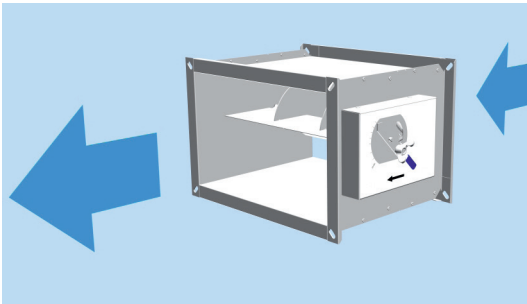


Technical brochure

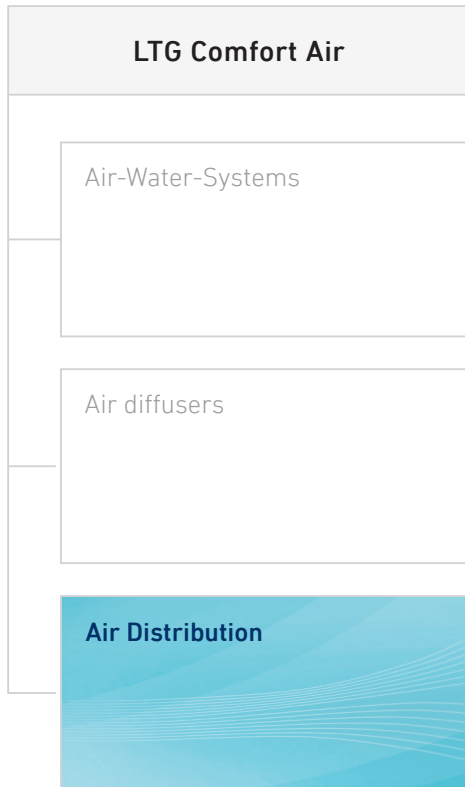
LTG Air Distribution

Constant flow rate controllers VRX



Mechanically self-operated, rectangular

Technical brochure • Constant flow rate controllers VRX, rectangular



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Notes

Dimensions stated in this brochure are in mm.

Dimensions stated in this brochure are subject to General Tolerances according to DIN ISO 2768-vL. Possible additional details are stated in the drawings.

Straightness and twist tolerances according to DIN EN 12020-2

The actual tender documents are available as a word document at your local distributor or at www.LTG.net.

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View of unit



Application

Mechanically self-operated control of a constant air flow rate, i.e. without external power supply and pressure independent. Used in rectangular air supply and discharge ducts in ventilation and air-conditioning systems.

Function

The aerodynamic forces acting on the damper blade are equalised using the control device after it has been set to the required value.

Mechanical flow rate controllers do not need any external energy sources; the required flow rate is easily set using a lever with indicator and scale.

An actuator is optionally available for remote adjustment of the required flow rate. The actuator operates in this case the lever that sets the target value.

Conditions for operation as authorised

- Max. air speed 10 m/s
- Max. pressure in the air duct 1000 Pa
- Air flow evenly spread over the entire casing cross-section
- No abrasive, adhesive or chemical constituents in the air
- Temperature in the air duct between
0...70 °C (version with manual adjustment)
0...50 °C (version with actuator)
- Surroundings without condensation, icing, ice formation, and without water even from sources other than rain as per EN 60 72133 Amendment A2

The flow rate controllers are protected against the effect of weather to climate classification class 3K5.

Design, constructional features

The flow rate controller consists of

- Casing
- Damper blade
- Control device with spring, vibration absorber, and cap with scale for setting the required values, scale accuracy approx. $\pm 5\%$.

Standard

- Casing galvanized sheet steel (1 mm)
- Control device galvanized sheet steel
- Damper blade aluminium sheet
- Axle, spring stainless steel,
axle in a plastic sleeve
- Sealing acrylic sealant
- Casing leakiness Class C acc. to DIN EN 1751
- Flow rate 250...12000 m³/h
- Max. air speed 10 m/s
- Max. pressure in the air duct 1000 Pa
- Control accuracy $\pm 10\%$... $\pm 20\%$ of nominal value

Accessories, special versions

- Stainless steel
- 40 mm thick insulating case of mineral wool as per DIN 4102, material class A2, non-combustible, density 25 kg/m³
- Coated casing
- Actuator
- Splitter silencer SDF-SM, of galvanised sheet steel

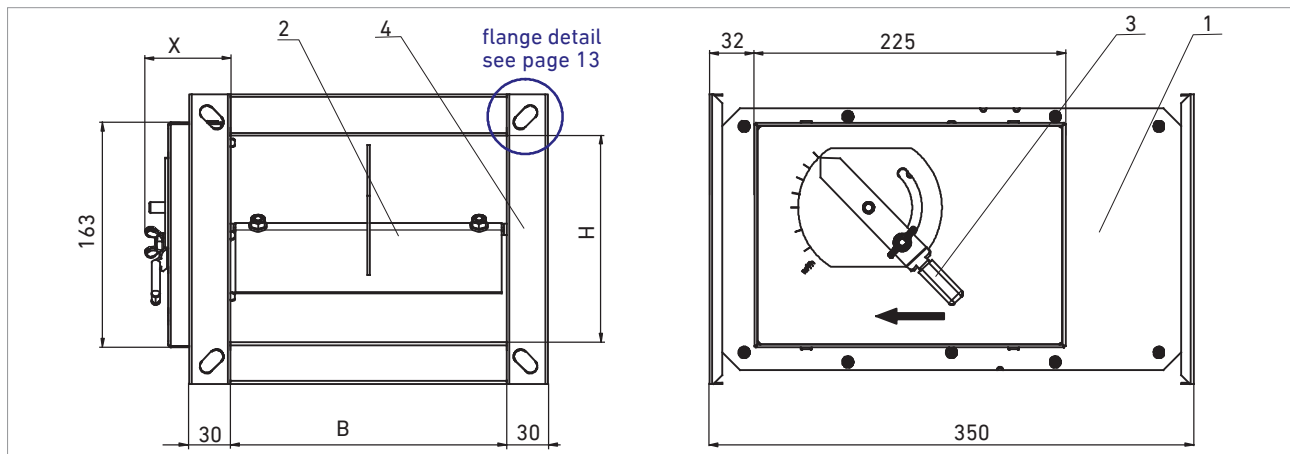
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Dimensions, weight, version with manual adjustment

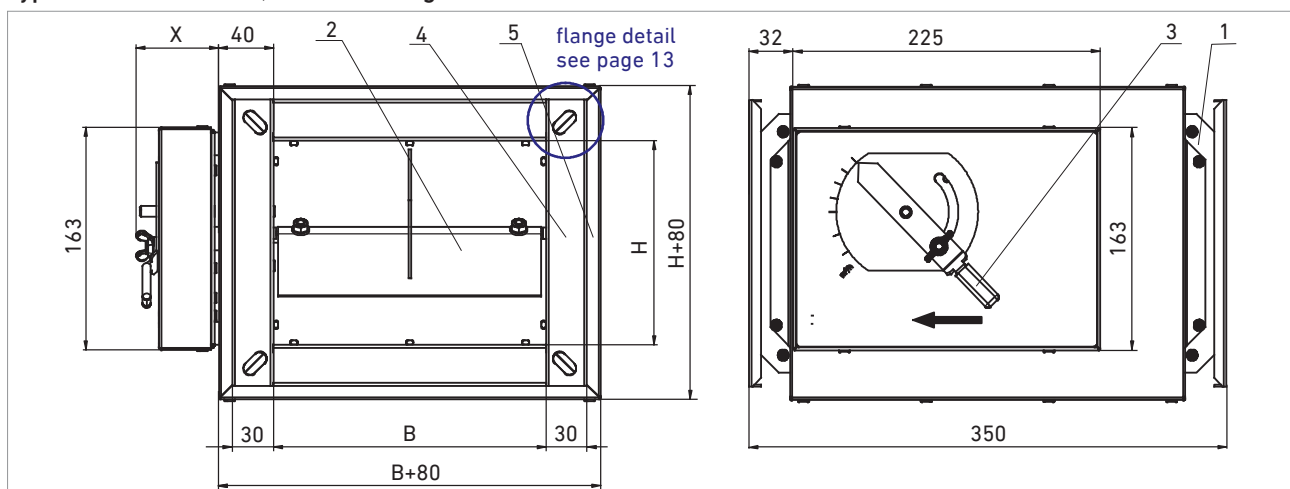
Size B x H			Weight [kg]		Size B x H			Weight [kg]		Size B x H			Weight [kg]	
B	H	X	without	with	B	H	X	without	with	B	H	X	without	with
[mm]	[mm]	[mm]	insul. case	insul. case	[mm]	[mm]	[mm]	insul. case	insul. case	[mm]	[mm]	[mm]	insul. case	insul. case
200	100	62	4.0	6.1	400	200	81	6.4	10.1	600	200	120	9.6	14.3
	150	62	4.4	6.8		250	87	6.9	10.8		250	120	10.3	15.2
	200	62	4.8	7.4		300	81	8.0	12.1		300	120	10.9	16.1
				400		81 *	10.7	15.5	400		120 *	16.5	22.2	
300	100	62	4.7	7.3	500	200	81	7.2	11.4		500	120 *	17.8	24.0
	150	62	5.2	8.1		250	87	8.8	13.2		600	120 *	19.1	25.7
	200	62	5.56	8.7		300	120	10.0	14.6					
	250	62	6.0	9.4		400	81 *	12.0	17.1					
	300	81	6.5	10.2		500	87 *	15.2	20.9					

* Starting from dimension H \geq 400 mm, the flow rate controllers consist of two identical control devices arranged one above the other. The target flow rate corresponds to the sum of the flow rates of the two control devices. The control devices have two mechanisms (when designed with manual adjustment) or actuators.

Type VRX/./...x..././-./..., without insulation case



Type VRX/./...x..././D/./..., with insulating case



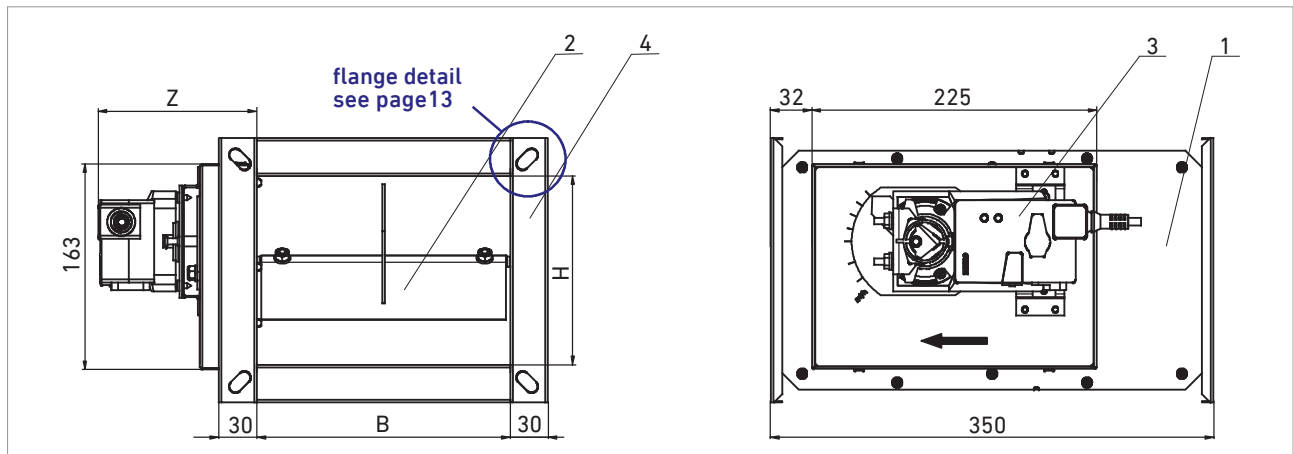
- 1 Casing 2 Damper blade 3 Lever 4 Flange 5 Insulating case

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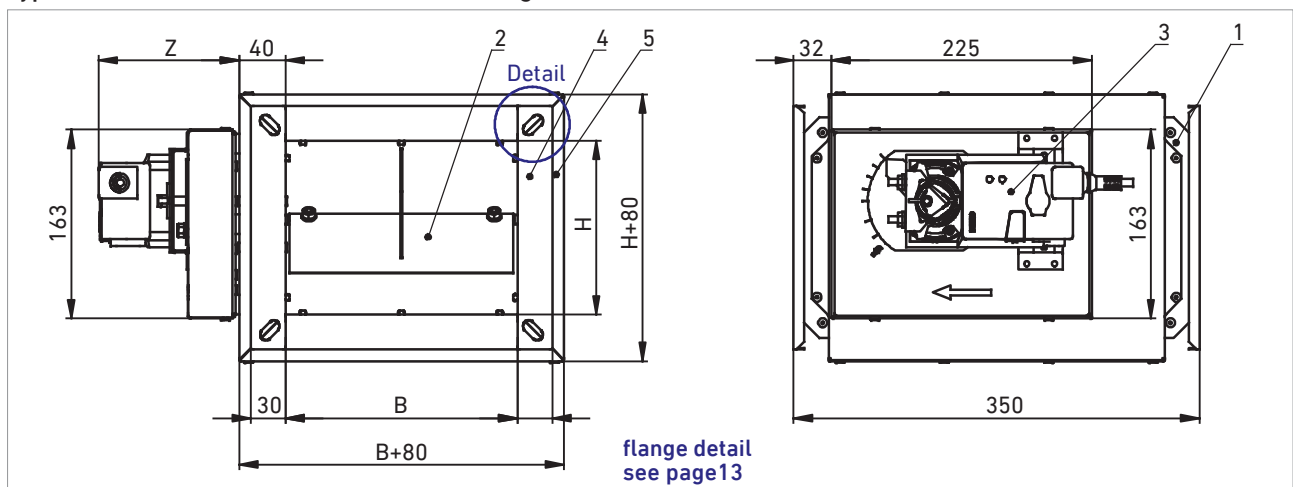
Dimensions, weight, version with actuator

Size B x H			Weight [kg]		Actuator	Size B x H			Weight [kg]		Actuator
B [mm]	H [mm]	Z [mm]	with insulating case	without insulating case		B [mm]	H [mm]	Z [mm]	with insulating case	without insulating case	
200	100	125	4.7	6.8	LM	500	200	132	8.2	12.3	NM
	150	125	5.1	7.4	LM		250	137	9.8	14.2	NM
	200	125	5.5	8.1	LM		300	170	11.1	15.8	SM
300	100	125	5.4	8.0	LM		400	132	14.0	19.1	2 x NM
	150	125	5.8	8.7	LM		500	137	17.1	22.8	2 x NM
	200	125	6.3	9.4	LM						
	250	125	6.7	10.1	LM	600	200	170	10.8	15.4	SM
300	132	7.5	11.1	NM	250		170	11.5	16.4	SM	
400	200	132	7.1	10.7	LM		300	170	12.1	17.2	SM
	250	137	7.9	11.8	NM		400	170	18.8	24.5	2 x SM
	300	132	8.9	13.1	NM		500	170	20.2	26.3	2 x SM
	400	132	12.7	17.3	2 x NM		600	170	21.4	28.1	2 x SM

Type VRX/./...x..././././M24A/..., without insulating case



Type VRX/./...x..././D/./M24A/..., with insulating case



- 1 Casing 2 Damper blade 3 Actuator 4 Flange 5 Insulating case

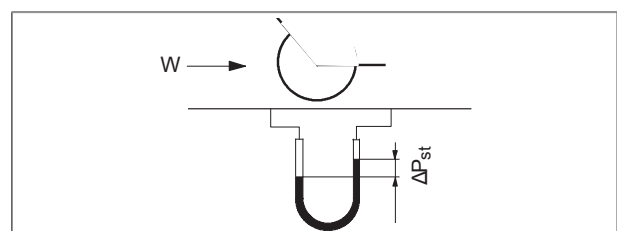
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Technical data

Size / B x H	Flow rate [m ³ /h]		Max. control error ± [%] *	Min. pressure diff. Δp _{st} [Pa]	Size / B x H	Flow rate [m ³ /h]		Max. control error ± [%] *	Min. pressure diff. Δp _{st} [Pa]
200 x 100	250	(min)	20	70	500 x 200	1100	(min)	20	70
	400		15	70		1500		15	70
	500		15	70		2500		15	70
	700	(max)	10	80		3400	(max)	10	80
200 x 150	400	(min)	20	70	500 x 250	1500	(min)	20	70
	600		15	70		2500		15	70
	800		15	70		3500		15	80
	1000	(max)	10	80		4200	(max)	10	90
200 x 200	500	(min)	20	70	500 x 300	1800	(min)	20	70
	700		15	70		2500		15	70
	1000		10	70		3500		15	80
	1300	(max)	10	80		4800	(max)	10	90
300 x 100	400	(min)	20	70	500 x 400	2200	(min)	20	70
	600		15	70		3000		15	70
	800		10	70		5000		15	70
	1000	(max)	10	80		6800	(max)	10	80
300 x 150	500	(min)	20	70	500 x 500	3000	(min)	20	70
	800		15	70		5000		15	70
	1000		10	70		7000		15	80
	1500	(max)	10	70		8400	(max)	10	90
300 x 200	600	(min)	20	70	600 x 200	1500	(min)	20	70
	800		15	70		2000		15	70
	1200		15	80		3000		15	70
	2000	(max)	10	80		4000	(max)	10	80
300 x 250	800	(min)	20	70	600 x 250	1800		20	70
	1200		15	70		2500		15	70
	1700		10	80		3500		15	80
	2500	(max)	10	80		5000	(min)	10	80
300 x 300	1000	(min)	20	70	600 x 300	2100		20	70
	1500		15	70		3500		15	70
	2000		15	80		4500		10	80
	3000	(max)	10	90		6000	(max)	10	80
400 x 200	900	(min)	20	70	600 x 400	3000	(min)	20	70
	1500		15	70		4000		15	70
	2000		10	70		6000		15	70
	2700	(max)	10	70		8000	(max)	10	80
400 x 250	1200	(min)	20	70	600 x 500	3600	(min)	20	70
	1600		15	70		5000		15	70
	2500		15	70		7000		15	80
	3400	(max)	10	80		10 000	(max)	10	80
400 x 300	1500	(min)	20	70	600 x 600	4200	(min)	20	70
	2500		15	70		7000		15	70
	3500		15	70		9000		10	80
	4200	(max)	10	90		12 000	(max)	10	80
400 x 400	1800	(min)	20	70					
	3000		15	70					
	4000		10	70					
	5400	(max)	10	70					

Pressure difference at the flow rate controller

* At pressure differences of ≤ 100 Pa or ≥ 500 Pa, greater divergences are possible.



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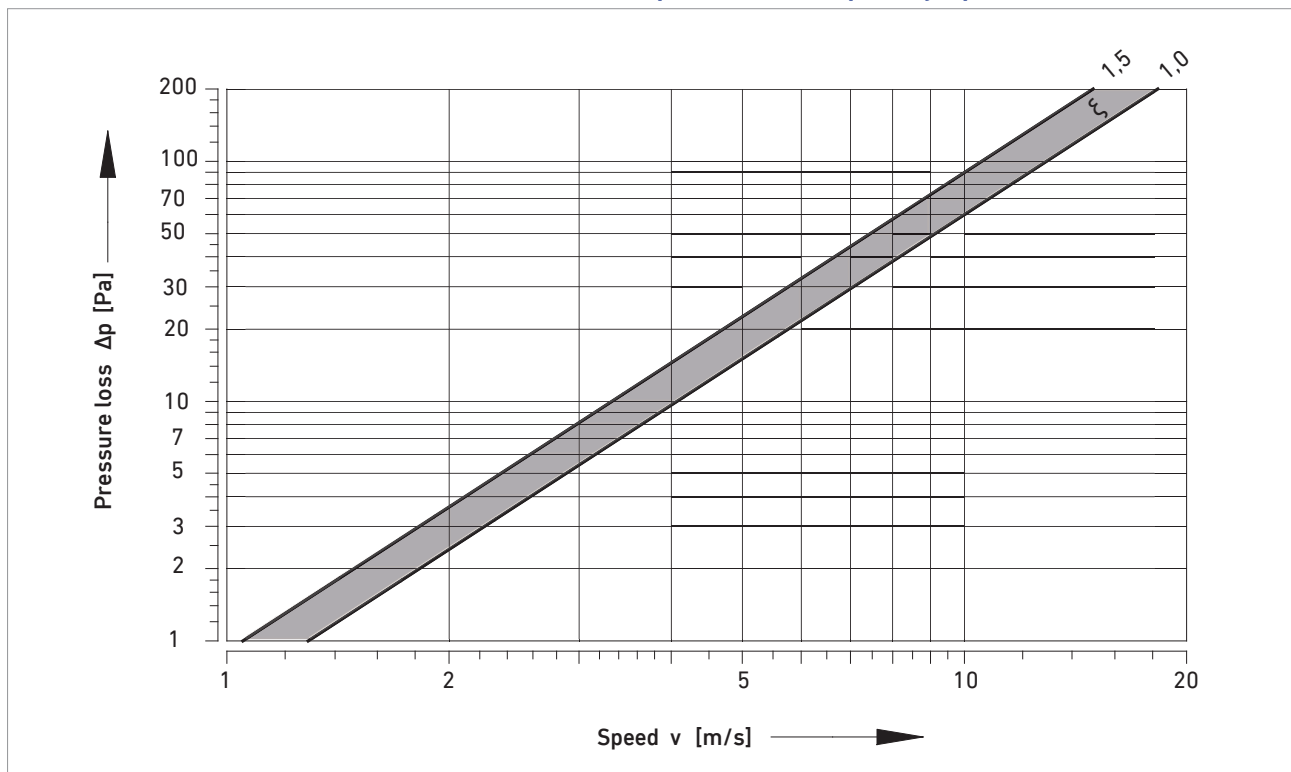
Coefficient of the local pressure loss for the nominal cross-section of the flow rate controller

Size / W x H [mm]	ξ [-]	Size / W x H [mm]	ξ [-]	Size / W x H [mm]	ξ [-]
200 x 100	1.386	400 x 200	1.344	600 x 200	1.316
200 x 150	1.379	400 x 250	1.330	600 x 250	1.295
200 x 200	1.372	400 x 300	1.316	600 x 300	1.274
		400 x 400	1.288	600 x 400	1.231
				600 x 500	1.189
300 x 100	1.379	500 x 200	1.330	600 x 600	1.147
300 x 150	1.368	500 x 250	1.312		
300 x 200	1.358	500 x 300	1.295		
300 x 250	1.347	500 x 400	1.260		
300 x 300	1.337	500 x 500	1.224		

$$\Delta p = \xi \cdot \rho \cdot \frac{W^2}{2}$$

- Δp [Pa] - pressure loss
- W [m/s] - air speed
- ρ [kg/m³] - air density
- ξ [-] - Coefficient of the local pressure loss for the nominal cross-section of the flow rate controller

Pressure losses of flow rate controller with damper blade completely opened



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Airborne sound transmission

Size / Width x Height	Flow rate [m ³ /h]	Pressure difference Δp_{st} [Pa]																										
		100								250								500										
		Octave power level L_w [dB/Oktave]							Sum sound power level L_{WA} A-weighted [dB(A)]	Octave power level L_w [dB/Oktave]							Sum sound power level L_{WA} A-weighted [dB(A)]	Octave power level L_w [dB/Oktave]							Sum sound power level L_{WA} 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					
200 x 100	250	45	44	40	40	40	41	44	38	48	53	52	48	48	48	49	49	46	56	59	58	54	54	54	55	55	52	62
	400	48	47	45	44	43	45	47	42	52	56	55	53	52	51	53	53	50	60	62	61	59	58	57	59	59	56	66
	550	48	50	51	50	50	48	50	42	55	56	58	59	58	58	56	56	50	63	62	64	65	64	64	62	62	56	69
	700	52	51	52	53	53	52	51	44	58	60	59	60	61	61	60	60	52	66	67	66	67	68	68	67	67	59	73
200 x 150	400	46	45	41	41	41	42	42	39	49	55	54	50	50	50	51	51	48	58	60	59	55	55	55	56	56	53	63
	600	49	48	46	45	44	46	46	43	53	58	57	55	54	53	55	55	52	62	63	62	60	59	58	60	60	57	67
	800	49	51	52	51	51	49	49	43	56	58	60	61	60	60	58	58	52	65	63	65	66	65	65	63	63	57	70
	1000	52	51	52	53	53	52	52	44	58	61	60	61	62	62	61	61	53	67	67	66	67	68	68	67	67	59	73
200 x 200	500	46	45	41	41	41	42	42	39	49	55	54	50	50	50	51	51	48	58	61	60	56	56	56	57	57	54	64
	765	49	48	46	45	44	46	46	43	53	58	57	55	54	53	55	55	52	62	64	63	61	60	59	61	61	58	68
	1035	49	51	52	51	51	49	49	43	56	58	60	61	60	60	58	58	52	65	64	66	67	66	66	64	64	58	71
	1300	52	51	52	53	53	52	52	44	58	61	60	61	62	62	61	61	53	67	68	67	68	69	69	68	68	60	74
300 x 100	400	47	46	42	42	42	43	43	40	50	51	50	46	46	46	47	47	44	54	54	53	49	49	49	50	50	47	57
	600	51	50	48	47	46	48	48	45	55	54	53	51	50	49	51	51	48	58	57	56	54	53	52	54	54	51	61
	800	49	51	52	51	51	49	49	43	56	53	55	56	55	55	53	53	47	60	56	58	59	58	58	56	56	50	63
	1000	52	51	52	53	53	52	52	44	58	56	55	56	57	57	56	56	48	62	59	58	59	60	60	59	59	51	65
300 x 150	500	46	45	41	41	41	42	42	39	49	55	54	50	50	50	51	51	48	58	61	60	56	56	56	57	57	54	64
	835	51	50	48	47	46	48	48	45	55	53	52	50	49	48	50	50	47	57	64	63	61	60	59	61	61	58	68
	1165	45	47	48	47	47	45	45	39	52	58	60	61	60	60	58	58	52	65	65	67	68	67	67	65	65	59	72
	1500	53	52	53	54	54	53	53	45	59	56	55	56	57	57	56	56	48	62	62	61	62	63	63	62	62	54	68
300 x 200	600	48	47	43	43	43	44	44	41	51	58	57	53	53	53	54	54	51	61	64	63	59	59	59	60	60	57	67
	1065	51	50	48	47	46	48	48	45	55	61	60	58	57	56	58	58	55	65	67	66	64	63	62	64	64	61	71
	1535	56	58	59	58	58	56	56	50	63	61	63	64	63	63	61	61	55	68	67	69	70	69	69	67	67	61	74
	2000	54	53	54	55	55	54	54	46	60	64	63	64	65	65	64	64	56	70	71	70	71	72	72	71	71	63	77
300 x 250	800	51	50	46	46	46	47	47	44	54	59	58	54	54	54	55	55	52	62	67	66	62	62	62	63	63	60	70
	1365	52	51	49	48	47	49	49	46	56	61	60	58	57	56	58	58	55	65	69	68	66	65	64	66	66	63	73
	1935	52	54	55	54	54	52	52	46	59	61	63	64	63	63	61	61	55	68	68	70	71	70	70	68	68	62	75
	2500	55	54	55	56	56	55	55	47	61	64	63	64	65	65	64	64	56	70	72	71	72	73	73	72	72	64	78
300 x 300	1000	51	50	46	46	46	47	47	44	54	59	58	54	54	54	55	55	52	62	68	67	63	63	63	64	64	61	71
	1665	53	52	50	49	48	50	50	47	57	62	61	59	58	57	59	59	56	66	70	69	67	66	65	67	67	64	74
	2335	52	54	55	54	54	52	52	46	59	61	63	64	63	63	61	61	55	68	69	71	72	71	71	69	69	63	76
	3000	56	55	56	57	57	56	56	48	62	65	64	65	66	66	65	65	57	71	73	72	73	74	74	73	73	65	79
400 x 200	900	50	49	45	45	45	46	46	43	53	59	58	54	54	54	55	55	52	62	66	65	61	61	61	62	62	59	69
	1500	52	51	49	48	47	49	49	46	56	61	60	58	57	56	58	58	55	65	69	68	66	65	64	66	66	63	73
	2100	52	54	55	54	54	52	52	46	59	60	62	63	62	62	60	60	54	67	68	70	71	70	70	68	68	62	75
	2700	54	53	54	55	55	54	54	46	60	63	62	63	64	64	63	63	55	69	71	70	71	72	72	71	71	63	77
400 x 250	1200	51	50	46	46	46	47	47	44	54	60	59	55	55	55	56	56	53	63	67	66	62	62	65	63	63	60	70
	1935	52	51	49	48	47	49	49	46	56	62	61	59	58	57	59	59	56	66	69	68	66	65	65	66	66	63	73
	2665	52	54	55	54	54	52	52	46	59	61	63	64	63	63	61	61	55	68	68	70	71	70	66	68	68	62	75
	3400	55	54	55	56	56	55	55	47	61	64	63	64	65	65	64	64	56	70	71	70	71	72	72	71	71	63	77
400 x 300	1500	52	51	47	47	47	48	48	45	55	61	60	56	56	56	57	57	54	64	68	67	63	63	66	64	64	61	71
	2400	54	53	51	50	49	51	51	48	58	63	62	60	59	58	60	60	57	67	70	69	67	66	66	67	67	64	74
	3300	58	60	61	60	60	58	58	52	65	67	69	70	69	69	67	67	61	74	69	71	72	71	67	69	69	63	76
	4200	61	60	61	62	62	61	61	53	67	70	69	70	71	71	70	70	62	76	72	71	72	73	73	72	72	64	78
400 x 400	1800	54	53	49	49	49	50	50	47	57	64	63	59	59	59	60	60	57	67	70	69	65	65	68	66	66	63	73
	3000	56	55	53	52	51	53	53	50	60	65	64	62	61	60	62	62	59	69	72	71	69	68	68	69	69	66	76
	4200	60	62	63	62	62	60	60	54	67	69	71	72	71	71	69	69	63	76	71	73	74	73	69	71	71	65	78
5400	63	62	63	64	64	63	63	55	69	72	71	72	73	73	72	72	64	78	74	73	74	75	75	74	74	66	80	

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Airborne sound transmission

Size / Width x Height	Flow rate [m ³ /h]	Pressure difference Δp_{st} [Pa]																																
		100								250								500																
		Octave power level L_w [dB/Oktave]								Sum sound power level L_{WA} A-weighted [dB(A)]	Octave power level L_w [dB/Oktave]								Sum sound power level L_{WA} A-weighted [dB(A)]	Octave power level L_w [dB/Oktave]								Sum sound power level L_{WA} 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			63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz
500 x 200	1100	48	47	43	43	43	44	44	41	51	58	57	53	53	53	54	54	51	61	65	64	60	60	63	61	61	58	68						
	1865	50	49	47	46	45	47	47	44	54	60	59	57	56	55	57	57	54	64	67	66	64	63	66	64	64	61	71						
	2635	50	52	53	52	52	50	50	44	57	59	61	62	61	61	59	59	53	66	66	68	69	68	65	66	66	60	73						
	3400	53	52	53	54	54	53	53	45	59	63	62	63	64	64	63	63	55	69	69	68	69	70	66	69	69	61	75						
500 x 250	1500	50	49	45	45	45	46	46	43	53	60	59	55	55	55	56	56	53	63	67	66	62	62	65	63	63	60	70						
	2400	52	51	49	48	47	49	49	46	56	62	61	59	58	57	59	59	56	66	68	67	65	64	67	65	65	62	72						
	3300	51	53	54	53	53	51	51	45	58	60	62	63	62	62	60	60	54	67	67	69	70	69	66	67	67	61	74						
	4200	54	53	54	55	55	54	54	46	60	63	62	63	64	64	63	63	55	69	70	69	70	71	67	70	70	62	76						
500 x 300	1800	51	50	46	46	46	47	47	44	54	61	60	56	56	56	57	57	54	64	68	67	63	63	66	64	64	61	71						
	2800	53	52	50	49	48	50	50	47	57	63	62	60	59	58	60	60	57	67	70	69	67	66	69	67	67	64	74						
	3800	52	54	55	54	54	52	52	46	59	62	64	65	64	64	62	62	56	69	69	71	72	71	68	69	69	63	76						
	4800	54	53	54	55	55	54	54	46	60	64	63	64	65	65	64	64	56	70	71	70	71	72	68	71	71	63	77						
500 x 400	2200	55	54	50	50	50	51	51	48	58	64	63	59	59	59	60	60	57	67	70	69	65	65	68	66	66	63	73						
	3735	58	57	55	54	53	55	55	52	62	67	66	64	63	62	64	64	61	71	72	71	69	68	71	69	69	66	76						
	5265	56	58	59	58	58	56	56	50	63	65	67	68	67	67	65	65	59	72	72	74	75	74	74	72	72	66	79						
	6800	60	59	60	61	61	60	60	52	66	70	69	70	71	71	70	70	62	76	77	76	77	78	75	77	77	69	83						
500 x 500	3000	59	58	54	54	54	55	55	52	62	68	67	63	63	63	64	64	61	71	74	73	69	69	68	70	70	67	77						
	4800	61	60	58	57	56	58	58	55	65	69	68	66	65	64	66	66	63	73	75	74	72	71	74	72	72	69	79						
	6600	60	62	63	62	62	60	60	54	67	68	70	71	70	70	68	68	62	75	74	76	77	76	76	74	74	68	81						
	8400	62	61	62	63	63	62	62	54	68	71	70	71	72	72	71	71	63	77	77	76	77	78	75	77	77	69	83						
600 x 200	1500	49	48	44	44	44	45	45	42	52	58	57	53	53	53	54	54	51	61	65	64	60	60	59	61	61	58	68						
	2335	50	49	47	46	45	47	47	44	54	60	59	57	56	55	57	57	54	64	67	66	64	63	66	64	64	61	71						
	3165	54	56	57	56	56	54	54	48	61	64	66	67	66	66	64	64	58	71	66	68	69	68	68	66	66	60	73						
	4000	58	57	58	59	59	58	58	50	64	67	66	67	68	68	67	67	59	73	70	69	70	71	68	70	70	62	76						
600 x 250	1800	50	49	45	45	45	46	46	43	53	60	59	55	55	55	56	56	53	63	66	65	61	61	60	62	62	59	69						
	2865	52	51	49	48	47	49	49	46	56	61	60	58	57	56	58	58	55	65	68	67	65	64	67	65	65	62	72						
	3935	50	52	53	52	52	50	50	44	57	61	63	64	63	63	61	61	55	68	68	70	71	70	70	68	68	62	75						
	5000	53	52	53	54	54	53	53	45	59	64	63	64	65	65	64	64	56	70	72	71	72	73	73	72	72	64	78						
600 x 300	2100	52	51	47	47	47	48	48	45	55	60	59	55	55	55	56	56	53	63	67	66	62	62	62	63	63	60	70						
	3400	53	52	50	49	48	50	50	47	57	62	61	59	58	57	59	59	56	66	69	68	66	65	64	66	66	63	73						
	4700	52	54	55	54	54	52	52	46	59	61	63	64	63	63	61	61	55	68	68	70	71	70	70	68	68	62	75						
	6000	54	53	54	55	55	54	54	46	60	63	62	63	64	64	63	63	55	69	70	69	70	71	71	70	70	62	76						
600 x 400	3000	56	55	51	51	51	52	52	49	59	64	63	59	59	59	60	60	57	67	71	70	66	66	66	67	67	64	74						
	4665	57	56	54	53	52	54	54	51	61	66	65	63	62	61	63	63	60	70	72	71	69	68	67	69	69	66	76						
	6335	56	58	59	58	58	56	56	50	63	64	66	67	66	66	64	64	58	71	72	74	75	74	74	72	72	66	79						
	8000	61	60	61	62	62	61	61	53	67	69	68	69	70	70	69	69	61	75	74	73	74	75	75	74	74	66	80						
600 x 500	3600	58	57	53	53	53	54	54	51	61	66	65	61	61	61	62	62	59	69	73	72	68	68	68	69	69	66	76						
	5735	60	59	57	56	55	57	57	54	64	68	67	65	64	63	65	65	62	72	74	73	71	70	69	71	71	68	78						
	7865	58	60	61	60	60	58	58	52	65	67	69	70	69	69	67	67	61	74	73	75	76	75	75	73	73	67	80						
	10000	63	62	63	64	64	63	63	55	69	72	71	72	73	73	72	72	64	78	79	78	79	80	80	79	79	71	85						
600 x 600	4200	60	59	55	55	55	56	56	53	63	69	68	64	64	64	65	65	62	72	75	74	70	70	70	71	71	68	78						
	6800	62	61	59	58	57	59	59	56	66	70	69	67	66	65	67	67	64	74	76	75	73	72	71	73	73	70	80						
	9400	61	63	64	63	63	61	61	55	68	69	71	72	71	71	69	69	63	76	75	77	78	77	77	75	75	69	82						
	12000	64	63	64	65	65	64	64	56	70	71	70	71	72	72	71	71	63	77	78	77	78	79	79	78	78	70	84						

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Sound emission (casing radiated noise)

Size / width x height	Flow rate [m ³ /h]	Sum sound power level L _{WA} A-weighted [dB(A)]					
		With insulating case			Without insulating case		
		Pressure difference Δp _{st} [Pa]			Pressure difference Δp _{st} [Pa]		
		100	250	500	100	250	500
200 x 100	250	28	33	38	38	49	49
	400	35	40	44	43	54	54
	550	38	44	48	46	52	57
	700	40	46	52	48	55	61
200 x 150	400	29	34	38	39	45	50
	600	35	41	44	43	50	55
	800	38	46	49	46	53	58
	1000	41	48	53	48	55	62
200 x 200	500	31	35	39	39	46	51
	765	37	42	45	44	51	55
	1035	41	47	50	47	54	59
	1300	43	49	54	49	56	63
300 x 100	400	31	36	41	40	46	52
	600	36	41	45	44	50	56
	800	40	45	49	47	53	59
	1000	42	47	51	49	55	61
300 x 150	500	30	36	41	39	46	51
	835	37	42	47	44	51	56
	1165	41	46	50	48	54	60
	1500	45	50	54	50	57	62
300 x 200	600	30	38	44	40	48	54
	1065	35	43	49	44	52	58
	1535	39	47	52	48	56	61
	2000	41	49	56	50	58	64
300 x 250	800	31	38	45	40	48	55
	1365	35	43	50	45	53	60
	1935	40	48	53	49	57	63
	2500	42	50	57	51	59	66
300 x 300	1000	31	39	46	41	49	56
	1665	36	44	51	45	53	60
	2335	40	49	54	49	57	63
	3000	42	51	58	51	59	66
400 x 200	900	29	37	44	40	48	54
	1500	34	42	48	45	52	59
	2100	37	45	51	47	55	61
	2700	40	48	54	49	57	63
400 x 250	1200	32	40	46	43	50	56
	1935	36	44	53	47	54	60
	2665	39	47	55	50	57	63
	3400	42	51	48	52	59	65
400 x 300	1500	34	66	52	44	51	58
	2400	39	46	52	48	56	62
	3300	42	49	55	51	59	65
	4200	44	51	57	52	60	66
400 x 400	1800	38	45	51	48	55	62
	3000	42	49	55	51	59	65
	4200	45	52	58	54	61	67
	5400	47	54	60	55	63	69

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Sound emission (casing radiated noise)

Size / width x height	Flow rate [m ³ /h]	Sum sound power level L_{WA} A-weighted [dB(A)]					
		With insulating case			Without insulating case		
		Pressure difference Δp_{st} [Pa]			Pressure difference Δp_{st} [Pa]		
		100	250	500	100	250	500
500 x 200	1100	28	36	42	40	48	54
	1865	34	41	48	45	52	59
	2635	38	45	51	48	55	61
	3400	44	49	53	51	58	63
500 x 250	1500	31	39	45	41	49	56
	2400	35	43	49	51	53	60
	3300	38	46	52	53	56	63
	4200	42	49	55	56	58	65
500 x 300	1800	33	41	47	43	51	57
	2800	37	45	51	47	55	61
	3800	40	47	53	49	58	64
	4800	42	50	56	52	60	66
500 x 400	2200	36	43	49	46	53	58
	3735	40	48	53	50	58	62
	5265	43	51	57	52	60	65
	6800	47	55	61	56	64	69
500 x 500	3000	40	47	53	50	57	63
	4800	43	51	57	53	60	66
	6600	46	54	59	55	63	68
	8400	48	56	62	57	65	70
600 x 200	1500	29	37	43	40	48	54
	2335	34	42	48	44	52	59
	3165	37	45	51	47	55	61
	4000	41	47	56	50	57	65
600 x 250	1800	31	39	45	41	50	56
	2865	35	43	49	45	54	60
	3935	38	47	53	48	57	63
	5000	41	50	54	51	59	67
600 x 300	2100	32	40	46	42	50	57
	3400	36	44	50	47	55	61
	4700	39	47	53	50	57	64
	6000	42	50	58	52	60	66
600 x 400	3000	36	43	49	46	53	59
	4665	40	47	53	49	56	63
	6335	39	50	56	51	58	65
	8000	46	54	58	55	62	67
600 x 500	3600	39	46	52	49	56	62
	5735	42	49	55	51	59	65
	7865	45	52	58	54	61	67
	10000	49	57	63	58	66	72
600 x 600	4200	40	48	54	51	58	64
	6800	44	52	57	54	61	67
	9400	47	54	60	56	63	69
	12000	50	57	62	58	65	71

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Installation

The flow rate controllers must be mounted in consideration of and compliance with general rules of engineering, relevant regulations and mandatory construction supervision provisions.

Mounting consists of installation of the flow rate controller into the air duct system and, where applicable, electrical connection of the actuator.

The flow rate controller can be installed with horizontal damper axis in vertically and horizontally routed air ducts. During mounting, the flow direction must match the arrow on the housing.

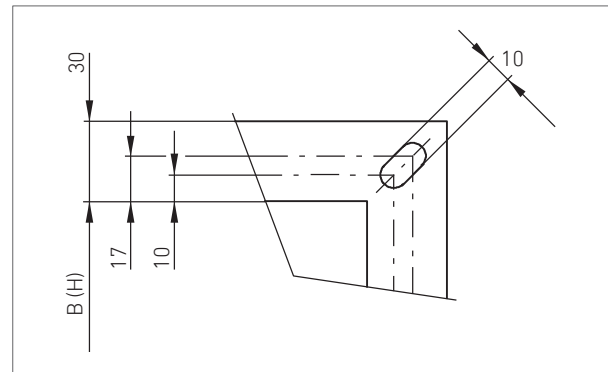
Mounting must not result in any deformations of the casing.

To ensure correct operation of the flow rate controller, the air flow must be spread evenly over the damper blade.

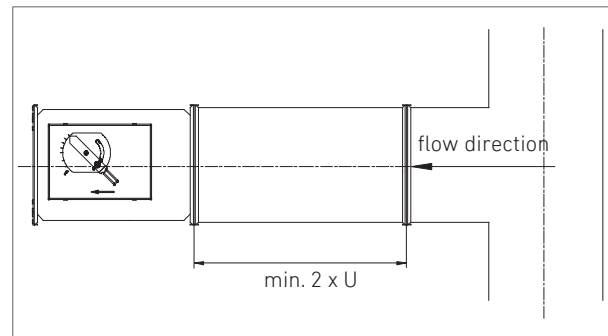
The spacing of shaped parts such as branches must be at least $2 \times U$ and of bends at least $1 \times U$ (see illustr.)

$$\text{Diagonal } U = \sqrt{B^2 + H^2}$$

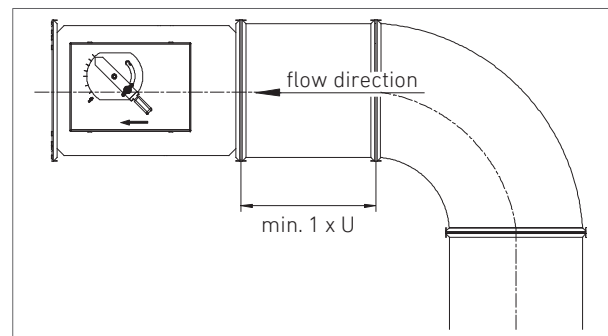
B = width and H = height see pages 4/5



Flange dimensions



Recommended distance to a branch



Recommended distance to a bend

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Nomenclature, ordering code

VRX / 2 / 200x100 / S / D / F / - / 50...200

(1) (2) (3) (4) (5) (6) (7) (8)

(1) Series	VRX	= Constant flow rate controller, rectangular
(2) Type	2	= Standard version since 2017
	1	= Version till 2016 (on request)
	US	= Version for USA (cfm scale) (on request)
(3) Size	200 x 100	= Width 200 mm x Height 100 mm
	200 x 150	= Width 200 mm x Height 150 mm
	200 x 200	= Width 200 mm x Height 200 mm
	300 x 100	= Width 300 mm x Height 100 mm
	300 x 150	= Width 300 mm x Height 150 mm
	300 x 200	= Width 300 mm x Height 200 mm
	300 x 250	= Width 300 mm x Height 250 mm
	300 x 300	= Width 300 mm x Height 300 mm
	400 x 200	= Width 400 mm x Height 200 mm
	400 x 250	= Width 400 mm x Height 250 mm
	400 x 300	= Width 400 mm x Height 300 mm
	400 x 400	= Width 400 mm x Height 400 mm
	500 x 200	= Width 500 mm x Height 200 mm
	500 x 250	= Width 500 mm x Height 250 mm
	500 x 300	= Width 500 mm x Height 300 mm
	500 x 400	= Width 500 mm x Height 400 mm
	500 x 500	= Width 500 mm x Height 500 mm
	600 x 200	= Width 600 mm x Height 200 mm
	600 x 250	= Width 600 mm x Height 250 mm
	600 x 300	= Width 600 mm x Height 300 mm
600 x 400	= Width 600 mm x Height 400 mm	
600 x 500	= Width 600 mm x Height 500 mm	
600 x 600	= Width 600 mm x Height 600 mm	
(4) Design	S	= Galvanised steel
	K	= Coated (casing only)
	E	= Stainless steel
(5) Insulating case	-	= Without insulating case (standard)
	D	= With insulating case
(6) Connection	F	= Flanges, width 30 mm (standard)
(7) Actuator	-	= Manual adjustment
	LM230A, NM230A, SM230A	* = Actuator 230 V, 2-point for setting 2 values
	LM230A-S, NM230A-S, SM230A-S	* = Actuator 230 V, 2-point for setting 2 values, with position feedback
	LM24A, NM24A, SM24A	* = Actuator 24 V, 2-point for setting 2 values, without position feedback
	LM24A-S, NM24A-S, SM24A-S	* = Actuator 24 V, 2-point for setting 2 values, with position feedback
	LM24A-SR, NM24A-SR, SM24A-SR	* = Actuator 24 V, continuous for variable set values, 0...10 V
* Actuator type (LM..., NM..., SM...) see table page 5		
(8) Setting range-....	= Flow rate range [m ³ /h]-[m ³ /h], see table page 6, with actuator: V_{\min} - V_{\max}



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