



CAV controllers

VFL

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Product overview

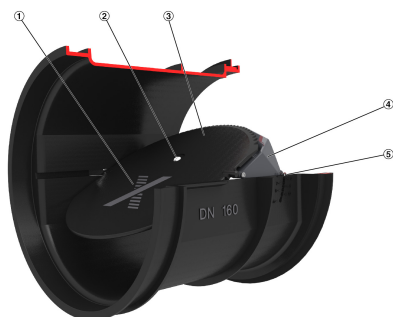


Fig. 1: Volume flow limiter Type VFL

- 1 Damper blade
- 2 Bellows inlet
- 3 Bellows
- 4 Crossbar
- 5 Volume flow rate scale ➔ Fig. 5

Important notes

Information on the installation manual

This manual enables operating or service personnel to correctly install the product described below and to use it safely and efficiently.

It is essential that these individuals read and fully understand this manual before starting any work. The basic prerequisite for safe working is to comply with the safety notes and all instructions in this manual.

The local regulations for health and safety at work and general safety regulations also apply.

Correct use

The Type VFL volume flow limiter is used for the balancing of volume flow rates in ventilation systems. VFL prevents the volume flow rate from exceeding the setpoint and maintains the flow rate even if the pressure keeps fluctuating.

Do not use CAV controllers in extract air systems in commercial kitchens unless the extract air has been cleaned as much as possible with high-efficiency aerosol separators; see VDI 2052.

Installation in humid rooms, areas with potentially explosive atmospheres or rooms with dust-laden or aggressive air has to be assessed beforehand because it depends on the actual conditions on site.

TROX Technical Service

To ensure that your request is processed as quickly as possible, please keep the following information ready:

- Product name
- TROX order number
- Delivery date
- Brief description of the fault

Online	www.troxtechnik.com
Phone	+49 2845 202-400

Qualified staff

HVAC technician

HVAC technicians are individuals who have sufficient professional or technical training in the field they are working in to enable them to carry out their assigned duties at the level of responsibility allocated to them and in compliance with the relevant

guidelines, safety regulations and instructions. HVAC technicians are individuals who have in-depth knowledge and skills related to HVAC systems; they are also responsible for the professional completion of the work under consideration.

HVAC technicians are individuals who have sufficient professional or technical training, knowledge and actual experience to enable them to work on HVAC systems, understand any potential hazards related to the work under consideration, and recognise and avoid any risks involved.

Personal protective equipment

Personal protective equipment must be worn for any work in order to reduce health or safety hazards to the minimum.

The appropriate protective equipment for a job must be worn for as long as the job takes.

Industrial safety helmet



Industrial safety helmets protect the head from falling objects, suspended loads, and the effects of striking the head against stationary objects.

Protective gloves



Protective gloves protect hands from friction, abrasions, punctures, deep cuts, and direct contact with hot surfaces.

Safety shoes



Safety shoes protect the feet against crushing, falling parts, and slipping on slippery ground.

Limitation of liability

The information in this manual has been compiled with reference to the applicable standards and guidelines, the state of the art, and our expertise and experience of many years.

The manufacturer does not accept any liability for damages resulting from:

- Non-compliance with this manual
- Incorrect use
- Operation or handling by untrained individuals
- Unauthorised modifications

The actual scope of delivery may differ from the information in this manual for special constructions, additional order options or as a result of recent technical changes.

Transport and storage

Delivery check

Upon delivery, carefully remove the packaging and check the unit for transport damage and completeness. In case of any damage or an incomplete shipment, contact the shipping company and your supplier immediately. Put the product back into its packaging after the delivery check to protect it from dust and contamination.



Fixing and installation material

Fixing and installation material is not part of the supply package (unless stated otherwise), but has to be provided by others; it has to be suitable for the installation situation.

Transport on site



CAUTION!

Danger of injury from sharp edges, sharp corners and thin sheet metal parts!

Sharp edges, sharp corners and thin sheet metal parts may cause cuts or grazes.

- Be careful when carrying out any work.
- Wear protective gloves, safety shoes and a hard hat.

Please note:

- Be careful when unloading or moving the product, and pay attention to the symbols and information on the packaging.
- If possible, take the product in its transport packaging up to the installation location.
- Use only lifting and transport gear designed for the required load.
- Always secure the load against tipping and falling.
- Do not move bulky items just by yourself. Get help to prevent injuries and damage.

Storage

Please note:

- Store the product only in its original packaging
- Protect the product from the effects of weather
- Protect the product from humidity, dust and contamination
- Storage temperature: -10 °C to 50 °C.
- Relative humidity: 95% max., no condensation

Packaging

Properly dispose of packaging material.

Technical data

Nominal sizes	80 – 250 mm
Volume flow rate range	4 – 212 l/s or 14 – 764 m³/h
Volume flow rate control range	< 20 – 100% of the nominal volume flow rate
Volume flow rate accuracy	approx. ± 10% of the nominal volume flow rate
Minimum differential pressure	30 Pa
Maximum differential pressure	300 Pa
Operating temperature	10 – 50 °C

Dimensions and weight

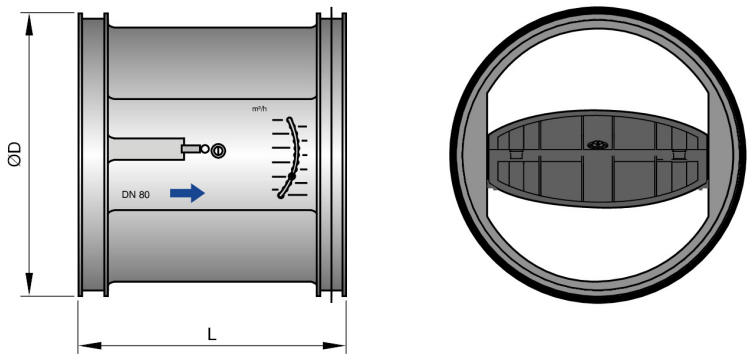


Fig. 2: VFL

Product-specific data for VFL

Nominal size	ØD [mm]	L [mm]	m [kg]
80	78	86	0.10
100	98	100	0.15
125	122	118	0.25
160	156	148	0.40
200	196	175	0.50
250	246	220	0.70

Installation

Installation orientation

- The airflow direction is critical.
- The installation orientation is not critical.

Upstream conditions

The volume flow rate accuracy of CAV controllers applies to a straight upstream section of the duct. Bends, junctions or a narrowing or widening of the duct cause turbulence that may affect volume flow rate measurement. Depending on the respective installation situation, information on the straight duct section upstream of the control unit must be observed.

Duct connections, e.g. branches off the main duct, must comply with EN 1505.

A junction causes strong turbulence. The stated volume flow rate accuracy $\Delta \dot{V}$ can only be achieved with a straight duct section of at least 1.5D upstream. If there is no straight upstream section, the control may not be stable, even with a perforated plate.

Note: If you intend to install a shut-off damper upstream of the CAV controller, be sure to install the damper in *Wird vor dem KVS-Regler in Anströmrichtung eine Absperrklappe eingebaut, ist darauf zu achten, dass die Absperrklappe so eingebaut wird das deren Klappenachse gegenüber der Klappenachse des KVS-Reglers um 90° verdreht angeordnet ist.*

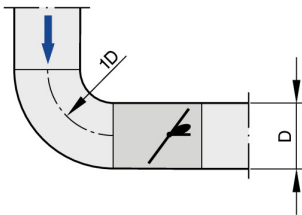


Fig. 3: Bend

A bend with a curvature radius of at least 1D – without an additional straight duct section upstream of the CAV controller – has only a negligible effect on the volume flow rate accuracy

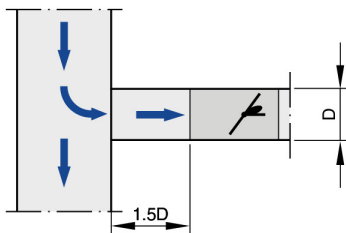


Fig. 4: Junction

Setting the flow rate setpoint

Tool:

- Torx T9 screwdriver (by others)



Fig. 5: Setting the flow rate setpoint

1. ► Use the Torx screwdriver to set the required volume flow rate setpoint on the scale (↖ sticker).



Fig. 6: Covering the slotted hole

2. ► Cover the slotted hole with the provided clear sticker; this is required to improve the acoustic properties.

Installing the CAV controller

Personnel:

- HVAC technician

Protective equipment:

- Industrial safety helmet
- Protective gloves
- Safety shoes

Before you install the product, take suitable precautions to protect air distribution components from contamination during installation (VDI 6022). If this is not possible, at least cover the product or take other precautions to protect it from contamination. In this case you have to ensure that the product cannot be started. Ensure that all components are clean before you install them. If necessary, clean them thoroughly. If you have to interrupt the installation procedure, protect all openings from the ingress of dust or moisture.

For installation please note:

- The installed product must be accessible for maintenance and service.

Be careful to not damage the controller accidentally:

- Handle the controller with care.
- Lift the controller only by lifting the entire casing.
- Do not lift the controller by holding the damper blade, the rotary knob or the actuator.

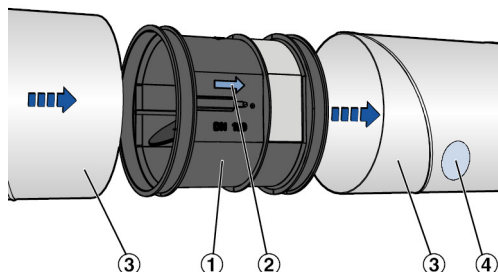


Fig. 7: Installing VFL

1. ► Set the flow rate setpoint before you install the controller, ⚙ 'Setting the flow rate setpoint' on page 6
2. ► Insert VFL (Fig. 7/1) into the duct (Fig. 7/3).

The arrow indicates the correct airflow direction. (Fig. 7/2) .

3. ► Push the duct sections together.
4. ► Use the provided stickers to indicate the position of the controllers. You can write on the stickers and affix them to the duct for people to see (Fig. 7/4)

Maintenance and cleaning

Maintenance

It is the system owner's duty to set up a maintenance schedule, taking the actual operating conditions (contamination, operating time etc.) of the ventilation system into consideration.

Important: Do not lubricate the bearings of the damper blade.

Maintenance jobs to be carried out regularly:

- Visually check the controller for contamination, damage and corrosion. Remove contamination; if the controller has been damaged, or if there is any corrosion, replace the controller.
- Check the fixing of the controller and of the connected ductwork.

Cleaning

Please note:

- The cleaning intervals given in the VDI 6022 standard apply.
- Clean surfaces with a damp cloth.
- Use only common household cleaners, do not use any aggressive cleaning agents.
- Do not use cleaning agents that contain chlorine.

