

# PKIR-E60S and EKIR-E60S



## Round Fire and Evacuation Damper

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### INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

**EACH FIRE/EVACUATION DAMPER MUST BE INSTALLED ACCORDING TO THIS INSTALLATION MANUAL!**

## Introduction

This installation, operation and maintenance manual concerns round fire and evacuation dampers, type PKIR-E60S and EKIR-E60S, manufactured by IMOS-Systemair. It consists of basic information and recommendations concerning the design, installation, start-up and operation, which shall be followed to ensure the proper failfree operation of the unit. The key to proper and safe operating of the unit is to read this manual thoroughly, use the damper according to its guidelines and follow all safety requirements.

## Warnings

Some damper parts can have sharp edges – therefore it is necessary to use gloves during damper installation and manipulation. In order to prevent electric shock, 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. Perform damper inspection in accordance with the maintenance and inspection manual.
3. Before you can install the fire damper, it's functionality must be checked as per chapter 3 (Fire Damper Functionality Check). This procedure prevents installation of a damper that has been damaged during transportation or handling.

**Do not install non-functioning fire dampers!**

## Operating Conditions

Systemair fire dampers can be defined as fire shutters for ventilation ducts in the place where they pass through walls or ceilings, which are the borders of the fire area. In case of fire, the dampers function as a fire safety element and by closing they prevent the fire and smoke from expanding through the ventilation duct during the defined time.

- PKI fire dampers are designed for installations in accordance with Fig. 1 and Fig. 2
- All fire dampers are with an electric driving mechanism as standard.
- They are intended for installation in places which are protected against weather disruptions in the ducts distributing air without any mechanical or chemical contamination in the following operating conditions:
- Maximum air flow velocity 12 m/s
- Temperature within the range -10 up to 60 °C

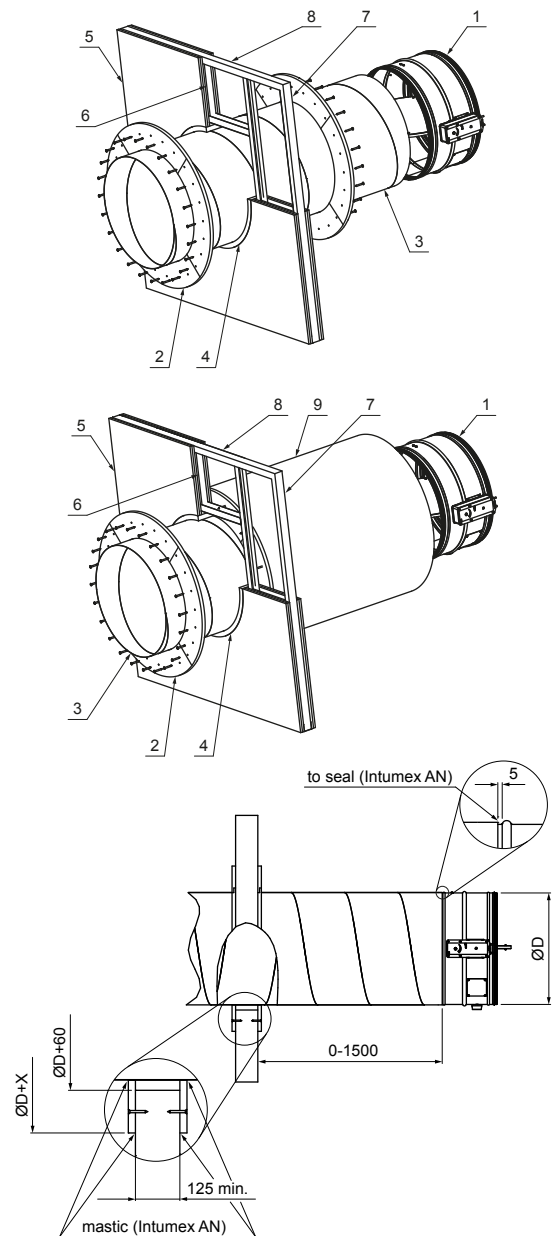
From the noise perspective all Systemair dampers are passive. Increased noise can only be heard when the damper is being closed or opened in case of inspection or fire (which lasts less than 20 seconds).

# 1 Installation manual

- All connecting ducts to the fire damper must be supported or suspended in such a way that the duct weight would not lean on the damper. Furthermore the damper should not bear any weight from the above or surrounding construction; this can result in distortion of the casing and ultimately malfunctioning of the fire damper.
- The damper actuator can be located on any side of the fire resistant wall, however it must be positioned in such a way that there is easy access provided for inspection or service.
- Spacing between the dampers must be a minimum of 200 mm.
- Space between the wall/ceiling and the damper must be at least 75 mm.
- All dampers can be installed with the blade in a horizontal or vertical position.

## 1.1 Vertical installation of the PKIR-EI60S (in a horizontal duct – Fig.1)

1. Insert the fire damper into the duct - the sealing spiro safe must be wholly in the duct and the end of the fire damper has to be ca 5 mm away from the ridge (to allow for thermal dilatations). The distance between the end of the damper and the wall can be  $L = 0 - 1500$  mm.
2. Seal both gaps between ends of the damper and the duct with fire resistant mastic – e.g. Intumex AN.
3. The duct can be installed into the wall by either wet or dry method (on the figure 1 there is only dry method), equally as by fire dampers installed into the wall (see the document [InstalMaintenOperInstr\\_PP-28\\_EN](#))
4. Check the damper functionality. (See Operating manual)



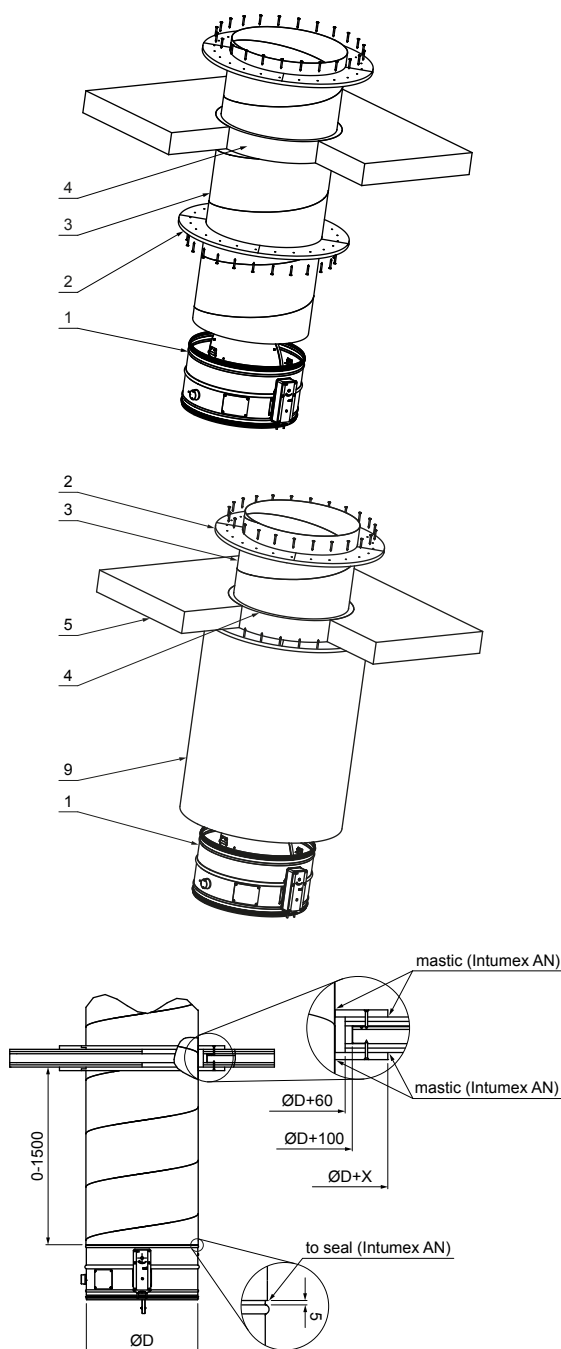
### Damper Parts Description:

1. PKIR-E60S
2. Cover plate
3. Metal duct
4. Mineral wool
5. Flexible or rigid wall
6. Mineral wool
7. Horizontal profile UW (if flexible wall)
8. Vertical profile (if flexible wall)
9. Insulation with the same fire resistivity as the fire damper and the wall ceiling have

Fig.1: Vertical installation of the PKIR-E60S and EKIR-E60S

## 1.2 Horizontal installation of the PKIR-E60S (in a vertical duct – Fig.2)

It is the same procedure as in 1.1 Vertical installation... (on the figure 2 there is only dry method)



**Damper Parts Description:** see Fig. 1

Fig. 2: Horizontal installation of the PKIR-E60S and EKIR-E60S

## 2 Operation manual

After installing the damper the actuator needs to be set up into emergency position, meaning that the fire/evacuation damper blade will open/close. The control system which the damper is connected to signals (according to the damper connection) opens or closes the damper blade.

### 2.1 Electrical actuator

Connect the electrical actuator to power (see wiring schemes) and the electromotor is activated and puts the damper into operating position.

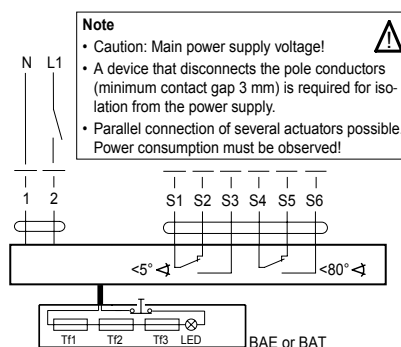


Fig. 3: Wiring scheme of actuators BELIMO BLF230-T (BFL and BFN instead of BLF), BFL230-T, BFN230-T, BF230-T

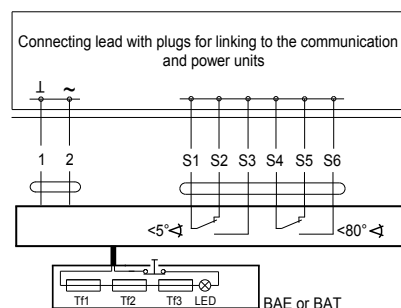


Fig. 4: Wiring scheme of actuators BELIMO BFL24-T-ST, BFN24-T-ST, BF24-T-ST

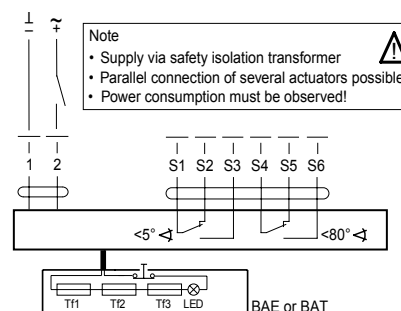


Fig. 5: Wiring scheme of actuator BELIMO BFL24-T, BFN24-T, BF24-T

### 3 Fire Damper Functionality Check

The damper function is checked when the switch on the thermo-electrical release device is pressed and held as shown in Fig. 6. With the switch you simulate a failure of the thermal electrical release device. It is necessary to hold the switch in ON mode during the whole damper function check. The actuator puts the damper into emergency position – it closes/opens the fire/evacuation damper blade with the energy of return spring of the actuator. The damper should close/open within about 20-30 seconds (this depends on operation temperature). The position of the blade is possible to check visually through the inspection lid or the blade position is signalized by the control system which the damper is connected to. Damper must close/open also at any interruption of electricity supply when the damper blade is moved by the energy of the actuator's return spring.

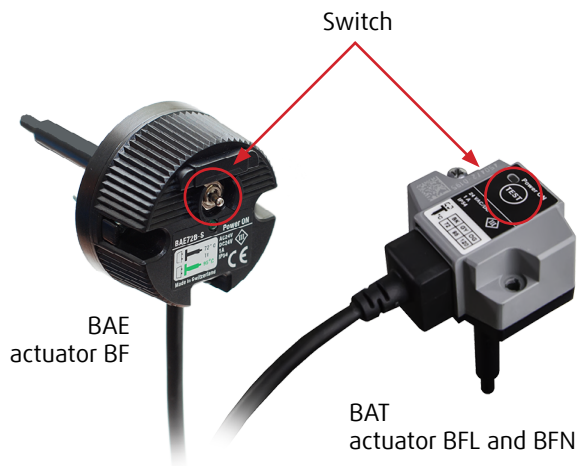


Fig. 6: Electro-thermal fuse - control switch

### Operational conditions

The actuator keeps the fire dampers in operation and in safe status during their whole period of service. It is not permitted to change or modify the dampers and any damper parts cannot be removed without the manufacturer's permission. The operator regularly checks the dampers according to instructions and norms given in the country.

If not stated otherwise the operator does the damper check once every 12 months. Damper checking is to be done by an authorized person. The damper status determined during the check is noted into the operation diary with the date of the check, name, last name and signature of the person that has done the check. If any inadequacies are determined it is necessary to note a proposal for their elimination into the operation diary.

During a visual check visible damages to the damper parts are also to be checked. From the outer side of the damper check the damper casing and actuator. During a visual check from the inner part of the damper, the inspection lid is dismantled and the sealing is checked together with the intumescent material. Check the damper inner casing, thermo-electrical release device, all the sealings inside the damper, damper blade and also the correctness of the damper blade closure (when it is at the end stop in closed position). The damper blade must be open in operation mode. **Do not open the inspection lid in the event of airflow in the ductwork!**

### 4 Damper inspection

During the check the damper should be in operational mode, meaning that during the visual check the fire/evacuation damper blade is open/closed. Correct functioning of the actuator release is checked by holding the switch on the thermo-electrical release device. Closing/opening of the damper is provided by the spring. After the function check put the damper into operation mode by releasing the switch on the thermo-electrical release device.

#### Recommended checks according to the EN 15 650 regulation:

1. date of inspection
2. check of the end switch's connection for damage, if applicable
3. check for damper cleanliness and clean if needed
4. check the blades and sealing, correction and record if needed
5. check the fire damper's safe closure – for details please see the previous section
6. check if the damper moves while in its open and closed position, correct and record if needed
7. check the end switch indicating the open and closed position, correct and record if needed
8. check if the damper is in its standard position.

### 5 Warranty Conditions

For warranty conditions ask please our Systemair colleagues in your country. Before you can install the fire damper, it's functionality must be tested as per chapter 3 (Fire Damper Functionality Check).

#### DO NOT INSTALL NON-FUNCTIONING FIRE DAMPERS!


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

Before you can connect the fire damper into the ductwork, the fire damper functionality must be checked again (according to chapter 3, in Fire Damper Functionality Check).

Operation Journal

Activation of the damper		
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		
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<b>IMOS-Systemair</b> 90043 Kalinkovo 371, Slovakia 1396 - CPD - 0069 EN 15650 : 2010	
<b>Fire damper:</b> - all types of PKI-R-E60S	
<b>Nominal activation conditions/sensitivity:</b> - sensing element load bearing capacity - sensing element response temperature	<b>Pass</b>
<b>Response delay (resp. time)</b> - closure time	<b>Pass</b>
<b>Operational reliability:</b> - cycling	10200 cycles - pass
<b>Fire resistance:</b> - maintenance of the cross section (under E) - integrity E - insulation I - smoke leakage S - mechanical stability (under E) - cross section (under E)	
<b>Durability of response delay:</b> - sensing element response temperature and load bearing capacity	
<b>Durability of operational reliability:</b> - open and closing cycle	

Damper Identification	
Building object	
Emplacement	
Room no.	
Position no.	
Identification	
Signalization	

Warranty Service

Date of warranty repair notification	Date of warranty repair finalization	Description of the executed warranty repair	Representative of the manufacturer (stamp, signature)