Halton RMK, airflow management damper - Technical description

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1 Introduction

1.1 About this document

The purpose of this document is to give technical information and design examples for salespersons, technical support and designers.

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1.3 Summary of changes

Release	Date	Description
1.1	20.10.2026	Updated the "2.3 Structure and materials and 2.6 Specification" sections regarding casing information.
1.0	30.06.2026	First published version

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2 Product description

2.1 Overview



The Halton RMK is a mechanical airflow controller designed to maintain a constant airflow rate in terminal or secondary ducts, independent of system pressure variations. This makes it suitable for demanding CAV applications.

The dual blade design ensures stable regulation, accurate performance, and low noise levels across the operating range. Fully mechanical operation eliminates the need for an external power supply, improving reliability and simplifying installation. Durable metal construction supports a long service life, while energy efficient airflow control reduces fan energy usage.

Application areas

- Commercial buildings
- Healthcare facilities
- Industrial and technical facilities

Key features

- On/off or proportional actuation available on request.
- For high airflow rates, the Halton RMK is available in a Twin version (dual-blade design).
- Model with external insulation is available as an option
- Sound attenuator (accessory)
- Coil casing (accessory)

2.2 Operating principle

The regulation is based on variations in dynamic pressure caused by changes in upstream static pressure. Changes in dynamic pressure act on the airflow controller, which moves a damper blade balanced by a calibrated spring. By continuously adjusting the effective air passage cross-section, the blade modifies the pressure drop across the device to compensate for pressure variations and maintain a constant airflow rate. An integrated damping mechanism stabilises the blade movement and prevents oscillation until the equilibrium position is reached.

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Halton RMK operates as a fully self-regulating unit, requiring no external power supply and maintaining airflow independent of upstream pressure. Airflow is controlled by an adjustable, factory-calibrated spring. The setpoint within the regulation range can be modified by changing the spring compression.

The airflow can be adjusted directly on site by tightening the adjustment screw according to the flow scale indicated on the adjustment cylinder.

Operating range

The constant airflow damper operates from a minimum pressure difference over the unit, which depends on the air velocity to a maximum of 1000 Pa.

Halton RMK

Size	qv min.	qv max	qv min.	qv max	v min.	v max	d_{pst} min.	d_{pst} max
[mm]	[m^3h]	[m^3h]	[l/s]	[l/s]	[m/s]	[m/s]	[Pa]	[Pa]
150 x 150	243	729	67.5	202.5	32	9	50	1000
300 x 100	216	799	60	222	2.0	7.4	50	1000
300 x 150	486	1458	135	405	3	9	50	1000
200 x 200	432	1296	120	360	3	9	50	1000
300 x 200	648	1944	180	540	3	9	50	1000
400 x 100	302	1094	84	304	2.1	7.6	50	1000
400 x 200	864	2592	240	720	3	9	50	1000
300 x 300	972	2916	270	810	3	9	50	1000
450 x 300	1458	4374	405	1215	3	9	50	1000
600 x 300	1944	5832	540	1620	3	9	50	1000

Halton RMK, Twin

Size	qv min.	qv max	qv min.	qv max	v min.	v max	d_{pst} min.	d_{pst} max
[mm]	[m^3h]	[m^3h]	[l/s]	[l/s]	[m/s]	[m/s]	[Pa]	[Pa]
400 x 400	1728	5184	480	1440	3	9	50	1000
500 x 400	2160	6480	600	1800	3	9	50	1000
600 x 400	2592	7776	720	2160	3	9	50	1000
500 x 500	2700	8100	750	2250	3	9	50	1000
600 x 500	3240	9720	900	2700	3	9	50	1000
600 x 600	3888	11664	1080	3240	3	9	50	1000

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2.3 Structure and materials

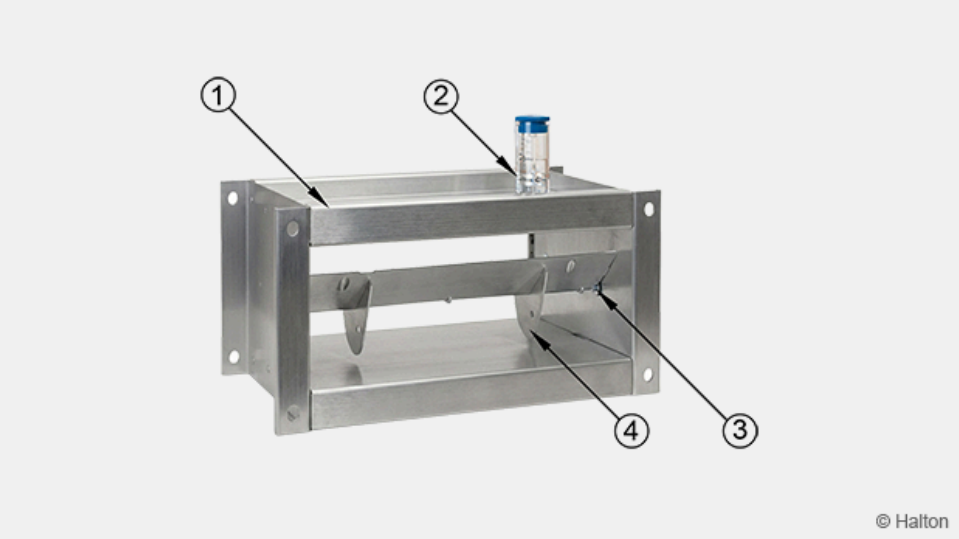
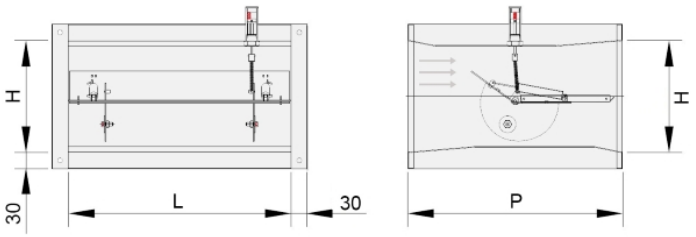


Fig. 1. Halton RMK, structure

No.	Part	Material	Note
1	Casing	Galvanised steel	All Halton RMK models are optionally available in AISI 316L stainless steel and ATEX versions.
2	Adjustment tube	Plastic	-
3	Damper blade bearings	PTFE	-
4	Damper blade	Aluminium	-

2.4 Dimensions

Halton RMK, dimensions



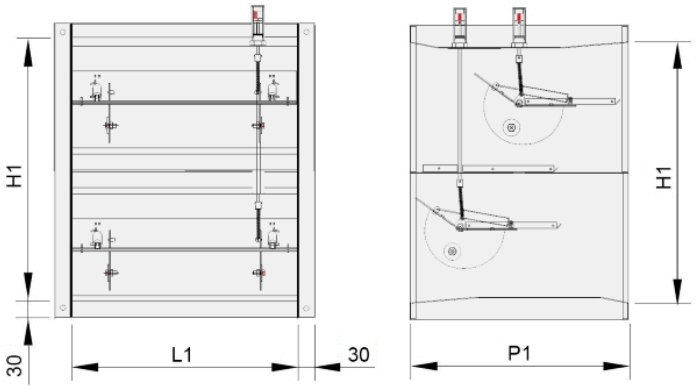
Size [mm]	RMK		RMK/I*		P [mm]
	L [mm]	H [mm]	L [mm]	H [mm]	
150 x 150	150	150	210	210	220
300 x 100	300	100	360	160	220
300 x 150	300	100	360	160	220
200 x 200	200	200	260	260	220

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Size [mm]	RMK		RMK/I*		P [mm]
	L [mm]	H [mm]	L [mm]	H [mm]	
300 x 200	300	200	360	260	220
400 x 100	400	100	460	260	220
400 x 200	400	200	460	160	220
300 x 300	300	300	360	360	385
450 x 300	450	300	510	360	385
600 x 300	600	300	660	360	385

*Insulated (30 mm)

Halton RMK twin dimensions



Size [mm]	L1 [mm]	H1 [mm]	P [mm]
400 x 400	400	400	385
500 x 400	500	400	385
600 x 400	500	400	385
500 x 500	500	500	385
600 x 500	600	500	385
600 x 600	600	600	385

2.5 Product models

Product model	Code	Description
Standard	N	Without insulation
Insulation	I	Mineral wool, thickness 30 mm, for sound insulation and reduction of heat transfer

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2.6 Specification

Rectangular mechanical constant airflow damper (CAV) with self- balancing operation for supply and exhaust installations, fullfilling the following requirements:

Function

- The constant airflow damper operates without an external electrical or pneumatic.
- The damper operates with an adjustable spring.
- No external electrical or pneumatic control required.
- The factory-set airflow can be adjusted on site.
- The maximum air temperature is 100 °C.
- The pressure range is 50–1000 Pa.

Materials

- The damper casing is made of galvanised steel. However, all models are optionally available in AISI 316L stainless steel and ATEX versions.
- The damper blade and adjustment device are made of aluminium.
- The bearings are low-friction PTFE (Teflon).
- The damper casing is insulated with mineral wool as sound and thermal insulation material (optional).

Structure

- Sizes from 150 x 150 to 600 x 600

2.7 Order code

RMK-M-L-H; ZT

Main options	
M = Model	
N	Standard (without insulation)
I	Insulated (30 mm)
L = Length [mm]	150, 200, 300, 400, 450, 500, 600
H = Height [mm]	100, 150, 200, 300, 400, 500, 600

Other options and accessories	
ZT = Tailored product	
N	No
Y	Yes (ETO)

Order code example
RMK-N-400-150; ZT=N

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3 Design information

3.1 Installation

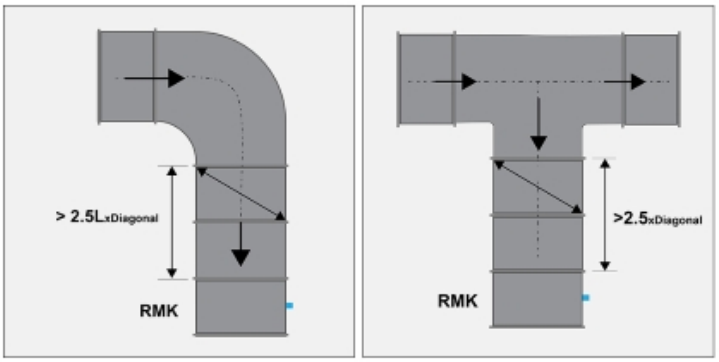
The rectangular airflow management damper (CAV) is installed directly into the duct system. The damper can be installed on both horizontal and vertical ducts. However, when installed in vertical ducts, the adjustable spring must be positioned horizontally.

Follow the indicated airflow direction on the damper casing. The damper suits both supply and extract air ducts. Provide sufficient straight duct lengths upstream and downstream to ensure stable airflow control.

Safety distances for the damper

The airflow control damper should be installed in an undisturbed airflow. The airflow velocity profile in the duct should be sufficiently even, without disturbances from bends, T-branches, etc.

The required safety distance after a bend (90° elbow) or T-branch is 2.5 times the duct cross section diagonal (2.5 Diagonal). The damper should be installed so that the arrow points in the direction of the airflow. See the installation examples below.



3.2 Commissioning

The damper is factory set or can be adjusted on site to the required constant airflow value using the integrated mechanical adjustment device. Commissioning is performed without an external power supply. The airflow can be adjusted on site by tightening the adjustment screw, in accordance with the flow scale indicated on the adjustment cylinder.

Once set, the damper automatically maintains the specified airflow rate within its operating pressure range, eliminating the need for system balancing. Effective commissioning is achieved by reading and verifying the airflow setting on the built in scale.

3.3 Maintenance

All components are designed to be maintenance-free, non-ageing, and corrosion-resistant under normal operating conditions. Routine functional checks are generally unnecessary. However, accessibility for inspection and commissioning must be ensured in accordance with the standard DIN EN 12097, which specifies access requirements for ventilation duct systems.

In standard applications, no further maintenance actions are required beyond ensuring that installation conditions and airflow profiles remain within the specified operating parameters.

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