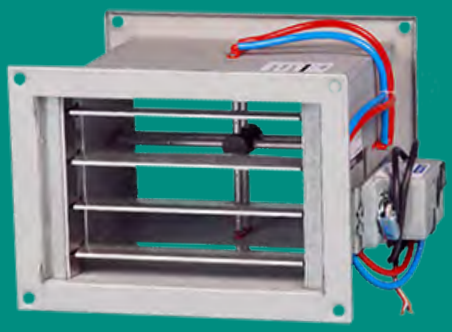
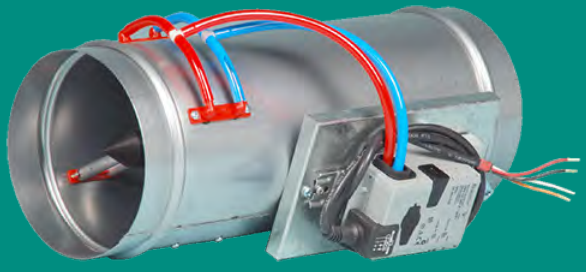
WATERLOO
A Swegon Group Company

Operating and Maintenance

WVSV-WR-WLM Series VAV Devices





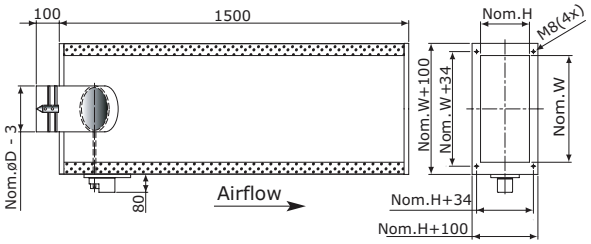
Operation and Maintenance Instructions

WVSV

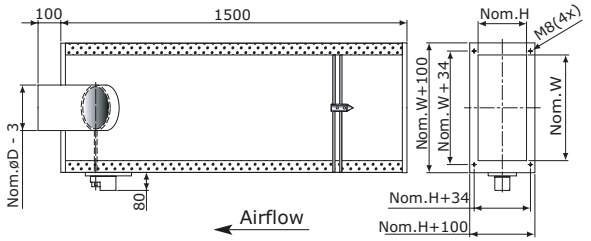
Introduction

Waterloo WVSV series are variable air volume dampers for supply or extract applications, complete with integral attenuator, flow sensor and motor with integral Belimo actuator. Applicable in all positions, it is manufactured to fit standard duct sizes. The unit is fitted with a Belimo LMV-D3 actuator as standard and is factory set to customer requirements.

Dimensions Table								
Nom.ØD	100	125	160	200	250	315	355	400
Nom.W	300	300	300	400	400	400	600	600
Nom.H	200	200	200	250	300	350	400	400
L	400	400	400	450	550	700	830	830



WVSV-S



WVSV-E

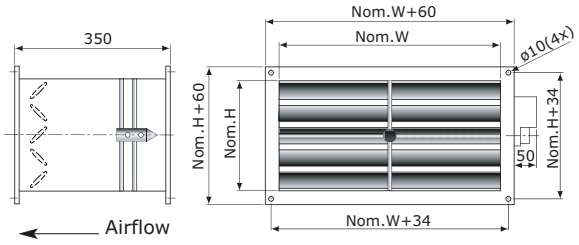
WLM

Introduction

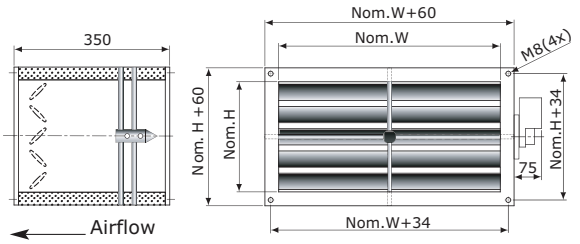
Waterloo WLM series are variable air volume dampers for supply or extract applications, complete with integral attenuator, flow sensor and motor with integral Belimo actuator. Applicable in all positions, it is manufactured to fit standard duct sizes. The unit is fitted with a Belimo LMV-D3 actuator as standard and is factory set to customer requirements.

Sizes

Nom. Width 200 - 1000 mm in Increments 50 mm
Nom. Height 200 - 600 mm in Increments 50 mm



WLMS



WLMD

WR

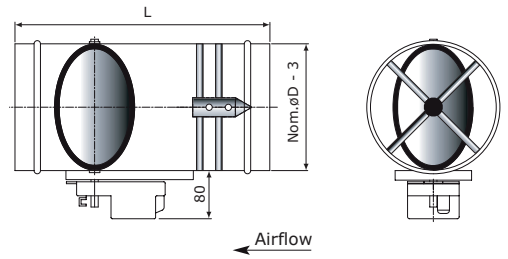
Introduction

Waterloo WR series are variable air volume dampers for supply or extract applications, complete with integral attenuator, flow sensor and motor with integral Belimo actuator.

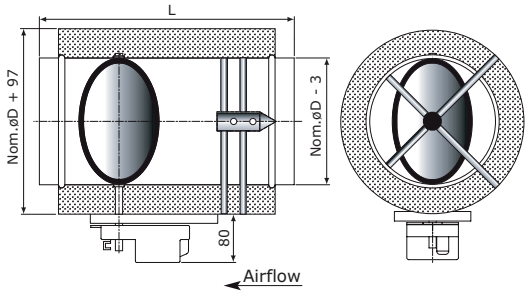
Applicable in all positions, it is manufactured to fit standard duct sizes. The unit is fitted with a Belimo LMV-D3 actuator as standard and is factory set to customer requirements.

Sizes

Ø 100, Ø 125, Ø 160, Ø 200,
Ø 250, Ø 315, Ø 355, Ø 400



WRS



WRD

Operation and Maintenance Instructions

WVSV / WLM / WR

Selection

VAVs are variable air volume devices. Their intended function is to change the volume of air delivered into a room most typically in response to demand established by thermostats or building management systems. The VAV is controlled using a damper driven by an electrical actuator. The actuator uses either a 0-10v or 2-10v signal to position the damper to achieve the desired air volume.

In a typical system the design air volume is that at maximum load in the room. This volume is the effective maximum and as a rule this is known as V_{max}.

If the system uses a turn down ratio to establish the minimum value at which the ATDs will operate effectively this is typically, but not exclusively, limited to 50% of V_{max}. For regulating systems where there is no specified turn down ratio the minimum operating volume is determined by the capacity of the selected VAV.

VAV capacity is governed by the size nominally of the unit. The capacity is referred to as V_{nom} and represents the volume of air at 10m/s velocity through the unit. The standard method of selection would aim to use a V_{max} of no more than 80% of V_{nom} (ie 8m/s through the unit) If this is not possible, V_{max} should be no less than 40% of V_{nom} (ie 4m/s through the unit).

Where a 50% turn down is not specified, for best practice, V_{min} should be limited to 30% of V_{nom} or 3m/s through the unit. The absolute limit is 20% of V_{nom} or 2m/s. It is not possible to calibrate the actuator to operate at lower velocities, and therefore to improve accuracy and the level of controllability use the 30% V_{nom} value wherever possible. The only alternative is to use the 2–10v range and to set the 2v at zero flow. Setting 0v at zero flow is not permitted.

Installation

Correct duct entry conditions are extremely important for ensuring that a VAV performs as intended. The VAV must be mounted a minimum of 2 hydraulic diameters of straight ducting from any device. Any variation from these inlet conditions will result in a deviation from the calibrated flow range specified at time of order. In such instances the actuators will need to be recalibrated on site. It is the responsibility of the customer to resolve such issues.

Connection

Note the flow direction indicated on the product in relation to the installation requirement. Mount the VAV noting the location of the actuator for easy access. Connect the round and rectangular duct for WVSV, for WR connect the round duct and for WLM connect the rectangular duct sections as per accepted standard practice taking care not to damage the flow sensor connections on the spigot.

Please ensure that the pressure connections to the actuator are secure. All VAV unit actuators supplied as original equipment are precalibrated in the factory to the customer required settings in accordance with the product selection criteria.

The Belimo actuator wiring and control information is provided by the addendum of this manual for use by the controls engineer. The standard LMV-D3 actuator is self contained. The Waterloo flow sensor provides the differential pressure signal used by the Belimo actuator to position itself in accordance with the calibration.

Any additional instrumentation or controls fall outside the scope of this manual

Maintenance

To clean, use warm soapy water and a damp cloth. Wipe down the internal and external surfaces and leave to dry. For any control circuits and instrumentation fitted to the unit use proprietary and approved aerosol de-dusters only. The VAV does not require on-going maintenance other than to ensure that the pressure signal tubes are in good condition and are secured at both ends.

Should a fault occur with the actuator then it can be replaced with an identical precalibrated unit. Should it be neceessary to reassign the flow range of the VAV within the allowable scope of the unit then the actuator can be recalibrated using the appropriate instrumentation.

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