Constant flow damper VRL1

Description

Constant flow damper with manual setting of one flow.

VRL1 is a constant flow damper, which facilitates balancing of ventilation systems and gives correct flow from the start.

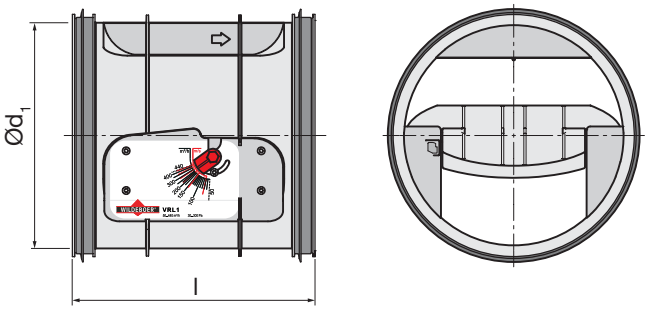
The unit compensates for e.g. connection and disconnectionof system parts, clogging of filters and ducts, thermal lift forces, wind effects, window opening etc.

Ø 80–250 fullfills pressure class A in closed position.

Ordering example

	VRL1	125
Product		
Dimension Ød$_1$		

Dimensions



Ød$_1$ nom	l [mm]	Tightness class across closed blade	m [kg]
80	100	0	0,08
100	125	0	0,14
125	150	0	0,19
160	160	0	0,36
200	200	0	0,54
250	250	0	0,81

Technical data

Summary

- VRL1 - manual single flow unit
- Diameters Ø 80–250
- Flow range 4–295 l/s (13–1060 m³/h)
- Pressure range 30–300 Pa (over the unit)
- Independent of mounting direction

Function

The constant flow damper is an automatic damper, which at varying pressures wholly mechanical and independent of external energy sources maintains a set flow constant. The force, needed for regulation, is taken from the passing air stream. The air stream across the blade attempts to close it and generates a closing torque. This is balanced by an opposed opening force from a spring. The greater the pressure across the blade the more it closes. A bellow eliminates oscillations, which could occur at unfavourable conditions of operation.

Temperature

Working range: +10 to +50 °C.

Material

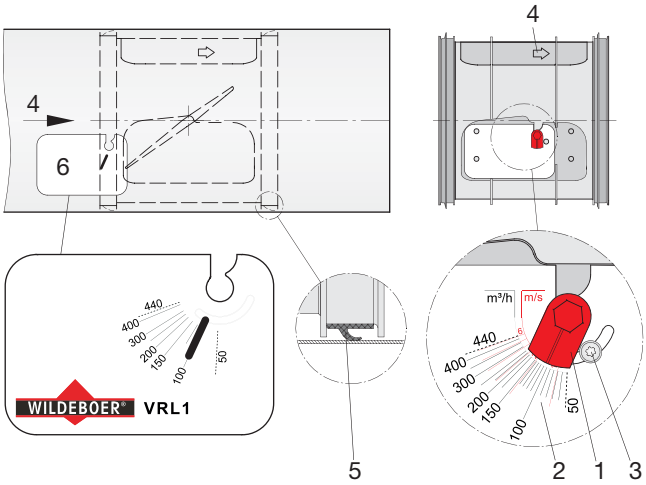
Housing and damper blade are made of a special antistatic and microbial resistant plastic. The smooth surfaces of the air-conducting components results in that the flow regulator thus meet the most stringent hygiene requirements.

Constant flow damper VRL1

Technical data

Setting and installation
Set the desired flow rate before mounting the constant flow damper VRL1 into the duct sytem.

The desired flow is set with the pointer (1) on the scale (2). To set the desired flow the adjustment screw (3) needs to tightened (screw head size TX8).



When the damper is mounted into the duct system the flow direction (4) of the damper must match the direction of the flow in the duct system.

Make sure that the ducts have the necessary concentricity and that the installation is tension-free. The lip seals (5) must be in contact with the duct walls, as shown, and inserted against the direction of air flow (4).

The damper blade must move easily all of the time.

Each VRL1 flow regulator has a sticker where the set flow rate (6) should be specified.

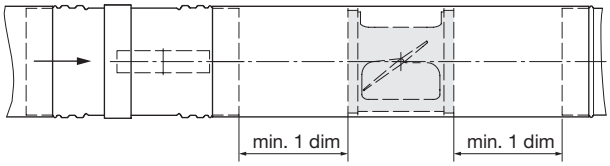
Regulating accuracy
The units are calibrated from factory within their whole working range. In this the units keep the flow constant within approximately ±5 to ±10% of the set flow. Greater deviations occur at the lower flows, aspecially for small sizes.

Flow setting
The units can not be delivered from factory with a preset flow. You can set the flow yourself very easy following to the instruction for each product.

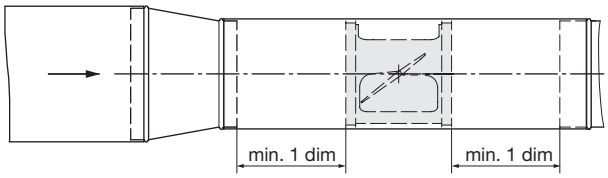
Change of direction
The units are independent of their mounting direction and one may deviate from the specified direction and mount them in any direction without affecting the accuracy.

Disturbance tolerance
In order to achieve the stated accuracy for the pre-set flow a straight distance before and after the unit are required. A mounting close to a source of disturbance (bend, reducer, t-piece etc.) decreases the regulation accuracy and the flow may diverge from the set value.

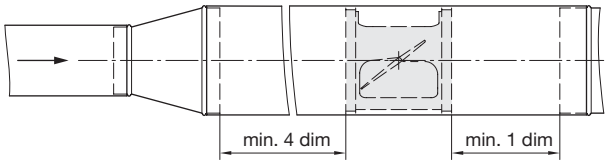
After fire damper



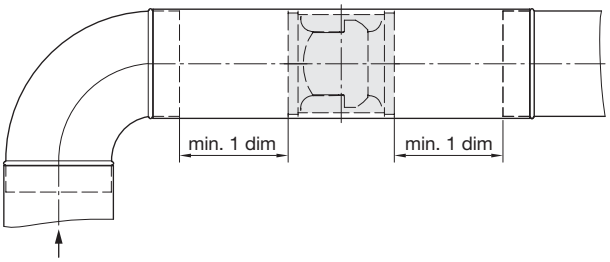
From larger dimension to smaller



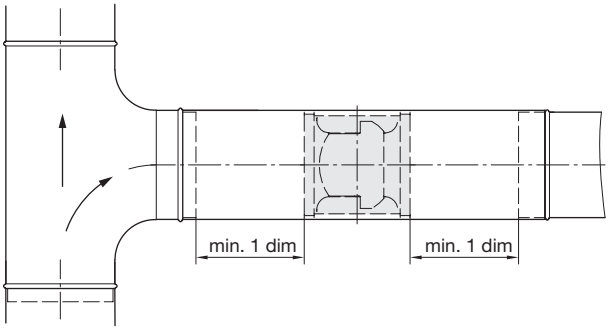
From smaller dimension to larger



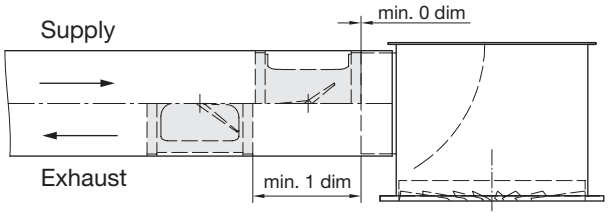
After bend



After t-piece



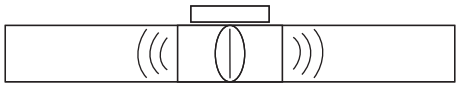
In combined installation with a plenum box



Constant flow damper VRL1

Technical data

Pressure and flow ranges and sound to duct



The graphs show A-weighted sound power level, L_{WA} [dB], to duct. These curvs are intended for brief comparision. For more accurate calculation, please use the tables.

Example

Given:	Diameter 160 mm
Flow	40 l/s
Pressure drop	100 Pa

The graph gives:
A-weighted sound
power level approx. 43 dB

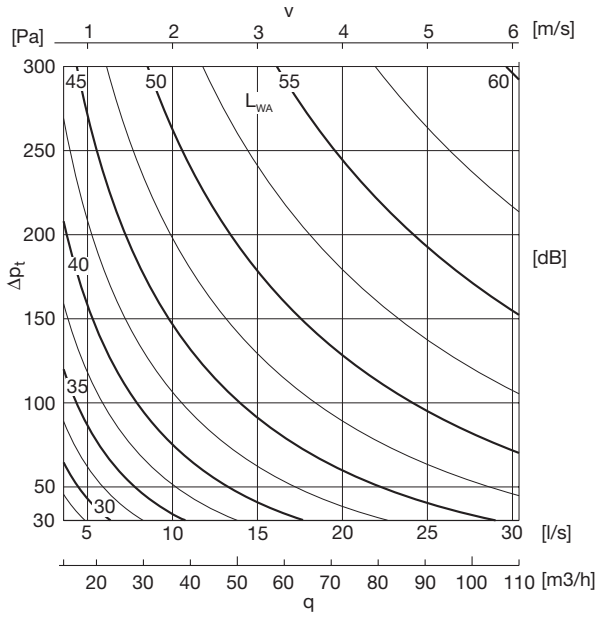
The table gives:
Sound power level as below

Explanation to Diagrams

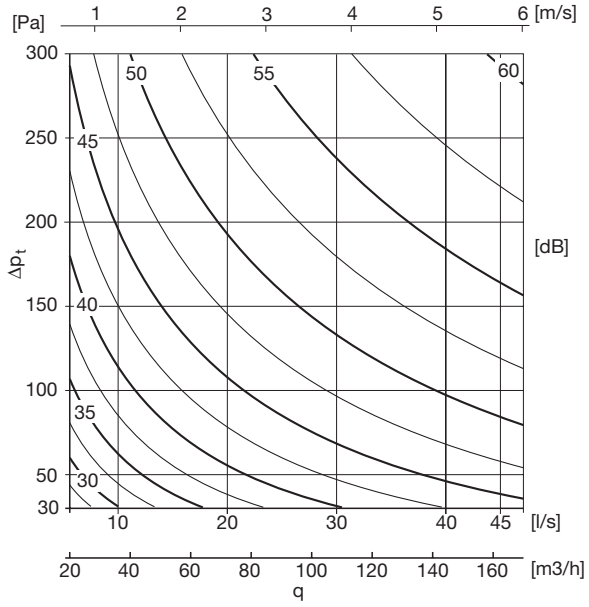
v :	Air velocity
Δp_t :	Pressure loss
q :	Volume flow

Centre frequency [Hz]	63	125	250	500	1 k	4 k	8 k
Sound power level [dB]	46	50	46	41	37	26	24

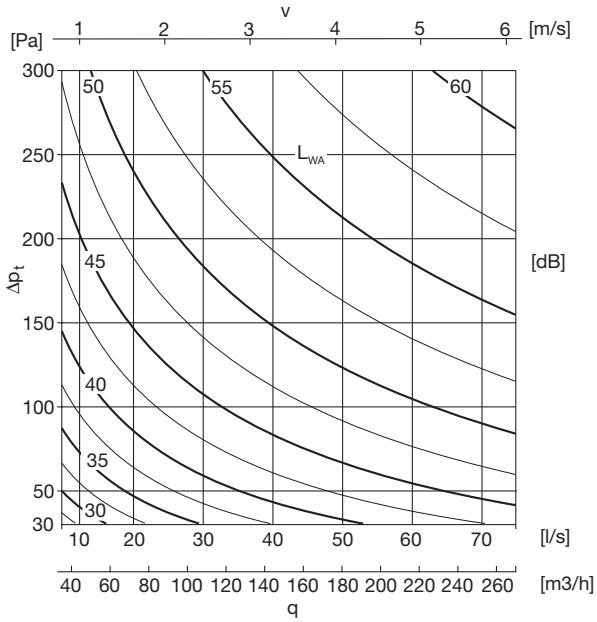
Ø 80



Ø 100



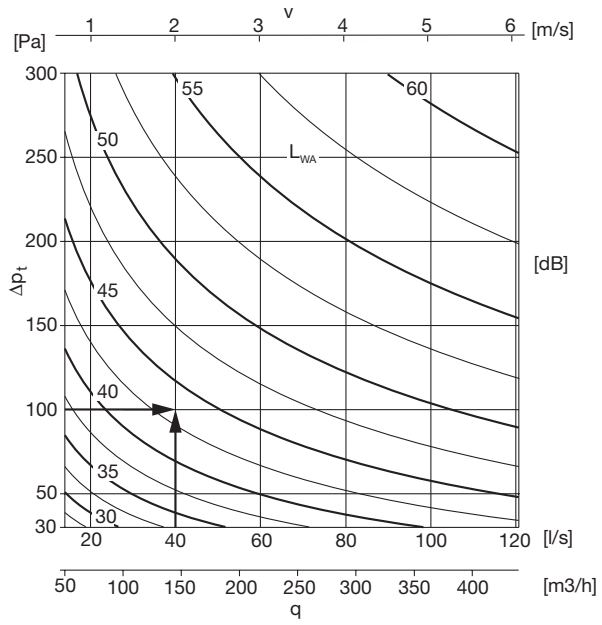
Ø 125



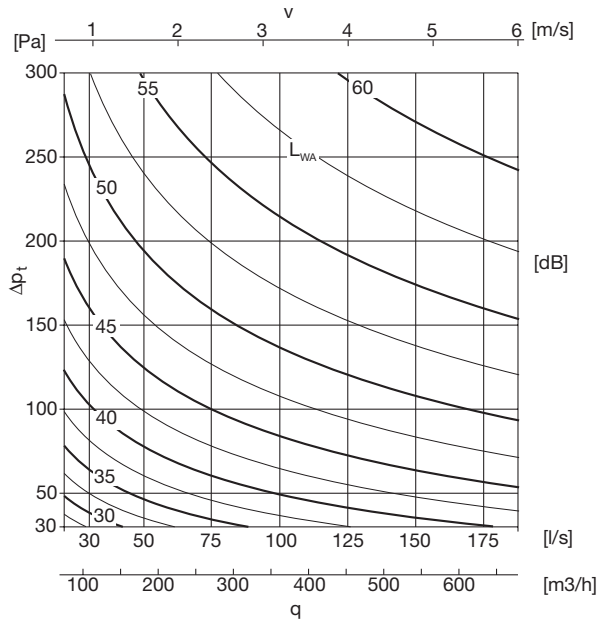
Constant flow damper VRL1

Technical data

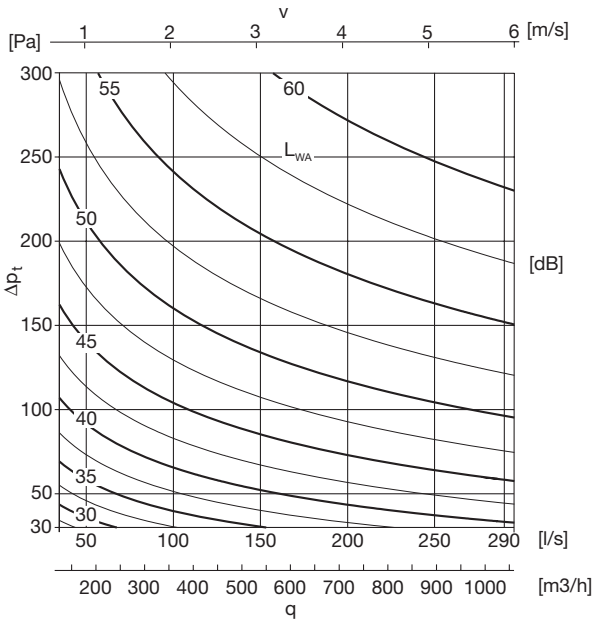
Ø 160



Ø 200



Ø 250



Constant flow damper VRL1

Technical data

Sound to duct

Sound power level, L_W [dB], to duct in octave bands 1-8, 63-8000 Hz, as a function of diameter, pressure drop and flow.

Ød$_1$	Pressure loss [Pa]	Velocity app. 1,0 [m/s]							Velocity app. 2,0 [m/s]						
		Centre frequency [Hz]							Centre frequency [Hz]						
		63	125	250	500	1k	4k	8k	63	125	250	500	1k	4k	8k
		Flow 5 [l/s]							Flow 10 [l/s]						
80	300	49	45	45	43	41	32	25	51	53	51	49	46	37	31
	200	47	43	43	40	37	26	21	49	52	49	46	42	31	27
	100	45	41	39	34	30	< 20	< 20	47	49	46	40	35	22	< 20
	30	40	37	33	23	< 20	< 20	< 20	42	45	39	30	22	< 20	< 20
		Flow 8 [l/s]							Flow 16 [l/s]						
100	300	48	46	46	45	43	33	27	51	54	52	50	47	38	33
	200	47	45	44	41	39	28	23	49	52	50	47	43	33	28
	100	44	42	40	35	31	< 20	< 20	47	49	46	40	35	23	21
	30	39	37	33	24	< 20	< 20	< 20	42	45	39	29	22	< 20	< 20
		Flow 12 [l/s]							Flow 24 [l/s]						
125	300	48	47	47	46	45	35	29	51	54	53	51	49	40	35
	200	46	46	45	42	40	29	25	50	53	50	47	44	34	30
	100	43	43	40	36	32	< 20	< 20	46	50	46	41	36	25	22
	30	38	37	32	24	< 20	< 20	< 20	41	44	38	29	23	< 20	< 20
		Flow 20 [l/s]							Flow 40 [l/s]						
160	300	47	49	49	48	47	37	31	52	55	54	52	50	42	37
	200	45	47	46	44	42	38	27	50	53	51	48	45	36	32
	100	42	43	41	37	34	21	< 20	46	50	46	41	37	26	24
	30	36	37	32	25	< 20	< 20	< 20	41	44	38	29	23	< 20	< 20
		Flow 31 [l/s]							Flow 63 [l/s]						
200	300	47	50	50	50	49	38	33	52	56	55	53	52	43	39
	200	45	48	47	45	44	32	28	50	54	52	49	47	38	34
	100	41	44	41	38	35	22	< 20	46	50	46	42	38	28	25
	30	35	38	32	25	20	< 20	< 20	40	43	37	29	23	< 20	< 20
		Flow 49 [l/s]							Flow 98 [l/s]						
250	300	46	51	51	51	50	40	36	52	57	56	54	53	45	41
	200	44	49	48	47	45	34	30	50	54	52	50	48	39	36
	100	40	45	42	39	36	24	21	46	50	46	42	39	29	27
	30	34	38	32	25	21	< 20	< 20	40	43	36	28	23	< 20	< 20

Constant flow damper VRL1

Technical data

Sound to duct

Sound power level, L_W [dB], to duct in octave bands 1-8, 63-8000 Hz, as a function of diameter, pressure drop and flow.

Ød$_1$	Pressure loss [Pa]	Velocity app. 4,0 [m/s]							Velocity app. 6,0 [m/s]						
		Centre frequency [Hz]							Centre frequency [Hz]						
		63	125	250	500	1k	4k	8k	63	125	250	500	1k	4k	8k
		Flow 20 [l/s]							Flow 30 [l/s]						
80	300	53	61	58	56	50	42	36	54	66	62	59	53	45	40
	200	51	60	56	52	46	36	32	52	64	60	56	49	39	35
	100	49	57	52	46	39	27	25	50	62	56	50	42	30	28
	30	44	53	46	36	27	< 20	< 20	45	58	50	39	29	< 20	< 20
		Flow 31 [l/s]							Flow 47 [l/s]						
100	300	54	61	58	56	51	44	38	55	66	62	59	54	46	42
	200	52	60	56	52	47	38	34	54	64	60	55	50	41	37
	100	49	57	52	46	40	28	27	51	61	56	49	42	31	30
	30	44	52	45	35	27	< 20	< 20	46	57	49	38	29	< 20	< 20
		Flow 49 [l/s]							Flow 74 [l/s]						
125	300	55	61	59	56	53	45	40	57	65	62	59	55	48	44
	200	53	60	56	52	48	39	36	55	64	60	55	50	42	39
	100	50	57	52	46	40	30	28	52	61	55	49	42	33	31
	30	45	51	44	34	26	< 20	< 20	47	56	47	37	29	< 20	< 20
		Flow 81 [l/s]							Flow 121 [l/s]						
160	300	56	62	59	57	54	47	43	59	65	62	59	56	50	46
	200	54	60	56	53	49	41	38	57	63	59	55	51	44	41
	100	51	56	51	45	41	31	30	53	60	54	48	38	34	33
	30	45	50	43	33	26	< 20	< 20	48	54	46	36	28	< 20	< 20
		Flow 126 [l/s]							Flow 189 [l/s]						
200	300	57	62	60	57	55	49	45	60	65	63	59	56	52	48
	200	55	60	57	53	50	43	40	58	63	59	55	51	46	43
	100	51	56	51	45	41	33	31	54	59	54	47	43	36	34
	30	45	49	42	32	26	< 20	< 20	48	53	45	34	28	< 20	< 20
		Flow 196 [l/s]							Flow 294 [l/s]						
250	300	58	62	60	57	56	50	47	61	65	63	59	57	53	50
	200	56	60	57	53	51	44	41	59	63	59	55	52	47	45
	100	52	55	51	45	42	34	32	56	59	53	47	43	37	36
	30	46	48	41	31	26	< 20	< 20	49	51	43	33	28	< 20	20