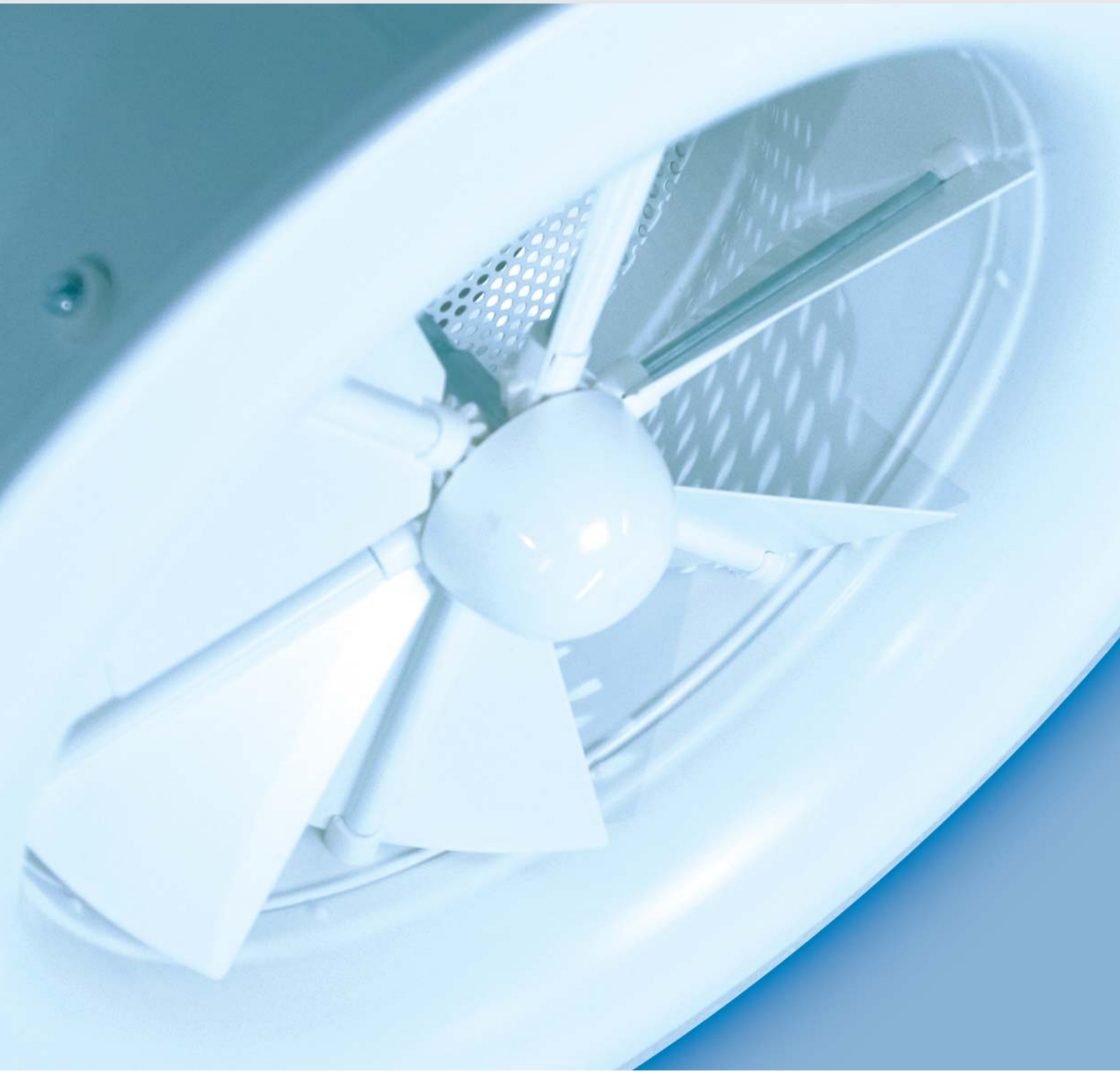


Rotation diffuser RCW/RCWB

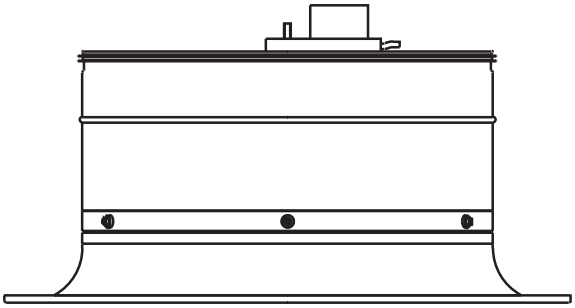
Mounting instructions, september 2009

Lindab®

Mounting instructions RCW/RCWB

Mounting

RCW/RCWB is equipped with a Safe connection. The connection is mounted directly in the duct or fittings and is secured with pop rivets or duct screws. RCWB is equipped with 3 pcs. of ø 6mm thread rivets on top of the box for suspending of the box.



Adjustment

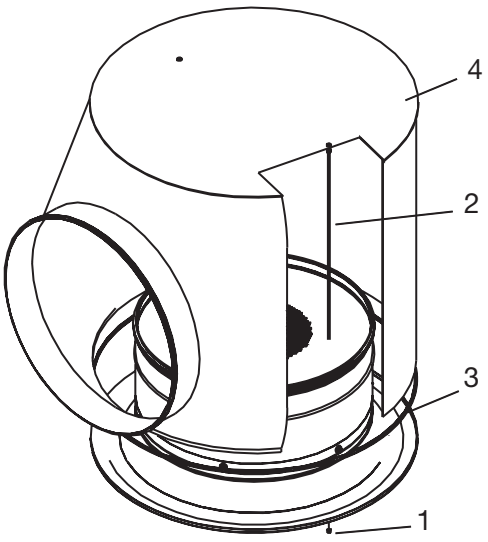
Control of the air volume and adjustment is made on external dampers.

Maintenance

To service the motor or cleaning the duct the diffusor is demounted from the duct/the box itself, whereafter there is free access to the duct. The visible parts of the diffusor and the box can be wiped with a damp cloth.

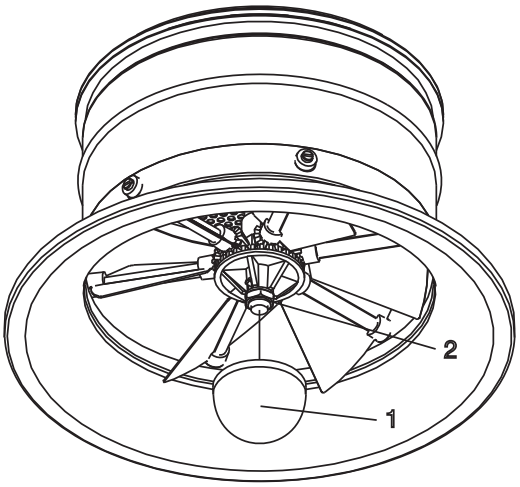
RCWB

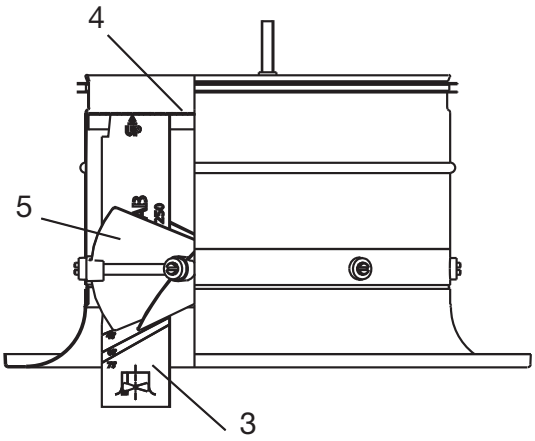
Demounting of RCW from the box (4) is done by disengaging m4 lock nut (1) from m4 threaded rod (2), pls. note that the blades have to be in vertical position. Thereafter the diffusor is loose and can be disengaged from the box (4). When remounting you must be aware that the terminal strip (3) is placed properly on the box (4).



Blade settings

As standard the manual models are delivered with 30 degrees blade setting. If other blade settings are required these can be adjusted manually by using the enclosed angle meter.





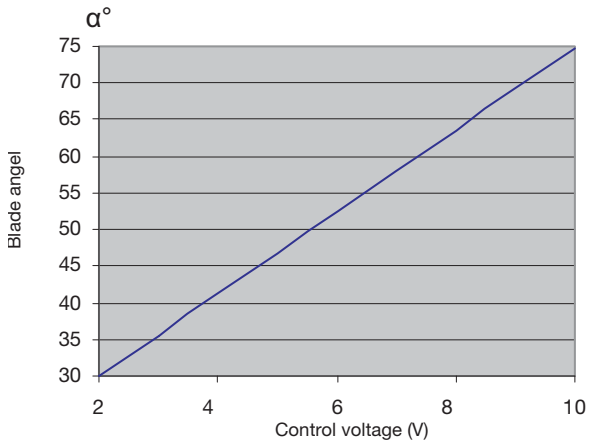
To change the standard blade setting the plactic button (1) is demounted and the center nut (2) is loosened a bit. The angle meter (3) is placed towards the perforated plate (4) in the diffusor, whereafter you can turn the blades (5) to the wanted angle which is read on the angle meter (3). After that the center nut is tightened (2) and the plastic button (1) is mounted.

Mounting instructions RCW/RCWB

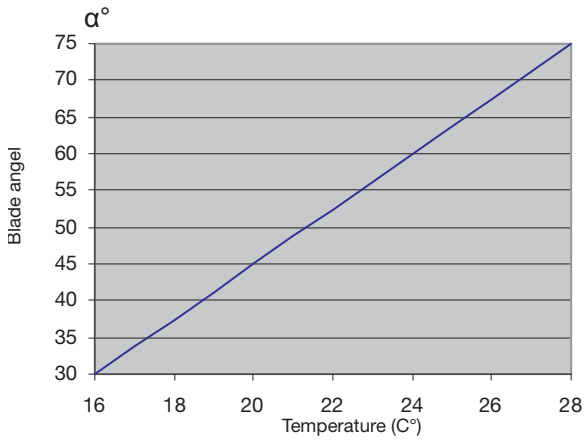
Motorized models

The motorized models and the model with thermo actuator are as standard adjusted from 30 degrees to 75 degrees. If other settings are wanted these can be calibrated from the factory if ordered.

RCW with modulating electric motor

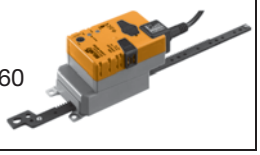


RCW with thermal actuator



Choice of motortype

RCW-1 / RCWB-1

RCW-1 / RCWB-1 size	Belimo motor
Ød 250 - 400	NM24A-MF-F 
Ød 500 - 630	LH24A-MF60 

Technical data sheets NM24A-MF / LH24A-MF
Technical data can be found on the following pages:

NM24A-MF go to page 4.
LH24A-MF go to page 9.

Choice of motortype

RCW-2 / RCWB-2

RCW-2 / RCWB-2 size	Belimo motor
Ød 250 - 400	NM24A-F 
Ød 500 - 630	LH24A60 

Technical data sheets NM24A / LH24A
Technical data can be found on the following pages:

NM24A go to page 15.
LH24A go to page 17.

Mounting instructions RCW-1/RCWB-1

BELIMO

Technical data sheet **Damper actuator NM24A-MF**

Multifunctional damper actuator for adjusting air dampers in ventilation and air conditioning systems in buildings

- **Air damper size up to approx. 2 m²**
- **Torque 10 Nm**
- **Nominal voltage AC/DC 24 V**
- **Control: Modulating DC 0 ... 10 V or variable**
- **Position feedback DC 2 ... 10 V or variable**

Technical data

Electrical data			
Nominal voltage	AC 24 V, 50/60 Hz / DC 24 V		
Power supply range	AC 19.2 ... 28.8 V / DC 21.6 ... 28.8 V		
Power consumption In operation At rest For wire sizing	3.5 W at nominal torque 1.25 W 5.5 VA		
Connection	Cable 1 m, 4 x 0.75 mm²		
Functional data	**Factory settings**	**Variable**	**Settings**
Torque (nominal torque)	Min. 10 Nm at nominal voltage	25%, 50%, 75% reduced	.....
Control Control signal Y Working range	DC 0 ... 10 V, input impedance 100 kΩ DC 2 ... 10 V	Open-close, 3-point (AC only) Start point DC 0.5 ... 30 V End point DC 2.5 ... 32 V	....
Position feedback (measuring voltage U)	DC 2 ... 10 V, max. 0.5 mA	Start point DC 0.5 ... 8 V End point DC 2.5 ... 10 V	 .....
Uni-rotation	±5%		
Direction of rotation	Can be selected with 0 / 1		
Direction of motion at Y = 0 V	In switch position 0 ↶ or 1 ↷	Electronically reversible	.....
Manual override	Disengaging the gearing latch by means of a pushbutton, self-resetting		
Angle of rotation	Max. 95° ◁, can be limited at both ends with mechanical adjustable end stops		
Running time	150 s	43 ... 173 s	.....
Automatic adjustment of running time, operating range and measuring signal U to match the mechanical angle of rotation	Manual triggering of this adaption by pressing the button «Adaption» or with the PC-Tool	Automatic adaption whenever the supply voltage is switched on, or manual triggering	.....
Override control	MAX (maximum position) = 100% MIN (minimum position) = 0% ZS (intermediate position, AC only) = 50%	MAX = (MIN + 30° ◁) ... 100% MIN = 0% ... (MAX – 30° ◁) ZS = MIN ... MAX	 .....
Sound power level	Max. 35 dB (A)	With a running time of 43 s = 45 dB (A) 173 s = 35 dB (A)	
Position indication	Mechanical, plug-on		
Safety			
Protection class	**III** Safety extra-low voltage		
Degree of protection	IP54 in all mounting positions		
EMC	CE according to 89/336/EEC		
Mode of operation	Type 1 (to EN 60730-1)		
Rated impulse voltage	0.8 kV (to EN 60730-1)		
Control pollution degree	3 (in acc. with EN 60730-1)		
Ambient temperature range	–30 ... +50 °C		
Non-operating temperature	–40 ... +80 °C		
Ambient humidity range	95% r.H., non-condensating (to EN 60730-1)		
Maintenance	Maintenance-free		

Mounting instructions RCW-1/RCWB-1

NM24A-MF **Multifunctional damper actuator AC/DC 24 V, 10 Nm**

Technical data *(Continued)*

Dimensions/weight

Dimensions	See «Dimensions» on page 8
Weight	Approx. 710 g

Safety notes

- **The damper actuator is not allowed to be used outside the specified field of application, especially in aircraft or in any other airborne means of transport.**
- **It may only be installed by suitably trained personnel. All applicable legal or institutional installation regulations must be complied with.**
- **The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.**
- **The cable is not allowed to be removed from the unit.**
- **When calculating the torque required, the specifications supplied by the damper manufacturers concerning the cross section, design and installation site, and the air flow conditions must be observed.**
- **The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.**

Product features

Mode of operation
The actuator is controlled with a standard modulating signal of DC 0 ... 10 V and travels to the position defined by the control signal. Measuring voltage U serves for the electrical display of the damper position 0 ... 100% and as slave control signal for other actuators.

Parameterisable actuators
The factory settings cover the most common applications. Input and output signals and other parameters can be altered with the MFT-H parameterising device or the BELIMO Service Tool, MFT-P.

Simple direct mounting
Simple direct mounting on the damper spindle with a universal spindle clamp, supplied with an anti-rotation strap to prevent the actuator from rotating.

Manual override
Manual operation with self-resetting pushbutton possible (the gear is disengaged for as long as the button is pressed).

Adjustable angle of rotation
Adjustable angle of rotation with mechanical end stops.

High functional reliability
The actuator is overload-proof, requires no limit switches and automatically stops when the end stop is reached.

Home position
When the supply voltage is switched on for the first time, i.e. at commissioning or after pressing the «gear disengagement» switch, the actuator travels to the home position.

Pos. direction of rotation switch	Home position
0 / 1 — Y = 0	ccw — Left stop
Y = 0	cw — Right stop

The actuator then moves into the position defined by the control signal.

Accessories

	Description	Data sheet
Electrical accessories	Auxiliary switch S..A..	T2 - S..A..
	Feedback potentiometer P..A..	T2 - P..A..
	Manual parameterising device MFT-H	T2 - MFT-H
	PC-Tool MFT-P	T2 - MFT-P
	Position sensor SG..24	T2 - SG..24
	Digital position indication ZAD24	T2 - ZAD24
Mechanical accessories	Various accessories (clamps, shaft extensions etc.)	T2 - Z-NM..A..

Mounting instructions RCW-1/RCWB-1

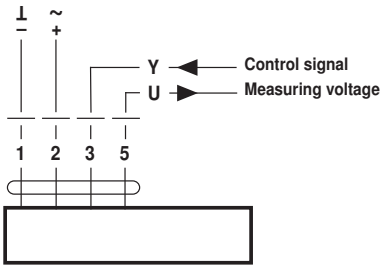
BELIMO

Multifunctional damper actuator AC/DC 24 V, 10 Nm **NM24A-MF**

Electrical installation

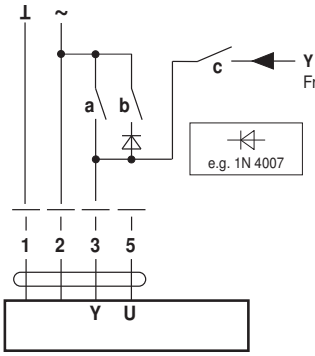
Wiring diagram

Note
- Connect via safety isolation transformer.
- Parallel connection of other actuators possible. Note the performance data.



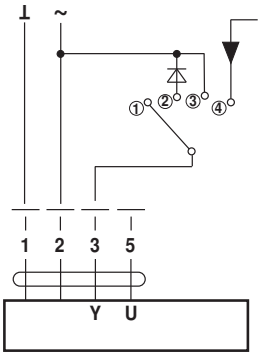
Functions with basic values

Override control with AC 24 V with relay contacts



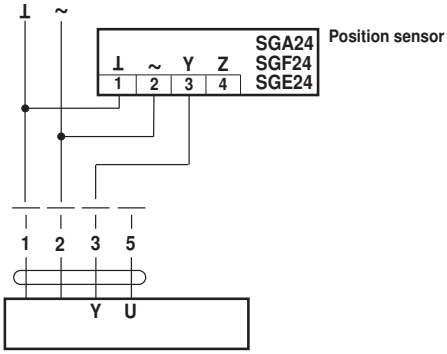
Functions	a	b	c
0% ◁	_/_	_/_	_/_
ZS 50% ◁ (intermediate position)	_/_	__	_/_
100% ◁	__	_/_	_/_
Control mode in accordance with Y	_/_	_/_	__

Override control with AC 24 V with rotary control switch

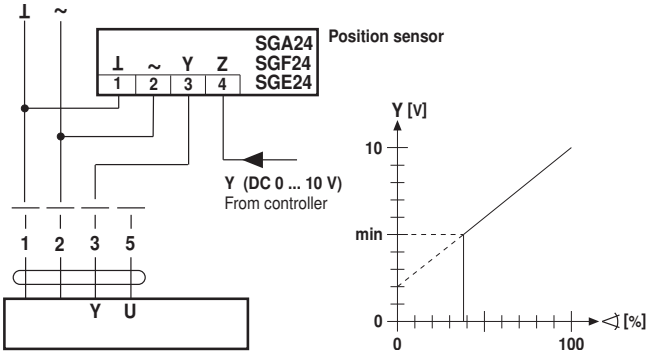


Pos	Functions
1	0% ◁
2	ZS 50% ◁ (intermediate position)
3	100% ◁
4	Control mode in accordance with Y

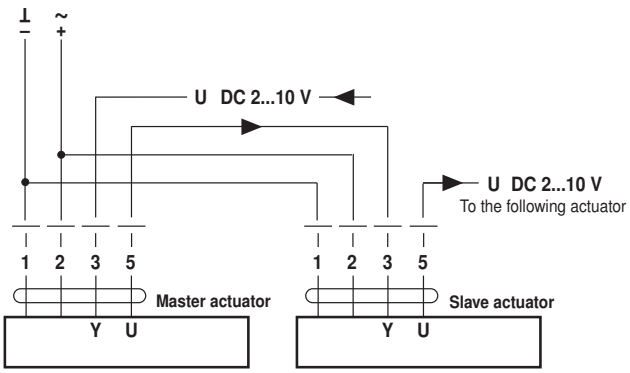
Remote control 0 ... 100 %



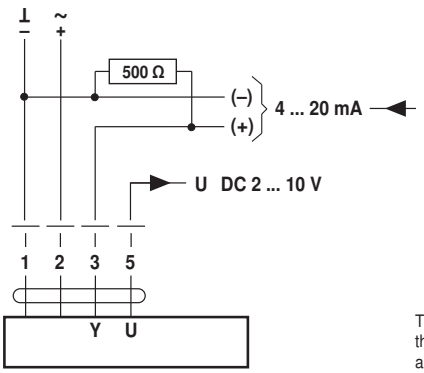
Minimum limit



Master/Slave control (position-dependent)



Control with 4 ... 20 mA via external resistance



The 500 Ω resistor converts the 4 ... 20 mA current signal to a voltage signal DC 2 ... 10 V

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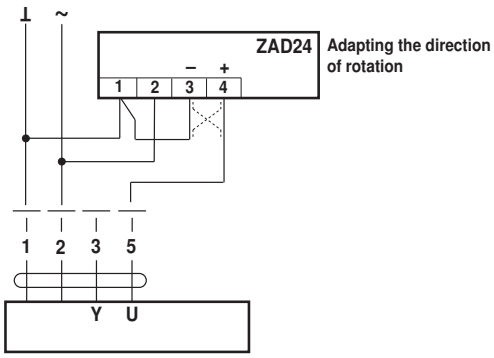
Mounting instructions RCW-1/RCWB-1

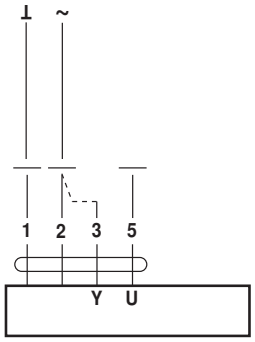
NM24A-MF **Multifunctional damper actuator AC/DC 24 V, 10 Nm**

Functions with basic values *(continued)*

Position indication



Functional check

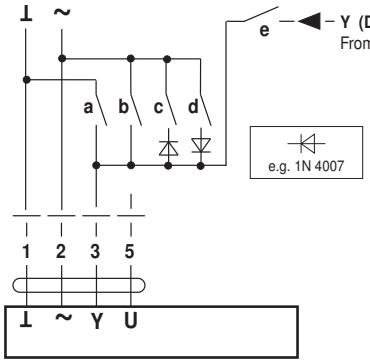


Procedure

- Apply AC 24 V to connection 1 and 2
- Disconnect connection 3:
  - For direction of rotation 0: Actuator turns in the direction of ↺
  - For direction of rotation 1: Actuator turns in the direction of ↻
- Short circuit connections 2 and 3:
  - Actuator runs in the opposite direction

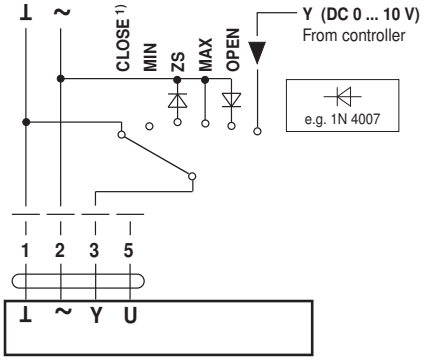
Functions for actuators with specific parameters

Override control and limiting with AC 24 V with relay contacts



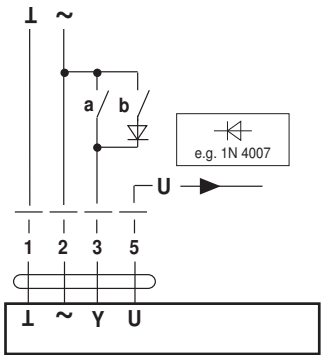
Functions	a	b	c	d	e
CLOSE [1]	⌐	_	_	_	_
MIN	_	_	_	_	_
ZS (intermediate position)	_	_	⌐	_	_
MAX	_	⌐	_	_	_
OPEN	_	_	_	⌐	_
Control mode in accordance with Y	_	_	_	_	⌐

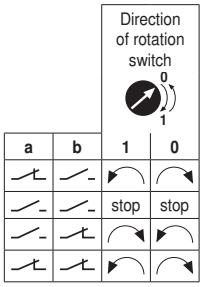
Override control and limiting with AC 24 V with rotary switch



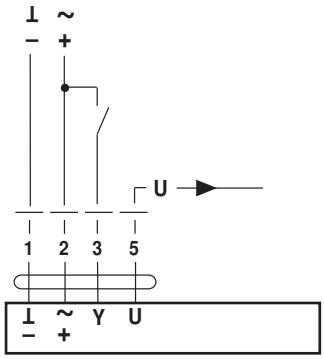
[1] **Caution!** This function is only guaranteed if the start point of the operating range is defined as min. 0.6 V.

3-point control





Open/close control



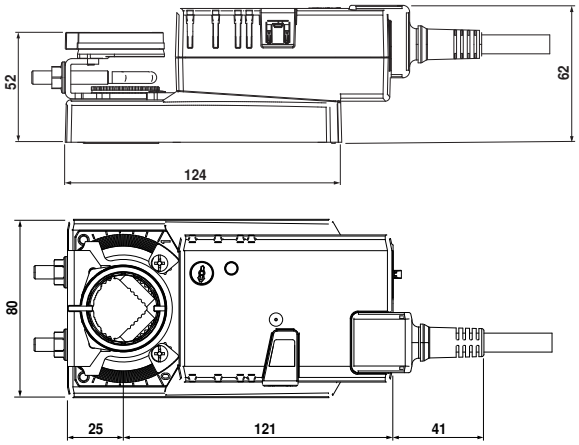
Mounting instructions RCW-1/RCWB-1

BELIMO

Multifunctional damper actuator AC/DC 24 V, 10 Nm **NM24A-MF**

Dimensions [mm]

Dimensional diagrams



Damper spindle	Length	⊙I◇
Clamp, top	Min. 40	8 ... 26.7
Clamp, bottom *	Min. 20	8 ... 20

* Option (accessories K-NA)

Operating controls and indicators

① **Direction of rotation switch**
Switching over: Direction of rotation changes

② **Pushbutton and green LED display**
Off: No voltage supply or malfunction
Green on: Operation
Press button: Switches on angle of rotation adaption followed by standard operation

③ **Pushbutton and yellow LED display**
Off: Standard operation
Yellow on: Adaption or synchronising process active
Press button: No function

④ **Gear disengagement switch**
Press button: Gear disengaged, motor stops, manual operation possible
Release button: Gear engaged, synchronisation starts, followed by standard operation

⑤ **Service plug**
For connecting parameterising and service tools

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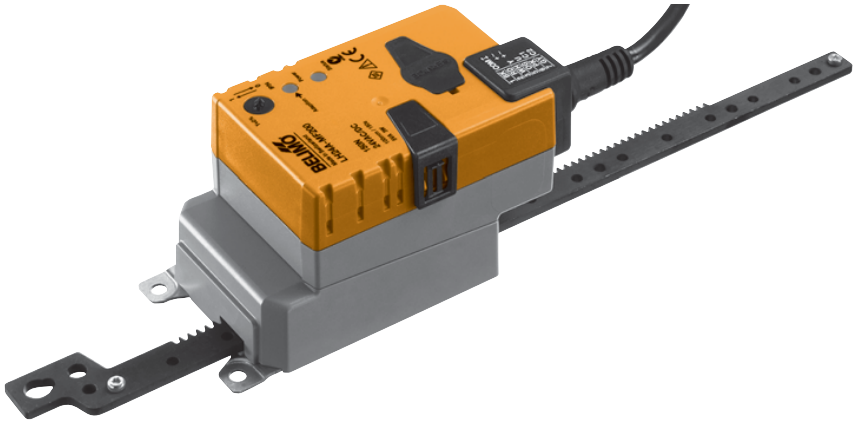
Mounting instructions RCW-1/RCWB-1

BELIMO

Technical data sheet **LH24A-MF..**

Multifunctional linear actuators for adjusting air dampers and slide valves in ventilation and air-conditioning systems for building services installations

- **For air control dampers up to approx. 1 m²**
- **Actuating force 150 N**
- **Nominal voltage AC/DC 24 V**
- **Control: modulating DC 0 ... 10 V or variable**
- **Position feedback DC 2 ... 10 V or variable**
- **Lenght of stroke 60, 100, 200 or 300 mm**



Overview of types

Type	Stroke (adjustable in steps of 20 mm)	Operating range	Weight
LH24A-MF60	Up to max. 60 mm	DC 2 ... 10 V ≃ 0 ... 60 mm	500 g
LH24A-MF100	Up to max. 100 mm	DC 2 ... 10 V ≃ 0 ... 100 mm	515 g
LH24A-MF200	Up to max. 200 mm	DC 2 ... 10 V ≃ 0 ... 200 mm	540 g
LH24A-MF300	Up to max. 300 mm	DC 2 ... 10 V ≃ 0 ... 300 mm	575 g

Technical data

Electrical data			
Nominal voltage	AC 24 V, 50/60 Hz / DC 24 V		
Nominal voltage range	AC 19.2 ... 28.8 V / DC 21.6 ... 28.8 V		
Power consumption In operation	2 W @ nominal force		
At rest	1.2 W		
For wire sizing	5 VA		
Connection	Cable 1 m, 4 x 0.75 mm²		
Functional data	**Factory settings**	**Variable**	**Settings**
Actuating force	Min. 150 N @ nominal voltage	25%, 50%, 75% reduced	.....
Control Control signal Y	DC 0 ... 10 V, input impedance 100 kΩ	Open-close, 3-point (AC only), modulating (DC 0 ... 32 V)	.....
Operating range	DC 2 ... 10 V (See also «Overview of types»)	Start point DC 0.5 ... 30 V End point DC 2.5 ... 32 V	.....
Position feedback (Measuring voltage U)	DC 2 ... 10 V, max. 0,5 mA	Start point DC 0.5 ... 8 V End point DC 2.5 ... 10 V	.....
Position accuracy	±5%		
Stroke	See «Overview of types»		
Direction of stroke at Y = 0 V	Reversible with switch 1↑ resp. 0↓	Electronically reversible	.....
Manual override	Gearing latch disengaged with pushbutton, can be locked		
Stroke adjustment	Max. 60, 100, 200 or 300 mm, adjustable in steps of 20 mm, can be limited at both ends with mechanical adjustable end stops		
Running time LH24A-MF60	90 s / 60 mm	42 ... 162 s / 60 mm	.....
LH24A-MF100/200/300	150 s / 100 mm	70 ... 270 s / 100 mm	.....
Automatic adjustment of the operating range and the measuring signal U to match the mechanical stroke adjustment	Manual triggering of the adaption by pressing the «Adaption» button or with the PC-Tool	Automatic adaption whenever the supply voltage is switched on, or manual triggering	.....
Override control	MAX (maximum position) = 100% MIN (minimum position) = 0% ZS (intermediate position, AC only) = 50%	MAX = (MIN + 32%) ... 100% MIN = 0% ... (MAX – 32%) ZS = MIN ... MAX	.....
Sound power level	Max. 35 dB (A)	With a running time 70 s = 45 dB (A) 270 s = 35 dB (A)	
Safety			
Protection class	III Safety extra-low voltage / UL Class 2 Supply		
Degree of protection	IP54 in any mounting position NEMA2, UL Enclosure Type 2		
EMC	CE according to 2004/108/EC		

Mounting instructions RCW-1/RCWB-1

LH24A-MF.. **Multifunctional linear actuators, AC/DC 24 V, 150 N**

BELIMO

Technical data *(Continued)*

Safety	
Certification	cULus according to UL 60730-1A and UL 60730-2-14 and CAN/CSA E60730-1:02 Certified to IEC/EN 60730-1 and IEC/EN 60730-2-14
Mode of operation	Type 1
Rated impulse voltage	0.8 kV
Control pollution degree	3
Ambient temperature	–30 ... +50°C
Non-operating temperature	–40 ... +80°C
Ambient humidity	95% r.h., non-condensating
Maintenance	Maintenance-free
Dimensions / Weight	
Dimensions	See «Dimensions» on page 13
Weight	See «Overview of types» on page 1

Safety notes

- **The actuator is not allowed to be used outside the specified field of application, especially not in aircraft or any other form of air transport.**
- **Assembly must be carried out by trained personnel. Any legal regulations or regulations issued by authorities must be observed during assembly.**
- **The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.**
- **The cable must nut be removed from the device.**
- **The rotary supports and coupling pieces available as accessories must always be used if lateral forces are likely.**
  In addition, the actuator must not be tightly bolted to the application. It must remain movable via the rotary support (refer to «Assembly notes»).
- **If the linear actuator is exposed to severely contaminated atmosphere, appropriate precautions must be taken on the system side. Excessive deposits of dust, soot etc. can prevent the gear rack from being extended and retracted correctly.**
- **If not installed horizontally, the gear disengagement pushbutton may only be actuated when there is no pressure on the gear rod**
- **When calculating the required actuating force, the specifications supplied by the damper or slide valve manufacturers (cross section, design, installation site), and the air flow conditions must be observed.**
- **If a rotary support and/or coupling piece is used, losses in the actuation force are to be expected.**
- **The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.**

Product features

Mode of operation The actuator is controlled with a standard modulating signal of DC 0 ... 10 V and travels to the position defined by the control signal. Measuring voltage U serves for the electrical display of the damper position 0 ... 100% and as slave control signal for other actuators.

Parameterisable actuators The factory settings cover the most common applications. Input and output signals and other parameters can be altered with the MFT-H parameterising device or the BELIMO Service Tool, MFT-P.

Simple direct mounting The actuator can be directly connected with the application using the enclosed screws. The head of the gear rod is connected to the moving part of the ventilation application individually on the mounting side or with the Z-KS2 coupling piece provided.

Manual override Manual operation is possible with the pushbutton (the gearing latch remains disengaged as long as the pushbutton is pressed or detented).

Stroke adjustment The stroke of the gear rack can be adjusted on both sides in increments of 20 mm by means of mechanical end stops.

High functional reliability The actuator is overload-proof, requires no limit switches and automatically stops when the end stop is reached.

Mounting instructions RCW-1/RCWB-1

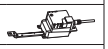
LH24A-MF.. **Multifunctional linear actuators, AC/DC 24 V, 150 N**

BELIMO

Product features *(Continued)*

Home position

When the supply voltage is switched on for the first time, i.e. at commissioning or after pressing the «gear disengagement» switch, the actuator travels to the home position.

Pos. direction of stroke switch	Home position
1 / 0 Y = 0	extended 
Y = 0	retracted 

The actuator then moves into the position defined by the control signal.

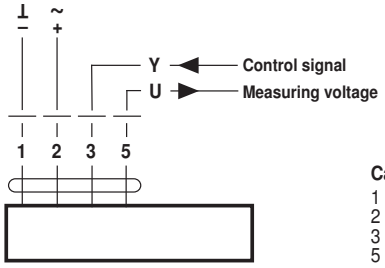
Accessories

	Description	Data sheet
Electrical accessories	Parameterising device MFT-H	T2 - MFT-H
	PC-Tool MFT-P	T2 - MFT-P
	Position sensor SGA24, SGE24 and SGF24	T2 - SG..24
	Digital position indication ZAD24	T2 - ZAD24
Mechanical accessories	Rotary support to compensate lateral forces Z-DS1	T2 - Z-LH..A..
	Coupling piece Z-KS2	T2 - Z-LH..A..
	Mechanical limiter set Z-AS2	T2 - Z-LH..A..

Electrical installation

Wiring diagram

Notes
- Connection via safety isolating transformer!
- Other actuators can be connected in parallel. Please note the performance data!



Cable colours:
1 = black
2 = red
3 = white
5 = orange

Assembly notes

Application without lateral forces

The linear actuator is screwed directly to the housing at three points. Afterwards, the head of the gear rod is fastened to the moving part of the ventilation application (e.g. damper or slide valve).

Application with lateral forces

The coupling piece with the internal thread (Z-KS2) is connected to the head of the gear rod. The rotary support (Z-DS1) is screwed to the ventilation application.
Afterwards, the linear actuator is screwed to the previously mounted rotary support with the enclosed screw. Afterwards, the coupling piece, which is mounted to the head of the gear rod, is attached to the moving part of the ventilation application (e.g. damper or slide valve).
The transverse forces can be compensated for to a certain limit with the rotary support and/or coupling piece. The maximum permissible swivel angle of the rotary support and coupling piece is 10°∢, laterally and upwards.

Caution
If a rotary support and/or coupling piece is used, losses in the actuation force are to be expected.

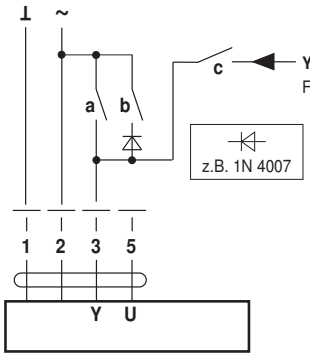
Mounting instructions RCW-1/RCWB-1

LH24A-MF.. Multifunctional linear actuators, AC/DC 24 V, 150 N

BELIMO

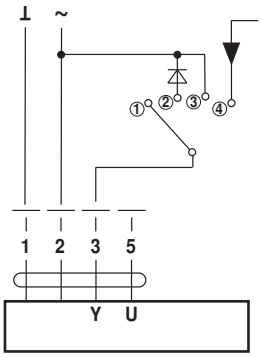
Functions with basic values

Override control with AC 24 V with relay contacts



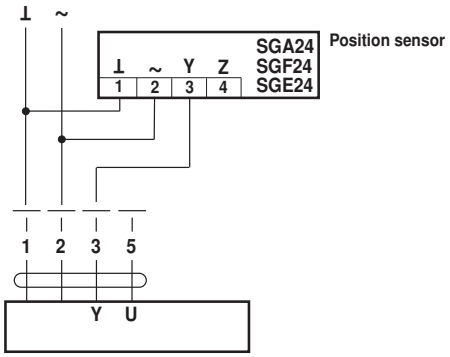
Functions	a	b	c
0%			
ZS 50% (intermediate position)			
100%			
Control mode in accordance with Y			

Override control with AC 24 V with rotary control switch

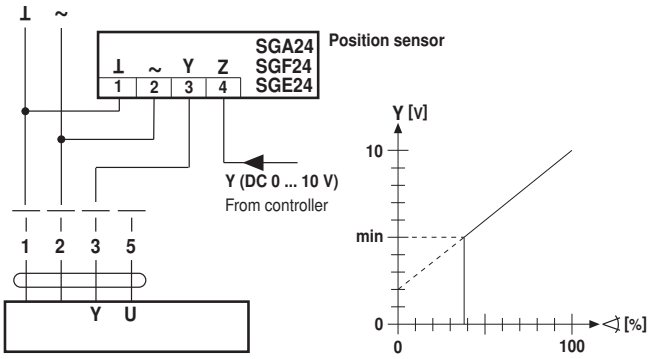


Pos	Functions
1	0%
2	ZS 50% (intermediate position)
3	100%
4	Control mode in accordance with Y

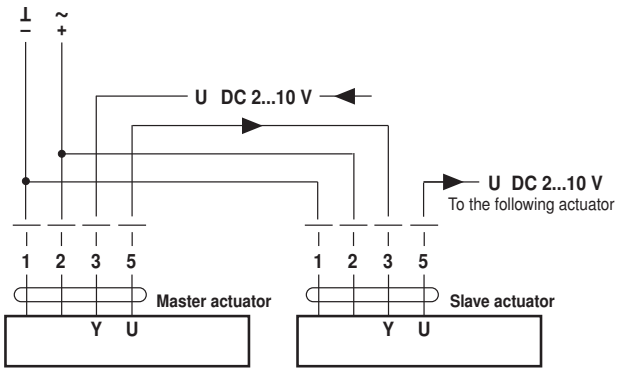
Remote control 0 ... 100 %



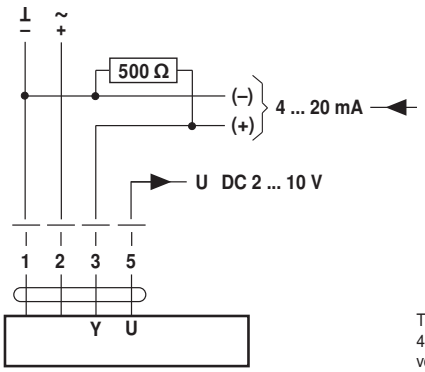
Minimum limit



Master/Slave control (position-dependent)

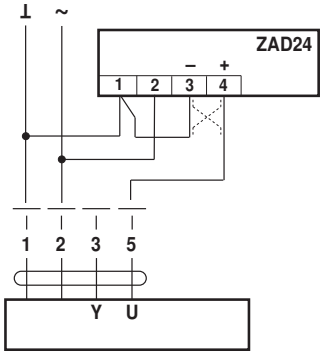


Control with 4 ... 20 mA via external resistance

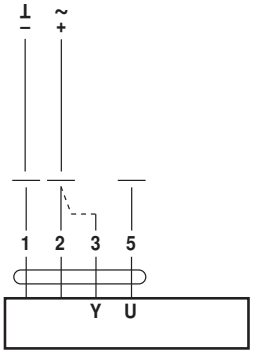


The 500 Ω resistor converts the 4 ... 20 mA current signal to a voltage signal DC 2 ... 10 V

Position indication



Functional check



Procedure

- Apply 24 V to connection 1 and 2
- Disconnect connection 3:
  - For direction of stroke 0: Actuator travels in the direction of ↧
  - For direction of stroke 1: Actuator travels in the direction of ↥
- Short circuit connections 2 and 3:
  - Actuator travels in the opposite direction

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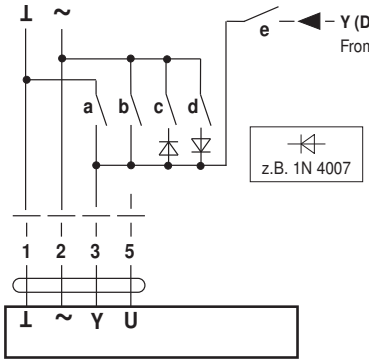
Mounting instructions RCW-1/RCWB-1

LH24A-MF.. **Multifunctional linear actuators, AC/DC 24 V, 150 N**

BELIMO

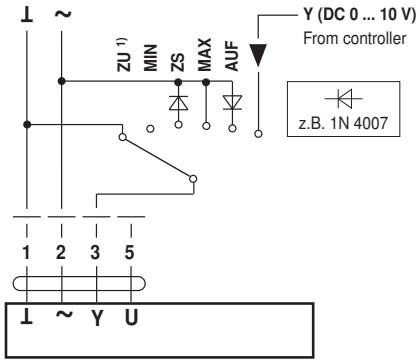
Functions for actuators with specific parameters

Override control and limiting with AC 24 V with relay contacts



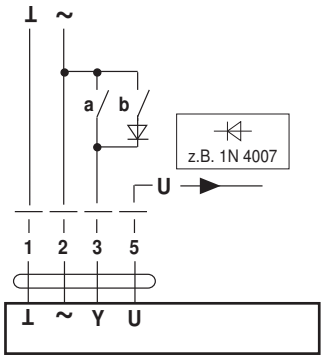
Functions	a	b	c	d	e
CLOSE [1]	⌐	_	_	_	_
MIN	_	_	_	_	_
ZS (intermediate position)	_	_	⌐	_	_
MAX	_	⌐	_	_	_
OPEN	_	_	_	⌐	_
Control mode in accordance with Y	_	_	_	_	⌐

Override control and limiting with AC 24 V with rotary switch



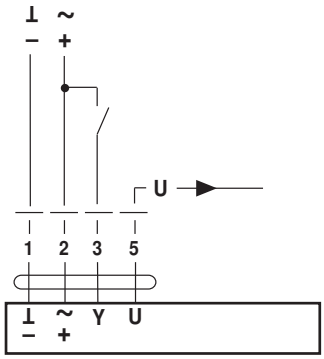
[1] **Caution !** This function is only guaranteed if the start point of the operating range is defined as min. 0.6 V

3-point control



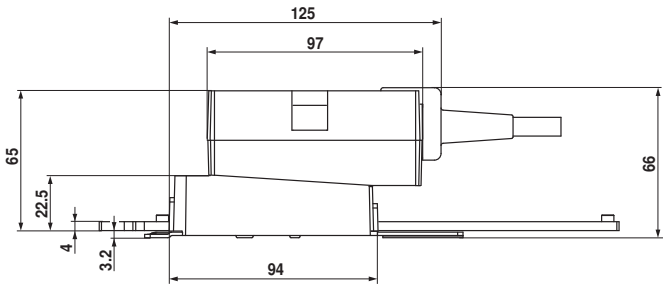
Direction of stroke switch			
a	b	0	1
⌐	_	↓	↑
_	_	stop	stop
_	⌐	↑	↓
⌐	⌐	↓	↑

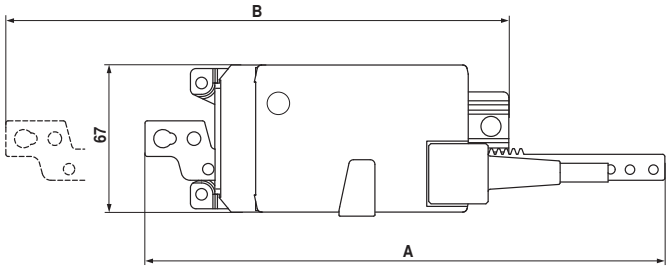
Open-close control



Dimensions [mm]

Dimensional drawings



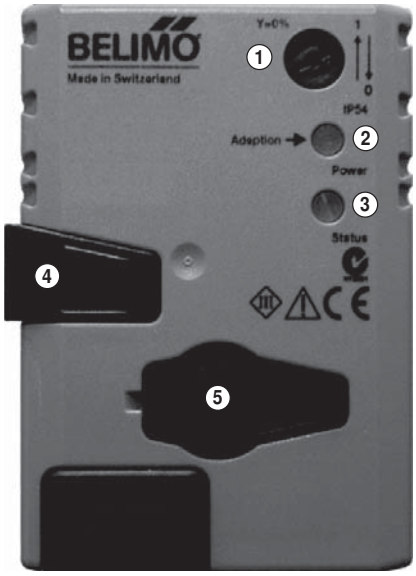


Type	Max. stroke	A	B
LH24A-MF60	60	193.5	224.2
LH24A-MF100	100	233.5	264.2
LH24A-MF200	200	333.5	364.2
LH24A-MF300	300	433.5	464.2

Mounting instructions RCW-1/RCWB-1

LH24A-MF.. **Multifunctional linear actuators, AC/DC 24 V, 150 N**

Operating controls and indicators



① **Direction of stroke switch**
Switching over: Direction of stroke changes

② **Pushbutton and green LED display**
Off: No voltage supply or malfunction
On: Operation
Press button: Switches on stoke adaption followed by standard operation

③ **Pushbutton and yellow LED display**
Off: Standard operation
On: Adaption or synchronising process active
Press button: No function

④ **Gear disengagement switch**
Press button: Gear disengaged, motor stops, manual operation possible
Release button: Gear engaged, synchronisation starts, followed by standard operation

⑤ **Service plug**
For connecting parameterising and service tools

Check voltage supply connection

a) ② Off and ③ On
b) ② Blinking and ③ Blinking
} Check the supply connections. Possibly ⏚ and ~ are swapped over.

Mounting instructions RCW-2/RCWB-2

BELIMO

Technical data sheet NM24A

Damper actuator for operating air control dampers in ventilation and air-conditioning systems for building services installations

- **For air control dampers up to approx. 2 m²**
- **Torque 10 Nm**
- **Nominal voltage AC/DC 24 V**
- **Control: Open-close or 3-point**

Technical data

Electrical data	Nominal voltage		AC 24 V, 50/60 Hz DC 24 V
	Nominal voltage range		AC/DC 19.2 ... 28.8 V
	Power consumption	In operation	1.5 W @ nominal torque
		At rest	0.2 W
		For wire sizing	3.5 VA
	Connection		Cable 1 m, 3 x 0.75 mm²
Functional data	Torque (nominal torque)		Min. 10 Nm @ nominal voltage
	Direction of rotation		Reversible with switch 0 ↶ or 1 ↷
	Manual override		Gearing latch disengaged with pushbutton, detentable
	Angle of rotation		Max. 95°∢, limited on both sides by means of adjustable, mechanical end stops
	Running time		150 s / 90°∢
	Sound power level		Max. 35 dB (A)
	Position indication		Mechanical, pluggable
Safety	Protection class		**III** Safety extra-low voltage
	Degree of protection		IP54 in any mounting position
	EMC		CE according to 89/336/EEC
	Mode of operation		Type 1 (EN 60730-1)
	Rated impulse voltage		0.8 kV (EN 60730-1)
	Control pollution degree		3 (EN 60730-1)
	Ambient temperature range		–30 ... +50°C
	Non-operating temperature		–40 ... +80°C
	Ambient humidity range		95% r.H., non-condensating (EN 60730-1)
	Maintenance		Maintenance-free
Dimensions / Weight	Dimensions		See «Dimensions» on page 16
	Weight		Approx. 750 g

Safety notes

⚠

- **The damper actuator is not allowed to be used outside the specified field of application, especially in aircraft or any other form of air transport.**
- **Assembly must be carried out by trained personnel. Any legal regulations or regulations issued by authorities must be observed during assembly.**
- **The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.**
- **The cable must not be removed from the device.**
- **When calculating the required torque, the specifications supplied by the damper manufacturers (cross section, design, installation site), and the air flow conditions must be observed.**
- **The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.**

Mounting instructions RCW-2/RCWB-2

NM24A **Damper actuator AC/DC 24 V, 10 Nm**

BELIMO

Product features

Simple direct mounting Simple direct mounting on the damper spindle with a universal spindle clamp, supplied with an anti-rotation strap to prevent the actuator from rotating.

Manual override Manual operation is possible with the pushbutton (the gearing latch remains disengaged as long as the pushbutton is pressed or detented).

Adjustable angle of rotation Adjustable angle of rotation with mechanical end stops.

High functional reliability The actuator is overload-proof, requires no limit switches and automatically stops when the end stop is reached.

Accessories

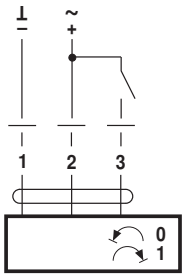
	Description	Data sheet
Electrical accessories	Auxiliary switch, type S..A..	T2 - S..A..
	Feedback potentiometer, type P..A..	T2 - P..A..
Mechnical accessories	Various accessories (clamps, shaft extensions etc.)	T2 - Z-NM..A..

Electrical installation

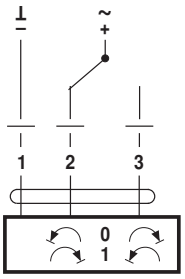
Wiring diagrams

Notes
- Connection via safety isolating transformer.
- Other actuators can be connected in parallel. Please note the performance data.

Open-close control



3-point control

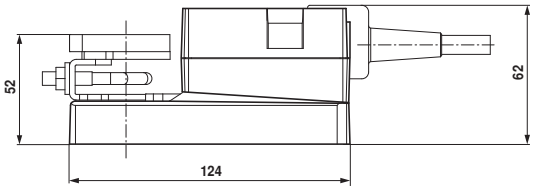


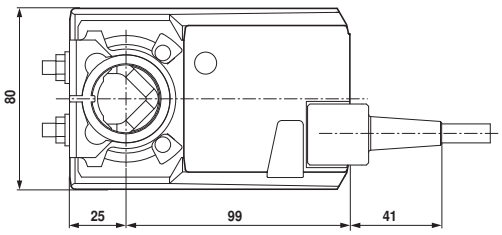
Direction of rotation

Cable colours:
1 = black
2 = red
3 = white

Dimensions [mm]

Dimensional drawings





Damper spindle	Length			
	>40	8 ... 26.7	>8	<26.7
	>20	8 ... 20	>8	<20

* Option (Accessory K-NA)

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Mounting instructions RCW-2/RCWB-2

BELIMO

Technical data sheet **LH24A..**

Linear actuators for operating air control dampers and slide valves in ventilation and air-conditioning systems

- **For air control dampers up to approx. 1 m²**
- **Actuating force 150 N**
- **Nominal voltage AC/DC 24 V**
- **Control: Open-close or 3-point**
- **Lenght of stroke up to max. 60, 100, 200 or 300 mm, adjustable in steps of 20 mm**

Overview of types

Type	Stroke	Weight
LH24A60	Up to max. 60 mm, adjustable in steps of 20 mm	430 g
LH24A100	Up to max. 100 mm, adjustable in steps of 20 mm	445 g
LH24A200	Up to max. 200 mm, adjustable in steps of 20 mm	480 g
LH24A300	Up to max. 300 mm, adjustable in steps of 20 mm	515 g

Technical data

Electrical data	Nominal voltage		AC 24 V, 50/60 Hz DC 24 V
	Power supply range		AC/DC 19.2 ... 28.8 V
	Power consumption	In operation	1.5 W @ nominal force
		At rest	0.5 W
		For wire sizing	3 VA
	Connection		Cable 1 m, 3 x 0.75 mm²
Functional data	Actuating force		150 N @ nominal voltage
	Stroke		See «Overview of types»
	Direction of stroke		Reversible with switch 1 ↑ resp. 0 ↓
	Running time	LH24A60	90 s / 60 mm
		LH24A100/200/300	150 s / 100 mm
	Sound power level		<35 dB (A)
Safety	Protection class		**III** Safety extra-low voltage
	Degree of protection		IP54 in any mounting position
	EMC		CE according to 89/336/EEC
	Mode of operation		Type 1 (to EN 60730-1)
	Rated impulse voltage		0.8 kV (to EN 60730-1)
	Control pollution degree		3 (to EN 60730-1)
	Ambient temperature range		–30 ... +50°C
	Non-operating temperature		–40 ... +80°C
	Ambient humidity range		95% r.H., non-condensating (to EN 60730-1)
	Maintenance		Maintenance-free
Dimensions / Weight	Dimensions		See «Dimensions» on page 19
	Weight		See «Overview of types»

Mounting instructions RCW-2/RCWB-2

LH24A.. **Linear actuators AC/DC 24 V, 150 N**

BELIMO

Safety notes

- **The actuator is not allowed to be used outside the specified field of application, especially not in aircraft or any other form of air transport.**
- **Assembly must be carried out by trained personnel. Any legal regulations or regulations issued by authorities must be observed during assembly.**
- **The device may only be opened at the manufacturer's site. It does not contain any parts that can be replaced or repaired by the user.**
- **The rotary supports and coupling pieces available as accessories must always be used if lateral forces are likely.**
  In addition, the actuator must not be tightly bolted to the application. It must remain movable via the rotary support (refer to «Assembly notes»).
- **If the linear actuator is exposed to severely contaminated atmosphere, appropriate precautions must be taken on the system side. Excessive deposits of dust, soot etc. can prevent the gear rack from being extended and retracted correctly.**
- **If not installed horizontally, the gear disengagement pushbutton may only be actuated when there is no pressure on the gear rod**
- **When calculating the required actuating force, the specifications supplied by the damper or slide valve manufacturers (cross section, design, installation site), and the air flow conditions must be observed.**
- **If a rotary support and/or coupling piece is used, losses in the actuation force are to be expected.**
- **The device contains electrical and electronic components and is not allowed to be disposed of as household refuse. All locally valid regulations and requirements must be observed.**

Product features

Manual override Manual operation is possible with the pushbutton (the gearing latch remains disengaged as long as the pushbutton is pressed or detented).

Stroke adjustment The stroke of the gear rack can be adjusted on both sides in increments of 20 mm by means of mechanical end stops.

High functional reliability The actuator is overload-proof, requires no limit switches and automatically stops when the end stop is reached.

Accessories

	Description	Data sheet
Mechanical accessories	Rotary support to compensate lateral forces, type Z-DS1	T2 - Z-LH..A..
	Coupling piece, type Z-KS2	T2 - Z-LH..A..
	Mechanical limiter set, Typ Z-AS2	T2 - Z-LH..A..

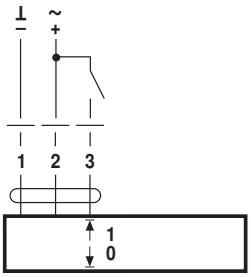
Electrical installation

Wiring diagrams

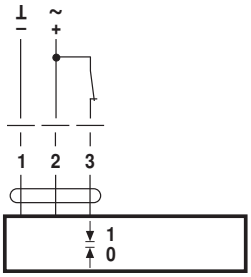
Notes
- Connection via safety isolating transformer!
- Other actuators can be connected in parallel. Please note the performance data!

Direction of stroke

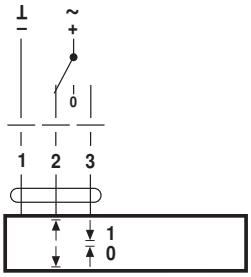
Open-close control



Connection 3 takes priority



3-point control



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Mounting instructions RCW-2/RCWB-2

LH24A.. **Linear actuators AC/DC 24 V, 150 N**

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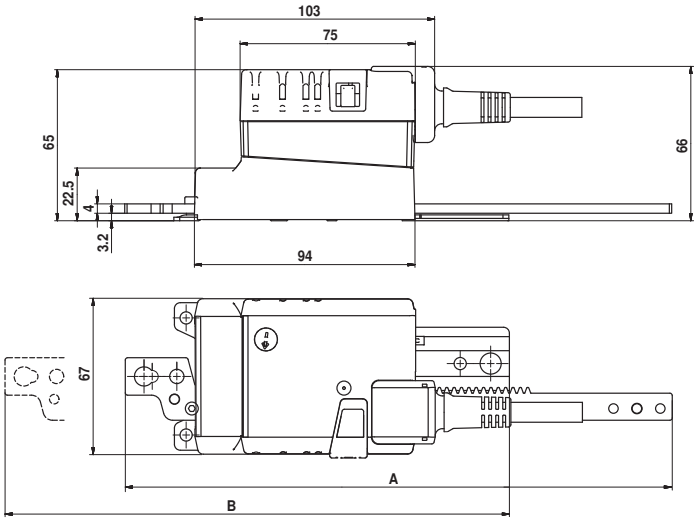
Dimensions [mm]

Dimensional drawings



Type	Max. Stroke	A	B
LH24A60	60	193.5	224.2
LH24A100	100	233.5	264.2
LH24A200	200	333.5	364.2
LH24A300	300	433.5	464.2

Assembly notes

Application without lateral forces

The linear actuator is screwed directly to the housing at three points. Afterwards, the head of the gear rod is fastened to the moving part of the ventilation application (e.g. damper or slide valve).

Application with lateral forces

The coupling piece with the internal thread (Z-KS2) is connected to the head of the gear rod. The rotary support (Z-DS1) is screwed to the ventilation application.
Afterwards, the linear actuator is screwed to the previously mounted rotary support with the enclosed screw. Afterwards, the coupling piece, which is mounted to the head of the gear rod, is attached to the moving part of the ventilation application (e.g. damper or slide valve).
The transverse forces can be compensated for to a certain limit with the rotary support and/or coupling piece. The maximum permissible swivel angle of the rotary support and coupling piece is 10°◁, laterally and upwards.

Caution
If a rotary support and/or coupling piece is used, losses in the actuation force are to be expected.

Mounting instructions RCW/RCWB

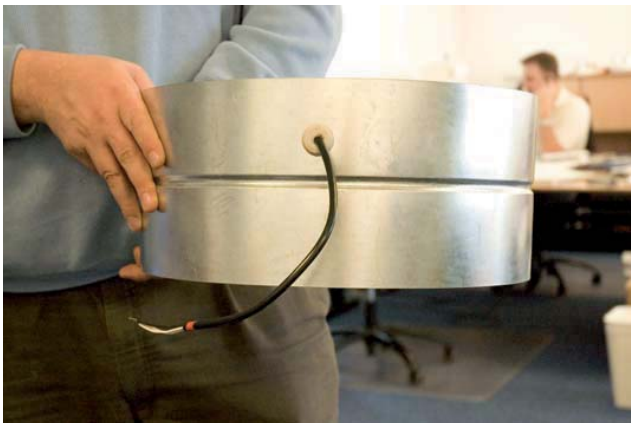
RCW mounting instruction with electric motor

20 mm hole is drilled in duct where connection is wanted.

Put electric cable through drilled hole.

Cable lead-in.

Cable lead-in is mounted on electric cable.



Cable lead-in is mounted in duct.

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Hjälp
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