

KTS

FIRE DAMPER



Intended use:

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KTS type fire dampers are intended to installation in ventilation systems as cut-off baffles, separating the fire one 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 h i ↔ o) S**, which means that the fire damper has integrity, insulation and smoke leakage not less than e 0 120 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".

Dampers KTS type fire resistance classification

Shut-off dampers KTS type are classified in the following fire resistance classes and may be installed in the following compartments:

EI 120 (ve ho i ↔ o) S

- Ceilings having a density (2200±200 kg/m³) or more, having a thickness of 150 mm or more and having fire resistance class EI 120 or higher,
- Rigid walls having low density (650±200 kg/m³) or more, having a thickness of 115 mm or more and having fire resistance class EI 120 or higher (for example: concrete, masonry of solid brick, cellular concrete blocks or airbricks and panels),
- Standard walls having a thickness of 100 mm or more and having fire resistance class EI 120 or higher (thicker, denser, more layers of board),
- Rigid walls having a thickness of 100 mm or more and having fire resistance class EI 120 or higher (for example: concrete, masonry of solid brick, cellular concrete blocks or airbricks and panels).

EI 90 (ve i ↔ o) S

- away from rigid walls of low density (650±200 kg/m³) or more and having fire resistance class EI 90 or higher (for example: concrete, masonry of solid brick, cellular concrete blocks or airbricks and panels).

EI 60 (ve i ↔ o) S

- Standard walls having a thickness of 75 mm or more and having fire resistance class EI 60 or higher (thicker, denser, more layers of board),
- Rigid walls having a thickness of 75 mm or more, having fire resistance class EI 60 or higher (for example: concrete, masonry of solid brick, cellular concrete blocks or airbricks and panels),
- Rigid walls having a thickness of 100 mm or more, having density (520±200 kg/m³) or more and having fire resistance class EI 60 or higher (for example: concrete, masonry of solid brick, cellular concrete blocks or airbricks and panels).

EI 30 (ve i ↔ o) S

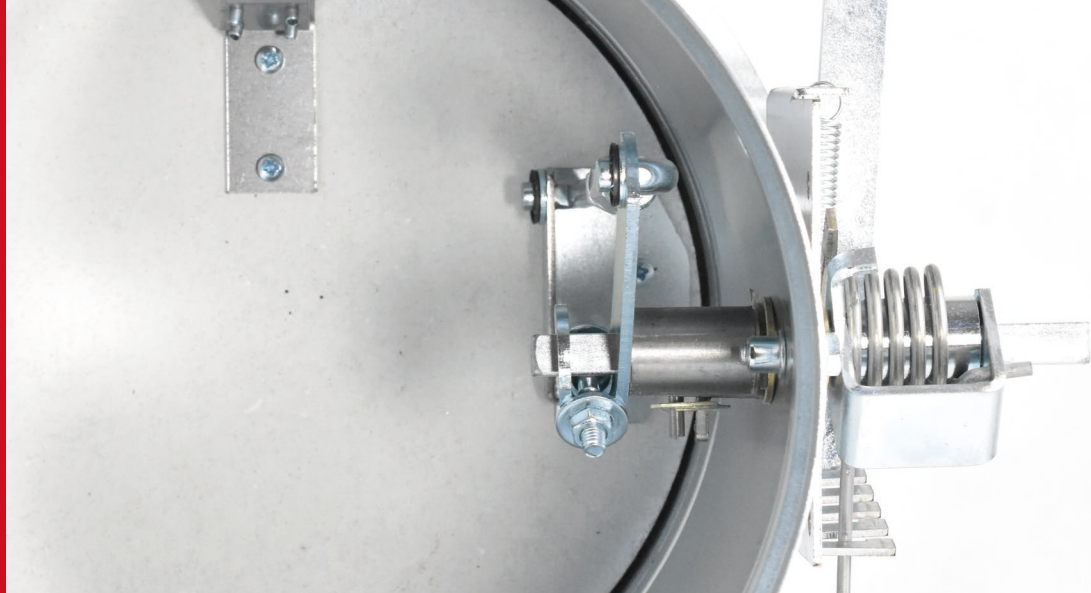
- Standard walls having a thickness of 75 mm or more and having fire resistance class EI 30 or higher (thicker, denser, more layers of board),
- Rigid walls having a thickness of 75 mm or more, having fire resistance class EI 30 or higher (for example: concrete, masonry of solid brick, cellular concrete blocks or airbricks and panels).

Key:

- E** – Fire integrity,
- I** – Insulation,
- S** – Smoke leakage,
- ve** – Damper installed in vertical compartment (wall),
- 120/90/60/30** – Classification time in which criteria E and I are met, expressed in minutes,

The fire dampers can be also installed in building barriers with lower fire resistance class. In such use damper has the fire resistance equal to the fire resistance class of the barrier with smoke leakage criteria maintained.

Installation in both, vertical and horizontal axis of rotation of the damper's blade is acceptable.



Technical description

The KTS-O-S type fire damper (with return spring) and KTS-O-E (with electric actuator and return spring) consist of casing with round cross-section, moveable blade and closure mechanism with sensing element.

The casing of the damper is made of galvanized steel. On both casing ends there are couplings (male or female) allowing easy connection of the damper with the ductwork elements.

The intumescent gasket was attached on the internal and external surface of the housing, in place of perforation around the closed blade. The feature of this gasket is that, under the influence of high temperatures, it increases its volume and fills thoroughly all the leaks and between the blade and the body.

The moveable blade is made of silicate calcium board. On the perimeter of the blade there is gasket that ensures air tightness at ambient temperature.

The KTS-O-S fire damper has actuating springs, which during the opening of the blade are storing the energy that is used for closing. The opened position of the flap is provided by thermal fuse with $70^{\circ}\text{C} \pm 5^{\circ}\text{C}$ nominal reaction temperature. The closing of the blade takes place after thermal fuse reaction. After exceeding the nominal temperature thermal fuse breaks, causing transition of the blade to the closed position through the operation of the springs. The movement of the blade is limited by the bumper.

The damper KTS-O-E is equipped with the BELIMO BFL, BFN or BF electric actuator with BAT 72°C or BAE 72°C thermoelectric tripping device (optionally 95°C), which forms the drive mechanism of the damper with power supply of AC 230V or AC/DC 24V. Automatic closing of the blade is realized by thermoelectric device, its reaction causes power loss to the electric actuator. With no power supplied to the actuator, the return spring moves the blade to the fully closed position.

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

Versions of KTS dampers

Dimensional series of the KTS type fire dampers include the diameters from DN160 to DN630. The basic dimensional series of the diameters: **DN160, DN200, DN250, DN315, DN355, DN400, DN450, DN500, DN560, DN630.**

KTS dampers are made for one type of connection, i.e. a nipple connection.

Depending on the intended use and used actuating mechanism, the fire dampers are marked with the following symbols:

- **KTS-O-S** – fire dampers with returning spring mechanism,
- **KTS-O-E** – fire dampers with electric actuator and return spring.

The length of the KTS fire damper is $L=375\text{ mm}$.

On request, the dampers can be provided with limit switches that indicate closed position, open position.

In the special chemical-resistant version, all steel components are made of acid-resistant steel, blade is impregnated with non-solvent substance which is used to impregnate fireproof boards.

It is also possible to make the damper in the version powder coated.

KTS dampers can be equipped with a revision enabling control of the damper condition after installation in a ventilation system.

Weight of KTS dampers

Table 1. KTS dampers weight.

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

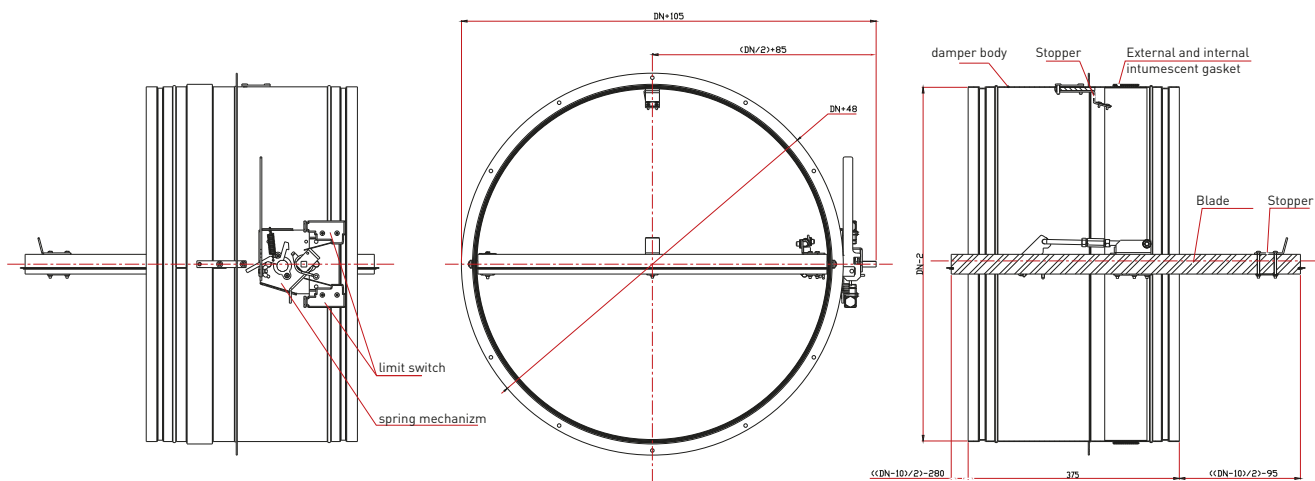


Figure 1. KTS-O-S damper with return spring mechanism.

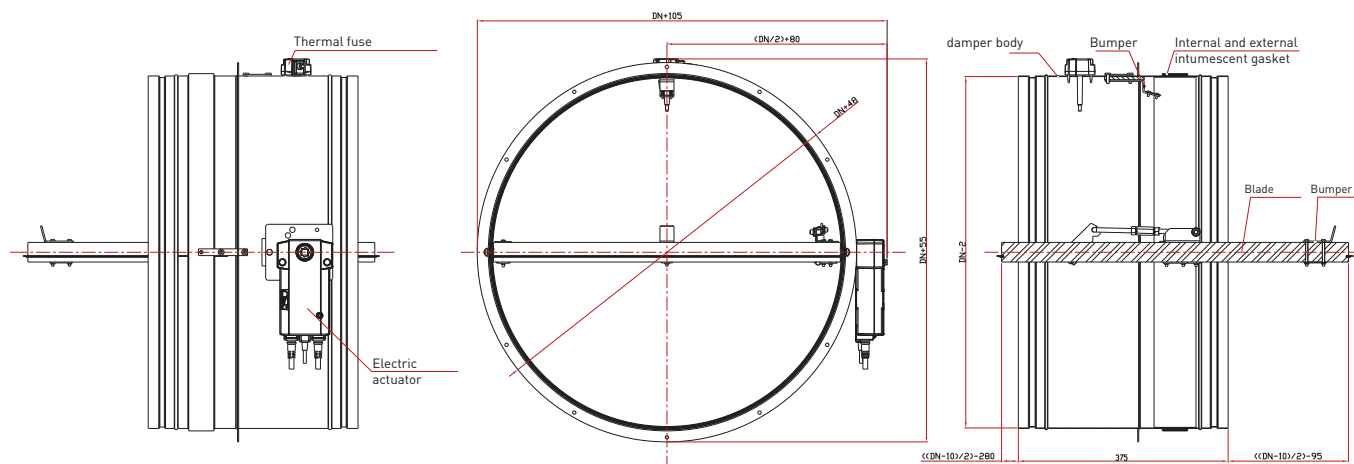


Figure 2. KTS-O-E damper with actuator.

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

Table 2. Noise level emitted by KTS dampers.

| V [m.s] | DN [mm] | | | | | | | | | |
|------------|-----------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| | 160 | 200 | 250 | 315 | 355 | 340 | 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 |

Characteristics of pressure drop

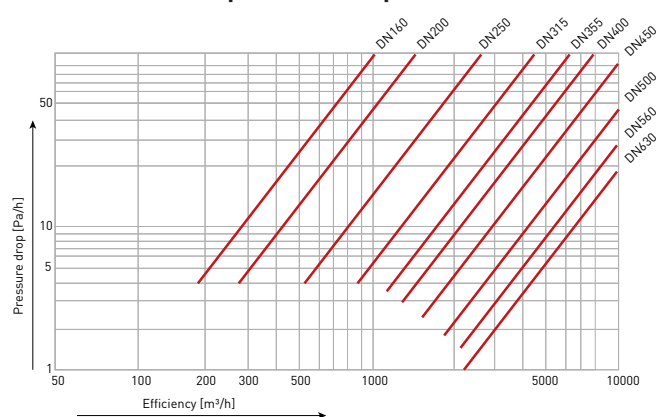


Chart 1. KTS characteristics of pressure drop.

Table 3. KTS Characteristics of pressure drop.

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

KTS - fire dampers

While ordering please provide information according to the following method:

KTS-O - <F> - <D> - <W> - <S> - <UP> - <P> - <RAL> - <Q>

Where:

| | |
|------------|---|
| F | Mechanism version |
| | S - with return spring E - with electric actuator and return spring |
| D | Nominal diameter, [mm]: 160, 200, 250, 315, 355, 400, 450, 500, 560, 630 |
| W | Limit switch (refers only to KTS-O-S)* |
| | none - no limit switches W1 - limit switch indicating closed position W2 - limit switch indicating open position W12 - both limit switches indicating closed and open position |
| S | Actuator type (refers only to KTS-O-E) |
| | seria BFL DN ≤ 400 mm seria BFN DN > 400 mm seria BF DN ≥ 160 mm |
| | Explanation: T - thermoelectrical tripping device ST - connection with plug SR - modulating control type |
| | TL - communicative control type 24/230 - nominal voltage |
| UP | Gaskets on connectors* |
| | none - without gaskets UP - gaskets mounting |
| P | Material* |
| | none - galvanized steel SN - stainless steel SL - varnished steel |
| RAL | colour according to the RAL palette (for SL)* |
| Q | Inspection* |
| | none - no inspection hole R - inspection hole |

* optional values - default values will be used if optional values are not specified

Order example:

KTS-O-S-160-375-W12-SN

KTS-O-E-630-375-BFN230-T-UP-SL-9010-R



For fire dampers made in special version with increased resistance to corrosion (stainless or painted), the flap will be coated with impregnating substance.