

# RCP-R

## CIRCULAR CONSTANT FLOW REGULATOR CAV



### Product characteristics:

Circular constant air flow regulator CAV, without external power supply.

Key parameters	
Function	CAV
Operating range	2-10 m/s
Material	galvanized steel or stainless steel 1.4301
Pressure range	50-500Pa
Air leakage class	CX
Regulation accuracy	10% (>3 m/s), 20% [2-3 m/s]
Operating temperature range	0-50°C

### Intended use

The CAV RCP-R regulator is used for the automatic control of the constant air flow in ventilation systems without external power supply (in the basic version). It guarantees the maintenance of constant air flow values regardless of the static pressure change in the ventilation duct. In a special version, a device made of AISI304L stainless steel can be ordered. In addition, it is possible to make a controller with an electric actuator 24VAC / DC or 230VAC, so you can easily maintain two selected flow values. The RCP-R regulator can be used for both supply and exhaust ventilation ducts.

### Design

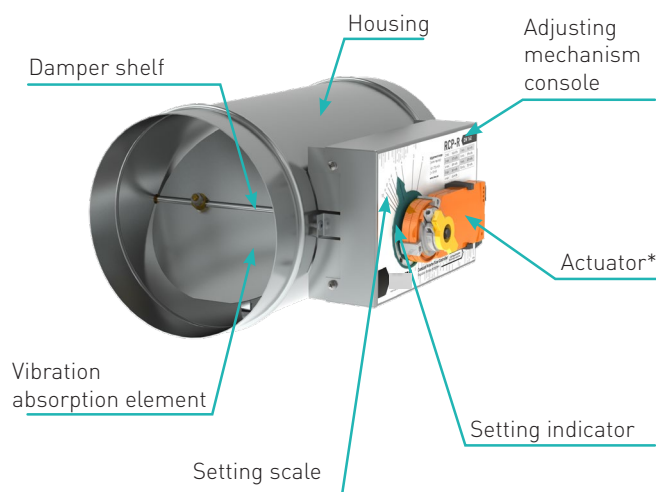


Figure 1. RCP-R design.

### Wymiary

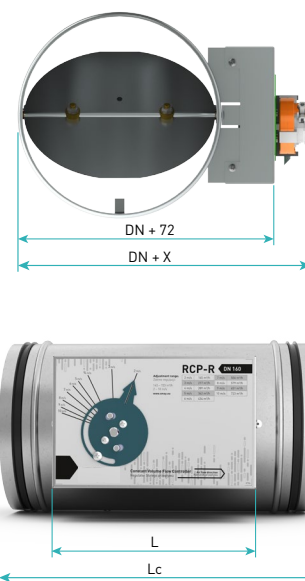


Figure 2. Dimensions of RCP-R regulator.

Table 1. Specific data of RCP-R.

Characteristic dimensions of RCP-R				
DN	Ø d [mm]	L [mm]	Lc [mm]	Weight [kg]
100	98	270	350	1,97
125	123	270	350	2,23
160	158	270	350	2,61
200	198	270	350	3,06
250	248	270	350	3,65
315	313	270	350	4,47
400	398	270	350	5,58

Legend	
Actuator type	CM..G-R
	LM..A

\* RCP-R - ... - S... - version with an actuator



Tabela 2. The accuracy of regulation and minimum operating pressure.

DN	air flow V			$\Delta p_{min}$ [Pa]	$\Delta V$ [%]
	m/s	m <sup>3</sup> /h	l/s		
100	2	57	16	50	20
	4	113	31	50	10
	6	170	47	50	10
	8	226	63	70	10
	10	283	79	90	10
125	2	88	25	30	20
	4	177	49	30	10
	6	265	74	50	10
	8	353	98	50	10
	10	442	123	70	10
160	2	145	40	30	20
	4	289	80	30	10
	6	434	121	50	10
	8	579	161	50	10
	10	723	201	70	10
200	2	226	63	30	20
	4	452	126	30	10
	6	678	188	50	10
	8	904	251	50	10
	10	1130	314	70	10
250	2	353	98	50	20
	4	707	196	50	10
	6	1060	294	50	10
	8	1413	393	50	10
	10	1766	491	70	10
315	2	561	156	50	20
	4	1122	312	50	10
	6	1682	467	50	10
	8	2243	623	50	10
	10	2804	779	70	10
400	2	904	251	50	20
	4	1809	502	50	10
	6	2713	754	50	10
	8	3617	1005	50	10
	10	4522	1256	70	10

### Installation recommendations

The RCP-R regulator should be installed in accordance with the air flow direction which is marked with an arrow on the device's housing.

To ensure correct operation of the device follow these rules during installation:

- Straight section length before the regulator 3D,
- Straight section length after the regulator 1,5D.

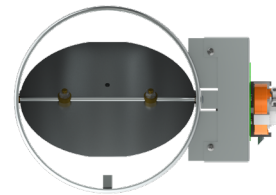


Figure 3. Recommended way of RCP-R installation.

The RCP-R regulator is designed for installation in both supply and exhaust ducts, in any position. However, it is recommended to install it with a side position of the adjusting mechanism console to minimize regulation inaccuracy.

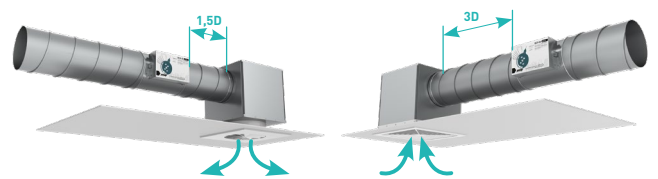


Figure 4. Required straight section lengths before and after RCP-R regulator.

## Technical data

Table 3. Sound power level  $L_w$  [dB] and acoustic pressure level  $L_{pa}$  [dB(A)] emitted by RCP-R regulator.

RCP-R	dP=100Pa												dP=300Pa												dP=500Pa											
	Air flow noise emitted into the duct											Through the ho- using	Air flow noise emitted into the duct											Through the ho- using	Air flow noise emitted into the duct											Through the ho- using
	in frequency bands, $L_w$ [dB]												in frequency bands, $L_w$ [dB]												in frequency bands, $L_w$ [dB]											
DN [mm]	Air flow			63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	total $L_{pa}$ [dB(A)]	none insulation $L_{pa}$ [dB(A)]	insulation $L_{pa}$ [dB(A)]	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	total $L_{pa}$ [dB(A)]	none insulation $L_{pa}$ [dB(A)]	insulation $L_{pa}$ [dB(A)]	63Hz	125Hz	250Hz	500Hz	1kHz	2kHz	4kHz	8kHz	total $L_{pa}$ [dB(A)]	none insulation $L_{pa}$ [dB(A)]	insulation $L_{pa}$ [dB(A)]
Velocity v [m/s]	V [m³/h]	V [l/s]																																		
100	2	57	16	29	<20	32	39	34	33	31	21	32	<20	<20	38	21	37	41	37	34	49	41	43	24	<20	43	22	39	42	39	34	58	51	51	28	<20
	4	113	31	38	34	41	43	40	39	39	29	38	23	<20	44	39	46	47	44	41	55	45	49	31	<20	46	42	48	49	46	43	62	52	55	34	<20
	6	170	47	39	40	44	46	42	43	41	33	41	28	<20	44	45	50	50	46	46	54	47	49	35	22	46	48	52	53	48	47	61	54	55	39	26
	8	226	63	44	46	49	47	46	46	45	36	44	32	<20	52	56	54	53	51	48	56	49	52	38	24	55	61	57	56	53	50	62	54	56	42	27
	10	283	79	45	50	49	49	48	48	46	39	46	35	<20	51	60	54	55	52	51	56	50	53	41	26	54	65	57	58	54	52	62	55	57	44	30
125	2	88	25	32	22	34	40	37	36	32	21	35	<20	<20	40	26	40	43	41	38	50	42	44	26	<20	44	28	42	45	43	39	58	51	52	30	<20
	4	177	49	40	37	42	44	43	41	39	29	40	25	<20	46	43	48	49	48	43	55	45	50	32	<20	48	45	51	51	50	44	63	53	56	36	<20
	6	265	74	43	43	46	47	45	44	42	34	43	29	<20	47	49	53	52	48	47	56	48	51	37	20	49	52	56	54	50	49	62	54	56	40	24
	8	353	98	47	49	50	48	48	48	46	37	46	32	<20	54	59	56	54	52	52	57	49	53	39	20	57	63	59	57	54	54	62	55	57	43	24
	10	442	123	50	52	50	49	49	50	47	40	47	36	<20	56	62	56	56	54	53	57	51	54	41	22	59	67	59	59	56	54	62	56	58	44	26
160	2	145	40	35	27	36	41	41	40	34	23	38	<20	<20	43	33	43	46	45	43	51	42	46	29	<20	47	35	46	48	47	44	59	52	53	33	<20
	4	289	80	43	40	44	45	45	44	40	31	42	27	<20	48	47	50	50	50	46	56	46	51	34	<20	50	50	53	53	52	48	63	54	57	38	<20
	6	434	121	47	47	48	48	47	47	44	36	45	30	<20	52	53	55	53	51	50	56	49	52	38	21	55	56	59	56	53	51	62	55	57	42	25
	8	579	161	52	52	52	49	50	51	47	39	48	33	<20	57	61	58	55	54	54	58	51	54	40	21	60	66	61	58	56	56	63	56	58	44	25
	10	723	201	55	55	52	50	51	52	49	42	49	36	<20	61	65	58	57	55	55	58	52	55	42	23	64	70	61	60	57	56	63	56	59	45	27
200	2	226	63	38	32	39	43	44	44	35	24	40	22	<20	45	38	46	48	49	47	52	43	48	31	<20	48	41	49	51	51	49	60	52	55	36	<20
	4	452	126	47	43	45	46	48	48	42	33	45	28	<20	52	50	52	52	53	52	57	47	52	36	<20	54	54	55	55	55	54	64	54	58	40	<20
	6	678	188	52	50	50	48	49	50	46	37	47	32	<20	57	57	58	54	53	53	58	50	54	39	22	60	60	61	57	55	54	63	56	58	43	26
	8	904	251	56	54	53	50	51	53	49	41	49	34	<20	62	64	60	56	56	56	59	52	56	41	22	65	68	63	59	58	58	63	57	59	45	26
	10	1130	314	59	58	53	51	52	54	50	44	51	37	<20	66	67	60	58	57	57	59	53	56	43	23	69	72	63	61	59	58	63	57	60	46	27
250	2	353	98	41	36	41	44	47	47	37	26	43	24	<20	47	44	49	50	52	51	54	44	50	34	<20	50	47	53	53	54	53	61	53	56	39	<20
	4	707	196	50	46	47	47	50	51	43	34	47	30	<20	55	54	54	54	55	56	57	48	54	38	<20	57	58	58	57	57	58	64	55	59	42	<20
	6	1060	294	56	53	52	49	51	52	47	39	49	33	<20	62	61	60	56	56	56	58	51	55	41	23	65	64	64	59	58	57	64	56	59	45	27
	8	1413	393	60	57	55	51	53	55	50	43	51	35	<20	66	66	62	57	58	58	59	53	57	42	23	69	70	65	60	60	60	64	57	60	46	26
	10	1766	491	63	61	55	52	54	56	52	45	52	38	<20	70	70	62	58	58	59	60	54	58	44	24	74	74	65	61	60	60	64	58	61	47	28
315	2	561	156	43	41	43	45	50	51	38	27	47	26	<20	50	49	52	53	56	56	55	45	53	36	<20	52	53	56	56	59	58	63	53	58	42	<20
	4	1122	312	53	49	48	48	53	54	44	36	50	31	<20	58	58	56	55	57	59	58	49	56	40	<20	61	62	60	59	60	61	64	56	60	44	<20
	6	1682	467	60	56	54	50	54	55	49	41	51	34	<20	67	64	62	57	58	59	59	52	57	42	24	70	68	66	60	60	61	64	57	61	46	28
	8	2243	623	64	60	56	52	55	57	51	44	53	36	<20	71	69	64	58	59	60	60	54	59	43	23	73	73	67	61	61	62	64	58	62	47	27
	10	2804	779	68	63	56	53	56	58	53	47	54	38	<20	76	72	64	59	60	61	60	55	59	44	25	80	76	67	62	62	63	64	59	62	48	29
400	2	904	251	48	46	46	47	53	55	40	29	50	29	<20	55	55	55	55	59	61	56	46	57	39	<20	58	60	59	59	62	63	64	54	61	45	<20
	4	1809	502	57	53	49	50	55	57	46	38	52	33	<20	63	62	58	57	60	62	58	50	59	42	<20	66	66	62	61	63	65	64	56	62	46	20
	6	2713	754	65	60	56	51	56	58	50	43	54	35	<20	73	68	65	58	61	62	60	53	60	44	25	76	73	69	62	63	65	65	58	63	47	29
	8	3617	1005	69	63	57	52	57	59	53	46	55	37	<20	75	71	66	59	61	63	61	55	60	45	24	78	75	70	62	64	65	65	59	63	48	28
	10	4522	1256	72	66	57	53	57	60	55	49	56	39	<20	79	75	66	60	62	63	61	56	61	45	26	82	79	70	63	64	65	65	59	64	49	30

The sound pressure level takes into account the room and ceiling attenuation for the reference room, which was adopted at the level of 8 dB. Actual parameters may vary depending on conditions.

Acoustic data for other pressures and air flows, including sound power levels in individual frequency bands, are available from design department.

01.06.2022

RCP-R regulator can be fitted with an electric actuator, which enables the settings the air flow value to be changed automatically e.g. in the event of a night time reduction in ventilation capacity. The RCP-R regulator cannot be closed. The available actuators can be supplied with 24VAC/DC or 230VAC voltage.

Table 4. Technical data of the 24VAC/DC actuator.

CM24A and NM24A actuator data		
Power supply		24V AC/DC
Power consumption	Running	CM24A 0,5 [W] LM24A 1 [W]
	Idle	0,2 [W]
	Rated power	CM24A 1 [VA] LM24A 1,5 [VA]
Torque		CM24A 2Nm LM24A 5Nm
Running time		75 s/90°
Connection diagram		Diagram 1

Table 5. Technical data of the 230VAC actuator.

CM230A i NM230A actuator data		
Power supply		230V AC
Power consumption	Running	CM230A 1,5 [W] LM230A 1,5 [W]
	Idle	CM230A 1 [W] LM230A 0,5 [W]
	Rated power	CM230A 3 [VA] LM230A 3,5 [VA]
Torque		CM230A 2Nm LM230A 5Nm
Running time		75 s/90°
Connection diagram		Diagram 1

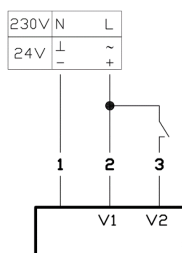


Diagram 1. Connection and control of RCP-R regulator.

Table 6. The control of the actuator of RCP-R.

Power Supply		Wire number			Function
		1	2	3	
230V	colour	blue	brown	white	
	action	N	L		V1
24V		N	L	L	V2
	colour	black	red	white	
	action	-	+		V1
		-	+	+	V2

V1 - lower air flow value  
V2 - higher air flow value

### The change of the setting

The user can change the setting of the set point. In order to change the RCP-R settings, loosen the locking screw, change the set value and tighten the screw:



Table 7. Standard factory settings.

Dn	V [m³/h]								
	2 m/s	3 m/s	4 m/s	5 m/s	6 m/s	7 m/s	8 m/s	9 m/s	10 m/s
100	57	85	113	141	170	198	226	254	283
125	88	132	177	221	265	309	353	397	442
160	145	217	289	362	434	506	579	651	723
200	226	339	452	565	678	791	904	1017	1130
250	353	530	707	883	1060	1236	1413	1590	1766
315	561	841	1122	1402	1682	1963	2243	2524	2804
400	904	1356	1809	2261	2713	3165	3617	4069	4522

# RCP-R – Circular constant flow regulator CAV

When ordering, please provide information according to the following pattern:

**RCP-R <I> - <D> - <V1> / <V2> - <S> - <P> - <G>**

where:

<b>I</b>	Insulation**
	<b>none</b> - non-insulated
	t - insulated
<b>D</b>	diameter
<b>V1</b>	air flow value (factory setting)*
<b>V2</b>	air flow value for a version with an actuator (factory setting)*
<b>S</b>	manufacturing version**
	<b>none</b> - version without an actuator
	S24 - version with 24V AC/DC actuator
	S230 - version with 230VAC actuator
<b>P</b>	Material**
	<b>none</b> - galvanized steel
	SN - stainless steel
<b>G</b>	Seal on connectors**
	<b>none</b> - no seal
	UP - seal on connectors

\* Non-standard setting involves additional costs, available standard factory settings are listed in Table 7

\*\* optional values – if blank, default values will be used.

Exemplary product marking:

## RCP-Rt-125-132/309-S230

(RCP-R regulator, 125 mm diameter, insulated, with an 230V actuator, factory standard settings).

## RCP-R-250

(RCP-R regulator, 250 mm diameter, standard version, available on stock, setting to be done by a customer on site).

01062022