AIR-CONCEPTS

air distribution products

VCR

Mechanical Constant Volume regulator

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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-SW

VCR-DW

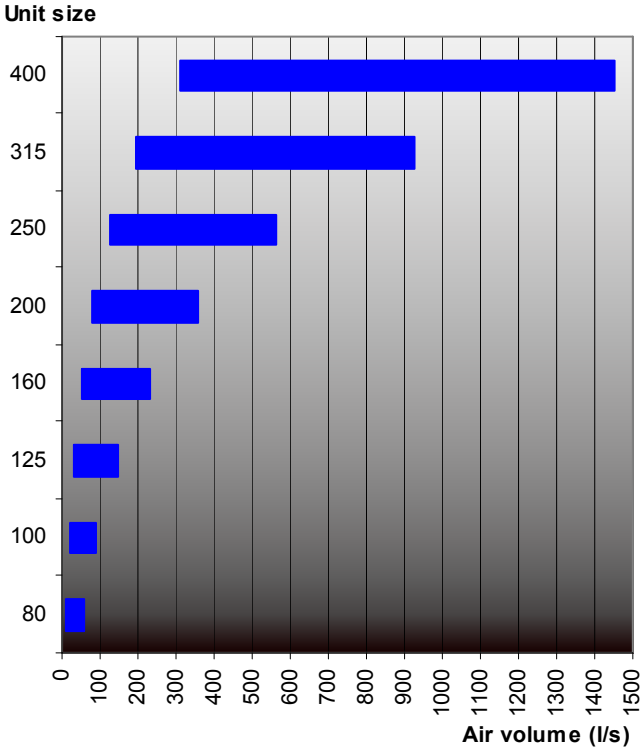
Design features

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



Air Volume range VCR

	Air volume (m^3/h)		Air volume (l/s)	
Model	**min**	**max**	**min**	**max**
80	45	210	12	60
100	70	325	20	90
125	110	510	30	145
160	180	825	50	230
200	285	1300	80	360
250	450	2030	125	565
315	700	3325	195	925
400	1130	5200	310	1450

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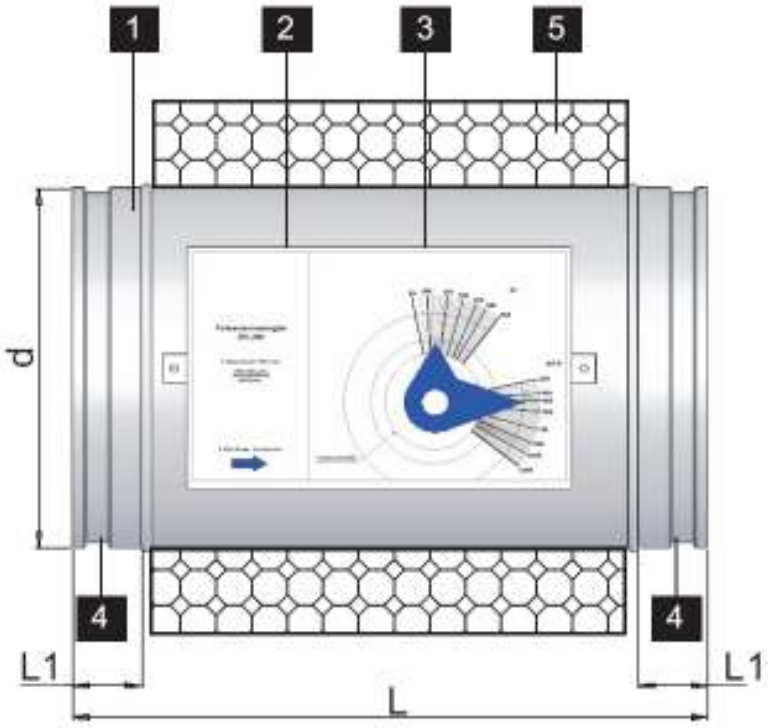
Dimensions



Legend:
1. Unit casing
2. Control mechanism
3. Air volume scale (in m^3/h) with indicator
4. Rubber seal (optional)
5. Double skin insulation, 40mm (-DW version)

				weight (kg)	
Model	**ød**	**L**	**L1**	**SW**	**DW**
80	ø 78	320	38	1,5	2,3
100	ø 98	320	38	1,7	2,5
125	ø 123	320	38	1,8	2,8
160	ø 158	320	38	2,0	3,2
200	ø 198	250	38	2,4	3,5
250	ø 248	410	47	3,4	5,7
315	ø 313	460	47	6,2	9,4
400	ø 398	460	60	8,0	11,7

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1.04 - VCR mechanical CAV

Pressure drop and Sound

Model	Air volume (l/s)	Air velocity (m/s)	Min. P_{st} (Pa)	100 Pa							250 Pa							500 Pa						
				Lw (dB/oct) re 10^{-12}W							Lw (dB/oct) re 10^{-12}W							Lw (dB/oct) re 10^{-12}W						
				125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	NR*	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	NR*	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	NR*
80	15	3,2	52	33	26	26	28	31	31	--	41	34	34	36	39	39	--	46	40	40	41	44	44	**22**
	30	6,4	70	44	39	39	39	41	40	--	50	46	46	46	47	47	**24**	55	50	50	50	52	51	**29**
	50	10,7	116								59	55	55	54	54	53	**32**	62	58	58	57	57	56	**35**
	70	15,0	187								66	61	61	59	59	57	**40**	69	63	64	61	61	60	**43**
100	20	2,7	50	32	25	25	27	30	30	--	42	35	35	37	41	41	--	48	41	41	43	47	47	**24**
	45	6,1	67	45	40	40	40	42	41	--	52	47	47	47	49	48	**26**	57	52	52	52	54	53	**31**
	70	9,5	99	51	47	47	46	47	46	**24**	57	53	54	52	53	52	**31**	61	57	58	56	57	56	**35**
	95	12,9	148								63	58	58	56	57	55	**36**	66	62	62	60	60	59	**40**
125	35	3,0	51	42	35	35	37	40	40	--	49	42	42	44	47	47	**25**	55	49	49	50	54	54	**31**
	80	6,8	73	50	46	46	45	47	46	**24**	57	53	53	53	54	54	**31**	63	59	59	58	60	59	**37**
	125	10,7	115								63	58	59	57	58	57	**36**	67	63	63	62	62	61	**41**
	170	14,5	178								67	62	62	60	60	58	**41**	72	67	67	65	65	63	**47**
160	45	2,3	49	43	35	35	37	41	41	--	50	42	42	45	49	49	**27**	56	48	48	50	54	54	**32**
	105	5,4	62	49	45	45	45	47	46	**24**	57	52	52	52	54	54	**31**	63	58	58	58	60	60	**37**
	165	8,5	89	53	49	50	49	50	49	**27**	60	56	57	56	57	56	**34**	66	62	63	62	63	62	**40**
	225	11,6	128								65	60	60	59	59	58	**38**	72	67	67	66	66	65	**46**
200	70	2,3	49	43	35	35	37	41	41	--	52	44	44	46	50	50	**28**	59	51	51	53	57	57	**35**
	170	5,6	63	49	44	44	44	46	46	**24**	58	53	53	53	55	55	**32**	64	60	60	60	62	61	**39**
	270	8,9	92	54	50	50	49	50	49	**27**	62	58	58	57	58	57	**35**	69	65	65	64	65	64	**43**
	360	11,8	131								65	61	61	59	60	58	**39**	72	67	67	66	66	65	**46**
250	110	2,3	49	42	34	34	36	40	40	--	52	44	44	46	50	50	**28**	59	51	51	53	57	57	**35**
	275	5,7	64	50	45	45	45	47	47	**25**	58	54	54	54	56	55	**33**	64	60	60	60	62	61	**39**
	450	9,4	98	56	52	52	51	52	51	**29**	64	60	60	59	60	59	**38**	69	65	65	64	65	64	**43**
	610	12,7	146								68	63	63	61	62	60	**42**	73	68	68	66	67	65	**47**
315	165	2,2	49	42	34	34	36	40	40	--	52	44	44	46	50	50	**28**	60	52	52	55	59	59	**36**
	385	5,0	60	49	44	44	45	47	46	**24**	59	54	54	54	56	56	**33**	65	60	60	60	62	62	**39**
	600	7,8	82	55	51	51	51	52	51	**29**	63	59	59	58	59	58	**36**	69	65	65	64	65	64	**43**
	830	10,9	117								67	62	63	61	62	60	**40**	72	67	68	66	67	65	**46**

1.Min. P_{st} is the minimum static pressure drop required to operate the unit.
2."--" sound pressure levels < NR 20.

3.NR* is the expected sound level in the room based on 7 dB room absorption and the following assumptions for downstream duct and diffuser attenuation:

125	250	500	1k	2k	4k	Hz
-4	-7	-15	-20	-25	-20	dB

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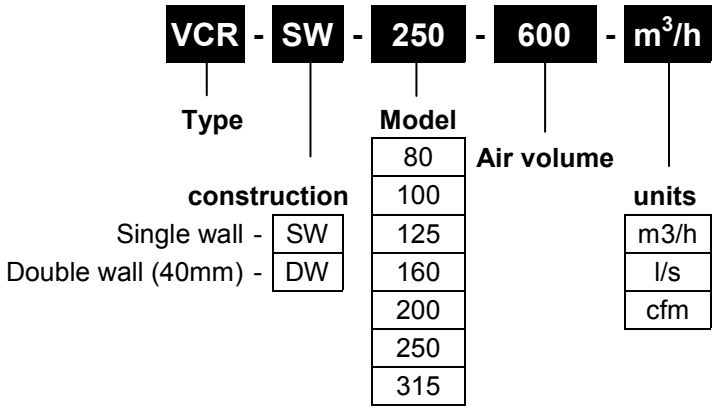
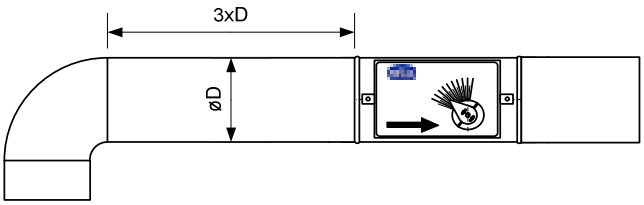
Type Designation

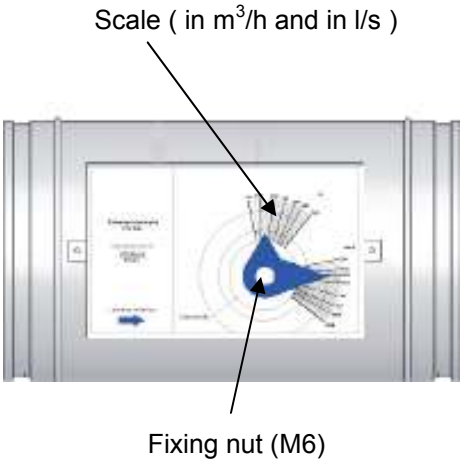


Mounting instructions

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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