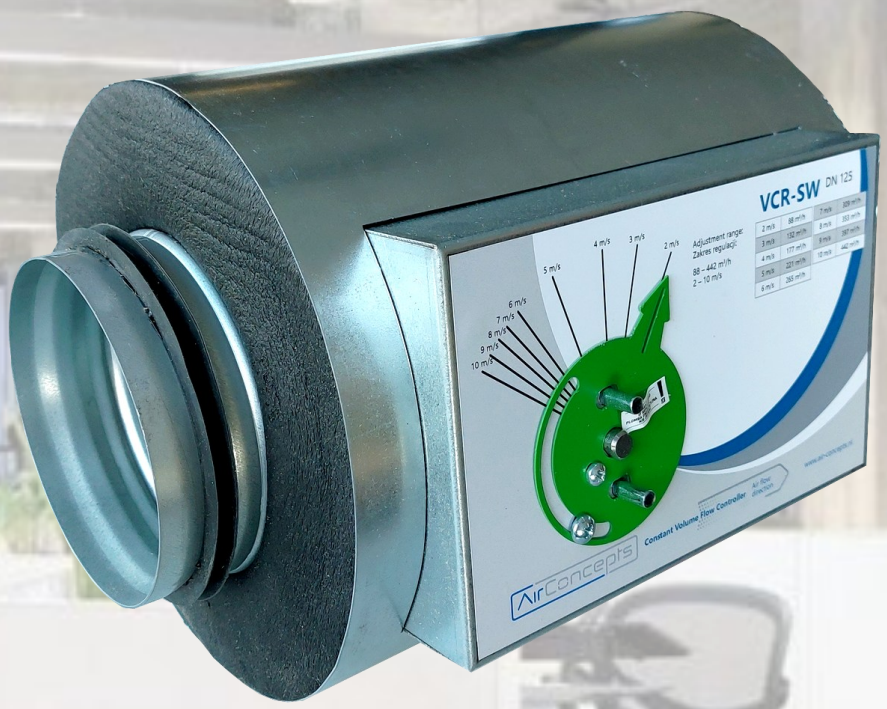
Circular, system powered, mechanical CAV regulator

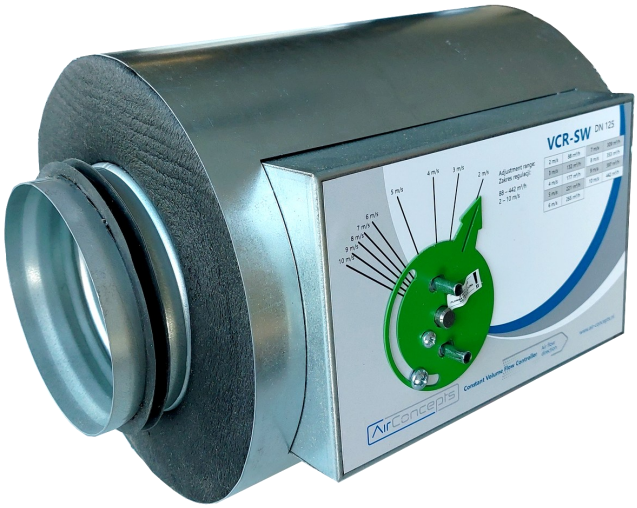
VCR-DW



AirConcepts
AIRFLOW MEASUREMENT AND CONTROL

Application

The mechanical constant volume regulator type VCR is used to reduce the cost and time of air balancing or commissioning on site. The advantage over manual dampers is that measurements and adjustments by a qualified commissioning engineer are no longer required. The factory set air volume can be read on the external scale and can be site adjusted.
When using normal manual balancing dampers, if the pressure in the duct system changes, the volume flows in the system with also changes. This is not the case when type VCR mechanical constant volume regulators are used. The regulators respond immediately and adjust the damper positions directly so that the set volume flow is held constant over the entire differential pressure range.



VCR-DW (double wall construction)

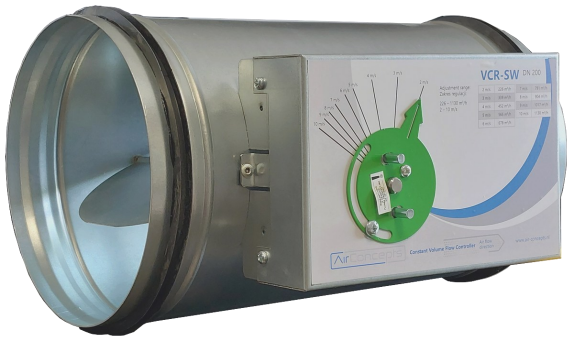
Design features

Casing

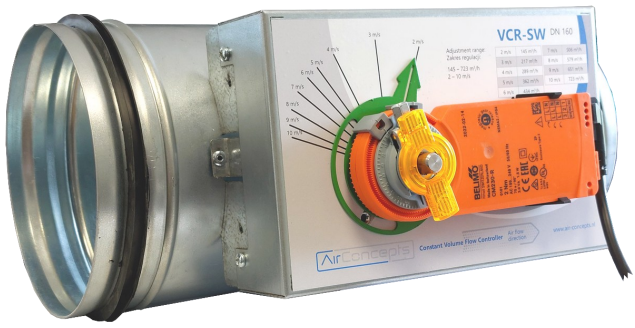
- Ridged galvanised steel construction (1.0mm)
- Silicone bellow for anti-oscillating and reduced hysteresis.
- Spigots comply with DIN 24145 or DIN 24146 ducts.
- Maintenance free
- Short installed length
- Rubber seal (optional) for easy and air tight mounting (DIN 24194 Class 4)
- Casing leakage complies with Class II, VDI 3803 or DIN 24194, Part 2

Volume Flow Control

- Mechanical system powered, no external power supply
- Insensitive to mounting position
- Suitable for supply or extract air
- Operating temperature –20 to +70°C
- Differential pressure range 50 to 1000 Pa
- Correct functioning even with unfavourable inlet and outlet flow conditions (minimum straight length of inlet duct 3.0xD)
- Control blade shaft supported in bearings
- Includes anti oscillation bellow
- Large volume flow range (1 : 5)
- Volume flow adjustment and resetting via external scale, scale accuracy approx 5%
- Maintenance free



VCR-SW (single wall construction)



VCR-SW-160-230

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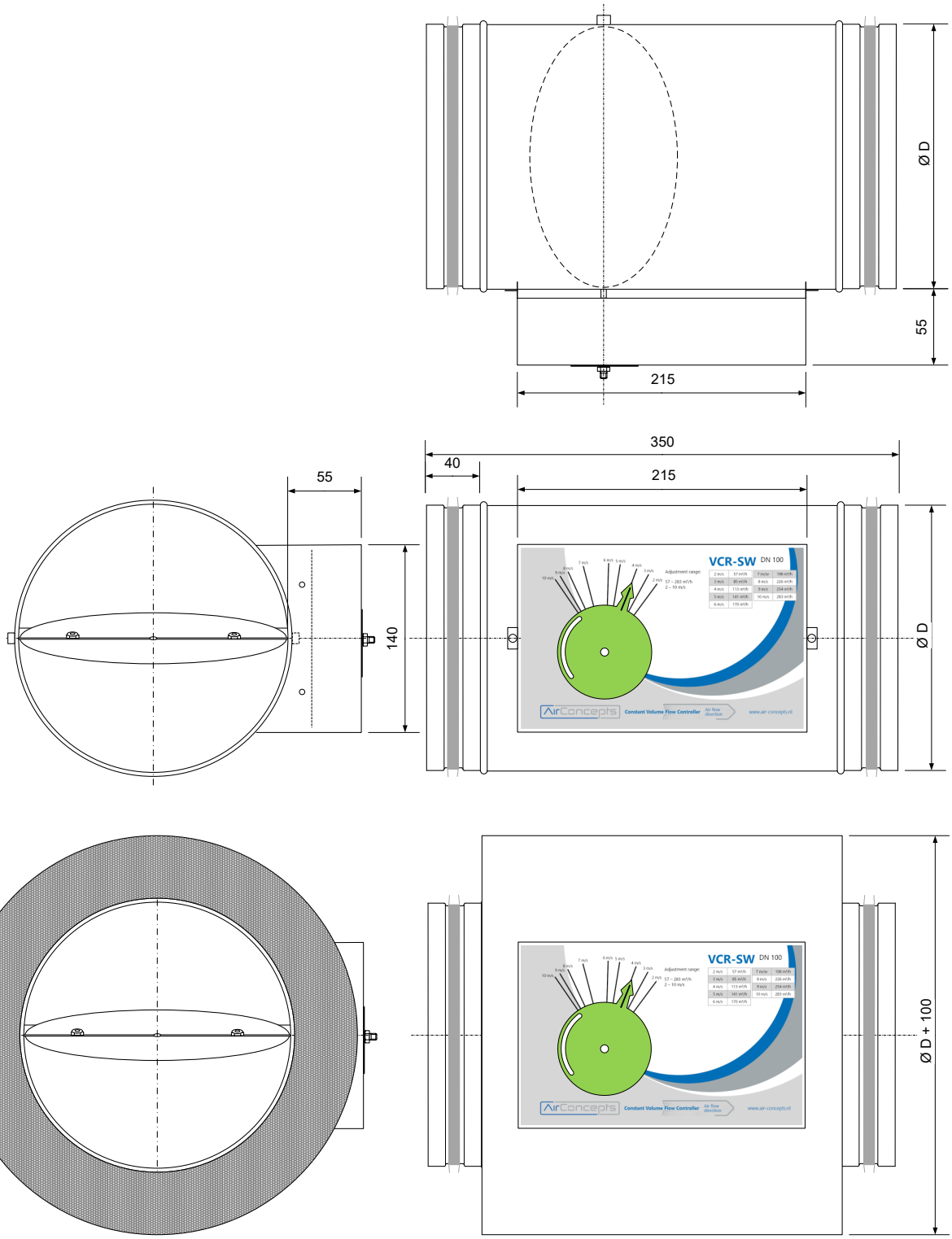

Dimensions, weight and control range

Model	100	125	160	200	250	315	400	mm
øD	98	123	158	198	248	313	398	mm
VCR-SW weight	2,0	2,2	2,6	3,1	3,7	4,4	5,6	kg
VCR-DW weight	2,8	3,2	3,8	4,5	5,4	7,6	9,4	kg
Vmin (2 m/s)	57	88	145	226	353	561	904	m^3/h
	16	24	40	63	98	156	251	l/s
Vmax (10 m/s)	283	442	723	1130	1766	2804	4522	m^3/h
	79	123	201	314	491	779	1256	l/s

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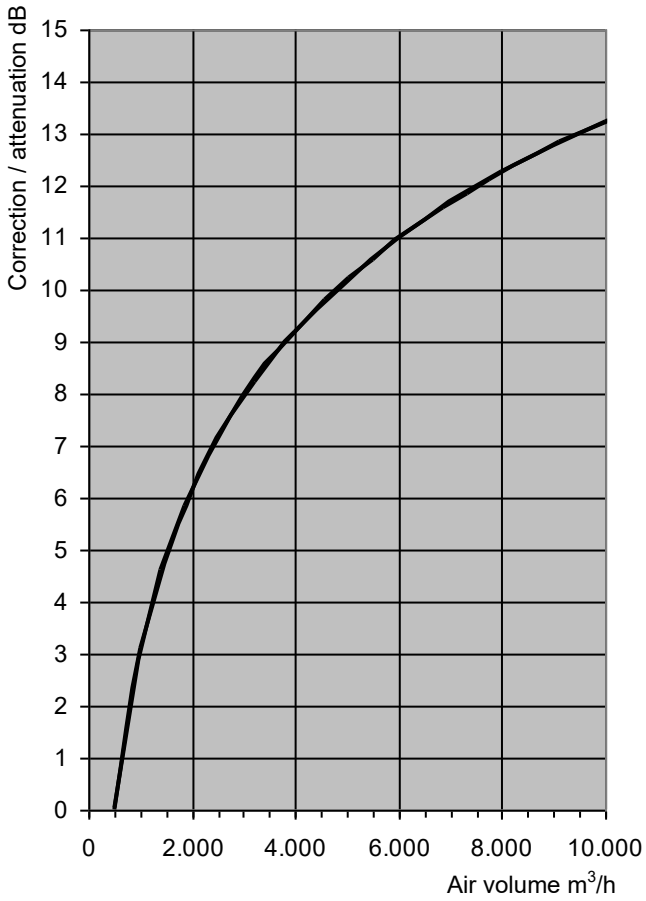
Sound data

1. L_w in dB/Oct are sound power levels (re 10-^{12}W) per octave band in dB for discharge sound and radiated sound. Values less than 17 dB are indicated by ”-”.
2. The discharge sound pressure levels **Lp**, are determined with a room absorption of 7dB/oct and the following assumption for downstream ductwork, diffuser(s) and end reflection:

125	250	500	1k	2k	4k	**Hz**
-3	-5	-10	-15	-15	-12	**dB**

3. The discharge sound pressure levels **Lp(A)** also include a correction for air volume :



4. The Radiated sound pressure levels **Lp** are determined with a room absorption of 7dB/oct and the following assumption ceiling attenuation:

125	250	500	1k	2k	4k	**Hz**
-1	-3	-5	-7	-7	-10	**dB**

5. Δ**Pa.** Unit resistance with fully opened damper blade
6. Sound data is measured in a reverberation room at an independent sound laboratory, according to ISO-3741 and ISO-5135 standards.

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Pressure drop across unit 100Pa

Model / Diameter	Lucht volume (m³/h)	Luchtsnelheid (m/s)	Min. P_{st} (Pa)	Snelselectie L_p(A) in dB(A)			Luchtgeluid enkel- en dubbelwandig							Afgestraalgeluid enkelwandig							Afgestraalgeluid dubbelwandig						
							Lw (dB/oct) re 10^{-12}W							Lw (dB/oct) re 10^{-12}W							Lw (dB/oct) re 10^{-12}W						
				Luchtgeluid zonder geluiddemper	Afgestraald geluid enkelwandig	Afgestraald geluid dubbelwandig	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	L_w(A) dB(A)	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	L_w(A) dB(A)	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	L_w(A) dB(A)
100	57	2,0	50	22	-	-	20	32	39	34	33	31	40	- -	- -	23	17	23	20	27	- -	- -	21	- -	- -	- -	22
	113	4,0	55	27	19	-	34	41	43	40	39	39	46	20	24	27	23	29	28	34	19	23	25	22	20	24	29
	170	6,0	64	30	23	18	40	44	46	42	43	41	49	26	27	30	25	33	30	37	25	26	28	24	24	26	32
	226	8,0	78	34	26	21	46	49	47	46	46	45	52	32	32	31	29	36	34	40	31	31	29	28	27	30	35
	283	10,0	98	35	27	23	50	49	49	48	48	46	54	36	32	33	31	38	35	42	35	31	31	30	29	31	37
125	88	2,0	40	23	-	-	22	34	40	37	36	32	42	- -	17	23	20	24	20	28	- -	- -	22	19	17	17	25
	177	4,0	44	29	20	-	37	42	44	43	41	39	48	22	25	27	26	29	27	34	21	24	26	25	22	24	30
	265	6,0	52	32	22	19	43	46	47	45	44	42	51	28	29	30	28	32	30	37	27	28	29	27	25	27	33
	353	8,0	65	35	26	22	49	50	48	48	48	46	54	34	33	31	31	36	34	40	33	32	30	30	29	31	36
	442	10,0	83	36	28	24	52	50	49	49	50	47	55	37	33	32	32	38	35	42	36	32	31	31	31	32	38
160	145	2,0	40	26	-	-	27	36	41	41	40	34	46	- -	19	23	23	24	20	29	- -	18	23	23	20	18	27
	289	4,0	43	30	19	18	40	44	45	45	44	40	50	23	27	27	27	28	26	33	20	26	27	27	24	24	32
	434	6,0	51	34	22	21	47	48	48	47	47	44	53	30	31	30	29	31	30	36	27	30	30	29	27	28	35
	579	8,0	64	37	26	24	52	52	49	50	51	47	56	35	35	31	32	35	33	40	32	34	31	32	31	31	38
	723	10,0	81	38	27	25	55	52	50	51	52	49	57	38	35	32	33	36	35	41	35	34	32	33	32	33	39
200	226	2,0	40	28	-	-	32	39	43	44	44	35	49	- -	21	23	24	26	19	30	- -	18	22	22	24	20	28
	452	4,0	43	33	20	19	43	45	46	48	48	42	53	25	27	26	28	30	26	34	22	24	25	26	28	27	33
	678	6,0	51	36	23	21	50	50	48	49	50	46	55	32	32	28	29	32	30	37	29	29	27	27	30	31	36
	904	8,0	63	38	26	24	54	53	50	51	53	49	58	36	35	30	31	35	33	40	33	32	29	29	33	34	39
	1130	10,0	80	40	27	25	58	53	51	52	54	50	59	40	35	31	32	36	34	41	37	32	30	30	34	35	40
250	353	2,0	50	31	23	19	36	41	44	47	47	37	51	20	25	27	31	33	25	37	17	22	24	29	28	23	33
	707	4,0	52	35	26	23	46	47	47	50	51	43	55	30	31	30	34	37	31	41	27	28	27	32	32	29	37
	1060	6,0	58	37	28	25	53	52	49	51	52	47	57	37	36	32	35	38	35	42	34	33	29	33	33	33	39
	1413	8,0	68	40	31	27	57	55	51	53	55	50	59	41	39	34	37	41	38	45	38	36	31	35	36	36	42
	1766	10,0	83	42	32	29	61	55	52	54	56	52	61	45	39	35	38	42	40	46	42	36	32	36	37	38	43
315	561	2,0	50	34	27	23	41	43	45	50	51	38	55	26	27	29	35	38	27	41	23	23	25	32	33	24	37
	1122	4,0	52	37	30	26	49	48	48	53	54	44	58	34	32	32	38	41	33	44	31	28	28	35	36	30	40
	1682	6,0	58	40	32	28	56	54	50	54	55	49	59	41	38	34	39	42	38	46	38	34	30	36	37	35	42
	2243	8,0	68	42	34	30	60	56	52	55	57	51	61	45	40	36	40	44	40	48	42	36	32	37	39	37	44
	2804	10,0	83	43	35	31	63	56	53	56	58	53	62	48	40	37	41	45	42	49	45	36	33	38	40	39	45
400	904	2,0	50	37	31	26	46	46	47	53	55	40	58	32	30	31	38	43	30	45	28	26	27	35	37	27	40
	1809	4,0	52	40	34	29	53	49	50	55	57	46	60	39	33	34	40	45	36	48	35	29	30	37	39	33	43
	2713	6,0	58	42	35	30	60	56	51	56	58	50	62	46	40	35	41	46	40	49	42	36	31	38	40	37	44
	3617	8,0	68	44	36	32	63	57	52	57	59	53	63	49	41	36	42	47	43	51	45	37	32	39	41	40	46
	4522	10,0	83	45	38	33	66	57	53	57	60	55	64	52	41	37	42	48	45	52	48	37	33	39	42	42	47

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Sound data + minimum operation pressure

Pressure drop accross unit 300Pa

Model / Diameter	Lucht volume (m^3/h)	Luchtsnelheid (m/s)	Min. P_{st} (Pa)	Snelselectie L_p(A) in dB(A)			Luchtgeluid enkel- en dubbelwandig							Afgestraalgeluid enkelwandig							Afgestraalgeluid dubbelwandig						
							Lw (dB/oct) re 10^{-12}W							Lw (dB/oct) re 10^{-12}W							Lw (dB/oct) re 10^{-12}W						
				Luchtgeluid zonder geluiddemper	Afgestraald geluid enkelwandig	Afgestraald geluid dubbelwandig	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	L_w(A) dB(A)	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	L_w(A) dB(A)	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	L_w(A) dB(A)
100	57	2,0	50	**32**	**23**	**19**	21	37	41	37	34	49	**51**	- -	20	25	20	24	38	**39**	- -	19	23	19	- -	34	**35**
	113	4,0	55	**38**	**29**	**25**	39	46	47	44	41	55	**57**	25	29	31	27	31	44	**45**	24	28	29	26	22	40	**41**
	170	6,0	64	**38**	**29**	**25**	45	50	50	46	46	54	**57**	31	33	34	29	36	43	**45**	30	32	32	28	27	39	**41**
	226	8,0	78	**41**	**32**	**28**	56	54	53	51	48	56	**59**	42	37	37	34	38	45	**47**	41	36	35	33	29	41	**43**
	283	10,0	98	**42**	**33**	**29**	60	54	55	52	51	56	**60**	46	37	39	35	41	45	**48**	45	36	37	34	32	41	**44**
125	88	2,0	40	**33**	**23**	**20**	26	40	43	41	38	50	**52**	- -	23	26	24	26	38	**40**	- -	22	25	23	19	35	**36**
	177	4,0	44	**38**	**28**	**26**	43	48	49	48	43	55	**57**	28	31	32	31	31	43	**45**	27	30	31	30	24	40	**42**
	265	6,0	52	**40**	**30**	**27**	49	53	52	48	47	56	**59**	34	36	35	31	35	44	**46**	33	35	34	30	28	41	**43**
	353	8,0	65	**43**	**33**	**29**	59	56	54	52	52	57	**61**	44	39	37	35	40	45	**48**	43	38	36	34	33	42	**45**
	442	10,0	83	**43**	**33**	**30**	62	56	56	54	53	57	**62**	47	39	39	37	41	45	**48**	46	38	38	36	34	42	**45**
160	145	2,0	40	**35**	**23**	**21**	33	43	46	45	43	51	**54**	- -	26	28	27	27	37	**39**	- -	25	28	27	23	35	**37**
	289	4,0	43	**40**	**28**	**26**	47	50	50	50	46	56	**59**	30	33	32	32	30	42	**44**	27	32	32	32	26	40	**42**
	434	6,0	51	**41**	**29**	**27**	53	55	53	51	50	56	**60**	36	38	35	33	34	42	**44**	33	37	35	33	30	40	**43**
	579	8,0	64	**44**	**32**	**30**	61	58	55	54	54	58	**62**	44	41	37	36	38	44	**47**	41	40	37	36	34	42	**45**
	723	10,0	81	**45**	**33**	**31**	65	58	57	55	55	58	**63**	48	41	39	37	39	44	**47**	45	40	39	37	35	42	**45**
200	226	2,0	40	**36**	**23**	**23**	38	46	48	49	47	52	**56**	20	28	28	29	29	36	**39**	17	25	27	27	27	37	**39**
	452	4,0	43	**41**	**28**	**28**	50	52	52	53	52	57	**61**	32	34	32	33	34	41	**43**	29	31	31	31	32	42	**44**
	678	6,0	51	**43**	**29**	**29**	57	58	54	53	53	58	**62**	39	40	34	33	35	42	**45**	36	37	33	31	33	43	**45**
	904	8,0	63	**46**	**32**	**31**	64	60	56	56	56	59	**64**	46	42	36	36	38	43	**46**	43	39	35	34	36	44	**46**
	1130	10,0	80	**47**	**33**	**32**	67	60	58	57	57	59	**64**	49	42	38	37	39	43	**47**	46	39	37	35	37	44	**47**
250	353	2,0	50	**39**	**30**	**27**	44	49	50	52	51	54	**58**	28	33	33	36	37	42	**45**	25	30	30	34	32	40	**43**
	707	4,0	52	**43**	**33**	**30**	54	54	54	55	56	57	**62**	38	38	37	39	42	45	**49**	35	35	34	37	37	43	**46**
	1060	6,0	58	**45**	**35**	**32**	61	60	56	56	56	58	**63**	45	44	39	40	42	46	**49**	42	41	36	38	37	44	**47**
	1413	8,0	68	**47**	**36**	**33**	66	62	57	58	58	59	**65**	50	46	40	42	44	47	**51**	47	43	37	40	39	45	**48**
	1766	10,0	83	**49**	**38**	**35**	70	62	58	58	59	60	**66**	54	46	41	42	45	48	**52**	51	43	38	40	40	46	**49**
315	561	2,0	50	**42**	**34**	**30**	49	52	53	56	56	55	**62**	34	36	37	41	43	44	**49**	31	32	33	38	38	41	**45**
	1122	4,0	52	**44**	**36**	**33**	58	56	55	57	59	58	**64**	43	40	39	42	46	47	**51**	40	36	35	39	41	44	**48**
	1682	6,0	58	**47**	**38**	**34**	64	62	57	58	59	59	**65**	49	46	41	43	46	48	**52**	46	42	37	40	41	45	**49**
	2243	8,0	68	**49**	**39**	**35**	69	64	58	59	60	60	**66**	54	48	42	44	47	49	**53**	51	44	38	41	42	46	**50**
	2804	10,0	83	**50**	**40**	**36**	72	64	59	60	61	60	**67**	57	48	43	45	48	49	**54**	54	44	39	42	43	46	**50**
400	904	2,0	50	**45**	**38**	**33**	55	55	55	59	61	56	**65**	41	39	39	44	49	46	**53**	37	35	35	41	43	43	**48**
	1809	4,0	52	**46**	**40**	**35**	62	58	57	60	62	58	**66**	48	42	41	45	50	48	**54**	44	38	37	42	44	45	**50**
	2713	6,0	58	**49**	**41**	**36**	68	65	58	61	62	60	**67**	54	49	42	46	50	50	**55**	50	45	38	43	44	47	**51**
	3617	8,0	68	**51**	**42**	**37**	71	66	59	61	63	61	**68**	57	50	43	46	51	51	**56**	53	46	39	43	45	48	**52**
	4522	10,0	83	**52**	**43**	**38**	75	66	60	62	63	61	**69**	61	50	44	47	51	51	**56**	57	46	40	44	45	48	**52**

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Drukval over de unit 500Pa

Model / Diameter	Lucht volume (m^3/h)	Luchtsnelheid (m/s)	Min. P_{st} (Pa)	Snelselectie L_p(A) in dB(A)			Luchtgeluid enkel- en dubbelwandig							Afgestraalgeluid enkelwandig							Afgestraalgeluid dubbelwandig						
							Lw (dB/oct) re 10^{-12}W							Lw (dB/oct) re 10^{-12}W							Lw (dB/oct) re 10^{-12}W						
				Luchtgeluid zonder geluiddemper	Afgestraald geluid enkelwandig	Afgestraald geluid dubbelwandig	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	L_w(A) dB(A)	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	L_w(A) dB(A)	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	L_w(A) dB(A)
100	57	2,0	50	**40**	**31**	**27**	22	39	42	39	34	58	**59**	- -	22	26	22	24	47	**48**	- -	21	24	21	- -	43	**44**
	113	4,0	55	**44**	**35**	**31**	42	48	49	46	43	62	**63**	28	31	33	29	33	51	**52**	27	30	31	28	24	47	**48**
	170	6,0	64	**44**	**35**	**31**	48	52	53	48	47	61	**63**	34	35	37	31	37	50	**51**	33	34	35	30	28	46	**47**
	226	8,0	78	**46**	**37**	**33**	61	57	56	53	50	62	**64**	47	40	40	36	40	51	**53**	46	39	38	35	31	47	**49**
	283	10,0	98	**47**	**37**	**34**	65	57	58	54	52	62	**65**	51	40	42	37	42	51	**53**	50	39	40	36	33	47	**49**
125	88	2,0	40	**40**	**30**	**27**	28	42	45	43	39	58	**59**	- -	25	28	26	27	46	**47**	- -	24	27	25	20	43	**44**
	177	4,0	44	**45**	**35**	**32**	45	51	51	50	44	63	**64**	30	34	34	33	32	51	**52**	29	33	33	32	25	48	**49**
	265	6,0	52	**45**	**35**	**32**	52	56	54	50	49	62	**64**	37	39	37	33	37	50	**51**	36	38	36	32	30	47	**48**
	353	8,0	65	**47**	**36**	**33**	63	59	57	54	54	62	**65**	48	42	40	37	42	50	**52**	47	41	39	36	35	47	**49**
	442	10,0	83	**48**	**37**	**34**	67	59	59	56	54	62	**65**	52	42	42	39	42	50	**52**	51	41	41	38	35	47	**49**
160	145	2,0	40	**41**	**30**	**28**	35	46	48	47	44	59	**60**	18	29	30	29	28	45	**46**	- -	28	30	29	24	43	**44**
	289	4,0	43	**46**	**34**	**32**	50	53	53	52	48	63	**65**	33	36	35	34	32	49	**50**	30	35	35	34	28	47	**48**
	434	6,0	51	**46**	**34**	**32**	56	59	56	53	51	62	**64**	39	42	38	35	35	48	**50**	36	41	38	35	31	46	**48**
	579	8,0	64	**48**	**36**	**34**	66	61	58	56	56	63	**66**	49	44	40	38	40	49	**51**	46	43	40	38	36	47	**49**
	723	10,0	81	**49**	**36**	**35**	70	61	60	57	56	63	**66**	53	44	42	39	40	49	**51**	50	43	42	39	36	47	**49**
200	226	2,0	40	**43**	**29**	**30**	41	49	51	51	49	60	**62**	23	31	31	31	31	44	**45**	20	28	30	29	29	45	**46**
	452	4,0	43	**47**	**33**	**34**	54	55	55	55	54	64	**66**	36	37	35	35	36	48	**50**	33	34	34	33	34	49	**50**
	678	6,0	51	**47**	**33**	**33**	60	61	57	55	54	63	**66**	42	43	37	35	36	47	**49**	39	40	36	33	34	48	**49**
	904	8,0	63	**49**	**35**	**34**	68	63	59	58	58	63	**67**	50	45	39	38	40	47	**50**	47	42	38	36	38	48	**50**
	1130	10,0	80	**50**	**36**	**35**	72	63	61	59	58	63	**67**	54	45	41	39	40	47	**50**	51	42	40	37	38	48	**50**
250	353	2,0	50	**44**	**35**	**32**	47	53	53	54	53	61	**63**	31	37	36	38	39	49	**51**	28	34	33	36	34	47	**49**
	707	4,0	52	**48**	**38**	**35**	58	58	57	57	58	64	**67**	42	42	40	41	44	52	**54**	39	39	37	39	39	50	**52**
	1060	6,0	58	**49**	**39**	**36**	64	64	59	58	57	64	**67**	48	48	42	42	43	52	**54**	45	45	39	40	38	50	**52**
	1413	8,0	68	**51**	**40**	**37**	70	65	60	60	60	64	**68**	54	49	43	44	46	52	**55**	51	46	40	42	41	50	**52**
	1766	10,0	83	**52**	**41**	**38**	74	65	61	60	60	64	**69**	58	49	44	44	46	52	**55**	55	46	41	42	41	50	**52**
315	561	2,0	50	**47**	**39**	**35**	53	56	56	59	58	63	**66**	38	40	40	44	45	52	**54**	35	36	36	41	40	49	**51**
	1122	4,0	52	**49**	**40**	**37**	62	60	59	60	61	64	**68**	47	44	43	45	48	53	**56**	44	40	39	42	43	50	**52**
	1682	6,0	58	**51**	**41**	**37**	68	66	60	60	61	64	**68**	53	50	44	45	48	53	**56**	50	46	40	42	43	50	**53**
	2243	8,0	68	**52**	**42**	**38**	73	67	61	61	62	64	**69**	58	51	45	46	49	53	**56**	55	47	41	43	44	50	**53**
	2804	10,0	83	**53**	**43**	**39**	76	67	62	62	63	64	**70**	61	51	46	47	50	53	**57**	58	47	42	44	45	50	**53**
400	904	2,0	50	**49**	**42**	**38**	60	59	59	62	63	64	**69**	46	43	43	47	51	54	**57**	42	39	39	44	45	51	**54**
	1809	4,0	52	**51**	**43**	**39**	66	62	61	63	65	64	**70**	52	46	45	48	53	54	**58**	48	42	41	45	47	51	**54**
	2713	6,0	58	**53**	**44**	**40**	73	69	62	63	65	65	**71**	59	53	46	48	53	55	**59**	55	49	42	45	47	52	**55**
	3617	8,0	68	**54**	**45**	**41**	75	70	62	64	65	65	**71**	61	54	46	49	53	55	**59**	57	50	42	46	47	52	**55**
	4522	10,0	83	**56**	**46**	**42**	79	70	63	64	65	65	**72**	65	54	47	49	53	55	**59**	61	50	43	46	47	52	**56**

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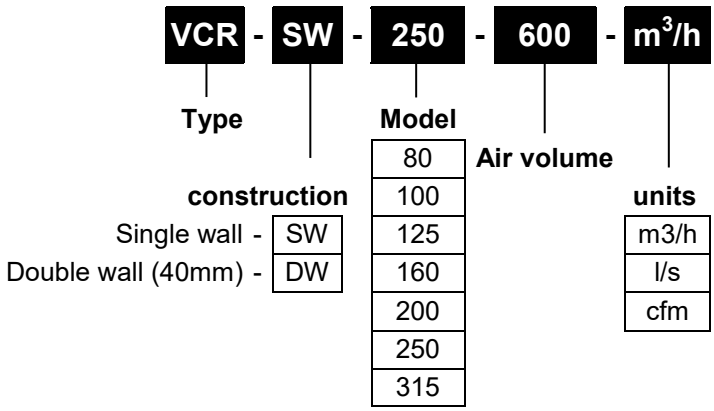
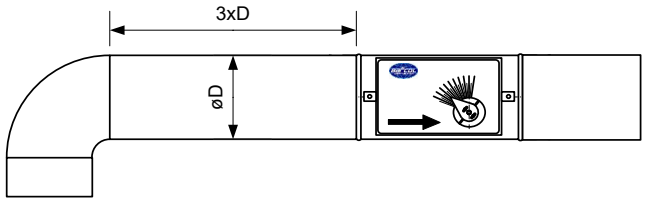
Type Designation

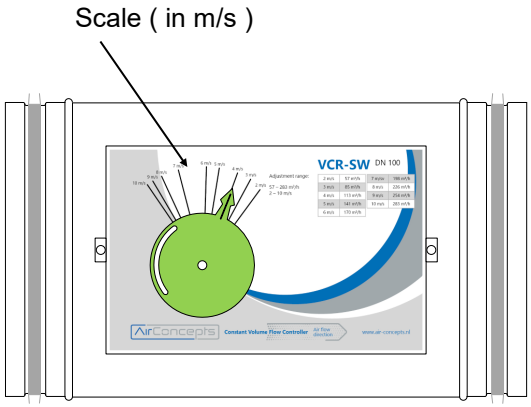


Mounting instructions

To achieve the specified accuracy, a straight inlet of 3xD is required. If this is not possible, field adjustment may be required. NR units can be installed in any position, however the air flow is factory calibrated in a horizontal position. Different mounting positions can result in up to 10% error and field adjustment may be required.



Air flow field adjustment
The air flow setting can be adjusted by loosening the M6 nut (SW10) on the centre of the scale and rotation of the indicator to the required air volume.
The scale is both in m^3/h and in l/s.
Do not forget to tighten the M6 nut after adjustment !!!



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