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Volumetric flow rate controller VR1 | VR1-N



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 **WILDEBOER**

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VR1 | VR1-N volumetric flow rate controller

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VR1 | VR1-N volumetric flow rate controller

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Internal company research and development guarantees our customers the needs-based functionality of our products and systems. In the process, continuous further development together with our customers is particularly dear to us. The feedback we receive from our customers is particularly important in this context.

We thank you for your kind support.

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About this document

VR1 | VR1-N volumetric flow rate controller

1 About this document

This document contains all basic information for safe operation of the product, and must therefore be read before all actions. Otherwise, there is a risk of hazards for people and material, and malfunctions and operating faults.

These installation and operating instructions, referred to hereinafter as the instructions, must be kept in permanently legible condition near to the product or the accessories respectively at all times.

If the product is sold or passed on, the instructions must be passed on along with the product.

1.1 Scope of the installation and operating instructions

These installation and operating instructions are valid for the following product(s):

Product designation	Product description
VR1	Volumetric flow rate controller
VR1-N	Volumetric flow rate controller for low-pressure ranges

1.2 Other valid documents

Description	Article number
VR1 user manual	C6584.003.001-09
VR1-N user manual	C6584.003.009-00

1.3 Explanation of the symbols and pictograms used

The symbols and pictograms used in the following indicate safety-related and important information which must be observed in conjunction with the product and in order to guarantee safe and optimum operation.



General hazard symbol (danger, warning, caution)



General note

In the interest of safety

VR1 | VR1-N volumetric flow rate controller

2 In the interest of safety

2.1 Intended use

VR1 | VR1-N volumetric flow rate controllers, also referred to hereinafter as the product, are maintenance-free, mechanically self-actuating controllers for supply air and exhaust air ducts with constant volumetric flow rates that operate without any auxiliary power supply. They are used to maintain a constant volumetric flow rate at the set point.

Any use other than that described here is regarded as improper and can put the safety of persons and the environment at risk.

The following must be observed in the interest of intended use:

- Read and follow the instructions.
- Only operate the product and accessories with media that are free from caustic, aggressive and corrosive substances. If in doubt, carry out an analysis.
- Only use the product and accessories within the operating parameters and agreed delivery conditions as specified in the technical data.
- Only use the product and accessories in a ventilation or duct system that meets the technical specifications, with suitable connections, duct diameters and sufficient installation clearance.
- Only use the product and accessories in areas which are free from toxic and corrosive chemicals and gases.
- Only use the product and accessories outside of explosive atmospheres.
- Only use the product and accessories indoors and away from direct sunlight.
- Only combine the product and accessories with products specified and recommended in the instructions.
- Follow the specified maintenance schedule.

Before using the product and the accessories, the operating company must make sure that all the conditions and prerequisites for intended use are met.

All activities described must only be carried out by the qualified specialist staff.

2.2 Foreseeable improper use

Foreseeable improper use is use of the product or the accessories in any way different to that described in the chapter "Intended use". Foreseeable misuse includes use of the product or accessories in a manner which is not intended by the manufacturer or supplier which can, however, result from foreseeable human actions.

Foreseeable improper use includes:

- Making modifications of any type, in particular constructional and procedural interventions.
- Disabling or non-use of existing or recommended safety devices.
- Installation in non-approved installation configurations

This list is not intended to be exhaustive as not all possible misuses can be foreseen. If the operating company is aware of misuses of the product or accessories which are not listed here, the manufacturer must be informed of them immediately.

In the interest of safety

VR1 | VR1-N volumetric flow rate controller

2.3 Responsibility of the operating company

In order to prevent accidents, faults and environmental damage, the responsible operating company must make sure of the following:

- Before all actions, check whether these instructions also belong to the product.
- The product and accessories are used as intended and maintained.
- All valid legal stipulations, safety regulations and accident prevention regulations are observed.
- All regulations and operating instructions for safe work and information on how to act in the event of accidents and fires are accessible at the place of operation at all times.
- The product and the accessories are only used with recommended and fully functional safety devices.
- All assembly, installation and maintenance work is carried out by qualified specialist staff only.
- Personnel are provided with the necessary personal protective equipment (PPE) and use it.

2.4 Qualified specialist staff

This document is intended for various qualified specialist staff. The specialist staff are described in the following accordingly. Later on in this document, the information on specialist staff is indicated at the top right of the page.

INFO	Requirement for qualified specialist staff
	The mentioned qualified specialist staff must not perform any actions on the product or accessories if they are under the influence of drugs, medication, alcohol or other substances which impair consciousness.

Abbreviation	Description
QE	A qualified electrician (QE) is a person who is able to assess the electrical work assigned to him/her and identify possible hazards as a result of his/her technical training, knowledge and experience and knowledge of the valid standards.
PET	A person with electrical engineering training (PET) is a person who "has been instructed and, if necessary, trained on the tasks assigned to him/her and the possible hazards in the event of improper behaviour, and trained in relation to the necessary protective devices, personal protective equipment and safety devices" (DIN VDE 0105-100).
QPTS	Qualified personnel for transport and storage (QPTS) are persons who, through their training, professional experience and qualifications, have the necessary skills to safely carry out and instruct others in all activities relating to the transport and storage of the product, independently identify potential hazards and take measures to prevent them. These skills include, in particular, experience in handling lifting equipment, forklift trucks and industrial trucks, as well as knowledge of the applicable regional laws, standards and guidelines relating to transport and storage.
QVP	Qualified ventilation personnel (QVP) are persons who, through their training, professional experience and qualifications, have the necessary skills to safely carry out and instruct others in all activities relating to ventilation systems and ducts, independently identify potential hazards and take measures to prevent them. These skills include, in particular, experience and knowledge of the applicable regional laws, regulations, standards and directives for ventilation components.

In the interest of safety

VR1 | VR1-N volumetric flow rate controller

2.5 Safety notices

Safety notices warn of hazards when handling the product and the accessories. It is imperative that these safety notices be observed in order to prevent accidents, personal injuries and material damage and impairments during operation.

Structure of the safety notice:

SIGNAL WORD!



Type and source of the hazard

Consequences if the hazard is disregarded

Evasion of the hazard

Signal words:

Signal word	Consequence if not observed
DANGER	Death and serious personal injuries
WARNING	Death or serious personal injuries are possible
CAUTION	Personal injury or material damage are possible
NOTE	Disadvantages in the operation, handling or servicing are possible. No risk to persons or safe operation

DANGER!



Operation outside the permissible limits!

Operating the product or accessories outside the permissible limits and operating parameters, or making unauthorised interventions or modifications, may result in death or serious injury.

- To ensure safe operation of the product and accessories, comply with the limits, operating parameters and maintenance intervals specified on the rating plate and in the instructions, as well as the installation and ambient conditions.
- Check whether the use of accessories changes or restricts the operating parameters.

DANGER!



Cuts!

When handling and installing the product, there is a risk of cuts from sharp edges resulting from the manufacturing process.

- Wear cut-resistant protective gloves when carrying out any work.

3

Product information

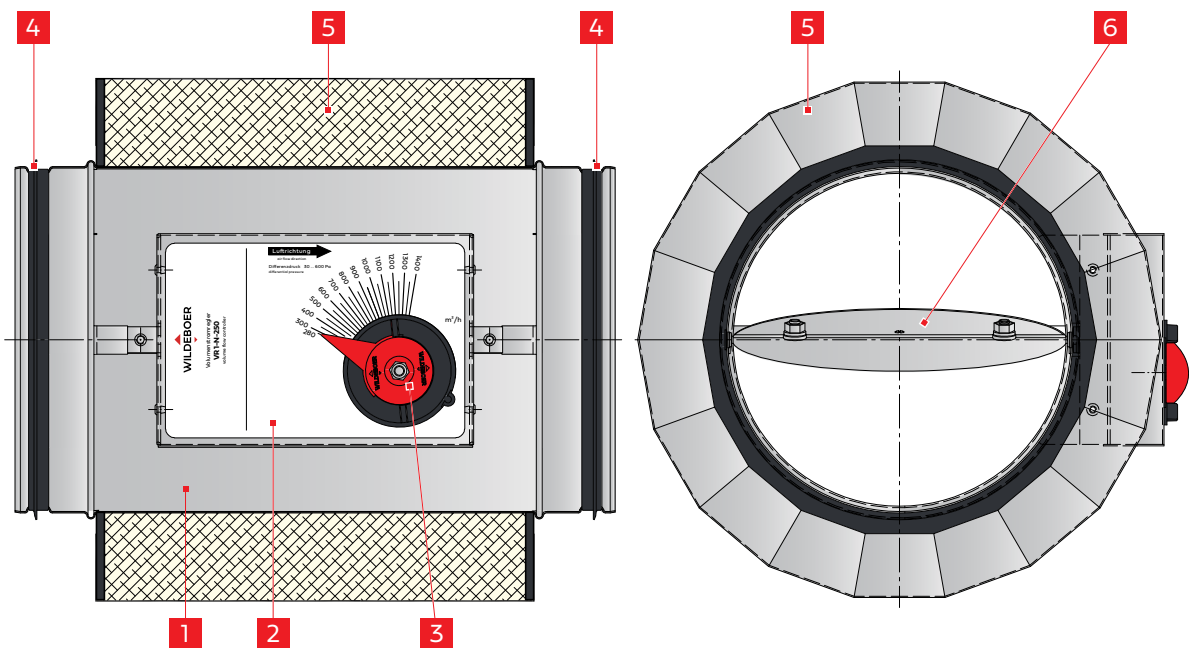
3.1

Product description

VR1 | VR1-N volumetric flow rate controllers are maintenance-free, mechanically self-actuating controllers for supply air and exhaust air ducts with constant volumetric flow rates that operate without any auxiliary power supply. They are specifically designed for use with variable pressures to maintain a constant volumetric flow rate at the set point. The flow rate is set using a manual setting device with pointer, scale and locking mechanism. As an option, the VR1 | VR1-N can be fitted with a 24 V AC/DC or 230 V AC actuator for motorised set point adjustment for applications with variable volumetric flow rates.

3.2

Product overview



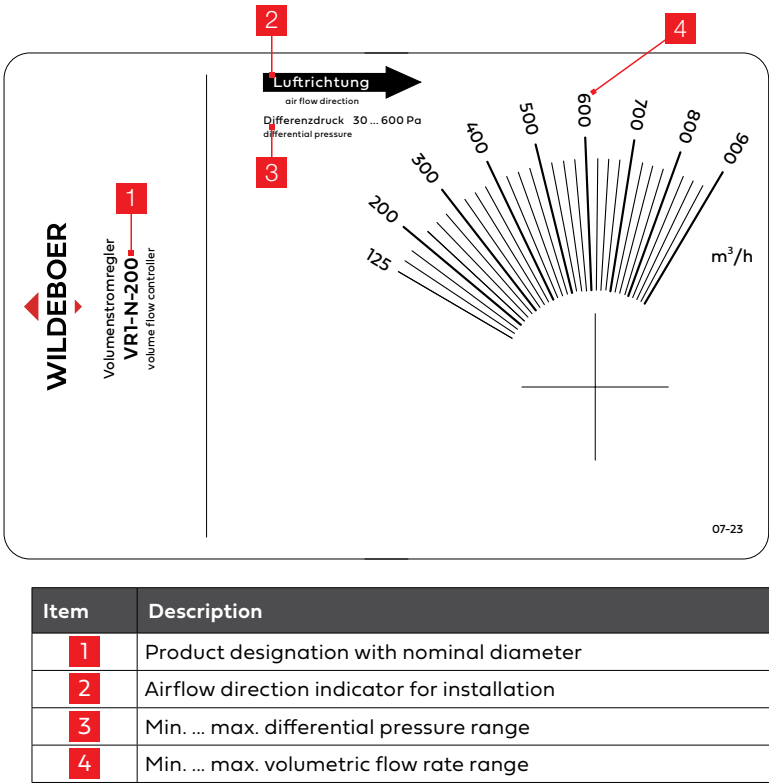
Item	Description
1	Duct casing
2	Label with scale and air direction indicator
3	Manual setting device with setting pointer, scale and locking mechanism
4	Lip seal (optional accessory)
5	Acoustic insulation with sheet metal jacket (optional accessories)
6	Damper blade

3.3

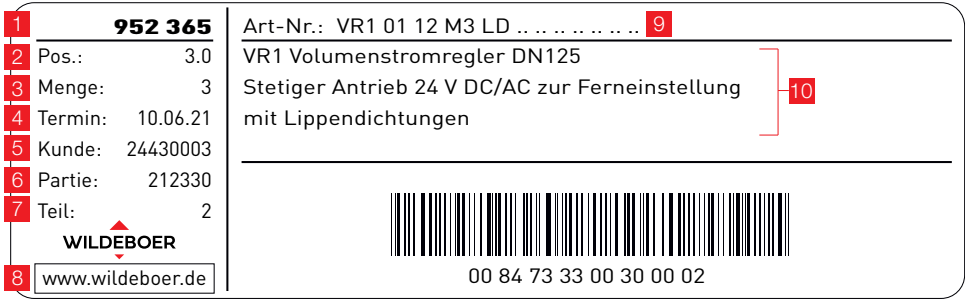
Functional description

The VR1 | VR1-N volumetric flow rate controller operates without any auxiliary power supply. The air flow in the ventilation duct generates a torque in the closing direction when it hits the damper blade. This torque is counterbalanced by the restoring torque of blade springs so that the volumetric flow rate can be kept constant within the tolerances, even if the pressure differences change. Additional damping bellows ensures vibration-free movement of the damper blade.

3.4 Operating and display elements



3.5 Type plate



NOTE!



Handling the rating plate!
Never damage or remove the type plate or render it illegible.

Technical data

VR1 | VR1-N volumetric flow rate controller

3.6 Scope of delivery

The following table shows the scope of delivery for the VR1 | VR1-N:

Illustration	Description
	VR1 VR1-N volumetric flow rate controller

4 Technical data

General data	VR1	VR1-N
Nominal diameter	DN 80, DN 100, DN 125, DN 160, DN 200, DN 250, DN 315	
Flow rate range	50 ... 3100 m³/h	30 ... 2300 m³/h
Control accuracy	Approx. $\pm 5 \dots \pm 10$ % of set point volumetric flow rate	Approx. ± 5 % from the nominal flow rate or ± 10 % from the set point volumetric flow rate (whichever value is greater)
Differential pressure range	50 ... 1000 Pa	30 ... 600 Pa
Flow velocity	2.1 ... 15.5 m/s	1.1 ... 12.2 m/s
Operating temperature	-20 ... +70 °C, short-term +90 °C	
Relative humidity	≤ 95 %, non-condensing	
Casing tightness as per DIN EN 1751	Class C	
Maintenance-free design	Yes	
Materials	VR1	VR1-N
Casing + damper blade	Galvanised steel	
Bearing shafts	Stainless steel	
Adjustment mechanism	Plastic	

Technical data

VR1 | VR1-N volumetric flow rate controller

4.1 Actuators

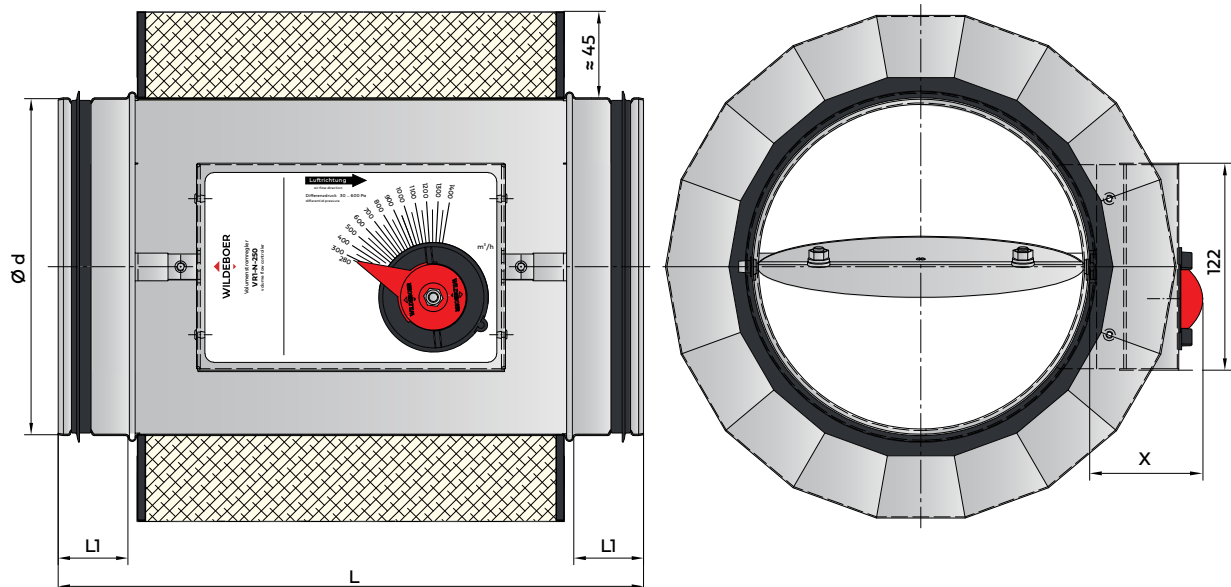
The VR1 | VR1-N volumetric flow rate controller can be equipped with three different actuators (M1, M2, M3) to adjust the volumetric flow rate.

General data			
Electric data	M1	M2	M3
Voltage supply	230 V AC	24V AC/DC	
Frequency	50 ... 60 Hz		
Function range	85 ... 265 V AC	19.2 ... 28.8 V AC 19.2 ... 28.8 V DC	
Power consumption during operation	1.5 W	1 W	
Power consumption in standby mode	0.5 W	0.2 W	0.4 W
Power consumption for sizing	3.5 VA	1.5 VA	2 VA
Power supply / control connection	Cable 1 m, 3 x 0.75 mm²		
Parallel operation	yes (observe the power specifications)		
Functional data	M1	M2	M3
Motor torque	5 Nm		
Working area Y	-		2 ... 10 V
Input resistance	-		100 kΩ
Position feedback U	-		2 ... 10 V
Position feedback U – Note	-		max. 1 mA
Position accuracy	-		± 5 %
Motor direction of rotation	Selectable via switch: 0 – anticlockwise / 1 – clockwise		
Manual adjustment	with push-button, lockable		
Angle of rotation	Max. 95°		
Angle of rotation – Note	Can be limited in both directions by adjustable mechanical end stops		
Motor running time	150 s / 90°		
Motor sound power level	35 dB(A)		
Shaft coupling	Universal clamp 6 ... 20 mm		
Position indicator	Mechanical, clip-on		
Safety data	M1	M2	M3
Protection class IEC / EN	II, reinforced insulation	III, safety extra-low voltage (SELV)	
Protection class UL	II, reinforced insulation	-	Class 2 Supply
Protection rating IEC / EN	IP54		
Protection rating NEMA / UL	NEMA2		
Casing	UL Enclosure Type 2		
EMC	CE in accordance with 2014/30/EC		
Low Voltage Directive	CE in accordance with 2014/35/EU	-	-
Protection rating IEC / EN	IEC / EN 60730-1 and IEC / EN 60730-2-14		
UL Approval	cULus in accordance with UL60730-1A, UL60730-2-14 and CAN / CSA E60703-1 The UL marking on the actuator depends on the production site. The device is UL-compliant in all cases.		
Mode of operation	Type 1		
Rated impulse voltage – power supply / control	2.5 kV	0.8 kV	
Level of soiling	3		
Ambient humidity	Max. 95 % RH, non-condensing		
Ambient temperature	-30 ... +50 °C -22 ... +122 °F		
Storage temperature	-40 ... +80 °C -40 ... +176 °F		
Maintenance	Maintenance-free		
Weight	660 g		630 g

Technical data

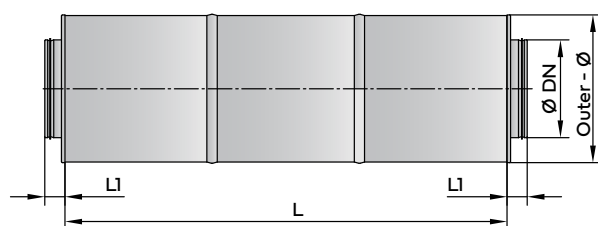
VR1 | VR1-N volumetric flow rate controller

4.2 Dimensions



Nominal diameter [DN]	Ød [mm]	L [mm]	L1 [mm]	X	A _A [m²]
80	79	329	40	Manual: 65 mm Motorised: 130 mm	0.005
100	99	329	40		0.008
125	124	329	40		0.012
160	159	329	40		0.020
200	199	329	40		0.031
250	249	407	60		0.049
315	314	457	60		0.078

4.2.1 SRC duct silencer



Size [DN]	Outer diameter Ø [mm]	L [mm]		L1 [mm]
80	200	600	-	40
100	200		900	
125	225			
160	260			
200	300			
250	355			
315	415			

4.3 Weights

Nominal diameter [DN]	VR1 VR1-N [kg]	Acoustic insulation [kg]	Lip seal [g]	SRC duct silencer [kg]	
				600 mm	900 mm
80	1.13	0.73	20	3.00	-
100	1.24	0.88	26	3.80	5.70
125	1.39	1.07	32	4.50	6.30
160	1.60	1.33	40	5.10	7.80
200	1.88	1.84	52	6.20	10.00
250	3.35	2.45	64	7.80	11.50
315	4.53	3.60	88	9.10	13.10

5 Storage and transportation

DANGER!



Improper transport or storage!

Improper transport or storage may result in personal injury or property damage.

- Wear protective gloves when handling packaging materials.
- Handle the packaging and product with care.
- Transport and handle the packaging in accordance with the markings (observe lifting equipment attachment points, centre of gravity and orientation, e.g. keep upright, do not throw, etc.).
- Comply with the permissible transport and storage parameters.

NOTE!



Handling packaging materials!

Improper disposal of packaging materials may cause environmental damage.

- Dispose of packaging materials in accordance with the regional laws, guidelines and regulations of the country of use.

5.1 Storage

Store the product and the accessories as follows:

- Comply with the storage conditions.
- Store in a sealed, dry room at temperatures above freezing point.
- Store with protection from external effects of the weather, direct sunlight and heat sources.
- Secure against tipping over and vibrations at the storage location.

5.2 Transportation

Check the product after transportation and removal of the packaging material for possible transport damage. Any damage must be reported immediately to the freight forwarder, Wildeboer Bauteile GmbH or its representative.

Transport the product as follows:

- Handle the packaging and product with care.
- Observe the transport weight information and markings on the packaging.
- Secure the packaging and product against slipping and falling during transport.

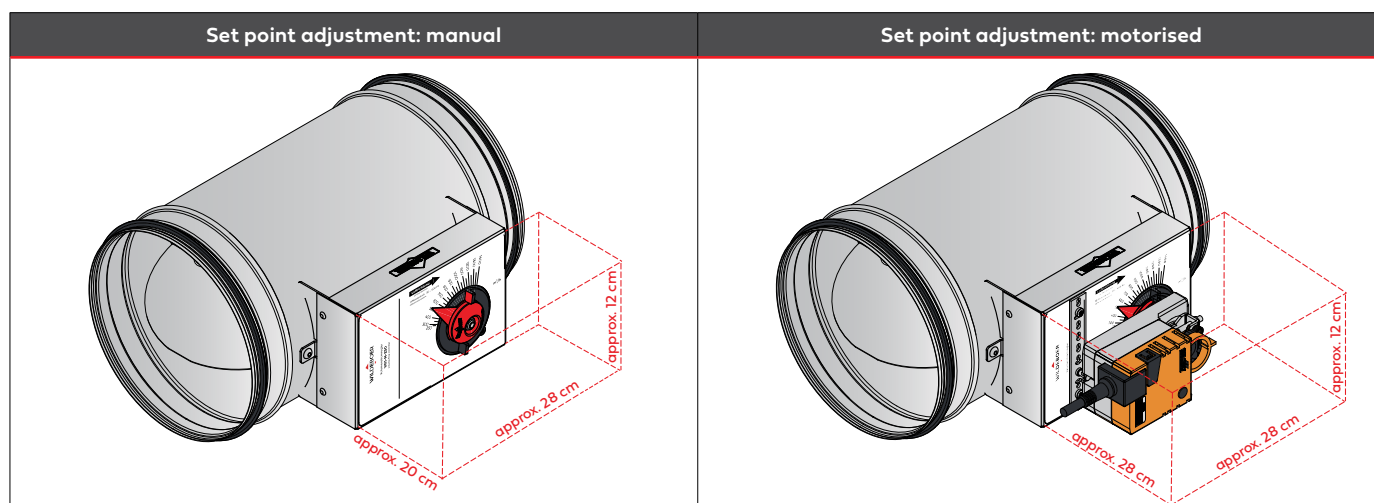
6 Installation and assembly

6.1 Installation in the direction of airflow

The VR1 | VR1-N volumetric flow rate controller is installed regardless of the position and in the air direction indicated on the label. The pipe end fits into ventilation ducts in accordance with DIN EN 1506 or DIN EN 13180. When installing the controller, always ensure that the connecting ducts are round and that the installation is free from stress to allow the damper blade to move freely. If necessary, secure the volumetric flow rate controller at the duct connection using tapping screws or fabric tape. When using screws, always ensure that the damper blade can move freely.

6.2 Space requirement

To enable the scale to be read and the commissioning and servicing work to be carried out, sufficient space should be kept free in the area of any attachments. Inspection openings of sufficient size may required so that the attachments are easily accessible.

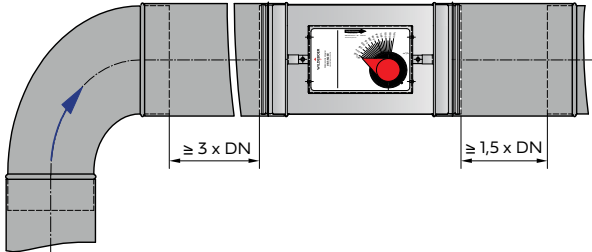


6.3 Distances to disturbance points

The stated control accuracy of ΔV applies to a straight and disturbance-free inflow. Fittings such as bends, branches or changes in cross-section cause turbulence that can influence the flow rate measurement.

For the volumetric flow rate controller to work optimally, the flows must be largely free of disturbance. After flow disturbance points (e.g. bends or branches), the straight inlet and outlet sections shown as examples must be observed; longer inlet sections may be required where several disturbance points occur consecutively. Otherwise significant control deviations must be expected.

Bend connection

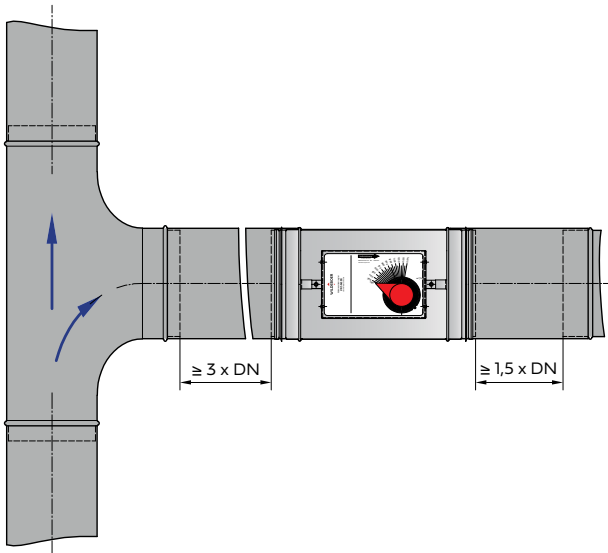


The specified control accuracy of ΔV can only be achieved with at least $3 \times DN$ straight flow path.

Note:

EN 1506 must be observed for the design of ventilation duct connections.

Branch-off from main duct



7 Installation



DANGER!

Electrical voltage

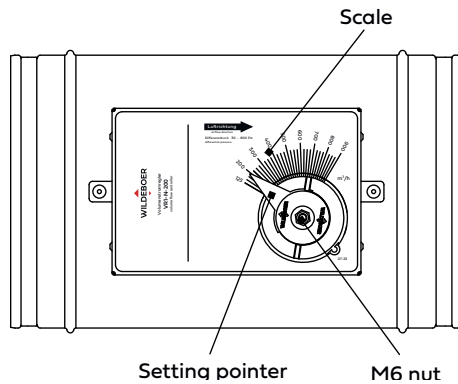
There is a risk of death or serious injuries by contact with live components. There is also a risk of functional faults and operating faults and material damage.

- All work must be carried out by a qualified electrician only.
- Observe the respective valid regulations (e.g. VDE 0100/IEC 60364) for all work.
- Isolate the device and all devices connected to it from the voltage, and secure it while carrying out the work to prevent it from being switched back on.
- Check all electrical components and line connections regularly and immediately eradicate any identified defects.
- Only use undamaged original parts as indicated by the manufacturer for all work.

M1: 2-point control N L 230 VAC 1 2 3	M1: 3-point control N L 230 VAC 1 2 3	M1: Direction of travel <table><tr><td>1</td><td>2</td><td>3</td><td>0</td><td>0</td></tr><tr><td>↗</td><td>↗</td><td>↗</td><td>↻</td><td>↻</td></tr><tr><td>↗</td><td>↗</td><td>↗</td><td>↻</td><td>↻</td></tr><tr><td>↗</td><td>↗</td><td>↗</td><td>stop</td><td>stop</td></tr><tr><td>↗</td><td>↗</td><td>↗</td><td>↻</td><td>↻</td></tr></table>	1	2	3	0	0	↗	↗	↗	↻	↻	↗	↗	↗	↻	↻	↗	↗	↗	stop	stop	↗	↗	↗	↻	↻
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M2: 2-point control ⊥ ~ 24 VAC - + 24 V DC 1 2 3	M2: 3-point control ⊥ ~ 24 VAC - + 24 V DC 1 2 3	M2: Direction of travel <table><tr><td>1</td><td>2</td><td>3</td><td>0</td><td>0</td></tr><tr><td>↗</td><td>↗</td><td>↗</td><td>↻</td><td>↻</td></tr><tr><td>↗</td><td>↗</td><td>↗</td><td>↻</td><td>↻</td></tr><tr><td>↗</td><td>↗</td><td>↗</td><td>stop</td><td>stop</td></tr><tr><td>↗</td><td>↗</td><td>↗</td><td>↻</td><td>↻</td></tr></table>	1	2	3	0	0	↗	↗	↗	↻	↻	↗	↗	↗	↻	↻	↗	↗	↗	stop	stop	↗	↗	↗	↻	↻
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M3: Continuous control ⊥ ~ 24 VAC/DC - + 1 2 3 5	M3: Direction of travel <table><tr><td>1</td><td>2</td><td>3</td><td>0</td><td>0</td></tr><tr><td>↗</td><td>↗</td><td>2 V</td><td>↻</td><td>↻</td></tr><tr><td>↗</td><td>↗</td><td>10 V</td><td>↻</td><td>↻</td></tr></table>	1	2	3	0	0	↗	↗	2 V	↻	↻	↗	↗	10 V	↻	↻											
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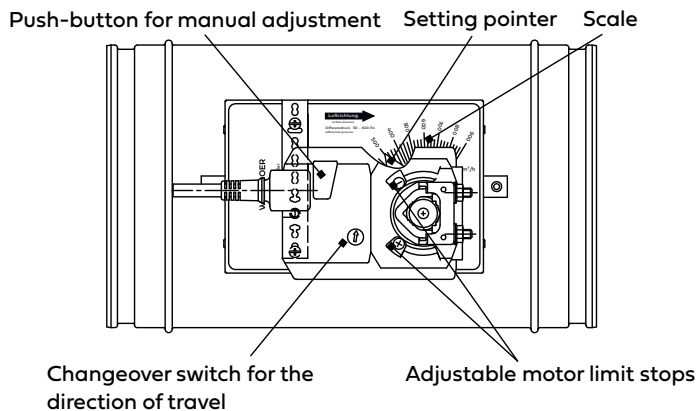
8 Commissioning

Set point adjustment: manual



Set the volumetric flow rate set point value manually using the setting pointer with scale within the ranges $\dot{V}_{\min}$ to $\dot{V}_{\max}$.

Set point adjustment: motorised



The M1 (LM230A) or M2 (LM24A) servo motor provides two-point operation (MIN-MAX control). The motor is used solely to set the reference volumetric flow rate; actual control is performed mechanically. MIN-MAX control is achieved using 1-wire or 2-wire control. The actuator is overload-proof, requires no limit switches and stops automatically when it reaches the limit stop.

The M3 (LM230A-SR) servo motor provides continuous set point adjustment. The motor is used solely to set the reference volumetric flow rate; actual control is performed mechanically. Control is via a standard positioning signal Y DC 0...10 V, with the motor's operating range starting at 2 V. The operating range set using the mechanical motor stops therefore allows proportional adjustment within the remaining angle of rotation and voltage range.

Operation

VR1 | VR1-N volumetric flow rate controller

9 Operation

The volumetric flow rate controller operates automatically by mechanical means. The reference volumetric flow rate is adjusted manually or by motor. During operation, the volumetric flow rate is kept constant within the ranges $\dot{V}_{\min}$ to $\dot{V}_{\max}$.

10 Consumables, accessories and spare parts

10.1 Accessories

Description	Variant code
Lip seal DN 80	LD01.08.....
Lip seal DN 100	LD01.10.....
Lip seal DN 125	LD01.12.....
Lip seal DN 160	LD01.16.....
Lip seal DN 200	LD01.20.....
Lip seal DN 250	LD01.25.....
Lip seal DN 315	LD01.31.....
Acoustic insulation with sheet metal jacket DN 80	VR1..0008....DS.....
Acoustic insulation with sheet metal jacket DN 100	VR1..0010....DS.....
Acoustic insulation with sheet metal jacket DN 125	VR1..0012....DS.....
Acoustic insulation with sheet metal jacket DN 160	VR1..0016....DS.....
Acoustic insulation with sheet metal jacket DN 200	VR1..0020....DS.....
Acoustic insulation with sheet metal jacket DN 250	VR1..0025....DS.....
Acoustic insulation with sheet metal jacket DN 315	VR1..0031....DS.....
SRC duct silencer DN 80, length 600 mm	SRC..0806.....
SRC duct silencer DN 100, length 600 mm	SRC..1006.....
SRC duct silencer DN 100, length 900 mm	SRC..1009.....
SRC duct silencer DN 125, length 600 mm	SRC..1206.....
SRC duct silencer DN 125, length 900 mm	SRC..1209.....
SRC duct silencer DN 160, length 600 mm	SRC..1606.....
SRC duct silencer DN 160, length 900 mm	SRC..1609.....
SRC duct silencer DN 200, length 600 mm	SRC..2006.....
SRC duct silencer DN 200, length 900 mm	SRC..2009.....
SRC duct silencer DN 250, length 600 mm	SRC..2506.....
SRC duct silencer DN 250, length 900 mm	SRC..2509.....
SRC duct silencer DN 315, length 600 mm	SRC..3106.....
SRC duct silencer DN 315, length 900 mm	SRC..3109.....

10.2 Spare parts

Description	Ordering data
Lip seal DN 80	LD01.08.....
Lip seal DN 100	LD01.10.....
Lip seal DN 125	LD01.12.....
Lip seal DN 160	LD01.16.....
Lip seal DN 200	LD01.20.....
Lip seal DN 250	LD01.25.....
Lip seal DN 315	LD01.31.....

11 Decommissioning

The product is decommissioned by disassembling it.

12 Disassembly

When disassembling the controller, always ensure that the connecting ducts are round. They must not become distorted during disassembly. After disassembling the volumetric flow rate controller, the functionality of the ventilation duct section must be restored.

13 Disposal

Dispose of the product properly at the end of its service life, e.g. through a specialist company. Do not dispose of electrical and electronic components with municipal or household waste. Materials such as glass and plastic can largely be recovered and reused.

Description	EU waste code
Absorbents, filter materials, wiping cloths and protective clothing – contaminated with oils or other hazardous substances	15 02 02
Absorbents, filter materials, wiping cloths and protective clothing – other than those falling under 15 02 02	15 02 03
Packaging – paper and cardboard	15 01 01
Packaging – plastics	15 01 02
Electrical and electronic equipment – other than those falling under 20 01 21, 20 01 23 and 20 01 35	20 01 36
Galvanised sheet steel	17 04 04

14

Appendix

14.1

Declaration of Incorporation



Declaration of Incorporation

within the meaning of the EC Machinery Directive 2006/42/EC Annex II 1. B for partly completed machinery

1. Manufacturer:

Wildeboer Bauteile GmbH
Marker Weg 11
26826 Weener, Germany
2. Product:

Volumetric flow rate controller
3. Type:

VR1 and VR1-N
4. Function:

Mechanically self-actuating controller for supply air and exhaust
air ducts with constant volumetric flow rates

We declare that the following essential requirements of the Machinery Directive 2006/42/EC are met:
1.3, 1.5.1, 1.6.1

We further declare that the specific technical documentation has been prepared in accordance with Annex VII Part B of this Directive.
We expressly declare that the partly completed machinery complies with all relevant provisions of the following EC/EU directives or regulations:

2006/42/EG	Directive 2006/42/EC of the European Parliament and the Council of 17 May 2006 on machinery
2011/65/EU	Directive 2011/65/EU of the European Parliament and of the Council of 08 June 2011 on the restriction of the use of certain hazardous substances in electrical and electronic equipment
1907/2006	Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC Published in L 396/1 of 30 December 2006
2014/35/EU	Directive 2014/35/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits. Published in 2014/L 96/357 of 29 March 2014
2014/30/EU	Directive 2014/30/EU of the European Parliament and of the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to electromagnetic compatibility (recast) Published in 2014/L 96/79 of 29 March 2014

References to the harmonised standards in accordance with Article 7, paragraph 2

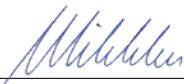
EN ISO 12100:2010-11	Safety of machinery - General principles for design - Risk assessment and risk reduction (ISO 12100:2010)
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The manufacturer or the authorised representative undertake to provide national authorities with the specific technical documentation for the partly completed machinery upon justified request. The documentation will be provided by mail.

The industrial property rights remain unaffected.

Important notice!
The partly completed machinery may only be put into operation after it has been determined that the machine into which the partly completed machinery is to be incorporated complies with the provisions of the Machinery Directive.

Weener, 31/01/2024


Dr.-Ing. J. Wildeboer, Managing Director

Place and date of issue

Appendix

VR1 | VR1-N volumetric flow rate controller

Notes

This image shows a full page of blank graph paper. The grid consists of small, uniform squares formed by thin, light gray lines. There are no margins, text, or other markings on the page.

Appendix

VR1 | VR1-N volumetric flow rate controller

Notes

This image shows a full page of blank graph paper. The grid consists of small, equal-sized squares formed by thin gray lines. There are 20 columns and 20 rows of squares, creating a total of 400 square units. The grid covers the entire area of the page, leaving no margins or other markings.

Notes

This image shows a full page of blank graph paper. The grid consists of small, uniform squares formed by thin, light gray lines. There are no margins, text, or other markings on the page.

Always there for you

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