

# SMOKE CONTROL DAMPERS



**Round DKIR1 and Rectangular DKIS1**

**ORIGINAL INSTALLATION, OPERATION AND MAINTENANCE MANUAL**

**EVERY SMOKE DAMPER NEEDS TO BE INSTALLED IN ACCORDANCE WITH THIS MANUAL!**



Fig. 1: Installatin of the round smoke damper DKIR1 onto and into the duct running through the vertical supporting construction ( $v_{ed}$  - see the fire resistivity on the page 3)

NOTE: Installation onto the duct - distance between lower edge of the open blade and bottom wall of the duct must be more than 100 mm.

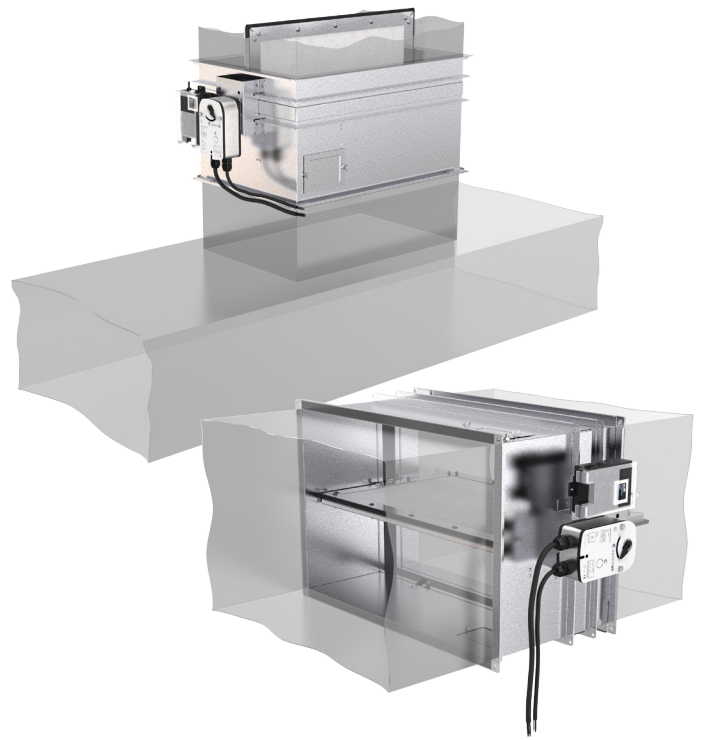


Fig. 2: Installatin of the rectangular smoke damper DKIS1 onto and into the duct running through the vertical supporting construction ( $v_{ed}$  - see the fire resistivity on the page 3)

NOTE: Installation onto the duct - distance between lower edge of the open blade and bottom wall of the duct must be more than 100 mm.

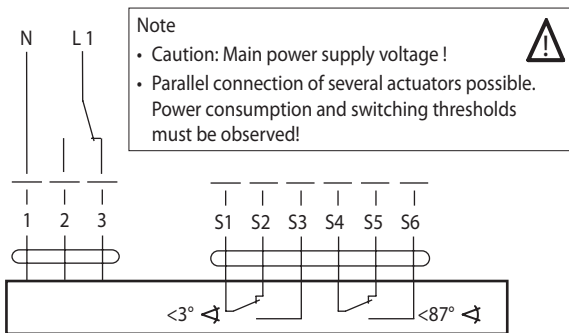


Fig. 3: Connection of the actuator BELIMO BLE 230

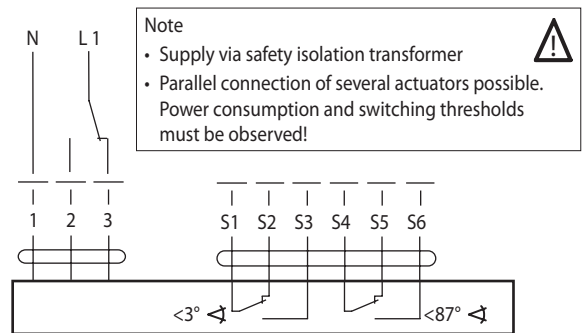


Fig. 4: Connection of the actuator BELIMO BE 230-12

Application with the SBSE-Control damper control and monitoring system

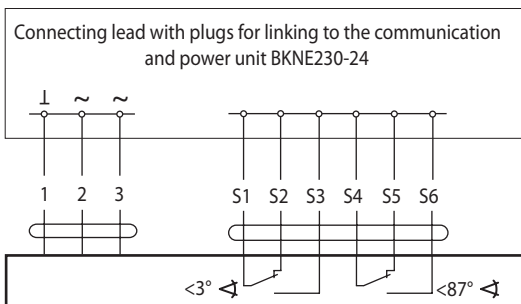


Fig. 5: Connection of the actuator BELIMO BLE 24

Application with the SBSE-Control damper control and monitoring system

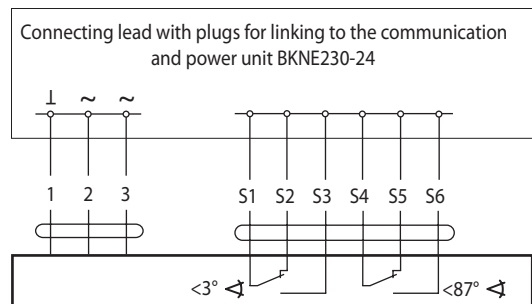
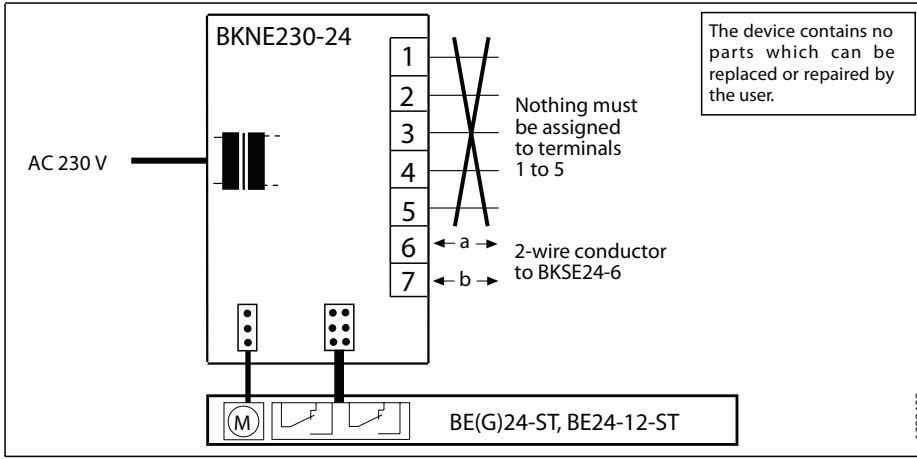


Fig. 6: Connection of the actuator BELIMO BE 24-12-ST



Displays

LED	Status	Function
yellow	flashing light	damper moving to OPEN
yellow	steady light	damper open
green	flashing light	damper moving to CLOSED
green	steady light	damper closed
yellow  or green	flashing at double frequency	fault
yellow  + green	dark	power failure

Fig. 7: Connection and display of the supply and communication unit BKNE230-24

Introduction

Instructions for installation, operation and control refers to the smoke dampers (hereafter dampers) circular DKIR1 and rectangular DKIS1, the products of Systemair. It contains basic information and recommendations regarding the installation, use and inspections that need to be followed to ensure proper and smooth operation of the dampers.

Resistance class E<sub>600</sub> 120 (v<sub>ed</sub> i ↔ o) S500C<sub>10000</sub> AA single is valid for all nominal dimensions of round dampers (see Fig. 8) and for nominal dimensions of rectangular dampers where W > 1200 mm (see Fig. 10).

Resistance class E<sub>600</sub> 120 (v<sub>ed</sub> i ↔ o) S1500C<sub>10000</sub> AA single is valid only for rectangular dampers with nominal dimensions H × W from 200 × 200 up to 1200 × 800 mm (see Fig. 9).

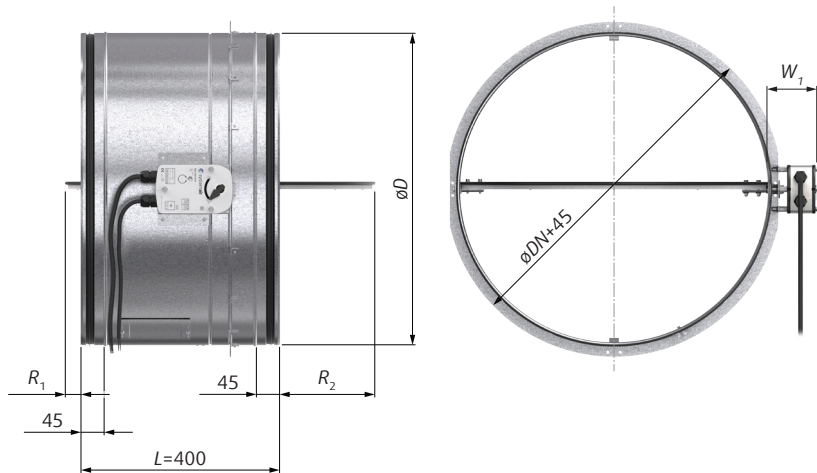


Fig. 8: Dimensions of the round smoke damper

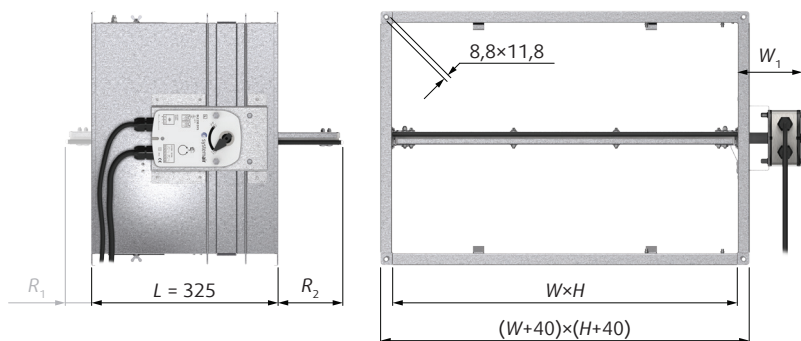


Fig. 9: Dimensions of the rectangular smoke damper for nominal dimensions W × H = 200 × 200 up to 1200 × 800 mm

NOTE: These smoke dampers have flanges width 20 mm.

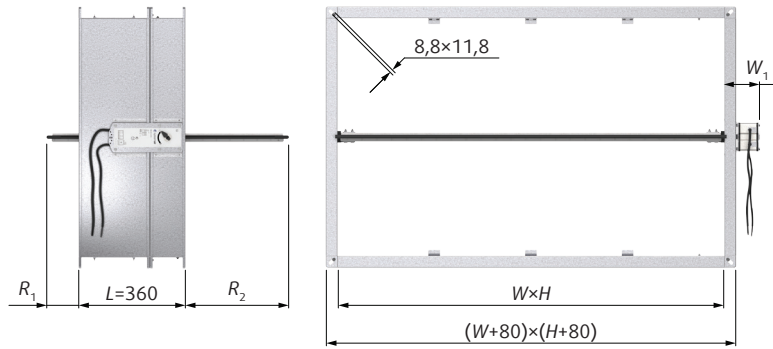


Fig. 10: Dimensions of the rectangular smoke damper with  $W > 1200$  mm up to  $1500 \times 800$  mm

NOTE: These smoke dampers have flanges width 40 mm.

### Warnings

Some damper parts can have sharp edges – therefore it is necessary to use gloves during damper installation and manipulation.

In order to prevent an electric injury, fire or any other damage which could result from incorrect damper usage and operation, it is important to:

1. Install the damper in accordance with the installation manual and by a properly trained employee.
2. Execute the damper inspection in accordance with this installation, operation and maintenance manual.
3. Before you can install the smoke damper, it's functionality must be checked according to chapter 3 Check of the functionality.  
This procedure prevents installation of a damper that has been damaged during transportation or handling.

**Do not install functionless fire dampers!**

### Operating conditions

Smoke dampers are part of the Smoke and Heat Exhaust Ventilation System (SHEVS). Functionality of the smoke damper is following. In case of fire damper:

- opens and removes the heat and smoke through a special fan from the fire compartment affected by fire or
- closes and prevents the spread of smoke and heat in the fire compartment unaffected by fire.

All smoke dampers have electric actuator as standard. They are designed to be installed in the SHEVS ducts in locations that are protected from weather.

Systemair smoke dampers are passive in terms of noise. There is increased noise only when closing or opening the damper in case of inspection or fire (and it takes less than 60 seconds).

## 1 Installation

**The installation must be done as follows:**

- Duct connected to the damper must be supported or suspended so that the damper do not bear its weight. The damper must not bear any part of the supporting construction. This could lead to damage and subsequent failure of the damper.
- Actuator can be on either side of the supporting construction, but it must be placed so that it is easy to access for inspection and repairs.

- Distance between dampers and building structures, distribution technology and ventilation equipment must be large enough for reliable performance of the installation, functional testing, inspection and repair.
- The distance between the dampers must be at least 200 mm according to EN 1366-10.
- The distance between dampers and the wall or ceiling must be at least 200 mm according to EN 1366-10.
- The gap between the damper and the selfstanding grill (when installed) must be at least 200 mm according to EN 1366-10. Otherwise the damper must be tested together with the grill.
- The smoke dampers must be installed with horizontal blade axis.
- Before the installation of the smoke damper, it's functionality must be tested according to the chapter 3 Check of the functionality.

**DO NOT INSTALL NONFUNCTIONAL SMOKE DAMPERS!**

- Changes of smoke damper functionality, caused by transport or installation, aren't reclaimable after the installation (deformations, damages, mechanical damage of the sealing material, foreign objects which can constrain the blade, wrong handling of the activating mechanism etc.)
- Before connection of the smoke damper into the ductwork, smoke damper's functionality must be checked again (according to chapter 3 Check of the functionality).

**IT IS NOT POSSIBLE TO CLAIM FAULTY FUNCTIONALITY CAUSED BY PRODUCTION, TRANSPORTATION OR INSTALLATION AFTER CONNECTING THE DUCTS TO THE SMOKE DAMPER!**

During installation, it is necessary to protect the damper mechanism and its interior against dirt. The blade must be in the closed position. It is necessary to avoid deformation of the damper. Installation and setup of the dampers is always determined by SHEVS project plans that must comply with the applicable regulations.

The smoke dampers DKIR1 must be installed according to Fig. 1, the smoke dampers DKIS1 must be installed according to Fig. 2.

After damper installing into the SHEVS duct it is necessary to connect electrical installation that must be done only by authorized persons – connection has to be done according to Fig. 3 - 7. The actuators have two microswitches indicating the open and closed positions of the blade - see Fig. 3 - 6.

Setup, install, repair, overhaul and inspections of the dampers must be done only by the manufacturer or by the personnel

trained by the manufacturer.

Before putting dampers into service after installation (and in subsequent periodic inspections) visual inspection and functional test must be conducted. After the visual inspection and functional test a record must be made into operational diary (page 6).

## 2 Operating and Maintenance

### 2.1 The damper operation

After installation, the damper must be set up into the operating position - closed. By connecting a power source to activate the actuator the blade shall move. Respective switching power supply achieves entry into the operating position - closed.

### 2.2 Maintenance

Systemair smoke dampers are maintenance free.

## 3 Check of the functionality

Switching the supply phase according to Figure 3 - 7 damper switch to the „open“:

- The blade must come to the fully open position and must remain there detented.
- After reaching the end position of the blade the appropriate signaling circuit must switch on.

Switching the supply phase according to Figure 3 - 7 switch damper to the „closed“:

- The blade must come up to the fully closed position and remain there detented.
- After reaching the end position of the blade the appropriate signaling circuit must switch on.

Now the damper is in standby mode, so it must rest for normal operation.

## 4 Inspection of the damper

Each damper should be inspected after installation and every 12 months using following steps:

1. Identification of damper
2. Date of inspection
3. Check of the electrical connection of the activation mechanism
4. Check of the the electrical connection of the end switches
5. Check of the damper for cleanliness and eventually treatment (where necessary)
6. Removing of the cover of the inspection lid.
7. Check of the inspection lid, cover tightness and eventually correction and record (where applicable)
8. Check of the blade and sealings, and eventually correction and record (where applicable)
9. Check of the safety damper closure - details see Chap. 3
10. Check of the damper functionality (details see Chap. 3) opening and closing by the control system, tracking the physical behavior of the dampers and signalization of the end positions, and eventually correction and record (where applicable)
11. Closing of the cover of the inspection lid.
12. Set up into the operating position - see Chap. 2.1
13. Record into operational diary (page 6) with name and signature of the checker.

The damper is part of the SHEVS. Therefore the system must be checked as specified in its operational and maintenance requirements.

## 5 Warranty conditions:

1. IMOS-Systemair a.s. provides warranty for all its DKI smoke dampers. The warranty period is 24 months, starting on the date of product shipment, by an exceptional agreement this period can be up to 30 months, starting on the date of shipment.
2. The product is tested in the production factory before the shipment. The producer guarantees that the product features shall be in accordance with the related technical standards during the whole warranty period, assuming that the customer uses it in a way that complies with the Operation manual. If, in spite of this, any unpredictable production defects occur, the producer shall secure their removal without charge.
3. The customer may apply for the warranty service only in written form including serial number of the claimed damper.
4. The warranty does not apply to defects caused by unprofessional handling, incorrect mounting, mechanical damage or not following the instructions stated in the Operation manual.
5. The warranty period shall be prolonged for the same period of time which has elapsed between the date when the customer lodged the claim for warranty service and the date when the repair was carried out.
6. The repair shall be carried out at the customer's premises and the producer shall bear all the costs which are necessarily needed for the repair.
7. In case no defects applicable for warranty are identified, the costs associated with the arrival of the service technician will be handled by the customer who filed the warranty repair claim.
8. Before you can install the smoke damper, it's functionality must be tested according to the chapter 3 Check of the functionality.

### **DO NOT INSTALL NONFUNCTIONAL SMOKE DAMPERS!**

Changes of smoke damper functionality, caused by transport or installation, aren't reclaimable after the installation (deformations, damages, mechanical damage of the sealing material, foreign objects which can constrain the blade, wrong handling of the activating mechanism etc.)

9. Before you can connect the smoke damper into the ductwork, smoke damper's functionality must be checked again (according to chapter 3 Check of the functionality).

### **IT IS NOT POSSIBLE TO CLAIM FAULTY FUNCTIONALITY CAUSED BY PRODUCTION, TRANSPORTATION OR INSTALLATION AFTER CONNECTING THE DUCTS TO THE SMOKE DAMPER!**


The dampers are transported in covered means of transport, on pallets or in boxes. When handling during transportation and storage, the dampers must be protected against damage and weather conditions and the damper blades must be in the closed position. These products must be stored in a closed and dry area where the temperature is kept within the range of -20 °C to +50 °C.

**OPERATING DIARY**

Activation of the damper		
Date	Description of found defects and date of the following inspection after deficiencies elimination	Inspection technician's signature
Periodic damper inspection - at least once in 12 months		
Date	Description of found defects and date of the following inspection after deficiencies elimination	Inspection technician's signature

## Periodic damper inspections - at least once in 12 months

Date	Description of found defects and date of the following inspection after deficiencies elimination	Inspection technician's signature

12  1396
<b>IMOS-Systemair</b> 90043 Kalinkovo 146, Slovakia 1396 - CPD - 0058
EN 12101-8 <b>Smoke damper:</b> round DKIR1-DN, rectangular DKIS1-WxH
<b>Operational reliability:</b> - cycling 10 200 cycles - passed
<b>Fire resistance:</b> E <sub>600</sub> 120(v <sub>ed</sub> i↔o)S500C <sub>10000</sub> AA single or E <sub>600</sub> 120(v <sub>ed</sub> i↔o)S1500C <sub>10000</sub> AA single (see the page 3) <ul style="list-style-type: none"> <li>- mainten. of t. cross section (under E)</li> <li>- integrity E 600°C</li> <li>- smoke leakage S 500 Pa and 1500 Pa (see the page 3)</li> <li>- mechanical stability (under E)</li> <li>- cross section (under E)</li> </ul>
<b>Durability of operational reliability:</b> open and closing cycle <span style="float: right;">Pass</span>

Smoke damper identification	
Construction site	
Placement	
Room No.	
ID No.	
Label	
Signalization	

### Warranty service

Date of claim submission	Date of the repair	Description of the repair	Service officer (signature & stamp)