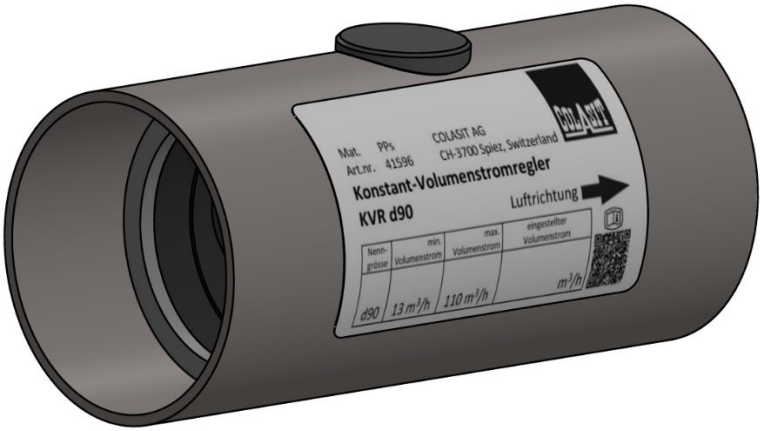
Operating instructions

KVR 90-250

Volume flow controller (VFC)



Your point of contact:

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Location

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1 Operating instruction information

Scope

These operating instructions provide qualified personnel with all essential safety instructions, information, and guidance for working with Volume flow controller.

All phases of a VCF's service life are covered, from transport, mounting, and placement in service to repairs and disposal.

Careful reading of and compliance with these operating instructions will help to avoid injuries as well as environmental and material damage, ensure operational safety and reliability of the VCF, and minimize downtime.

Storage location

The operating instructions and associated documents are to be stored near the VCF such that they are easily accessible to qualified personnel at all times.

The operating instructions are provided in electronic form and are available on the website www.colasit.com.

A QR code containing a link is printed on the product's nameplate.

Design notes

For the sake of simplification, in these operating instructions,

- the company Colasit AG is referred to as the "manufacturer",
- The Volume flow controller KVR 90 - 250 is generally referred as the „VFC". The product name remains "KVR" in the declaration of conformity (e.g. "KVR 90").
- chapter and page number references appear as follows: ⇨ Chap. 1 [▸ 5]

The images in these operating instructions are for illustrative purposes and could differ from the actual execution.

In the interest of our customers, we reserve the right to make changes as a result of technical developments.

Translation note

The German language version of this document is the original set of operating instructions.

Inquiries

If possible, clarify any ambiguities in a given language version with the aid of the original operating instructions. Ambiguities regarding the operating instructions are to immediately be clarified with the manufacturer. Placement in service of or other work on the VCF is only permitted after successful clarification.

1.1 Further applicable documents

In addition to these operating instructions, the following documents and guidance shall be available as associated documents for working on the VCF:

- Technical data sheet for the VCF with complete technical data, including application limitations.
- Order confirmation or the specification sheet for the conveyed medium with information on the (limited) resistance of the VCF to certain chemical substances. See also “Permissible conveyed media ⇨ Chap. 2.2.1 [▶ 7].



The order confirmation also provides details regarding the full scope of delivery.

1.2 Copyright

These operating instructions are protected by copyright.

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The use and distribution of the operating instructions is permitted in the context of using the VCF. Any other use is only permitted with the written consent of the manufacturer.

2 Additional safety instructions

This chapter contains information relevant to safety and additional as well as more in-depth safety instructions for operators and technical specialists.

Additional safety instructions

Depending on the execution of the VCF, associated documents can contain additional operating instructions with important safety instructions.

2.1 Use and storage of the operating instructions

- Before beginning mounting procedures or working on VFC, read these operating instructions carefully and completely.
- After use, always return the operating instructions to the marked storage location near of VFC.

2.2 Intended application of the VCF

The maintenance-free VFC is a mechanical regulator that requires no auxiliary power and is designed to maintain constant airflow rates in ventilation systems. It regulates airflow rates to preset values and keeps them constant.

The VFC is intended for conveying gaseous media in potentially explosive atmospheres and is designed and manufactured in accordance with the state of the art and the recognized technical safety regulations.

Nevertheless, the VCF may pose a danger to life and limb of personnel or third parties as well as material damage. Special care is therefore to be taken to ensure that the VCF is in technically sound condition and that it is used as intended.

2.2.1 Intended use

The VFC is intended exclusively for the application specified on the nameplate and for installation in a complete system ⇨ Chap. 4.2 [▸ 4.1]. The VFC may only be transported, mounted, and operated by trained qualified personnel ⇨ Chap. 2.2.5 [▸ **Fehler! Textmarke nicht definiert.**].

Permissible conveyed media

In general, conveyance of dust-free air is permissible within the parameters specified in the technical data sheet.

Conveyance of corrosive, hazardous, explosive, gaseous media is restricted as follows:

1. The following apply to a conveyed medium that is specified in the VCF's technical data sheet:
   - The VFC is suitable exclusively for conveyance of the specified medium.
   - The service life of the VCF could be limited if there is a corresponding note in the order confirmation or the specification sheet.

2. The following apply to a conveyed medium that is specified as “undefined” in the VCF's technical data sheet:
   - The VFC is suitable for conveyance of corrosive gaseous media to which the plastics of the VFC is resistant.
   - For independent assessment, the operator is to consult the pertinent available resistance lists for plastics. The SIMCHEM guide is found on the manufacturer's website (www.colasit.com).
   - The order confirmation or the additional specification sheet contains further information and notes regarding a potential reduction in service life of the VFC.
3. The following apply if, according to the operator’s information, the conveyed medium contains several chemical substances:
   - The named importer or the manufacturer confirms the resistance of the VFC to these chemical substances in the order confirmation or the specification sheet, which is an associated document.
   - The service life of the VFC can be limited if there is a corresponding note in the order confirmation or the specification sheet.

Permissible Ambient Temperature

The permissible temperature range [T_a] for the VFC is 0 °C to 50 °C.

Permissible Fluid Temperature

The permissible temperature range [T_F] for the VFC is 10 °C to 50 °C.

Procedure for process changes

- The operator is to ensure upon a process change that
  - the VFC can withstand the zone or parameters changed or the new conveyed medium,
  - the operating conditions according to the technical data sheet and nameplate plate are adhered to.

Operating conditions

- The permissible operating conditions for the VFC are specified on the nameplate.
- The VFC can be used in supply and exhaust air ducts of HVAC systems.
- The VFC can be used in any orientation.

Intended use also includes compliance with all safety regulations and requirements set forth in this operating manual.

Maintenance and repair regulations

Adjustments and modifications to The VFC are strictly prohibited. Failure to comply will void the conformity of the VFC.

2.2.2 Reasonably foreseeable misuse

Any use of the VFC other than that for which it is intended or any other use is considered misuse and can lead to dangerous situations. The manufacturer assumes no responsibility for resulting injuries or material damage.

The following list of misuse is exemplary and not exhaustive.

- Conveyance of explosive dust.
- Operation of the VFC outside the parameters and limit values specified in the technical data sheet.
- Operation of the VCF with prohibited conveyed media, such as solids and dust.
- Removal of components or tampering with components that ensure safe and proper function of the VFC.
- Maintenance work conducted inappropriately, without ATEX training and qualification.
- Unauthorized changes, modifications, or alterations to the VFC.
- Any use of the VFC that does not comply with the essential safety regulations of these operating instructions.

2.2.3 Equipment limits

Spatial dimensions

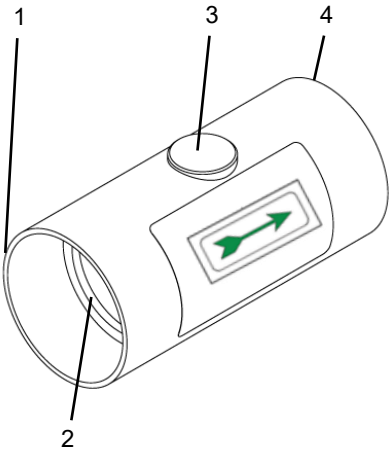
The dimensions of the VCF are specified in the technical data sheet.

Application limits

The permissible operating range is limited to a differential pressure of 300 Pa and an inflow velocity of 6 m/s. In addition, the size-specific load limits must be observed. This protects the limiters from mechanical overload.

Interfaces

The VCF has the following interfaces.



1. Inlet connection (suction side): Connection to supply air ductwork with pipe socket. Option with flange or welded double socket ⇨ Chap. 5.3 [▸ 18].
2. A pressure-independent controller that regulates the flow rate to a preset setpoint and maintains it at a constant level. The controller is installed inside the tube.
3. Setpoint adjustment: The desired setpoint can be set on the controller ⇨ Chap. 7.3 [▸ 22]. To do this, the sealing plug must be removed.
4. Outlet connection (pressure side): Connection to discharge air

ductwork with pipe socket. Option with flange or welded double socket ⇨ Chap. 5.3 [▶ 18].

Fig. 1: Interfaces on the VFC

Service life

The VCF is designed for an expected service life of 8-10 years.

2.2.4 Residual risks

The VFC is designed and manufactured in accordance with the state of the art and the recognized technical safety regulations. Residual risks nevertheless remain. They are indicated by safety instructions in these operating instructions and require the user to proceed with caution.

Hazardous, aggressive conveyed media

Residue and deposits of the conveyed medium can reside in the VCF or flow in from the ductwork.

- Qualified personnel responsible for maintenance and repair work shall
  - be trained in handling hazardous conveyed media,
  - wear suitable personal protective equipment ⇨ Chap. 3.2 [▶ 13],
  - coordinate with the operator when taking suitable protective and lock-out measures.

2.2.5 Target groups and personnel requirements

These operating instructions are intended for:

- The operator of the system in which the VCF is installed.
- The qualified personnel who carry out work on the VCF during its various life cycle phases, from installation to disposal.

The duties and personnel requirements for these target groups are described next.

Requirements for staying and working in potentially explosive atmospheres

- Wear special personal protective equipment ⇨ Chap. 3.2.1 [▶ **Fehler! Textmarke nicht definiert.**].
- Only use certified non-sparking equipment and tools in the explosion protection area.

The duties and personal requirements for these target groups are set out below.

2.2.5.1 Operator

The operator is the person who operates the VFC for commercial or economic purposes or who allows a third party to use it and who assumes legal liability during its operation.

The operator has the following duties:

- Comply with the minimum safety and health protection regulations for the use of work equipment and performance of activities on the VCF.
- Keep current on national and local occupational safety and health regulations.

- Compliance with and verification of the applicable requirements and specifications for the duct system or the overall system.
- Adapt these operating instructions to current applicable standards and regulations at the time of operation.
- Ensure that the VCF is always in a technically sound condition under observance of the maintenance intervals per these operating instructions.
- Clearly determine and regulate the responsibility for installation, servicing, maintenance, and repair of the VCF.
- Ensure that the responsible qualified personnel
  - have read and understood these operating instructions,
  - have adequate occupational qualifications,
  - are regularly trained in the dangers related to and measures to take upon malfunction or in an emergency.
- Store these operating instructions and associated documents in their entirety in legible condition in an identified location near the VCF.
- Save and protect the electronic version of these operating instructions.
- Prepare the required protective equipment and direct the wearing of this protective equipment by qualified personnel based on the operating and environmental conditions.

2.2.5.2 Transport personnel

The transport personnel are responsible for the transport of the VCF to the installation location and for its removal for disposal at the end of its lifespan.

The transport personnel:

- Possess all necessary occupational knowledge, qualifications, and authorizations for operating the necessary lifting and transport devices.
- Are authorized by the operator to perform transport operations.

2.2.5.3 Mounting personnel

Mounting personnel are responsible for the installation of the VCF in the system and for the subsequent placement in service. Removal of the VCF for disposal also falls in this area of responsibility.

- Mounting personnel consist exclusively of qualified technical specialists who possess the necessary occupational experience, knowledge, and qualifications for mechanical and electrical work on the VCF.
- The technical specialist is dependable when it comes to current safety and accident prevention guidelines, directives, and recognized regulations of the technology in their line of activity, and they are instructed by the operator.

2.2.5.4 Operating personnel

The VFC is typically installed in the system for automatic operation.

2.2.5.5 Maintenance personnel

Maintenance personnel are responsible for the inspection, cleaning, maintenance, and repair of the VCF.

- The same requirements apply as for the mounting personnel ⇨ Chap. 2.2.5.3 [▸ 11].

3 Essential safety instructions

The associated documents can contain additional operating instructions with important safety instructions ⇨ Chap. 1.1 [▶ 5].

3.1 Notation of safety instructions

The safety instructions and warnings in these operating instructions are identified by the following warning symbols, signal words, and colours (electronic version of the operating instructions only), which convey the severity of the dangers.

Death or serious injuries

DANGER Danger to life due to... !



Outcome of the danger upon noncompliance...
- Conditions for prevention of the danger...
- ▶ Measures for prevention of the danger...

This safety instruction, the highest danger level, denotes and a direct and immediate dangerous situation. This indicates a hazardous situation which, if not avoided, will result in death or serious injury.

Serious injuries

WARNING Risk of injury due to... !



Outcome of the danger upon noncompliance...
- Conditions for prevention of the danger...
- ▶ Measures for prevention of the danger...

A safety instruction of this danger level denotes a possible dangerous situation. This indicates a hazardous situation which, if not avoided, will result in death or serious injury with lasting effects.

Minor injuries

CAUTION Bodily injuries due to... !



Outcome of the danger upon noncompliance...
- Conditions for prevention of the danger...
- ▶ Measures for prevention of the danger...

A safety instruction of this danger level denotes a possible dangerous situation. This indicates a hazardous situation which, if not avoided, may result in minor or moderate injury, possibly with lasting effects.

Material damage

NOTICE Material damage due to... !



Outcome of the danger upon noncompliance...
- Conditions for prevention of the danger...
- ▶ Measures for prevention of the danger...

This warning informs of a dangerous situation that can damage the VFC or lead to other material damage.

3.2 Personal protective equipment

The personal protective equipment to be worn:

- is to be determined and made available by the operator based on the operating conditions and conveyed medium.
- is the personal responsibility of the qualified personnel to be worn as suitable for the work to be conducted and to be supplemented as necessary.

The manufacturer recommends personal protective equipment according to the following table:

Symbol	Meaning
	Hardhat to protect the head from falling objects, swinging loads, and strikes from sharp, pointed machine parts.
	Safety glasses to protect the eyes from airborne particles, parts, and fluids. Protection from aggressive, hazardous conveyed media or residues.
	Suitable breathing protection when in contact with aggressive, toxic conveyed media or residues.
	Work gloves for protection from injuries, burns, or contact with aggressive, toxic residues of the conveyed medium.
	Safety shoes for protection from crushing and from falling parts as well as slips and falls on slick surfaces.

3.3 Mechanical hazards

⚠WARNUNG Risk of injury due to sharp corners or edges.

Crush, cut, strike, eye, or other injuries.



- Operation in a manner other than that intended (e.g. regarding temperature, speed, conveyed medium).

▶ Only authorized qualified personnel may conduct work on the VFC.
▶ Wear personal protective equipment.
▶ Do not leave any tools or mounting accessories in the VCF.
▶ Comply with all current accident prevention guidelines.

3.4 Conveyed medium hazards

⚠WARNING Risk of injury due to escape or inflow of a conveyed medium with the ability to cause adverse health effects

Risk of eye irritation, cough, difficulty breathing, burn, and suffocation.



▶ Clarify what medium is being conveyed.
▶ Observe the Safety Data Sheet(s) of the conveyed medium.
▶ Wear suitable personal protective equipment.
▶ Close the shut-off damper in the ductwork.
▶ Ventilate closed rooms.
▶ Take special safety precautions when working in confined spaces:
- Request permit.
- Inform supervisory personnel.
- Assign an attendant.
- Measure gas content in the work area.

⚠WARNING Risk of injury due to aggressive, hazardous residue and deposits

Chemical burn and poisoning upon contact.



- Conveyed medium forms deposits in the VCF and ductwork that can cause adverse health effects.

▶ Wear suitable personal protective equipment.
▶ Observe the Safety Data Sheet(s) of the conveyed medium.
▶ For leaking condensate: neutralize, immediately wipe up, and dispose of in accordance with current local regulations.

3.5 Actions to take in an emergency

An emergency is caused by melting of the plastic components during VFC operation constitutes an emergency situation.

Possible causes (due to use in a manner other than that intended):

- Prohibited chemical or thermal factors

Possible consequences:

- Casing explosion.
- Escape of conveyed medium.
- Development of hot, corrosive, hazardous, or flammable gases.

If no emergency measures are directed by the operator, proceed as follows:

1. Use the isolation switch to remove voltage on all phases.
2. Get personnel who are injured or in danger to safety. Get personnel who are having difficulty breathing to fresh air immediately.
3. Perform first aid.
4. Alert rescue/emergency personnel and inform them of the hazards of the conveyed medium according to the Safety Data Sheet.
5. Safeguard the hazardous area.
6. Fight small incipient fires only with fire extinguishers approved for low-voltage electrical equipment and the conveyed medium.

⚠WARNING Risk of burn, risk of poisoning from smoke inhalation



Burns, damage to respiratory tract.

- The thermoplastic of the VCF generates smoke when burnt.
- If the VCF housing is made of PVC, there will be adverse health effects and caustic smoke when burnt.

▶ Maintain a safe distance when extinguishing.
▶ Pay attention to the direction in which the smoke is spreading.

⚠WARNING Danger of asphyxiation with carbon dioxide (CO_2) fire extinguisher use

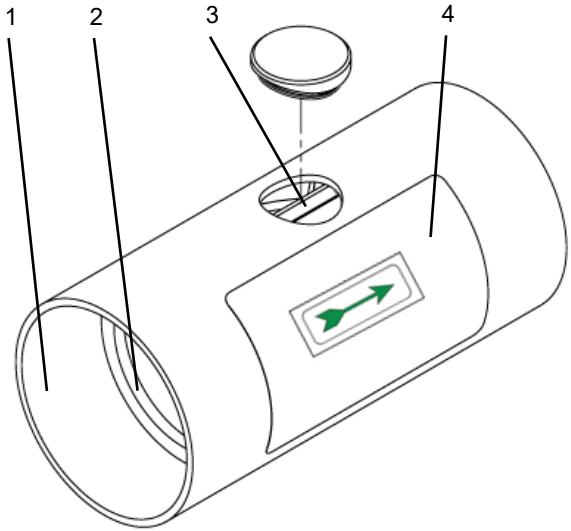


- There could be a high concentration of carbon dioxide (CO_2) in the breathing air.

▶ Do not attempt to extinguish in confined, small, or enclosed spaces.
▶ Instead, fight fire from outside through open door.
▶ Do not access area where fire occurred until it has been thoroughly ventilated.

4 Structure and function

4.1 Overview



1 Pipe sleeve
2 Flow rate controller (VFC)
3 Setting control (covered by a plug)
4 Nameplates

Function description

The Constant flow rate controller (VFC) is a mechanical regulator without auxiliary power designed to maintain constant flow rates in industrial ventilation systems. The flow rate is maintained at a constant value (the preset setpoint) regardless of pressure. The controller is housed in a tubular sleeve.

4.2 Signs and warning symbols on the VFC

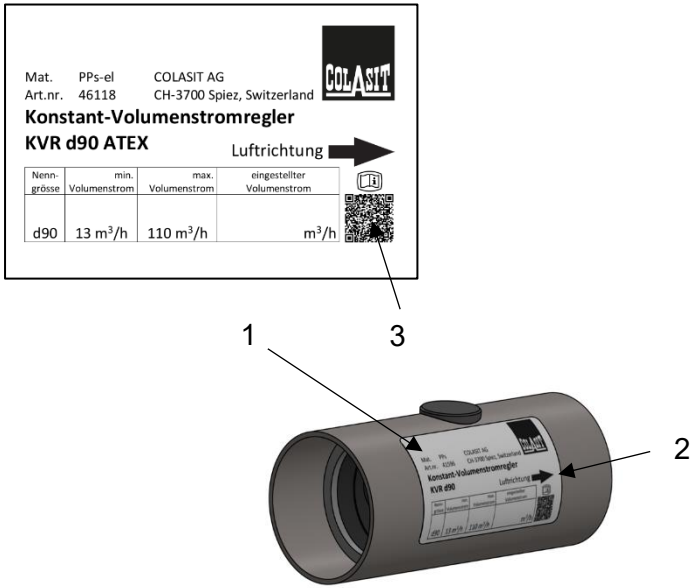


Fig. 2: Signs and warning symbols on the VFC

1 VFC nameplate	3 QR code, link to operating instructions
2 Direction of Air Flow Arrow	

Set Flow Rate

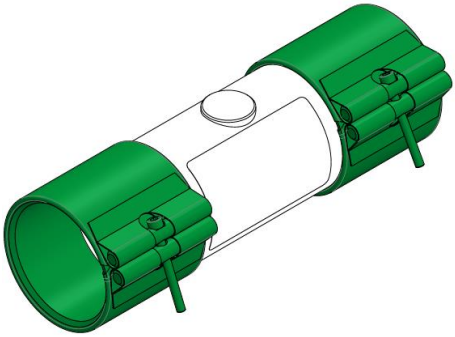
The setpoint value ⇨ ⇨ Kap.6.3 [▶ 22] is manually entered on the VFC nameplate after commissioning is complete.

The operator's responsibilities regarding these signs on the VCF are to

- keep them clean and uncovered,
- replace them if damaged or missing.

4.3 Options and accessories

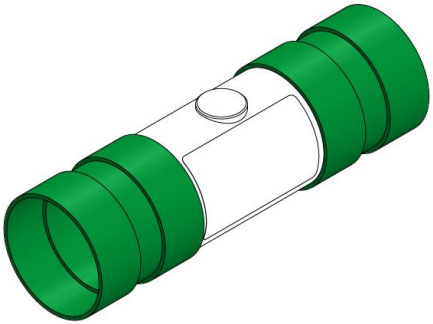
4.3.1 Pipe sockets



- **Required accessory for VFC.**
- Pipe sockets made of electrically conductive material for Zone 1 (equipment categories 2 and 3).
- For flexible connection of the inlet and outlet connections to ductwork.
- Pipe sockets compensate for minor misalignments in the piping system.

Fig. 4: Pipe Connection with Pipe Sockets

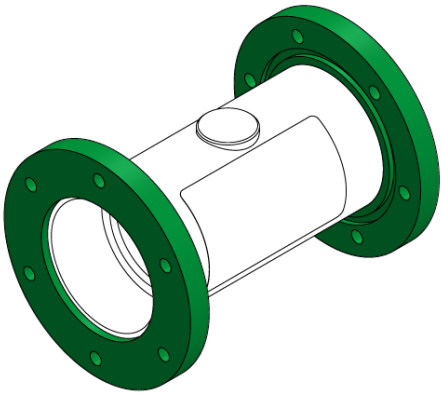
4.3.2 Double socket



- Optional.
- Double sockets made of electrically conductive material for Zone 1 (equipment categories 2 and 3).
- The double sockets welded to the housing create a rigid connection in the piping system. Deviations in the piping system cause stresses that are transmitted to the VFC.

Fig. 5: Pipe connection with double sockets

4.3.3 Flange connections



- Optional.
- Flanges made of electrically conductive material for Zone 1 (equipment categories 2 and 3).
- The flange connections are welded to the housing on the supply air and exhaust air sides.
- Recommended for higher sealing requirements.

Fig. 5: Flange connection installation locations

5 Transport

5.1 Safety instructions

These safety instructions warn against dangers that can arise when transporting the VFC.

NOTICE **Risk of damage due to improper transport**

5.2 Incoming goods inspection

For the delivered VFC:

- Check for completeness based on the shipping documents.
- Inspect for possible transport damage.

If transport damage is detected:

1. Do not receive delivery, or doing so only conditionally.
2. Record transport damage (photos).
3. Note the extent of the damage on the transport paperwork or on the transport company's bill of lading.
4. File a complaint immediately.

Claims for damages can only be made within the complaint period and according to the general terms and conditions (T&C). Save packing for a possible return shipment.

5. Mount VFC and place in service only after repairs and resolution of complaints.

5.3 Packing

The packing and provided transport protection protect the VFC from transport damage and environmental influences.

Do not damage the packing, and remove it only shortly before mounting.

Disposal instructions

The transport packing is intended as disposable packing and is to be disposed of after use according to current local disposal instructions.

5.4 Intermediate storage

Pack the VCF in the original packaging as follows:

- Covered, dry, and dust-free location.
- Protect from sun, weather, and condensation.
- Storage temperature +10 °C to +50 °C with max. 50 % humidity.

6 Mechanical installation

6.1 Safety instructions

These safety instructions warn against dangers that can arise when mounting the VCF.

WARNING Risk of injury due to unsecured work area

Injuries due to objects falling or being bumped.

- The installation location of the VCF could be inaccessible or at a dangerous height.

▶ Set up safe means for accessing the installation location (e.g. walkway with banisters, platform).
▶ Safeguard work area with enclosures, safety nets, etc.
▶ Secure work area against unauthorized access.

WARNING Risk of injury due to escape or inflow of a conveyed medium with the ability to cause adverse health effects

Risk of eye irritation, cough, difficulty breathing, burn, and suffocation.

▶ Wear protective equipment.
▶ Close shut-off damper to inlet and outlet connections until all installation work is complete.
▶ Watch for escaping conveyed medium as well as deposits and condensate when using the service opening and inspecting the ductwork.

6.2 Installation location requirements

NOTICE Risk of damage due to improper outside mounting

Material damage and production downtime.

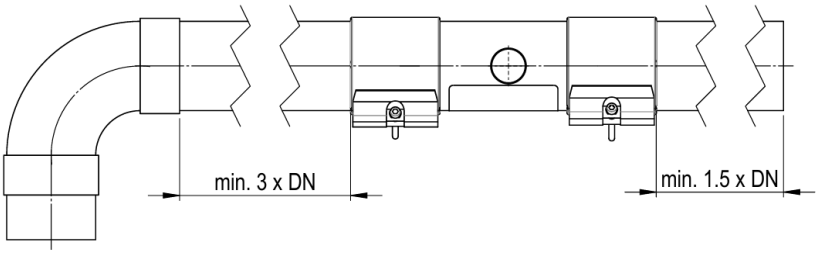
▶ Protect VCF and FC (option) from exposure to weather as much as possible.

Installation Instructions

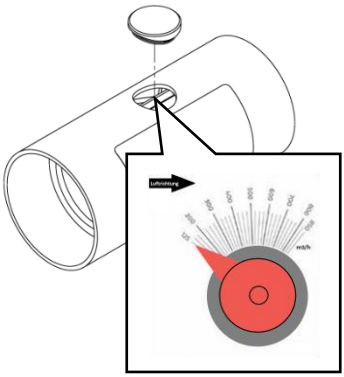
The proper functioning of the flow controllers requires a largely unobstructed flow path. Downstream of flow obstructions (e.g., elbows or branch lines), the straight inlet and outlet run shown in the example must be maintained; multiple

consecutive obstructions may require longer inlet runs. Otherwise, larger control deviations are to be expected.

▶ The specified control accuracy can only be achieved with an approach length of at least 3 x DN.



6.3 Setting the Setpoint for the VFC



Manual adjustment mechanism with adjustment pointer, scale, and lock: The flow rate setpoints are set manually using the adjustment pointer within the range from $\dot{V}min$ to $\dot{V}max$. The controllers are factory-calibrated for the entire flow rate range.

The setpoint is adjusted by the customer during commissioning.

The setting value must be added to the nameplate (handwritten entry) ⇨ Kap. 4.2 [▶ 17]

6.4 Connecting the VFC to the Piping

ACHTUNG Risk of Damage Due to Deformation of the VFC Housing



The VFC is no longer functioning as intended.

- Connection pipes attached directly to VFC fittings transmit excessive forces to the VFC housing, e.g., due to thermal expansion.

▶ Ensure that the pipe connections are installed correctly.

ACHTUNG Risk of damage due to lateral forces

Cracks in the pipe connections.

- Pipe connections can compensate for lateral/radial pipe misalignment only to a limited extent.

▶ Align the connecting pipes precisely.
▶ Use supports for supplemental securing of connection tubes

6.5 Final inspection

- Check that all fasteners are secure.
- Check for possible leaks at the pipe connections.

7 Placement in service

7.1 Safety instructions

These safety instructions warn against dangers that can arise when placing the VFC in service.

WARNING Risk of injury when placing the VCF in service.



Injuries due to electrical, mechanical, and chemical hazards.

- ▶ Installation work on the VCF as well as final inspection have been completed in their entirety ⇨ Chap. 6 [▸ 21].
- ▶ Initial and subsequent placement in service is only to be completed by authorized mounting personnel.

7.2 Carrying out placement in service

Open the shut-off or damper valves of the VCF's supply air duct and discharge duct.

7.2.1 Check the air flow direction

Procedure:

- Check whether the airflow direction in the duct matches the installation direction specified on the VFC.
- Compare the setpoint value for the target airflow rate with the measured value. Transfer the measured value to the nameplate ⇨ Chap. 4.2 [▸ 17].
- Check the pipe connections for leaks

.

8 Operation

8.1 Safety instruction

This safety instruction warns against dangers that can arise during VFC operation.

⚠WARNING Risk of injury due to VCF operation



Injuries due to electrical, mechanical, and chemical hazards or explosions.

- ▶ Only qualified and authorized operating personnel may operate the VFC and clean the outside of it.
- ▶ In the event of an operating fault, assign qualified personnel to rectify the fault.

8.2 Operating instructions

The VFC, as a mechanical system, performs its function once it is installed in the pipeline.

The operating personnel are also responsible for regularly checking the operating condition of the VCF ⇨ Chap. 10.3.1 [▸ 27].

Actions to take in the event of a malfunction

1. Shut the VCF down and inform supervisory personnel.
2. In case of emergency, immediately carry out emergency measures ⇨ Chap. 3.6 [▸ 15].
3. Assign qualified personnel to rectify the fault ⇨ Chap. 11.2 [▸ 29].

8.3 Outside cleaning

Procedure:

- Clean VCF housing and plastic parts with a damp cloth.
  ⚠CAUTION Spark formation due to static charge - do not use a dry cloth!
- Keep the installation site of the VCF clean.

Observe cleaning interval and adjust if necessary ⇨ Chap. 10.2 [▸ 26].

9 Maintenance

9.1 Safety instructions

These safety instructions warn against dangers that can arise when performing maintenance on the VCF.

WARNING Risk of injury due to maintenance work on the VCF in a potentially explosive atmosphere

Death or serious injuries upon explosion.
Injuries due to electrical, mechanical, and chemical hazards.

- ▶ Control the operating condition via authorized operating personnel with appropriate ATEX training.
- ▶ All other maintenance work only to be performed by authorized maintenance personnel with appropriate ATEX training and certification.

SAFETY INSTRUCTIONS

- ▶ In the access and work areas of the maintenance work
  - eliminate trip and fall hazards,
  - ensure sufficient lighting,
  - keep clean and tidy.
- ▶ In a potentially explosive atmosphere, only use tools and equipment that are non-sparking and approved for the existing explosion protection zone.
- ▶ When working on the VFC, as protection from hazardous, aggressive, and explosive conveyed media:
  - Close the shut-off damper to the supply air duct and discharge duct.
  - Ensure that no conveyed medium can flow in.
  - Be mindful of harmful deposits and condensate residue.
- ▶ After completion of work
  - check functionality of all safeguards,
  - remove all tools and materials from the work area,
  - wipe up spilled substances and dispose of them properly.

9.2 Maintenance table

The maintenance intervals (W/weekly, M/monthly, 6M/semi-annually and 12M/annually) are to be adapted to the current operating conditions of the VCF as determined by the customer.

Maintenance activity	Cross reference	W	M	6M	12M*
Check operating condition	⇨ Kap. 9.3.1 [▸ 27]	X			
Outside cleaning	⇨ Kap. 8.3 [▸ 25]		X		
Test run during extensive downtime	⇨ Kap. 7.2 [▸ 24]			X	
Inside inspection and cleaning (if necessary)	⇨ Kap. 9.3.2 [▸ 27]			X	
Annual inspection	⇨ Kap. 9.3.3 [▸ 28]				X

* Or before placement in service after an extensive downtime period.

9.3 Maintenance work

For questions regarding maintenance work and intervals, contact the distributor or manufacturer. Draw up a service contract if required.

9.3.1 Check operating condition

Visually check during VCF operation:

- For proper mounting, damage, and contamination: protective devices, VFC housing, motor, and support for floor mounting.
- For leak tightness: sleeves, sealing ring.
- For loose screw connections.

Promptly report any defects found and have them properly rectified.

9.3.2 Inside inspection

ACHTUNG **Risk of damage caused by deposits**

Property damage and production downtime, reduced service life.

- Improper use or deposits in the VFC may result in incorrect flow rate control.

▶ Check the flow rate values if the VFC behaves unusually.
▶ Inspect parts that come into contact with the medium.
▶ The area around the damper blade can only be cleaned to a limited extent.

Procedure:

- Dismantle the pipe connection at the inlet spigot ⇨ Kap. 7.5 [▸ 23]. If available, insert an endoscope camera through the gap.
- Check the inner housing for corrosion, stress cracks, deformation and deposits.
- Clean the inner housing if necessary. Also clean the VFC's connecting pipes.

- If damage or heavy soiling of the VFC's damper blade is detected, replace the VFC.

NOTICE **Risk of damage due to aggressive cleaning agents and sharp cleaning tools**



Damage to plastic surfaces.

- ▶ Select cleaning agent appropriate for conveyed medium and plastic VCF material.
- ▶ If possible, use warm water and a household cleaning agent.

9.3.3 Annual inspection

The mechanical functionality of the VFC is assessed in the annual inspection, and its continued operation is ensured. This also applies in the event of extensive downtime.

1. Check during outside inspection
   - Cracking: VCF housing
   - Damaged parts. Replace these parts immediately.
2. Test run
   - Vibration measurement and condition check of the motor bearings.
3. Inside inspection and cleaning
   - Check the housing for deformation and damage, such as cracks ⇨ Kap. 9.3.2 [▸ **Fehler! Textmarke nicht definiert.**].
   - Correct fitting and damage to the damper blade, if necessary, conduct outside and inside cleaning.
4. Assembly and final inspection
   - Check the fit of the pipe connections to the VFC sockets.

10 Repair

10.1 Safety instructions

These safety instructions warn against dangers that can arise when repairing the VFC.

Modifications and adaptations to the VCF are strictly prohibited and will result in the loss of ATEX certification.

DANGER Risk of injury due to repair work on the VFC in a potentially explosive atmosphere

Death or serious injuries upon explosion.
Injuries due to electrical, mechanical, and chemical hazards.

- Only maintenance personnel authorized by the operator as well as service personnel authorized by the distributor or manufacturer, who have appropriate ATEX training/qualification, may carry out repair work.
- The same safety instructions as for maintenance work apply ⇨ Kap. 9.1 [▸ **Fehler! Textmarke nicht definiert.**]..
- Explosion protection testing is to be conducted before the VFC is put back in service.

10.2 Fault table

Identify and rectify VFC faults using this table, and enter them in the machine logbook. For further information, contact customer service (see title page).

Fault	Possible cause	Fault discovery	Remedy
The measured flow rate does not comply with expectations	Incorrect setting	Volume flow measurement	⇨ Kap. 6.3 [▸ 22].
	VFC controller defect	No change after adjustment	Replace VFC
	Pressure losses in piping.	VFC control damper closed	Clean piping systems Replace VFC
	VFC dirtied	Check piping system and VFC for dirt	Clean piping systems Replace VFC
Improper operating conditions	Leaky piping system	Check for leaks.	Replace pipe connections
	Loose or damaged pipe connections.		Tighten or replace pipe connections

10.3 Spare parts and wear parts

NOTICE **Risk of damage due to prohibited spare parts**

Component and material damage as well as production downtime.

- Loss of ATEX certification and void of warranty.

▶ Only use original spare parts from the manufacturer for maintenance activities and repairs.

With the exception of the pipe connections, the VFC cannot be repaired. If the unit is not functioning correctly, it must be replaced.

Order spare parts and wear parts from customer service (see title page) in a timely manner with the following information:

- Type classification of VFC according to nameplate or technical data sheet.
- Desired quantity.

10.4 Replacement of Pipe Connections

Repairs to the VFC:

1. Follow the safety instructions ⇨ Chap. 10.1 [▶ 26].
2. Shut down the airflow
3. Close the shut-off dampers on the supply and exhaust air ducts.
4. Loosen the pipe connections and replace them with new parts.

Risk of contamination of the ductwork

Cover open ductwork ends with plastic sheeting during repairs.

11 Removal from service, disposal, and recycling

11.1 Safety instructions

These safety instructions warn against dangers that can arise during removal from service and disposal of the VFC.

WARNING Risk of injury during removal from service and disposal of the VFC

Death or serious injuries upon explosion.
Injuries due to electrical, mechanical, and chemical hazards.

- ▶ Ensure that the work area does not have a potentially explosive atmosphere.
- ▶ Removal of the VCF to be completed only by authorized mounting personnel.
- ▶ Removal for disposal is to be completed only by authorized transport personnel.

11.2 Environmental protection

NOTICE Environmental hazards upon disposal of the VCF

Water and soil pollution

- ▪ Check the VCF for conveyed medium deposits that are harmful to health and the environment.
- ▶ Dispose of contaminated components as special waste.

11.3 Removal from service

WARNING Risk of injury due to improper removal

Injuries by pinching and crushing of body parts.

- ▶ Wear protective equipment.
- ▶ Safeguard work area and prevent unauthorized access using enclosures, safety nets, etc.
- ▶ Secure a VCF that is mounted on the wall or ceiling against falling or tipping over by attaching suitable supports.
- ▶ Provide suitable transport aids for transportation of the VFC.

WARNING Risk of injury due to escape or inflow of a conveyed medium with the ability to cause adverse health effects

Risk of eye irritation, cough, difficulty breathing, burn, and suffocation.

- ▶ Wear protective equipment.
- ▶ Close shut-off damper to inlet and outlet connections.
- ▶ Watch for deposits and condensate of the conveyed medium in the VFC and ductwork.

Procedure:

- Prepare the VFC for removal:
  - Allow to cool down.
  - Close the shut-off dampers in the supply air.
- Remove piping and ductwork connections:
  - Remove the sleeves from the inlet connection and outlet connection.
- Prepare VFC for disposal in a location suitable for this purpose.

11.4 Disposal instructions

When disposing of the VFC, observe all nationally applicable regulations and legal requirements for waste disposal, and comply with regional environmental protection regulations.

Preferably, commission a waste disposal company for proper recycling or disposal.

Disassembly instructions

- Separate the VFC components into material groups and dispose of them separately:
  - Metals
  - Plastics



Dispose of plastic parts contaminated by conveyed media that are harmful to health and the environment as special waste.

12 EU - Declaration of incorporation

We, the manufacturer	COLASIT AG Faulenbachweg 63 3700 Spiez Switzerland
declare under our sole responsibility that the product of the series	Flow rate controller (VFC) KVR 90 KVR 110 KVR 125 KVR 180 KVR 200 KVR 250

to which this declaration refers, complies with the relevant European Union harmonisation regulations.

EU Directives	Machinery Directive 2023/1230/EU
Harmonized standards	EN ISO 12100: 2011

Spiez, 30.08.2026



Reto Zwahlen (Division manager)

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Notes

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