

Private: Halton Vita Lab VFH – Airflow damper

Overview

Halton Vita Lab

VFH – airflow management damper

Halton VFH is a galvanised steel damper for all Halton Vita Lab solutions:

- In Halton Vita Lab Solo:
 - For exhaust installations, to control the fume cupboard exhaust airflow
 - For general exhaust ventilation design applications (fume cupboard exhausts are connected to one common fan)
- In Halton Vita Lab Room:
 - For supply and exhaust installations, to control room supply airflow or room supply exhaust
 - External insulation available (VFH/I)
- In Halton Vita Lab Zone:

- For exhaust installation, to control the zone exhaust pressure
- The addition of a static pressure measuring unit (MSS) is recommended for measuring the static pressure
- External insulation available (VFH/I)
- Delivered with an integrated control box containing a differential pressure sensor for airflow measurement, a Halton VLC controller and a fast actuator

Product characteristics

- Corrosion-proof, galvanised steel
- Circular inlet, circular outlet
- Complete shut-off function (blade gasket), complies with EN 1751 class 4
- Casing tightness complies with EN 1751 class C
- Maximum differential pressure over the damper of 1000 Pa
- Operating range : ambient temperature of 0 to 50 °C
- Ambient relative humidity <95%, non-condensing

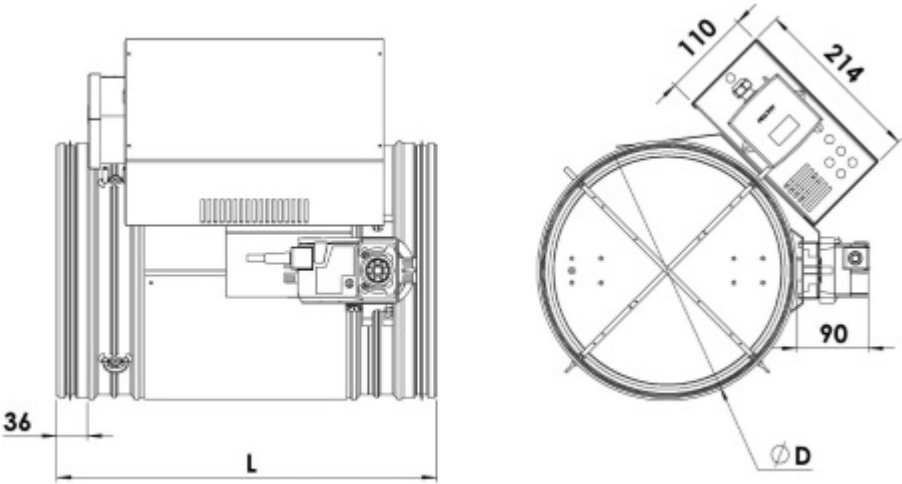
Product models and options

- VFH/G without insulation
- VFH/I with insulation (50mm)
- Electrical reheater available as special accessory
- Available sizes : 100, 125, 160, 200, 250, 315, 400 and 500

The Halton Vita Lab Solo and Halton Vita Lab Room Design Guides available from Halton Sales provide you with more information about selecting the right configuration and damper for your Halton Vita Lab solution. However, as all designs vary, close cooperation with Halton is recommended in order to ensure the best results.

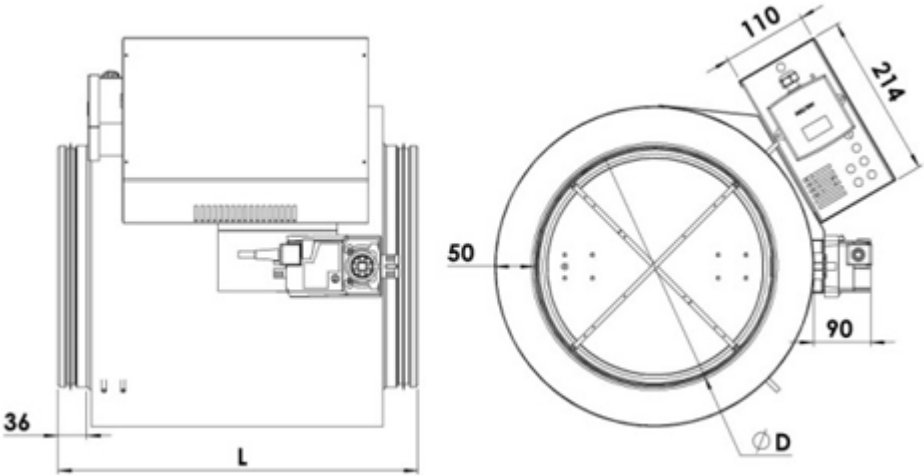
Dimensions

Halton VFH/G



NS	D	L
100	98	370
125	123	370
160	158	370
200	198	470
250	248	470
315	313	470
400	398	625
500	498	625

Halton VFH/I



NS	D	L
100	98	365
125	123	365
160	158	365
200	198	465
250	248	465
315	313	465
400	398	675
500	498	675

Airflow ranges per size

Minimum and maximum airflow ranges for the different sizes for Halton VFH in l/s and m³/h (max is based on damper velocity of 8 m/s):

NS	Qmin	Q for 8m/s
100	8 l/s	64 l/s
	29 m ³ /h	230 m ³ /h
125	13 l/s	104 l/s
	47 m ³ /h	374 m ³ /h
160	20 l/s	160 l/s
	72 m ³ /h	576 m ³ /h
200	32 l/s	256 l/s
	115 m ³ /h	922 m ³ /h
250	49 l/s	392 l/s
	176 m ³ /h	1411 m ³ /h
315	78 l/s	624 l/s
	281 m ³ /h	2246 m ³ /h
400	126 l/s	1008 l/s
	454 m ³ /h	3629 m ³ /h
500	197 l/s	1576 l/s
	709 m ³ /h	5674 m ³ /h

Material

Part	Material
Casing	Galvanised steel
Damper blade	Galvanised steel
Shaft	Zinc coat steel
Bearings	HDPE (Polyethylene Resin)
Blade gasket	EPDM Rubber
Duct gaskets	1C-polyurethane hybrid
Measurement probe	Aluminium
Tube Connectors	Polyacetal
Flexible tubes	Plastic
External insulation	Mineral wool
Control Box	Galvanised steel (Control option : CB = CB1)

Function

Depending on the application, the damper maintains the required airflow in the fume cupboard, the room and/or the duct. A stable airflow is achieved through accurate measurement and airflow control, regardless of the variation in the conditions.

The damper is controlled by the Halton VLC controller (premounted on the unit in the control box). The VLC retrieves the measured sensor values of the Halton Vita Lab system and compares them with the assigned setpoint. The differential pressure sensor integrated in the damper measures the pressure with a measurement probe and calculates the airflow rate.

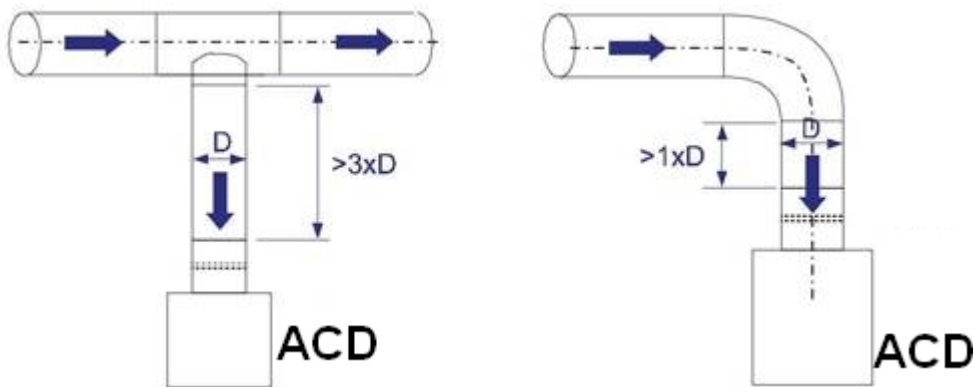
Based on the calculations, the VLC then adapts the damper position or frequency using a PID control in order to maintain a constant face velocity. If the airflow does not reach the predefined setpoint, an audio-visual alarm is triggered.

For more information about the operation of the damper as part of the Halton Vita Lab systems, see the Halton Vita Lab Solo Design Guide and the Halton Vita Lab Room Design Guide available from Halton Sales.

Installation

The damper can be installed horizontally, vertically or in any other position without impact on the measurement performance

The required safety distances must be taken into account when installing the damper. Install the unit into the ductwork so the airflow direction through the unit is as indicated:

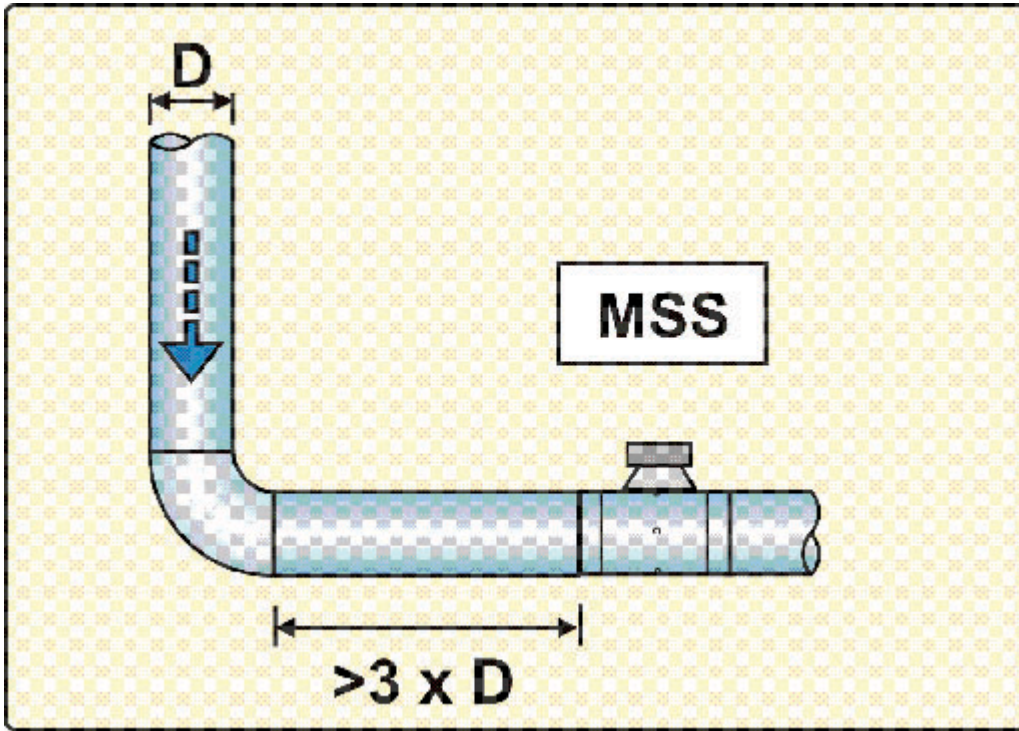


Static pressure measurement

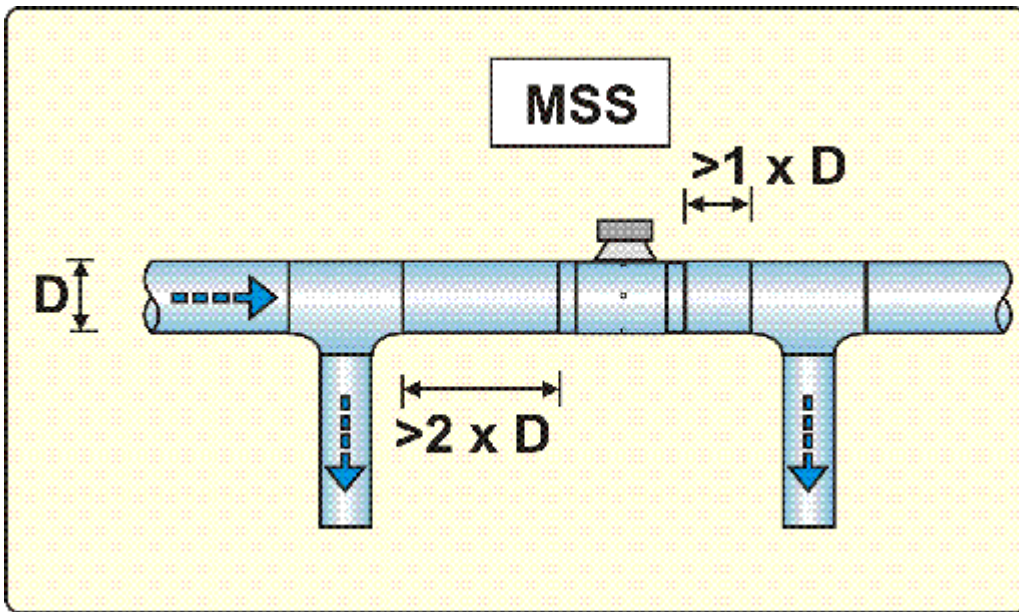
When using the damper in Halton Vita Lab Zone applications, the addition of a static pressure measuring unit (Halton MSS) is recommended for increasing the accuracy of static pressure measurement.

In order to ensure the accuracy of the duct static pressure measurement, consider the safety distances between the measuring unit and airflow disturbances as follows:

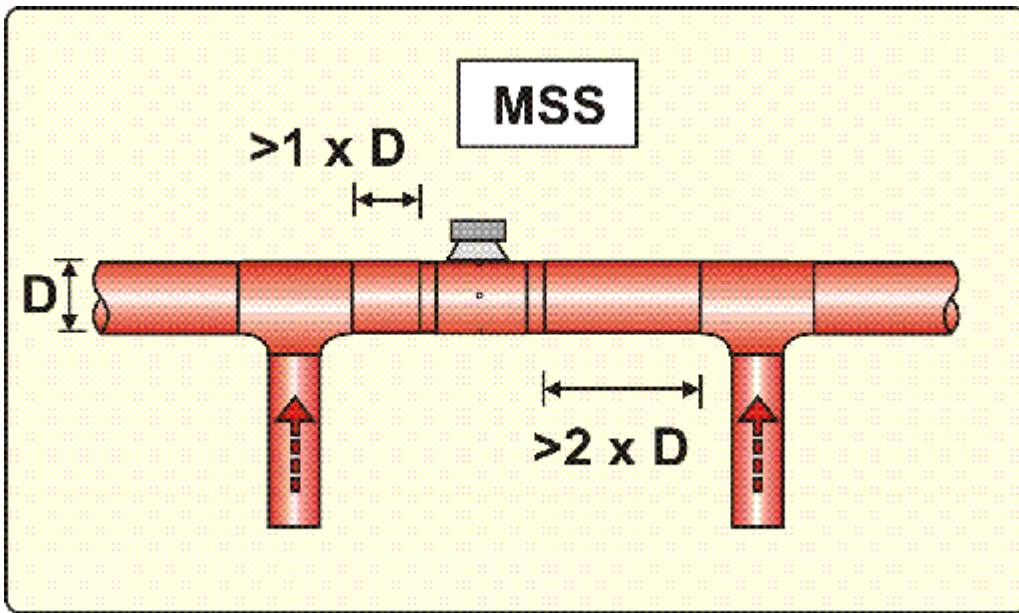
90° elbow



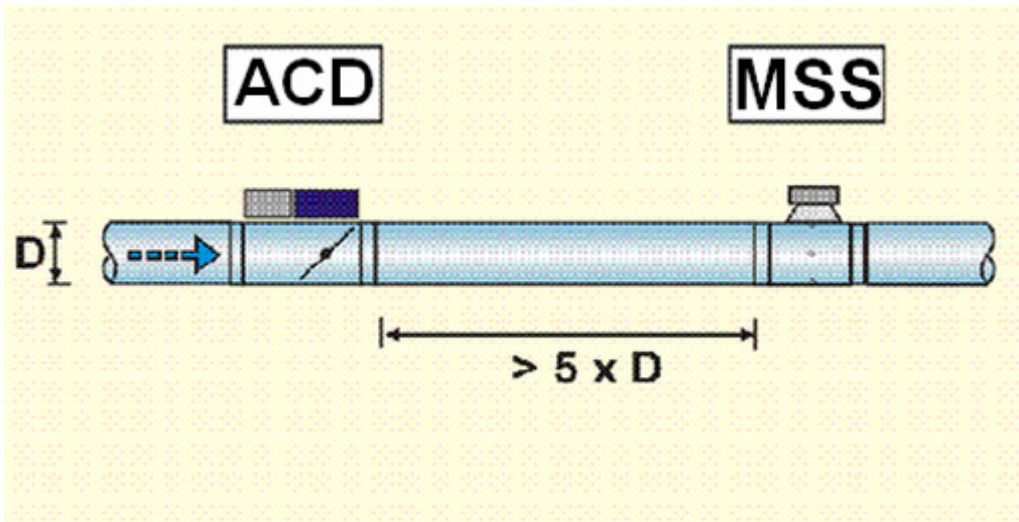
Branch on supply duct



Branch on exhaust duct



Safety distance between damper and MSS, straight duct



Installation instructions and project-specific wiring diagrams are provided by Halton for all Halton Vita Lab system configurations. For more information, see the relevant Halton Vita Lab Solo and Halton Vita Lab Room Design Guides available from Halton Sales.

Commissioning

The actual airflow can be calculated as a function of the differential pressure at the measurement probe and the measurement probe k factor as follows:

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

Q_v Actual airflow rate

k k-value for the product (see table below)

Δp_m Differential pressure of the measurement probe [Pa]

NS	k (l/s)	k (m3/h)
100	5,7	20,6
125	9,4	33,8
160	17,2	62
200	27,8	99,9
250	43,9	158,1
315	72,3	260,1
400	127	457,1
500	200	719,9

Specification

Damper for supply and/or exhaust installations in Halton Vita Lab Solo, Vita Lab Room and Vita Lab Zone applications:

Variable airflow control damper used for measuring and controlling the exhaust airflow of fume cupboards connected to a common exhaust fan or for controlling the airflow and pressure of the laboratory space or zone.

Damper made of galvanised steel with measurement probe pipes made of aluminium.

Pressure-independent damper equipped with

- integral airtight rubber gaskets for duct connection
- a differential pressure sensor with auto-zero calibration and a digital display for airflow measurement
- an airflow controller
- a damper actuator using the LMS technology (Load Moment Stop) for extending product lifetime
- external insulation made of mineral wool as an option for air-radiated noise reduction

Compliance with standards:

- Tightness of the control damper in closed position (EN1751 class 4)
- Casing tightness (EN 1751 class C).

Short damper construction (<500mm).

Installation possible in any position without impact on the measurement performance.

Integration to fast systems possible due to:

- the differential pressure sensor's standard time constant of 0.5s

the actuator's reaction time of 1.5s (damper sizes of up to 250mm)

Product Code

VFH/M-D; MA-ZT

M = Model

G Damper with blade gasket

I Damper with blade gasket, insulation 50 mm

D = Diameter of duct connection

100, 125, 160, 200, 250, 315, 400, 500

Other options and accessories

MA = Material

CS Galvanised steel

ZT = Tailored product

N No

Code example

VFH/G-100, MA=CS, ZT=N