



TYPE VFC

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FOR LOW AIRFLOW VELOCITIES

Circular mechanical self-powered volume flow controllers for the control of supply air or extract air in constant air volume systems with low airflow velocities

- Suitable for airflow velocities from 0.8 m/s
- Very simple commissioning
- Volume flow rate can be set using a rotary knob and a scale on the outside of the casing
- Simple retrofit of an actuator for variable volume flows
- Any installation orientation; maintenance-free
- Casing air leakage to EN 1751, class C

Optional equipment and accessories

- Secondary silencer Type CA, CS or CF for the reduction of air-regenerated noise
- Hot water heat exchanger Type WL and electric air heater Type EL for reheating the airflow
- Actuator for variable volume flows or for V_{\min} / V_{\max} switching

Application

Application

- Circular CAV controllers of Type VFC for the precise supply air or extract air flow control in constant air volume systems
- Mechanical self-powered volume flow control without external power supply
- For low airflow velocities
- Simplified project handling with orders based on nominal size

Special features

- Volume flow rate can be set using an external scale; no tools required
- Simple retrofit of an actuator is possible
- Correct operation even under unfavourable upstream or downstream conditions (1.5 D straight section required upstream)
- Any installation orientation
- Aerodynamic function testing of each unit on a special test rig prior to shipping

Description

Parts and characteristics

- Ready-to-commission controller
- Damper blade with low-friction bearings
- Bellows that acts as an oscillation damper
- Leaf spring
- Rotary knob with pointer for setting the volume flow rate
- Lip seal

Attachments

- Min/Max actuators: Actuators for switching between minimum and maximum volume flow rate setpoint values
- Modulating actuators: Actuators for the stepless adjustment of volume flow rates

Useful additions

- Secondary silencer Type CA, CS or CF
- Heat exchanger Type WL
- Electric air heater Type EL

Construction features

- Circular casing
- Spigot with lip seal, for circular connecting ducts to EN 1506 or EN 13180
- Damper blade with low-friction bearings and special bellows

Materials and surfaces

- Casing made of galvanised sheet steel
- Damper blade and other parts made of high-quality plastic, to UL 94, V1; to DIN 4102, material classification B2
- Leaf spring made of stainless steel
- Polyurethane bellows

INFORMACIÓN TÉCNICA

Functional description

The volume flow controllers work without an external power supply.

A damper blade with low-friction bearings is adjusted by aerodynamic forces such that a set volume flow rate is maintained within the differential pressure range.

The aerodynamic forces of the airflow create a closing torque on the damper blade.

The bellows extends and increases this force while at the same time acting as an oscillation damper.

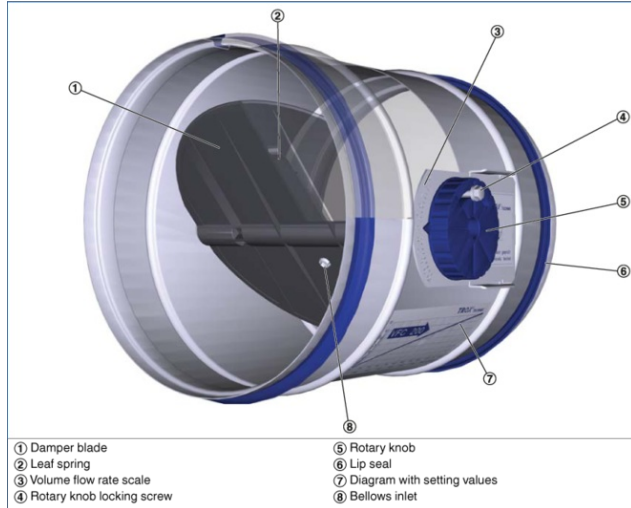
The closing force is countered by a leaf spring. As the differential pressure changes, the leaf spring adjusts the position of the damper blade such that the volume flow rate is maintained almost exactly.

Efficient commissioning

The volume flow rate setpoint value can be set quickly and easily using the pointer on the external scale; no measurements are required.

The advantage over flow adjustment dampers is that there is no need for repeat measurements or adjustments by an air conditioning engineer. Should the system pressure change, e.g. by opening or closing of duct sections, the flow rates in the entire system will also change if flow adjustment dampers are used; however, this is not the case with mechanical self-powered volume flow controllers. A mechanical self-powered controller reacts immediately and adjusts the damper blade such that the set constant volume flow rate is maintained.

Schematic illustration of the VFC



Nominal sizes	80 – 250 mm
Volume flow rate range	6 – 370 l/s
Volume flow rate range	22 – 1330 m ³ /h
Volume flow rate setting range	approx. 10 – 100 % of the nominal volume flow rate
Volume flow rate accuracy	approx. ± 10 % of the nominal volume flow rate
Minimum differential pressure	30 Pa
Differential pressure	30 – 500 Pa
Operating temperature	10 – 50 °C

Quick sizing: Sound pressure level at differential pressure 50 Pa

Nominal size	V̇		Air-regenerated noise				Case-radiated noise
			①	②	③	④	①
	l/s	m ³ /h	L _{PA}	L _{PA1}			L _{PA2}
dB(A)							
80	6	22	25	<15	<15	<15	<15
	10	36	28	16	<15	<15	<15
	20	72	33	21	<15	<15	<15
	42	151	39	27	18	16	17
100	6	22	29	15	<15	<15	<15
	15	54	33	20	<15	<15	15
	30	108	37	26	18	17	18
	65	234	41	33	26	25	21
125	10	36	22	<15	<15	<15	<15
	20	72	27	16	<15	<15	<15
	45	162	34	25	18	16	<15
	100	360	41	34	29	27	16
160	18	65	25	16	<15	<15	<15
	45	162	32	24	18	16	18
	85	306	36	29	24	22	22
	185	666	41	35	30	28	27
200	25	90	27	16	<15	<15	<15
	60	216	31	22	16	<15	18
	120	432	35	27	21	19	22
	250	900	37	30	25	24	26
250	37	133	31	21	<15	<15	18
	100	360	35	25	18	16	22
	185	666	36	28	21	19	25
	370	1332	37	29	23	22	29

- ① VFC
- ② VFC with secondary silencer CS/CF, insulation thickness 50 mm, length 500 mm
- ③ VFC with secondary silencer CS/CF, insulation thickness 50 mm, length 1000 mm
- ④ VFC with secondary silencer CS/CF, insulation thickness 50 mm, length 1500 mm

Circular volume flow controllers for constant and variable air volume systems with low airflow velocities, mechanical self-powered, without external power supply, suitable for supply or extract air, available in 6 nominal sizes.

Ready-to-commission unit consists of the casing containing a damper blade with low-friction bearings, bellows, leaf spring, and a rotary knob to set the volume flow rate setpoint.

Differential pressure: 30 – 500 Pa

Volume flow rate: max. 10 : 1

Spigot with lip seal, for circular connecting ducts to EN 1506 or EN 13180.

Casing air leakage to EN 1751, class C.

Special features

- Volume flow rate can be set using an external scale; no tools required
- Simple retrofit of an actuator is possible
- Correct operation even under unfavourable upstream or downstream conditions (1.5 D straight section required upstream)
- Any installation orientation
- Aerodynamic function testing of each unit on a special test rig prior to shipping

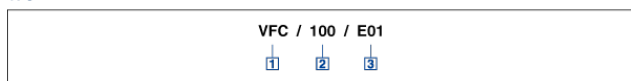
Materials and surfaces

- Casing made of galvanised sheet steel
- Damper blade and other parts made of high-quality plastic, to UL 94, V1; to DIN 4102, material classification B2
- Leaf spring made of stainless steel
- Polyurethane bellows

Technical data

- Nominal sizes: 80 – 250 mm
- Volume flow rate range: 6 to 370 l/s or 22 to 1330 m³/h
- Volume flow rate control range: approx. 10 – 100 % of the nominal volume flow rate
- Volume flow rate accuracy: approx. ± 10 % of the nominal volume flow rate
- Differential pressure: 30 – 500 Pa

VFC



1 Type

VFC Volume flow controller

2 Nominal size [mm]

80
100
125
160
200
250

3 Actuator

No entry: Manual operation
E01 $\dot{V}_{min}/\dot{V}_{max}$ switching, 24 V AC/DC supply voltage, potentiometer
E02 $\dot{V}_{min}/\dot{V}_{max}$ switching, 230 V AC supply voltage, potentiometer
E03 variable volume flow, 24 V AC/DC supply voltage, potentiometer, control signal 0 to 10 V DC
M01 $\dot{V}_{min}/\dot{V}_{max}$ switching, 24 V AC/DC supply voltage, mechanical stops
M02 $\dot{V}_{min}/\dot{V}_{max}$ switching, 230 V AC supply voltage, mechanical stops

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