



warringtonfiregent  
global safety

## Classification report No. 14554B

### Fire resistance on reactive air transfer grilles type GE60 / GE60 XL

#### Owner of the classification report:

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This classification report consists of ten pages and three annexes and may only be used or reproduced in its entirety.



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## 1 Introduction

This classification report defines the classification assigned to fire resistant reactive air transfer grilles named GE60 and GE60 XL in accordance with the procedures given in EN 13501-2: 2007 + A1: 2009: Fire classification of construction products and building elements - Part 2: Classification using data from fire resistance tests, excluding ventilation services.

## 2 Details of classified product

### 2.1 General

The elements GE60 and GE60XL, are defined as reactive air transfer grilles. Their function is to resist the spread of fire and hot gases by the intumescent action of its active components, in respect of the fire performance characteristics integrity, thermal insulation and radiation in clause 5 of EN 13501-2: 2007 + A1: 2009.

### 2.2 Product description

The reactive air transfer grille consists of a frame and horizontal slats.

The outside dimensions (measuring values) of the air transfer grilles are the following:

- 1200 mm x 800 mm with the mdf frame (GE 60 XL);
- 795 mm x 395 mm (GE 60).

#### 2.2.1 Air transfer grille frame

The frame is composed of two vertical profiles and two horizontal profiles.

##### Frame type GE60 XL (1200 mm x 800 mm NV)

- [1] frame – horizontal – material: mdf – outside dimensions of the section: 100 mm x 22 mm – density: 690 kg/m<sup>3</sup> (NV).
- number: 2 per air transfer grille;
  - provided with notches – diameter 20 mm/ 4.2 mm – every 100 mm;
- [2] frame – vertical – material: mdf – outside dimensions of the section: 100 mm x 22 mm – density: 690 kg/m<sup>3</sup> (NV).
- number: 2 per air transfer grille;

- provided with notch – 52 mm x 13 mm and 22 mm x 15 mm over total length.
  - fixation: stapled to each other.
- [3] intumescent strip – material: graphite – brand and type: RFT RF-expand – dimensions: 20 mm x 2 mm.
- number: 1 per vertical frame profile;
  - fixation: stapled into notch at inside of vertical frame profile.

#### Frame type GE60 (800 mm x 400 mm NV)

- [7] frame – horizontal – material: Palusol 100 in PVC envelope – dimensions (Palusol): 41.5 mm x 4 mm – dimensions (slat): 50 mm x 6 mm.
- number: 2 per air transfer grille;
  - provided with notches – diameter 20 mm/ 4.2 mm – every 100 mm;
- [8] frame – vertical – material: Palusol 100 in PVC envelope – dimensions (Palusol): 41.5 mm x 4 mm – dimensions (slat): 50 mm x 6 mm.
- number: 2 per air transfer grille;
  - fixation: glued to each other and covered with tape in the corners.

### **2.2.2 Horizontal intermediate slats**

#### Frame type GE60 XL (1200 mm x 800 mm NV)

- [4] horizontal slat – material: Palusol 100 in PVC envelope – dimensions (Palusol): 41.5 mm x 4 mm – dimensions (slat): 50 mm x 6 mm.
- number:  $H_n/18 + 1$  (e.g. for nominal height 800 mm: 46 pieces);
  - intermediate distance: 12 mm.
- [5] steel rod – material: steel ST 37 – diameter: 4 mm – length:  $H_n + 40$  mm (e.g. 800 mm + 40 mm = 840 mm).
- number: 12;
  - fixation: in between the horizontal frame profiles.
  - center/center distance: 100 mm.
- [6] spacer – material: polystyrene – diameter: 8 mm – length: 12 mm.
- position: in between horizontal slats [4].

#### Frame type GE60 (800 mm x 400 mm NV)

The mounting with the horizontal slats [4], steel rods [5] and spacers [6] is identical as above.

#### **2.2.4 Actuating mechanism**

The intumescent elements swell when exposed to heat and seal off the air path through the grille. There is no mechanical actuating mechanism.

#### **2.2.5 Sealing of the gap in the supporting construction**

The gap between the air transfer grille GE60 XL (1200 mm x 800 mm NV) with its mdf frame and the supporting construction is around 30 mm ((1200 mm  $W_n$ +100 mm) x (800 mm  $H_n$ +100 mm) – see indication on annex 3) and is filled with mortar [9] – density: 1550 kg/m<sup>3</sup> (MV).

The gap between the air transfer grille GE60 (800 mm x 400 mm NV) and the supporting construction is 2 to 3 mm and is filled with silicone mastic [10] – brand and type: RF-Technojoint – BCM.

### **2.3 Mounting**

The fire resistant reactive air transfer grilles can be mounted in an aerated concrete wall of 100 mm thickness.

The opening provided for the air transfer grilles type GE60 is 800 mm x 400 mm. The gap between the grilles and the wall is 2 to 3 mm.

The opening provided for the air transfer grilles type GE60 XL is 1300 mm x 900 mm. The gap between the grilles + frame and the wall is about 30 mm.

The detailed description of the elements, GE60 and GE60 XL, is fully given in the test report N° 14554A that has been issued in support of this classification and mentioned in clause 3.1.

### 3 Test reports and test results in support of this classification

There is currently no specific European test standard for testing the resistance to fire of reactive air transfer grilles. Therefore, the procedure shall be based on the principle of testing the product as part of an element. In the case of a wall the test shall be in accordance with EN 1364-1.

#### 3.1 Test reports

Name of the laboratory that performed the tests	Identification number of test report	Tested dimension(s) $W_n \times H_n$ (mm) (*)	Supporting construction	Direction of exposure (i - o)	Orientation ( $h_o, v_e$ )	Working pressure
WFRGENT NV	14554A	1200 x 800 (type GE60 XL)	Aerated concrete wall - thickness: 100 mm	i ↔ o	$v_e$	-3 Pa and +6 Pa
WFRGENT NV	14554A	800 x 400 (type GE60)	Aerated concrete wall - thickness: 100 mm	i ↔ o	$v_e$	-3 Pa and +6 Pa

( $W_{n \text{ opening}}$  = Nominal width)

( $H_{n \text{ opening}}$  = Nominal height)

(i - o): the air transfer grilles are symmetrical and can be used in both directions.

#### Exposure conditions of the fire resistance test:

Temperature/time curve: standard as in EN 1363-1: 1999.

ETAG 026-4: 2008 §2.4.2.1. 'Where the grille is part of a wall, the test shall be undertaken in accordance with EN 1364-1.'

Orientation: mounted in a wall construction ( $v_e$  = vertical orientation)

Direction of exposure: Test report 14554A

This concerns a symmetrical construction of the air transfer grilles built in the middle of the vertical plane of the wall. The symmetrical air transfer grilles have been tested once at an overpressure and once at an underpressure.

ETAG 026-4: 2008 §2.4.2.1. 'The grilles shall be tested with exposure to fire to each face, unless the grille is symmetrical in construction.'

One side exposed to the fire.

Level of pressure:

Test report 14554A

The air transfer grilles are tested at 3 Pa underpressure and 6 Pa overpressure.

ETAG 026-4: 2008 §2.4.2.1. 'If the product is to be used in both high and low pressure applications, tests must be carried at high and low level in the furnace.'

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## 3.2 Test results

Parameter	Results in minutes			
	i → 0		i ↔ 0	
	WFRG 14554A			
	90 min			
<u>Test duration</u>	GE60	GE60	GE60 XL	GE60 XL
<u>Dimensions grille (mm)</u>	800 x 400 (W <sub>n</sub> x H <sub>n</sub> )	800 x 400 (W <sub>n</sub> x H <sub>n</sub> )	1200 x 400 (W <sub>n</sub> x H <sub>n</sub> )	1200 x 400 (W <sub>n</sub> x H <sub>n</sub> )
<u>Integrity (E criterion):</u>				
Ignition of the cotton pad during the test after five minutes	≥ 90 minutes (1)	≥ 90 minutes (1)	≥ 90 minutes (1)	(2)
Spontaneous, continuous flames	≥ 90 minutes (1)	≥ 90 minutes (1)	85 minutes	82 minutes
Gap gauge (Ø 6 mm or Ø 25 mm) around the perimeter of the grille	≥ 90 minutes (1)	≥ 90 minutes (1)	≥ 90 minutes (1)	(2)
<u>Thermal insulation (I criterion):</u>				
A maximum temperature rise of 180°C at the unexposed side	≥ 90 minutes (1)	≥ 90 minutes (1)	85 minutes	(2)
An average temperature rise of 140°C at the unexposed side	≥ 90 minutes (1)	≥ 90 minutes (1)	84 minutes	(2)
<u>Radiation (R criterion):</u>				
Reaches 15 kW/m <sup>2</sup>	Not applicable	≥ 90 minutes (1)	≥ 90 minutes (1)	Not applicable

(1) No failures at test termination (90 minutes).

(2) The air transfer grille is partially sealed off after 85 minutes.

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07/02/2011

## 4 Classification and field of application

### 4.1 Reference of classification

This classification has been carried out in accordance with clause 7.5.2.3 of EN 13501-2: 2007 + A1: 2009 and with clause 2.4.2.2 of ETAG 026-4: 2008.

### 4.2 Classification

The elements, the air transfer grilles, GE60 and GE60 XL are classified according to the clause 7.5.2.3 of EN 13501-2: 2007 + A1: 2009 and clause 2.4.2.2. of ETAG 026-4:2008.

Since the performance of the grille can be affected by its position in the vertical plane (due to the pressure gradient within the furnace) any classification is restricted to the position tested i.e. in the underpressure/ overpressure zone of the fire side.

The test report mentioned in table 3.1 allows a large series of combinations of performance parameters and time categories. At the request of the sponsor, only the classes below are given.

**For air transfer grilles placed in an aerated concrete wall  
with a thickness of 100 mm:**

**EI 60 ( $v_e i \leftrightarrow o$ )  
EW 60 ( $v_e i \leftrightarrow o$ )  
E 60 ( $v_e i \leftrightarrow o$ )**

The above classifications are valid for air transfer grilles placed between a pressure of -3 Pa and +6 Pa at midheight of the grilles.

### 4.3 Field of direct application

This classification is valid for the following end use applications according to EN 13501-2: 2007 + A1: 2009, ETAG 026-4: 2008 and EN 1364-1: 1999: reactive air transfer grille in walls.



This classification is also valid for the following production varieties:

- **Size of the air transfer grille:**

The type of grille and the fixings, including type and number of fixings, shall not be changed from those tested.

The dimensions of the grilles may be decreased but shall not be increased from the tested configuration:

- 100 mm x 100 mm until 800 mm x 400 mm: type GE60
- 800 mm x 400 mm until 1200 mm x 800 mm: type GE60 XL

- **Direction of exposure of the air transfer grille:**

Fire resistant reactive air transfer grilles for vertical mounting are permitted as mentioned in clause 4.2. of this document.

- **Distance between the reactive air transfer grilles and construction elements:**

For grilles in partitions, the grille shall be positioned in the element no closer than 200 mm from the edge of the specimen and between 530 mm and 2500 mm from the threshold.

The filling between the reactive air transfer grille and the wall needs to be done as mentioned in clause 2.2.5 of this document.

- **Supporting constructions:**

A supporting construction of the same type with a fire resistance equal or greater than the tested standard supporting construction (thicker and/or denser). The results of the fire test are directly applicable to mounting in a similar supporting construction with one or more of the following changes:

Aerated concrete wall

The height of an identical construction may be increased to 4 m.

## 5 Duration of the validity of the classification report

At the time the standard EN 13501-2: 2007 + A1: 2009 was published, no decision was made concerning the duration of validity of the classification document.

## 6 Warning

This classification document does not represent type approval or certification of the product.

Report	Name	Signature*	Date
Prepared by	Ing. N. DE KLERCK		24 MAY 2011
Reviewed by	Dr. Ir. B. SETTE		24 MAY 2011
* For and on behalf of WFRGENT N.V.			

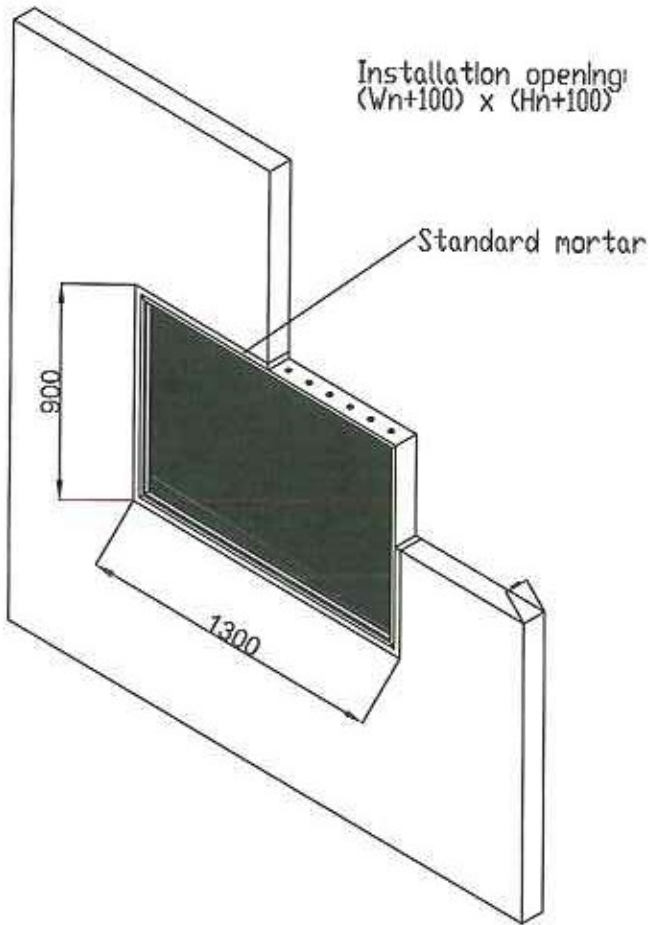
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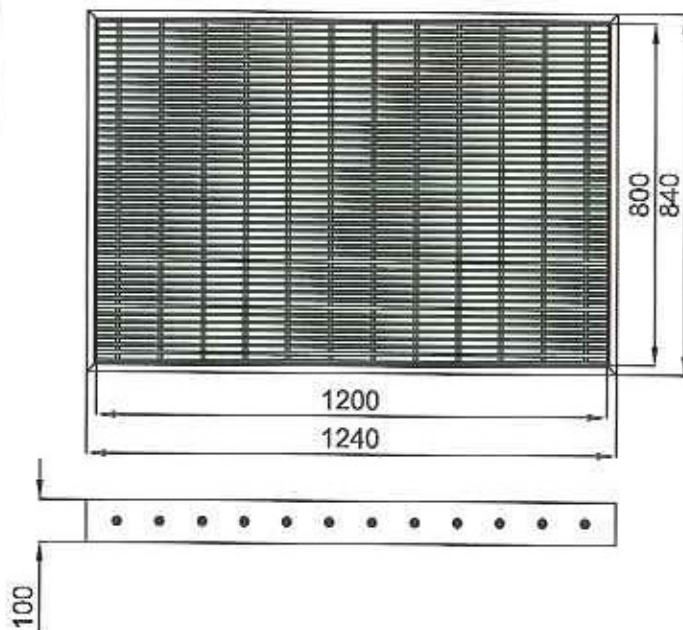
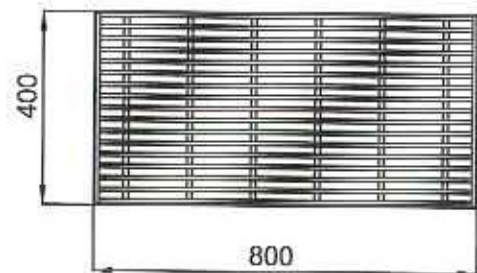
Unexposed side

GE60 XL

GE60



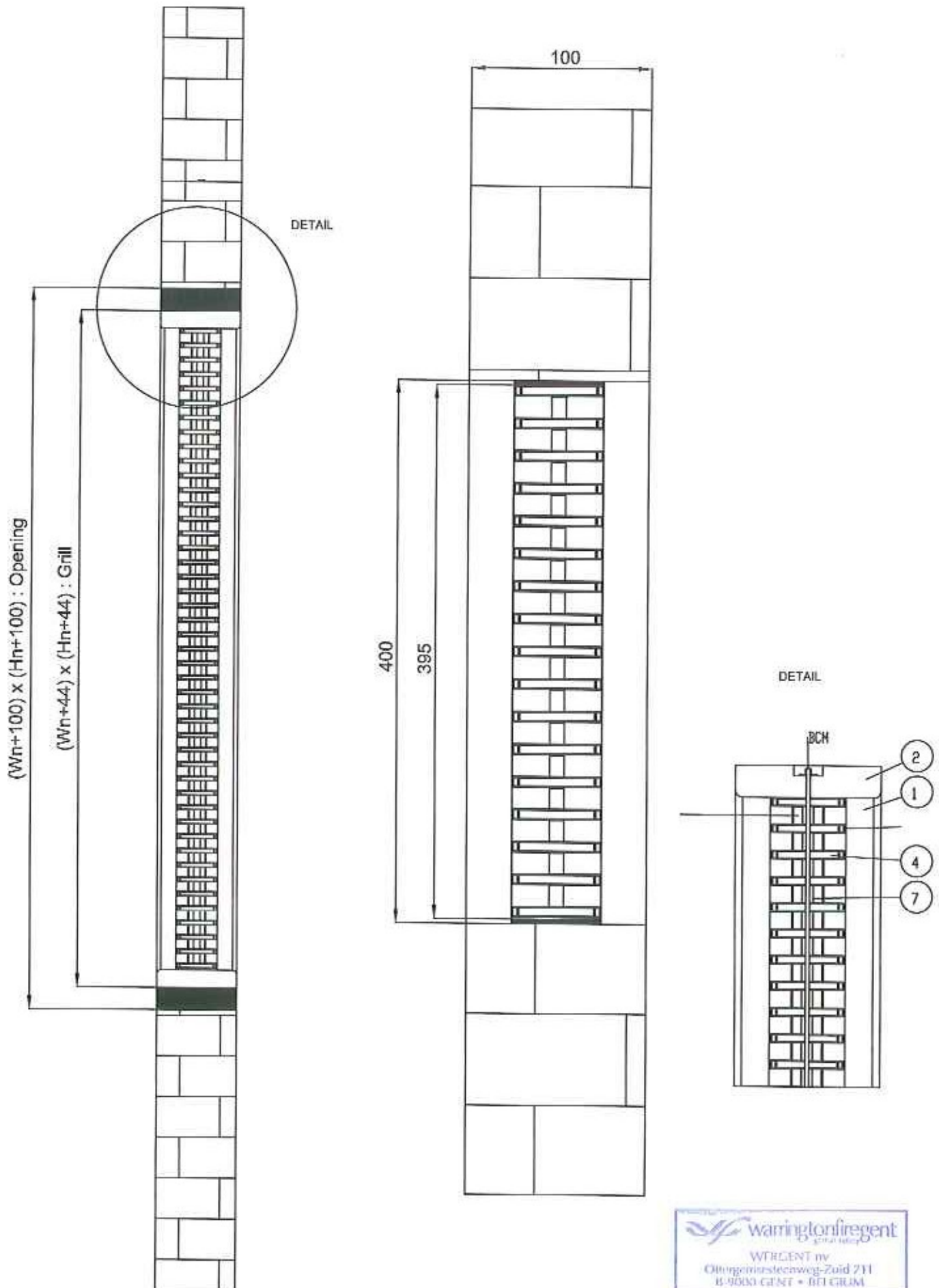
Installation opening:  $Wn \times Hn$   
Dimensions grille:  $(Wn-5) \times (Hn-5)$



Vertical section

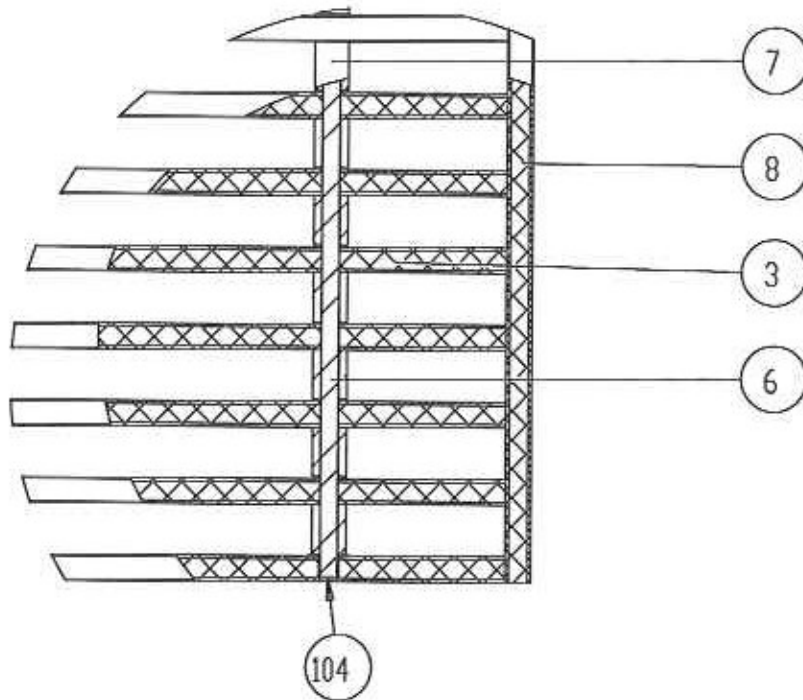
GE60 XL - air transfer grilles 3 and 4

GE60 - air transfer grilles 1 and 2



DETAILS

GE60 - air transfer grilles 1 and 2



GE60 XL - air transfer grilles 3 and 4

