

Smoke extraction duct systems

Type

TD - rectangular cross-section smoke extraction duct system - single compartment

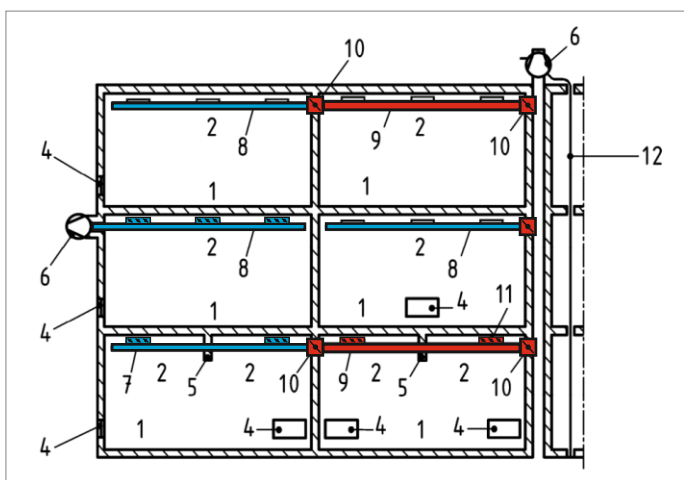
Application

It applies to ductwork used in smoke extraction ventilation and air conditioning systems in buildings. The smoke extraction ducts are part of the single compartment smoke extraction and fire protection system.

Function

The function of the smoke extraction duct is to prevent the transmission of smoke and combustion products from the fire zone.

Smoke and heat ventilation



Example of powered smoke and heat exhaust ventilation according to EN 12101-7

1. Fire compartment; 2. Smoke reservoir; 4. Air inlet; 5. Smoke barrier
6. Powered smoke and heat ventilator (fan)

7. Smoke exhaust dampers for single compartments (EN 12101-8 and EN 1366-10)
8. Smoke exhaust duct sections for single compartments (EN 12101-7 and EN 1366-9)

9. Smoke control duct sections for multi compartments (EN 12101-7 and EN 1366-8)
10. Smoke control dampers for multi compartments (EN 12101-8 and EN 1366-10)

mounted inside or outside of wall or floor
11. Smoke control dampers for multi compartments (EN 12101-8 and EN 1366-10)
mounted on surface of the wall

12. Electrical equipment

Standards

- TD steel single compartment smoke exhaust ducts are classified according to the EN 13501-4+A1:2010 standard as E₆₀₀120 (v_e-h_o) S1500 single fire resistance class.
- Testing was carried out at 600°C over a period of 120 minutes by PAVUS a.s., in Czech Republic according to the EN 1366-9 standard. TD smoke extraction ducts can be installed in vertical and horizontal positions. In the system, an underpressure of up to 1500 Pa and an overpressure of max. 500 Pa are allowed. (Pressure level 3.)
- The TD smoke extraction duct system for single compartment is CE marked according to EN 12101-7 standard.
- And all locally relevant regulations must be observed.

Smoke extraction duct systems

Material

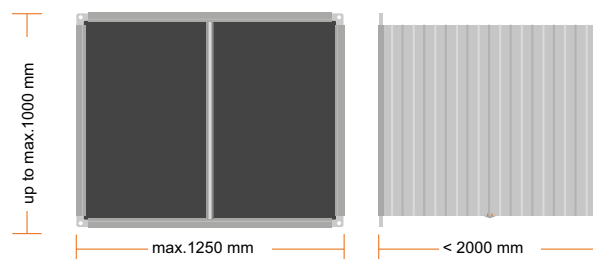
Smoke ducts constructed from non-combustible materials (euroclass A1 and A2-s1, d0). Smoke extraction duct is made of 1 mm thick galvanized steel sheet.

Sheet thickness the following:

- 1 mm thick galvanised steel

Dimension

- min. standard duct section width (b): 160 mm
- min. standard duct section width (a): 160 mm
- min. standard duct section length (l): 50 mm
- max. duct section width (b): 1250 mm
- max. duct section height (a): 1000 mm
- max. duct section length (l): 2000 mm



Intermediate sizes are possible between the minimum and maximum sizes without restrictions. The reduction of rectangular duct cross-section is not limited.

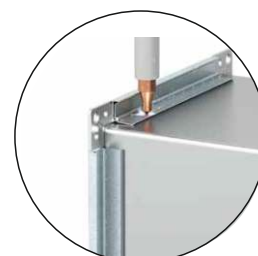
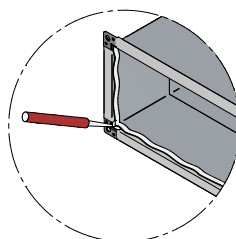
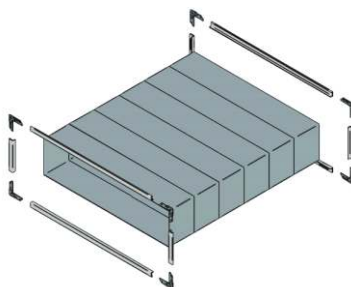
Frame of the duct

The parts of duct elements are assembled by using mechanical corner folds in case of bend elements.

Method of fixing the frame to the duct body:

- spot welding

The corners and inside part of the frame are sealed with sealing material - min. fire resistance 120 minutes.



Tested quality

Function maintained 120 min 600°C –
certificate of constancy of performance
by PAVUS

Dimensions

Individual dimensions up to
max. 1250 mm x 1000 mm available

Classification

E₆₀₀ 120 (v_e - h_o) S1500 single

Duct parts

in 1 mm galvanised steel sheet,
30 mm air duct profile

Smoke extraction duct systems

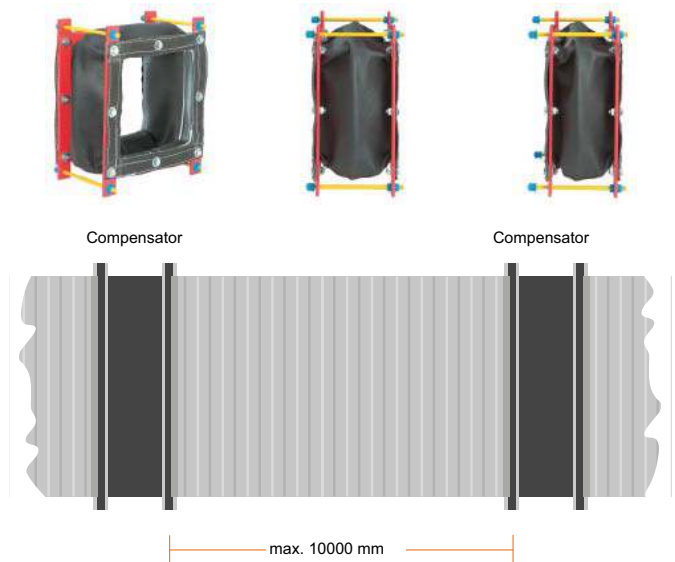
Compensator

- Compensator made of flexible material to compensate extension of ducts.
- Compensator tested in accordance with DIN 18232-6 (10/97). The compensator has been tested at room temperature with 1500 Pa underpressure and at 600 °C with 500 Pa underpressure for a period of 120 min.
- The distance between two compensators shall not exceed 10 m.
- Maximum dimensions: B = 1250 mm, H = 1000 mm and B > 1251 mm – 1500 mm, H = 797 mm

Type

- WSK 600

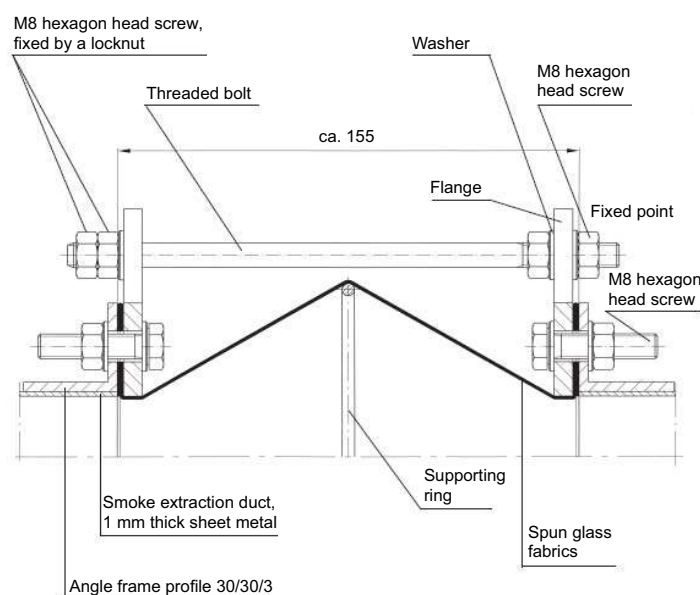
Please note, that it is only allowed to use duct fittings and components which are fire tested and CE-marked according to product standard EN 12101-7.



Available clear dimensions in [mm]

B	201	252	318	357	400	449	503	565	634	711	797	894	1003	1125	1250	1251-1500
H	201	252	318	357	400	449	503	565	634	711	797	850	900	950	1000	797

Intermediate sizes on request

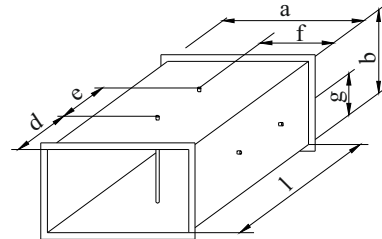


Smoke extraction duct systems

Rigidity

- straight smoke duct till $l=500$ mm - no rigidity
- fittings smoke duct till $l=600$ mm - no rigidity

We use reinforcing rod acc. to the table.



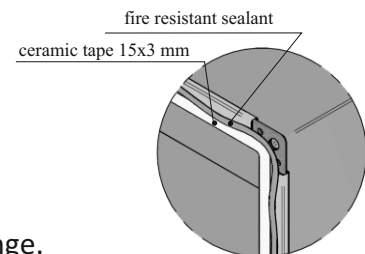
a	b	l	d	e	f	g
501 - 1 250	501 - 1 000	500 - 1 250	1/2	-	a/2	b/2
501 - 1 250	501 - 1 000	1 251 - 1 500	1/3	1/3	a/2	b/2
501 - 1 250	501 - 1 000	1501 - 2 000	1/4	1/4	a/2	b/2

Connection

We use a ceramic tape gasket 15x3 mm and firestop sealant between the flanges to seal the joints and bolt them together with an M10 steel nut and bolt at each other. Suspension from the ceiling shall be at a clear distance of max. 2000 mm. The recommended tread size is minimum M8. The suspension shall be performed with L-profiles (35/35/4) or C-profiles (40/40/4 or 45x60x3).

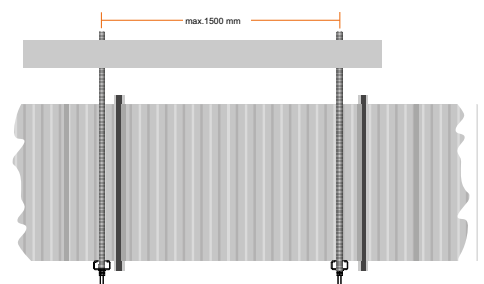
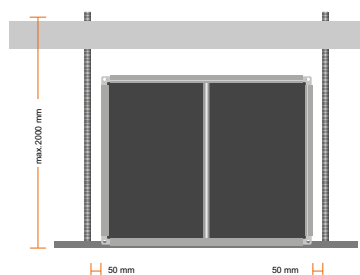
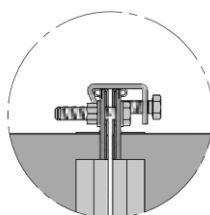
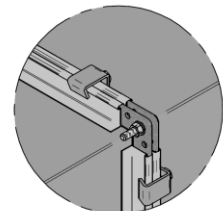
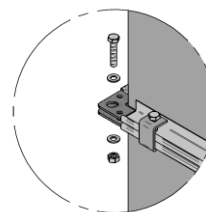
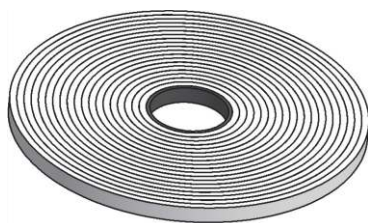
Cermatic tape:

- 15x3 mm tape



WE fasten the duct by 40 mm steel clamps.

The distance between two G-clamps should not exceed 180 mm along the flange.



Smoke extraction duct systems

Grilles

Application:

Ventilation grilles are used as supply or exhaust air grilles in normal HVAC or SMOKE system. The blades are fixed.

Type:

- **CNGF** - simple line air grilles with fixed blades in position of 90° or 45°

Fixing:

Directly mountable in wall opening or square duct.

- Fixed by visible screw (-C)
- Fixed by concealed bracket (-R)

Material:

- Grilles are made of galvanised steel for smoke
- Optional*
- Grilles are made of stainless steel (1.4301)

Accessories:

- FK mounting frame made of galvanised steel
- AL type deflection volume control damper galvanised steel
- TS/TSP type volume control damper galvanised steel

Application:

- External louvers are used as supply or exhaust air devices in normal HVAC system.
- The blades are fixed.

Type:

- **EV** - external louvers with fixed blades

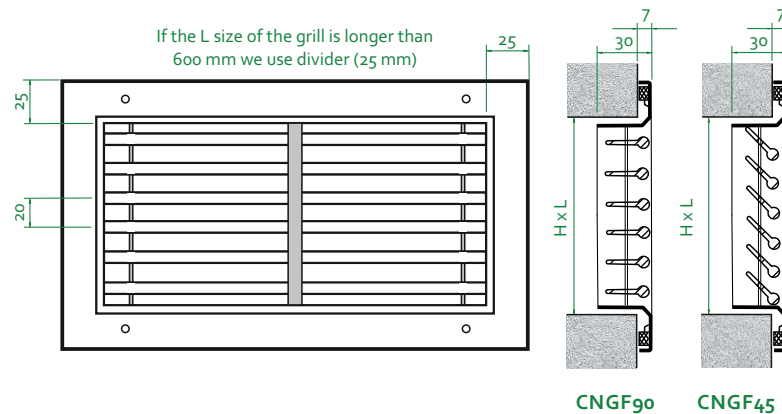
Fixing:

Directly mountable to wall opening or square duct.

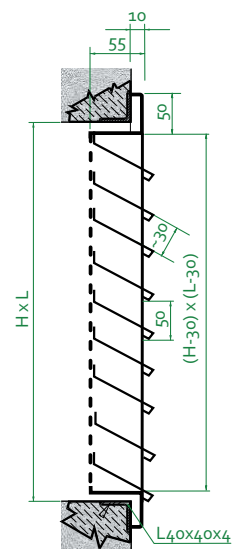
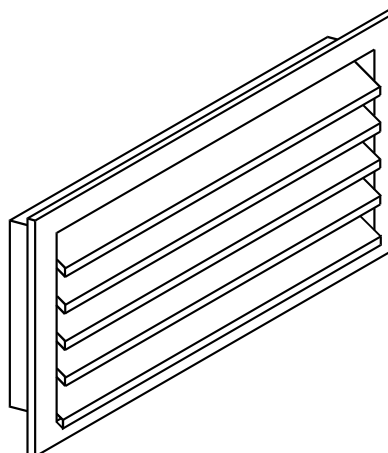
- Fixed by screw (-C)

Material:

- Grilles are made of galvanised steel in standard with wire meshes against bird.



1. Dimensions of ventilation grilles type CNG-F



Smoke extraction duct systems

Labels

Smoke control ducts, fittings and other duct components which are used for smoke exhaust purposes, are in scope of the harmonised product standard EN 12101-7 and have to be CE-marked. Please check before starting installation work, that all components are CE-marked.

TD smoke control ducts are marked with CE product labels which are fixed to the ductwork. The markings prove to the building owner that they meet product standards for smoke control purposes for single compartment applications. Please check before starting installation work, that all components are CE-marked.



Inspection and maintenance

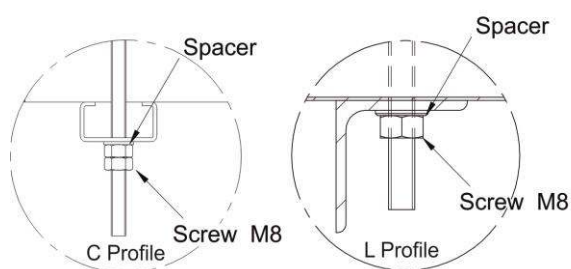
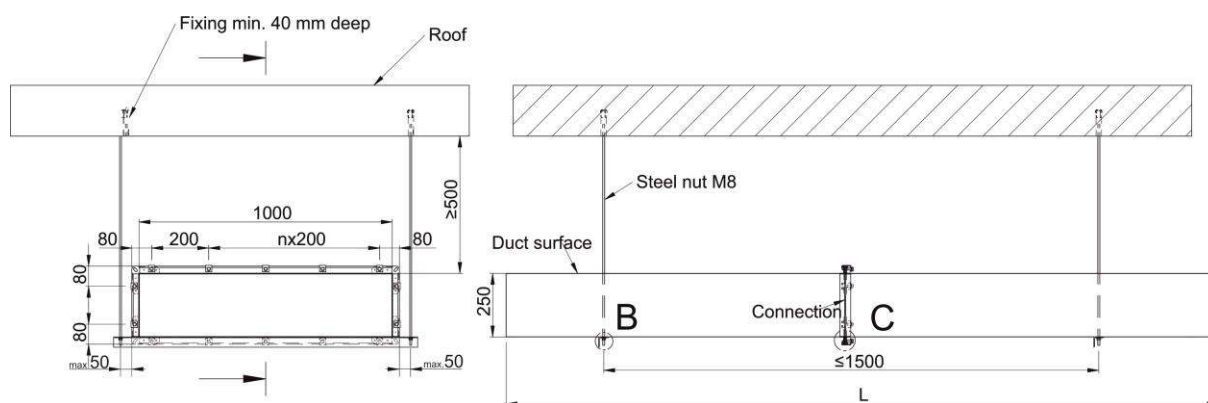
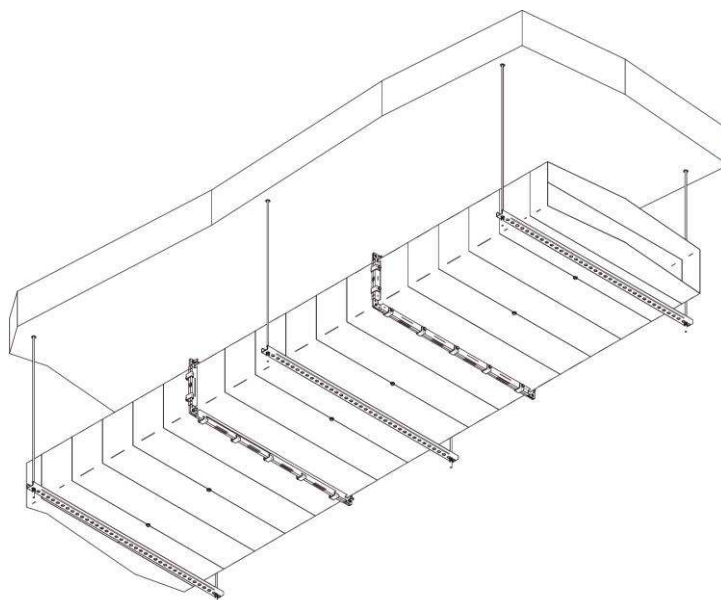
After installation, when the system is running, it is recommended according to product standard EN 12101-7 that the following inspection procedure is carried out and recorded. These inspections should be undertaken at least once a year. These are the minimum inspection records:

Duct section reference	
Date of inspection	
Check ducting for damage	
Check connections between duct sections and ancillary components	
Check penetration seals at compartment boundaries	
Check duct cleanliness and clean where necessary	
Check the condition of seals, rectify and report where necessary	
Confirm that the duct fulfils its function as part of the smoke control system	

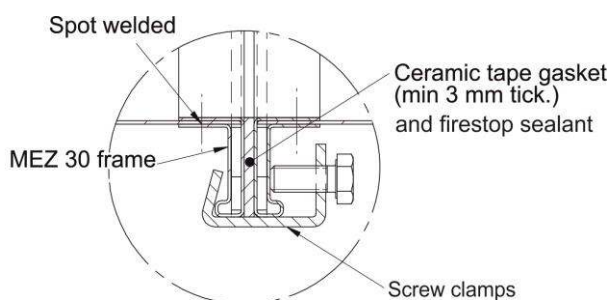
NOTE: A smoke control duct section is inherently part of a smoke control system. As this is the case the whole system should be checked as governed by the operation and maintenance requirements for the system.

Smoke extraction duct systems

Installation



Detail B



Detail C