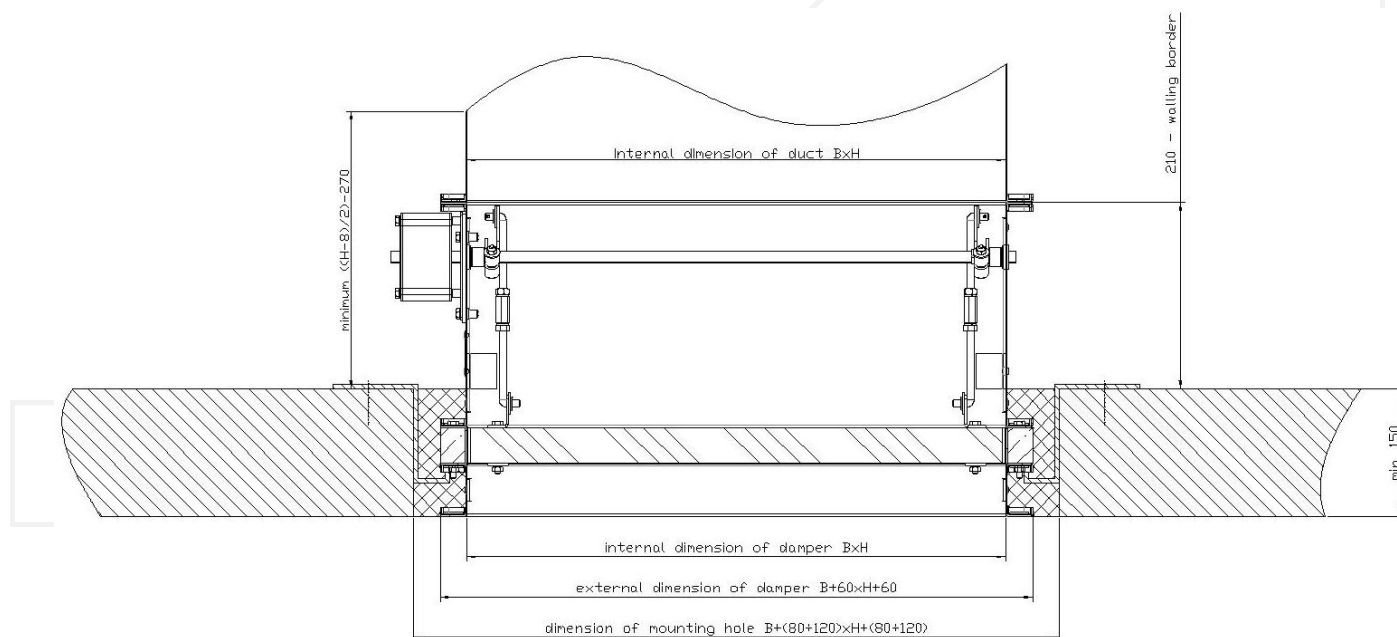


Figure 7. Installation method of smoke control dampers KWP-P in ceiling with a fire ventilation duct with sealing of cement mortar

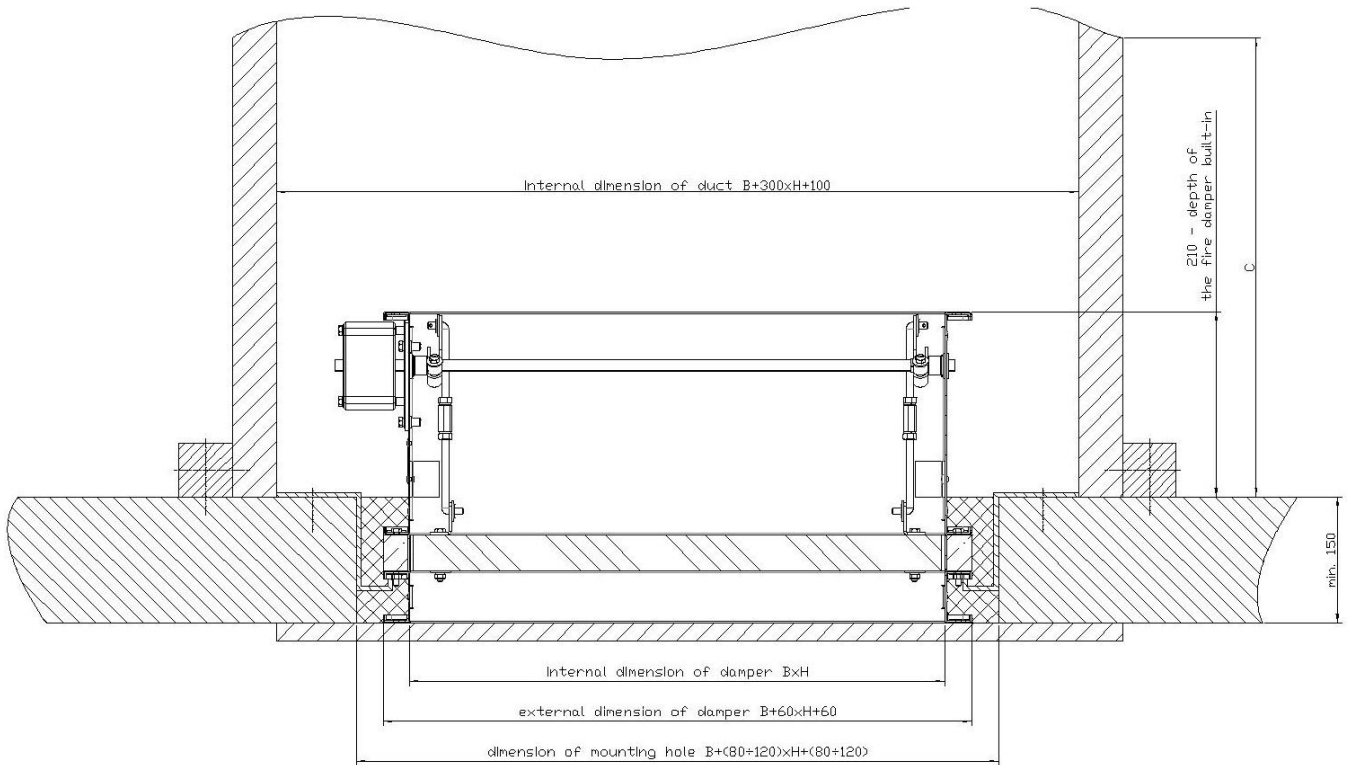


Figure 8. Installation method of smoke control dampers KWP-P in ceiling with a duct made of PROMAT boards with sealing of mineral wool

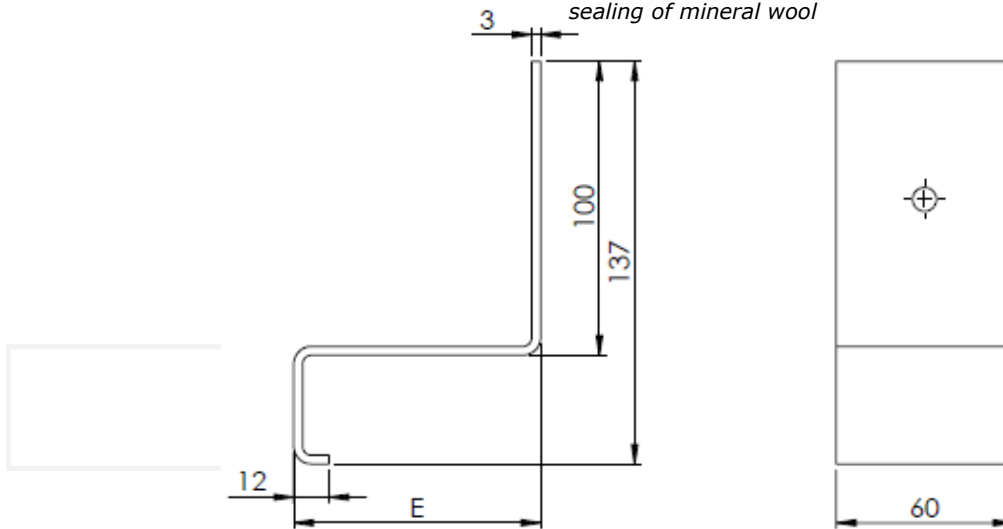


Figure 9. Proposed dimensions of mounting brackets for installation in a ceiling

|        | 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).

### 7.3. 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

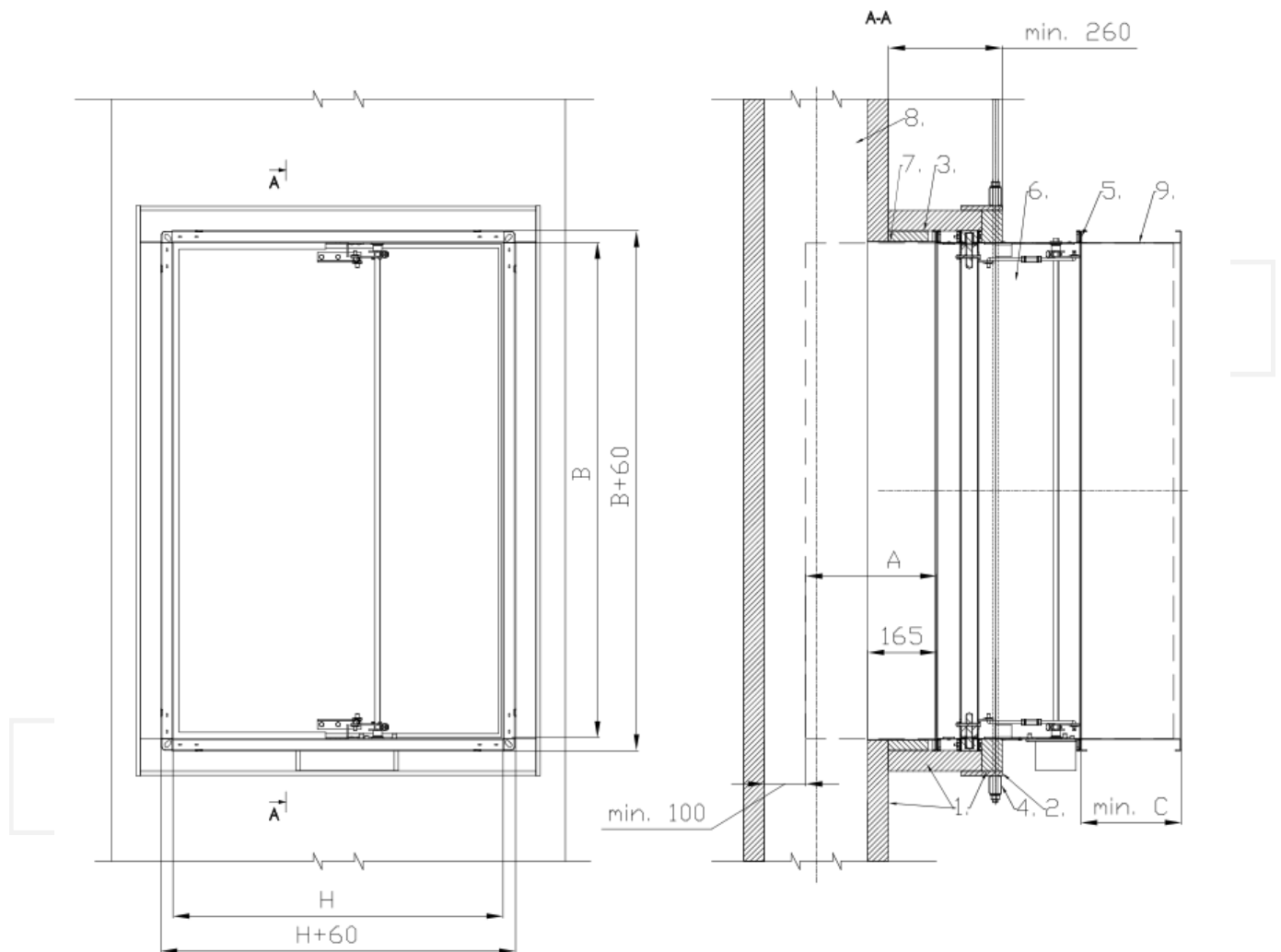


Figure 10. Installation method of dampers on the tee

- 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  $C \geq H/2-270+50$

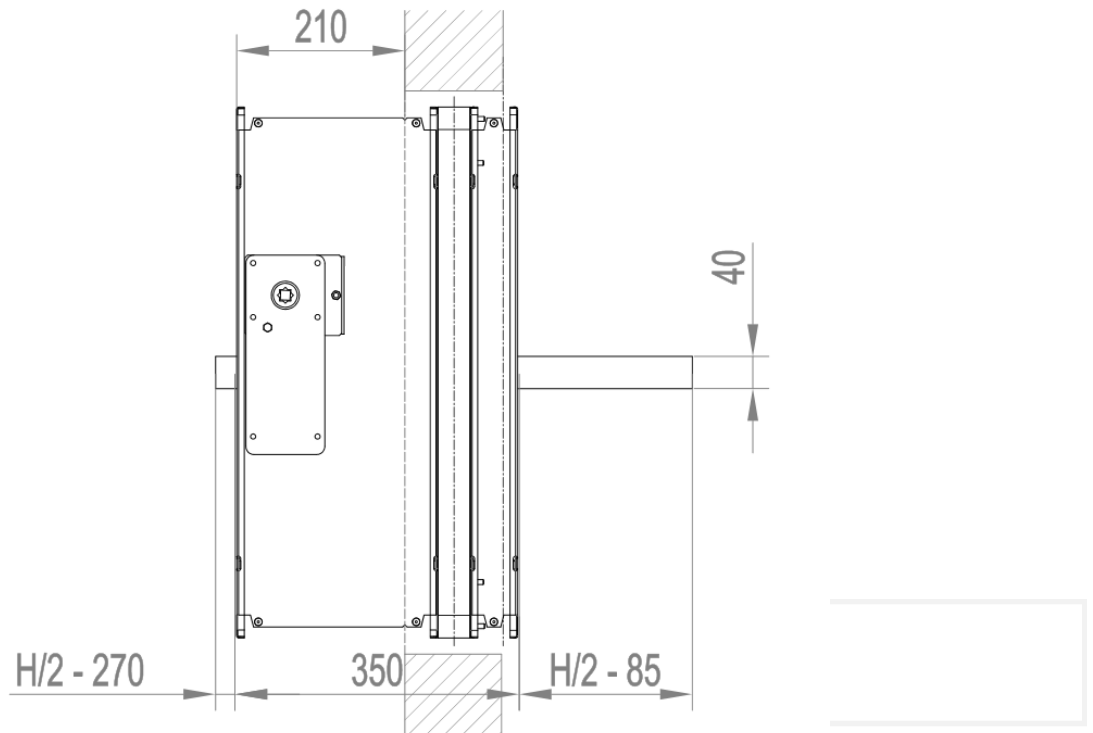


Figure 11. Dimensions of the building partition depending on the high of a damper

## 8. 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/m<sup>3</sup>) 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.

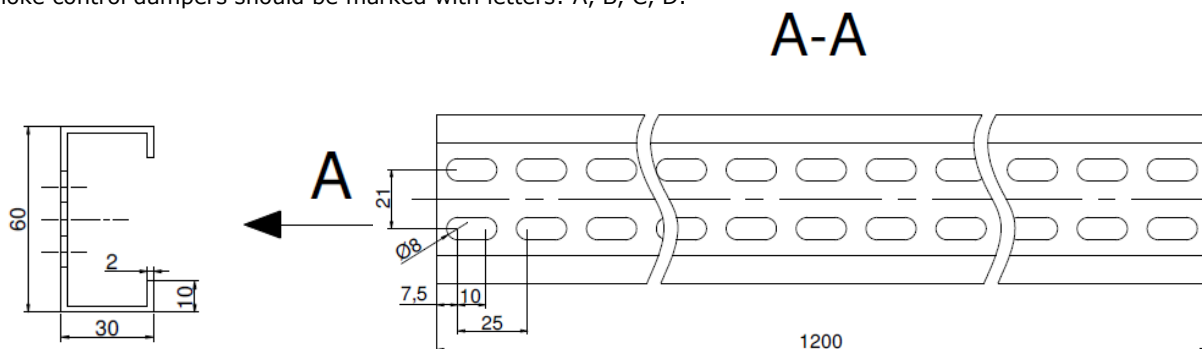


Figure 12. Connection strip

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  $20 \times 1.8$  mm (alternatively one strip with a minimum cross-section of  $40 \times 1.8$  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  $60 \text{ kg/m}^3$  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  $60 \text{ kg/m}^3$  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].

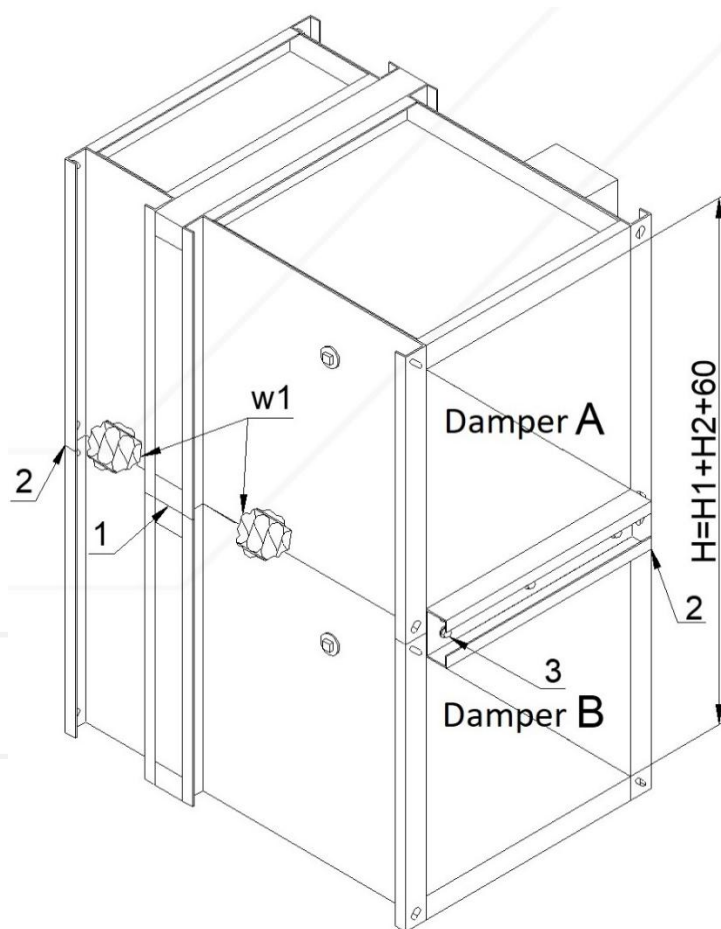


Figure 13. Arrangement 1 - vertical battery consisting of two smoke control dampers KWP

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

- a. First, fix two strips of PROMASEAL-PL gasket with a minimum cross-section of  $20 \times 1.8$  mm (alternatively one strip with a minimum cross-section of  $40 \times 1.8$  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  $60 \text{ kg/m}^3$  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  $60 \text{ kg/m}^3$  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).
- c. 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].
- d. Repeat accordingly paragraphs 2 and 3 to assemble smoke control damper A on smoke control damper B.

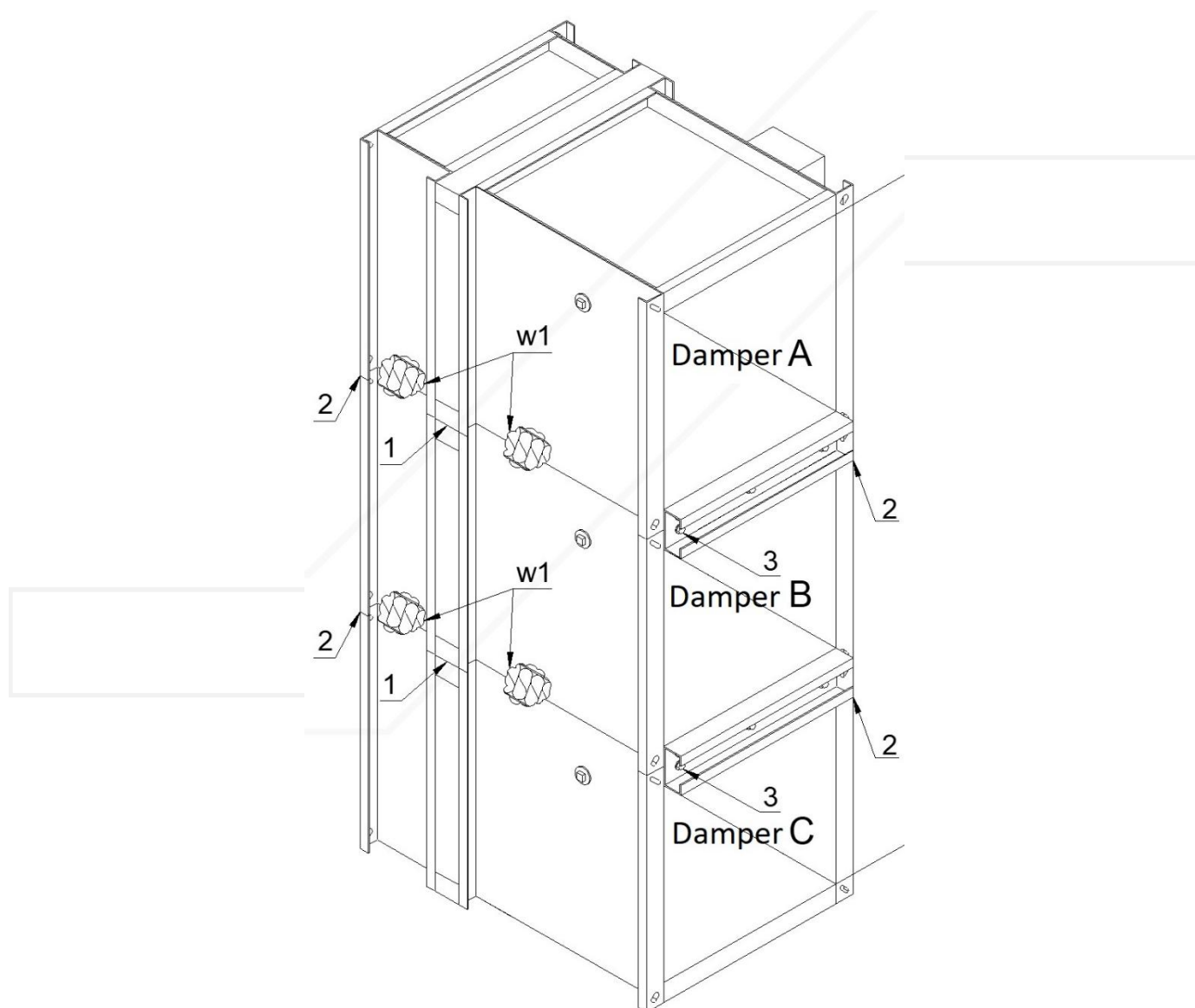


Figure 14. Arrangement 2 - vertical battery consisting of three smoke control dampers KWP-P

**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  $20 \times 1.8$  mm (alternatively one strip with a minimum cross-section of  $40 \times 1.8$  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  $60 \text{ kg/m}^3$ , as shown in detail (**w1**). Alternatively, two layers of mineral wool with a thickness of 30 mm and a density of at least  $60 \text{ kg/m}^3$  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)**).

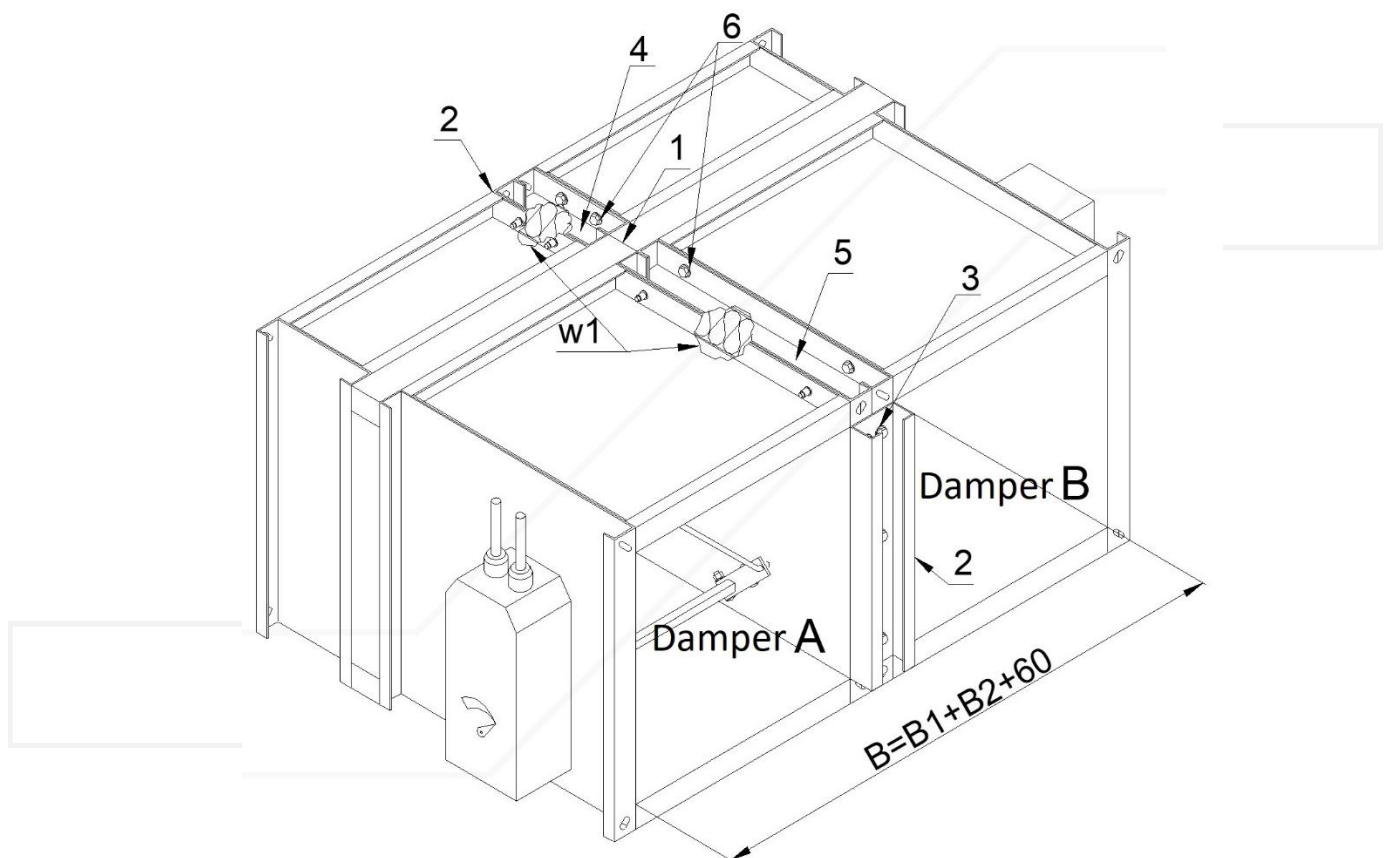


Figure 15. Arrangement 3 – horizontal battery consisting of two smoke control dampers KWP-P

**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  $20 \times 1.8$  mm (alternatively one strip with a minimum cross-section of  $40 \times 1.8$  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**.

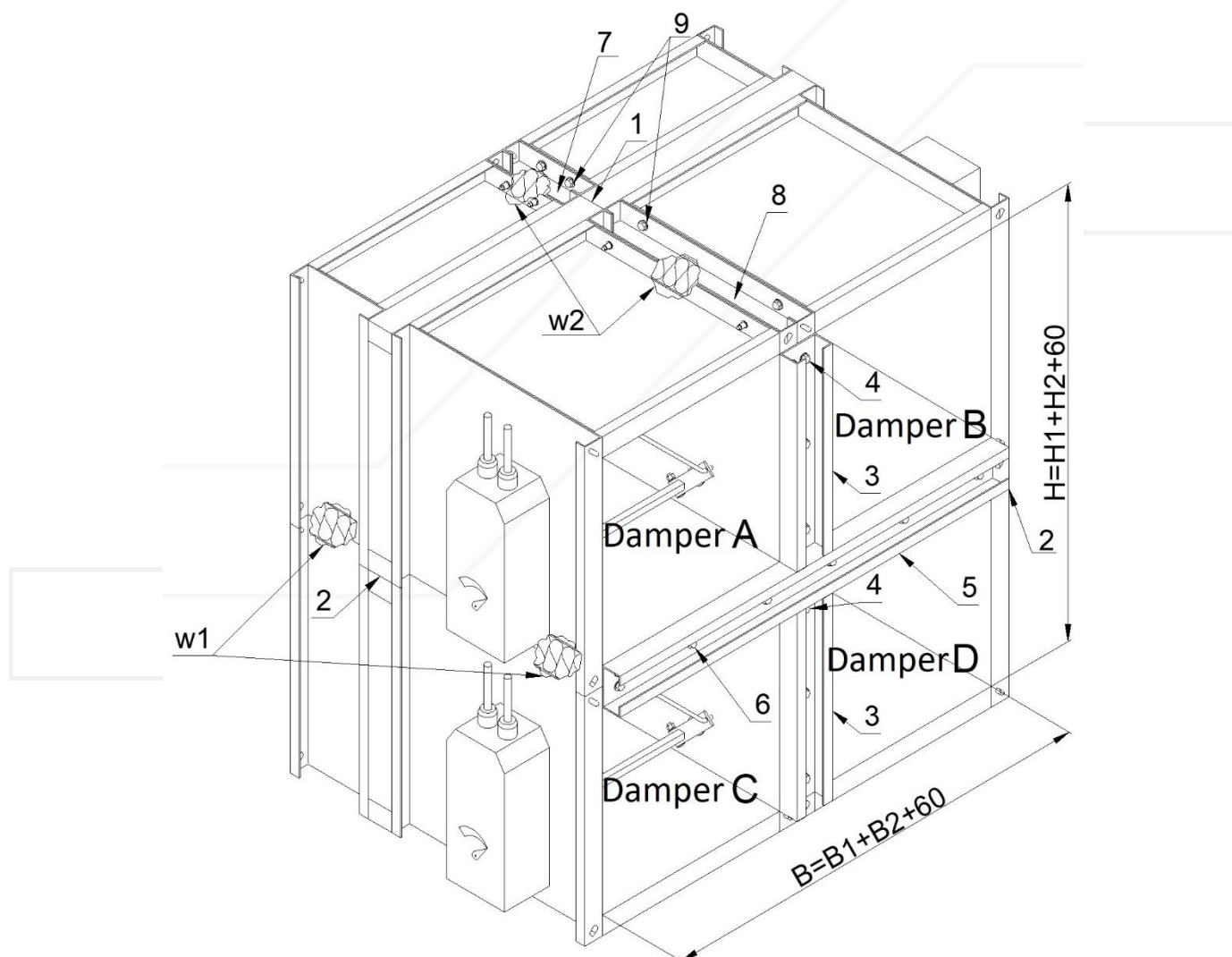


Figure 16. Battery made of four dampers KWP-P

**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/m<sup>3</sup> 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<sup>3</sup> 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).

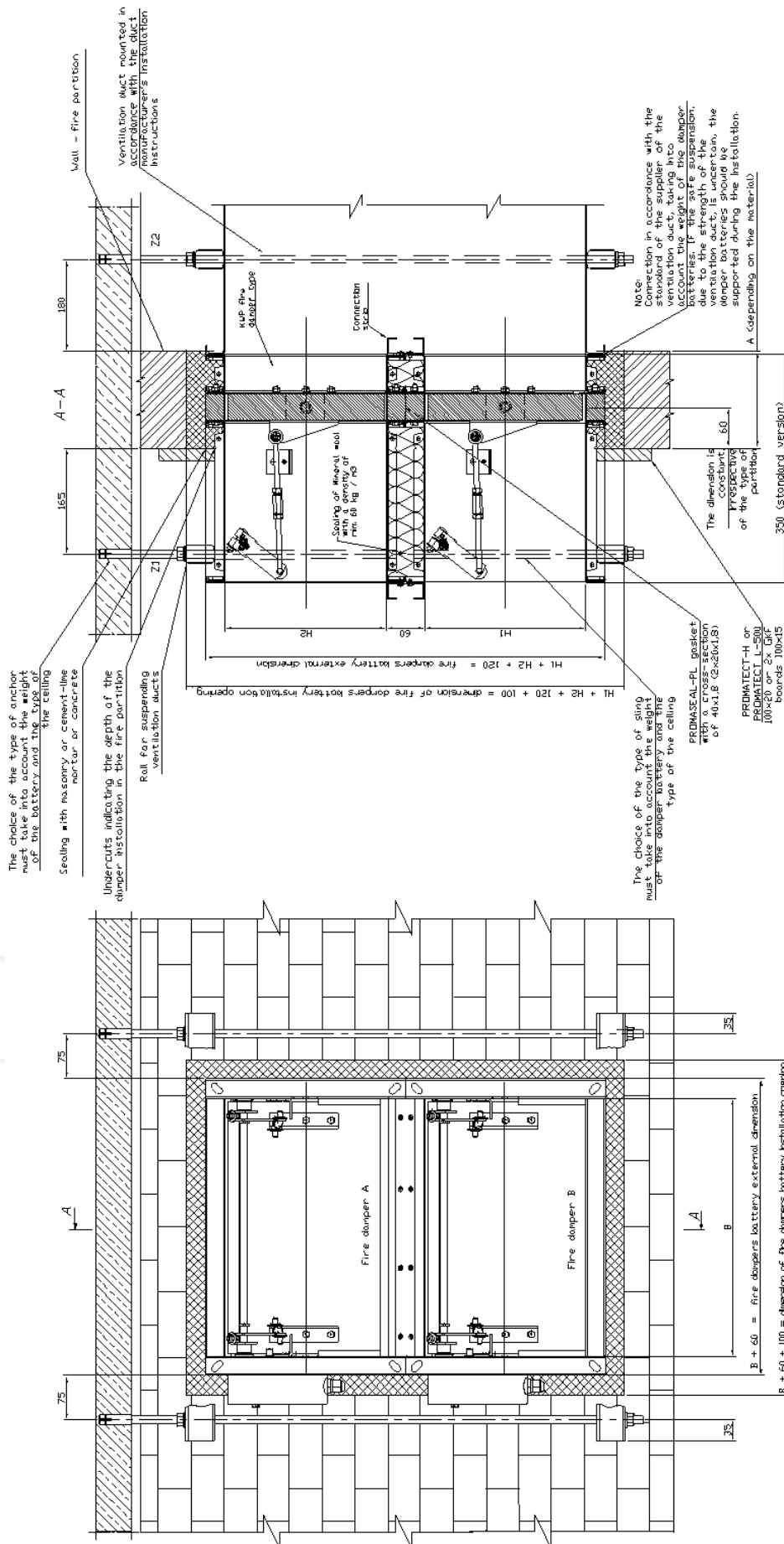
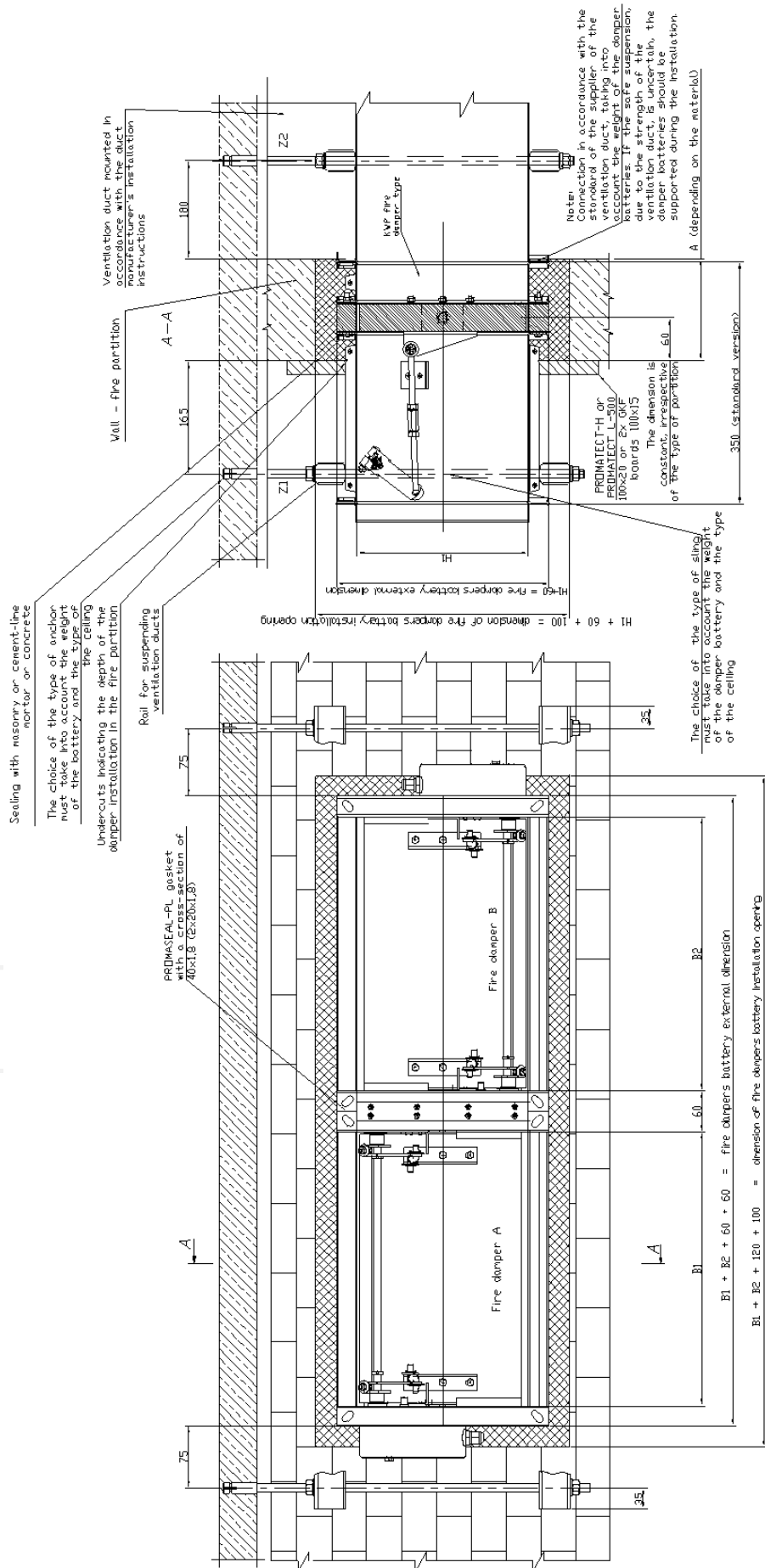


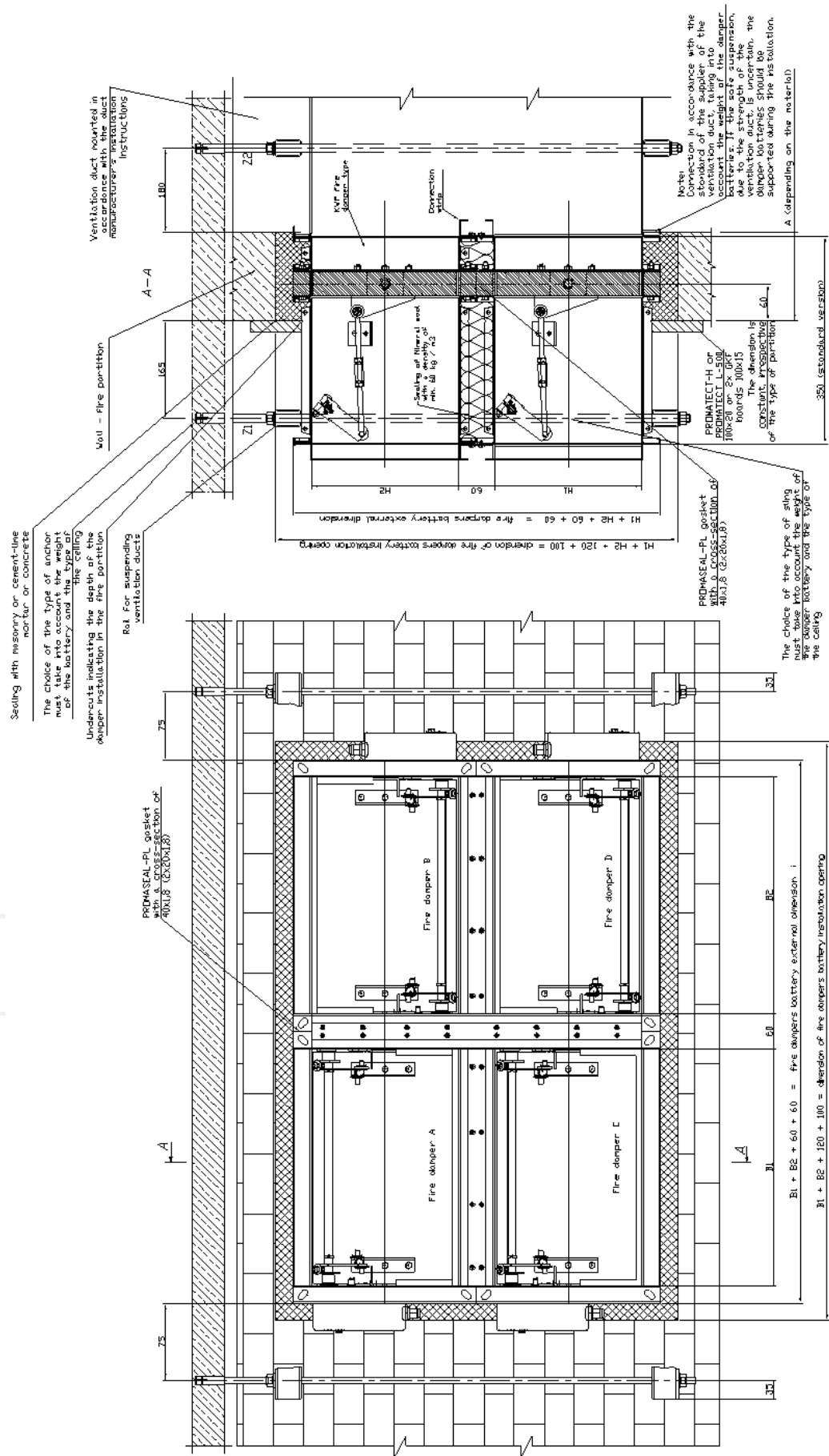
Figure 17. Installation of a battery consisting of two smoke control dampers KWP-P in vertical arrangement in wall




**CAUTION**

- An integral part of the drawing is the description of the fire damper installation guidelines recommended by SWAY
- The Z1 and Z2 suspensions can be removed 72 hours after the fire damper assembly
- Instead of the Z1 and Z3 suspensions, other suspension or support systems can be used for the time of assembly

Figure 19. Installation of battery consisting of two smoke control dampers KWP-P in horizontal arrangement in wall



**CAUTION:**

- An integral part of the drawing is the description of the fire damper installation guidelines recommended by SMAY
- The Z1 and Z2 suspensions can be removed 72 hours after the fire damper assembly
- Instead of the Z1 and Z2 suspensions, other suspension or support systems can be used for the fire of assembly

Figure 20. Installation of a battery consisting of four smoke control dampers KWP-P in wall

## 9. COMMISSIONING

After assembling the device and installation into the control system, before putting the smoke control damper into operation, the following actions should be carried out and recorded:

- verify the correct assembly of the damper according to this Technical Documentation;
- check the correctness of the electrical installation in terms of power supply parameters and quality of execution;
- ensure that the damper has not been mechanically damaged during installation;
- verify the correct opening/closing of the damper, with the opening/closing time being maintained below 60 seconds;
- check the cleanliness of the device and ensure that there are no foreign elements present that could damage the device;
- ensure proper accessibility to the drive mechanism and thermal trigger mechanism - required for service and maintenance purposes;
- check the availability and legibility of labeling stickers.

In order to enable efficient verification of the correctness of the assembly and start-up of the KWP-P damper, before putting it into service and documenting the above control activities in the as-built construction documentation, we suggest using (for auxiliary purposes) the document: "Assembly and Start-up Protocol - Fire Flaps".

This protocol is not obligatory to prepare and is only a proposal from the manufacturer of the product in the scope of preparing documentation confirming the execution of assembly and start-up in accordance with the Technical Documentation and Assembly Instructions.

**An editable version of the document (universal for all dampers in the SMAY offer) can be downloaded from the manufacturer's website: <https://www.smay.pl/en/>**

## 10. PERIODIC MAINTENANCE AND SERVICING RULES

Before starting any operational and maintenance work, you must familiarize yourself with this documentation. This obligation particularly falls on individuals responsible for operating the device or equipment within the scope of operation, maintenance, and service. In the absence of technical personnel with qualifications specified by the manufacturer, the inspection/maintenance of SMAY devices should be carried out by the SMAY Manufacturer's Service or technical staff of SMAY trading partners appropriate for a given country.

Damage to the KWP-P damper resulting from failure to comply with the guidelines contained in the documentation will not be covered by warranty repairs.

After installing KWP-P smoke control dampers and with the system activated, it is necessary to conduct regular inspections and record them as presented in the Annual Inspection Protocol - Smoke control dampers / Fire dampers (included below) **no less frequently than every 12 months or in periods resulting from local legislation. If necessary, inspections should be conducted more frequently.**

Technical condition review and maintenance of the device should include:

1. Visual inspection of the damper
  - a) Reading data from the damper rating label
  - b) Assessment of the damper installation condition
  - c) Assessment of the damper housing condition
  - d) Assessment of the partition and drive transmission condition
  - e) Assessment of the condition of the swelling and ventilation seal
  - f) Assessment of the damper cleanliness, cleaning
2. Inspection of the damper drive
  - a) Assessment of the manual mechanism\*
  - b) Assessment of the actuator\* (compliance of the symbol with the label, warranty seal)
  - c) Assessment of the electrical connection of the damper\*
3. Inspection of the damper trigger
  - a) Inspection of the mechanical trigger\*
  - b) Inspection of the electrical trigger\*
4. Inspection of the damper operation
  - a) Opening and closing the damper
  - b) Assessment of maintaining the open position
  - c) Assessment of correct closure of the damper
  - d) Assessment of correct response to the control signal from the SAP or voltage loss

\* if present in the inspected damper type

Technical inspection and service of the device should be documented in an inspection report, an editable version of which is available for download on the manufacturer's website: <https://www.smay.pl/en/>

Failure to implement the above guidelines regarding periodic inspection results in the device not being allowed for further operation. Simultaneously such a device loses the manufacturer's warranty protection in accordance with the OWG

All activities related to the replacement or modification of device components can be carried in agreement with the SMAY manufacturer's service.

Elements that have been factory sealed should have intact original seals applied.

The KWP-P damper does not require any protective measures other than regular maintenance/technical inspections and proper care, including keeping the damper elements clean. The damper can be cleaned using a dry cloth or brush. Dirt and other contaminants can be removed using commonly available cleaning agents. Do not use aggressive, corrosive, or sharp tools.

Below is a list of recommended periodic inspection activities with possible faults. The document is intended to assist in defining identified defects during inspection.

## **11. CLASSIFICATION OF DAMPERS FOR REPAIR**

The authorized service personnel of the manufacturer or trained companies authorized by them are responsible for removing any detected damages during the periodic inspection. In case of malfunction or damage, the user is obliged to notify the manufacturer or an authorized service company.

After each activation of the damper as a result of a fire action at the facility, it is necessary to assess its technical condition, and consequently qualify it for repair or replacement with a new one. The assessment can only be carried out by the manufacturer's service personnel. Repair work or replacement of the damper after activation due to a fire action at the facility is not covered by the warranty.

## 12. WARRANTY CONDITIONS

The manufacturer provides a warranty for the delivered products, on the terms set forth in the Agreement or the General Warranty Conditions of Smay, Sp. z o.o. The warranty does not cover defects resulting from improper storage, transportation, installation, and commissioning, operation, periodic maintenance, service, especially mechanical damage and damage to anti-corrosive coatings.

The manufacturer is exempt from warranty obligations if the user introduces structural changes independently, installs the product by the purchaser contrary to the Installation Instructions and Technical Conditions of Sale (Technical Documentation), exceeds the declared durability of the damper, defects due to improper periodic maintenance, and when there is permanent removal of the product nameplate or lack of legibility and verification of the device type.

The General Warranty Conditions (OWG) and General Sales Conditions (OWS) documents are available on the website [www.smay.pl](http://www.smay.pl)



### ATTENTION!

#### Annual Inspection Protocol - Fire Dampers / Smoke Control Dampers:

- **The protocol should be signed by a person holding a valid, personalized certificate or authorization issued by Smay Sp. z o. o., authorizing inspections of fire dampers / smoke control dampers.**
- **In order to maintain the warranty, the employee conducting inspections of SMAY fire dampers / smoke control dampers is required, upon completion of such inspection, to submit the Annual Inspection Protocol to the manufacturer electronically  
([www.smay.pl](http://www.smay.pl) → SERVICE AND WARRANTY tab → ADD COMMISSIONING PROTOCOL)**

**The template of the Annual Inspection Protocol - Fire Dampers / Smoke Control Dampers is located at the end of the Technical Documentation.**



### ATTENTION!

**The templates of the forms provided by the SMAY Manufacturer Service and available on the manufacturer's website (concerning assembly, start-up, inspections) are the intellectual property of Smay sp. z o.o. They may not be copied, duplicated or used for purposes other than those specified in this Technical Documentation.**