

On hold -> Halton TSA – Swirl diffuser

Overview

- Horizontal radial or vertical compact swirl jet air supply
- Suitable for heating and cooling applications
- Specially designed for large and high spaces
- Supply air pattern can be adjusted either manually or controlled by actuator
- High induction swirl jet ensures efficient mixing and fast reduction of air velocity
- Installation using plenum or directly to ductwork

Accessories

- Plenum options with measurement and adjustment functions
- Actuator (with 24 VAC power supply and proportional 0...10 VDC control signal or alternatively self-actuating wax-bulb) for the direction of airflow pattern

Quick selection

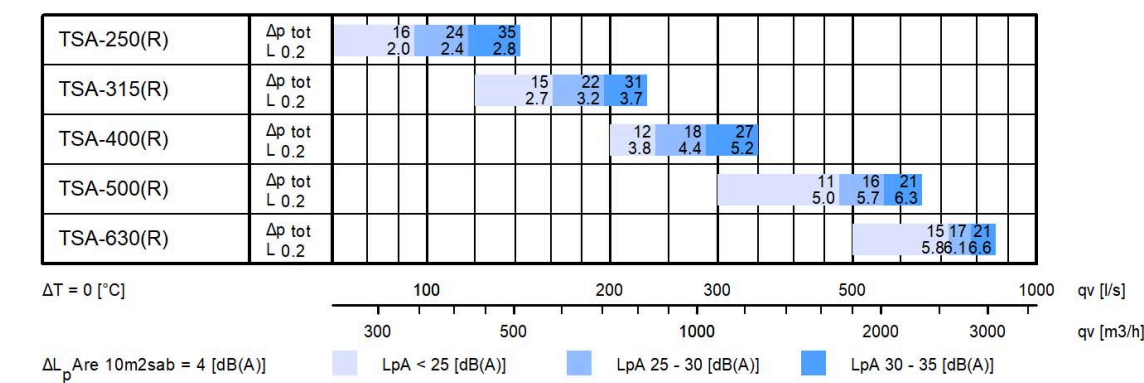


Fig.1. Halton TSA

(radial jet)

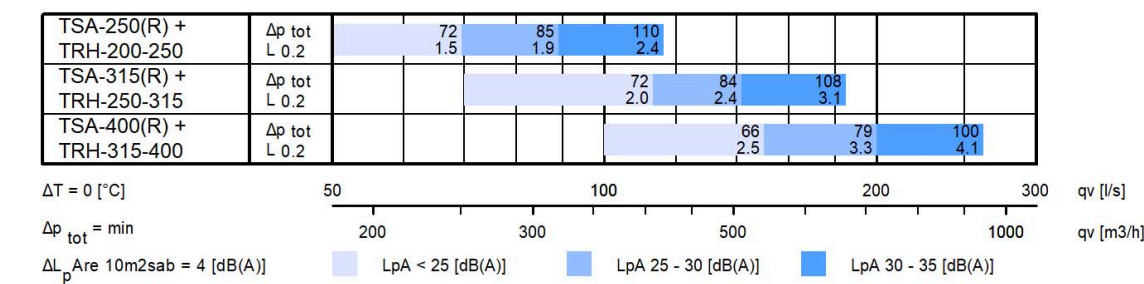


Fig.2. Halton TSA

(radial jet) with Halton TRH plenum.

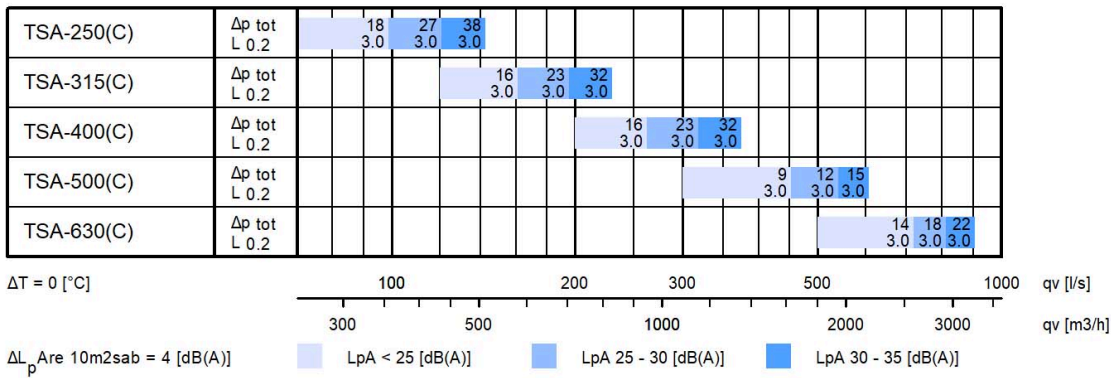


Fig.3. Halton TSA

(compact jet)

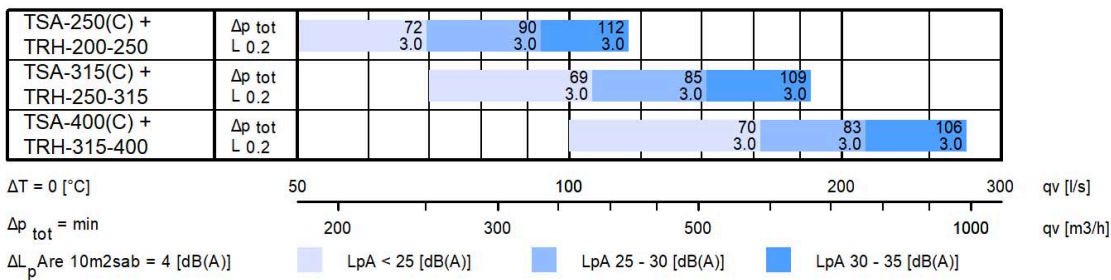
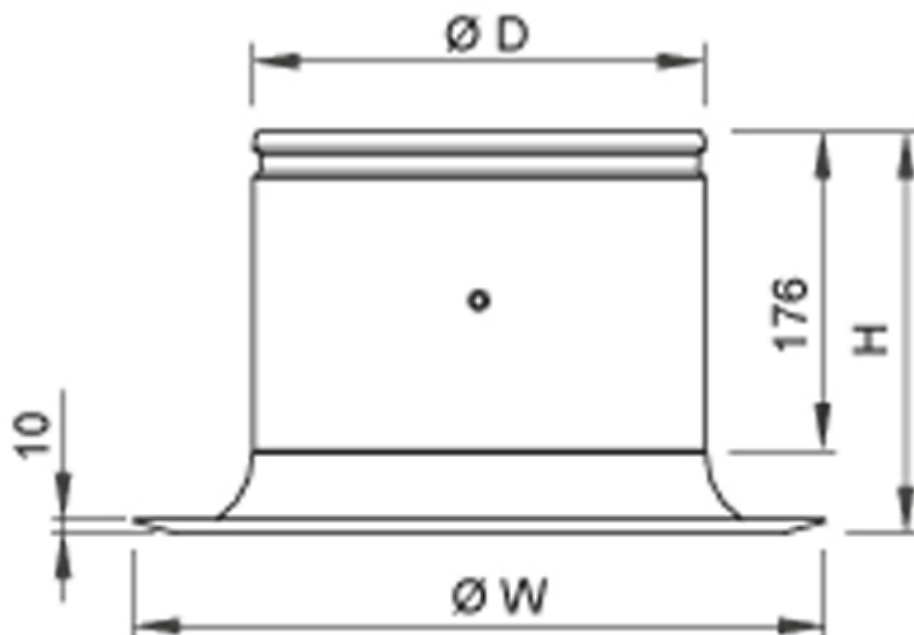


Fig.4. Halton TSA (compact jet) with Halton TRH plenum.

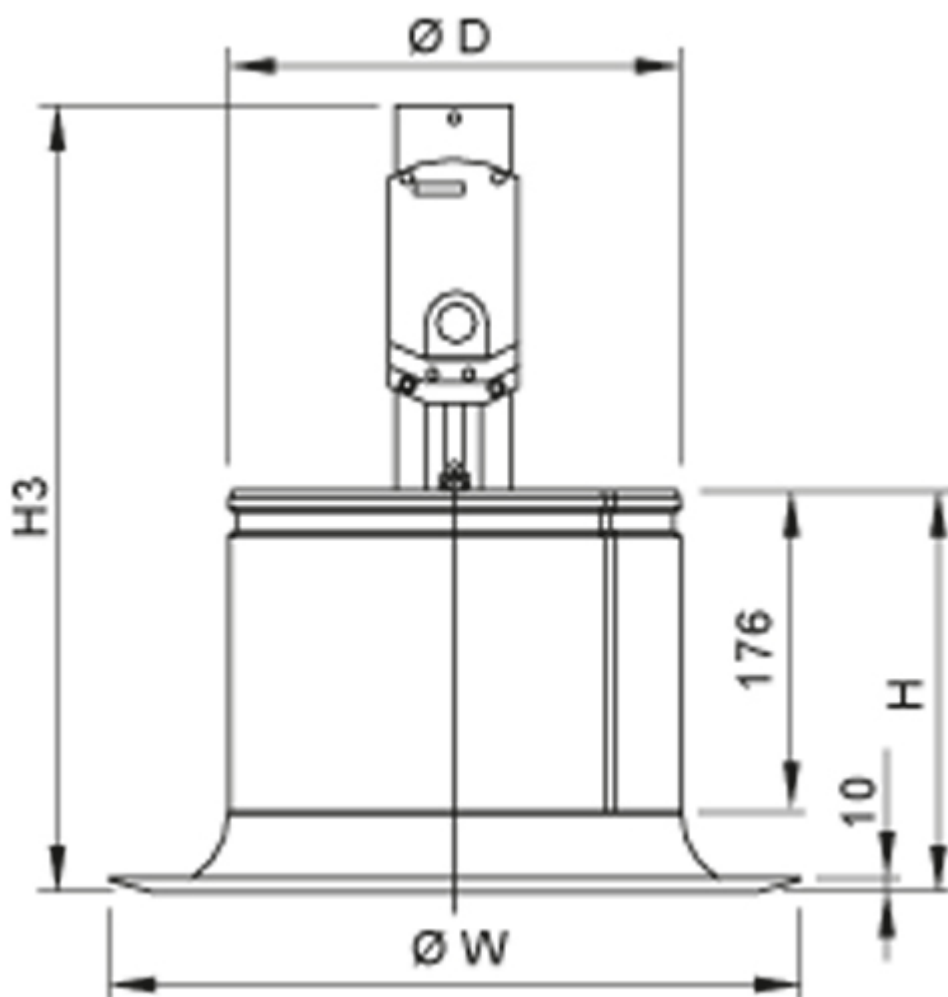
Dimensions and weight

Halton TSA, manually operated



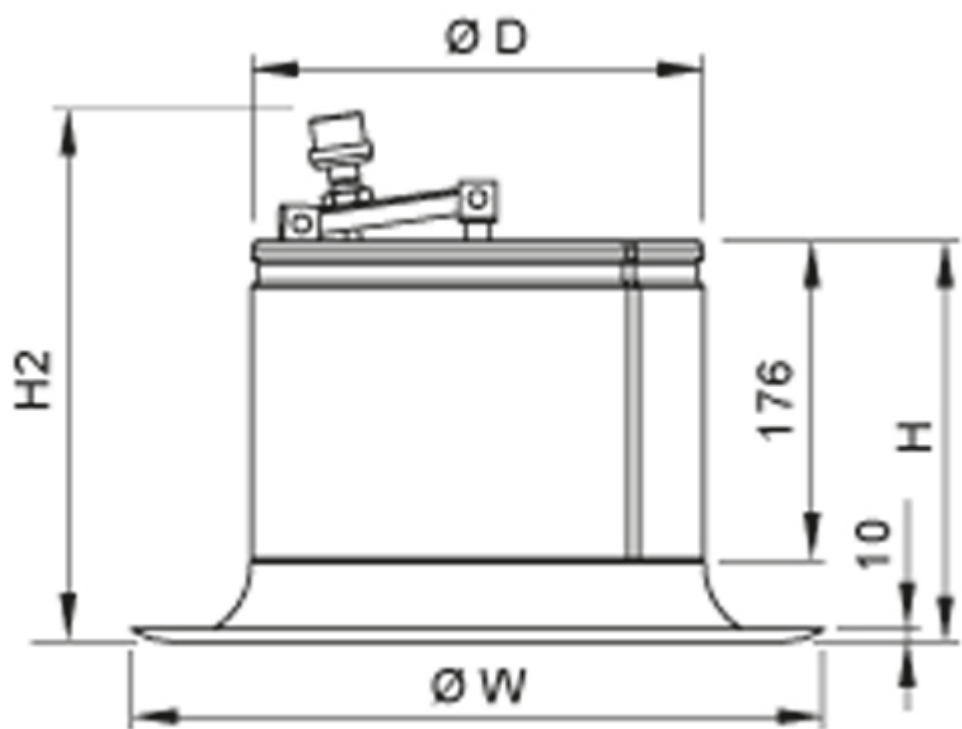
NS	ØD	ØW	H
250	249	382	221
315	314	475	233
400	399	593	246
500	499	735	264
630	629	917	286

Halton TSA, with electrical actuator



NS	ØD	ØW	H	H3
250	249	382	221	430
315	314	475	233	459
400	399	593	246	486
500	499	735	264	499
630	629	917	286	524

Halton TSA, with wax-bulb actuator



NS	ØD	ØW	H	H2
250	249	382	221	273
315	314	475	233	302
400	399	593	246	329
500	499	735	264	342
630	629	917	286	367

Weight (kg)

Halton TSA, manually operated

NS	Weight (kg)
250	3.70
315	4.80
400	7.30
500	9.60
630	11.60

Halton TSA, with wax-bulb actuator

NS	Weight (kg)
250	4.10
315	5.20
400	7.70
500	10.00
630	12.00

Material

Part	Material	Note
Casing	Steel	–
Deflector ring or cylinder	Steel	–
Front vane panel	Steel	–
Knob	Plastic	Colour options: white or black
Finishing	Painted, white (RAL 9003)	Special colours available

Product models

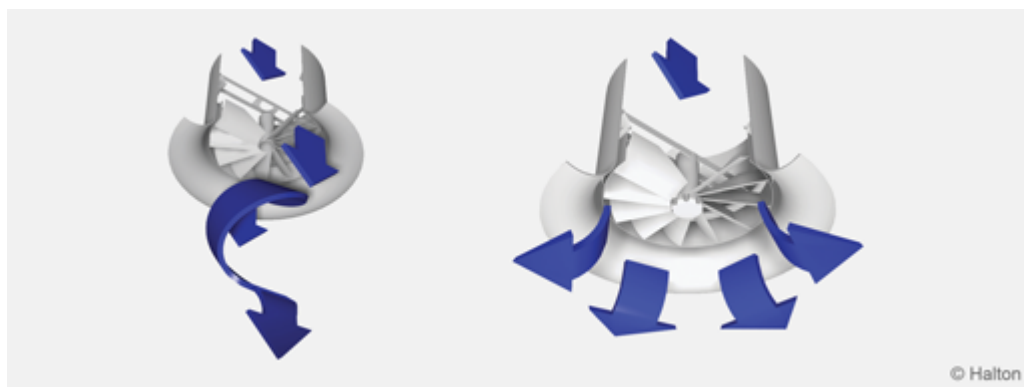
Halton TSA with electric actuator

- Siemens GDB161.2E/HA actuator with 24 VAC power supply and proportional 0...10 VDC control signal

Halton TSA with wax-bulb actuator

- Halton TSA can be equipped with a wax-bulb actuator, which work without any power supply. The cylinder position changes according to the temperature of supply air.
- The temperature range of the wax-bulb actuator is about 20 °C to 27 °C.
- The time taken to change from radial to compact jet (or the other way around) is 10 – 20 minutes.
- When warm air is supplied the piston of the wax bulb actuator keeps moving until the TSA supply air pattern is vertical. When cold air is supplied, the Halton TSA supply air pattern is changed back to horizontal by means of a spring.

Function



Compact jet

Radial Jet

- The Halton TSA is a high induction swirl diffuser with an adjustable flow pattern. The horizontal radial swirl jet is used mainly in cooling applications that use cool supply air or for ventilation with isothermal supply air.
- The vertical compact swirl jet with warm supply air is used in heating applications.
- Adjustment of the supply air pattern is effected by moving the internal adjustment element (cylinder).
- It is also possible to change from cooling mode to heating mode by adjusting the flow pattern using an electric or wax bulb actuator.
- The recommended maximum temperature differences between room and supply air temperatures are +15 °C for heating and -15 °C for cooling applications.

Installation

The diffuser is connected either directly to the duct by screwing or riveting or alternatively to Halton TRI or Halton TRH balancing plenum.

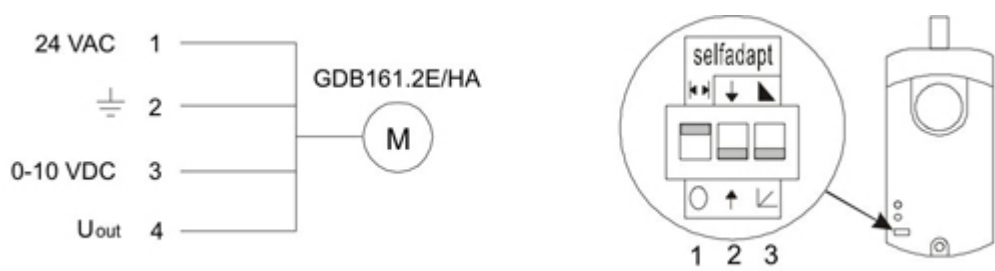
The front vane panel can be reattached

- Remove the screws through the front vane panel (sizes 250 and 315) or between the cylinder and casing (sizes 400, 500 and 630), turn and hold the front vane panel to remove.

Take care during installation to ensure that the cylinder can move freely and that the actuator has adequate installation space. There should be at least 50 mm clearance space above the top of the device when the cylinder is in the lowest position. The connection and fixing rivets or screws may not be located more than 50 mm below the upper edge of the diffuser.

A minimum safety distance upstream of the diffuser of 3xD is recommended.

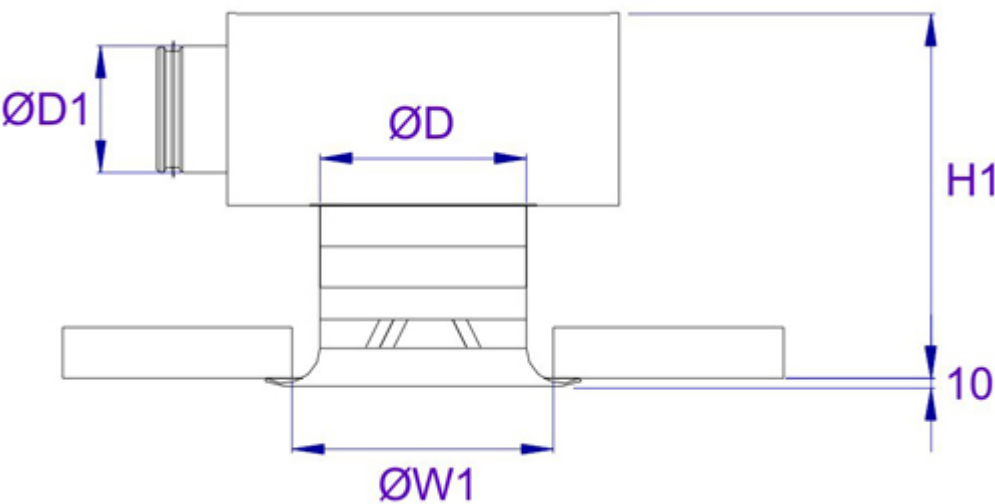
Wiring and DIL switches



DIL switches:

- 1. Automatic adaptation of limited movement length to 0-10 VDC control signal
- 2. Direction of shaft movement based on 0-10 VDC control signal
- 3. Feedback signal

Installation with plenum

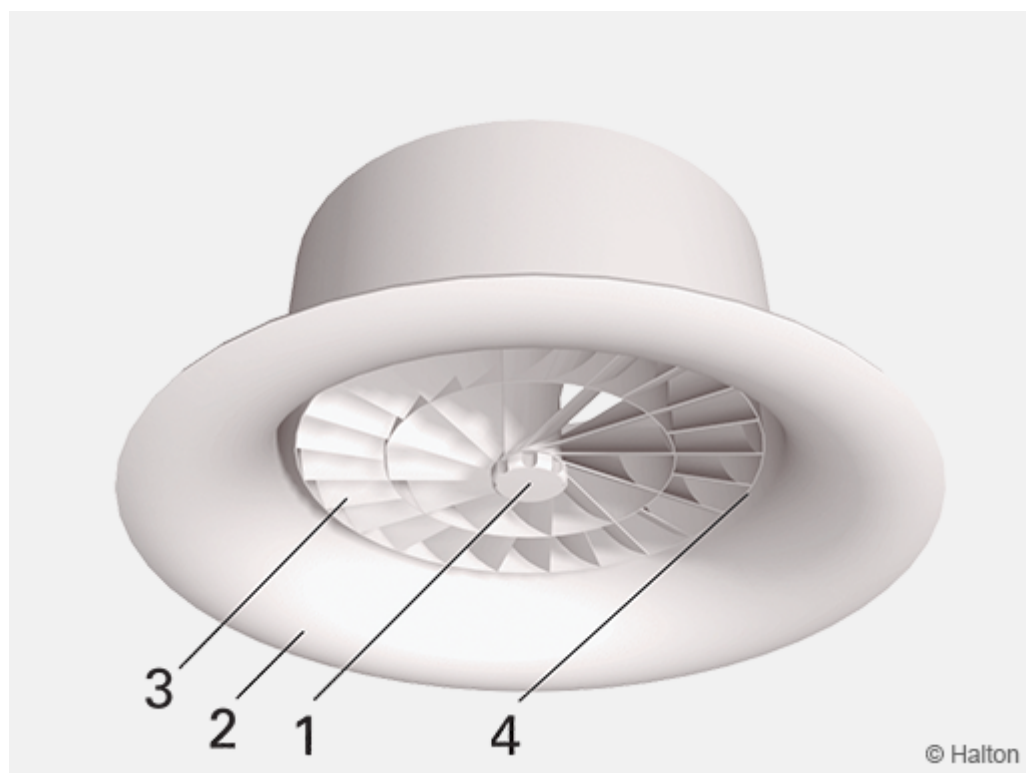


Ensure that the actuator has adequate installation space when installed in Halton TRI plenum. It is recommended to install the collar outwards.
The dimensions are with the outlet sleeve outside the plenum and diffuser without any actuator.

Halton TSA with Halton TRI plenum

NS	$\varnothing D1$	TRI	H1	$\varnothing W1$
250	200	TRI-200-250	390-535	310
315	250	TRI-250-315	465-610	400
400	315	TRI-315-400	525-670	500

Adjustment



Code description

1. Control knob
2. Casing
3. Front vane panel
4. Cylinder

Throw pattern adjustment

The supply air jet is adjusted by changing the position of the cylinder.

When you turn the knob clockwise the throw pattern is changes from radial to compact.

Airflow adjustment

It is not possible to adjust the airflow in Halton TSA itself.

In order to enable airflow adjustment and measurement of airflow rate it is recommended that you connect the diffuser TSA 250, 315 and 400 to the Halton TRI balancing plenum. The supply flow rate is determined by using the measurement and adjustment module MSM.

Pass the tubes and control spindle through the front vane panel.

Measure the differential pressure using a manometer. The flow rate is calculated using the formula below.

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

Adjust the airflow rate by rotating the control spindle until the desired setting is achieved. Replace the tubes and spindle in the plenum.

Servicing

Remove the front vane panel and clean the diffuser by wiping it with a damp cloth, instead of immersing it in water.

Option with balancing plenum

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

Wipe the parts with a damp cloth, instead of immersing them in water.

Remount the measurement and adjustment module by pushing the shaft until the module meets the stopper.

Specification

The diffuser consists of a frame with fixed internal profiled vane rings and a movable cylinder for throw pattern selection.

The front vane panel, the movable cylinder and the frame are made of powder painted steel, with a white (RAL 9003) as standard colour.

The airflow pattern is adjustable automatically using an electrical or wax-bulb actuator, (in applications where both heating and cooling are required.)

Order code

TSA-D; CO-MO-ZT

D = Duct connection size (mm)

250, 315, 400, 500, 630

Other options and accessories

CO = Colour

SW Signal white (RAL 9003)
X Special colour (RAL xxxx)

MO = Actuator type

NA No actuator
M2 24 VAC actuator, 0...10 VDC control signal
M3 Wax-bulb actuator

ZT = Tailored product

N No
Y Yes (ETO)

Sub products

TRH Plenum
TRI Plenum

Code example

TSA-250, CO=SW, MO=NA, ZT=N