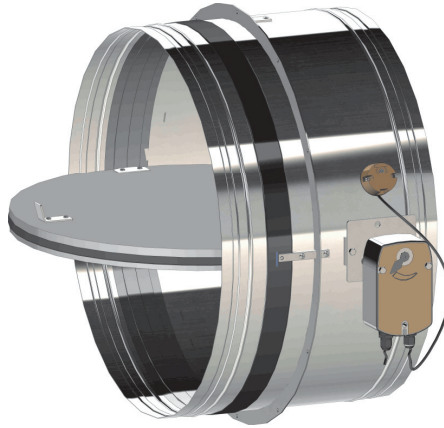


Fire damper



KTS-0-E KTS-0-S

Certificate of constancy
of performance
1488-CPR-0445/W



Fulfills the requirements of the standards:

Certified according to **PN-EN 15650** (Ventilation for buildings – Fire dampers).

Classified according to **PN-EN 13501-3** (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).

Tested in accordance with **PN-EN 1366-2** (Fire resistance tests for service installations – Part 2: Fire dampers).

Intended use

KTS type fire dampers are intended to installation in ventilation systems as cut-off baffles, separating the fire zone from the remaining part of the building. Therefore, the basic function of the KTS type fire dampers is to restrain the spreading of fire, temperature and smoke, and additionally, with use of appropriate actuators, to use in mixed ventilation systems (used not only in case of fire but for example: for periodic airing).

These fire dampers are nonsymmetrical, intended for vertical (in walls) and horizontal installation (in ceilings). They can be also installed in rigid building barriers. The KTS type fire dampers have fire resistance class **EI 120(v_eh_oi ↔ o)S**, which means that the fire damper has integrity, insulation and smoke leakage not less than 120 min.

Fire damper is constructed, manufactured and tested in accordance with the standards: PN-EN 15650 “**Ventilation for buildings – Fire dampers**” and PN-EN 13501-3 “**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**”.

Dimensions

Dimensional series of the KTS type fire dampers include the diameters from DN160 to DN630 (and all diameters within that range). The basic dimensional series of the KTS fire dampers is: **DN160, DN200, DN250, DN315, DN400, DN450, DN500, DN560, DN600, DN630**.

When dimensions are smaller than DN160 it is recommended to use the KTM type fire dampers or manufacture the KTS type fire dampers equipped with transitional connectors.

Technical description of the device

KTS type fire damper is composed of one body made of sheet steel with thickness of 1 [mm]. In the middle section of the housing, along the perimeter of the fire damper, there is a 35[mm] wide perforation made. Inside the fire damper there is the flap made of the PROMATECT board.

On the edge of the flap the gasket is mounted, in order to provide the tightness of the fire damper in ambient conditions. The movement of the flap in closed position is limited with stop bar made of sheet steel. On the internal surface of the housing, in place of perforation around the closed flap, there is the PROMASEAL gasket installed. The main characteristic of the gasket is that it expands its volume when heated, sealing all the gaps between the flap and the damper body. Inside the fire damper there is the aluminum foil put on the gasket. On the external surface of the housing, in place of perforation, there is the second intumescent gasket installed.

Versions of the device

KTS-O-S - fire damper for ventilation ducts (normally open) with spring drive without comfort function.

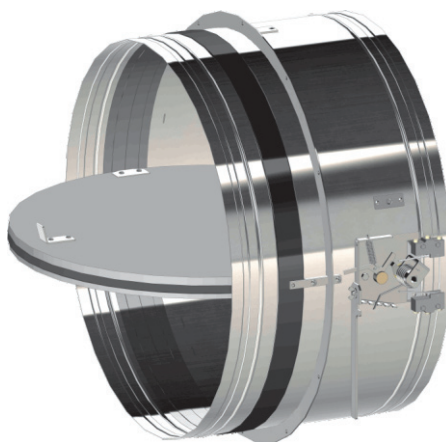


Fig.1. KTS-O-S type fire damper.

The drive system is a spring mechanism blocked with a thermal fuse SMAY. While opening the flap with the key, the return spring is being tensed. The spring is made of stainless steel wire. After exceeding a certain temperature (standard $70 \pm 5^\circ\text{C}$) thermal fuse brakes, causing the release of the hook, and then closing of the flap.

The current position of the flap is indicated by the position of the lever in relation to the "open" and "closed" labels on the damper housing. On request damper KTS-O-S can be provided with limit switch indicating the transition of the flap to the closed position. It is also possible to provide the damper with limit switch indicating the open position, as well as with both limit switches mentioned above.

During normal operation of the system the flap of the KWP-O-S damper is in the open position. In case of fire, the transition of the flap to fully closed position occurs.

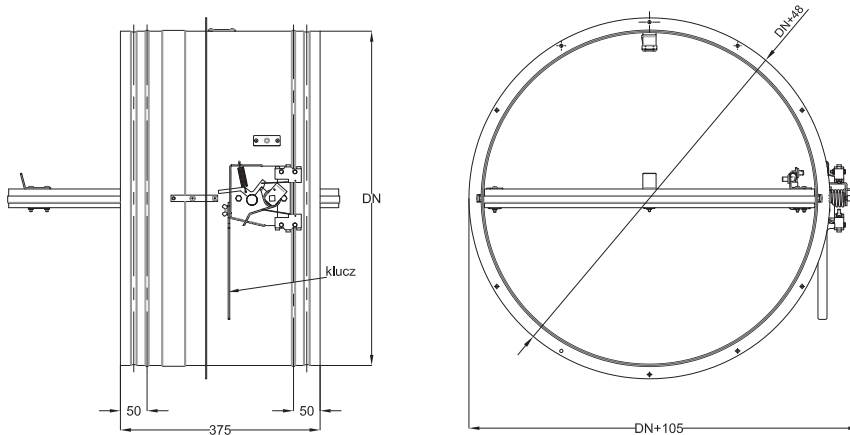


Fig.2. KTS-O-S type fire damper.

KTS-O-E - fire damper for ventilation ducts (normally open) with actuator and return spring, providing both comfort and safety function.

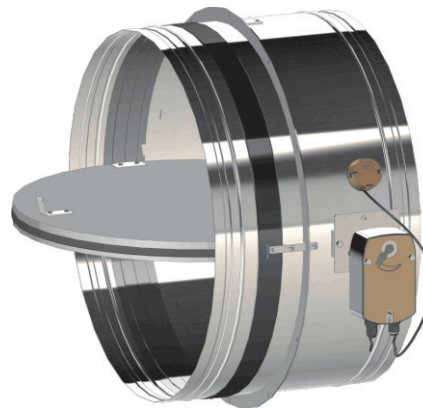


Fig. 3. KTS-O-E type fire damper with electric actuator

In case of KTS-O-E type fire dampers, the drive is electric actuator BLF series from Belimo (power supply voltage is 24 [V] AC/DC or 230 [V] AC). After connecting the power supply to the actuator cables, the transition of the flap to open position occurs. Automatic transition of the flap to closed position occurs as a result of activating the thermal switch BAE-72 or BAE-72S type. On special order the KTS-O-E fire dampers are provided with thermal switch with 95°C activation temperature. The automatic closing of KTS-O-E dampers is realized by power supply disconnection (when voltage decay occurs, the return spring in the actuator, while returning to free position, causes the closing of the flap).

In the actuator with a return spring, there are two built-in micro switches, indicating the flap position. The position of the flap can be read from the mechanical indicator of position.

During normal operation of the system, the flap of the KTS-O-E fire damper is in the open position. In case of fire, the transition of the flap to fully closed position occurs.

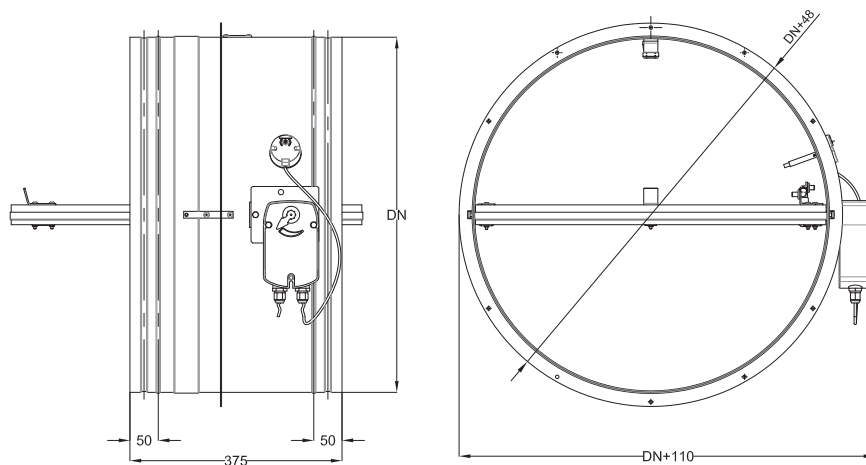


Fig. 4. KTS-0-E type fire damper with electric actuator.

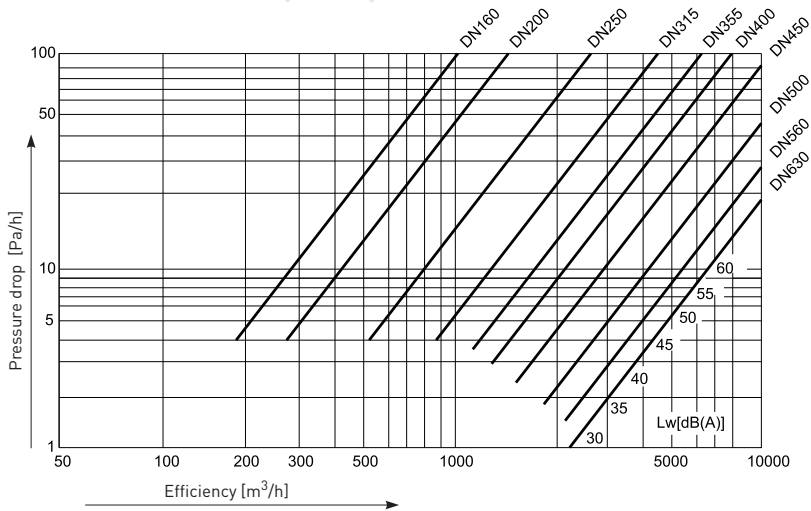
Special execution

1. In the version of the KTS-0-S fire damper with spring drive, as a standard, the Smay thermal fuse causing the closing of the fire damper at the temperature of $70\pm 5^\circ\text{C}$ is installed. It is possible on request to install thermal fuse with actuating temperature of $90\pm 5^\circ\text{C}$.
2. . In the version of the KTS-0-E fire damper with actuator, inside the fire damper body, the thermal fuse connected with an actuator is installed. After exceeding the temperature of $72\pm 5^\circ\text{C}$ in a duct, the thermal fuse causes the closing of the fire damper by cutting of the power from the actuator. It is possible on request to install the thermal fuse causing the closing of the fire damper at the temperature of $95\pm 5^\circ\text{C}$.
3. In the version of damper intended to use in aggressive environment, on request all steel components of the KTS type fire damper are replaced with the components made of acid-resistant steel 1.4301 (chrome-nickel steel 1.4301). The bearings remain brazen and flap is coated with Promat-SR-Impragnierung type impregnant - non-solvent substance made by PROMAT, on the basis of silicates which is intended to impregnate fireproof boards. Impregnation does not change the classification of the boards as incombustible.

Classification in terms of fire resistance of the KTS type fire dampers

EI 120 (v, h, i ↔ o) S this class means that the fire damper has integrity, insulation and smoke leakage not less than 120 min.

Wyk. 1.



Effective surface of the KTS type fire dampers

Tab. 1.

	Effective surface [m²]	Air speed [m/s]	Air flow [m³/h]	Air speed [m/s]	Air flow [m³/h]	Air speed [m/s]	Air flow [m³/h]	Air speed [m/s]	Air flow [m³/h]
DN 160	0,013	2	94	4	187	6	281	8	374
DN 200	0,022	2	158	4	317	6	475	8	634
DN 250	0,038	2	274	4	547	6	821	8	1094
DN 315	0,064	2	461	4	922	6	1382	8	1843
DN 355	0,083	2	598	4	1195	6	1793	8	2390
DN 400	0,107	2	770	4	1541	6	2311	8	3082
DN 450	0,139	2	1001	4	2002	6	3002	8	4003
DN 500	0,174	2	1253	4	2506	6	3758	8	5011
DN 560	0,221	2	1591	4	3182	6	4774	8	6365
DN 630	0,283	2	2038	4	4075	6	6113	8	8150

The level of noise emitted by the fire damper to the duct

V [m/s]	D [mm]									
	160	200	250	315	355	400	450	500	560	630
	L _{WA} [dB(A)]									
2	10	13	15	17	18	19	22	21	22	23
4	19	21	24	26	27	28	31	30	31	32
6	24	27	29	31	32	33	36	35	36	37
8	28	30	33	35	36	37	40	39	40	41

Weight of the KTS type fire dampers

Tab. 2.

	KTS-O-E	KTS-O-S
DN 160	3,5	4,7
DN 200	6,1	7,3
DN 250	7,7	8,9
DN 315	9,6	10,8
DN 355	10,9	12,1
DN 400	12,3	13,5
DN 450	13,8	15,0
DN 500	15,3	16,5
DN 560	17,2	18,4
DN 630	19,3	20,5

Rigid wall barriers

The fire dampers, to maintain declared EIS120 fire resistance class, should be installed in walls which are verified and classified as EI120.

It is allowed to use KTS fire dampers for lower fire resistance class walls, however it must be understood that the fire resistance class of the whole finished installation (including the KTS fire damper) is corresponding to the least classified element in the installation.

Installation technology

Variant I

1. Make an opening in the wall with the minimal size DN+70 [mm]
2. Put the fire damper into the installation opening to the depth of flange. The fire damper should be supported or hanged in the way that axis of the fire damper should coincide with the axis of the installation opening (coaxiality).
3. After setting the fire damper in accordance to the guidelines, fill the gap between the fire damper and the wall with cement and lime mortar or concrete. In place of cement and lime mortar and concrete, the fire protective mortar e.g. PROMASTOP MG III made by Promat can be used.
4. After drying of the mortar, remove used supports and hangers which were used during installation of the fire damper.

Variant II – Recommended by SMAY company (figure 5)

1. Make an opening in the wall with the minimal size DN+70 [mm]
2. Install the mounting plate (as shown in the figure 5) to the fire damper using M6 screws.
3. Make holes for the rawbolts as shown in the figure 5.
4. Put the fire damper into the installation opening to the depth of flange. The fire damper should be supported or hanged in the way that axis of the fire damper should coincide with the axis of the installation opening (coaxiality).
5. After setting the fire damper in accordance to the guidelines, fill the gap between the fire damper and the wall with cement and lime mortar or concrete. In place of cement and lime mortar and concrete, the fire protective mortar e.g. PROMASTOP MG III made by Promat can be used.

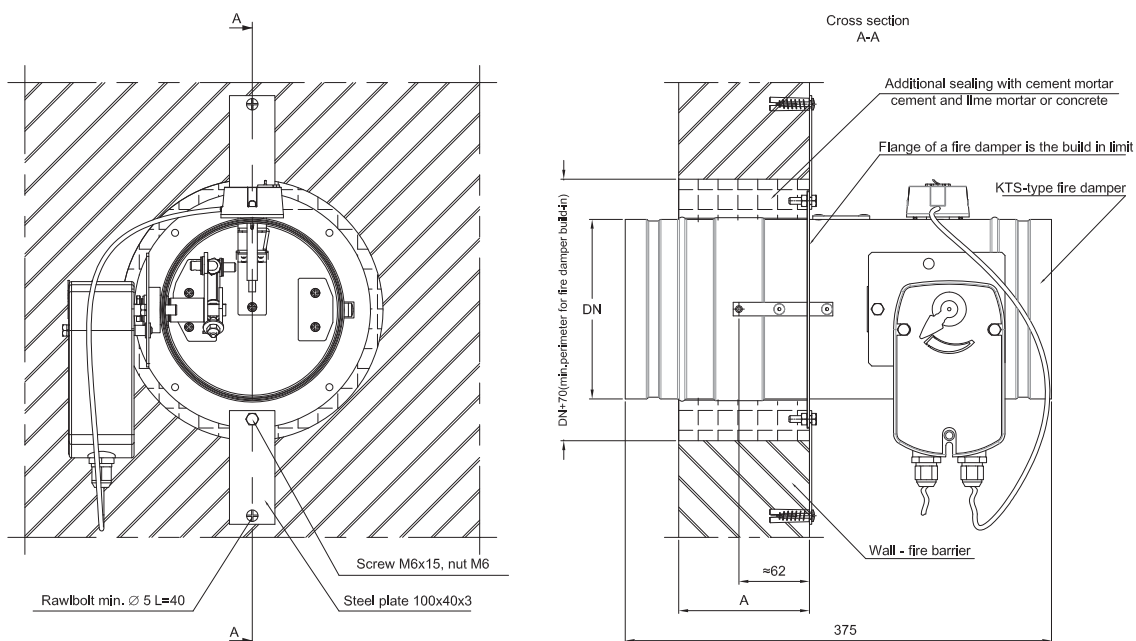


Fig. 5.

Rigid ceiling barriers – installation technology:

Variant I

1. Make an opening in the ceiling with the minimal size DN+70 [mm].
2. Put the fire damper into the installation opening to the depth of flange. The fire damper should be hanged in the way that axis of the fire damper should coincide with the axis of the installation opening (coaxiality).
3. After setting the fire damper in accordance to the guidelines, fill the gap between the fire damper and the wall with cement and lime mortar or concrete. In place of cement and lime mortar and concrete, the fire protective mortar e.g. PROMASTOP MG III made by Promat can be used.
4. After drying of the mortar, remove used supports and hangers which were used during installation of the fire damper.

Variant II – Recommended by SMAY company (figure 6)

1. Make an opening in the wall with the minimal size DN+70 [mm].
2. Install the mounting plate to the fire damper using M6 screws. Depending on position of the fire damper the actuating mechanism will be located above or below ceiling. Mounting plate will be installed in front of or behind the flange.
3. Make holes in the ceiling.
4. Put the fire damper into the installation opening to the depth of flange. The fire damper should be supported or hanged in the way that axis of the fire damper should coincide with the axis of the installation opening (coaxiality). Then screw the fire damper by means of rawlbolts. When the actuating mechanism is located below the ceiling, the rawlbolts should be made of steel.
5. After setting the fire damper in accordance to the guidelines, fill the gap between the fire damper and the wall with cement and lime mortar or concrete. In place of cement and lime mortar and concrete, the fire protective mortar e.g. PROMASTOP MG III made by Promat can be used.

Note: The mounting plates can be custom made and provided by Smay company or can be made in accordance with drawing in the manufacturer's Operation and Maintenance Documentation.

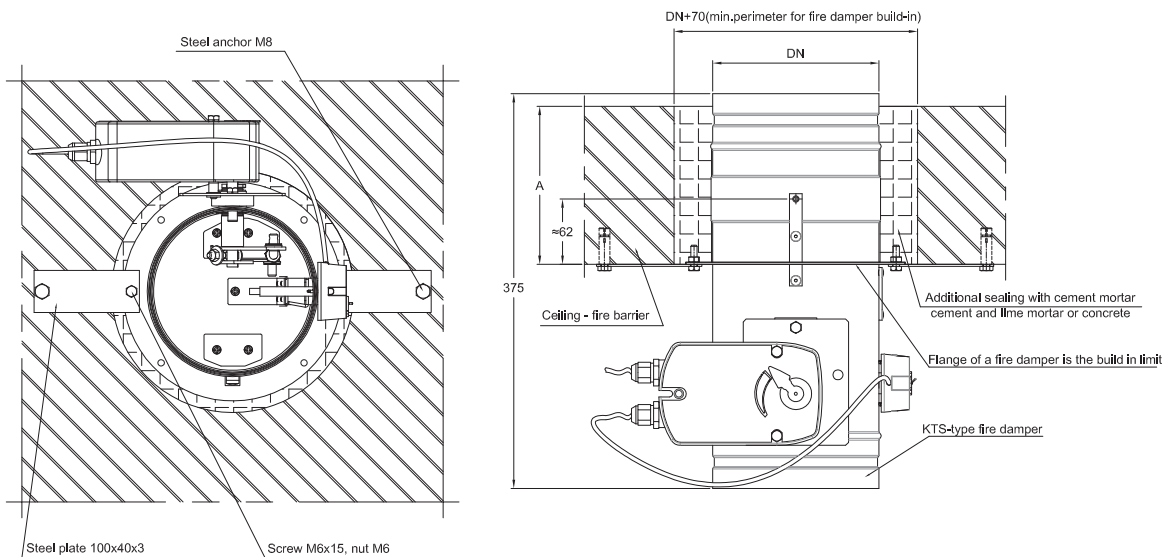


Fig. 6.

Guidelines for installation of KTS-O-S and KTS-O-E fire dampers in fire barriers

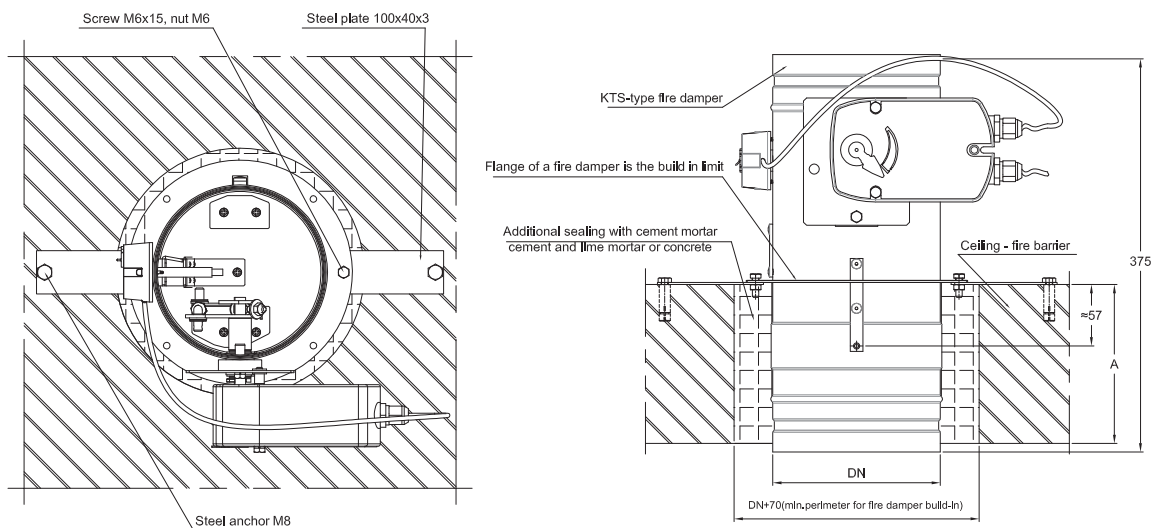


Fig. 6. cd.

Product designation principles

KTS-O-S-200-W1

KTS - F - D - L - W - S - P

- F** application
 - O-S fire damper with return spring
 - O-E fire damper with actuator with return spring
- D** diameter [mm]
- L** length of the fire damper [mm], standard L=375
- W** limit switch (only if F=O-S)
 - W1 indication of flap position – closed
 - W2 indication of flap position - opened
 - W12 indication of both flap positions
 -
- S** actuator
 - BLF24-T
 - BLF24-T-ST
 - BLF230-T
 - BLF230-T-ST
- P** material*
 - SN stainless steel
 - galvanized steel

* optional value – lack of them will cause the use of default value