Maintenance-free

VRL1 Volume Flow Limiter

for ventilation and air conditioning systems.

- Sizes DN 80 to DN 250.
- Flow velocities from 0.8 m/s, differential pressures from 30 Pa.
- Infinitely adjustable volume flows via scales.
- Hygienic design using microbe-resistant materials.
- Environmental Product Declaration as per ISO 14025 and EN 15804.
- Options: Drilling templates, sliding sleeves, duct sleeves.

VRL1 volume flow limiter

Overview: Limiter and optional accessories

VRL1 volume flow limiters are designed for insertion into circular ventilation ducts for supply air and exhaust air in ventilation and air conditioning systems. They are used to replace conventional dampers, eliminating the often time-consuming manual adjustment and calibration of volume flows in the systems. ⇒ see pages 3 and 6

Preset volume flow set points are automatically kept constant, even when sections of the systems are connected or disconnected during operation.

If the volume flow set point of the VRL1 volume flow limiter is required to be adjustable in the installed position from the outside and remain accessible, an opening can be made in the duct wall using the reusable **drilling template** and closed again using the **inspection cover**. ⇒ see page 7

Drilling template

Inspection cover

Sliding sleeves come with an inspection opening for adjusting the volume flow set point of the VRL1 volume flow limiter. Sliding sleeves must be inserted in circular ventilation ducts on one side and equipped with a detachable plug-in connection on the other.

⇒ see page 7

The circular ventilation duct can be opened and the VRL1 volume flow limiter removed.

This also allows the circular ventilation duct to be cleaned and disinfected.

VRL1 volume flow limiters in sliding sleeves can also be **adjusted by an actuator**. Depending on which actuator is selected, two set points or any intermediate values can be selected. ⇒ see page 8

VRL1 volume flow limiters in **duct sleeves** can be accessed via plenum boxes of air diffusers in suspended ceilings, if ceilings cannot be opened, for example.

Sufficiently large plenum boxes without dampers are suitable. If VRL1 volume flow limiters need to be taken out of the duct sleeve, the perforated panels inside the plenum box must be removable, or the plenum box must not contain any perforated panels.

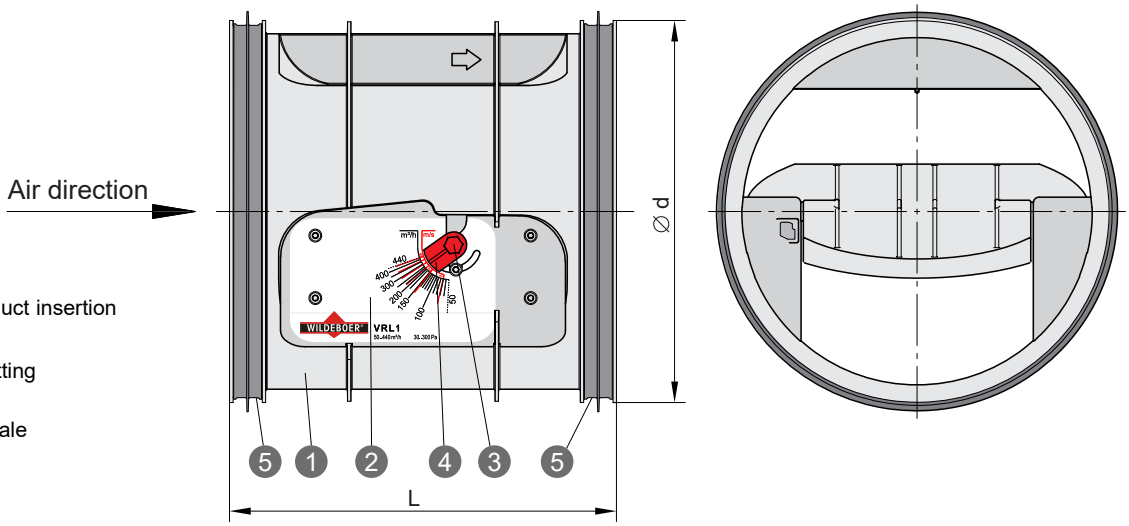
⇒ see page 9

SRC duct silencer

⇒ see page 9

VRL1 volume flow limiter

Description, sizes, technical data



1 Controller casing for duct insertion
2 Control device
3 Flow rate set point setting
Screw head TX 8
4 Setting pointer and scale
5 Lip seal

Maintenance-free **VRL1 volume flow limiters** are mechanical controllers that operate without any auxiliary power supply to maintain constant volume flows in ventilation and air conditioning systems. They regulate volume flows with reference to preselected set points and keep these constant.

VRL1 volume flow limiters can be used in any installation position in ventilation ducts, for example in spiral pipes.

The adjustment and control mechanism of the VRL1 volume flow limiters is enclosed and protected against contamination from the air flow. Furthermore, the lip seals on both sides position and fix the VRL1 volume flow limiter in the circular ventilation duct so that complete enclosure is created overall.

The controller casing and damper blade are made from a special anti-static and microbe-resistant plastic. The smooth surfaces of the air-ducting components virtually eliminate soiling. VRL1 volume flow limiters therefore fulfil maximum hygiene requirements.

- Sizes: DN 80 to DN 250
- Total volume flow range: V_{min} = 13 m³/h to V_{max} = 1060 m³/h
- Differential pressure range: 30 Pa to 300 Pa
  ⇒ see pages 4 and 5
- Interior temperature range: +10°C to +50°C

Size DN	V_{min} [m³/h]	V_{max} [m³/h]	Ød [mm]	L [mm]	A_A [m²]
80	13	110	79	100	0.005
100	20	170	99	125	0.008
125	35	270	124	150	0.012
160	50	440	159	160	0.020
200	75	680	199	200	0.031
250	125	1060	249	250	0.049

What is supplied VRL1	Drilling template	Sliding sleeve without actuator	Sliding sleeve with actuator	Duct sleeve	SRC duct silencer
factory-mounted in	-	x	x	x	-
to be installed on site with/in	x	x	-	x	x

The sliding sleeve and duct sleeve satisfy casing leaktightness class C as per DIN EN 1751

VRL1 volume flow limiters are adjusted at the factory to the total volume flow ranges, starting with at least 1 : 7. The set point can be infinitely adjusted on site using a rotary pointer on a scale with volume flow and velocity specifications between V_{min} and V_{max}, and then locked. The special control mechanism ensures a high degree of control precision with a deviation of around ±5 % to ±10 % throughout the entire range of application.

Control deviations stated as a percentage relate to the maximum adjustable volume flow set point. Other deviations can occur in low ranges of application, especially with small sizes! Disturbed flows should be compensated for. ⇒ See page 6

www.HYG.de
Geprüfte Qualität
Hygiene-Institut des Ruhrgebiets
Institut für Umwelthygiene und Toxikologie
HY geprüft
Nur gültig in Verbindung mit zugehörigem Zertifikat unter www.wildeboer.de!

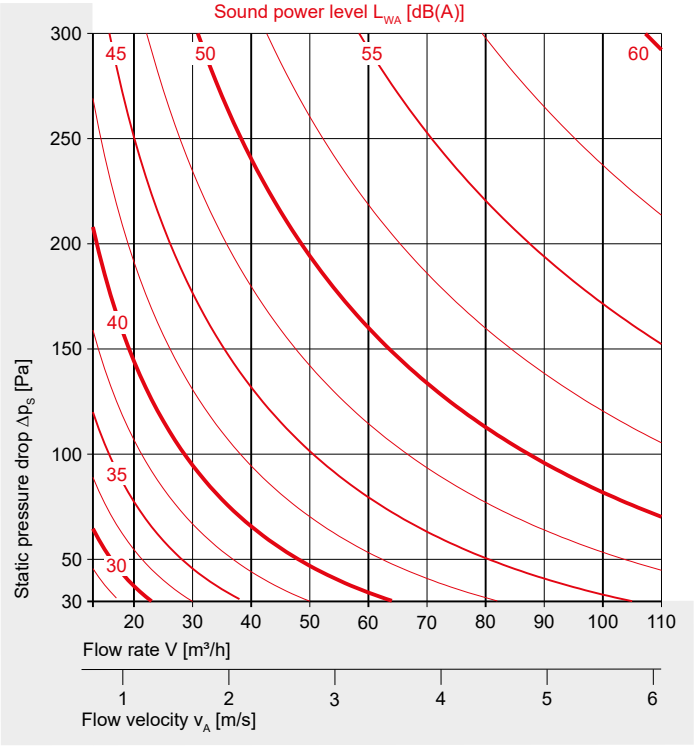
VRL1 volume flow limiter

- satisfy the **hygiene requirements** as per VDI 6022-1, VDI 3803-1, DIN 1946-4 and DIN EN 16798-3, SWKI VA104-01 and SWKI VA105-01, ÖNORM H6020 and ÖNORM H6021.
- are **resistant to microbes**, so they **do not promote the growth of micro-organisms (fungi, bacteria)**. This reduces the infection risk for people, and also means less cleaning and disinfection work!
- are **resistant to cleaning agents and disinfectants**, and are suitable for use in hospitals and similar facilities!
- With **Environmental Product Declaration** as per ISO 14025 and EN 15804:
  EPD-WIL-20150038-ICA1-EN

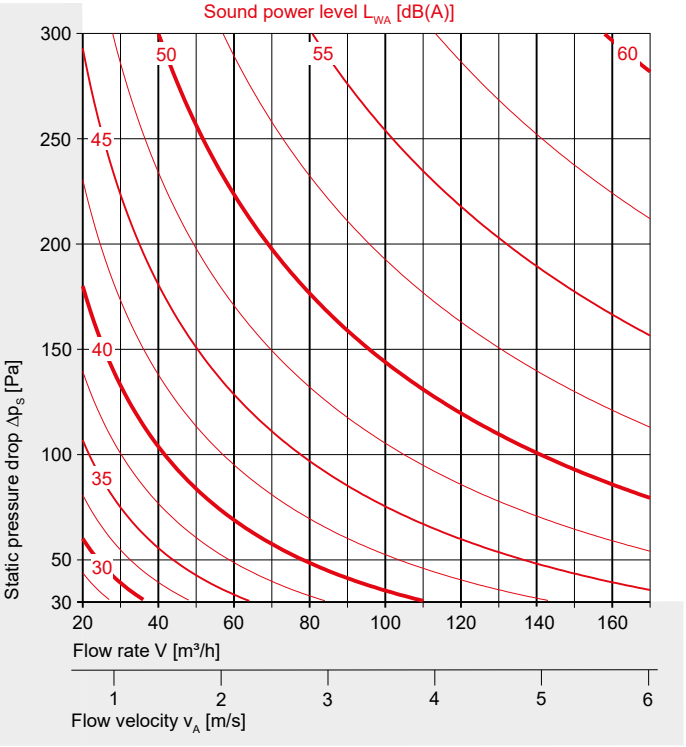
VRL1 volume flow limiter

Sound power level in the connecting duct (flow noise)

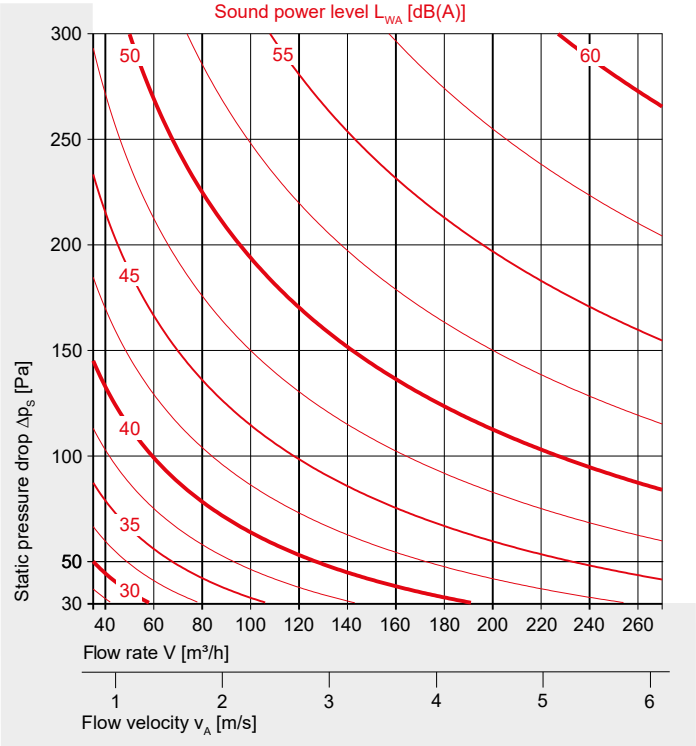
Size DN 80



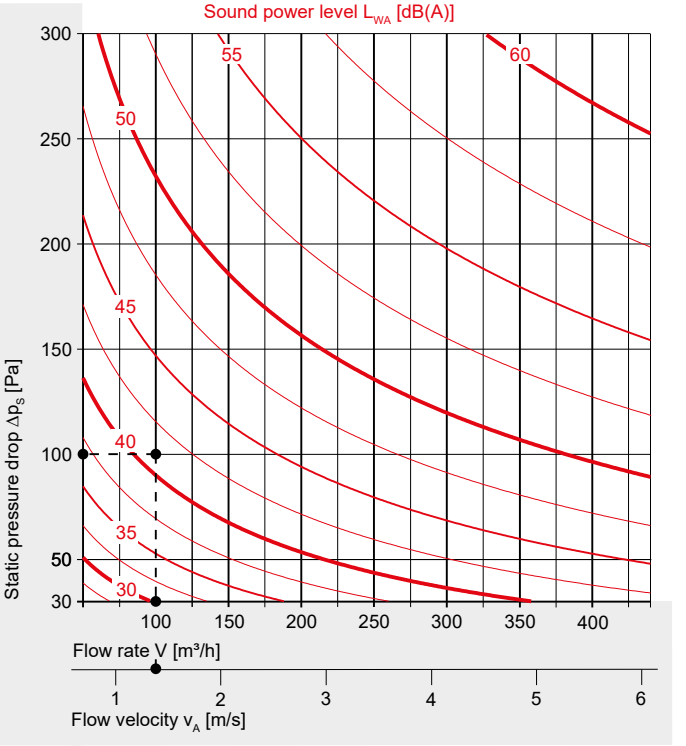
Size DN 100



Size DN 125



Size DN 160

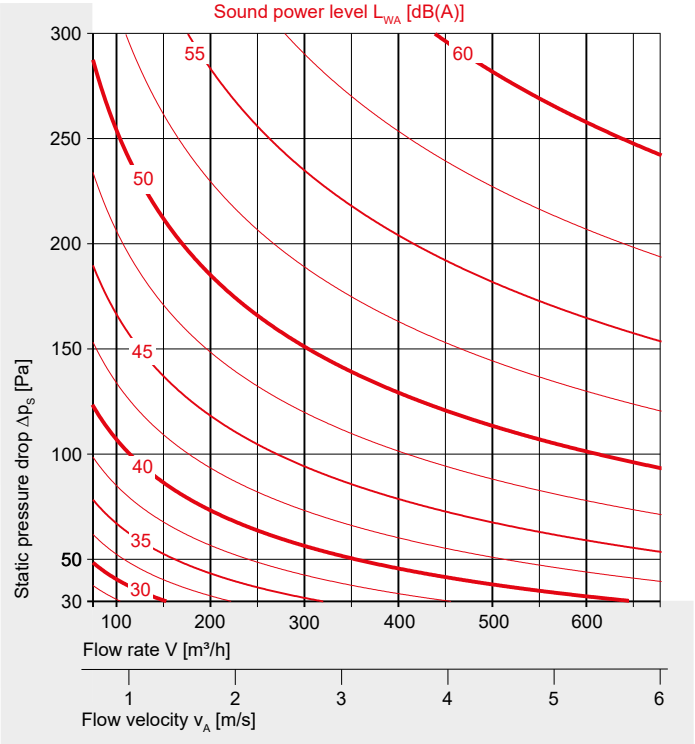


Nomenclature ⇒ see page 5

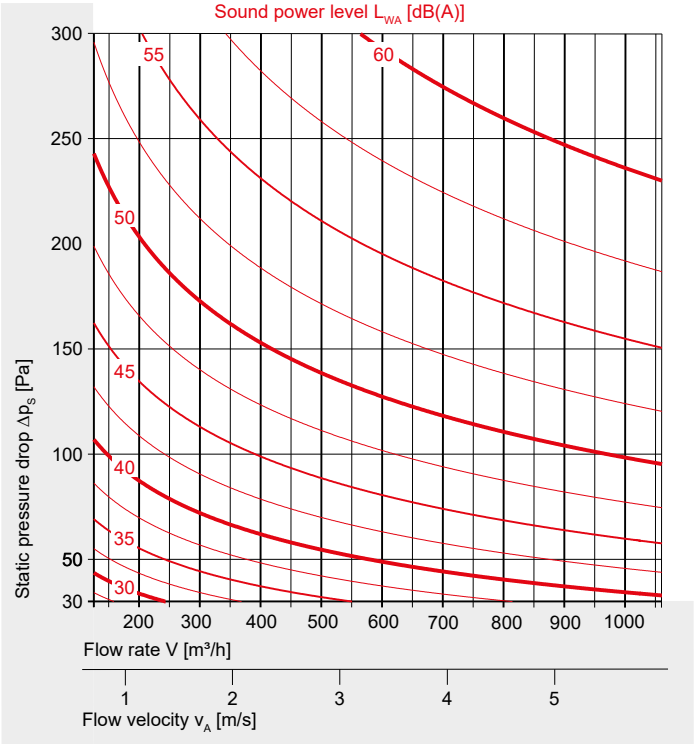
VRL1 volume flow limiter

Sound power level in the connecting duct (flow noise)

Size DN 200



Size DN 250



Example: ⇒ see page 4

Specified:	Size	DN 160			
	Flow rate	V	=	100	m³/h
	Flow velocity	v_A	=	1.4	m/s
	Static pressure drop	Δp_s	=	100	Pa
Result:	Flow noise				
	Sound power level	L_{WA}	=	41	dB(A)
	Attenuation (duct, room)	$\Delta L_{L,R}$	=	8	dB
	Sound pressure level	L_{pA}	=	33	dB(A)

- In the nomograms, the sound power level within the connecting duct is calculated as an A-weighted overall level L_{WA}.
- The sound power levels can be reduced by up to 24 dB using SRC duct silencers.
- Alternatively, the Wildeboer dimensioning software can be used as a design aid. ⇒ see page 9

  This software also calculates the octave sound power level $L_{W\text{-}Oct}$ for each size of VRL1 volume flow limiter and each operating point, also with additional SRC duct silencer.

Note

Sound power levels L_{WA} determine the sound energy introduced into the duct system and should always be used for the acoustic calculation, including when adding sound attenuators and ventilation ducts with deflections and branches.

Sound pressure levels L_p or L_{pA} are frequently specified instead of the sound power level L_{WA}. Their numerical values can be up to 10 dB lower, as the duct and room attenuation to be deducted from the sound power levels L_{WA} is generally pre-empted. This essential difference must be taken into consideration when purely comparing numerical values!

Nomenclature

V	[m³/h]	Volume flow
V_{min}	[m³/h]	minimum flow rate set point which can be selected
V_{max}	[m³/h]	maximum flow rate set point which can be selected
A_A	[m²]	Inflow cross section
v_A	[m/s]	Flow velocity in A_A
Δp_s	[Pa]	Static pressure drop
L_{WA}	[dB(A)]	A-rated sound power level
$L_{W\text{-}Oct}$	[dB]	Octave sound power level $L_{W\text{-}Oct} = L_{WA} + \Delta L$
ΔL	[dB]	Relative sound power level to L_{WA}
f	[Hz]	Octave mid-frequency
L_p	[dB]	Sound pressure level
L_{pA}	[dB(A)]	A-weighted sound pressure level
$\Delta L_{L,R}$	[dB]	attenuation (ventilation duct, room)

VRL1 volume flow limiter

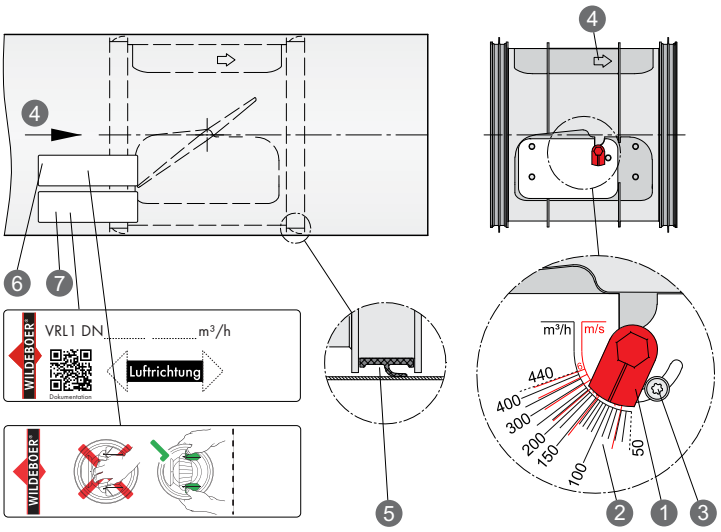
Installation instructions

To ensure the VRL1 volume flow limiter functions optimally in ventilation and air conditioning systems, the standard operating conditions must be given.

It should be installed under largely undisturbed flow conditions. The example inflow and outflow lengths shown should be observed, especially with nearby flow disturbance points (fire dampers, shut-off dampers, reductions, widenings, bends, branches, T-pieces, plenum boxes), as otherwise control deviations could result which may require the controller to be readjusted. A series of disturbance points can be compensated for by longer inflow and outflow lengths.

VRL1 volume flow limiter for installation in circular ventilation ducts:

- Prior to insertion in the circular ventilation ducts, the VRL1 volume flow limiters must be set on site to the required volume flow set point and locked! The volume flow set point must be set using the pointer (1) on the scale (2). Then the screw (3) must be tightened to lock the setting; screw head TX 8.
- The volume flow limiter must be inserted into the ventilation duct so that the air flow direction (4) indicated on it corresponds to the air flow direction in the ventilation duct.
- Make sure that the ducts have the necessary roundness and that installation is tension-free. The VRL1 volume flow limiters must be inserted against the direction of air flow (4) so that the lip seals (5) are in contact with the duct walls – as shown in the detail diagram. In doing so, only press on the lateral indentations of the controller casing! The damper blade must have freedom of movement permanently.
- Two labels are affixed to the VRL1 volume flow limiter. One of them (6) shows the correct handling. The other (7) shows the installation location, the flow direction and the set flow rate set point. Both must be observed and should be attached to the outside of the ventilation duct.



Please note!

VRL1 volume flow limiters are factory-adjusted control devices. Manual interventions in the mechanism are not permitted!

When a high volume flow set point is set, the damper blade must not be closed manually!

The permitted range of use is limited to 300 Pa differential pressure and 6 m/s inflow velocity. Moreover, the size-specific load limits must be observed. This protects the limiters from mechanical overload.

Inspection covers may only be removed to adjust the volume flow set points when the system is switched off!

Installation close to flow disturbance points

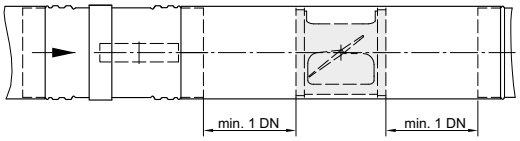


Figure 1: downstream of a fire damper

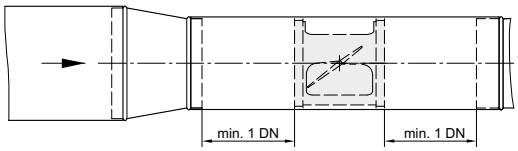


Figure 2: downstream of a reduction

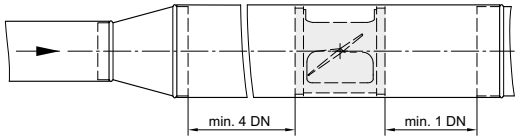


Figure 3: downstream of a widening

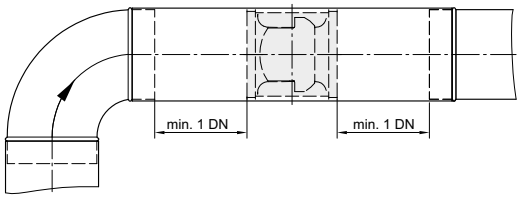


Figure 4: downstream of a bend

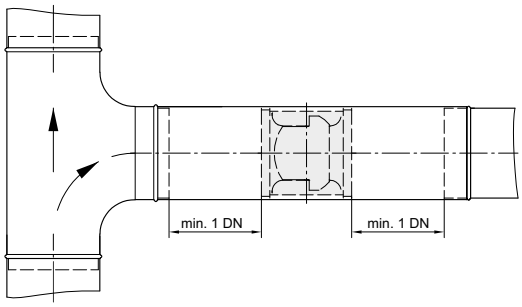


Figure 5: downstream of a T-piece

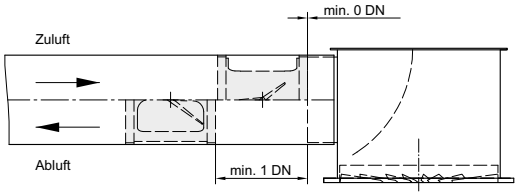
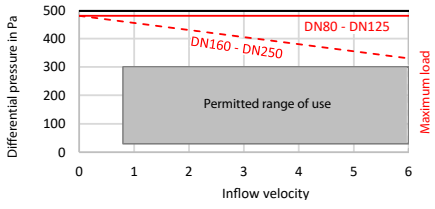


Figure 6: installation combined with a plenum box

Area of use and load limits



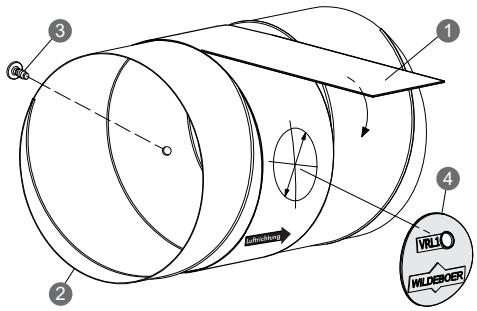
VRL1 volume flow limiter

Optional accessories: Drilling templates and sliding sleeves with inspection cover

Using the drilling templates

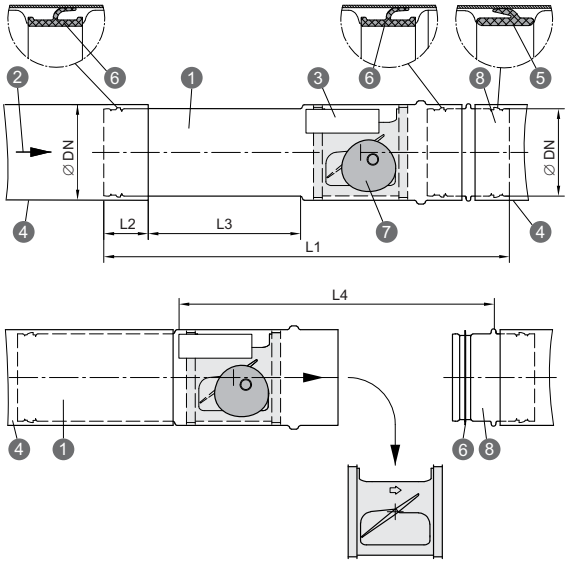
Openings made on site in circular ventilation ducts to allow the VRL1 volume flow limiters to remain accessible and easy to adjust in the installed position, should be prepared using **drilling templates**. The openings made are closed afterwards with inspection covers made of flexible plastic.

- The drilling template (1) specifies the positions of the holes to be drilled in the circular ventilation duct (2) for the inspection cover (4) and the fixing screw (3). A step-by-step description of the procedure and all details is provided on the drilling template.
- Once the drilling positions have been marked, the template is removed and can be re-used. The holes for the fixing screw (3.3 mm) and inspection cover (BK_ 35 mm/BG_ 44 mm) are then made, and deburred if required.
- VRL1 volume flow limiters can then be inserted into the circular ventilation duct with an accurate fit and secured with the fixing screw (3). The volume flow set point must be set and locked if this has not already been done, ⇒ see page 6
- The inspection cover can then be inserted!
- **Subsequent adjustment of the volume flow set point** can be carried out via the inspection opening by removing the inspection cover.
  ⇒ see operating instructions



1 Drilling template
2 Circular ventilation duct, on site
3 Fixing screw
4 Inspection cover

VRL1 volume flow limiters inserted in sliding sleeves must be installed between circular ventilation ducts. Sliding sleeves are made of galvanised sheet steel and open the circular ventilation duct completely to allow the VRL1 volume flow limiter to be completely removed. The inspection cover, which is made of flexible plastic, can also be opened and the volume flow set point adjusted from the outside.



1 Sliding sleeve
2 Air flow direction
3 Marking sticker
4 Circular ventilation duct, on site
5 Lip seal for insertion
6 Lip seal for repositioning
7 Inspection cover
8 Plug-in connector

Size DN	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]
80	432	40	160	352
100	472	40	185	392
125	517	40	210	437
160	547	40	230	467
200	632	40	270	552
250	807	60	340	687

- When installing the sliding sleeve (1), the direction of air flow (2) marked on the VRL1 volume flow limiter or indicated by the marking sticker (3) must be observed.
- The tapered part of the sliding sleeve is inserted into one end of the circular ventilation duct (4), according to L2; the continuation of the circular ventilation duct (4) is connected at the plug-in connector (8). The locations of the various lip seals (5) and (6) must be observed during installation – as shown in the detail diagram.
- To enable the circular ventilation duct to be opened using the sliding sleeve, it is essential to observe the spacing L4 between the ends of the circular ventilation ducts. This ensures that the insertion length L3 of the tapered part of the sliding sleeve into the circular ventilation duct is correct, and therefore that the VRL1 volume flow limiter can be removed.
- The volume flow set point must be set and locked if this has not already been done. ⇒ see page 6
- The inspection cover (7) can then be inserted!
- **Subsequent adjustment of the volume flow set point** can be carried out via the inspection opening by removing the inspection cover.
  ⇒ see operating instructions
- **"Removal of the VRL1 volume flow limiter from the sliding sleeve"** is carried out in reverse order to the installation procedure.

  The sliding sleeve must be disconnected from the plug-in connector in order to open the circular ventilation duct. The tapered part must be inserted into the circular ventilation duct. The fixing screw (opposite the volume flow set point adjustment) must be undone in order to take the VRL1 volume flow limiter out of the sliding sleeve. For re-installation, observe the installation requirements. ⇒ see page 6
- **Electric adjustment of the volume flow set point:** ⇒ see page 8

VRL1 volume flow limiter

Optional accessories: Sliding sleeves with electric adjusting actuators

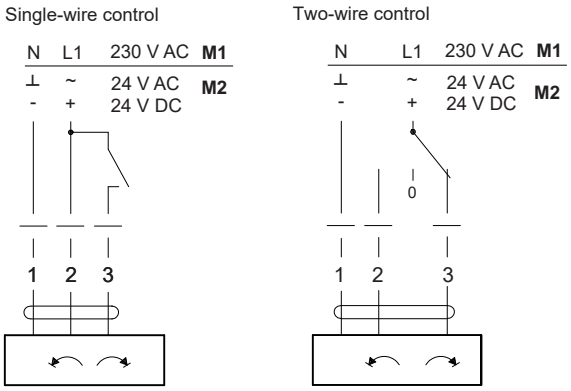
Electric adjustment of VRL1 volume flow limiters inserted into sliding sleeves.

VRL1 volume flow limiters in sliding sleeves can be supplied with electric adjusting actuators M1, M2 or M3 that set volume flow set points in different ways.

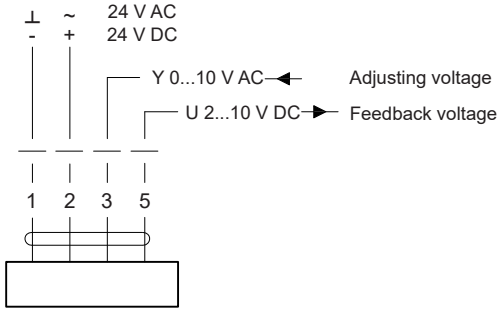
- The adjusting actuators M1 and M2 facilitate two-point operation (single-wire control). Depending on the electrical control, the actuators run against one of the two limit stops and thereby switch between two volume flow set points.
  This can be extended to include three-point operation using an additional 0 circuit arrangement (two-wire control). When actuated in this way, the actuator remains in its current position and the VRL1 volume flow limiter adjusts the corresponding set point.
- The adjusting actuator M3 facilitates controlled and continuous adjustment of the volume flow set point. The actuation is carried out with an adjusting voltage Y = 0 / 2…10 V DC, and the operating range of the drive only starts at 2 V. The drive moves between the two limit stops into the position specified by the actuating signal, which means that specific intermediate values within the volume flow range can be set.
  When the power supply is switched on for the first time, and after every voltage interruption, a synchronisation process starts and the drive moves to a home position (Y = 0 V, "left" limit stop). Then the actuator moves to the position specified by the actuating signal. The purpose of the feedback voltage U = 2…10 V DC is to provide an electrical indication of the volume flow set point setting and to serve as a subsequent actuating signal for other actuators.
- The motor-driven adjusting actuators are overload-proof, do not require a limit switch, and stop automatically at the limit stops.
- As delivered, the manually adjustable limit stops of the actuators are set to the minimum and maximum volume flow set point specified for each nominal size. The two volume flow set points (M1, M2) or the two limit values of the volume flow range (M3) can be adjusted manually on site by changing the positions of the corresponding limit stops.
  ⇒ see operating instructions
- In the event of a power failure, the actuators remain in their current position and the VRL1 volume flow limiters regulate the corresponding set point.
- For manual adjustment, the gear can be disengaged with the aid of a magnet (component of the adjusting actuators). The gear remains disengaged for as long as the magnet remains in the position marked by the magnet symbol.
- Even when supplemented by an actuator, the VRL1 volume flow limiter can be easily removed from the sliding sleeve.
  ⇒ see operating instructions

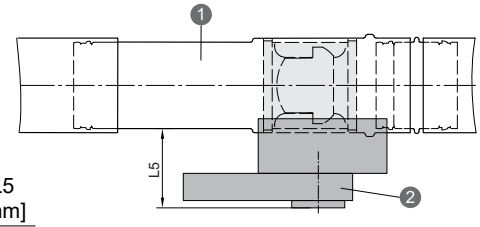
Adjusting actuator	M1	M2	M3
Supply voltage	230 V AC	24 V AC/DC	24 V AC/DC
Function range	85 V to 265 V	19.2 V to 28.8 V	19.2 V to 28.8 V
Torque	2 Nm	2 Nm	2 Nm
Run time for 90°	75 s	75 s	75 s
Connected load	3 VA	1 VA	1 VA
Power consumption	1.5 W	0.5 W	0.5 W
Protection rating	IP 54	IP 54	IP 54
Connection cable approx. 1 m long	0.75 mm² 3-core	0.75 mm² 2-core	0.75 mm² 2-core
Ambient temperature	-30°C to +50°C	-30°C to +50°C	-30°C to +50°C

Adjusting actuator M1 / M2



Adjusting actuator M3





Size DN	L5 [mm]
80	66
100	63
125	63
160	58
200	55
250	52

1 Sliding sleeve
2 Actuator-driven set point adjustment

Download at www.wildeboer.de:

- Dimensioning software
- Hygiene certificate
- Hygiene instructions for disinfection
- Operating instructions

VRL1 volume flow limiter

Optional accessories: Duct sleeves for plenum boxes and SRC duct silencers

VRL1 volume flow limiters inserted into duct sleeves are designed for plenum boxes of air diffusers in ceilings. Duct sleeves are made of galvanized sheet steel and have a DN size connection for the circular ventilation duct at one end, and an enlarged connection sleeve at the other end for fitting onto the connecting piece of the plenum box. This allows the VRL1 volume flow limiter to be removed and the volume flow set point to be adjusted.

A sufficiently large plenum box with lateral connecting pieces and without dampers is required for this. It should not contain any perforated panels, or, if it does, they must be removable.

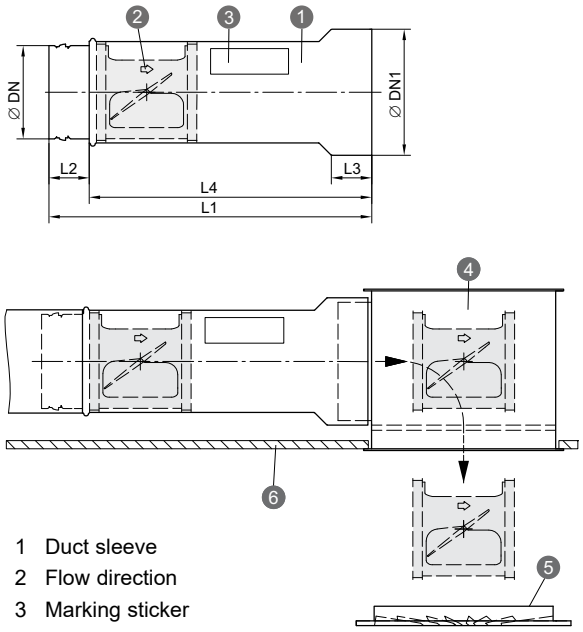
This arrangement is particularly suitable for closed ceilings that cannot be accessed.

Duct sleeves (1) are supplied with the VRL1 volume flow limiter installed in the supply air flow direction (2).

- Before the duct sleeve is installed, the VRL1 volume flow limiter must be removed, adjusted and reinserted in the duct sleeve, taking the direction of flow into account (supply air or exhaust air). The nominal size, direction of flow and set volume flow set point must be noted on the marking sticker (3). ⇒ see page 6
- The duct sleeve must be connected to the circular ventilation duct with the connection diameter ∅ DN and to the plenum box (4) with the larger connecting sleeve ∅ DN1.
- **For subsequent adjustment of the volume flow, the ceiling diffuser (5) can be removed**. This allows the VRL1 volume flow limiter to be accessed via the plenum box and removed from the duct sleeve.

  The lock must be released in order to carry out the adjustment. The volume flow set point can then be readjusted and locked. For re-installation, observe the installation requirements. ⇒ see page 6

Note: VRL1 volume flow limiters in duct sleeves and ceiling diffusers with plenum boxes must be coordinated in terms of dimensioning and design, taking into account acoustic characteristics!

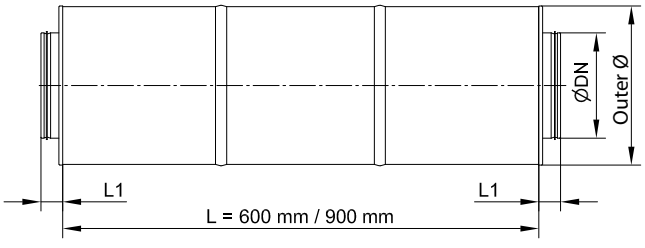


1 Duct sleeve
2 Flow direction
3 Marking sticker
4 Plenum box
5 Ceiling diffuser
6 Ceiling

Size DN	Size DN1	L1 [mm]	L2 [mm]	L3 [mm]	L4 [mm]
80	100	286	40	41	246
100	125	335	40	41	295
125	150	381	40	41	341
160	180	405	40	41	365
200	224	509	40	64	469
250	280	628	60	62	568

SRC duct silencer

SRC duct silencers facilitate the reduction of flow noise in the circular ventilation duct.



Maximum reduction of flow noise

Size DN	Outer ∅ [mm]	L1 [mm]	L [mm] 600	L [mm] 900
80	200	40	-22 dB	-
100	200	40	-22 dB	-25 dB
125	225	40	-22 dB	-25 dB
160	260	40	-21 dB	-24 dB
200	300	40	-19 dB	-24 dB
250	355	40	-18 dB	-22 dB

VRL1 volume flow limiter

Ordering data: VRL1 volume flow limiter, options, individual delivery

VRL1 volume flow limiter VRL1 - 01- ___ - ___ - ___

with options

- Sliding sleeve ⇒ see pages 2 and 7 — S
- Duct sleeve ⇒ see pages 2 and 9 — R

Size DN 80 / 100 / 125 / 160 / 200 / 250
⇒ see page 3

Adjusting actuators exclusively for sliding sleeve
M1 Two-point/three-point actuator 230 V AC
M2 Two-point/three-point actuator 24 V AC/DC
M3 continuous actuator 24 V AC/DC
⇒ See pages 2 and 8

Ordering example: VRL1 - 01 - S - 100 - M2

The volume flow set point must be adjusted on site on the VRL1 volume flow limiter. ⇒ see page 6
VRL1 volume flow limiters with adjusting actuator set the volume flow set point electrically. ⇒ see page 8

Individual delivery without VRL1 VRL1 - 00 - ___ - ___

- Drilling template ⇒ see pages 2, 7 and 10
  for sizes DN 80 to DN 125
  - with 1 inspection cover — BK1
  - with 10 inspection covers — BK10

  for sizes DN 160 to DN 250
  - with 1 inspection cover — BG1
  - with 10 inspection covers — BG10
- Sliding sleeve ⇒ see pages 2, 7 and 10 — S
- Duct sleeve ⇒ see pages 2, 9 and 10 — R

Size of sliding sleeve/duct sleeve
DN 80 / 100 / 125 / 160 / 200 / 250
⇒ see pages 7 and 9

Ordering example: VRL1 - 00 - S - 100

Individual delivery of SRC SRC - ___ - ___

Size ⇒ see page 9
DN 80 / 100 / 125 / 160 / 200 / 250
Length
- 600
- 900 (from DN 100)

Ordering example: SRC - 125 - 600

Individual delivery of drilling templates for creation of an inspection opening in on-site circular ventilation ducts.

What's included

BK1 and BG1
- 1 pc. drilling template, for multiple use
- 1 pc. inspection cover
- 1 pc. fixing screw

BK10 and BG10
- 1 pc. drilling template, for multiple use
- 10 pc. inspection cover
- 10 pc. fixing screw

Individual delivery of sliding sleeve for on-site insertion of a VRL1 volume flow limiter. Assembly instructions are enclosed with the sliding sleeve and must be observed.

What's included
- 1 pc. sliding sleeve
- 1 pc. plug-in connector
- 1 pc. lip seal for insertion
- 2 pcs. lip seal for repositioning
- 1 pc. inspection cover
- 1 pc. fixing screw
- 1 pc. assembly instructions

Individual delivery of duct sleeves for on-site insertion of VRL1 volume flow limiters. Assembly instructions are enclosed with the duct sleeve and must be observed.

What's included
- 1 pc. duct sleeve
- 1 pc. lip seal for insertion
- 1 pc. assembly instructions

VRL1 volume flow limiter

Specification text

Maintenance-free volume flow limiter for regulation of constant volume flows in ventilation and air conditioning systems. Mechanically self-actuating, operating without any auxiliary power supply, for position-independent insertion into circular ventilation ducts. Controller casing and centrally supported damper blade made of special anti-static, microbe-resistant plastic with smooth surfaces and air-ducting components that are resistant to soiling. The adjustment and control mechanism is fully enclosed and protected against contamination from the air flow. Lip seals at both ends for a fixed position in the ventilation duct and for complete enclosure.
Adjusted at the factory and infinitely adjustable and lockable on site with a rotary pointer on a scale giving the volume flow and flow velocity. The volume flow is kept constant by a high-precision special control mechanism with variable pressures from 30 Pa to 300 Pa and a deviation of around ±5% to ±10% relative to the maximum volume flow set point.

Options:

- Volume flow limiter with drilling template and inspection cover for installation in circular ventilation ducts and subsequent manual adjustment of the volume flow set point in the installed state.
- Volume flow limiter installed in a sliding sleeve made of galvanized sheet steel for easy removal of the volume flow limiter and simple manual adjustment of volume flow set point in the installed position via the corresponding inspection cover.
- Volume flow limiter installed in a sliding sleeve made of galvanized sheet steel, with 230 V AC or 24 V AC/DC two-point/three-point drive or 24 V AC/DC continuous actuator for adjustment of the volume flow set point.
- Volume flow limiter with duct sleeve made of galvanized sheet steel with enlarged diameter. For direct installation on plenum boxes which ensure that the volume flow limiter can be accessed at all times.

With Certificate of Conformity as proof of compliance with the hygiene requirements as per VDI 6022-1, VDI 3803-1, DIN 1946-4, DIN EN 16798-3 , SWKI VA104-01, SWKI VA105-01, ÖNORM H6020 and ÖNORM H6021. With Environmental Product Declaration as per ISO 14025 and EN 15804.

..... **pcs.**

Volume flow: ..... **m³/h**

Pressure drop: ..... **Pa**

Maximum sound power level
flow noise: ..... **dB (A)**
including SRC duct silencer

Manufacturer: **WILDEBOER**

Type: **VRL1**

Size: .....

deliver: .....

install: .....

Duct silencer for reduction of flow noise in the circular ventilation duct. Casing made of galvanized sheet steel with mineral wool fillings.

..... **pcs.**

Type: **SRC**

Diameter DN: .....

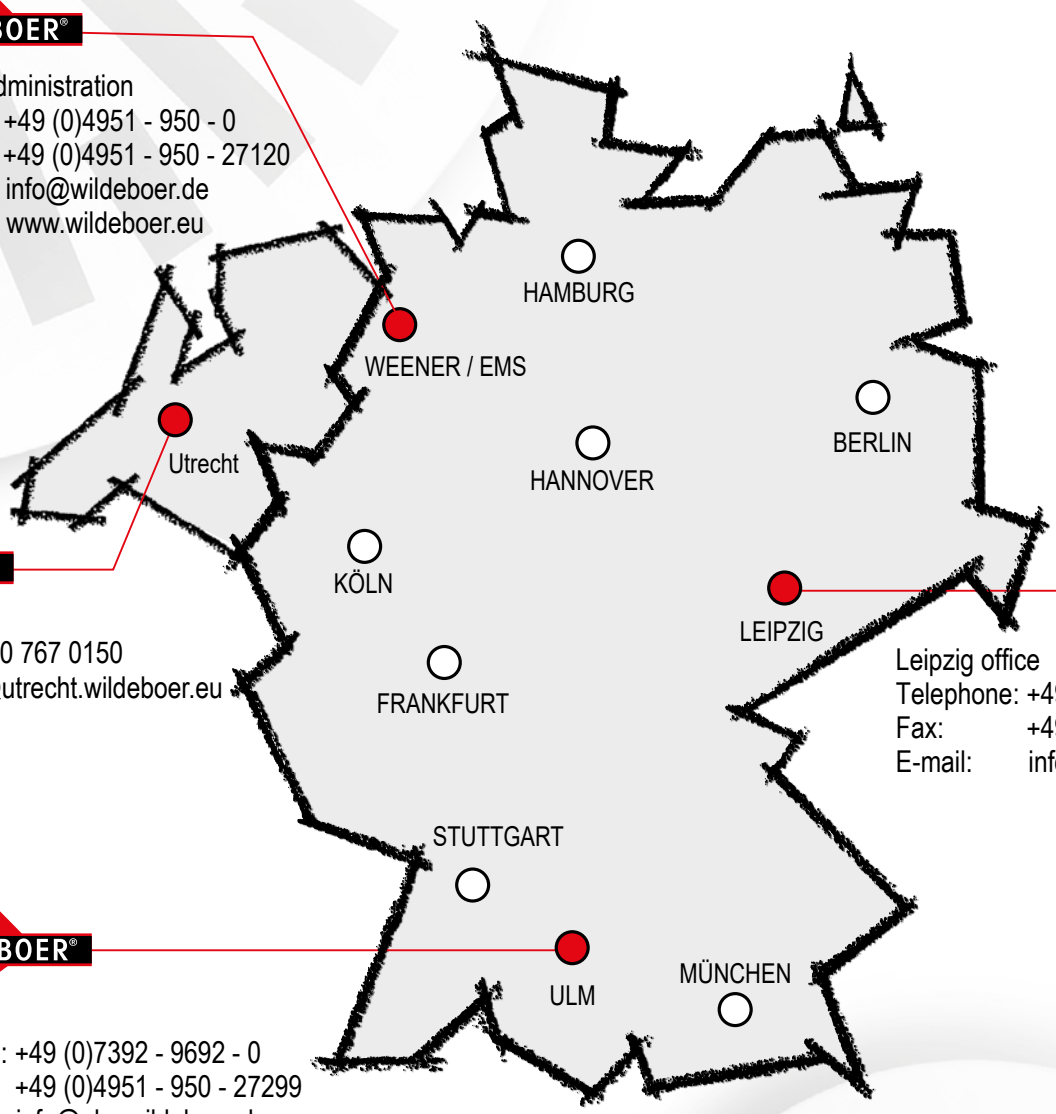
Length: .....

deliver: .....

install: .....

Select texts not highlighted in bold as required!

INNOVATIVE • PRACTICAL • ECONOMICAL



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TAKE ADVANTAGE OF OUR STRENGTHS!

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COMPONENTS FOR VENTILATION + AIR CONDITIONING

air distribution fire protection noise protection

building control systems