



Maintenance-free

# TS18 TopSchott

for fire protection in ventilation systems as per DIN 18017

**TRIED-AND-  
TESTED MILLIONS  
OF TIMES OVER FOR  
MORE THAN  
20 YEARS**

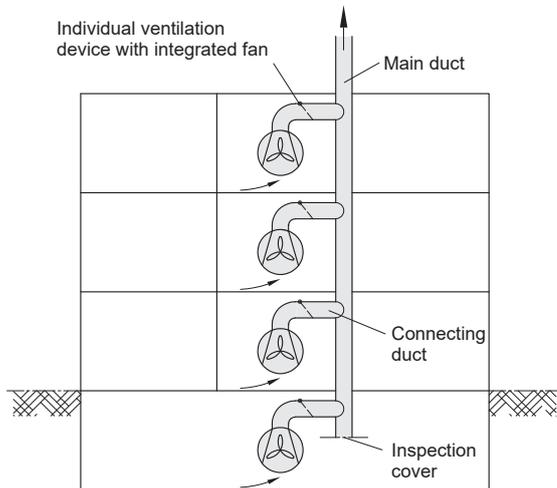
- Ideal operation thanks to completely free cross section
- Simple and flexible installation
- Optimum corrosion protection thanks to powder coating
- General building inspectorate approval Z-41.3-556 and hygiene certificate

# TS18 TopSchott

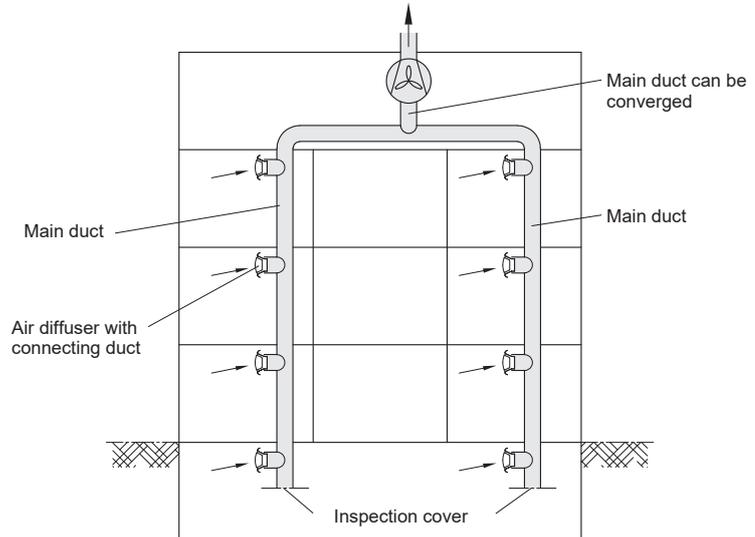
## Use

TS18 TopSchotts are approved for use in:

- Individual ventilation systems



- Central systems for ventilation



These types of **systems** without heat reclamation as per **DIN 18017-3** are for ventilation of **bathrooms** and **toilet rooms** in residential buildings and for buildings which are not used as residential buildings, e.g. hotels.

The following are also approved for connection:

- **Residential storage rooms.**
- **Basic ventilation systems for residential kitchens.** ⇒ see pages 4 and 8
- **Vapour extraction hoods** (extractor hoods operated with negative pressure, without dedicated fan) in **residential kitchens** to central ventilation systems. ⇒ see pages 4 and 8

**Fume extractor hoods** (extractor hoods operated with positive pressure, with integrated fan) in **residential kitchens** are approved for connection to individual **main ducts**. ⇒ see page 5

### Approval requirements:

- **Air conveying main ducts** should be routed through storeys vertically with a constant cross section and escape freely via the roof.

**Diversions** in main ducts ⇒ see pages 4 and 5

- **Supply air** can be directed from the roof into bathrooms and toilet rooms.
- In **central ventilation systems** the fans in the roof area of the building should be positioned above the upper air connection duct and should allow free outflow even when at a standstill.

Main ducts in the **roof area** can be converged and connected to a **plenum box** if no fire-resistant partition walls are bridged. The fan should be positioned downstream of the plenum box and the outlet should direct vertically via the roof. ⇒ see page 5 and page 10

**Fire safety coverings** on main ducts in the roof area are required, including for the plenum box and fan, if at

least one TS18 TopSchott is installed in, on or remote from shafts.

Fire safety coverings are not required if all TS18 TopSchotts are installed in storey ceilings.

- The approval makes reference to state law regulations for ventilation systems, fire safety requirements and the limitation of force and load application in fire-resistant shaft walls, storey ceilings and ventilation ducts.

Ventilation ducts must not apply any significant forces to them or to TS18 TopSchotts in case of fire.

- The air conditioning function of the ventilation systems should be demonstrated.

Towards the fan and the exhaust air duct, to the plenum box, the cross section dimensioning and the acoustic requirements should be observed and demonstrated.

# TS18 TopSchott

Product description, properties, technical data

**TS18 TopSchotts are maintenance-free shut-off devices to shut out fire and smoke in ventilation systems.**

They are made up of a metal housing which is coated with epoxy resin on the inside and outside, with fully enclosed, centrally closing, hinge-free shut-off elements.

A special intumescent seals the free cross section 100% in case of fire.

| Approvals    | Fire classifications    |
|--------------|-------------------------|
| D Z-41.3-556 | K30 / K60 / K90 - 18017 |
| CH No. 14204 | F90                     |

| Size DN | Ø D mm | Ø d mm | H mm | x <sup>1)</sup> mm | A <sub>free</sub> <sup>2)</sup> m <sup>2</sup> | Weight kg |
|---------|--------|--------|------|--------------------|--|-----------|
| 80      | 100    | 79     | 74   | 28                 | 0.0047   | 0.6       |
| 100     | 126    | 99     | 78   | 50                 | 0.0074   | 0.9       |
| 125     | 156    | 124    | 88   | 50                 | 0.0117   | 1.2       |
| 140     | 173    | 139    | 93   | 50                 | 0.0147   | 1.4       |
| 160     | 195    | 159    | 106  | 50                 | 0.0194   | 1.7       |
| 180     | 220    | 179    | 116  | 50                 | 0.0246   | 2.2       |
| 200     | 242    | 199    | 128  | 50                 | 0.0300   | 2.7       |

<sup>1)</sup> The length x of the fastening bracket on the TS18 TopSchott can be shortened or bent off on site as required.

<sup>2)</sup> Free air passage cross section

### Special properties:

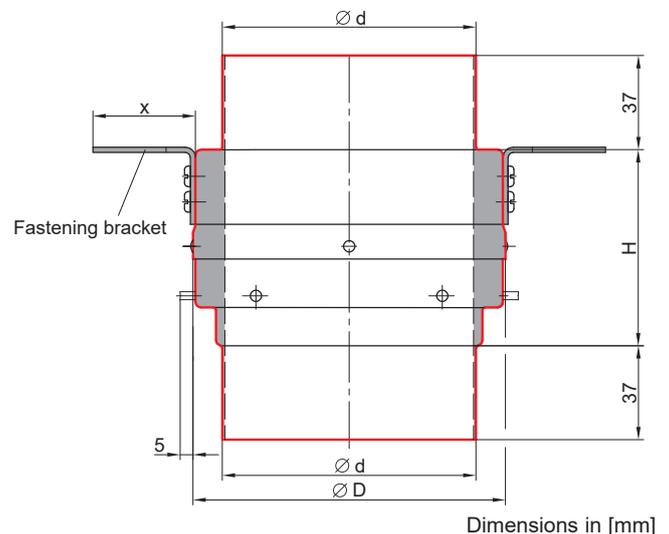
- Smallest dimensions and full duct cross section without soiled side areas.
- Even deposits on the walls caused by normal operation do not have a long-term influence on the closing process in case of fire.
- There are no restrictions for operating pressure.
- The pressure drop as a result of air flow is extremely low.  $\zeta$  values must be applied as zero.
- **Leak tightness class C as per DIN EN 1751.**
- **Hygienically tested**, the requirements of VDI 6022-1, VDI 3803-1, DIN 1946-4 and DIN EN 13779 are met.

TS18 TopSchotts are **resistant to microbes** and **cleaning agent** and **disinfectant**. The requirement is for **no growth of microorganisms (fungi, bacteria)**.

Infection hazards are reduced, as is the requirement for cleaning and disinfection. TS18 TopSchotts are suitable for use in hospitals and comparable facilities.

- Thanks to its simple design and the powder coating, the TS18 TopSchott has comprehensive protection from corrosion. This achieves a practically unlimited service life.

The TS18 TopSchott **does not require constant accessibility**.



### TS18 TopSchotts can be installed:

- directly underneath, in and directly on **storey ceilings**
  - **F90** made of **concrete** (reinforced concrete) from 100 mm thickness
  - **F90** made of **aerated concrete** from 125 mm thickness
  - **F30** and **F90** made of **wooden materials** from 100 mm thickness

⇒ see pages 4 to 7
- in, on and remotely at up to 6 m distance from single or multiple-shell
  - **shafts F30, F60, F90**
  - **shafts or ventilation ducts L30, L60, L90** made of mineral materials from 24 mm thickness.

⇒ see pages 8 to 10

TS18 TopSchotts have a fire resistance period of 30, 60 or 90 minutes depending on the storey ceiling, shaft or ventilation duct. TS18 TopSchotts can be installed directly next to each other. There is no need for spacing!

Minimum distances from cable and pipe screening are comprehensively demonstrated. ⇒ see manufacturer's information and page 12

# TS18 TopSchott

## Installation underneath, in and on storey ceilings (1) General information

- TS18 TopSchotts can be installed directly underneath, in and directly on storey ceilings and connected to ventilation ducts made of steel (e.g. spiral duct) as **main ducts** directly underneath, in and directly on storey ceilings.

Main ducts can be diverted **twice by up to 6 m.** ⇒ see page 5

- **Basic ventilation systems for residential kitchens** can be connected.

- **Air passages, air valves, individual ventilation devices** can be made from any materials. Integrated fire protection is not required.

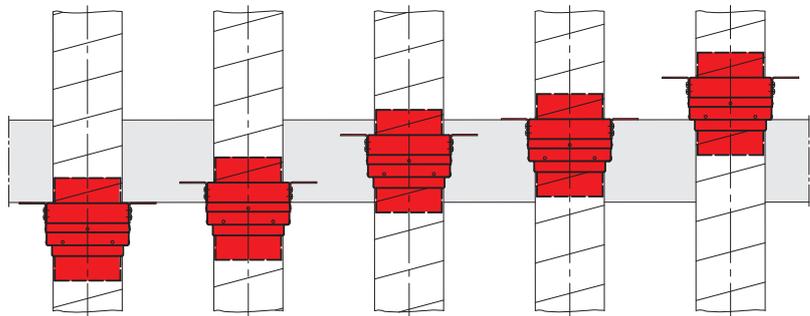
- **Main ducts and connecting ducts can remain without cladding.** Any **claddings** and the passing through of connecting ducts through walls and ceilings are permitted if there are no requirements for the fire resistance.

- **Connecting ducts** on main ducts must be made of non-combustible materials and made of steel or, e.g. aluminium (AluFlex pipe).

• Exceptions:

- If **vapour extraction hoods** are connected in residential kitchens, their connecting duct must be made of steel.
- If the TS18 TopSchotts are installed in storey ceilings made of concrete and there are fire safety requirements inside **claddings**, for example in shafts which have to be F30, F60 or F90 classified, the connecting ducts inside them must be made of steel. Otherwise, air passages, air valves, ventilation devices with integrated fire protection are required in or outside the cladding or the shafts.

**Installation** can be performed:



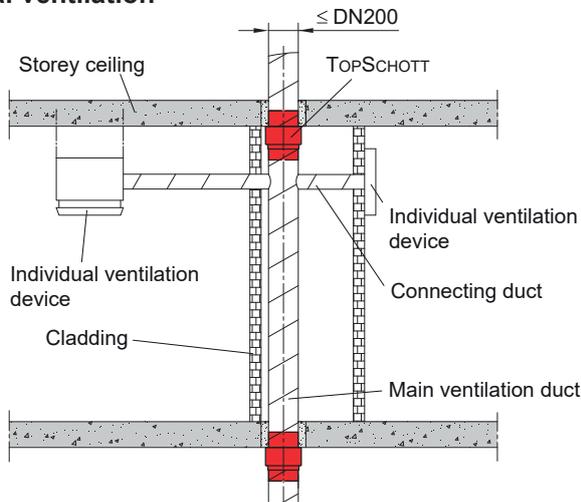
directly underneath

in

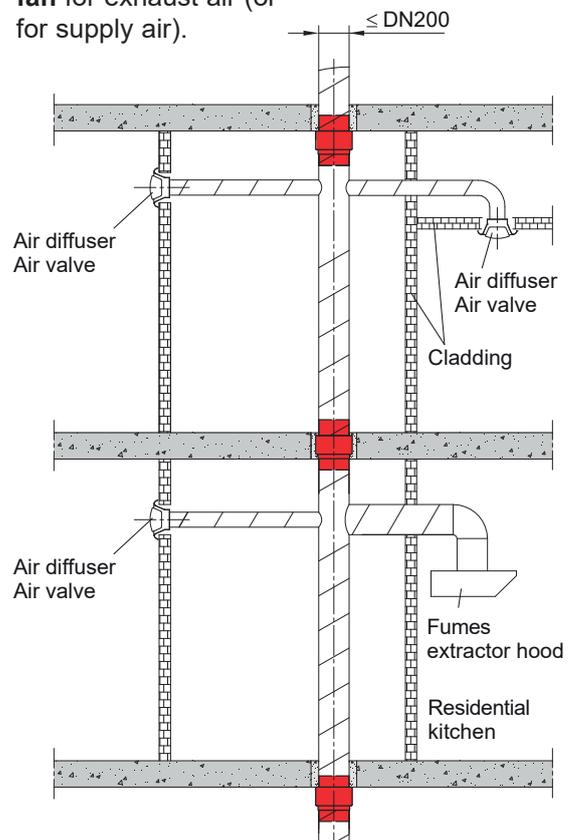
directly on

storey ceilings made of concrete, aerated concrete or with wooden beams.

### Ventilation systems with individual ventilation devices



### Systems with central fan for exhaust air (or for supply air).



### Installation examples

The **claddings** shown can be installed as required.  
For information on installation of the TS18 TopSchotts ⇒ see pages 6 and 7

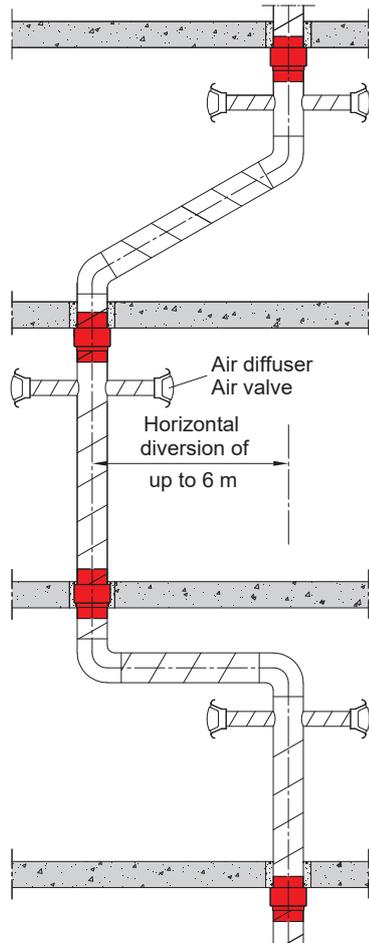
Dimensions in [mm]

# TS18 TopSchott

Installation underneath, in and on storey ceilings (2) Diversions in main ducts, fume extractor hoods

The **main ducts** of a utilisation unit can each contain 2 inclined or horizontal **diversions** of up to 6 m in length. → see also page 4

Example of arrangement



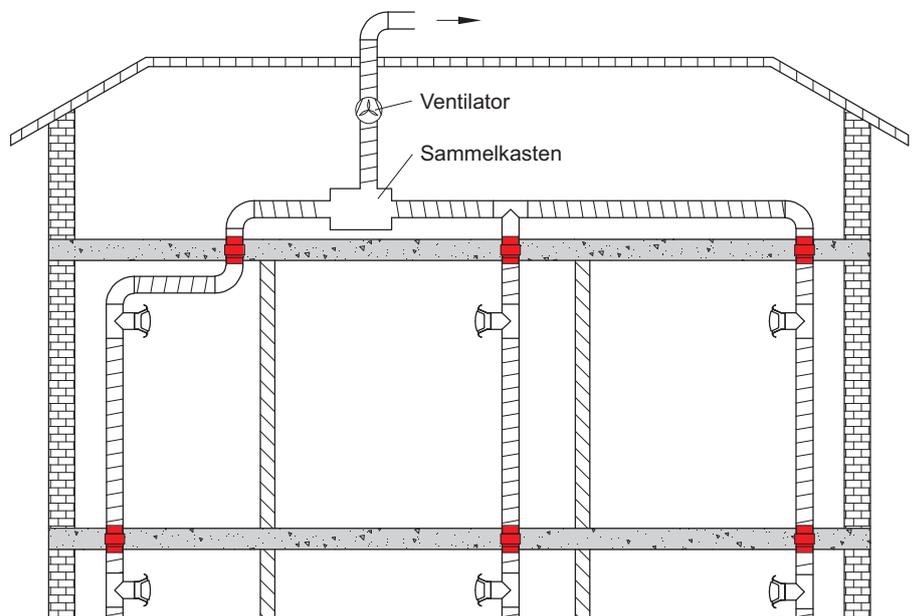
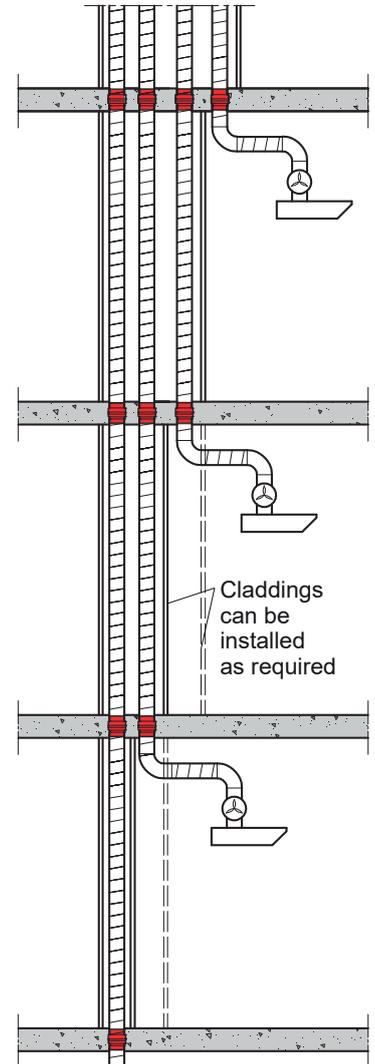
**Main ducts in the roof area** can be converged and connected to a **plenum box** if no fire-resistant partition walls are bridged.

⇒ see also page 10

**Fume extractor hoods in residential kitchens** can be connected to individual steel ventilation ducts routed above the roof. The storey ceilings must be made of concrete and a TS18 TopSchott must be installed in each one for every ventilation duct.

Other connections to the ventilation ducts are not permitted.

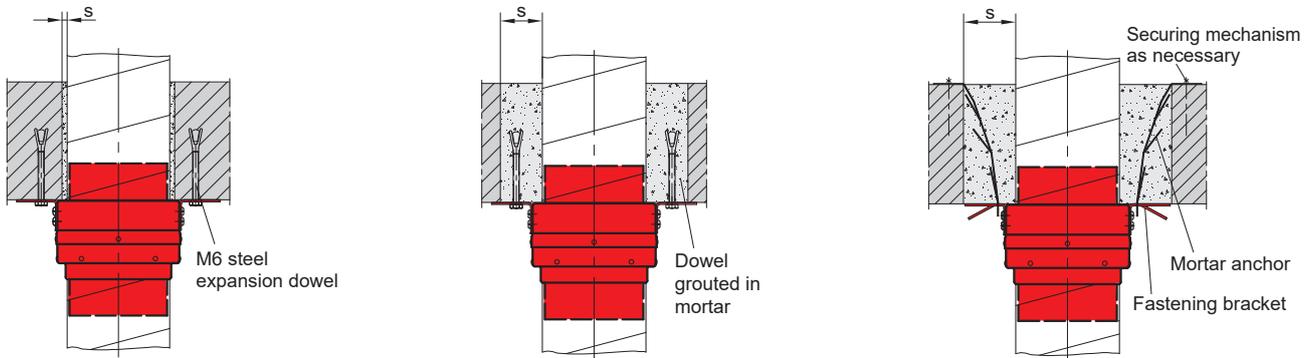
The ducts can remain without cladding. Any claddings and feed-throughs through walls and ceilings are permitted if there are no requirements for the fire resistance.



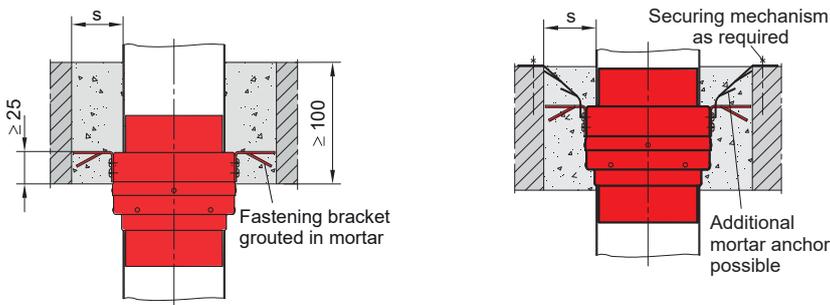
# TS18 TopSchott

Installation underneath, in and on storey ceilings (3) Concrete ceilings

## Installation directly under ceilings



## Installation in ceilings

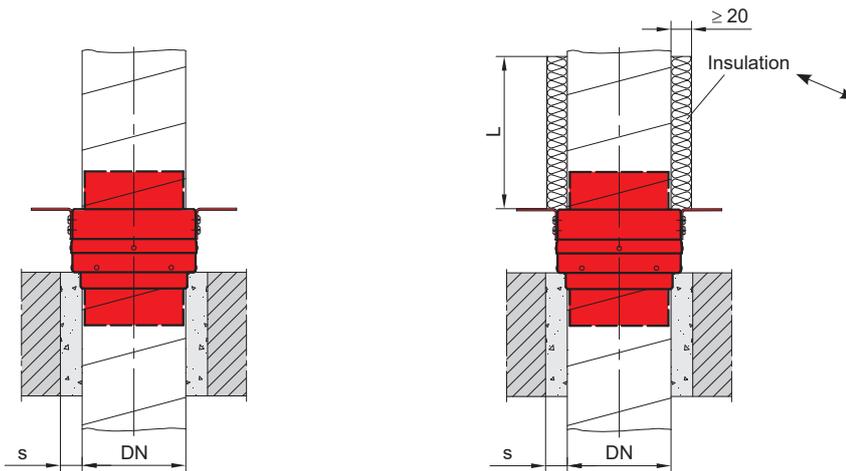


- **Installation in F90 storey ceilings** made of concrete (reinforced concrete) from a thickness of 100 mm and made of aerated concrete from 125 mm.

- **Gaps "s"** must be filled with mortar of groups II or III as per DIN 1053, with concrete or gypsum mortar; a depth of 100 mm is sufficient.

Gap widths "s" depend on the installation. All-round grouting  $\geq 5$  mm covering the full surface is sufficient as a minimum but requires the mortar to have sufficient fluidity.

## Installation directly on ceilings



- **If the TS18 TopSchott is installed directly on ceilings, main ducts without external insulation must be insulated over the full length L with  $\geq 20$  mm thick mineral wool clad in aluminium foil, e.g. Rockwool Klimarock, material class A - DIN 4102.**

### Minimum length L of insulation

|         |            |            |             |
|---------|------------|------------|-------------|
| DN [mm] | $\leq 100$ | $\leq 150$ | $\leq 200$  |
| L [mm]  | $\geq 250$ | $\geq 500$ | $\geq 1000$ |

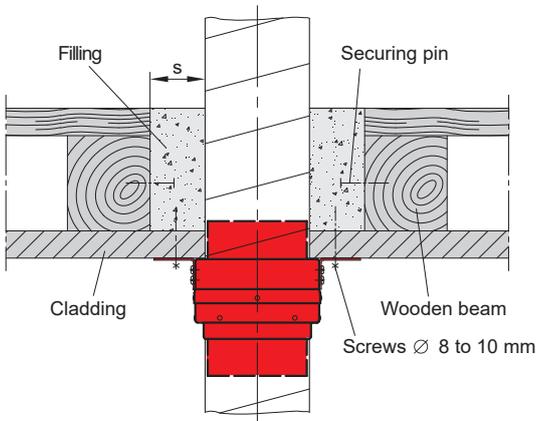
No insulation is required if the TS18 TopSchott

- is installed behind storey-height claddings made of  $\geq 10$  mm thick plasterboard or other mineral materials, or
- is located inside F30, F60, F90 classified claddings or in equivalent shafts.

# TS18 TopSchott

Installation underneath, in and on storey ceilings (4) Wooden ceilings

## Installation directly under ceilings

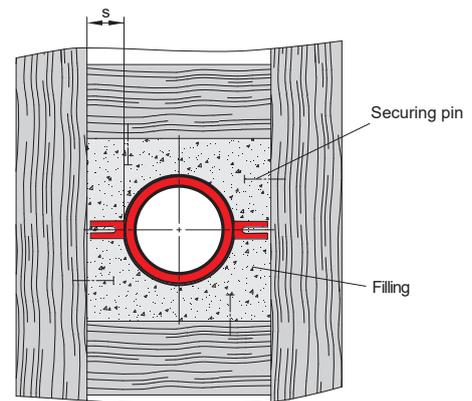
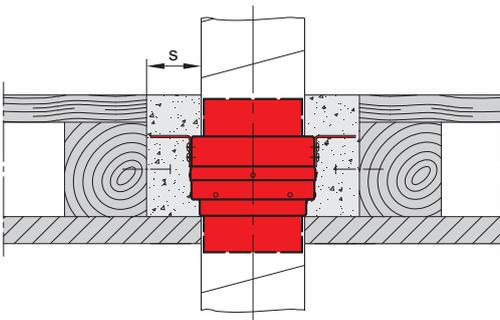


- **Installation in F30 or F90** storey ceilings in the design of **wooden beam ceilings** from a thickness of 100 mm with underside cladding for 30 or 90 minutes fire resistance period.
- There are no fire safety requirements for the **top of ceilings**; it can thus be made of commercially available wooden boards.
- **Wooden beams** should be  $\geq 100$  mm in width and arranged all round. If necessary, replacements must be used.

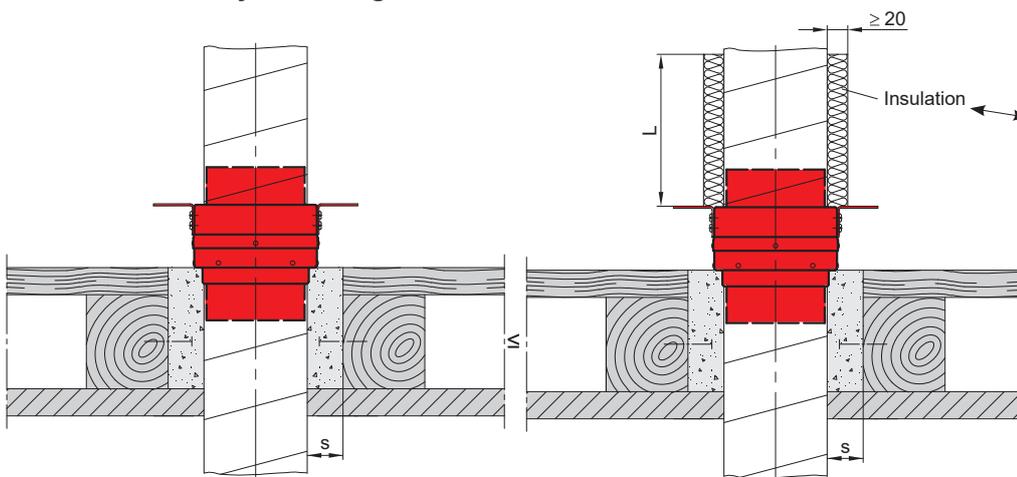
For F30 claddings the **gaps** must be set at "s"  $\geq 50$  mm, for F90 at "s"  $\geq 100$  mm, and must be filled in accordance with the thickness of the ceilings with mortar of groups II or III as per DIN 1053, with concrete or gypsum mortar.

A sufficient number of securing pins must be used **on all sides** to secure the filling from falling out; at least 4 wire nails of  $\geq 100$  mm in length are required.

## Installation in ceilings



## Installation directly on ceilings



- If the TS18 TopSchott is **installed directly on ceilings**, main ducts without external insulation must be insulated over the full length L with  $\geq 20$  mm thick mineral wool clad in aluminium foil, e.g. Rockwool Klimarock, material class A - DIN 4102.

### Minimum length L of insulation

|         |            |                  |             |
|---------|------------|------------------|-------------|
| DN [mm] | $\leq 100$ | $100 < \leq 150$ | $\leq 200$  |
| L [mm]  | $\geq 250$ | $\geq 500$       | $\geq 1000$ |

- No insulation is required if the TS18 TopSchott is installed behind storey-height claddings made of  $\geq 10$  mm thick plasterboard or of other mineral materials; a minimum gap of 2 cm must be observed.

Dimensions in [mm]

# TS18 TopSchott

Installation in, on and remote from classified shafts or ventilation ducts (1)

- The TS18 TopSchott can be installed **in, on** and at a distance of **up to 6 m** outside of **shafts made of F30, F60, F90 walls or made of L30, L60, L90 classified ventilation ducts**.

- Shafts can convey air as the **main duct** or contain a steel ventilation duct (e.g. spiral duct) on the inside as the air-conveying main duct.

**Cross sections** of air-conveying main ducts are limited to **1000 cm<sup>2</sup>** or **355 mm Ø**.

- 3 TS18 TopSchotts can be connected for each storey and fire protection area of use (residential unit).

- **Basic ventilation systems for residential kitchens** can be connected to shafts without and with a ventilation duct inside.

- **Air passages, air valves, individual ventilation devices** can be made from any materials. Integrated fire protection is not required.

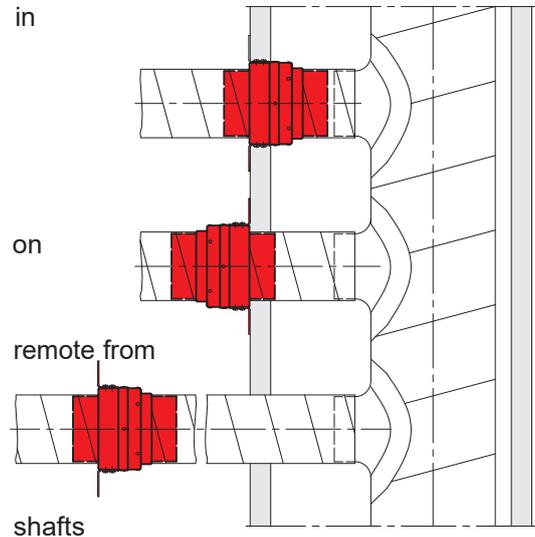
- **Connecting ducts and shafts can remain without cladding.** Any **claddings** and the passing through of connecting ducts through walls and ceilings are permitted if there are no requirements for the fire resistance.

- **Connecting ducts** must be made of non-combustible materials and can be made of steel or, e.g. aluminium (AluFlex pipe).

**Exceptions:**

- If **vapour extraction hoods** are connected in residential kitchens, their connecting duct must be made of steel.
- Connecting ducts between the shaft wall and a TS18 TopSchott installed at a distance of up to 6 m must be made of steel and must have no openings.

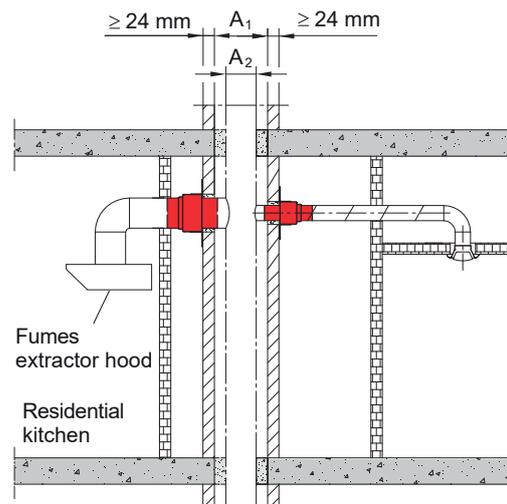
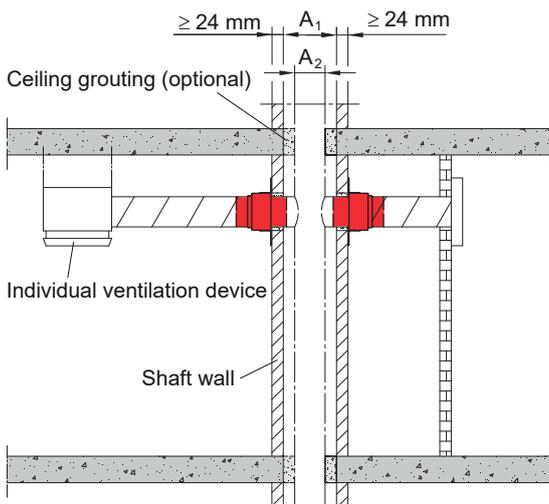
Installation can be performed:



The shaft is shown with an air-conveying main duct made of steel.

**Ventilation systems with individual ventilation devices**

**Supply air and exhaust air systems with central fans**



**Installation examples**

The **claddings** shown can be installed as required.  
For information on installation of the TS18 TopSchott ⇒ see pages 9

**Internal cross sections A<sub>1</sub>, A<sub>2</sub> of F30, F60, F90 shafts and made of L30, L60, L90 ventilation ducts**

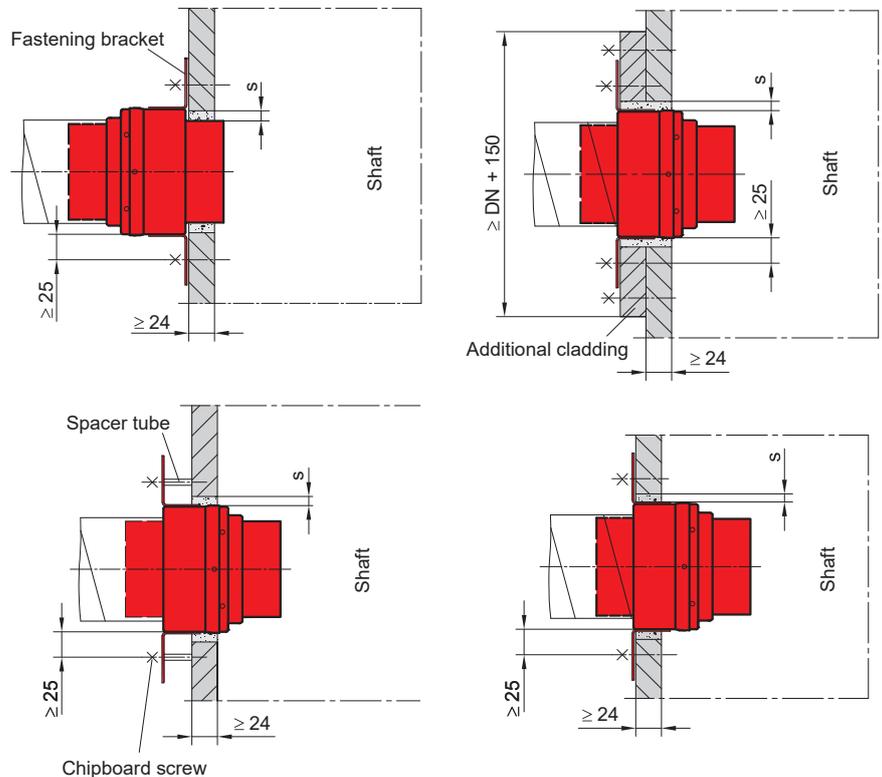
- **A<sub>1</sub> conveys air** and ≤ 1000 cm<sup>2</sup> or ≤ 355 mm Ø, inner duct A<sub>2</sub> is not in place.
- **A<sub>2</sub> conveys air** and
  - without ceiling grouting: A<sub>2</sub> ≤ 1000 cm<sup>2</sup> or ≤ 355 mm Ø; A<sub>1</sub> should enclose A<sub>2</sub> snugly.
  - with ceiling grouting: A<sub>1</sub> unlimited; A<sub>2</sub> ≤ 1000 cm<sup>2</sup> or ≤ 355 mm Ø.

# TS18 TopSchott

## Installation in, on and remote from classified shafts or ventilation ducts (2)

### Installation in and on classified shafts or ventilation ducts

- For installation of the TopSchott the wall with **openings** must be provided in the required size.
- **Gaps "s"** between the wall and the TS18 TopSchott must be filled with mortar of groups II or III as per DIN 1053 or with gypsum mortar.
- The **fastening bracket** on the TS18 TopSchott can be used for screwing to the wall.
- Depending on the type of wall, **M6 metal dowels** with fire protection suitability certification can be used for fastening or **chipboard screws**  $\varnothing$  6 mm, 45 mm in length or larger in accordance with the wall thickness. 6.4 mm DIN 125 washers are required for this purpose.
- **Additional claddings** on the shaft wall can be implemented with mineral boards (calcium silicate, vermiculite, plasterboard or equivalent).
  - Minimum size DN + 150 mm.
  - Screws and clamps must penetrate all walls.
- **Spacer tube** made of steel with  $\geq 3$  mm tube wall thickness.

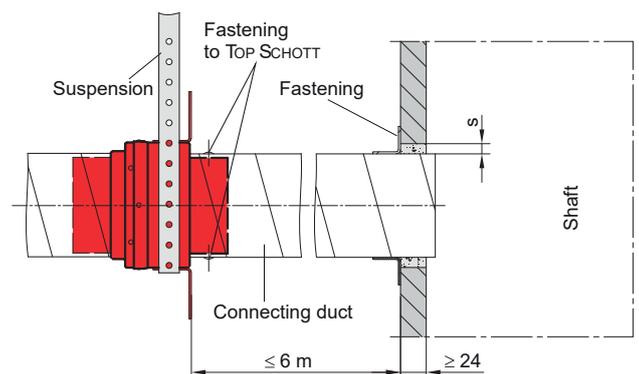


### Installation remote from classified shafts or ventilation ducts

- The TS18 TopSchott must be connected to steel **connecting duct** without openings with a length of  $\leq 6$  m, e.g. made of spiral duct.
- Two steel rivets are used to **fasten** the connecting duct to the TS18 TopSchott.
- The connecting duct is **fastened** to walls with at least 3 stable connecting brackets, offset by  $120^\circ$ , and with screws or steel rivets.
- For **suspension** of the connecting duct 20 mm wide, galvanized steel - perforated strip,  $\geq 1$  mm thick with perforations 7 to 8 mm is generally sufficient. M6 metal dowels must be used as approved steel expansion dowels.
- Suspensions should be spaced at  $\leq 3$  m from each other and should not be longer than 1.5 m.
- Cross section A of the suspension must be calculated with  $A [\text{mm}^2] = 1.65 \cdot G [\text{kg}]$ .

G is the sum of the weights which load the suspension: TS18 TopSchott, connecting ducts etc.

TS18 TopSchott weight  $\Rightarrow$  see page 3



Shafts and ventilation ducts can contain air-conveying main ducts made of steel.

Dimensions in [mm] unless specified otherwise.

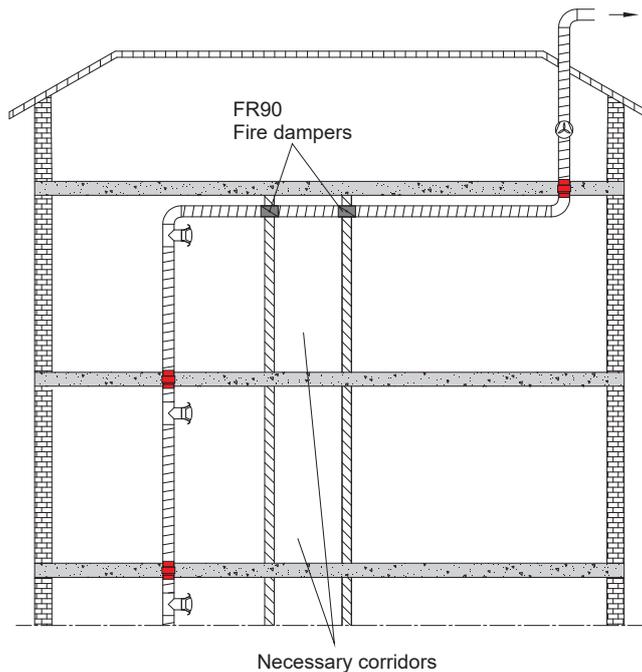
# TS18 TopSchott

Special design types

**Route the main duct through necessary corridor.**  
Instead of installing fire dampers in corridor walls, the sheet steel main duct can be insulated or clad in the corridor area.

Designed as per:

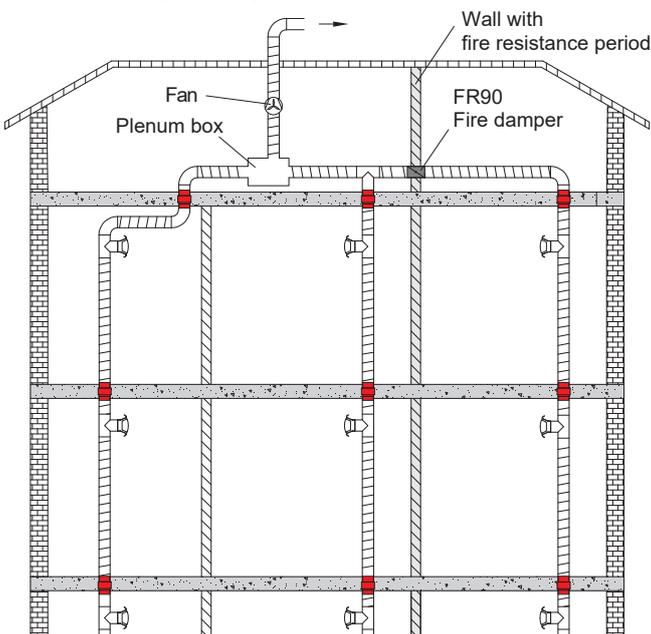
- "Muster-Lüftungsanlagenrichtlinie" (design guidelines for ventilation systems (M-LüAR)), version 11/12/2015, figure 3.1.
- Lippe • Czepuck • Esser • Vogelsang in comment on M-LüAR, 2nd issue, page 106, figure A II - 7/15.



**Converge main ducts in the roof area and secure fire compartments with fire dampers.**

Designed as per:

- Lippe • Czepuck • Esser • Vogelsang in comment on M-LüAR, 2nd issue, page 107, figure A II - 7/17.

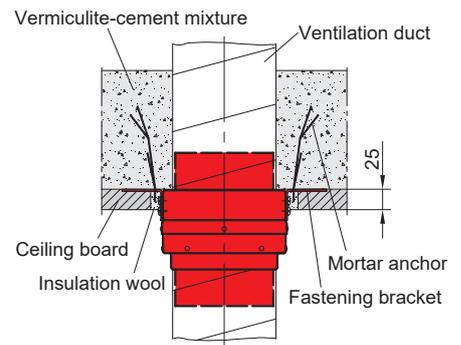


**Installation in WÜRTH installation shafts**  
Systems W1 and W2 in solid and lightweight construction

**IBS 90 (W1):** TS18 TopSchotts are installed in an opening in the 25 mm thick ceiling board inserted in the ceiling breakthrough.

After connecting the ventilation ducts, the ceiling board is filled with a dry mixture of vermiculite and cement and moistened with water.

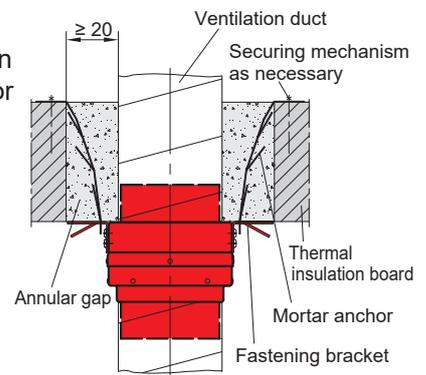
Remaining openings are sealed with insulation wool.



**I-Block 90 (W2):** TS18 TopSchotts are installed in an opening in the thermal insulation board made of polystyrene pellets and cement, inserted in the ceiling breakthrough.

The cutting and drilling surfaces are given an ablation coating for this purpose.

After installing the thermal insulation board in the ceiling breakthrough, the ventilation ducts are connected and the annular gap is filled with mortar.



Dimensions in [mm]

Designed as per:

- Expert opinion Ga-2017/058a -Nau from 16/04/2018
- Stipulations of Adolf Würth GmbH & Co. KG

## Acoustic measures for installation

- To reduce the transmission of structure-borne sound, the screed should only be laid to up to around 2 cm from the TS18 TopSchott or the ventilation duct. The all-round gap which remains can be filled with mineral wool and can include an elastic joint seal at the top.
- Ventilation ducts can be fastened with sound-absorbing pipe clips and the connections of the ventilation ducts can be fitted with lip seals.
- Installation shafts with ventilation ducts can be filled with mineral wool (rock wool or glass wool).

# TS18 TopSchott

Installation and operation / order information / specification text

## Installation

Installation must be performed in accordance with this user manual. Approval Z-41.3-556 must also be observed.

## Function in case of fire

TS18 TopSchotts contain an enclosed thermal release mechanism. A special intumescent seals the cross section.

## Commissioning

TS18 TopSchotts must be installed properly and in accordance with the user manual.

**Check the function, maintenance**  
is not required.

## Operation, servicing

TS18 TopSchotts must be kept in operational condition. There must be no damage or circumstances which rule it out.

TS18 TopSchotts are "sweepable".

## Repairs

Defect must be eliminated. In general the TS18 TopSchott must then be replaced.

## Hygiene

The instructions for disinfection are included in the operating instructions.

## Order information

..... pc TS18 TopSchott, size:  
DN 80  
DN 100  
DN 125  
DN 140  
DN 160  
DN 180  
DN 200  
..... Pack with 2 pc TS18  
Mortar anchor, 310 mm in length.

The user manual and operating instructions are available for download at [www.wildeboer.de](http://www.wildeboer.de).

## Specification text

Maintenance-free TopSchott for installation in, on and underneath storey ceilings made of concrete or F30 and F90 ceilings with wooden beams. For installation in, on and remote from shafts or ventilation ducts classified as fire-resistant. For exhaust air and supply air in ventilation systems as per DIN 18017-3 in buildings of all types and usages. For individual ventilations systems, central ventilation systems, for basic ventilation of residential kitchens, for vapour extraction hoods and fumes extraction hoods and for residential storage rooms. Steel housing suitable for sweeping, with epoxy resin powder coating inside and outside, with 100% open cross section with zero pressure drop, without side constrictions or enlargements. With fully enclosed, thermally closing, hinge-free shut-off elements.

..... pc

Size: DN.....  
Fire resistance period: 90 minutes  
Manufacturer: WILDEBOER  
Type: TS18 TopSchott  
Approval: DIBt Z-41.3-556  
VKF No.14204

Supply and install complete with fastenings and other accessories.

deliver: .....  
install: .....



Minimum gaps between TS18 TopSchotts and cable and pipe screening have documented for example:



**Adolf Würth GmbH & Co. KG**  
[www.wuerth.de/brandschutz](http://www.wuerth.de/brandschutz)  
[brandschutz@wuerth.com](mailto:brandschutz@wuerth.com)  
 +49 800 1813900



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