

FIRE-RESISTING DUCT DAMPER



BSK

EN

USER'S MANUAL

 **BLAUBERG**

CONTENTS

Safety requirements.....	2
Purpose.....	4
Delivery set.....	4
Designation key.....	5
Technical data.....	6
Design and operating principle	14
Mounting and set-up.....	15
Connection to power mains	19
Technical maintenance.....	20
Storage and transportation regulations.....	20
Manufacturer’s warranty	21
Certificate of acceptance.....	22
Seller information	22
Installation certificate.....	22
Warranty card.....	22

This user’s manual is a main operating document intended for technical, maintenance, and operating staff. The manual contains information about purpose, technical details, operating principle, design, and installation of the BSK unit and all its modifications. Technical and maintenance staff must have theoretical and practical training in the field of ventilation systems and should be able to work in accordance with workplace safety rules as well as construction norms and standards applicable in the territory of the country.

SAFETY REQUIREMENTS

All operations described in this manual must be performed by qualified personnel only, properly trained and qualified to install, make electrical connections and maintain ventilation units.

Do not attempt to install the product, connect it to the mains, or perform maintenance yourself. This is unsafe and impossible without special knowledge.

Disconnect the power supply prior to any operations with the unit.

All user's manual requirements as well as the provisions of all the applicable local and national construction, electrical, and technical norms and standards must be observed when installing and operating the unit.

Disconnect the unit from the power supply prior to any connection, servicing, maintenance, and repair operations.

Connection of the unit to power mains is allowed by a qualified electrician with a work permit for the electric units up to 1000 V after careful reading of the present user's manual.

Check the unit for any visible damage of the impeller, the casing, and the grille before starting installation. The casing internals must be free of any foreign objects that can damage the impeller blades.

While mounting the unit, avoid compression of the casing! Deformation of the casing may result in motor jam and excessive noise.

Misuse of the unit and any unauthorised modifications are not allowed.

Do not expose the unit to adverse atmospheric agents (rain, sun, etc.).

Transported air must not contain any dust or other solid impurities, sticky substances, or fibrous materials.

Do not use the unit in a hazardous or explosive environment containing spirits, gasoline, insecticides, etc.

Do not close or block the intake or extract vents in order to ensure the efficient air flow.

Do not sit on the unit and do not put objects on it.

The information in this user's manual was correct at the time of the document's preparation.

The Company reserves the right to modify the technical characteristics, design, or configuration of its products at any time in order to incorporate the latest technological developments.

Never touch the unit with wet or damp hands.

Never touch the unit when barefoot.

BEFORE INSTALLING ADDITIONAL EXTERNAL DEVICES, READ THE RELEVANT USER MANUALS.



THE PRODUCT MUST BE DISPOSED SEPARATELY AT THE END OF ITS SERVICE LIFE.

DO NOT DISPOSE THE UNIT AS UNSORTED DOMESTIC WASTE

PURPOSE

The BSK series fire dampers are intended for automatic closing of process openings and air duct penetrations in intermediate floors, walls and partitions, as well as closing of openings in supply and exhaust ducts of smoke ventilation systems. The dampers of this particular design are not suitable for installation in air ducts and ducts of premises with rated explosion and fire safety category A and B and in flammable and explosive mixture intakes.

The BSK fire dampers are designed, manufactured and tested in accordance with the following standards:

EN 15650:2019 Ventilation for buildings.

Fire dampers (EN 15650:2010, IDT);

EN 13501-3:2016 Fire classification of construction products and building elements.

Part 3: Classification using data from fire resistance tests on products and elements used in building service installations:

fire resisting ducts and fire dampers (EN 13501-3:2005+A1:2009, IDT).

Product performance has been confirmed by tests in accordance with EN 1366-2:2013 Fire resistance tests for service installations.

Fire dampers (EN 1366-2:1999, IDT).

DELIVERY SET

NAME	NUMBER
Damper	1 pc.
User's manual	1 pc.
Packing box	1 pc.

DESIGNATION KEY

Designation example: **BSK2 25x25/1 PNP24T/O S**

BSK - Fire-Stopping duct Damper (BrandSchutzKlappe) Normally open General industrial (Allgemeine)	Series 25x25/1
	Fire resistance 1 – 1 hour 2 – 2 hours
	Damper flow area width 20; 25; 30; 40; 50; 60; 80; 100
	Damper flow area height 20; 25; 30; 40; 50; 60; 80; 100
	Number of flanges 1 – one 2 – two
	Actuator Type 72S – thermal fuse and return spring (manual actuation) PNP24T – 24 V NENU TEC electric actuator with a return spring and a thermal breaker PNP230T – 230 V NENU TEC electric actuator with a return spring and a thermal breaker PVP24T – 24 V BELIMO electric actuator with a return spring and a thermal breaker PVP230T – 230 V BELIMO electric actuator with a return spring and a thermal breaker PSP24T – 24 V SIEMENS electric actuator with a return spring and a thermal breaker PSP230T – 230 V SIEMENS electric actuator with a return spring and a thermal breaker
	Actuator Location O – outside I – inside (except for dampers with a height or width of less than 300 mm)
	Design variant – – ordinary damper design; S – simplified damper design (for BSK2 only)

Designation example: **BSK1 100 PNP24T**

BSK - Fire-Stopping duct Damper (BrandSchutzKlappe) Normally open	Series 100
	Fire resistance 1 – 1 hour; 2 – 2 hours
	Rated damper diameter [mm] 100; 125; 150; 160; 180; 200; 225; 250; 315; 355; 400
	Actuator Type 1A – thermal fuse (72 °C), return spring (manual actuation) PNP24T – 24 V NENU TEC electric actuator with a return spring and a thermal breaker PNP230T – 230 V NENU TEC electric actuator with a return spring and a thermal breaker PVP24T – 24 V BELIMO electric actuator with a return spring and a thermal breaker PVP230T – 230 V BELIMO electric actuator with a return spring and a thermal breaker PSP24T – 24 V SIEMENS electric actuator with a return spring and a thermal breaker PSP230T – 230 V SIEMENS electric actuator with a return spring and a thermal breaker

TECHNICAL DATA

The dampers are designed for operation in spaces with non aggressive environment, the air temperature ranging from 0 °C to +60 °C and relative humidity up to 80 %.

Durability test:

- 50 cycles / manual actuation;
- 10,000 cycles / electric actuator with return spring.

Ingress protection rating against access to hazardous parts and water ingress is IPX4.

In terms of electric shock hazard the products belong to the following categories of electrical appliances:

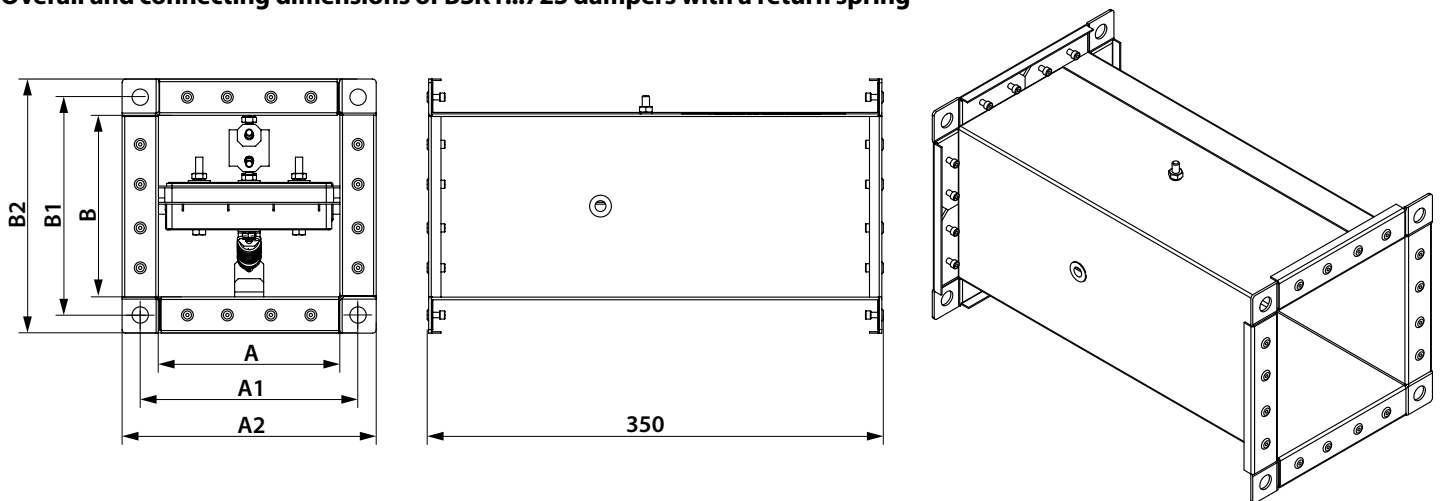
- Class III (low voltage) for the dampers with 24 V electric actuator power supply.
- Class II (complete insulation) for the dampers with 230 V electric actuator power supply.

The dampers may not be integrated:

- Into air ducts and on premises rated explosion and fire safety category A and B.
- Into air ducts of local intakes for flammable and explosive mixtures.
- Into systems which do not undergo periodic cleaning pursuant to an approved schedule to prevent the build-up of combustible deposits.

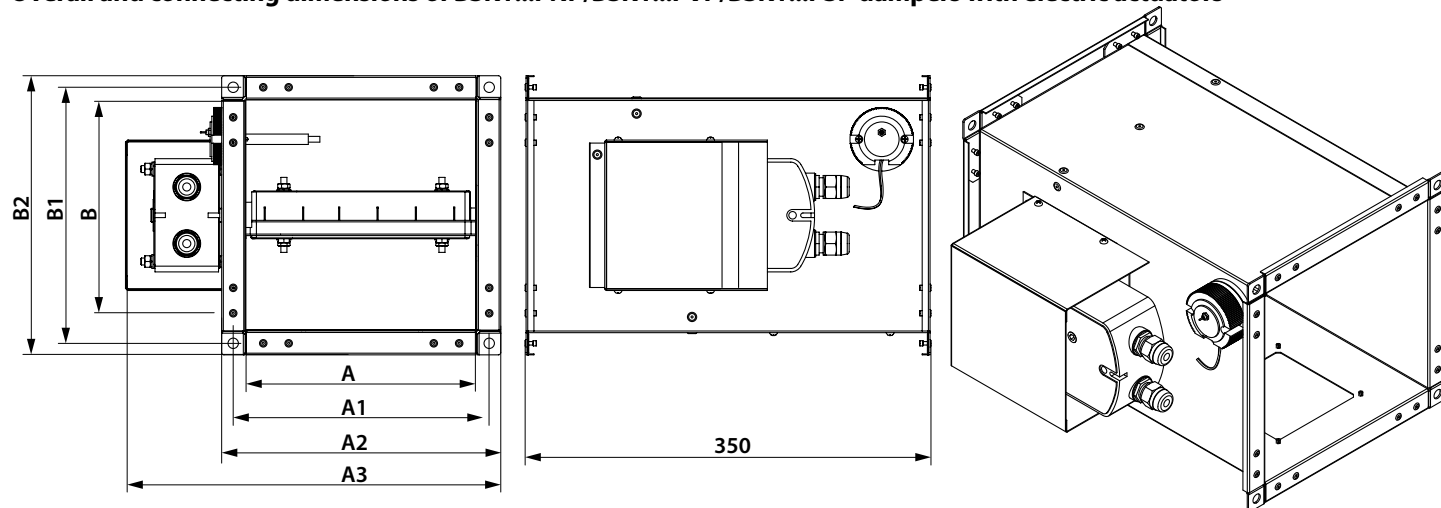
The damper undergoes continuous improvement. Therefore, some models may slightly differ from the ones described herein.

Overall and connecting dimensions of BSK1...72S dampers with a return spring



Model	Dimensions [mm]						Weight [kg]
	A	A1	A2	B	B1	B2	
BSK1 20x20/2 72S/O	200	220	240	200	220	240	3.5
BSK1 25x20/2 72S/O	250	270	290	200	220	240	4
BSK1 25x25/2 72S/O	250	270	290	250	270	290	4.5
BSK1 30x20/2 72S/O	300	320	340	200	220	240	4.5
BSK1 30x25/2 72S/O	300	320	340	250	270	290	5.1
BSK1 30x30/2 72S/O	300	320	340	300	320	340	5.8
BSK1 40x25/2 72S/O	400	420	440	250	270	290	6.3
BSK1 40x30/2 72S/O	400	420	440	300	320	340	7.1
BSK1 40x40/2 72S/O	400	420	440	400	420	440	8.7
BSK1 50x30/2 72S/O	500	520	540	300	320	340	8.5
BSK1 50x40/2 72S/O	500	520	540	400	420	440	10.3
BSK1 50x50/2 72S/O	500	520	540	500	520	540	12
BSK1 60x40/2 72S/O	600	620	640	400	420	440	11.9
BSK1 60x50/2 72S/O	600	620	640	500	520	540	13.8
BSK1 60x60/2 72S/O	600	620	640	600	620	640	16.1

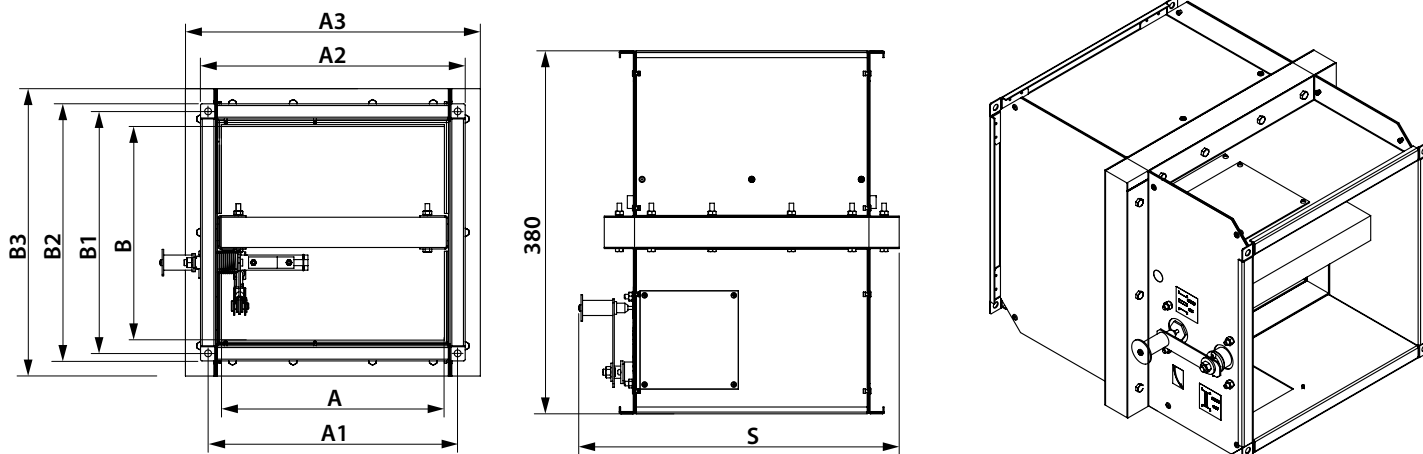
Overall and connecting dimensions of BSK1...PNP/BSK1...PVP/BSK1...PSP dampers with electric actuators



Model	Dimensions [mm]							Weight [kg]
	A	A1	A2	A3	B	B1	B2	
BSK1 20x20/2 .../O	200	220	240	325	200	220	240	6.2
BSK1 25x20/2 .../O	250	270	290	375	200	220	240	6.8
BSK1 25x25/2 .../O	250	270	290	375	250	270	290	7.3
BSK1 30x20/2 .../O	300	320	340	425	200	220	240	7.3
BSK1 30x25/2 .../O	300	320	340	425	250	270	290	7.9
BSK1 30x30/2 .../O	300	320	340	425	300	320	340	8.5
BSK1 40x25/2 .../O	400	420	440	525	250	270	290	9.1
BSK1 40x30/2 .../O	400	420	440	525	300	320	340	9.8
BSK1 40x40/2 .../O	400	420	440	525	400	420	440	11.3
BSK1 50x30/2 .../O	500	520	540	625	300	320	340	10.7
BSK1 50x40/2 .../O	500	520	540	625	400	420	440	12.9
BSK1 50x50/2 .../O	500	530	560	635	500	530	560	16.6
BSK1 60x40/2 .../O	600	620	640	725	400	420	440	14.5
BSK1 60x50/2 .../O	600	630	660	735	500	530	560	18.4
BSK1 60x60/2 .../O	600	630	660	735	600	630	660	20.6
BSK1 80x50/2 .../O	800	830	860	935	500	530	560	22.3
BSK1 80x60/2 .../O	800	830	860	935	600	630	660	24.8
BSK1 80x80/2 .../O	800	830	860	935	800	830	860	30.1
BSK1 100x60/2 .../O	1000	1030	1060	1135	600	630	660	29
BSK1 100x80/2 .../O	1000	1030	1060	1135	800	830	860	35.4
BSK1 100x100/2 .../O	1000	1030	1060	1135	1000	1030	1060	41.7

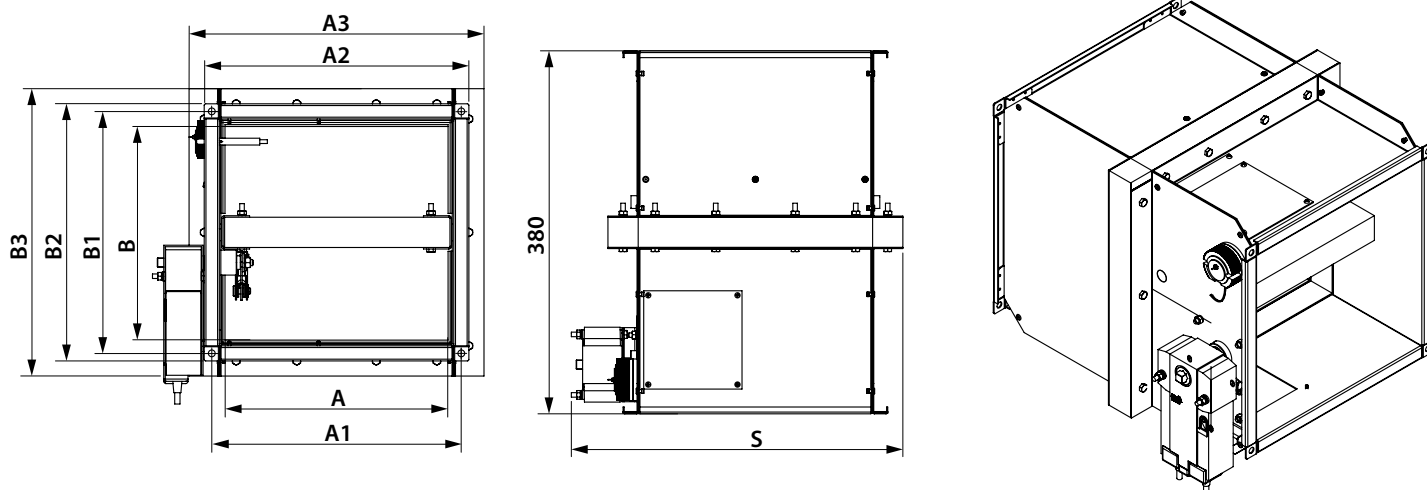
Note: The values given in the table for dampers with 230 V actuators are identical for those equipped with 24 V actuators.

Overall and connecting dimensions of BSK2...72S dampers with a mechanical actuator



Model	Dimensions [mm]									Weight [kg]
	A	A1	A2	A3	B	B1	B2	B3	S	
BSK2 20x20/2 72S/O	200	220	240	280	200	220	240	280	315	12
BSK2 25x20/2 72S/O	250	270	290	330	200	220	240	280	365	13
BSK2 25x25/2 72S/O	250	270	290	330	250	270	290	330	365	14.1
BSK2 30x20/2 72S/O	300	320	340	380	200	220	240	280	415	14
BSK2 30x25/2 72S/O	300	320	340	380	250	270	290	330	415	15.3
BSK2 30x30/2 72S/O	300	320	340	380	300	320	340	380	415	18.8
BSK2 40x25/2 72S/O	400	420	440	480	250	270	290	330	515	19.2
BSK2 40x30/2 72S/O	400	420	440	480	300	320	340	380	515	19.7
BSK2 40x40/2 72S/O	400	420	440	480	400	420	440	480	515	22
BSK2 50x30/2 72S/O	500	520	540	580	300	320	340	380	615	22.5
BSK2 50x40/2 72S/O	500	520	540	580	400	420	440	480	615	24.7
BSK2 50x50/2 72S/O	500	520	540	580	500	520	540	580	615	29.8
BSK2 60x40/2 72S/O	600	620	640	680	400	420	440	480	715	29.7
BSK2 60x50/2 72S/O	600	620	640	680	500	520	540	580	715	36
BSK2 60x60/2 72S/O	600	620	640	680	600	620	640	680	715	38

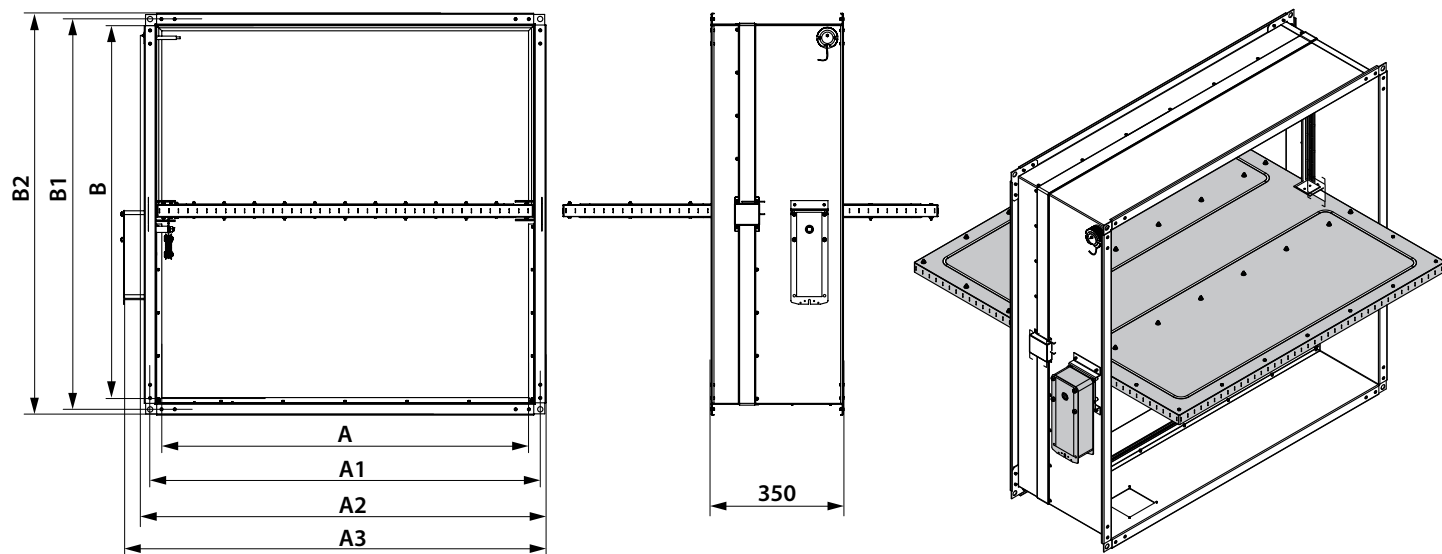
Overall and connecting dimensions of BSK2...PNP/BSK2...PVP/BSK2...PSP dampers with electric actuators



Model	Dimensions [mm]									Weight [kg]
	A	A1	A2	A3	B	B1	B2	B3	S	
BSK2 20x20/2 .../O	200	220	240	280	200	220	240	280	340	13.3
BSK2 25x20/2 .../O	250	270	290	330	200	220	240	280	390	14.3
BSK2 25x25/2 .../O	250	270	290	330	250	270	290	330	390	15.4
BSK2 30x20/2 .../O	300	320	340	380	200	220	240	280	440	15.3
BSK2 30x25/2 .../O	300	320	340	380	250	270	290	330	440	16.6
BSK2 30x30/2 .../O	300	320	340	380	300	320	340	380	440	20.1
BSK2 40x25/2 .../O	400	420	440	480	250	270	290	330	540	20.5
BSK2 40x30/2 .../O	400	420	440	480	300	320	340	380	540	21
BSK2 40x40/2 .../O	400	420	440	480	400	420	440	480	540	23.3
BSK2 50x30/2 .../O	500	520	540	580	300	320	340	380	640	23.8
BSK2 50x40/2 .../O	500	520	540	580	400	420	440	480	640	26
BSK2 50x50/2 .../O	500	530	560	580	500	530	560	580	650	33
BSK2 60x40/2 .../O	600	620	640	680	400	420	440	480	740	32.7
BSK2 60x50/2 .../O	600	630	660	680	500	530	560	580	750	38.4
BSK2 60x60/2 .../O	600	630	660	680	600	630	660	680	750	43
BSK2 80x50/2 .../O	800	830	860	880	500	530	560	580	950	47
BSK2 80x60/2 .../O	800	830	860	880	600	630	660	680	950	52
BSK2 80x80/2 .../O	800	830	860	880	800	830	860	880	950	63
BSK2 100x60/2 .../O	1000	1030	1060	1080	600	630	660	680	1150	63
BSK2 100x80/2 .../O	1000	1030	1060	1080	800	830	860	880	1150	75
BSK2 100x100/2 .../O	1000	1030	1060	1080	1000	1030	1060	1080	1150	87

Note: The values given in the table for dampers with 230 V actuators are identical for those equipped with 24 V actuators.

Overall and connecting dimensions of BSK2...PNP...1/BSK2...PVP...1/BSK2...PSP...1 dampers with electric actuators

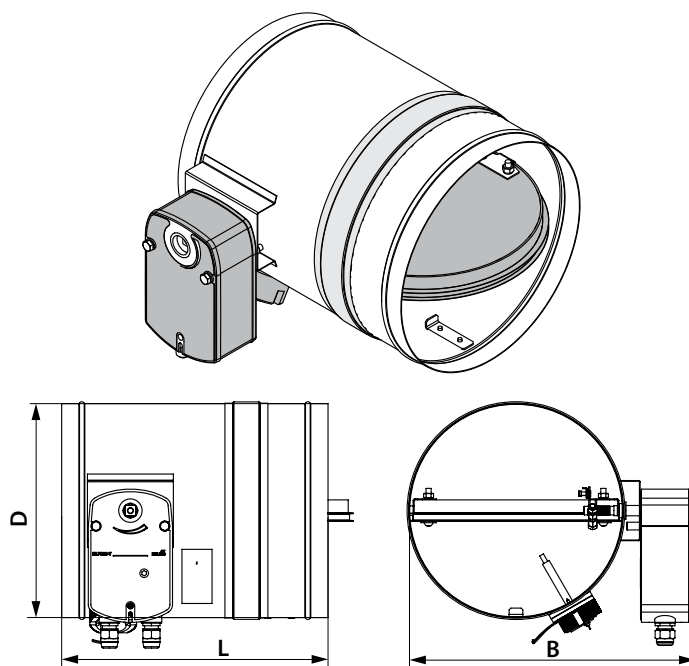
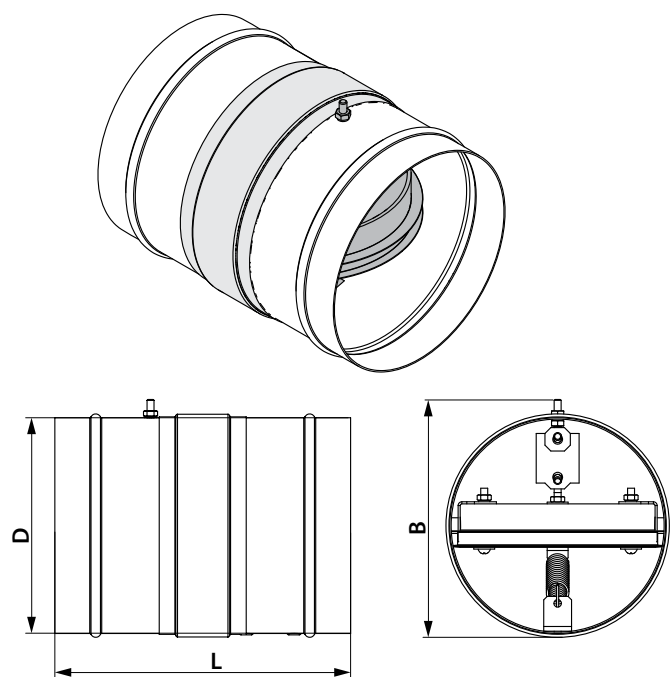


Model	Dimensions [mm]							Weight [kg]
	A	A1	A2	A3	B	B1	B2	
BSK2 20x20/2 .../O S	200	220	240	340	200	220	240	5.7
BSK2 25x20/2 .../O S	250	270	290	390	200	220	240	6.2
BSK2 25x25/2 .../O S	250	270	290	390	250	270	290	6.9
BSK2 30x20/2 .../O S	300	320	340	440	200	220	240	6.8
BSK2 30x25/2 .../O S	300	320	340	440	250	270	290	7.5
BSK2 30x30/2 .../O S	300	320	340	440	300	320	340	9.2
BSK2 40x25/2 .../O S	400	420	440	540	250	270	290	9
BSK2 40x30/2 .../O S	400	420	440	540	300	320	340	10.8
BSK2 40x40/2 .../O S	400	420	440	540	400	420	440	12.6
BSK2 50x30/2 .../O S	500	520	540	640	300	320	340	12.3
BSK2 50x40/2 .../O S	500	520	540	640	400	420	440	14.3
BSK2 50x50/2 .../O S	500	530	560	650	500	530	560	23
BSK2 60x40/2 .../O S	600	620	640	740	400	420	440	16.2
BSK2 60x50/2 .../O S	600	630	660	750	500	530	560	25.6
BSK2 60x60/2 .../O S	600	630	660	750	600	630	660	28.6
BSK2 80x50/2 .../O S	800	830	860	950	500	530	560	31.3
BSK2 80x60/2 .../O S	800	830	860	950	600	630	660	34.7
BSK2 80x80/2 .../O S	800	830	860	950	800	830	860	42
BSK2 100x60/2 .../O S	1000	1030	1060	1150	600	630	660	40.7
BSK2 100x80/2 .../O S	1000	1030	1060	1150	800	830	860	50.2
BSK2 100x100/2 .../O S	1000	1030	1060	1150	1000	1030	1060	58

Note: The values given in the table for dampers with 230 V actuators are identical for those equipped with 24 V actuators.

The BSK...1A fire safety damper with a mechanical actuating unit, a thermal fuse and a return spring

The BSK...PNP/BSK...PVP/BSK...PSP fire safety damper with an electric actuator and a thermally sensitive breaker



Model	Dimensions [mm]			Weight [kg]
	Ø D	L	B	
BSK...100 1A	99	170	112	1
BSK...125 1A	124	170	137	1.2
BSK...150 1A	149	170	162	1.5
BSK...160 1A	159	170	172	1.6
BSK...180 1A	179	170	192	1.8
BSK...200 1A	199	170	212	2
BSK...225 1A	224	170	237	2.2
BSK...250 1A	249	190	262	2.5
BSK...315 1A	314	190	327	3.6
BSK...355 1A	354	190	367	4.4
BSK...400 1A	399	240	412	6

Model	Dimensions [mm]			Weight [kg]
	Ø D	L	B	
BSK...100 PNP(PVP, PSP)	99	300	195	2.9
BSK...125 PNP(PVP, PSP)	124	300	215	3.1
BSK...150 PNP(PVP, PSP)	149	300	245	3.4
BSK...160 PNP(PVP, PSP)	159	300	255	3.5
BSK...180 PNP(PVP, PSP)	179	300	275	3.8
BSK...200 PNP(PVP, PSP)	199	300	295	4
BSK...225 PNP(PVP, PSP)	224	300	325	4.4
BSK...250 PNP(PVP, PSP)	249	310	345	4.7
BSK...315 PNP(PVP, PSP)	314	310	415	6.5
BSK...355 PNP(PVP, PSP)	354	310	455	8.3
BSK...400 PNP(PVP, PSP)	399	310	505	9.9

Dampers with dimensions not included in the table can be produced on request.

Main technical specifications of Belimo electric actuators with a return spring and a thermal breaker

Technical data	Basic models		Models with increased torque		Models with the highest torque	
Rated operation voltage	AC/DC 24 V	AC 230 V	AC/DC 24 V	AC 230 V	AC/DC 24 V	AC 230 V
Permissible operating voltage tolerance	AC 19.2...28.8 V DC 21.6...28.8 V	AC 198...264 V	AC 19.2...28.8 V DC 21.6...28.8 V	AC 198...264 V	AC 19.2...28.8 V DC 21.6...28.8 V	AC 198...264 V
AC mains frequency	50/60 Hz					
Power consumption at rest [W]	0.8	1.1	1.4	2.1	2	3
Power consumption in operation [W]	2.5	3.5	4	5	7	8.5
Maximum design capacity [VA]	4	6.5	6	10	10	11
Motor torque [Nm]	4		9		18	
Spring torque [Nm]	3		7		12	
Protection class	III	II	III	II	III	II
Ingress protection rating	IP54					
Auxiliary switches	2 pcs., single-pole, reversible 1 mA...3 (0.5) A, AC 250 V				2 pcs., single-pole, reversible, 1 mA...6(3)A, AC 250 V	
Electric motor connection cable	1 m, 2 x 0.75 mm ² (halogen-free)					
Auxiliary switch connection cable	1 m, 6 x 0.75 mm ² (halogen-free)					
Running time spring	20 seconds at -10...+55 °C < 60 seconds at -30...-10 °C				16 seconds at +20 °C	
Running time motor	< 60 s/90°				< 120 s/90°	
Response temperature of thermal breaker sensors	Duct sensor 72 °C Outdoor sensor 72 °C					
Technical maintenance	Not required					

Main technical specifications of Nenutec electric actuators with a return spring and a thermal breaker

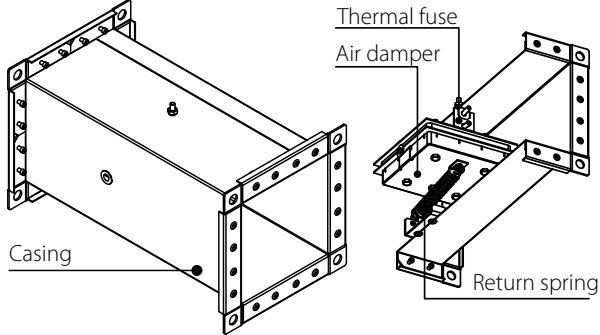
Technical data	Basic models BSK1/BSK2		Models with increased torque BSK1//BSK2		Basic models BSK	
Rated operation voltage	AC/DC 24 V	AC 230 V	AC/DC 24 V	AC 230 V	AC/DC 24 V	AC 230 V
Permissible operating voltage tolerance	AC/DC 21,8...26,4 V	AC 209...253 V	AC/DC 21,8...26,4 V	AC 209...253 V	AC/DC 21,8...26,4 V	AC 209...253 V
AC mains frequency	50/60 Hz				50/60 Hz	
Power consumption at rest [W]	2,5		2		2,5	
Power consumption in operation [W]	7		10		7	
Maximum design capacity [VA]	10		10		10	
Motor torque [Nm]	5		8		5	
Spring torque [Nm]						
Protection class	III	II	III	II	III	II
Ingress protection rating	IP54				IP54	
Auxiliary switches	2 pcs., single-pole, reversible, 3 (1.5) A, AC 250 V				2 pcs., single-pole, reversible, 3 (1.5) A, AC 250 V	
Electric motor connection cable	1 m, 2 x 0,75 mm ² (halogen-free)				1 m, 2 x 0,75 mm ² (halogen-free)	
Auxiliary switch connection cable	1 m, 6 x 0,75 mm ² (halogen-free)				1 m, 6 x 0,75 mm ² (halogen-free)	
Running time	50...70 s (return spring < 20 s) (fixed) - (return spring <20 s)		75...90 s (return spring < 25 s)		50...70 s (return spring < 20 s) (fixed) - (return spring <20 s)	
Response temperature of thermal breaker sensors	Duct sensor 72 °C Outdoor sensor 72 °C					

Main technical specifications of Siemens electric actuators with a return spring and a thermal breaker

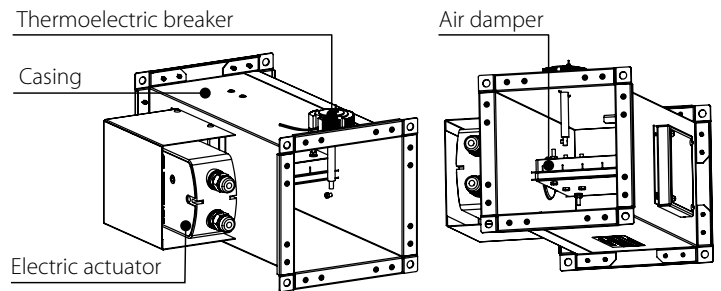
Technical data	Basic models		Models with increased torque		Models with the highest torque	
Rated operation voltage	AC 24 V/ DC 24...48 V	AC 230 V	AC 24 V/ DC 24...48 V	AC 230 V	AC 24 V/ DC 24...48 V	AC 230 V
Permissible operating voltage tolerance	AC/DC ±20 %	AC ±15 %	AC/DC ±20 %	AC ±15 %	AC/DC ±20 %	AC ±15 %
AC mains frequency	50/60 Hz					
Power consumption at rest [W]	2	3.5	2	3.5	3	4
Power consumption in operation [W]	3.5	4.5	3.5	4.5	5	6
Maximum design capacity [VA]	5	7	5	7	7	8
Motor torque [Nm]	4		9		18	
Spring torque [Nm]	4		7		18	
Protection class	III	II	III	II	III	II
Ingress protection rating	IP54					
Auxiliary switches	2 pcs., single-pole, reversible, 6(2)A, AC 24...250 V					
Electric motor connection cable	0.9 m, 2 x 0.75 mm ² (halogen-free)					
Auxiliary switch connection cable	0.9 m, 6 x 0.75 mm ² (halogen-free)					
Running time spring	15 seconds < 60 seconds at -30...-10 °C					
Running time motor	90 s/90°					
Response temperature of thermal breaker sensors	Duct sensor 72 °C Outdoor sensor 72 °C					
Service life	10 000 emergency positions					
Technical maintenance	Not required					

DESIGN AND OPERATING PRINCIPLES

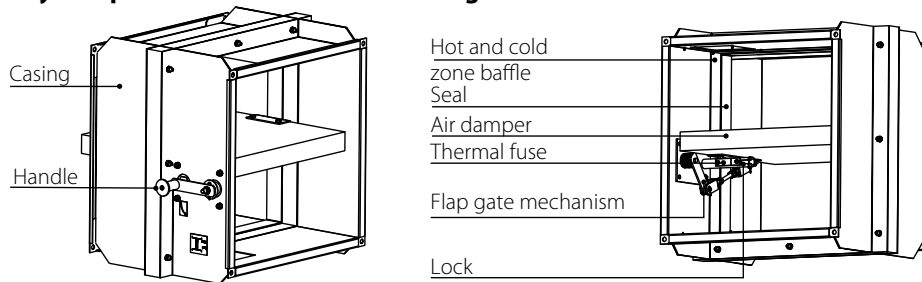
BSK1...72S fire safety damper with a mechanical actuating unit with a thermal fuse and a return spring



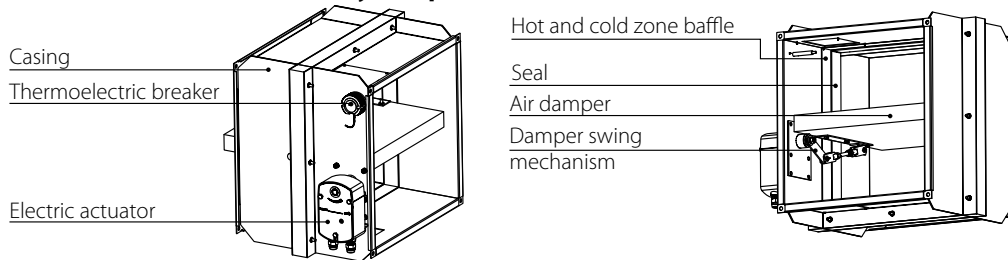
BSK1...PNP/BSK1...PVP/BSK1...PSP fire safety damper with electric actuator and a thermoelectric breaker



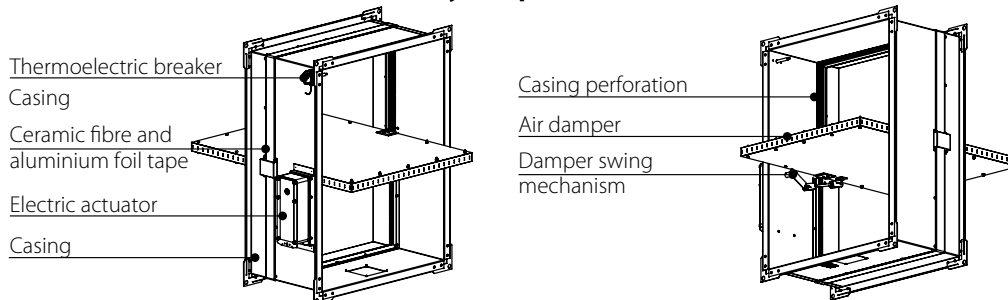
The BSK2...72S fire safety damper with a mechanical actuating unit with a thermal fuse and a return spring



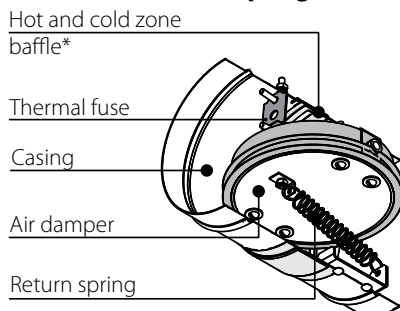
The BSK2...PNP/BSK2...PVP/BSK2...PSP fire safety damper with electric actuator and thermoelectric breaker



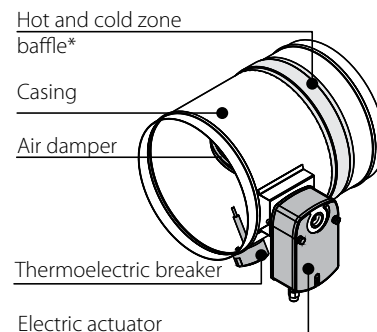
The BSK2...PNP...1/BSK2...PVP...1/BSK2...PSP...1 fire safety damper with a Belimo electric actuator and thermoelectric breaker



The BSK...1A fire safety damper with a mechanical actuating unit, a thermal fuse and a return spring



The BSK...PNP/BSK...PVP/BSK...PSP fire safety damper with an electric actuator and a thermoelectric breaker



*Only for dampers with a fire-resistance level of 2 hours (EI 120).

*Only for dampers with a fire-resistance level of 2 hours (EI 120).

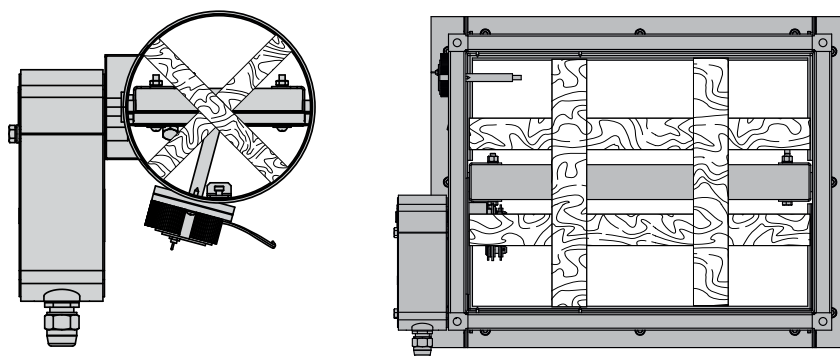
MOUNTING AND SET-UP

The dampers are installed into square or rectangular (BSK1, BSK2 series) and round (BSK series) air ducts of ventilation systems, and the apertures of ventilation shafts, division walls and fire partitions.

The installation of the dampers into ventilation systems must be carried out in consideration of the air flow direction.

While installing electrically actuated dampers provide for sufficient space for the actuator inspection.

When preparing the fire-safety dampers for installation the damper casing must be fitted with wooden spreader bars to prevent deformation, torsional twisting or geometry perturbation of the casing which may result in flap jamming and, eventually, loss of the damper functionality.



Following the damper installation into the shaft, wall or ceiling filler structure section and upon complete curing (immobilization) of the mortar make sure to remove the wooden spreader bars. The damper must open and close freely without excessive friction.

To install the dampers into the apertures of wall or ceiling slabs fill up the gaps between the damper casing and the aperture. The gaps are filled with fire-resistant mortar.

The damper design enables its attachment to air ducts and other ventilation system components by means of flanges as well as its installation into filler structures. Under any installation scenario the mating structure fire-resistance level must be upgraded by using extra fire insulation to at least match that of the filler structure of the respective fire-safety zone.

According to EN 15650, each fire damper must be installed in accordance with the mounting instructions provided by the manufacturer!

BSK1, BSK2 DAMPER INSTALLATION

The dampers can be installed in any position into vertical and horizontal channels of fire-protection structures. The damper installation openings must be made in such a way so as to prevent the transfer of loads caused by the fire-protection structures to the damper casing. The adjoining air duct must be suspended in such a way so as to prevent the transfer of air duct load to the damper flange. There must be at least 350 mm of unrestricted clearance for accessing the control elements. Make sure to arrange an inspection hole. While carrying out the installation mind size K. When two or more dampers are installed into the same fire-protection separation structure the distance between the two adjacent dampers must be at least 200 mm.

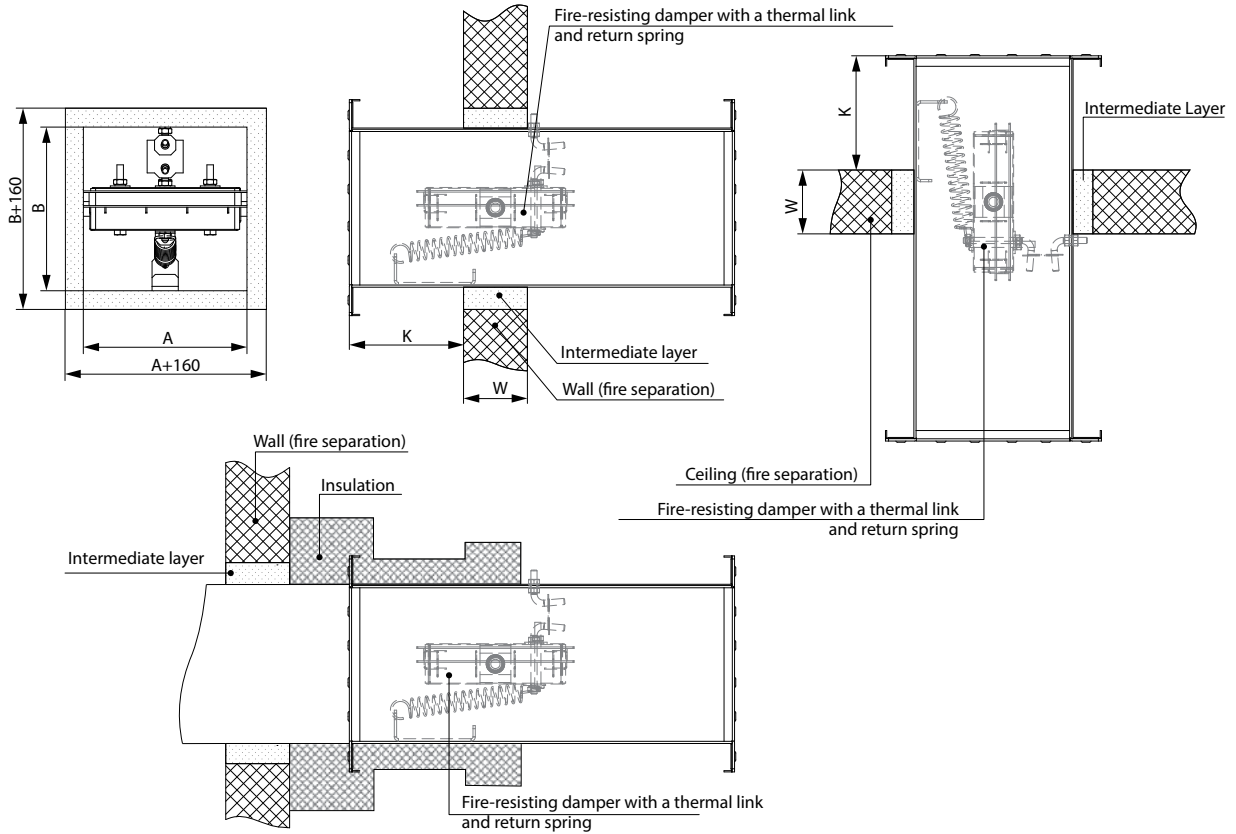
The damper must be installed in such a way that the damper flap lies in the fire-protection divider structure plane while closed. If such installation is not possible, the damper casing part between the fire-protection separation structure and the damper flap must be insulated with a suitable material pursuant to the applicable standards.

The damper control mechanism must be protected against damage and contamination. Avoid damper casing deformation during the embedding. After the installation the flap must not catch against the damper casing while opening or closing.

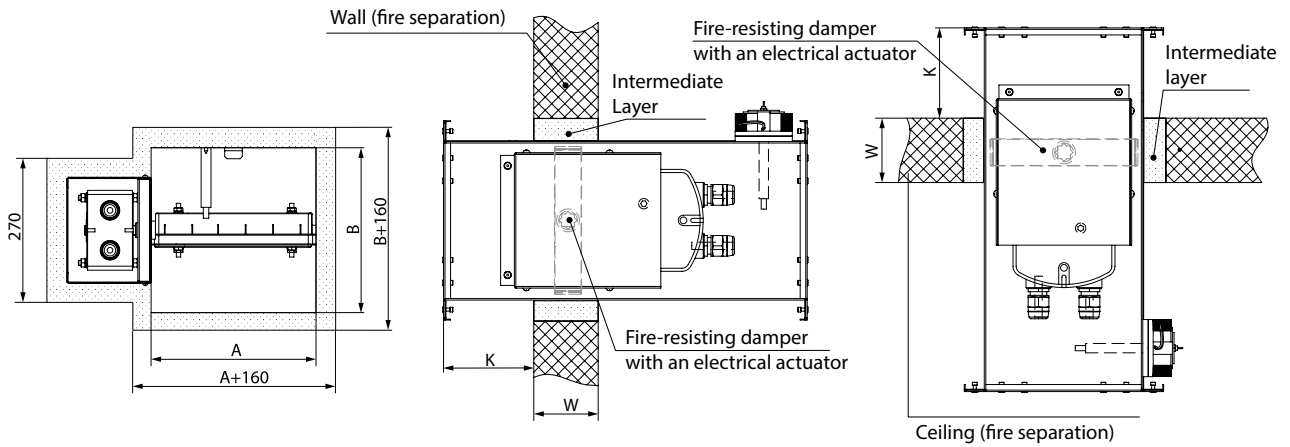
Fire-safety dampers can be integrated into a tight wall structure – e.g. made of conventional concrete work of minimum width $W = 100$ mm or into a plasterboard wall of the necessary fire resistance class or into a tight ceiling structure – e.g. made of conventional concrete of minimum width $W = 150$ mm.

The recommended values for construction openings are given below.

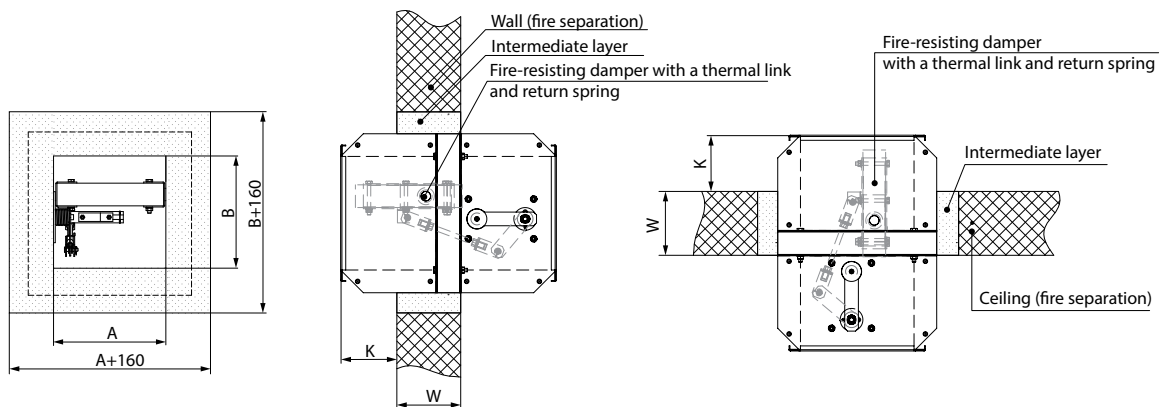
INSTALLATION RECOMMENDATIONS FOR BSK1...72S DAMPERS WITH A THERMAL FUSE AND A RETURN SPRING



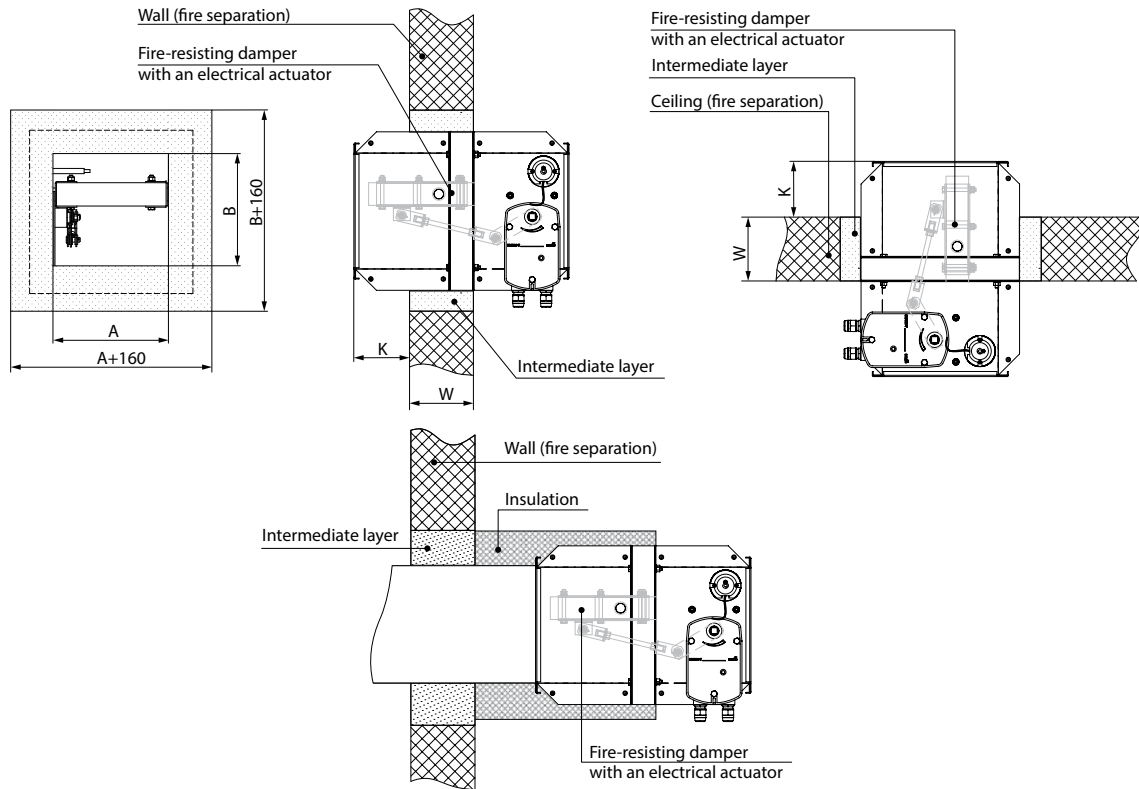
INSTALLATION RECOMMENDATIONS FOR BSK1...PNP/BSK1...PVP/BSK1...PSP FIRE SAFETY DAMPERS WITH ELECTRIC ACTUATOR



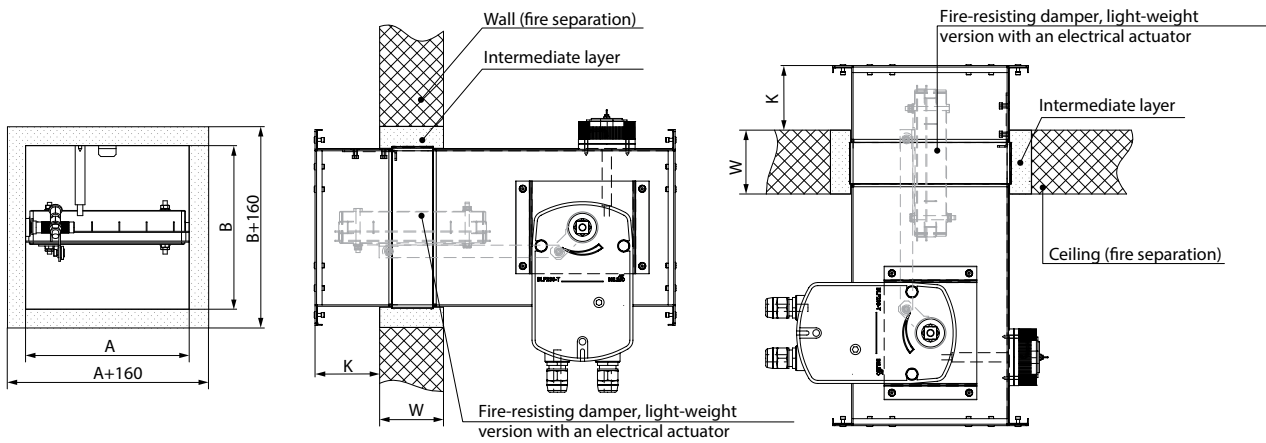
INSTALLATION RECOMMENDATIONS FOR BSK2...72S DAMPERS WITH A THERMAL FUSE AND A RETURN SPRING



INSTALLATION RECOMMENDATIONS FOR BSK2...PNP/BSK2...PVP/BSK2...PSP FIRE SAFETY DAMPERS WITH ELECTRIC ACTUATOR



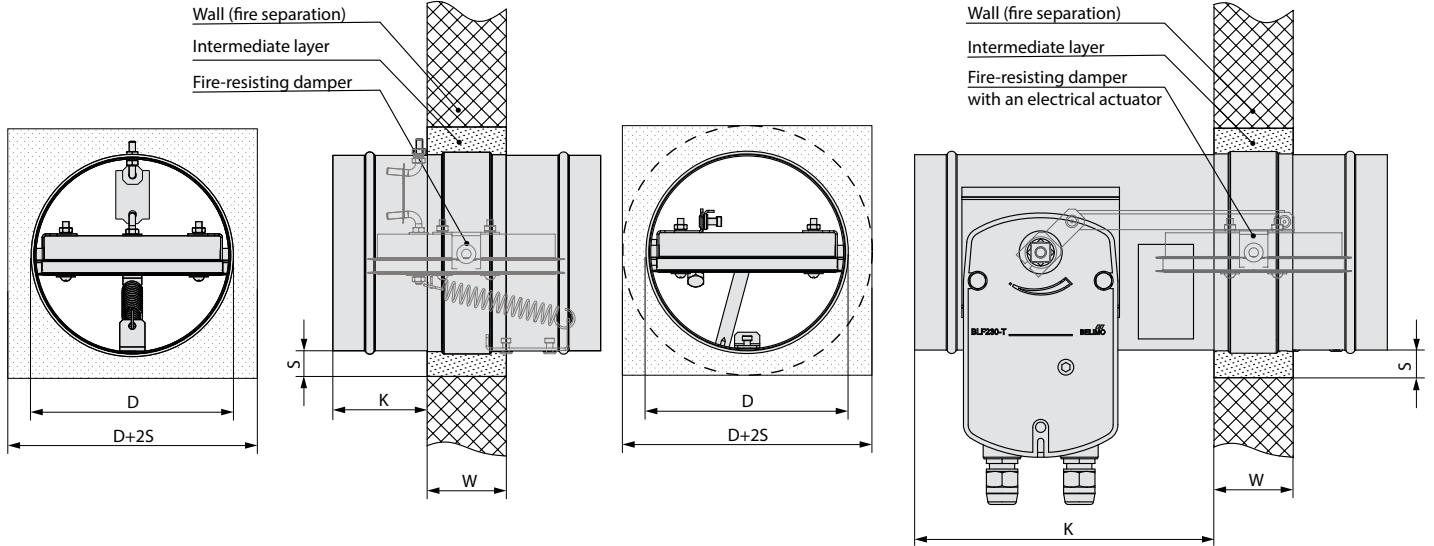
INSTALLATION RECOMMENDATIONS FOR BSK2...PNP...S/BSK2...PVP...S/BSK2...PSP...S FIRE SAFETY DAMPERS WITH ELECTRIC ACTUATOR



BSK DAMPER INSTALLATION

Fire-safety dampers can be installed into solid walls with the minimum width of $W = 150\text{ mm}$, into both round and square apertures, minimum intermediate layer thickness $S = 50\text{ mm}$. The walls can be made of concrete, brick or foam concrete blocks. The intermediate layer can be made of concrete or mortar. While carrying out the installation mind size K . When installing the dampers into thicker walls add an extender section on one of the damper sides.

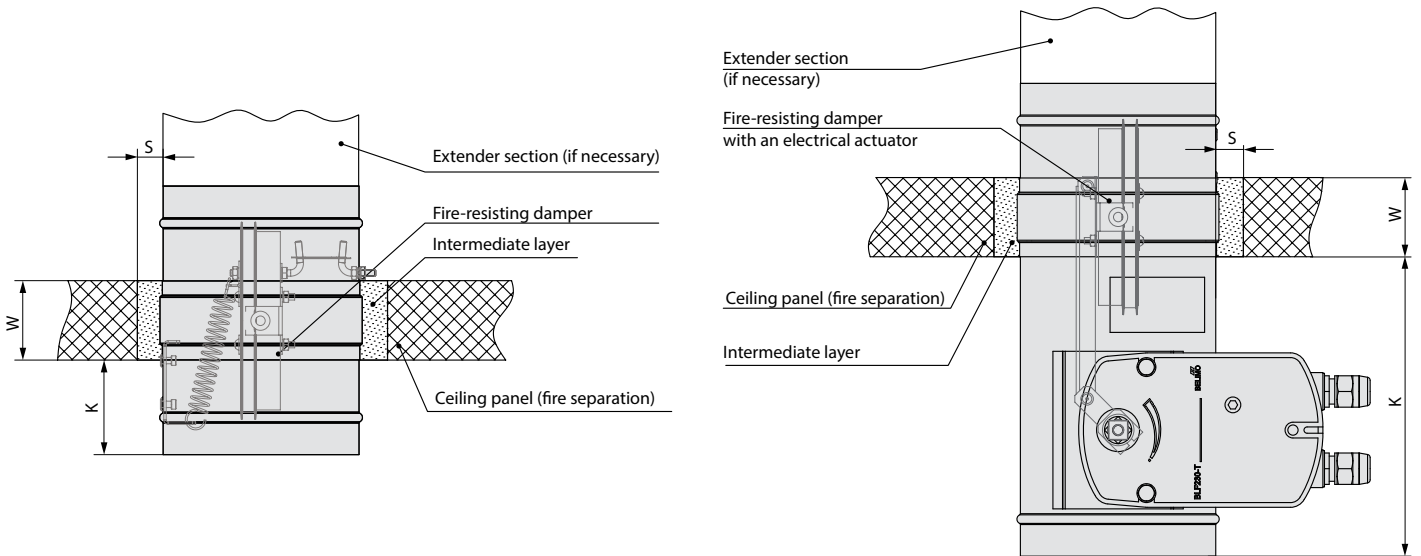
The electric actuator can be positioned freely on either side of the fire control sector (space) wall.



Fire-safety dampers can be installed into solid ceiling panels with the minimum thickness of $W = 150\text{ mm}$, minimum intermediate layer thickness $S = 50\text{ mm}$. The ceiling panels are made of concrete. The intermediate layer can be made of concrete or mortar. While carrying out the installation mind size K .

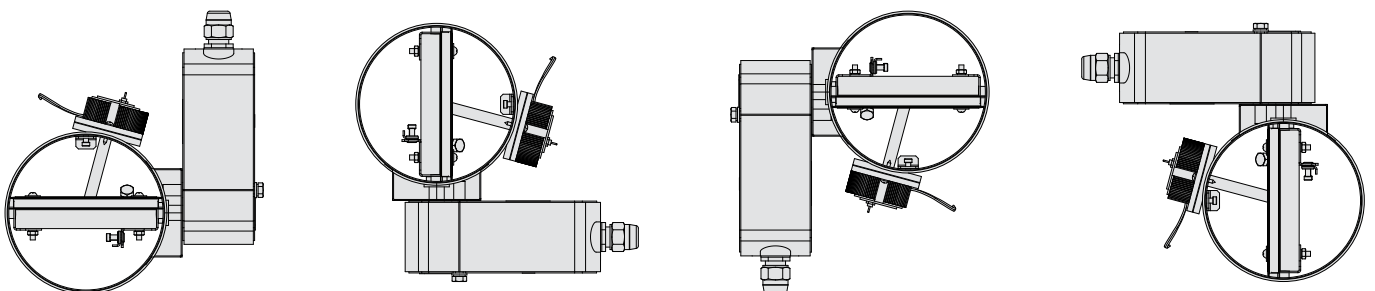
When installing the dampers into thicker walls add an extender section on one of the damper sides.

The electric actuator can be positioned freely above or below the ceiling panel of the fire control sector (space).



Permissible positions for fire-safety damper installation

The damper axle and actuation mechanism can be installed in any position – from horizontal to vertical.



CONNECTION TO POWER MAINS

The actuators featuring a return spring are designed to control fire-resisting dampers and smoke-extraction dampers installed in ventilation and air-conditioning systems.

The return spring is cocked upon setting the damper flap to the horizontal position. In case of a power failure, the damper flap is re-set to the protective position by the energy stored in the spring.

The damper does not require any limit switches and is overload-proof.

The thermally sensitive breaker Tf1 actuates upon ambient temperature exceeding 72 °C. The renewable thermally sensitive breakers Tf2 and Tf3 actuate upon the air duct temperature exceeding 72 °C. The operation of the renewable thermally sensitive breakers interrupts the electric power supply in such a way that it prevents actuator re-activation without their replacement.

The button on the thermally sensitive breaker body enables testing the damper functionality.

The actuator is equipped with two fixed microswitches which signal the end positions.

Intermediate positions of the damper are shown by the mechanical indicator (needle).

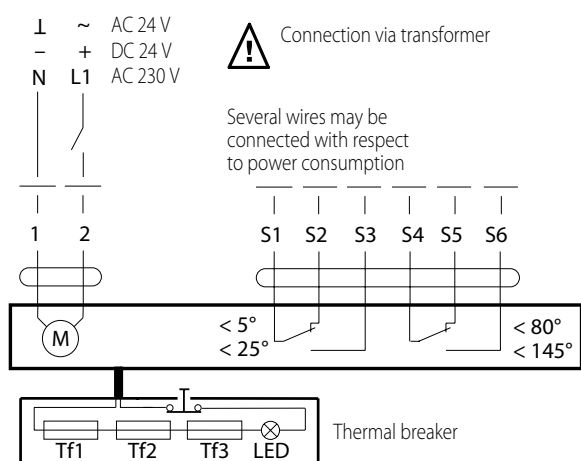
The BF24-T and BFN24-T actuators are connected via an insulated transformer unit.

The damper can also be controlled manually and fixed in any position. The unit can be unlocked either manually using a hex wrench (included) or automatically upon power-up.

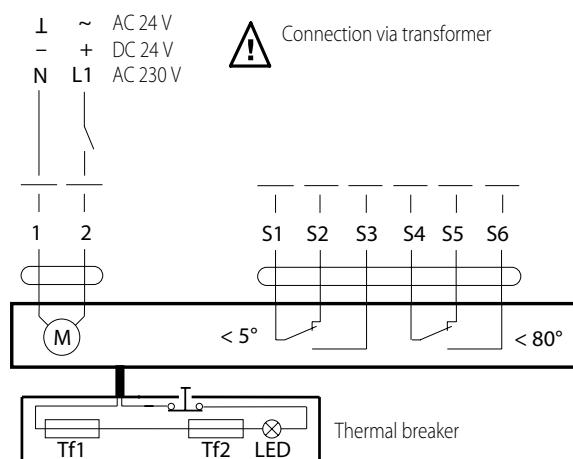
The actuator connections (cables and wires) must be durable, insulated and heat-resistant.

The recommended minimum conductor cross-section is 0.75 mm². The conductor cross-section selection must account for the maximum permissible wire heating which depends on the wire type, its insulation, length and installation method (i.e. overhead, in cable channels or inside walls).

Electrical connection of the basic models of Belimo and Nenutec electric actuators, as well as Belimo and Nenutec models with increased torque



Electrical connection of Belimo electric actuators with the highest torque, as well as Siemens electric actuators



TECHNICAL MAINTENANCE

The damper technical maintenance includes routine inspections and functionality checks.

The damper technical maintenance frequency must comply with the established technical maintenance frequency of the fire safety equipment complex of the facility.

Recommended inspection steps according to EN 15650:

1. Identification of the damper.
 2. Date of the inspection.
 3. Check the electrical connection of the actuating mechanism (if any).
 4. Check the damper for cleanliness and the need for cleaning (if necessary).
 5. Check the condition of the blade and seal, perform correction and registration actions (if necessary).
 6. Check that the damper is able to close properly.
 7. Check the functionality of the damper: opening and closing using the control system, physical inspection of the blade behaviour, perform correction and registration actions (if necessary).
 8. Check the functionality of the limit switches in the open and closed position, perform correction and registration actions if necessary.
 9. Check that the damper is operating as intended as part of the control system (if necessary).
 10. Check the standard operating position of the damper.
 11. The damper usually operates as a part of the system.
- In this case, it is necessary to check the entire system as described in the requirements for its operation defined by the system developer.

STORAGE AND TRANSPORTATION REGULATIONS

- Store the unit in the manufacturer's original packaging box in a dry closed with temperature range from -20 °C to +50 °C.
- Storage environment must not contain aggressive vapors and chemical mixtures provoking corrosion, insulation, and sealing deformation.
- Use suitable hoist machinery for handling and storage operations to prevent possible damage to the unit.
- Follow the handling requirements applicable for the particular type of cargo.
- The unit can be carried in the original packaging by any mode of transport provided proper protection against precipitation and mechanical damage. The unit must be transported only in the working position.
- Avoid sharp blows, scratches, or rough handling during loading and unloading.
- Prior to the initial power-up after transportation at low temperatures, allow the unit to warm up at operating temperature for at least 3-4 hours.

MANUFACTURER'S WARRANTY

The product is in compliance with EU norms and standards on low voltage guidelines and electromagnetic compatibility. We hereby declare that the product complies with the provisions of Electromagnetic Compatibility (EMC) Directive 2014/30/EU of the European Parliament and of the Council, Low Voltage Directive (LVD) 2014/35/EU of the European Parliament and of the Council and CE-marking Council Directive 93/68/EEC. This certificate is issued following test carried out on samples of the product referred to above.

The manufacturer hereby warrants normal operation of the unit for 24 months after the retail sale date provided the user's observance of the transportation, storage, installation, and operation regulations. Should any malfunctions occur in the course of the unit operation through the Manufacturer's fault during the guaranteed period of operation, the user is entitled to get all the faults eliminated by the manufacturer by means of warranty repair at the factory free of charge. The warranty repair includes work specific to elimination of faults in the unit operation to ensure its intended use by the user within the guaranteed period of operation. The faults are eliminated by means of replacement or repair of the unit components or a specific part of such unit component.

The warranty repair does not include:

- routine technical maintenance
- unit installation/dismantling
- unit setup

To benefit from warranty repair, the user must provide the unit, the user's manual with the purchase date stamp, and the payment paperwork certifying the purchase. The unit model must comply with the one stated in the user's manual. Contact the Seller for warranty service.

The manufacturer's warranty does not apply to the following cases:

- User's failure to submit the unit with the entire delivery package as stated in the user's manual including submission with missing component parts previously dismantled by the user.
- Mismatch of the unit model and the brand name with the information stated on the unit packaging and in the user's manual.
- User's failure to ensure timely technical maintenance of the unit.
- External damage to the unit casing (excluding external modifications as required for installation) and internal components caused by the user.
- Redesign or engineering changes to the unit.
- Replacement and use of any assemblies, parts and components not approved by the manufacturer.
- Unit misuse.
- Violation of the unit installation regulations by the user.
- Violation of the unit control regulations by the user.
- Unit connection to power mains with a voltage different from the one stated in the user's manual.
- Unit breakdown due to voltage surges in power mains.
- Discretionary repair of the unit by the user.
- Unit repair by any persons without the manufacturer's authorization.
- Expiration of the unit warranty period.
- Violation of the unit transportation regulations by the user.
- Violation of the unit storage regulations by the user.
- Wrongful actions against the unit committed by third parties.
- Unit breakdown due to circumstances of insuperable force (flood, earthquake, war, hostilities of any kind, blockades).
- Missing seals if provided by the user's manual.
- Failure to submit the user's manual with the unit purchase date stamp.
- Missing payment paperwork certifying the unit purchase.

The manufacturer shall not accept any claims with regards to the condition of the paint-and-lacquer coating (hereinafter PLC) in the following cases:

- Dents, cracks, scratches and abrasions of the PLC sustained during handling, mounting and assembly operations.
- Progress of corrosion on areas damaged with stones, sand, and roof coat tar during the performance of roofing work.
- Signs of direct exposure of the PLC to excessive temperatures, which occurred during the performance of roofing work.
- Violation of regulations on transportation, storage, installation, and operation of the unit.
- Presence of damage caused by exposure to industrial and chemical emissions, acidic or alkaline pollution, sap or other factors not related to normal operating conditions.



FOLLOWING THE REGULATIONS STIPULATED HEREIN WILL ENSURE A LONG AND TROUBLE-FREE OPERATION OF THE UNIT



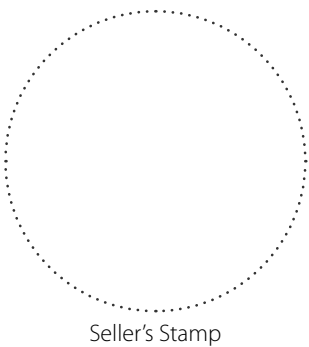
USER'S WARRANTY CLAIMS SHALL BE SUBJECT TO REVIEW ONLY UPON PRESENTATION OF THE UNIT, THE PAYMENT DOCUMENT AND THE USER'S MANUAL WITH THE PURCHASE DATE STAMP

CERTIFICATE OF ACCEPTANCE

Unit Type	Fire-Resisting Duct Damper
Model	
Serial Number	
Manufacture Date	
Quality Inspector's Stamp	

SELLER INFORMATION

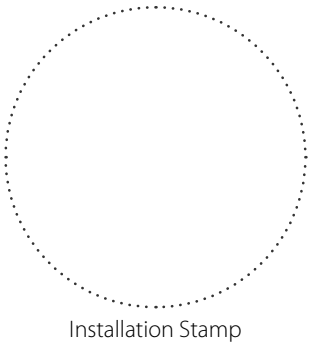
Seller	
Address	
Phone Number	
E-mail	
Purchase Date	
This is to certify acceptance of the complete unit delivery with the user's manual. The warranty terms are acknowledged and accepted.	
Customer's Signature	



INSTALLATION CERTIFICATE

The _____ unit is installed pursuant to the requirements stated in the present user's manual.

Company name	
Address	
Phone Number	
Installation Technician's Full Name	
Installation Date:	Signature:
The unit has been installed in accordance with the provisions of all the applicable local and national construction, electrical and technical codes and standards. The unit operates normally as intended by the manufacturer.	
Signature:	



WARRANTY CARD

Unit Type	Fire-Resisting Duct Damper
Model	
Serial Number	
Manufacture Date	
Purchase Date	
Warranty Period	
Seller	

