



Product manual

# Regulation louvers

RL, RL-A, RL-R

Airflow regulation

Version 1.0.3  
Date: 25.07.2024.

# Regulation louvers RL

Regulation louver types RL, are used for air volume and pressure control. They are made out of galvanized steel sheet. Louver gears and bearings are produced out of ABS plastic. Louver can be operated manually or equipped with electric actuator (24V or 230V).

- opposed louver blade operation
- $\Delta p_{max} = 1000 \text{ Pa}$ ;  $t_{max} = 70 \text{ }^\circ\text{C}$
- casing air leakage according to EN1751, class C
- open/close, continuous, fast acting and spring return actuators



- ▶ [RL Product overview](#)
- ▶ [RL-A Product overview](#)
- ▶ [RL-R Product overview](#)
- ▶ [Ordering key](#)
- ▶ [Actuators](#)
- ▶ [Installation / Diagrams](#)



PRODUCT OVERVIEW

AIRFLOW REGULATION

## DIMENSIONS AND WEIGHTS

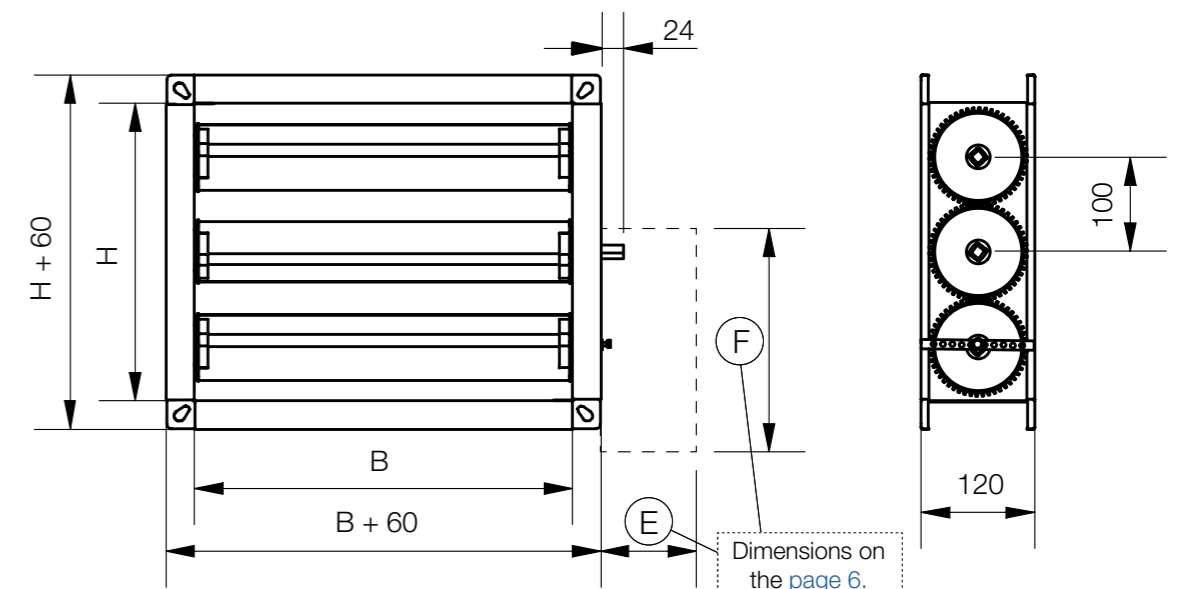
Height H [mm]	Base B [mm]																								
	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400
100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
150 *	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
200	2	2	3	3	3	4	4	5	5	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	9
250 *	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
300	3	3	4	4	5	5	5	6	6	-	-	-	-	-	-	-	-	-	-	-	9	-	-	-	10
350 *	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
400	4	4	5	5	6	6	6	7	7	8	8	8	9	9	10	10	10	10	10	10	11	11	11	11	11
500	4	4	5	5	6	7	7	8	8	9	9	9	10	10	11	11	11	11	11	11	12	12	12	12	12
600	5	5	6	6	7	7	8	8	9	9	9	10	10	10	11	11	11	11	11	11	12	12	12	12	13
700	6	6	7	7	8	8	9	9	10	10	10	11	11	11	11	11	11	11	11	11	13	13	13	13	14
800	6	7	8	8	9	9	10	10	11	11	11	12	12	12	13	13	13	13	13	13	14	14	14	14	15
900	7	7	8	8	9	9	10	10	11	11	11	12	12	12	13	13	13	13	13	13	15	15	15	15	16
1000	7	7	9	9	10	10	11	11	12	12	12	13	13	13	14	14	14	14	14	14	16	16	16	16	17

Weights are shown in kg.

- Not available
- \* Blade 50mm

Motor drives

- LM 5 Nm
- NM 10 Nm
- SM 20 Nm



# Airtight regulation louvers RL-A

Airtight regulation louvers type RL-A, are used for air volume and pressure control. They are made out of galvanized steel sheet. Louver gears and bearings are produced out of ABS plastic. Louver blades are equipped with blade tip seals that provide low air leakage. Louver can be operated manually or equipped with electric actuator (24V or 230V).

- opposed louver blade operation
- $\Delta p_{max} = 1000 \text{ Pa}$ ;  $t_{max} = 70 \text{ }^\circ\text{C}$
- casing air leakage according to EN1751, class C
- blade air leakage according to EN1751, class 3
- open/close, continuous, fast acting and spring return actuators



- ▶ [RL Product overview](#)
- ▶ [RL-A Product overview](#)
- ▶ [RL-R Product overview](#)
- ▶ [Ordering key](#)
- ▶ [Actuators](#)
- ▶ [Installation / Diagrams](#)

PRODUCT OVERVIEW

AIRFLOW REGULATION

## DIMENSIONS AND WEIGHTS

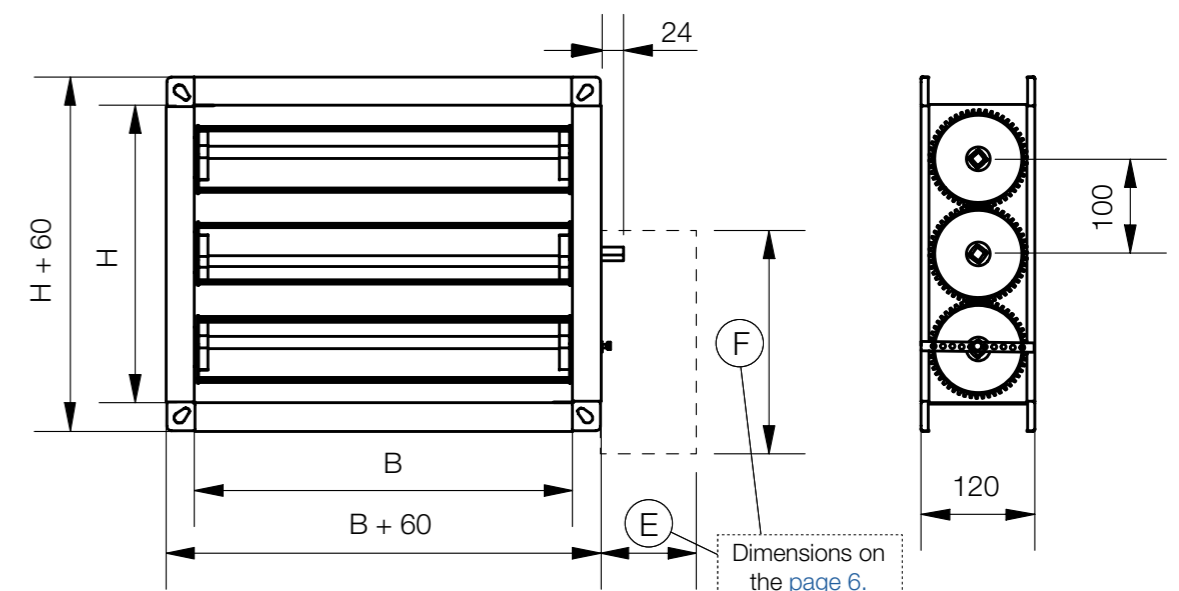
Height H [mm]	Base B [mm]																								
	200	250	300	350	400	450	500	550	600	650	700	750	800	850	900	950	1000	1050	1100	1150	1200	1250	1300	1350	1400
100	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
150 *	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
200	2	2	3	3	3	4	4	5	5	-	-	-	-	-	-	-	-	-	-	-	8	-	-	-	9
250 *	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
300	3	3	4	4	5	5	5	6	6	-	-	-	-	-	-	-	-	-	-	-	9	-	-	-	10
350 *	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
400	4	4	5	5	6	6	6	7	7	7	7	8	8	-	-	-	-	-	-	-	10	-	-	-	11
500	4	4	5	5	6	7	7	8	8	9	9	9	10	10	10	10	11	11	11	11	11	11	11	11	12
600	5	5	6	7	7	8	8	9	9	10	10	11	11	12	12	12	13	13	13	13	13	13	13	13	14
700	6	6	7	8	8	9	9	10	10	11	11	12	12	13	13	14	14	14	14	14	14	14	14	14	15
800	6	7	8	9	9	10	10	11	11	12	12	13	13	14	14	15	15	15	15	15	15	15	15	15	16
900	7	7	8	9	9	10	10	11	11	12	12	13	13	14	14	15	15	15	15	15	15	15	15	15	16
1000	7	7	9	10	10	11	11	12	12	13	13	14	14	15	15	16	16	16	16	16	16	16	16	16	17

Weights are shown in kg.

- Not available
- \* Blade 50mm

Motor drives

- LM 5 Nm
- NM 10 Nm
- SM 20 Nm



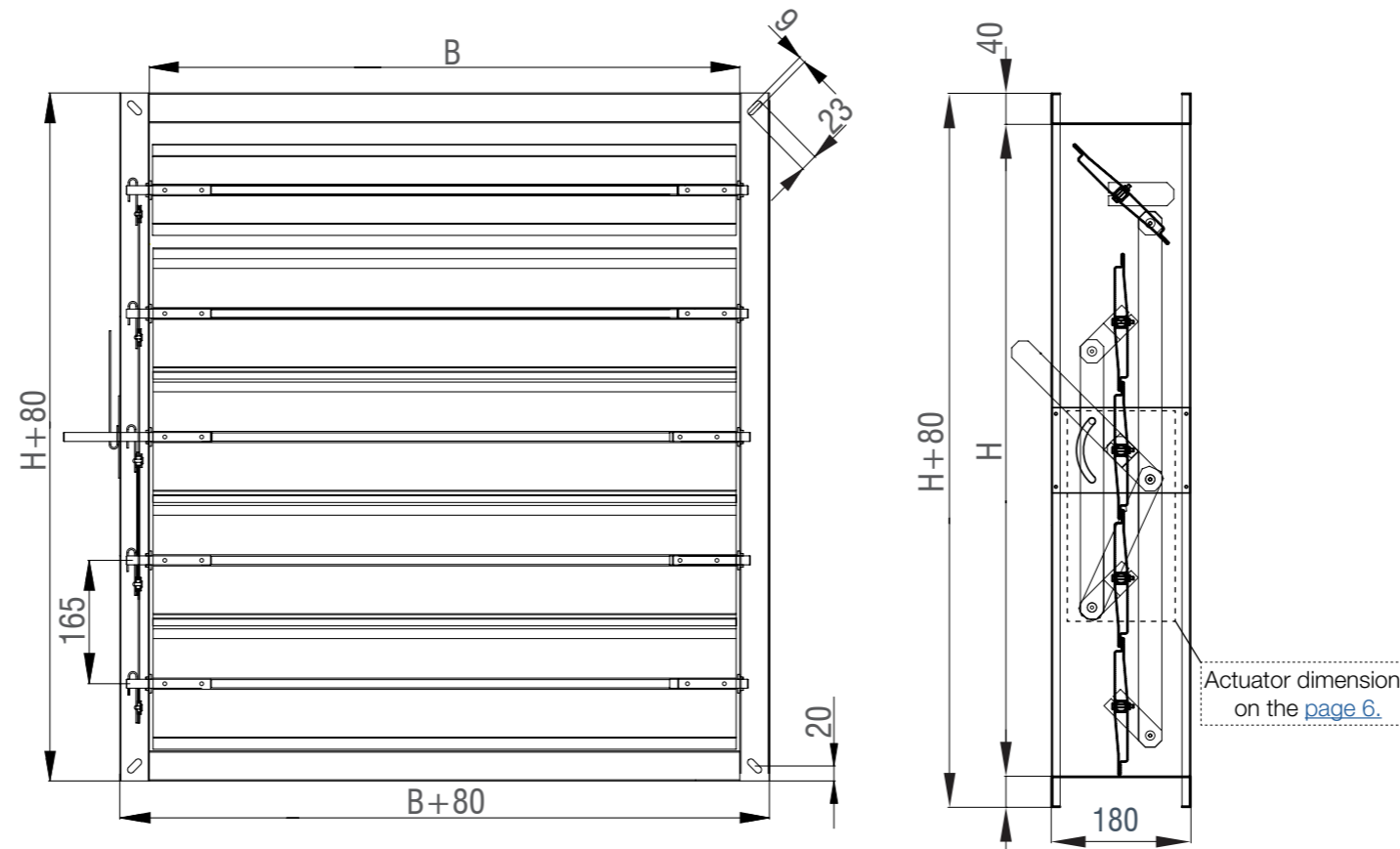
## Reinforced regulation louvers RL-R

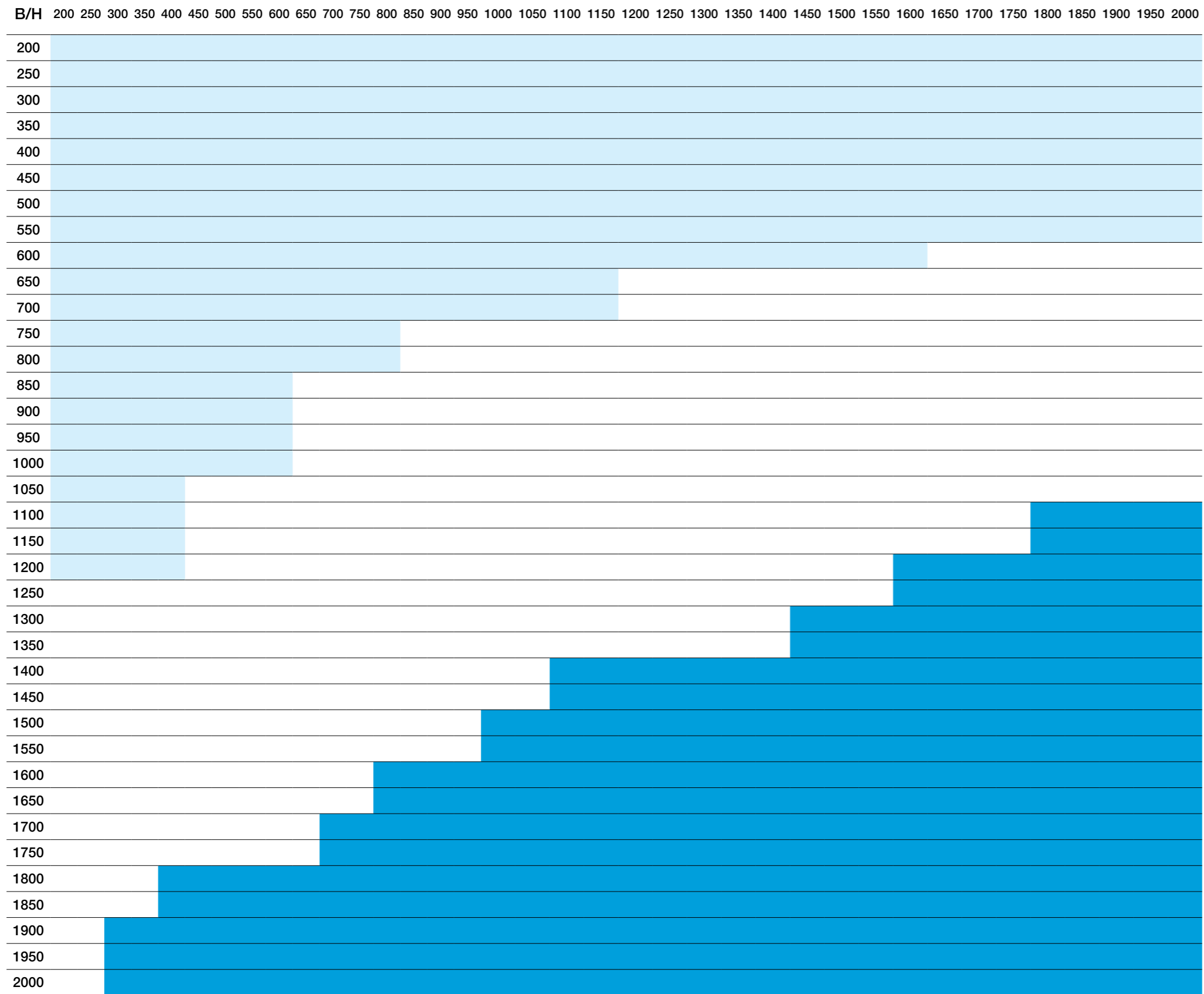
Reinforced regulation louvers type RL-R, are used for air volume and pressure control. They are made out of galvanized steel sheet. Louver bearings are produced out of brass. Louver can be operated manually or equipped with electric actuator (24V or 230V).

- opposed louver blade operation
- $\Delta p_{max} = 1000 \text{ Pa}$ ;  $t_{max} = 70 \text{ }^\circ\text{C}$
- open/close, continuous, fast acting and spring return actuators



- ▶ [RL Product overview](#)
- ▶ [RL-A Product overview](#)
- ▶ [RL-R Product overview](#)
- ▶ [Ordering key](#)
- ▶ [Actuators](#)
- ▶ [Installation / Diagrams](#)



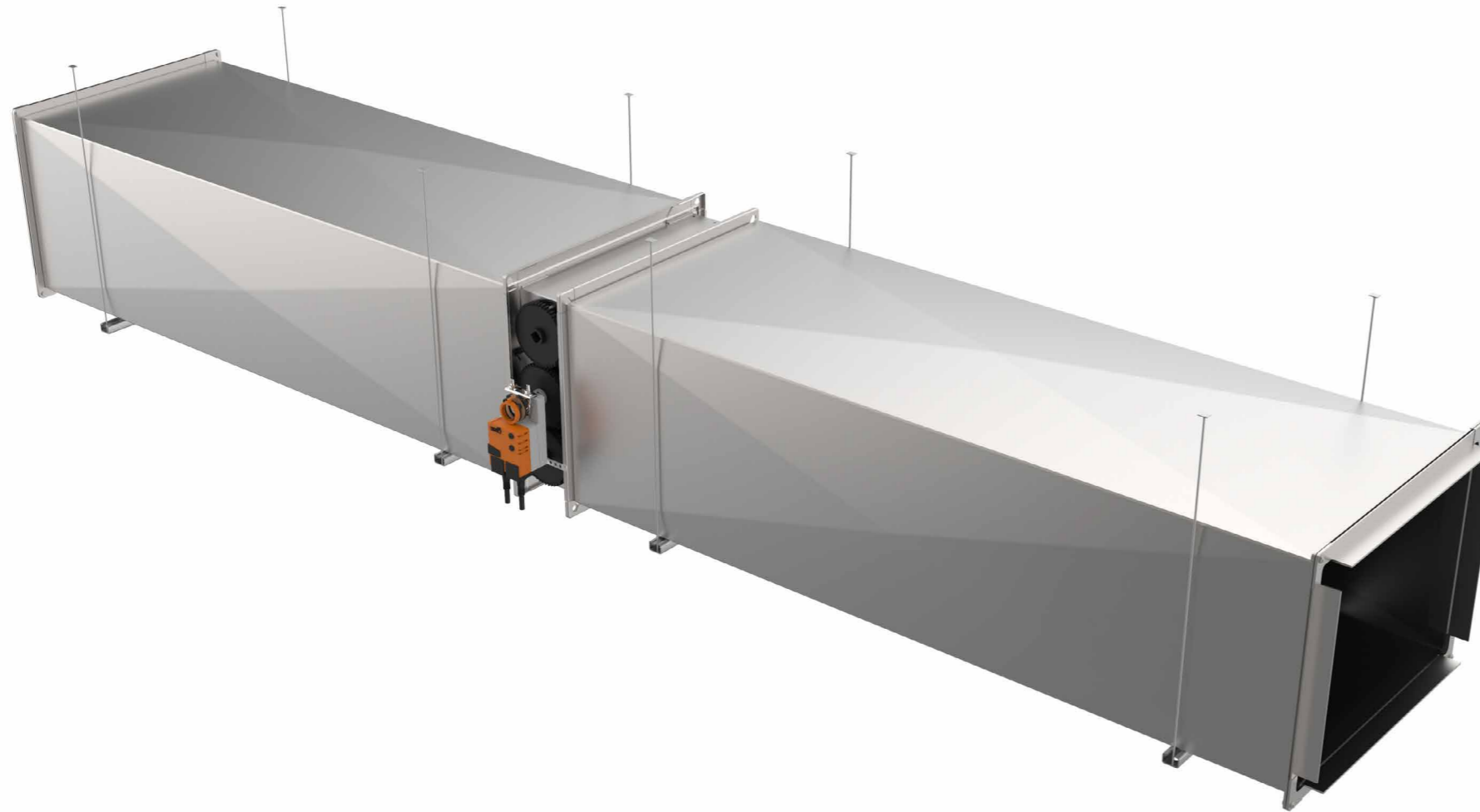


\*Weights are shown in kg.

- ▼ [RL Product overview](#)
- ▼ [RL-A Product overview](#)
- ▼ [RL-R Product overview](#)
- ▼ [Ordering key](#)
- ▼ [Actuators](#)
- ▼ [Installation / Diagrams](#)

 PRODUCT OVERVIEW

Motor drives  
 ■ LM 5 Nm  
 □ NM 10 Nm  
 ■ SM 20 Nm



- ▼ [RL Product overview](#)
- ▼ [RL-A Product overview](#)
- ▼ [RL-R Product overview](#)
- ▼ [Ordering key](#)
- ▼ [Actuators](#)
- ▼ [Installation / Diagrams](#)



ORDERING KEY

AIRFLOW REGULATION

ORDERING KEY

(1) Regulation louver    (2) Dimension    (3) Actuator type    (4) Regulation

**RL - BxH - M230 - OZ**

- |  |  |
|--|--|
| <p>(1) Regulation louver: <b>RL</b><br/><b>RL-A</b><br/><b>RL-R</b></p> <p>(2) <b>BxH</b></p> <p>(3) Actuator:<br/><b>R</b> - manual<br/><b>M</b> - preparation for the actuator<br/><b>M24</b> - actuator 24 V<br/><b>M230</b> - actuator 230 V</p> | <p>(4) Regulation (only for electric actuators)<br/><b>OZ</b> - open/close<br/><b>K</b> - continuous<br/><b>F</b> - spring return<br/><b>Q</b> - fast acting</p> |
|--|--|



## Belimo motor drive

- motor drives - Belimo (open/close, continuous, fast-acting, spring return)
- power supply - AC 24V, 50/60 Hz  
- DC 24V
- IP54 degree of protection

Voltage AC/DC	Type	Control	Torque	Energy consumption	Wire sizing	Weight [kg] approx.	Dimension (F x E)
DC24V	LM24A	3-point	5 Nm	1 W	1.5 VA	0.46	160 x 90
	NM24A	3-point	10 Nm	1,5 W	3.5 VA	0.75	180 x 90
	SM24A	3-point	20 Nm	2 W	4VA	0.94	180 x 90
	LM24A-SR	continuous	5 Nm	1 W	2VA	0.40	160 x 90
	NM24A-SR	continuous	10 Nm	2 W	4VA	0.74	180 x 90
	SM24A-SR	continuous	20 Nm	2 W	4VA	0.93	180 x 90
	LMQ24A	fast-acting	4 Nm	13 W	Imax 20 A @ 5 ms	0.87	190 x 100
	NMQ24A	fast-acting	8 Nm	13 W	Imax 20 A @ 5 ms	1	205 x 110
	SMQ24A	fast-acting	16 Nm	15 W	Imax 20 A @ 5 ms	1.7	180 x 110
	LF24	spring return	4 Nm	5 W	Imax 5.8 A @ 5 ms	1.4	220 x 110
AC/DC 24/230V	NFA	spring return	10 Nm	6 W	9,5 VA	3.1	240 x 120
AC 230V	LM230A	3-point	5 Nm	1,5 W	3,5 VA	0.46	160 x 90
	NM230A	3-point	10 Nm	2.5 W	5,5 VA	0.72	180 x 90
	SM230A	3-point	20 Nm	2.5 W	6 VA	1.1	180 x 90
	LM230A-SR	continuous	5 Nm	2 W	4 VA	0.50	180 x 90
	NM230A-SR	continuous	10 Nm	3,5 W	6,5 VA	0.84	190 x 90
	SM230A-SR	continuous	20 Nm	3.5 W	6,5 VA	1.1	205 x 90
	LF230	spring return	4 Nm	5 W	7 VA	1.6	220 x 110

- ▼ [RL Product overview](#)
- ▼ [RL-A Product overview](#)
- ▼ [RL-R Product overview](#)
- ▼ [Ordering key](#)
- ▼ [Actuators](#)
- ▼ [Installation / Diagrams](#)

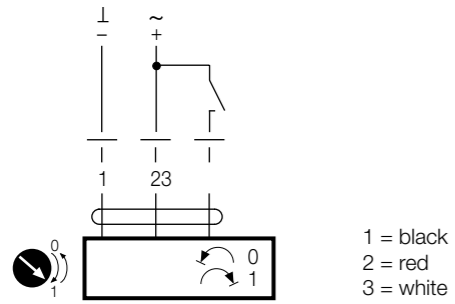


ACTUATORS

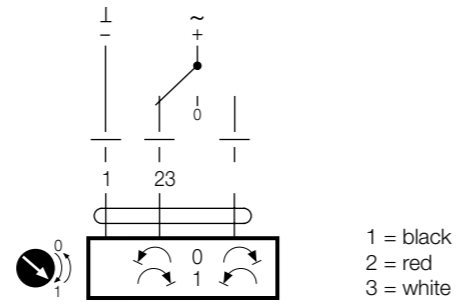
## Wiring diagram

### OZ -open/close

AC/DC 24 V, open/close

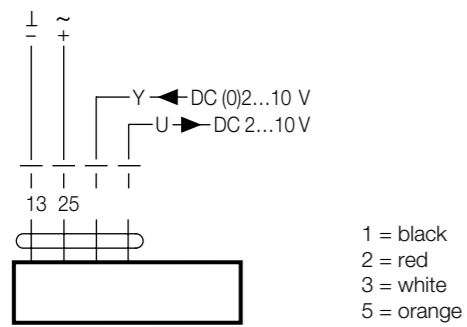


AC/DC 24 V, 3-point



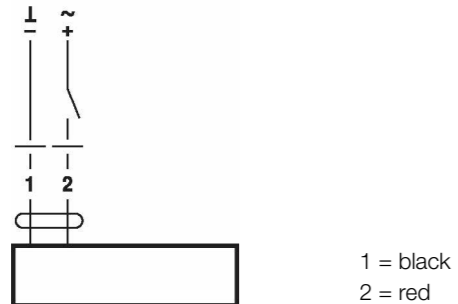
### K -continuous

AC/DC 24 V, modulating



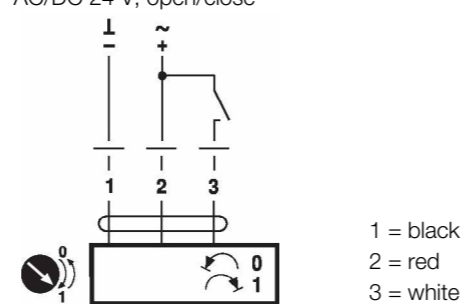
### F -spring return

AC/DC 24 V, open/close



### Q -fast-acting

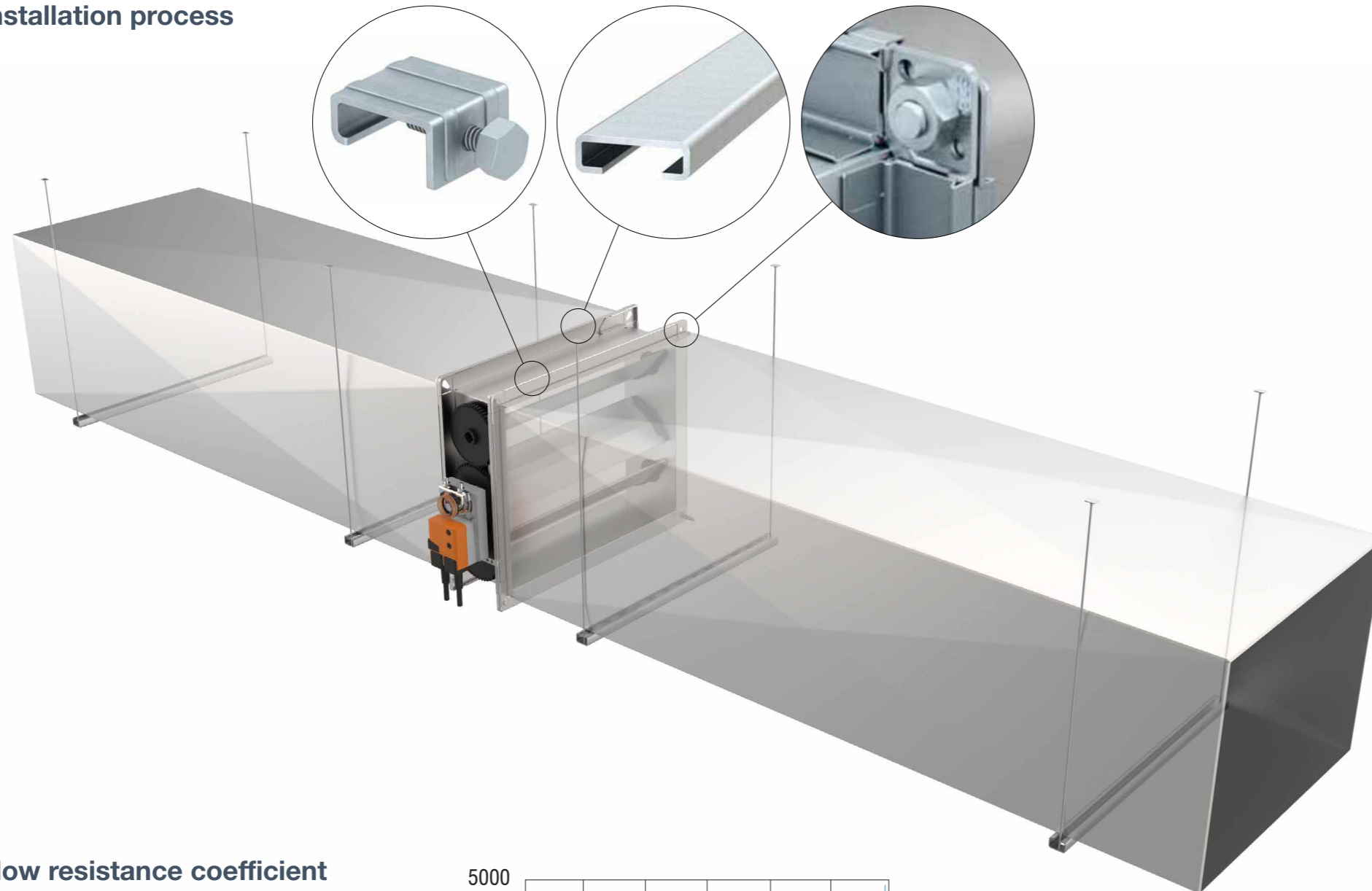
AC/DC 24 V, open/close



- ▼ [RL Product overview](#)
- ▼ [RL-A Product overview](#)
- ▼ [RL-R Product overview](#)
- ▼ [Ordering key](#)
- ▼ [Actuators](#)
- ▼ [Installation / Diagrams](#)



Installation process



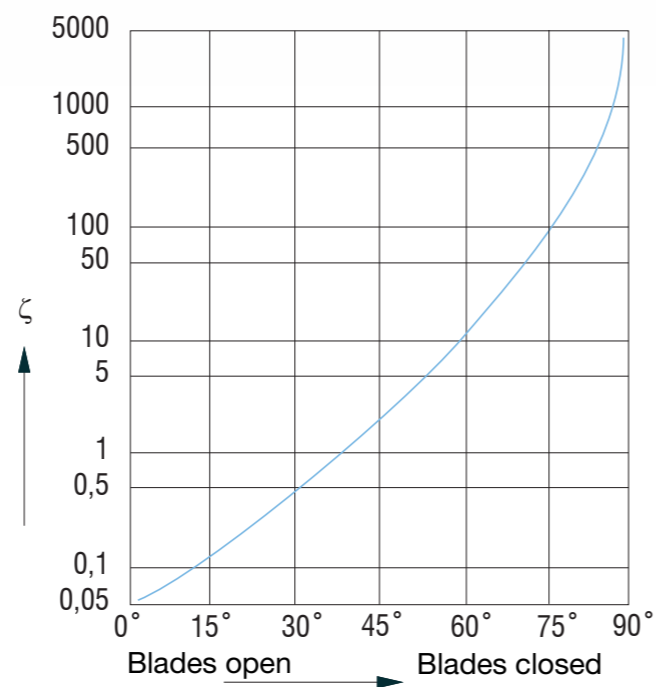
- ▼ [RL Product overview](#)
- ▼ [RL-A Product overview](#)
- ▼ [RL-R Product overview](#)
- ▼ [Ordering key](#)
- ▼ [Actuators](#)
- ▼ [Installation / Diagrams](#)

INSTALLATION

Flow resistance coefficient

ζ diagram for RL and RL-A louvers, depending on blade angle setting (angle of blades opening). Airflow velocity v[m/s] refers to the total cross-section area A=BxH [m²]

$$dp = (\zeta \cdot \rho \cdot v^2) / 2$$





- ▼ [RL Product overview](#)
- ▼ [RL-A Product overview](#)
- ▼ [RL-R Product overview](#)
- ▼ [Ordering key](#)
- ▼ [Actuators](#)
- ▼ [Installation / Diagrams](#)



## TRANSPORT

After arrival, check the product for transport damage and shortcomings. In case of any damage or shortcomings, immediately contact your supplier.

## STORAGE

If the louver is not installed immediately:

- Remove any wrapping.
- Protect louver from dust and contamination.
- Do not expose the louver to the effects of weather - store the louver in a dry place.
- Do not store the unit below -20 °C or above 50 °C.

**Please properly dispose of packaging material!**

## MAINTENANCE AND OPERATION

Klimaoprema louvers are designed with fully enclosed drive mechanism outside of the duct and as such do not require cleaning and regular maintenance.

However, activation mechanism should be inspected for proper operation on regular basis.

- Provide at least one annual check of the regulation damper
- After each intervention, provide a systematic cleaning of dust and especially its movable plate
- Check the if the electrical terminals are tightened
- Cleaning instruction: clean with a sponge, with water or a mild detergent
- Disinfection instruction: spray disinfectant (disinfectant may contain alcohol which is flammable, take precaution to avoid ignition)

It is not permitted to alter the products in any way nor perform any changes to their structure without the manufacturer's consent. The functional test must be carried out in compliance with the basic maintenance principles of the European norms.

## COMMISSIONING

- Carefully unpack louver - be careful of sharp edges and do not use excessive force for unpacking
- Inspect the louver - check the regulation louver for damage
- Installation of the louver - according to the installation instructions
- Before commissioning - check the louver functions



## AIRFLOW REGULATION

---

Projektiranje, proizvodnja i održavanje opreme za klimatizaciju, ventilaciju i čiste prostore.  
Design, production and service of Ventilation, Air-Conditioning and Cleanroom equipment.

---

-  Gradna 78A, 10430 Samobor, Croatia
-  +385 (0)1 33 62 513
-  [info@klimaoprema.com](mailto:info@klimaoprema.com)
-  [www.klimaoprema.com](http://www.klimaoprema.com)