

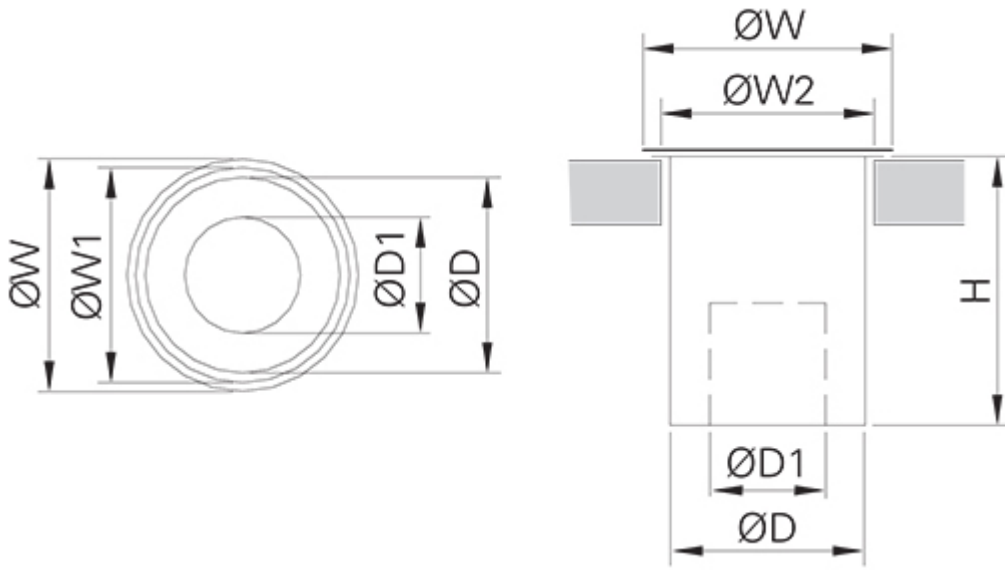
# Halton BCF – Floor diffuser



## Overview

- Vertical air supply
- Designed for use in auditoriums, theatres, concert halls, classrooms etc.
- Comfortable, thermal and good acoustic conditions
- Integrated installation to the floor
- Ducted or connected to pressurized under-floor plenum chamber
- Very limited distance between diffuser and seat required
- Pressure drop of the diffuser enables self-balancing in most cases
- Detachable front panel enables cleaning of the diffuser

# Dimensions

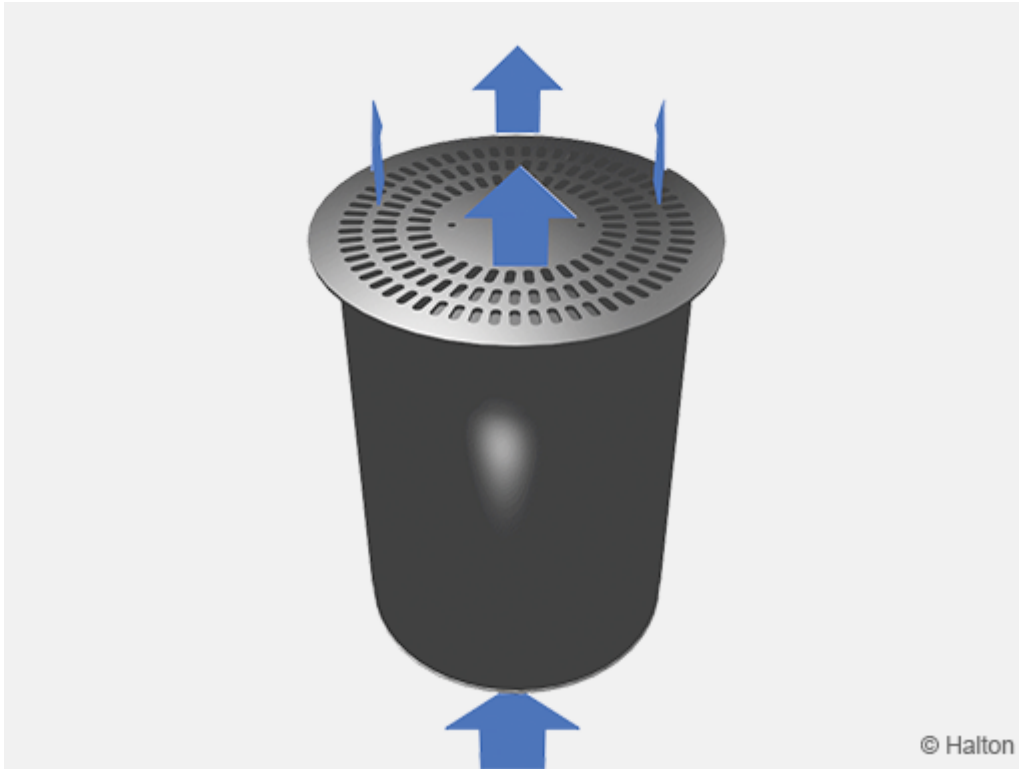


NS	$\varnothing W$	$\varnothing W1$	$\varnothing W2$	$\varnothing D$	$\varnothing D1$	H
190	190	176	165	160	95	220
250	250	235	225	220	120	300

# Material

Part	Material	Finishing	Note
Front panel	Galvanised steel	Epoxy-painted, black (RAL 9005/30% gloss)	Special colours available
Perforated plate	Galvanised steel	Epoxy-painted, black (RAL 9005/30% gloss)	Special colours available
Plenum box	Galvanised steel	Epoxy-painted, black (RAL 9005/30% gloss)	Special colours available

# Function



Halton BCF floor diffusers are designed for under-floor air distribution systems. Air is supplied into the space through the front panel at a low velocity, mixing with room air above the diffuser. The perforated plate inside the plenum box creates sufficient pressure loss to enable self-balancing.

The recommended pressure level in the plenum chamber is 30 ... 40 Pa.  
The recommended supply air temperature is max. 3°C lower than the room temperature.  
The supply airflow rate per unit is 10 ... 15 l/s.

## System design

### Floor supply system design

Halton BCF floor diffusers are designed for installation in raised floor systems like auditoriums, conference rooms, theatres, where a high level of comfort and conveyance is required. Supply air velocity must be very low to reduce discomfort that may be felt in the near zone.

We recommend designing as a displacement system with a maximum supply temperature of 3° C below room. Supply 10 to 15 l/s per unit and allow a distance between outlets of 0.8 to 1 meter. Where comfort requirements are less important, higher airflow rates can be used, generating increased velocities close to the diffuser.

Discomfort may be felt if exposed for an extended period of time. In this case outlets should be installed at least 1.5 m from the work place or other continuously occupied areas.

## Connection of the diffusers

The Halton BCF is suitable for installations without ductwork connections (figures 1 and 2). The space beneath the raised floor is used as a distribution plenum chamber. Construction includes a perforated cylinder inside the sleeve, which causes an efficient pressure loss and provides a self-balancing system.

We recommend designing the system so that the pressure inside the plenum chamber will be 10 ... 40 Pa.

Where the plenum chamber has a large volume, we recommended the use of multiple air introduction points (figure 2).

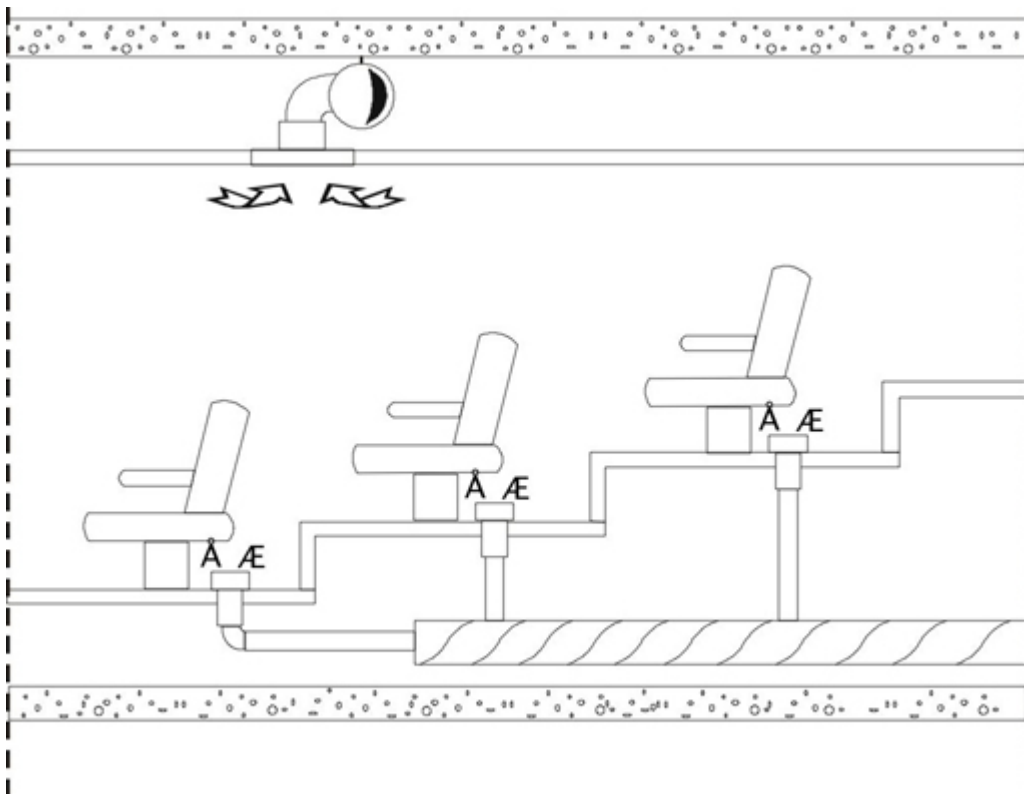


Fig. 1.

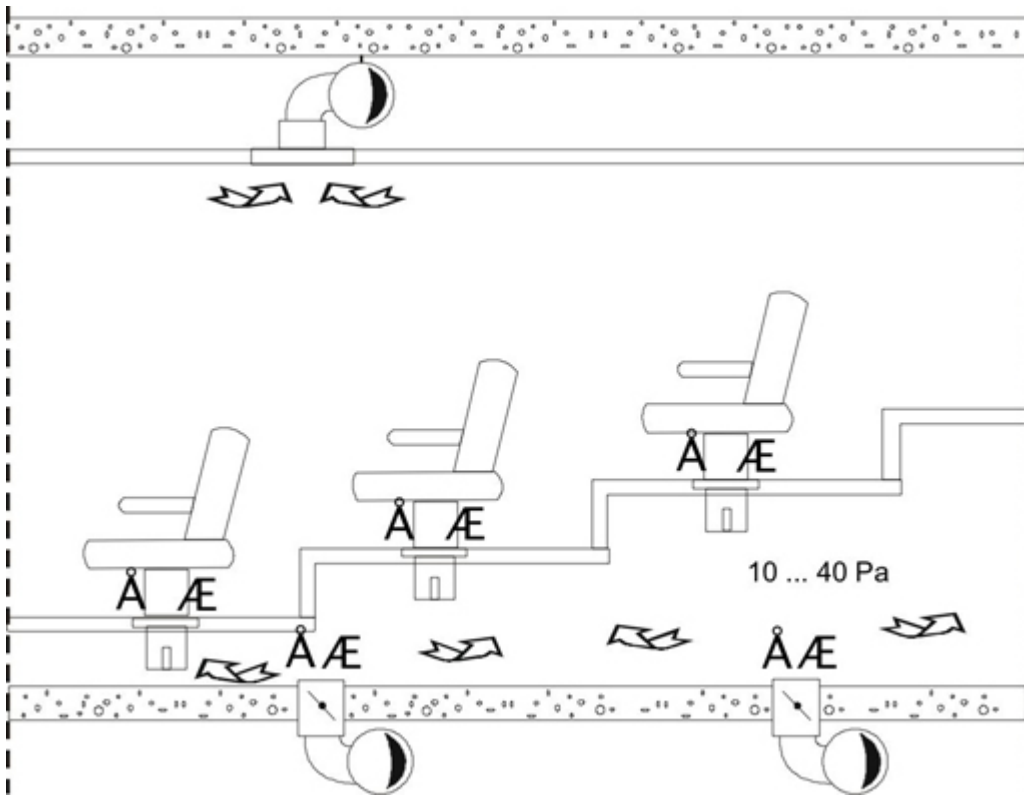
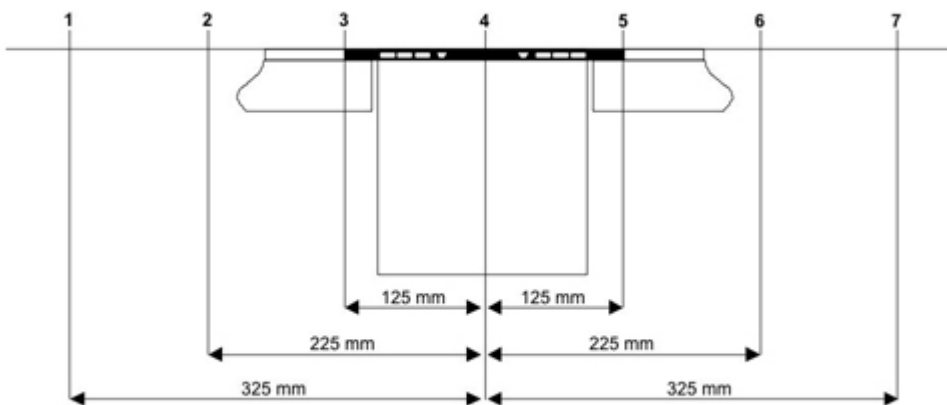


Fig.2.

## Measurements 190

### Velocity and temperature measurements; Halton BCF 190



#### Halton BCF 190

Airflow rate, $q_v$	10 l/s (36 m <sup>3</sup> /h)
Supply air temperature	21 °C
Room temperature	24 °C
$\Delta T$	-3°C

Height mm	Distance mm						
	-325	-225	-125	0	125	225	325
700	0.03 m/s 23.3°C	0.07 m/s 22.7°C		0.21 m/s 22.0°C		0.11 m/s 22.4°C	0.13 m/s 22.8°C
500	0.01 m/s 23.4°C	0.02 m/s 22.9°C		0.25 m/s 21.9°C		0.03 m/s 22.4°C	0.02 m/s 22.9°C
300	0.01 m/s 23.4°C	0.01 m/s 23.2°C		0.30 m/s 21.8°C		0.03 m/s 22.6°C	0.01 m/s 23.4°C
200	0.01 m/s 23.2°C	0.02 m/s 23.1°C		0.35 m/s 21.8°C		0.04 m/s 22.7°C	0.01 m/s 23.1°C
100		0.04 m/s 23.1°C	0.49 m/s 22.3°C	0.40 m/s 22.03°C	0.50 m/s 22.0°C	0.08 m/s 22.7°C	
50		0.03 m/s 23.7°C	0.43 m/s 23.4°C	0.41 m/s 22.9°C	0.46 m/s 22.9°C	0.04 m/s 23.5°C	

#### Halton BCF 190

Airflow rate, $q_v$	14 l/s (50 m <sup>3</sup> /h)
Supply air temperature	23 °C
Room temperature	26 °C
$\Delta T$	-3°C

Height mm	Distance mm						
	-325	-225	-125	0	125	225	325
700	0.04 m/s 24.6°C	0.08 m/s 24.0°C		0.49 m/s 23.1°C		0.12 m/s 23.9°C	0.07 m/s 23.9°C
500	0.02 m/s 24.5°C	0.03 m/s 24.0°C		0.06 m/s 23.1°C		0.04 m/s 23.7°C	0.03 m/s 23.8°C
300	0.01 m/s 24.4°C	0.01 m/s 24.2°C		0.49 m/s 23.1°C		0.05 m/s 23.8°C	0.01 m/s 24.5°C
200	0.02 m/s 24.3°C	0.08 m/s 24.1°C		0.35 m/s 23.0°C		0.07 m/s 23.7°C	0.03 m/s 24.2°C
100		0.07 m/s 24.2°C	0.87 m/s 23.2°C	0.52 m/s 23.1°C	0.89 m/s 23.1°C	0.15 m/s 23.8°C	
50		0.06 m/s 25.3°C	0.68 m/s 24.7°C	0.38 m/s 24.0°C	0.66 m/s 23.7°C	0.07 m/s 24.8°C	

#### Halton BCF 190

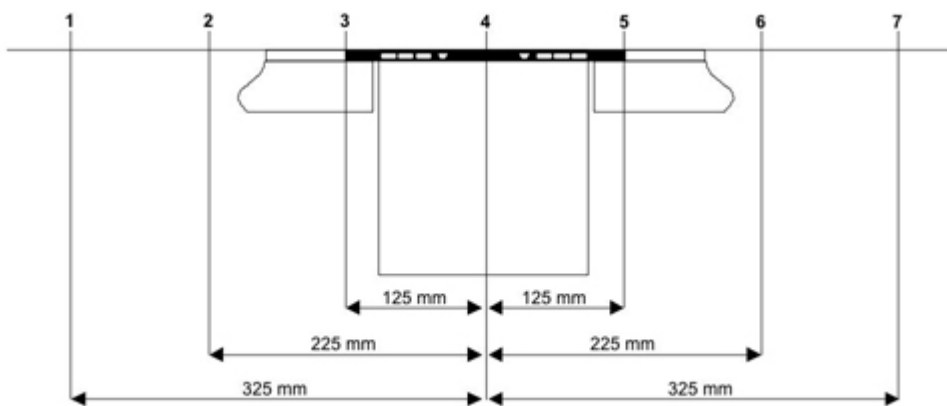
Airflow rate $q_v$	16 l/s (58 m <sup>3</sup> /h)
Supply air temperature	23 °C

Room temperature 6 °C  
 $\Delta T$  -3°C

Height mm	Distance mm						
	-325	-225	-125	0	125	225	325
700	0.02 m/s 24.6°C	0.11 m/s 24.4°C		0.49 m/s 23.4°C		0.16 m/s 24.2°C	0.05 m/s 24.4°C
500	0.02 m/s 24.7°C	0.03 m/s 24.4°C		0.07 m/s 23.3°C		0.04 m/s 24.1°C	0.03 m/s 24.4°C
300	0.01 m/s 25.8°C	0.04 m/s 24.8°C		0.58 m/s 23.2°C		0.06 m/s 24.1°C	0.01 m/s 24.7°C
200	0.02 m/s 24.7°C	0.06 m/s 24.4°C		0.43 m/s 23.5°C		0.12 m/s 23.9°C	0.02 m/s 24.6°C
100		0.08 m/s 24.5°C	1.05 m/s 23.4°C	0.58 m/s 23.4°C	1.04 m/s 23.3°C	0.14 m/s 24.1°C	
50		0.04 m/s 25.4°C	0.86 m/s 24.8°C	0.45 m/s 24.4°C	0.76 m/s 23.9°C	0.09 m/s 25.1°C	

## Measurements 250

### Velocity and temperature measurements; Halton BCF 250



#### Halton BCF 250

Airflow rate,  $q_v$  12 l/s (43 m<sup>3</sup>/h)  
 Supply temperature 20 °C  
 Room temperature 23 °C  
 $\Delta T$  -3°C

Height mm	Distance mm						
	-325	-225	-125	0	125	225	325
700	0.03 m/s 22.9°C	0.07 m/s 22.0°C		0.07 m/s 21.1°C		0.02 m/s 23.3°C	0.01 m/s 23.3°C
500	0.03 m/s 21.67°C	0.04 m/s 21.0°C		0.05 m/s 20.3°C		0.03 m/s 21.4°C	0.03 m/s 21.5°C
300	0.01 m/s 22.0°C	0.11 m/s 21.4°C		0.20 m/s 20.1°C		0.01 m/s 21.2°C	0.06 m/s 21.7°C
200	0.02 m/s 22.2°C	0.08 m/s 21.1°C		0.18 m/s 20.2°C		0.03 m/s 21.4°C	0.05 m/s 21.8°C
100		0.06 m/s 21.7°C	0.39 m/s 19.6°C	0.38 m/s 20.2°C	0.32 m/s 19.9°C	0.03 m/s 21.6°C	
50		0.04 m/s 22.5°C	0.18 m/s 21.2°C	0.33 m/s 21.1°C	0.12 m/s 20.6°C	0.02 m/s 22.7°C	

#### Halton BCF 250

Airflow rate,  $q_v$  16 l/s (58 m<sup>3</sup>/h)  
Supply temperature 20 °C  
Room temperature 23 °C  
 $\Delta T$  -3°C

Height mm	Distance mm						
	-325	-225	-125	0	125	225	325
700	0.08 m/s 21.6°C	0.16 m/s 20.8°C		0.10 m/s 20.6°C		0.06 m/s 21.2°C	0.05 m/s 21.7°C
500	0.02 m/s 21.5°C	0.04 m/s 21.1°C		0.15 m/s 20.3°C		0.04 m/s 21.3°C	0.02 m/s 21.8°C
300	0.01 m/s 22.1°C	0.03 m/s 21.4°C		0.22 m/s 20.3°C		0.01 m/s 21.7°C	0.01 m/s 22.5°C
200	0.02 m/s 22.06°C	0.04 m/s 21.5°C		0.37 m/s 20.3°C		0.02 m/s 21.5°C	0.03 m/s 22.3°C
100		0.07 m/s 21.9°C	0.41 m/s 20.2°C	0.39 m/s 20.3°C	0.36 m/s 20.1°C	0.04 m/s 21.9°C	
50		0.05 m/s 22.6°C	0.20 m/s 21.9°C	0.38 m/s 21.3°C	0.30 m/s 20.9°C	0.06 m/s 22.7°C	

#### Halton BCF 250

Airflow rate,  $q_v$  20 l/s (72 m<sup>3</sup>/h)  
Supply temperature 20 °C



Room temperature 23 °C  
 $\Delta T$  -3°C

Height mm	Distance mm						
	-325	-225	-125	0	125	225	325
700	0.09 m/s 21.6°C	0.18 m/s 21.5°C		0.19 m/s 20.8°C		0.08 m/s 21.5°C	0.04 m/s 21.9°C
500	0.03 m/s 21.6°C	0.04 m/s 21.5°C		0.21 m/s 20.8°C		0.03 m/s 21.5°C	0.02 m/s 22.0°C
300	0.01 m/s 22.1°C	0.02 m/s 21.8°C		0.31 m/s 20.6°C		0.01 m/s 21.8°C	0.02 m/s 22.3°C
200	0.02 m/s 22.0°C	0.04 m/s 21.7°C		0.43 m/s 20.7°C		0.02 m/s 22.1°C	0.02 m/s 22.3°C
100		0.06 m/s 21.9°C	0.69 m/s 20.4°C	0.47 m/s 20.7°C	0.61 m/s 20.4°C	0.04 m/s 22.2°C	
50		0.02 m/s 22.6°C	0.30 m/s 21.9°C	0.48 m/s 21.6°C	0.41 m/s 21.1°C	0.04 m/s 23.1°C	

## Installation

The Halton BCF floor diffuser is installed into an installation hole with a diameter of 165 mm or 225 mm, (see table below). The Halton BCF is mounted onto the floor.

The front panel is fastened with screws.

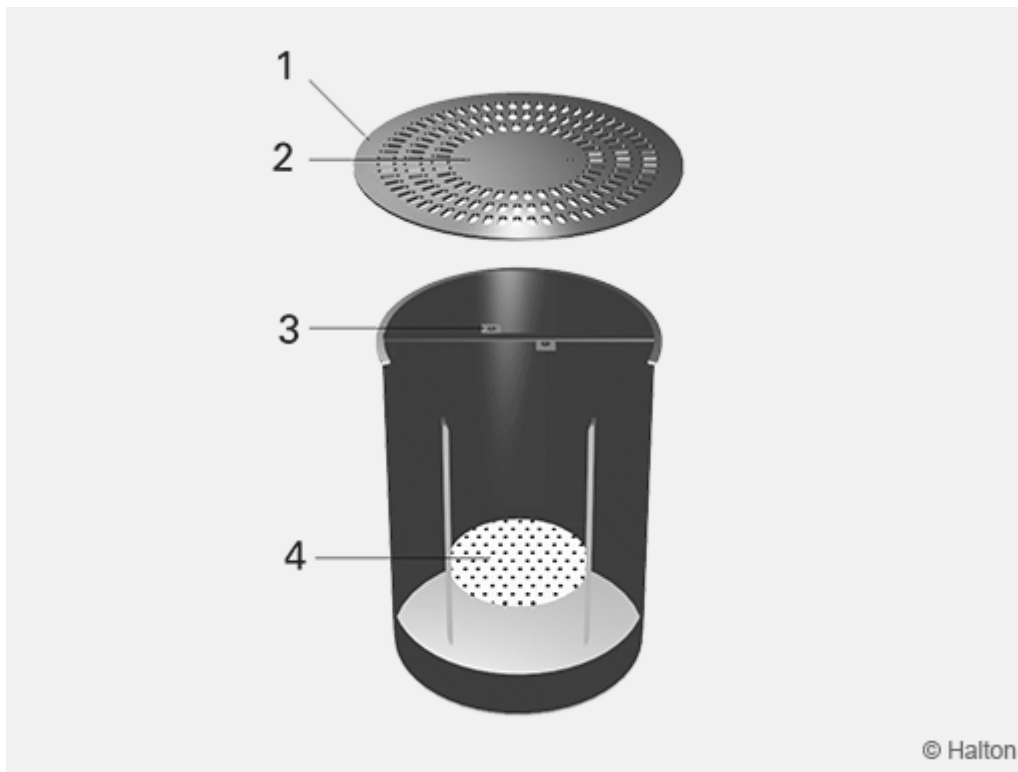
### Installation hole dimension

NS [mm]	Diameter [mm]
190	165
250	225

## Adjustment

The airflow rate is adjusted by setting the static pressure in the plenum chamber to the required pressure level.

# Servicing



## Key

1. Front panel
2. Holes for fixing screws
3. Plenum box
4. Perforeted plate

Detach the front panel by unscrewing the fixing screws.

Clean the parts by wiping them with a damp cloth, instead of immersing in water.

Remove impurities and dust regularly using a vacuum cleaner.

Reattach front panel by screwing it back onto the plenum box.

## Specification

The floor diffuser has a robust construction of galvanised steel, with black (RAL 9005) as standard colour.

The perforated plate inside the plenum box creates sufficient pressure loss to enable self-balancing in ductless applications. The space beneath the raised floor can be used as a plenum chamber.

The floor diffuser provides low velocity air distribution.

# Order code

## BCF-D;CO-ZT

**D = Duct connection (mm)**  
190, 250

## Other options and accessories

### CO = Colour

B Black (RAL 9005)

X Special colour (RAL xxxx – only front panel)

### ZT = Tailored product

N No

Y Yes (ETO)

## Code example

BCF-190, CO=B, ZT=N