Volume flow controller

Ref. no.: 232

Circular, self-regulating
model VRK-N

Controller for low flow rates, differential pressure up to 500 Pa

Size	Volume flow [m³/h]		Flow rate [m/s]	
[mm]	min.	max.	min.	max.
80	25	80	1,4	4,4
100	40	125	1,4	4,4
125	65	220	1,5	5,0
160	100	350	1,4	4,8
200	160	500	1,4	4,4
250	240	800	1,4	4,5

The controller operates from the minimum pressure difference, which is a function of the volume flow (see diagram 1), up to the maximum pressure difference of 500 Pa in a stable control range. Over this entire pressure range, the flow rate deviation is ± 10% (less than 100 m³/h ± 10 m³/h). For smaller air velocities below 4 m/s, the flow rate deviation can be ± 20%. Unfavorable flow conditions, pollution or minor bracing during installation can also cause larger deviations.

For further information, dimensions and prices see brochure VRK ref. no. 233.

AEROTECHNIK SIEGWART

Aerotechnik E. Siegwart GmbH
Untere Hofwiesen • D-66299 Friedrichsthal
☎ + 49 (0) 6897/859-0 • 🖷 +49 (0) 6897/859-150
www.aerotechnik.de • info@aerotechnik.de

Update status 06.2019

Ref. no.: 232

Constant volume flow controller automatically regulating - circular

Table 1: Air flow noise generated by the controller

Size [mm]	Flow velocity [m/s]	Volume flow [m³/h]	Static pressure difference at the controller [Pa]																									
			100 Pa									250 Pa									500 Pa								
			Octave power level* L_w [dB/octave]								Summation $L_{w\,sum}$ A-weighted dB(A)	Octave power level* L_w [dB/octave]								Summation $L_{w\,sum}$ A-weighted dB(A)	Octave power level* L_w [dB/octave]								Summation $L_{w\,sum}$ A-weighted dB(A)
			63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz		63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz		63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
80	1,4	25	29	33	32	32	32	33	28	27	37	38	40	40	40	41	42	36	35	46	45	47	47	47	47	48	43	42	53
	2,9	52	39	39	37	36	35	36	31	30	41	40	43	44	45	46	49	44	44	53	46	49	50	52	53	55	51	51	59
	4,4	80	48	46	43	41	39	39	33	31	44	51	51	50	48	48	49	44	44	54	57	57	56	55	55	56	51	50	60
100	1,4	40	32	34	34	33	33	34	29	27	39	41	42	42	42	42	43	38	36	48	47	49	49	49	49	50	44	43	54
	2,9	82	46	43	40	37	35	35	28	27	41	50	49	48	46	45	46	40	40	51	50	52	53	54	55	57	52	52	61
	4,4	125	50	48	45	42	40	40	33	32	45	53	53	51	50	50	50	45	45	55	59	59	58	57	56	57	52	51	62
125	1,5	65	35	36	36	35	35	36	30	29	41	43	45	45	44	44	45	39	37	49	50	52	51	51	51	51	45	44	56
	3,2	142	48	46	42	39	37	37	30	29	43	52	52	50	49	48	48	43	42	53	53	55	56	57	57	59	54	54	63
	5,0	220	52	50	47	44	42	42	36	34	48	61	59	56	53	51	51	44	43	56	62	62	60	59	59	59	54	53	64
160	1,4	100	37	38	38	37	36	36	30	28	41	46	47	46	45	45	45	39	37	50	53	54	53	52	52	52	45	44	57
	3,1	225	49	47	43	40	38	37	31	29	43	54	54	52	50	49	49	43	42	54	56	58	58	59	59	60	55	54	65
	4,8	350	53	51	48	45	43	42	36	35	48	62	60	57	54	52	51	45	43	57	64	64	62	60	60	60	55	54	65
200	1,4	160	40	41	40	38	38	37	31	29	43	48	49	48	47	46	46	40	38	51	55	56	55	54	53	53	46	44	58
	2,9	330	50	47	44	40	38	37	30	29	43	56	55	52	50	49	49	43	42	55	58	60	60	60	60	61	55	54	65
	4,4	500	54	51	48	45	43	42	36	34	48	59	58	56	54	54	54	48	47	59	65	65	63	61	60	61	55	54	66
250	1,4	240	42	42	41	39	38	38	31	28	43	51	51	50	48	47	47	40	37	52	57	58	56	55	54	53	46	44	59
	2,9	520	51	48	45	41	39	38	31	29	44	57	56	54	52	50	50	44	43	56	61	62	62	62	61	62	56	55	67
	4,5	800	55	53	49	46	44	43	37	35	49	61	60	58	56	55	55	49	48	60	67	67	65	63	62	62	56	55	67

* sound level in dB/octave in relation to 10^{-12} W

If air is blown into a room, the tube orifice and the room absorption provide an additional damping and thus reduce the sound power level.

According to VDI 2081, the spatial and mouth damping can be calculated. Roughly, approximately 8 dB can be deducted. To comply with a required sound pressure level for the room, it may be necessary to mount a correspondingly to be designed absorption silencer between the volume flow controller and the room or to insulate the pipe.

The flow noise is highly dependent on local conditions, the radiating area of the pipe (pipe diameter and length) after the muffler and the sound insulation. The data reported here, which were determined in the laboratory, can only be an indication of value. The sound power can be increased by an additional sound source (e.g. a fan, unfavorable flow conditions or the like). If this additional sound power level is about 10 dB lower than the sound power level of the volume flow controller, it does not cause an increase in the addition.

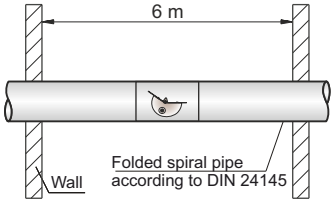
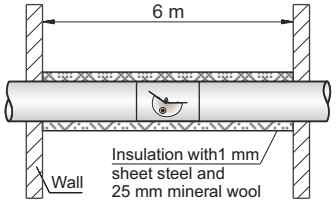
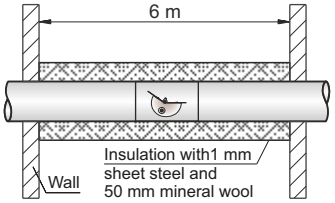
AEROTECHNIK SIEGWART

Aerotechnik E. Siegwart GmbH
Untere Hofwiesen • D-66299 Friedrichsthal
☎ + 49 (0) 6897/859-0 • 🖷 +49 (0) 6897/859-150
www.aerotechnik.de • info@aerotechnik.de

Ref. no.: 232

Constant volume flow controller automatically regulating - circular

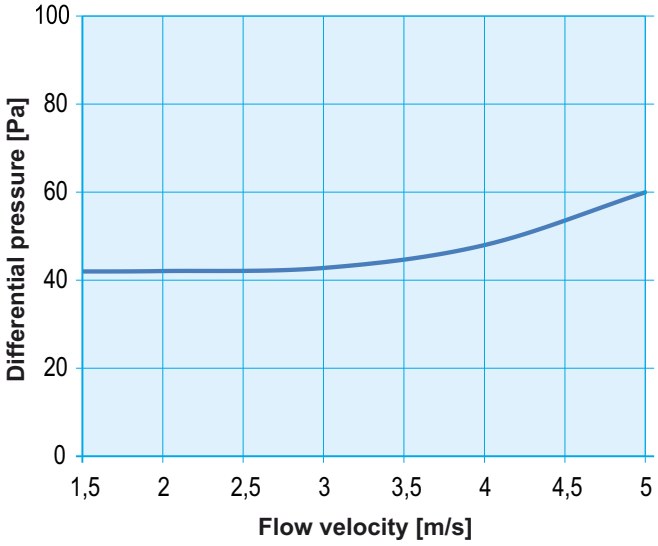
Table 2: Level correction values to calculate the radiated noise of a 6 m long pipe with built-in flow-regulator

Size [mm]																								
	Correction value [dB/octave]								Correction value [dB/octave]								Correction value [dB/octave]							
	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
80	36	33	32	23	17	12	11	11	39	35	39	35	32	33	34	29	42	37	45	46	47	54	56	47
100	34	32	30	22	16	12	11	10	38	35	38	34	31	33	34	28	41	38	46	45	47	54	57	47
125	29	29	31	24	21	19	15	11	35	33	37	36	32	33	36	27	35	36	42	48	51	60	58	45
160	23	23	20	18	11	10	9	8	27	26	28	29	27	31	31	25	29	28	35	40	44	51	54	44
200	22	19	16	16	15	11	9	8	23	18	23	26	29	29	29	24	26	22	29	37	42	51	53	43
250	19	16	13	12	12	10	9	8	23	18	20	24	26	30	28	24	25	20	26	35	41	50	52	42

Minimum response pressure difference

When dimensioning the tube system, the static minimum response pressure difference of the flow regulator according to diagram 1 is to be observed

Diagram 1: Reference values for response sensitivity



AEROTECHNIK SIEGWART
Aerotechnik E. Siegwart GmbH
Untere Hofwiesen • D-66299 Friedrichsthal
☎ + 49 (0) 6897/859-0 • 🖷 +49 (0) 6897/859-150
www.aerotechnik.de • info@aerotechnik.de

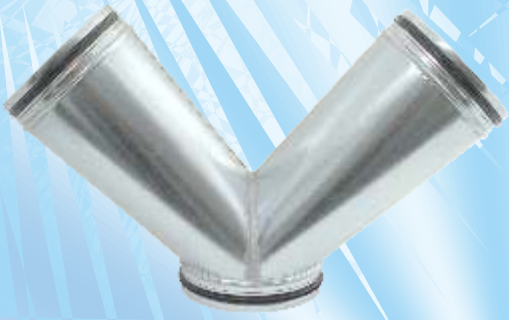
Our product range

Bends 15° - 90° (half shells), airtight, laser-welded without overlapping.
Available in stainless steel and VA mirror optics, too.

Ventilation hoods

Roof caps

Take offs



Y-pieces 15° - 120°

Exhaust air pieces

Spigots 15° - 45°

Flange connections
Flange system

non-destructive disassembly
with flange system

available
for all components

Male couplings

T-pieces 90°, airtight
laser-welded without
overlapping

Regular T-pieces 90°

Reducers symmetric
drawn from one component
without seam

Reducers
asymmetrical

X-pieces 90°

Saddles 90°, pressed

Flat ducts airtight
laser-welded without overlapping

AEROTECHNIK SIEGWART

Aerotechnik E. Siegwart GmbH
Untere Hofwiesen • D-66299 Friedrichsthal
☎ +49 (0) 6897/859-0 • 🖷 +49 (0) 6897/859-150
www.aerotechnik.de • info@aerotechnik.de

Special products on request.

Update status 06.2019