Halton Jaz JWC, swirl diffuser – Technical description

Contents

1 Introduction

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1.2 About this document

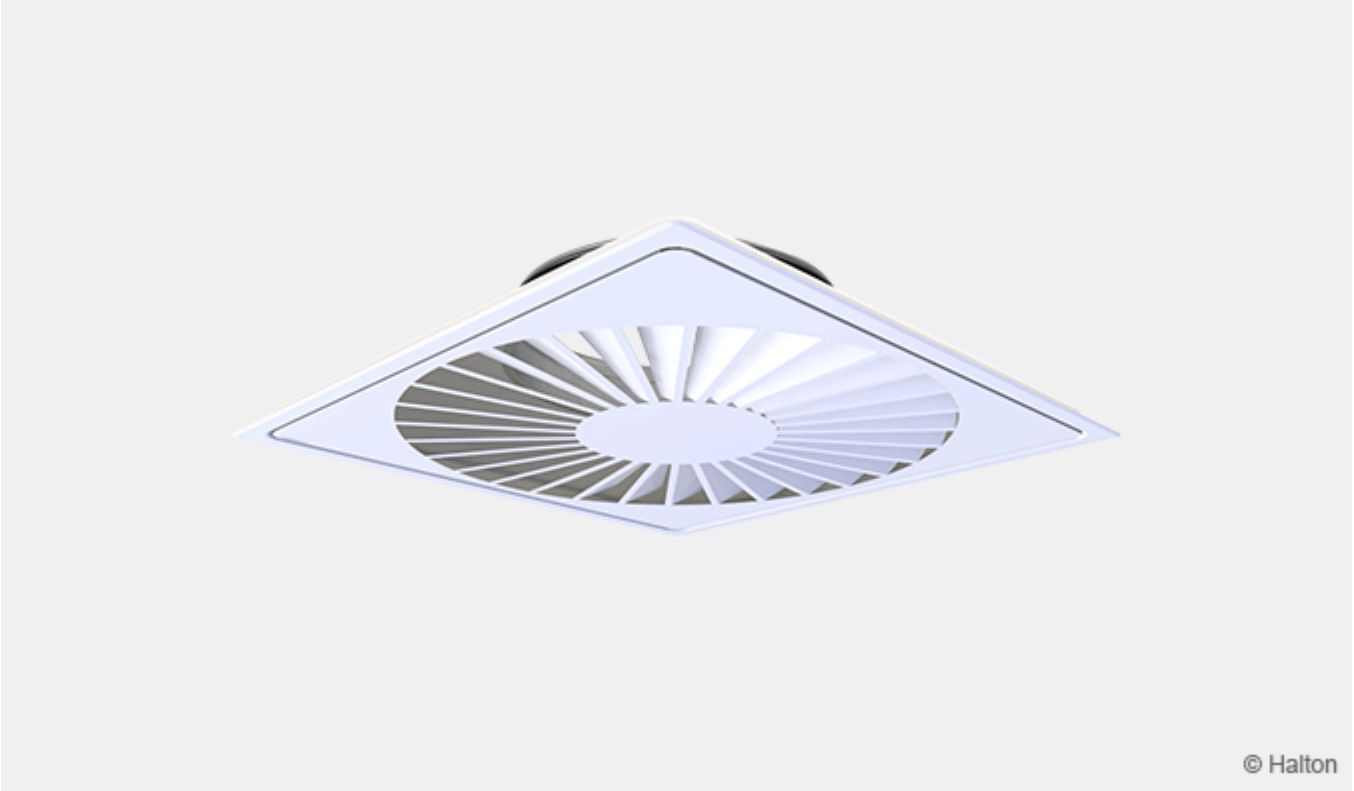
This technical description is intended for anyone needing detailed technical information about the product. It also provides general design-related information, such as design examples. More detailed designs can be carried out using the Halton eHIT selection tool, available at ***www.halton.com***.

1.3 Summary of changes

Release	Date	Description
1.0	09-June-2023	First release.

2 Product description

2.1 Overview



Halton Jaz JWC is a square diffuser that supplies air in a swirl pattern. It is suitable for suspended ceiling installation. It has been carefully designed and tested in the Halton Innovation Hub to ensure silent operation even with large airflows.

Application area

- Ventilation in offices, hospital rooms, schools, and public spaces.

Key features

- Swirl function with fixed blades
- Silent function also with large airflows
- Adjusting and measuring with Halton Pop PDI balancing plenum

2.2 Operating principle

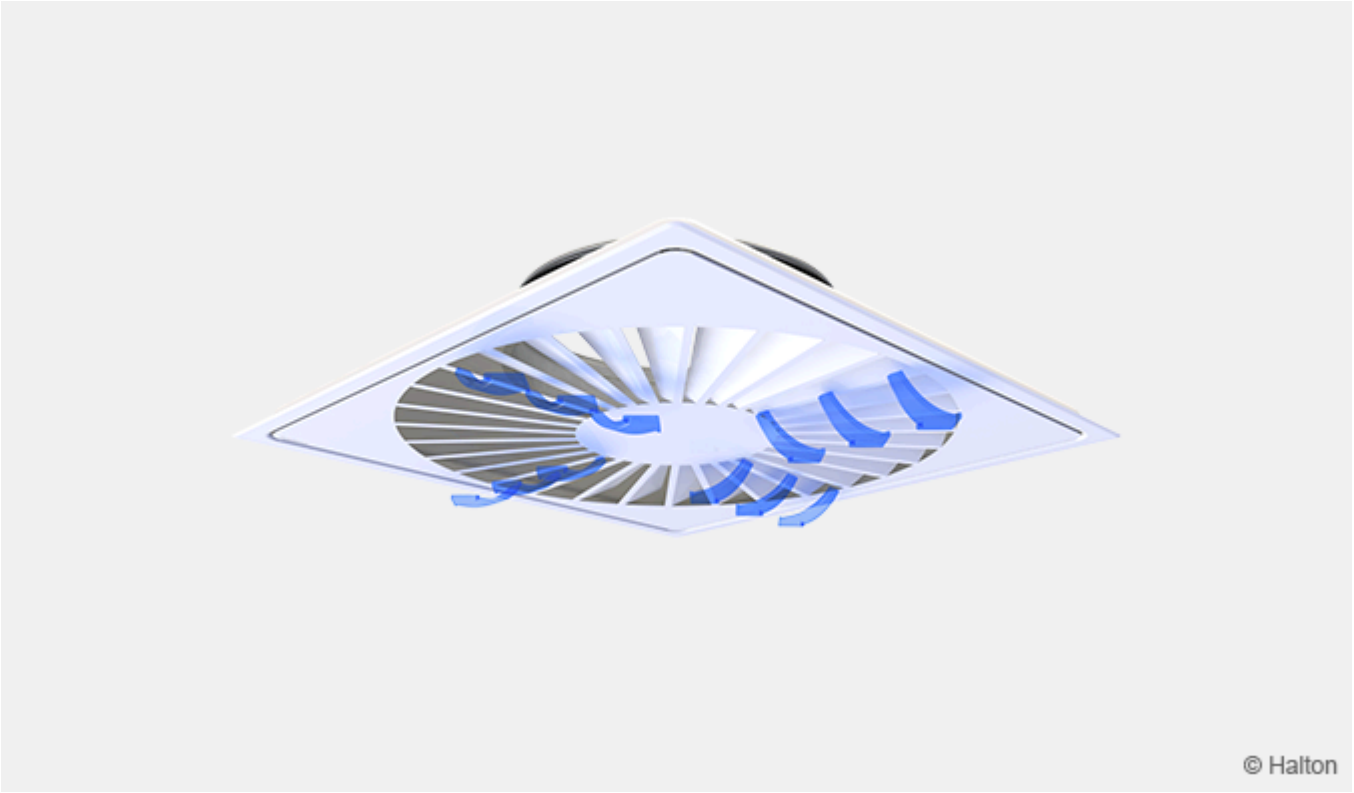


Fig. 1. Operating principle of Halton Jaz JWC

Air is supplied into the space through the tangentially oriented fixed blades, which leads to swirl function of the throw pattern. The function generates high induction rate, which effectively reduces the supply air jet velocity.

2.3 Key technical data

Feature	Description
Airflow rate	Max. airflow rate 135 l/s or 490 m^3/h <35 dB
Dimensions	595 x 595 mm
Weight	4.4 – 4.5 kg

2.4 Features and options

Category	Feature (order code)	Option (order code)	Description
Diffuser	Duct connection size (D)	160, 200, 250 or 315	Five nominal duct connections sizes. Units are in millimetres.
	Diffuser size (A)	600	595x595x70 mm. Available with all duct connection sizes.
Balancing plenum PDI (subproduct*)	Model (M)	S	With supply airflow adjustment and measurement module MSM
		E	With exhaust airflow adjustment module MEM
		N	Without airflow adjustment module
	Sizes	D	Plenum's duct connection size. It can be either the same or one size bigger than the diffuser's duct connection.
		E	Diffuser connection size. Must be the same size than the diffuser's duct connection size.
	Sound attenuation material (AT)	P	With polyester attenuation material
		W	With mineral wool attenuation material
		NA	Without attenuation material

*Ordered separately

2.5 Quick selection

Values with adjustment module (MSM) fully open.

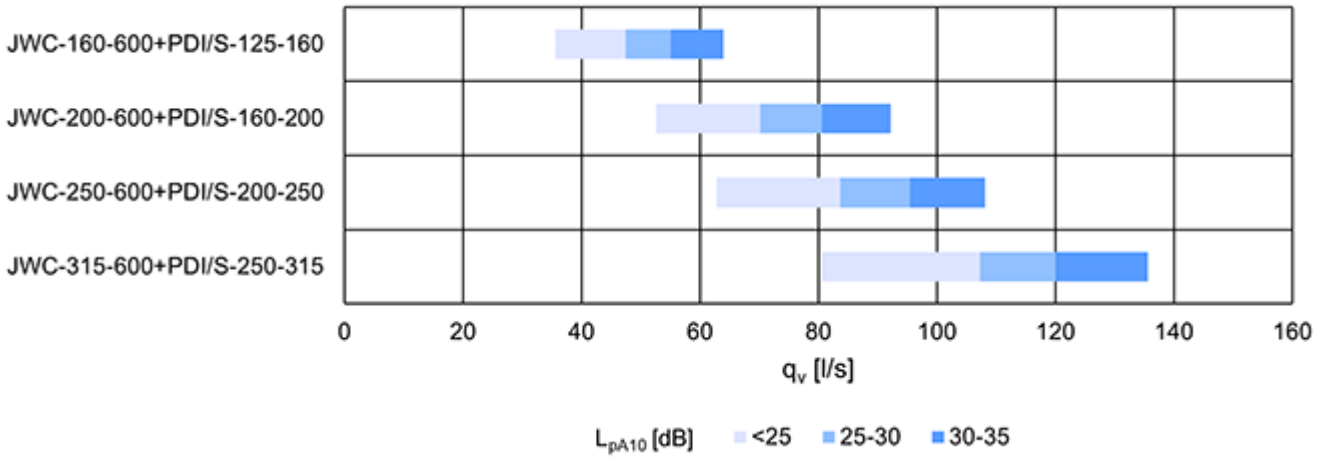


Fig. 2. Quick selection with unit l/s

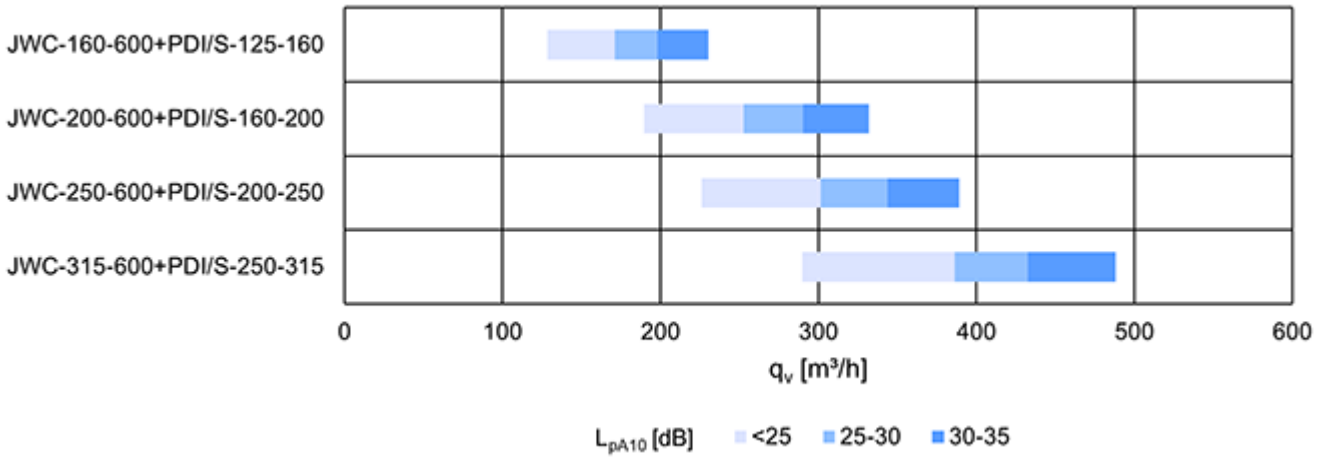
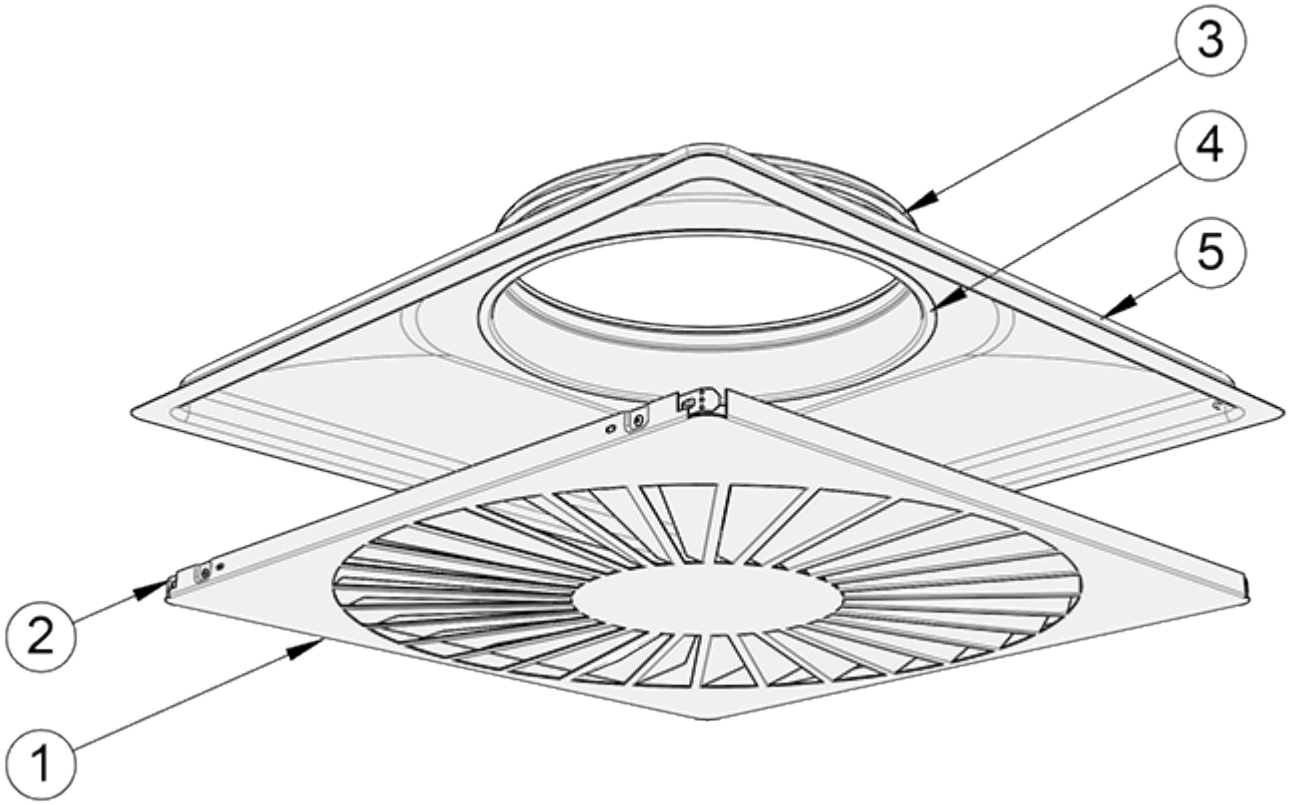


Fig. 3. Quick selection with unit m^3/h

2.6 Structure and materials



No.	Part	Description	Note
1	Front panel	Polyester-painted steel, white (RAL 9003)	Special colours available
2	Front panel springs	Stainless steel	-
3	Duct seal gasket	Polymer	-
4	Spigot	Galvanised steel	-
5	Casing	Polyester-painted steel, white (RAL 9003)	Special colours available

2.7 Dimensions and weight

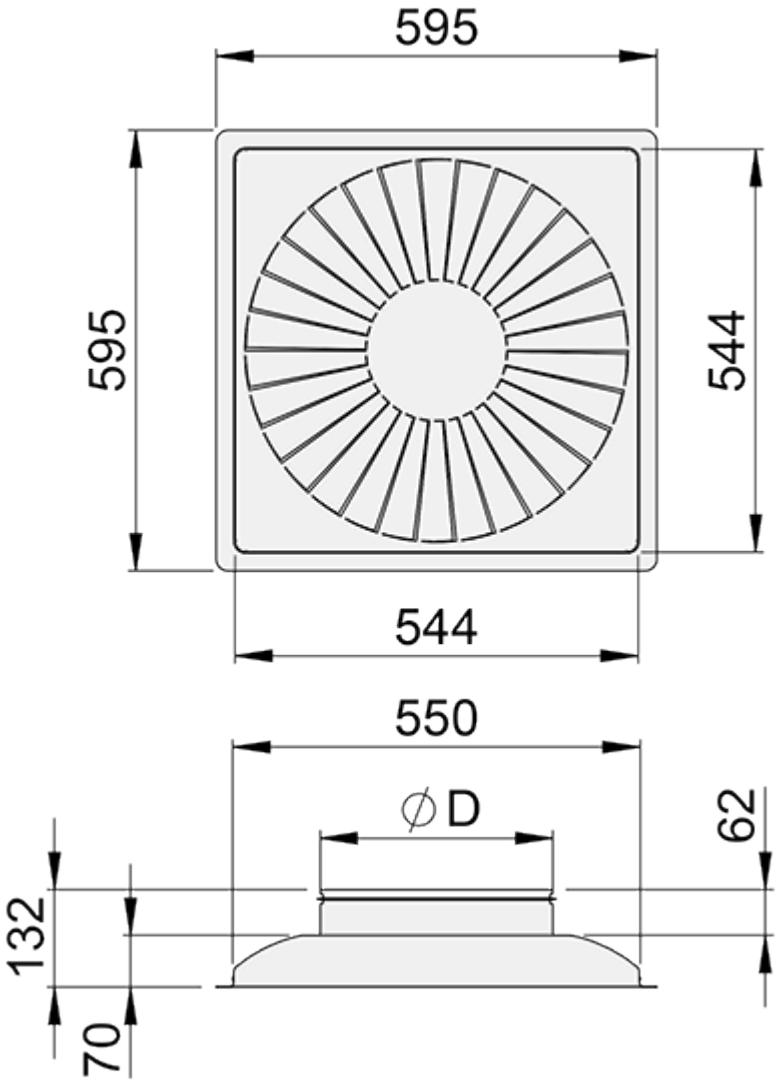


Fig. 4. Dimensions of Halton Jaz JWC diffuser

JWC	ØD [mm]	Weight [kg]
160-600	159	4.5
200-600	199	4.5
250-600	249	4.4
315-600	314	4.4

Halton Jaz JWC with Halton Pop PDI plenum

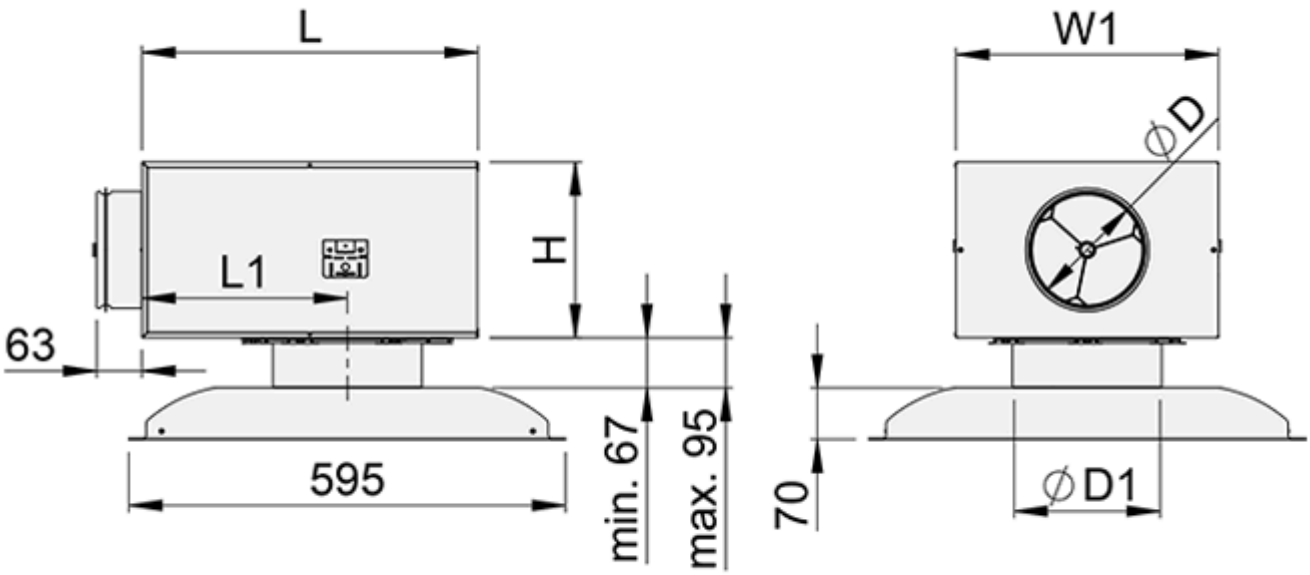


Fig. 5. Dimensions of Halton Jaz JWC with Halton Pop PDI plenum, externally positioned connection spigot

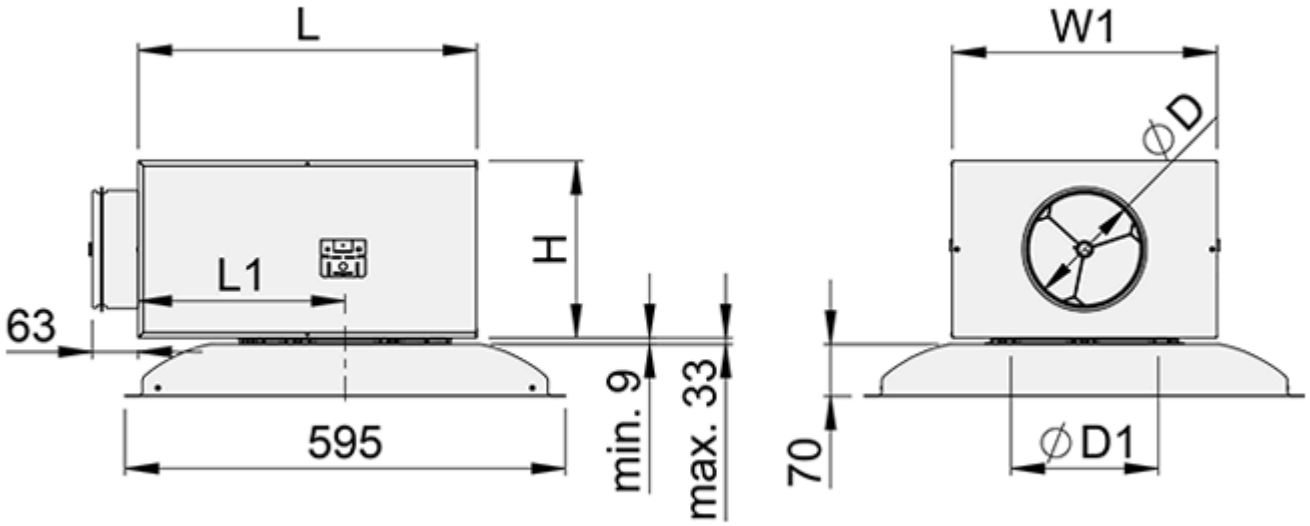


Fig. 6. Dimensions of Halton Jaz JWC with Halton Pop PDI plenum, internally positioned connection spigot

JWC	PDI	ØD [mm]	ØD1 [mm]	L [mm]	W1 [mm]	H [mm]	L1 [mm]	Weight [kg]
160-600	125-160	124	162	308	282	172	168	7.2
	160-160	159	162	459	358	239	280	9.5
200-600	160-200	159	202	459	358	239	280	9.4
	200-200	199	202	459	358	239	280	9.5
250-600	200-250	199	252	459	358	239	280	9.3
	250-250	249	252	520	480	359	280	12.6
315-600	250-315	249	317	520	480	359	280	12.4
	315-315	314	317	520	480	359	280	12.6

2.8 Specification

Square diffuser with swirl function for false ceiling installation, fulfilling the following requirements:

Structure

- Front panel openable and removable to allow general maintenance and cleaning.
- Front panel removable without special tools.
- Swirl air distribution.
- Unit width 595 mm, height 70 mm.
- Inlet duct diameter 160, 200, 250 or 315 mm.

Materials

- Casing and front panel manufactured from steel.
- Casing and front panel white, powder painted in RAL 9003, 30 % gloss.
- Connection spigot manufactured from galvanized steel.
- Connection spigot equipped with a fixed gasket.

Model with balancing plenum

- Diffuser to be connected with a galvanised steel plenum Halton Pop PDI.
- Plenum has an integrated gasket to ensure airtight duct connection.
- Plenum has a removable adjustment module MSM for supply or MEM for exhaust.

Packaging and identification

- The product is protected by a removable plastic coating.
- The product is packed in a cardboard box.
- The product is identified by labels attached both to the product and the cardboard box.

2.9 Order code

JWC-D-A; CO-ZT

Main options	
D = Diffuser duct connection size (mm)	160, 200, 250, 315
A = Diffuser size (mm)	600

Other options and accessories	
CO = Colour	
SW	Signal white (RAL 9003)
X	Special colour (RAL xxxx)
ZT = Tailored product	
N	No
Y	Yes (ETO)

Order code example for JWC	
	JWC-160-600, CO=SW, ZT=N

Sub products and accessories (ordered separately)	
Halton Pop PDI	Balancing plenum

3 Design information

3.1 Design considerations

3.1.1 Installation

Fig. 7. Halton Jaz JWC diffuser connected to a Halton Pop PDI plenum

The diffuser is available in size 595×595 mm for direct installation to the modular T-bar ceiling (600×600) either above or below the list.

The diffuser is usually connected to a balancing plenum Halton Pop PDI (see *Fig. 5*). Alternatively, it can be connected directly to the duct by riveting or screwing. In that case, a minimum safety distance to the next T-branch or curve is three times the duct's diameter (3xØD).

3.1.2 Commissioning

Fig. 8. Adjustment of the airflow of the diffuser and plenum combination.

Airflow control

The diffuser itself has no airflow adjustment. To adjust and measure the supply airflow rate, the diffuser shall be combined with a Halton Pop PDI balancing plenum with a measurement and adjustment module MSM. In case of exhaust air, the use of an adjustment module MEM is recommended. It is not possible to measure exhaust airflow rate with the adjustment module MEM.

Open the front plate and pass the tubes and control spindle through the front panel (see *Fig. 6*). Replace the front panel. Measure the differential pressure with a manometer. The flow rate is calculated using the formula below:

$$q_v = k\sqrt{\Delta p_m}$$

where

- q_v = Airflow rate [l/s] or [m^3/h]
- Δp_m = Measured pressure [Pa]
- k = k factor given as a function of mounting and diameter (see the table below)

Adjust the airflow rate by rotating the control spindle until the desired airflow rate (pressure difference) is achieved.

Set the tubes and spindle back into the plenum. Damper position can be locked with a knurled head screw of the adjuster.

Duct connection (PDI)	k factor of MSM adjuster, opening > 0, [l/s]	
	> 8D	Min. 3D
100	5.7	7.5
125	9.6	12.6
160	16.4	21.9
200	26.3	31.0
250	47.1	51.5
315	78.8	-

Duct connection (PDI)	k factor of MSM adjuster, opening > 0, [m^3/h]	
	>8D	Min. 3D
100	20.6	27.0
125	34.4	45.4
160	59.0	78.8
200	94.8	111.6
250	169.5	185.4
315	283.6	-

3.1.3 Maintenance

Detach the front panel of the diffuser and let it balance on the hinges.

Wipe the diffuser casing and front panel with a damp cloth.

After cleaning, reattach the front panel.

Option with balancing plenum

Remove the measurement and adjustment module by gently pulling from the shaft; not from the control spindle or measurement tubes.

Wipe the components with damp cloth instead of immersing in water. Also wipe the inner part of the plenum; detach the attenuation material, if needed.

Reassemble the module by pushing the shaft until the unit meets the stopper.

After cleaning, reattach the front panel.