



# Lindab **Rotationsdon RCW/RCWB**

MIS-Anvisning

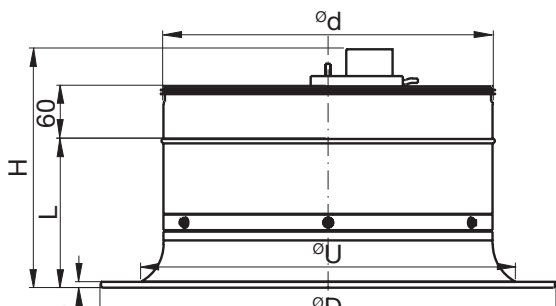


# MIS-Anvisning

# RCW/RCWB

## Montage

RCW/RCWB levereras med Safe tätning. Donet monteras direkt i kanal eller detaljer. RCWB är försedd med 3 st 6 mm invändigt gängade muttrar i topp för upphängning.



## Injustering

Kontroll av luftmängd samt injustering utföres med externa spjäll.

## Underhåll

Vid service av motor eller rengöring av kanal demonteras donet från själva kanalen/anslutningslådan. Synliga delar på donet rengöres med mildt diskmedel.

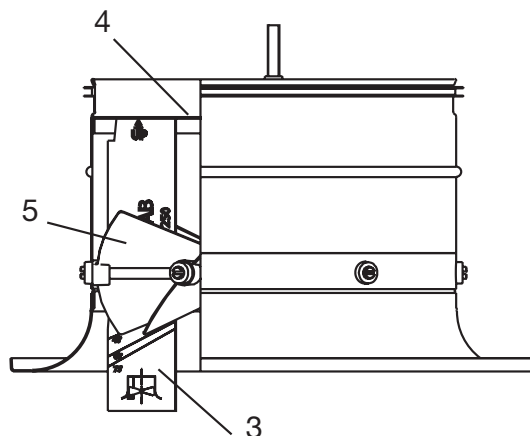
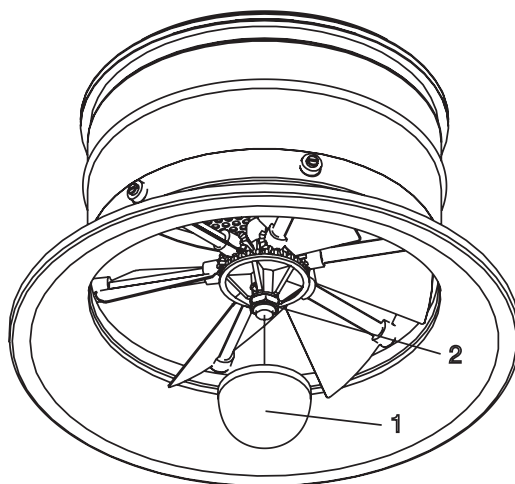
## RCWB

Demontering av RCWB från anslutningslåda (4) sker lämpligast genom att lossa låsmutter M4 (1) från gängstänger M4 (2). Obs att donbladen skall vara i lodrät position. Efter detta är donet lösgjort och kan demonteras från anslutningslådan. Vid återmontage var uppmärksam på att tätningslist (3) placeras i rätt position på anslutningslådan (4).



## Bladinställningar

Som standard levereras de manuella modellerna med 30° bladinställning. Önskas andra bladinställningar kan dessa justeras manuellt med den medlevererade vinkelmätaren.



För att ändra på den fabriksinställda bladvinkeln demonteras plastproppen (1) och centerskruven (2) lossas. Vinkelmätaren placeras upp mot den perforerade plåten (4) i donet var efter man kan vrida bladen (5) till önskad vinkelposition.

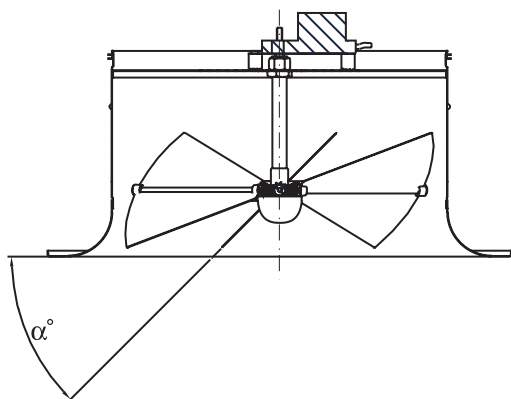
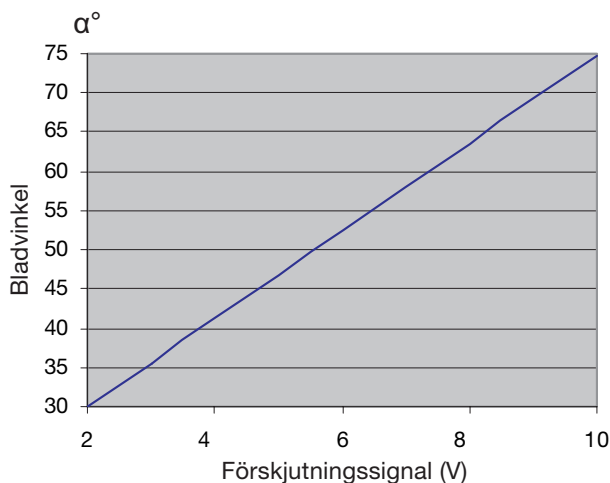
Efter gjord bladinställning skruvas centerskruven fast(2) och plastproppen (1) monteras.

# MIS-Anvisning

# RCW/RCWB

## Teknisk data

### RCW med elektrisk modulerande motor





### RCW med termiskt ställdon

Full horisontellt inblåsningssmönster uppnås när lufttemperaturen i donet är lägre än 17°C i minst 15 minuter.  
Fullt vertikalt inblåsningssmönster uppnås när lufttemperaturen i donet är över 26°C i minst 15 minuter.

## Val av motortyp

### RCW-1 / RCWB-1

RCW-1 / RCWB-1 storlek	Belimo motor
Ød 315 - 400	NM24A-MF-F 
Ød 500 - 630	LH24A-MF60 


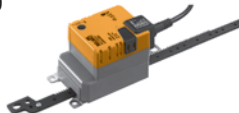
#### Tekniska data NM24A-MF / LH24A-MF

Tekniska data (engelska) anges på följande sidor:

NM24A-MF sida 4.  
LH24A-MF sida 9.

## Val av motortyp

### RCW-2 / RCWB-2

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

#### Tekniska data NM24A / LH24A

Tekniska data (engelska) anges på följande sidor:

NM24A sida 15.  
LH24A sida 17.

# MIS-Anvisning

# RCW-1/RCWB-1



Parameterisable damper actuator for adjusting dampers in technical building installations

- Air damper size up to approx. 2 m<sup>2</sup>
- Nominal torque 10 Nm
- Nominal voltage AC/DC 24 V
- Control Modulating DC (0)2...10 V Variable
- Position feedback DC 2...10 V Variable

## Technical data sheet

NM24A-MF



### Technical data

<b>Electrical data</b>	Nominal voltage	AC/DC 24 V	
	Nominal voltage frequency	50/60 Hz	
	Nominal voltage range	AC 19.2...28.8 V / DC 21.6...28.8 V	
	Power consumption in operation	3.5 W	
	Power consumption in rest position	1.3 W	
	Power consumption for wire sizing	6 VA	
	Connection supply / control	Cable 1 m, 4 x 0.75 mm <sup>2</sup>	
	Parallel operation	Yes (note the performance data)	
	<b>Functional data</b>	Torque motor	Min. 10 Nm
		Torque variable	25%, 50%, 75% reduced
Positioning signal Y		DC 0...10 V	
Positioning signal Y note		Input impedance 100 kΩ	
Control signal Y variable		Open-close 3-point (AC only) Modulating (DC 0...32 V)	
Operating range Y		DC 2...10 V	
Operating range Y variable		Start point DC 0.5...30 V End point DC 2.5...32 V	
Position feedback U		DC 2...10 V	
Position feedback U note		Max. 0.5 mA	
Position feedback U variable		Start point DC 0.5...8 V End point DC 2.5...10 V	
Position accuracy		±5%	
Direction of motion motor		Selectable with switch 0 / 1	
Direction of motion note		Y = 0 V: At switch position 0 (ccw rotation) / 1 (cw rotation)	
Direction of motion variable		Electronically reversible	
Manual override		Gear disengagement with push-button, can be locked	
Angle of rotation		Max. 95°	
Angle of rotation note		can be limited on both sides with adjustable mechanical end stops	
Running time motor		150 s / 90°	
Motor running time variable		43...173 s	
Adaption setting range		manual	
Adaption setting range variable		No action Adaption when switched on Adaption after pushing the gear disengagement button	
Override control		MAX (maximum position) = 100% MIN (minimum position) = 0% ZS (intermediate position, AC only) = 50%	
Override control variable		MAX = (MIN + 32%)...100% MIN = 0%...(MAX - 32%) ZS = MIN...MAX	
Sound power level motor	35 dB(A)		
Spindle driver	Universal spindle clamp 8...26.7 mm		
Position indication	Mechanically, pluggable		
<b>Safety</b>	Protection class IEC/EN	III Safety extra-low voltage	

# MIS-Anvisning

# RCW-1/RCWB-1

**NM24A-MF**

**Damper actuator, parameterisable, Modulating,  
AC/DC 24 V, 10 Nm**



## Technical data

<b>Safety</b>	Protection class UL	UL Class 2 Supply
	Degree of protection IEC/EN	IP54
	Degree of protection NEMA/UL	NEMA 2, UL Enclosure Type 2
	EMC	CE according to 2004/108/EC
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-14
	Certification UL	cULus according to UL 60730-1A, UL 60730-2-14 and CAN/CSA E60730-1:02
	Mode of operation	Type 1
	Rated impulse voltage supply / control	0.8 kV
	Control pollution degree	3
	Ambient temperature	-30...50 °C
	Non-operating temperature	-40...80 °C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
	<b>Weight</b>	Weight approx.

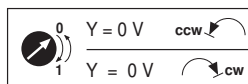
## Safety notes



- The device must not be used outside the specified field of application, especially not in aircraft or in any other airborne means of transport.
- Outdoor application: only possible in case that no (sea)water, snow, ice, insulation or aggressive gases interfere directly with the actuator and that is ensured that the ambient conditions remain at any time within the thresholds according to the data sheet.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- 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.
- Cables must not be removed from the device.
- To calculate the torque required, the specifications supplied by the damper manufacturers concerning the cross-section, the design, the installation site and the ventilation conditions must be observed.
- The device contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.

## Product features

<b>Mode of operation</b>	The actuator is connected with a standard modulating signal of DC 0...10V and drives to the position defined by the positioning signal. Measuring voltage U serves for the electrical display of the damper position 0...100% and as slave control signal for other actuators.
<b>Parameterisable actuators</b>	The factory settings cover the most common applications. Single parameters can be modified with the Belimo Service Tools MFT-P or ZTH EU.
<b>Simple direct mounting</b>	Simple direct mounting on the damper spindle with an universal spindle clamp, supplied with an anti-rotation device to prevent the actuator from rotating.
<b>Manual override</b>	Manual override with push-button possible (the gear is disengaged for as long as the button is pressed or remains locked).
<b>High functional reliability</b>	The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.
<b>Adjustable angle of rotation</b>	Adjustable angle of rotation with mechanical end stops.
<b>Home position</b>	The first time the supply voltage is switched on, i.e. at the time of commissioning, the actuator carries out a synchronisation. The synchronisation is in the home position (0%). The actuator then moves into the position defined by the positioning signal.



## MIS-Anvisning

## RCW-1/RCWB-1

NM24A-MF

Damper actuator, parameterisable, Modulating,  
AC/DC 24 V, 10 Nm

## Product features

**Adaption and synchronisation** An adaption can be triggered manually by pressing the “Adaption” button or with the PC-Tool. Both mechanical end stops are detected during the adaption (entire setting range).  
Automatic synchronisation after pressing the gearbox disengagement button is configured. The synchronisation is in the home position (0%).  
The actuator then moves into the position defined by the positioning signal.  
A range of settings can be adapted using the PC-Tool (see MFT-P documentation)

## Accessories

	Description	Type
<b>Electrical accessories</b>	Auxiliary switch, add-on, 1 x SPDT	S1A
	Auxiliary switch, add-on, 2 x SPDT	S2A
	Auxiliary switch, add-on, 2 x SPDT, grey	S2A GR
	Feedback potentiometer 140 Ohm, add-on	P140A
	Feedback potentiometer 140 Ohm, add-on, grey	P140A GR
	Feedback potentiometer 200 Ohm, add-on	P200A
	Feedback potentiometer 500 Ohm, add-on	P500A
	Feedback potentiometer 500 Ohm, add-on, grey	P500A GR
	Feedback potentiometer 1 kOhm, add-on	P1000A
	Feedback potentiometer 2.8 kOhm, add-on	P2800A
	Feedback potentiometer 2.8 kOhm, add-on, grey	P2800A GR
	Feedback potentiometer 1 kOhm, add-on, grey	P1000A GR
	Feedback potentiometer 5 kOhm, add-on	P5000A
	Feedback potentiometer 5 kOhm, add-on, grey	P5000A GR
	Feedback potentiometer 10 kOhm, add-on	P10000A
	Feedback potentiometer 10 kOhm, add-on, grey	P10000A GR
	Signal converter voltage/current, supply AC/DC 24V	Z-UIC
	Digital position indicator for front-panel mounting, 0...99%, front mass 72 x 72 mm	ZAD24
	Range controller for wall mounting, adjustable electron. Min./max. angle of rotation limitation	SBG24
	Positioner for wall mounting, range 0...100%	SGA24
	Positioner in a conduit box, range 0...100%	SGE24
	Positioner for front-panel mounting, range 0...100%	SGF24
	Positioner for wall mounting, range 0...100%	CRP24-B1
	Connecting cable 5 m, A+B: RJ12 6/6, To ZTH/ZIP-USB-MP	ZK1-GEN
	Connection cable 5 m, A: RJ11 6/4, B: Free wire end, To ZTH/ZIP-USB-MP	ZK2-GEN
	<b>Mechanical accessories</b>	Actuator arm, for standard spindle clamp (reversible) K-SA
Actuator arm, for one-sided spindle clamp K-ENSA		AH-25
Shaft extension 250 mm, for damper spindles Ø 8...25 mm		AV8-25
Spindle clamp, one side for NM..A		K-ENMA
Spindle clamp, one side for NM..A, SM..A		K-ENSA
Straight ball joint with M8, suitable for damper crank arms KH8		KG10A
Angled ball joint with M8, suitable for damper crank arms KH8		KG8
Damper crank arm, for damper spindles		KH8
Spindle clamp, reversible for NM..A and LMQ..		K-NA
Angle of rotation limiter, for K-NA		20334-00001
Universal mounting bracket 180 mm		Z-ARS180
Form fit insert 8x8 mm, for NM..A		ZF8-NMA
Form fit insert 10x10 mm, for NM..A / SM..A		ZF10-NSA
Form fit insert 12x12 mm, for NM..A / SM..A		ZF12-NSA
Form fit insert 15x15 mm		ZF15-NSA
Form fit insert 16x16 mm, for NM..A / SM..A		ZF16-NSA
Mounting kit for linkage operation, NM..A for flat installation		ZG-NMA

# MIS-Anvisning

# RCW-1/RCWB-1

**NM24A-MF**

**Damper actuator, parameterisable, Modulating,  
AC/DC 24 V, 10 Nm**



## Accessories

	Description	Type
	Base plate extension from NM..A to NM..	Z-NMA
	Position indication for LM..A, NM..A, SM..A, GM..A	Z-PI
Service Tools	Description	Type
	Service Tool, for MF/MP/Modbus/LonWorks actuators and VAV-Controller	ZTH EU
	Belimo PC-Tool, software for adjustments and diagnostics	MFT-P
	Adapter to Service-Tool ZTH	MFT-C

## Electrical installation

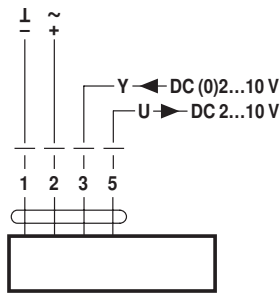


### Notes

- Connection via safety isolating transformer.
- Parallel connection of other actuators possible. Observe the performance data.

## Wiring diagrams

AC/DC 24 V, modulating

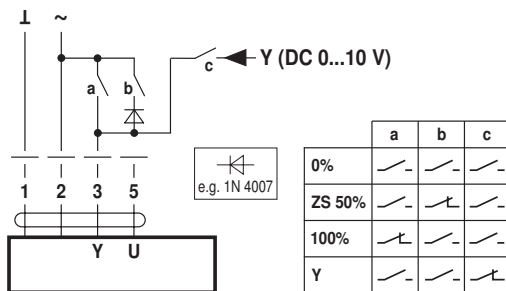


**Cable colours:**  
1 = black  
2 = red  
3 = white  
5 = orange

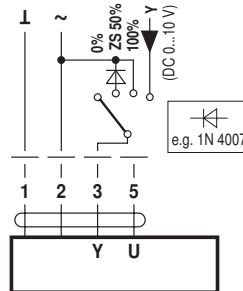
## Functions

### Functions with basic values (conventional mode)

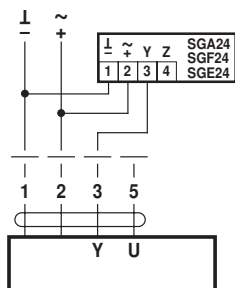
Override control with AC 24 V with relay contacts



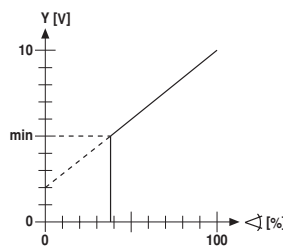
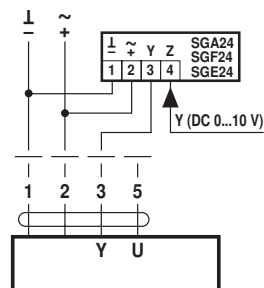
Override control with AC 24 V with rotary switch



Remote control 0...100% with positioner SG..



Minimum limit with positioner SG..



# MIS-Anvisning

# RCW-1/RCWB-1

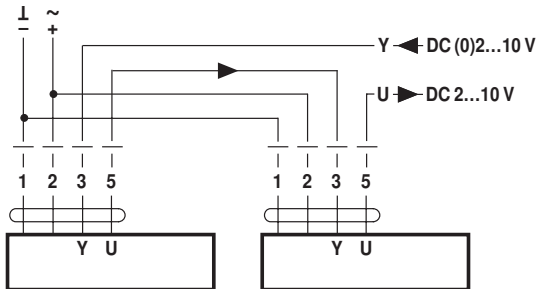
**NM24A-MF**

**Damper actuator, parameterisable, Modulating,  
AC/DC 24 V, 10 Nm**

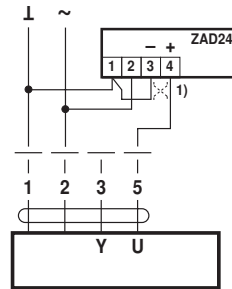


## Functions

Follow-up control (position-dependent)

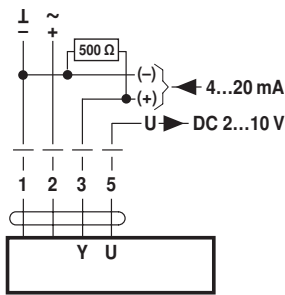


Position indication



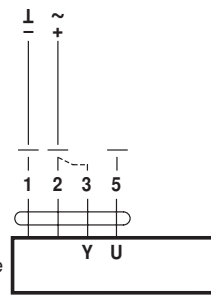
(1) Adapting the direction of rotation

Control with 4...20 mA via external resistor



**Caution:**  
The operating range must be set to DC 2...10 V.  
The 500 Ω resistor converts the 4...20 mA current signal to a voltage signal DC 2...10 V

Functional check

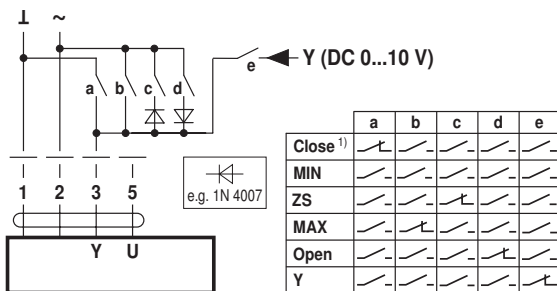


### Procedure

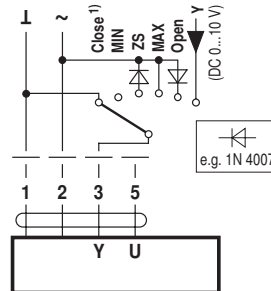
1. Connect 24V to connections 1 and 2
2. Disconnect connection 3:
  - with direction of rotation 0: Actuator rotates to the left
  - with direction of rotation 1: Actuator rotates to the right
3. Short-circuit connections 2 and 3:
  - Actuator runs in opposite direction

## Functions for actuators with specific parameters (Parametrisation with PC-Tool necessary)

Override control and limiting with AC 24 V with relay contacts

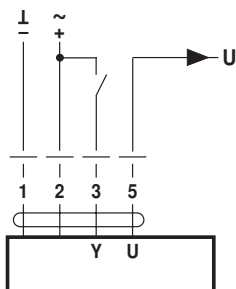


Override control and limiting with AC 24 V with rotary switch

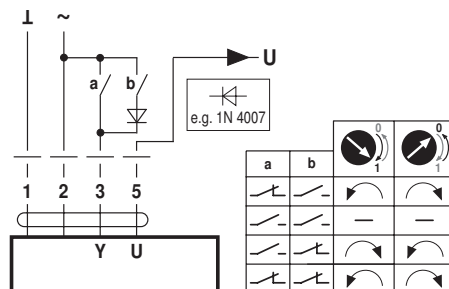


1) **Caution:** This function is only guaranteed if the start point of the operating range is defined as min. 0.5 V.

Control open-close



Control 3-point





# MIS-Anvisning

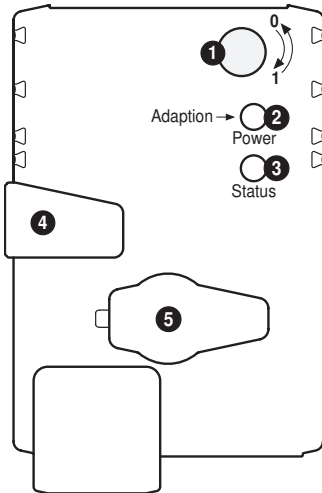
# RCW-1/RCWB-1

**NM24A-MF**

**Damper actuator, parameterisable, Modulating,  
AC/DC 24 V, 10 Nm**



## Operating controls and indicators



- 1 Direction of rotation switch**  
Switch over: Direction of rotation changes
  - 2 Push-button and LED display green**  
Off: No power supply or malfunction  
On: In operation  
Press button: Triggers angle of rotation adaptation, followed by standard mode
  - 3 Push-button and LED display yellow**  
Off: Standard mode  
On: Adaptation or synchronising process active  
Press button: No function
  - 4 Gear disengagement button**  
Press button: Gear disengages, motor stops, manual override possible  
Release button: Gear engages, synchronisation starts, followed by standard mode
  - 5 Service plug**  
For connecting parameterisation and service tools
- Check power supply connection**
- 2 Off and 3 On** Possible wiring error in power supply

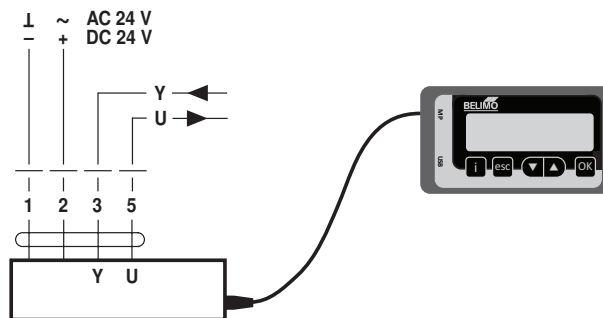
## Service



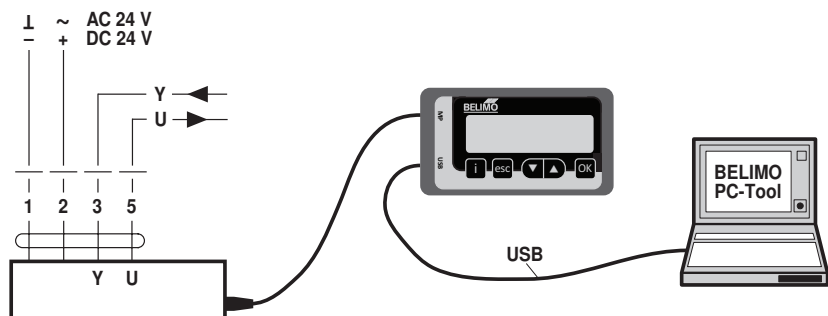
### Notes

- The actuator can be parameterised by PC-Tool and ZTH EU via the service socket.

### ZTH EU connection



### PC-Tool connection



# MIS-Anvisning

# RCW-1/RCWB-1

**NM24A-MF**

Damper actuator, parameterisable, Modulating,  
AC/DC 24 V, 10 Nm



**Dimensions [mm]**

**Spindle length**

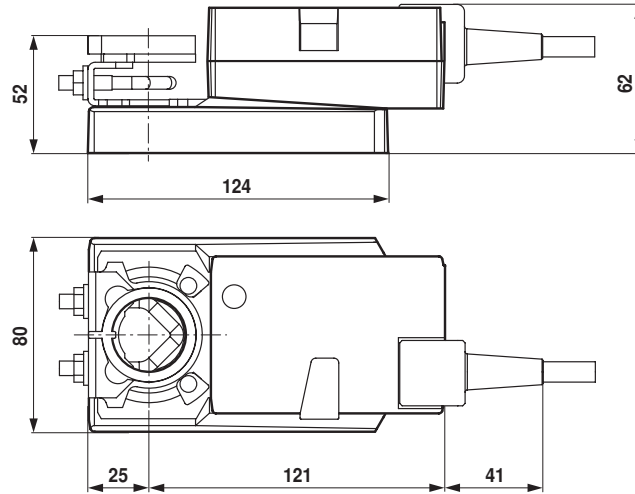
		Min. 40
		Min. 20

**Clamping range**

	8...26.7	≥8	≤26.7
	8...20*	≥8	≤20

\*Option: Spindle clamp mounted below  
(accessories K-NA needed)

**Dimensional drawings**



## MIS-Anvisning

## RCW-1/RCWB-1

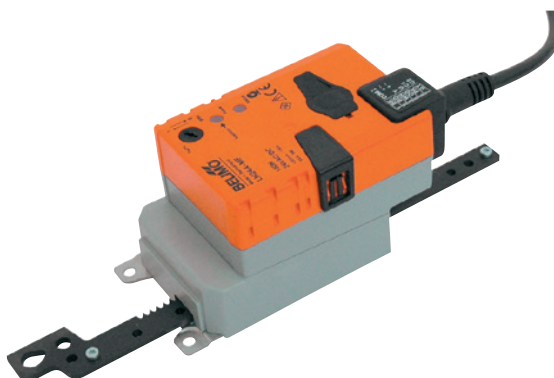


Parameterisable linear actuator for adjusting dampers and slide valves in technical building installations

- Air damper size up to approx. 1 m<sup>2</sup>
- Actuating force 150 N
- Nominal voltage AC/DC 24 V
- Control modulating DC (0)2...10 V Variable
- Position feedback DC 2...10 V Variable
- Length of Stroke Max. 60 mm, adjustable in 20 mm increments

## Technical data sheet

LH24A-MF60



## Technical data

<b>Electrical data</b>	Nominal voltage	AC/DC 24 V
	Nominal voltage frequency	50/60 Hz
	Nominal voltage range	AC 19.2...28.8 V / DC 21.6...28.8 V
	Power consumption in operation	2.5 W
	Power consumption in rest position	1.2 W
	Power consumption for wire sizing	5 VA
	Connection supply / control	Cable 1 m, 4 x 0.75 mm <sup>2</sup>
<b>Functional data</b>	Parallel operation	Yes (note the performance data)
	Actuating force motor	Min. 150 N
	Modifiable actuating force	25%, 50%, 75% reduziert
	Positioning signal Y	DC 0...10 V
	Positioning signal Y note	Input impedance 100 kΩ
	Control signal Y variable	Open-close 3-point (AC only) Modulating (DC 0...32 V)
	Operating range Y	DC 2...10 V
	Operating range Y variable	Start point DC 0.5...30 V End point DC 2.5...32 V
	Position feedback U	DC 2...10 V
	Position feedback U note	Max. 0.5 mA
	Position feedback U variable	Start point DC 0.5...8 V End point DC 2.5...10 V
	Position accuracy	±5%
	Direction of motion motor	Selectable with switch
	Direction of motion note	Y = 0 V: with switch 0 (retracted) / 1 (extended)
	Direction of motion variable	Electronically reversible
	Manual override	With push-button, can be locked
	Length of Stroke	Max. 60 mm, adjustable in 20 mm increments
	Stroke limitation	can be limited on both sides with mechanical end stops
	Running time motor	150 s / 100 mm
	Running time motor note	corresponds to 90 s / 60 mm
	Motor running time variable	70...270 s / 100 mm
	Adaption setting range	manual
	Adaption setting range variable	No action Adaption when switched on Adaption after pushing the gear disengagement button
Override control	MAX (maximum position) = 100% MIN (minimum position) = 0% ZS (intermediate position, AC only) = 50%	
Override control variable	MAX = (MIN + 32%)...100% MIN = 0%...(MAX - 32%) ZS = MIN...MAX	
Sound power level motor	45 dB(A)	
<b>Safety</b>	Protection class IEC/EN	III Safety extra-low voltage
	Protection class UL	UL Class 2 Supply
	Degree of protection IEC/EN	IP54
	Degree of protection NEMA/UL	NEMA 2, UL Enclosure Type 2

## MIS-Anvisning

## RCW-1/RCWB-1

LH24A-MF60

Linear actuator, parameterisable, modulating,  
AC/DC 24 V, 150 N**BELIMO**<sup>®</sup>

## Technical data

<b>Safety</b>	EMC	CE according to 2014/30/EU
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-14
	Certification UL	cULus according to UL 60730-1A, UL 60730-2-14 and CAN/CSA E60730-1:02
	Mode of operation	Type 1
	Rated impulse voltage supply / control	0.8 kV
	Control pollution degree	3
	Ambient temperature	-30...50 °C
	Non-operating temperature	-40...80 °C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
<b>Weight</b>	Weight	0.5 kg

## Safety notes



- The device must not be used outside the specified field of application, especially not in aircraft or in any other airborne means of transport.
- Outdoor application: only possible in case that no (sea)water, snow, ice, insolation or aggressive gases interfere directly with the actuator and that is ensured that the ambient conditions remain at any time within the thresholds according to the data sheet.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- 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.
- Cables must not be removed from the device.
- The rotary supports and coupling pieces available as accessories must always be used if transverse 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 actuator is exposed to severely contaminated ambient air, appropriate precautions must be taken on the system side. Excessive deposits of dust, soot etc. can prevent the gear rod 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.
- To calculate the actuating force required for air dampers and slide valves, the specifications supplied by the damper manufacturers concerning the cross section, the design, the installation site and the ventilation conditions must be observed.
- If a rotary support and/or coupling piece is used, actuation force losses are to be expected.
- The device contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.

## Product features

<b>Mode of operation</b>	The actuator is connected with a standard modulating signal of DC 0...10V and drives to the position defined by the positioning signal. Measuring voltage U serves for the electrical display of the damper position 0...100% and as slave control signal for other actuators.
<b>Parameterisable actuators</b>	The factory settings cover the most common applications. Single parameters can be modified with the Belimo Service Tools MFT-P or ZTH EU.
<b>Simple direct mounting</b>	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 ventilating application individually on the mounting side or with the Z-KS2 coupling piece provided.
<b>Manual override</b>	Manual override with push-button possible (the gear is disengaged for as long as the button is pressed or remains locked).
<b>Adjustable stroke</b>	If a stroke limitation will be adjusted, the mechanical operating range on this side of the gear rod can be used starting with an extension length of 20 mm and then can be limited respectively in increments of 20 mm by means of mechanical end stops Z-AS2.

## MIS-Anvisning

## RCW-1/RCWB-1

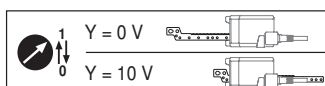
LH24A-MF60

Linear actuator, parameterisable, modulating,  
AC/DC 24 V, 150 N**BELIMO**<sup>®</sup>

## Product features

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

**Home position** The first time the supply voltage is switched on, i.e. at the time of commissioning, the actuator carries out a synchronisation. The synchronisation is in the home position (0%).  
The actuator then moves into the position defined by the positioning signal.



**Adaption and synchronisation** An adaption can be triggered manually by pressing the "Adaption" button or with the PC-Tool. Both mechanical end stops are detected during the adaption (entire setting range).  
Automatic synchronisation after pressing the gearbox disengagement button is configured. The synchronisation is in the home position (0%).  
The actuator then moves into the position defined by the positioning signal.  
A range of settings can be adapted using the PC-Tool (see MFT-P documentation)

## Accessories

	Description	Type
<b>Electrical accessories</b>	Digital position indicator for front-panel mounting, 0...99%, front mass 72 x 72 mm	ZAD24
	Range controller for wall mounting, adjustable electron. Min./max. angle of rotation limitation	SBG24
	Positioner for wall mounting, range 0...100%	SGA24
	Positioner in a conduit box, range 0...100%	SGE24
	Positioner for front-panel mounting, range 0...100%	SGF24
	Positioner for wall mounting, range 0...100%	CRP24-B1
	Connecting cable 5 m, A+B: RJ12 6/6, To ZTH/ZIP-USB-MP	ZK1-GEN
	Connection cable 5 m, A: RJ11 6/4, B: Free wire end, To ZTH/ZIP-USB-MP	ZK2-GEN
<b>Mechanical accessories</b>	<b>Description</b>	<b>Type</b>
	End stop set for LH	Z-AS2
	Rotary support for compensation of transverse forces	Z-DS1
Coupling piece M6 for LH, galvanised steel	Z-KS2	
<b>Service Tools</b>	<b>Description</b>	<b>Type</b>
	Service Tool, for MF/MP/Modbus/LonWorks actuators and VAV-Controller	ZTH EU
	Belimo PC-Tool, software for adjustments and diagnostics	MFT-P
Adapter to Service Tool ZTH	MFT-C	

# MIS-Anvisning

# RCW-1/RCWB-1

**LH24A-MF60**

Linear actuator, parameterisable, modulating,  
AC/DC 24 V, 150 N



## Electrical installation

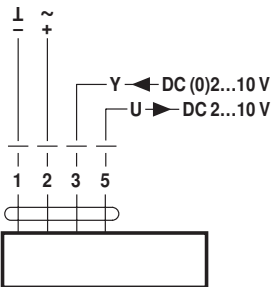


### Notes

- Connection via safety isolating transformer.
- Parallel connection of other actuators possible. Observe the performance data.

## Wiring diagrams

AC/DC 24 V, modulating



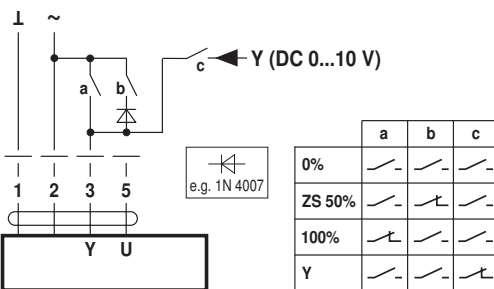
### Cable colours:

- 1 = black
- 2 = red
- 3 = white
- 5 = orange

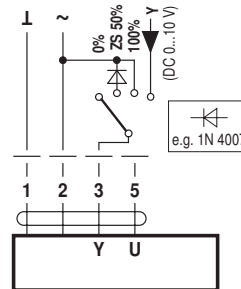
## Functions

### Functions with basic values (conventional mode)

Override control with AC 24 V with relay contacts

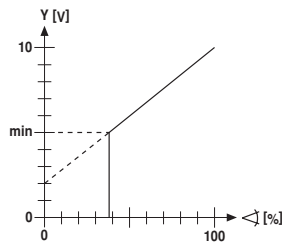
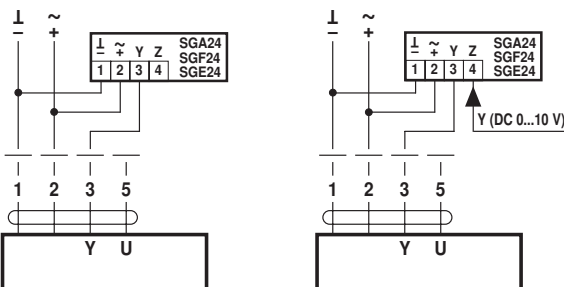


Override control with AC 24 V with rotary switch

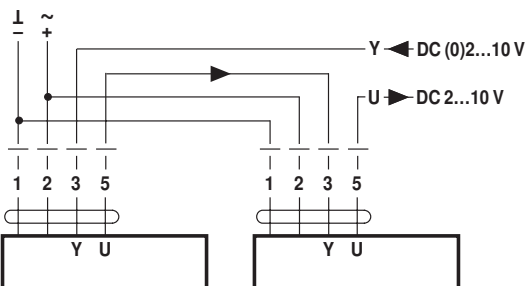


Remote control 0...100% with positioner SG..

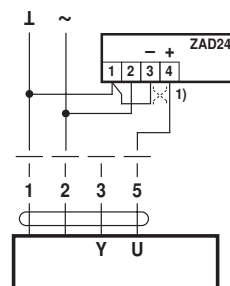
Minimum limit with positioner SG..



Follow-up control (position-dependent)



Position indication



1) Adapting the direction of stroke

# MIS-Anvisning

# RCW-1/RCWB-1

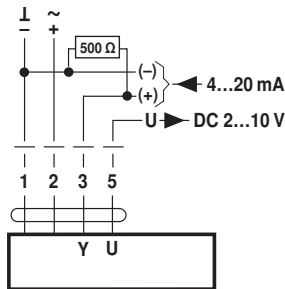
**LH24A-MF60**

Linear actuator, parameterisable, modulating,  
AC/DC 24 V, 150 N



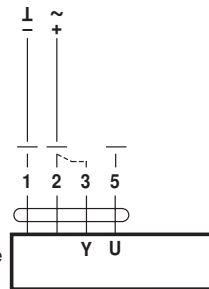
## Functions

Control with 4...20 mA via external resistor



**Caution:**  
The operating range must be set to DC 2...10 V.  
The 500 Ω resistor converts the 4...20 mA current signal to a voltage signal DC 2...10 V

Functional check

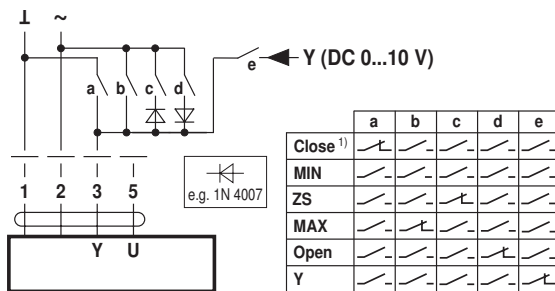


**Procedure**

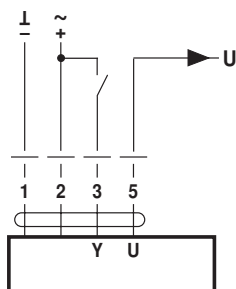
1. Apply 24 V to connection 1 and 2
2. Disconnect connection 3:  
- for direction of stroke 0: Actuator travels in the direction "retracted"  
- for direction of stroke 1: Actuator travels in the direction "extended"
3. Short circuit connections 2 and 3:  
- Actuator runs in the opposite direction

## Functions for actuators with specific parameters (Parametrisation with PC-Tool necessary)

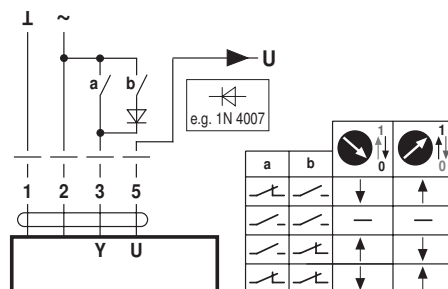
Override control and limiting with AC 24 V with relay contacts



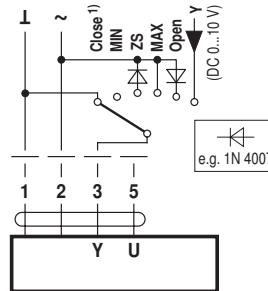
Control open-close



Control 3-point



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. 0.5 V.

# MIS-Anvisning

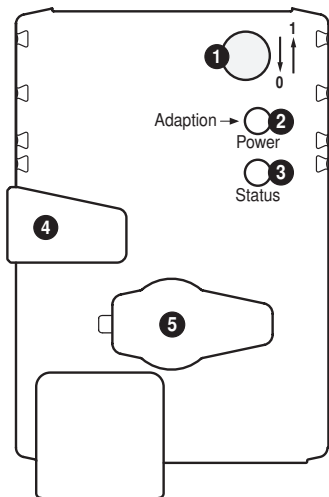
# RCW-1/RCWB-1

**LH24A-MF60**

**Linear actuator, parameterisable, modulating,  
AC/DC 24 V, 150 N**



## Operating controls and indicators



- 1 Direction of stroke switch**  
Switch over: Direction of stroke changes
  - 2 Push-button and LED display green**  
Off: No power supply or malfunction  
On: In operation  
Press button: Triggers stroke adaptation, followed by standard mode
  - 3 Push-button and LED display yellow**  
Off: Standard mode  
On: Adaptation or synchronising process active  
Press button: No function
  - 4 Gear disengagement button**  
Press button: Gear disengages, motor stops, manual override possible  
Release button: Gear engages, synchronisation starts, followed by standard mode
  - 5 Service plug**  
For connecting parameterisation and service tools
- Check power supply connection**  
**2** Off and **3** On Possible wiring error in power supply

## Installation notes



### Notes

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

### Applications without transverse force

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).

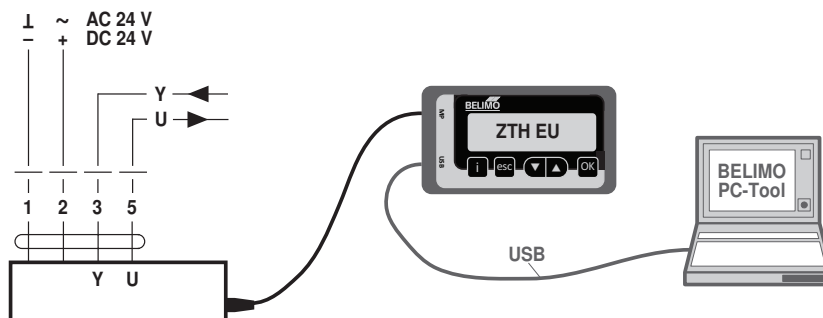
### Applications with transverse forces

Connect the coupling piece with the internal thread (Z-KS2) to the head of the gear rod. Screw the rotary support (Z-DS1) 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 ventilating 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.

## Service

### Service Tools connection

The actuator can be parameterised by ZTH EU via the service socket. For an extended parameterisation the PC tool can be connected.





# MIS-Anvisning

# RCW-1/RCWB-1

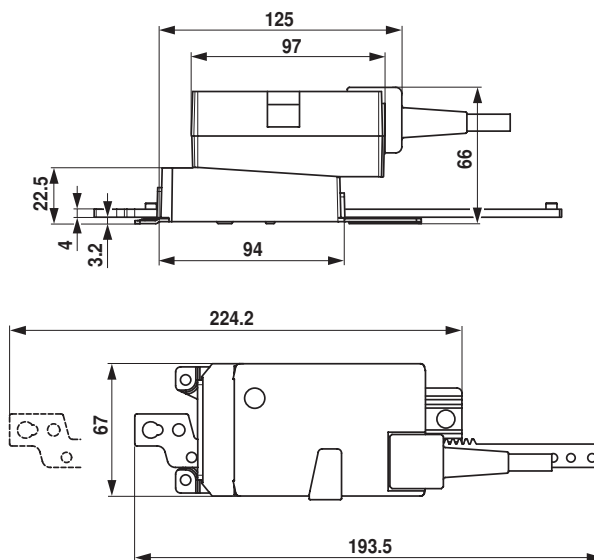
**LH24A-MF60**

Linear actuator, parameterisable, modulating,  
AC/DC 24 V, 150 N



**Dimensions [mm]**

**Dimensional drawings**



# MIS-Anvisning

# RCW-2/RCWB-2



Damper actuator for adjusting dampers in technical building installations

- Air damper size up to approx. 2 m<sup>2</sup>
- Nominal torque 10 Nm
- Nominal voltage AC/DC 24 V
- Control Open-close, 3-point

## Technical data sheet

NM24A



### Technical data

<b>Electrical data</b>	Nominal voltage	AC/DC 24 V
	Nominal voltage frequency	50/60 Hz
	Nominal voltage range	AC 19.2...28.8 V / DC 19.2...28.8 V
	Power consumption in operation	1.5 W
	Power consumption in rest position	0.2 W
	Power consumption for wire sizing	3.5 VA
	Connection supply / control	Cable 1 m, 3 x 0.75 mm <sup>2</sup>
	Parallel operation	Yes (note the performance data)
<b>Functional data</b>	Torque motor	Min. 10 Nm
	Direction of motion motor	selectable with switch 0 (ccw rotation) / 1 (cw rotation)
	Manual override	with push-button, can be locked
	Angle of rotation	Max. 95°
	Angle of rotation note	can be limited on both sides with adjustable mechanical end stops
	Running time motor	150 s / 90°
	Sound power level motor	35 dB(A)
	Spindle driver	Universal spindle clamp 8...26.7 mm
	Position indication	Mechanically, pluggable
	<b>Safety</b>	Protection class IEC/EN
Protection class UL		UL Class 2 Supply
Degree of protection IEC/EN		IP54
Degree of protection NEMA/UL		NEMA 2, UL Enclosure Type 2
EMC		CE according to 2014/30/EU
Certification IEC/EN		IEC/EN 60730-1 and IEC/EN 60730-2-14
Certification UL		cULus according to UL 60730-1A, UL 60730-2-14 and CAN/CSA E60730-1:02
Mode of operation		Type 1
Rated impulse voltage supply / control		0.8 kV
Control pollution degree		3
<b>Weight</b>	Ambient temperature	-30...50 °C
	Non-operating temperature	-40...80 °C
	Ambient humidity	95% r.h., non-condensing
	Maintenance	Maintenance-free
	Weight	0.75 kg

### Safety notes



- The device must not be used outside the specified field of application, especially not in aircraft or in any other airborne means of transport.
- Outdoor application: only possible in case that no (sea)water, snow, ice, insolation or aggressive gases interfere directly with the actuator and that is ensured that the

## MIS-Anvisning

## RCW-2/RCWB-2

NM24A

Damper actuator, Open-close, 3-point, AC/DC 24 V, 10 Nm



## Safety notes

- Cables must not be removed from the device.
- To calculate the torque required, the specifications supplied by the damper manufacturers concerning the cross-section, the design, the installation site and the ventilation conditions must be observed.
- The device contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.

## Product features

<b>Simple direct mounting</b>	Simple direct mounting on the damper spindle with an universal spindle clamp, supplied with an anti-rotation device to prevent the actuator from rotating.
<b>Manual override</b>	Manual override with push-button possible (the gear is disengaged for as long as the button is pressed or remains locked).
<b>Adjustable angle of rotation</b>	Adjustable angle of rotation with mechanical end stops.
<b>High functional reliability</b>	The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.

## Accessories

	Description	Type
<b>Electrical accessories</b>	Auxiliary switch, add-on, 1 x SPDT	S1A
	Auxiliary switch, add-on, 2 x SPDT	S2A
	Feedback potentiometer 140 Ohm, add-on	P140A
	Feedback potentiometer 140 Ohm, add-on, grey	P140A GR
	Feedback potentiometer 200 Ohm, add-on	P200A
	Feedback potentiometer 500 Ohm, add-on	P500A
	Feedback potentiometer 500 Ohm, add-on, grey	P500A GR
	Feedback potentiometer 1 kOhm, add-on	P1000A
	Feedback potentiometer 1 kOhm, add-on, grey	P1000A GR
	Feedback potentiometer 2.8 kOhm, add-on	P2800A
	Feedback potentiometer 2.8 kOhm, add-on, grey	P2800A GR
	Feedback potentiometer 5 kOhm, add-on	P5000A
	Feedback potentiometer 5 kOhm, add-on, grey	P5000A GR
	Feedback potentiometer 10 kOhm, add-on	P10000A
	Feedback potentiometer 10 kOhm, add-on, grey	P10000A GR
<b>Mechanical accessories</b>	<b>Description</b>	<b>Type</b>
	Actuator arm, for one-sided spindle clamp K-ENSA	AH-25
	Shaft extension 250 mm, for damper spindles Ø 8...25 mm	AV8-25
	Angled ball joint with M8, suitable for damper crank arms KH8	KG8
	Straight ball joint with M8, suitable for damper crank arms KH8	KG10A
	Damper crank arm, for damper spindles	KH8
	Spindle clamp, one side for NM..A	K-ENMA
	Spindle clamp, one side for NM..A, SM..A	K-ENSA
	Spindle clamp, reversible for NM..A and LMQ..	K-NA
	Angle of rotation limiter, for K-NA	20334-00001
	Form fit insert 8x8 mm, for NM..A	ZF8-NMA
	Form fit insert 10x10 mm, for NM..A / SM..A	ZF10-NSA
	Form fit insert 12x12 mm, for NM..A / SM..A	ZF12-NSA
	Form fit insert 15x15 mm	ZF15-NSA
	Form fit insert 16x16 mm, for NM..A / SM..A	ZF16-NSA
	Mounting kit for linkage operation, NM..A for flat installation	ZG-NMA
	Universal mounting bracket 180 mm	Z-ARS180
Base plate extension from NM..A to NM..	Z-NMA	
Position indication for LM..A, NM..A, SM..A, GM..A	Z-PI	

# MIS-Anvisning

# RCW-2/RCWB-2

**NM24A**

**Damper actuator, Open-close, 3-point, AC/DC 24 V, 10 Nm**

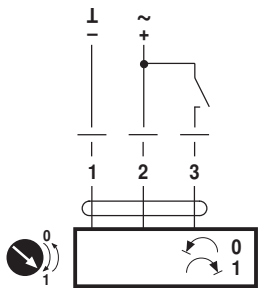


**Electrical installation**

	<b>Notes</b>	<ul style="list-style-type: none"> <li>• Connection via safety isolating transformer.</li> <li>• Parallel connection of other actuators possible. Observe the performance data.</li> </ul>
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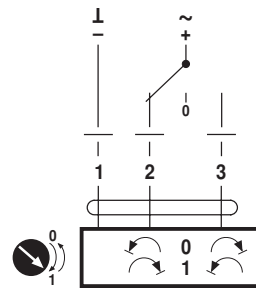
**Wiring diagrams**

AC/DC 24 V, open-close



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

AC/DC 24 V, 3-point



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

**Dimensions [mm]**

**Spindle length**

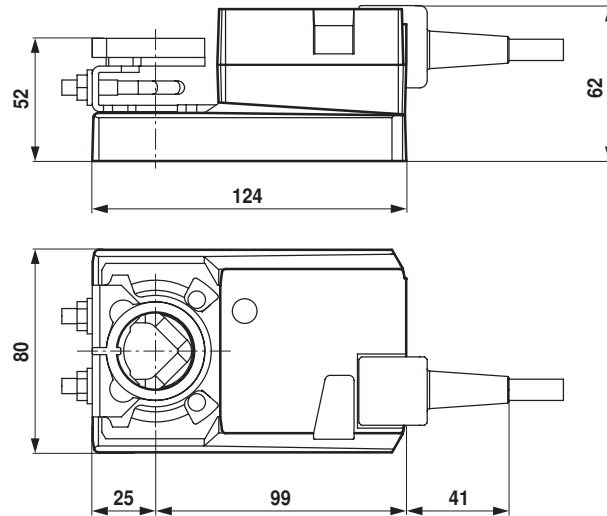
	Min. 40
	Min. 20

**Clamping range**

	8...26.7	≥8	≤26.7
	8...20	≥8	≤20

\*Option: Spindle clamp mounted below (accessories K-NA needed)

**Dimensional drawings**



## MIS-Anvisning

## RCW-2/RCWB-2

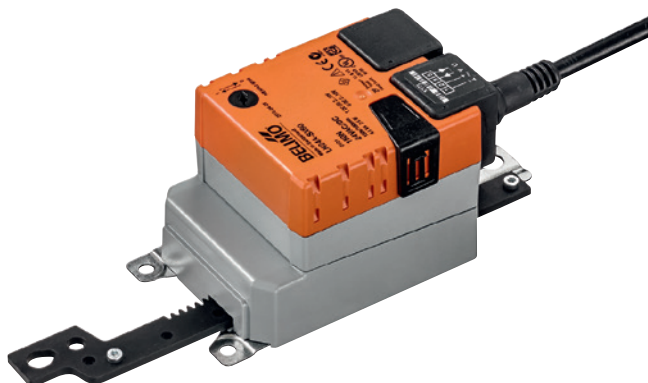


Linear actuator for adjusting dampers and slide valves in technical building installations

- Air damper size up to approx. 1 m<sup>2</sup>
- Actuating force 150 N
- Nominal voltage AC/DC 24 V
- Control Open-close, 3-point
- Length of Stroke Max. 60 mm, adjustable in 20 mm increments

## Technical data sheet

LH24A60



## Technical data

<b>Electrical data</b>	Nominal voltage	AC/DC 24 V	
	Nominal voltage frequency	50/60 Hz	
	Nominal voltage range	AC 19.2...28.8 V / DC 19.2...28.8 V	
	Power consumption in operation	1.5 W	
	Power consumption in rest position	0.5 W	
	Power consumption for wire sizing	3 VA	
	Connection supply / control	Cable 1 m, 3 x 0.75 mm <sup>2</sup>	
	Parallel operation	Yes (note the performance data)	
	<b>Functional data</b>	Actuating force motor	Min. 150 N
		Direction of motion motor	Selectable with switch 0 (extended) / 1 (retracted)
Manual override		Gear disengagement with push-button, can be locked	
Length of Stroke		Max. 60 mm, adjustable in 20 mm increments	
Stroke limitation		can be limited on both sides with mechanical end stops	
Running time motor		150 s / 100 mm	
Running time motor note		corresponds to 90 s / 60 mm	
Sound power level motor		45 dB(A)	
<b>Safety</b>		Protection class IEC/EN	III Safety extra-low voltage
		Protection class UL	UL Class 2 Supply
	Degree of protection IEC/EN	IP54	
	Degree of protection NEMA/UL	NEMA 2, UL Enclosure Type 2	
	EMC	CE according to 2004/108/EC	
	Certification IEC/EN	IEC/EN 60730-1 and IEC/EN 60730-2-14	
	Certification UL	cULus according to UL 60730-1A, UL 60730-2-14 and CAN/CSA E60730-1:02	
	Mode of operation	Type 1	
	Rated impulse voltage supply / control	0.8 kV	
	Control pollution degree	3	
<b>Weight</b>	Ambient temperature	-30...50 °C	
	Non-operating temperature	-40...80 °C	
	Ambient humidity	95% r.h., non-condensing	
	Maintenance	Maintenance-free	
	Weight	0.43 kg	

## Safety notes



- The device must not be used outside the specified field of application, especially not in aircraft or in any other airborne means of transport.
- Outdoor application: only possible in case that no (sea)water, snow, ice, insulation or aggressive gases interfere directly with the actuator and that is ensured that the ambient conditions remain at any time within the thresholds according to the data sheet.
- Only authorised specialists may carry out installation. All applicable legal or institutional installation regulations must be complied during installation.
- 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.

# MIS-Anvisning

# RCW-2/RCWB-2

LH24A60

Linear actuator, Open-close, 3-point, AC/DC 24 V, 150 N



## Safety notes

- The rotary supports and coupling pieces available as accessories must always be used if transverse 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 actuator is exposed to severely contaminated ambient air, appropriate precautions must be taken on the system side. Excessive deposits of dust, soot etc. can prevent the gear rod 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.
- To calculate the actuating force required for air dampers and slide valves, the specifications supplied by the damper manufacturers concerning the cross section, the design, the installation site and the ventilation conditions must be observed.
- If a rotary support and/or coupling piece is used, actuation force losses are to be expected.
- The device contains electrical and electronic components and must not be disposed of as household refuse. All locally valid regulations and requirements must be observed.

## Product features

<b>Simple direct mounting</b>	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 ventilating application individually on the mounting side or with the Z-KS2 coupling piece provided.
<b>Manual override</b>	Manual override with push-button possible (the gear is disengaged for as long as the button is pressed or remains locked).
<b>Adjustable stroke</b>	If a stroke limitation will be adjusted, the mechanical operating range on this side of the gear rod can be used starting with an extension length of 20 mm and then can be limited respectively in increments of 20 mm by means of mechanical end stops Z-AS2.
<b>High functional reliability</b>	The actuator is overload protected, requires no limit switches and automatically stops when the end stop is reached.

## Accessories

	Description	Type
<b>Mechanical accessories</b>	End stop set for LH	Z-AS2
	Rotary support for compensation of transverse forces	Z-DS1
	Coupling piece M6 for LH, galvanised steel	Z-KS2

## Electrical installation

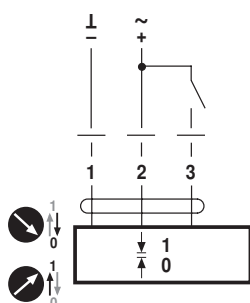


### Notes

- Connection via safety isolating transformer.
- Parallel connection of other actuators possible. Observe the performance data.

## Wiring diagrams

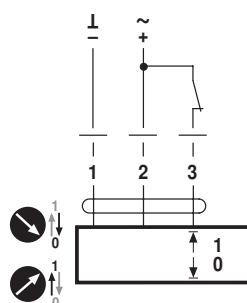
AC/DC 24 V, open-close



### Cable colours:

- 1 = black
- 2 = red
- 3 = white

Connection 3 takes priority



### Cable colours:

- 1 = black
- 2 = red
- 3 = white

## MIS-Anvisning

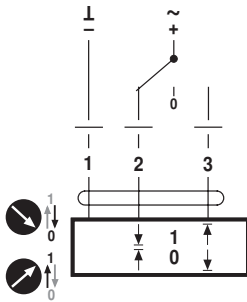
## RCW-2/RCWB-2

LH24A60

Linear actuator, Open-close, 3-point, AC/DC 24 V, 150 N

**BELIMO**<sup>®</sup>**Electrical installation**

AC/DC 24 V, 3-point

**Cable colours:**

1 = black  
2 = red  
3 = white

**Installation notes****Notes**

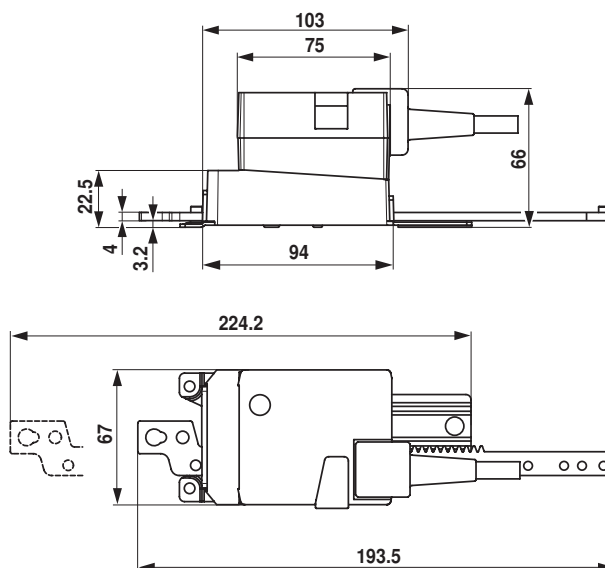
- If a rotary support and/or coupling piece is used, losses in the actuation force losses are to be expected.

**Applications without transverse force**

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).

**Applications with transverse forces**

Connect the coupling piece with the internal thread (Z-KS2) to the head of the gear rod. Screw the rotary support (Z-DS1) 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 ventilating 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.

**Dimensions [mm]****Dimensional drawings**



# MIS-Anvisning

# RCW-2/RCWB-2

## RCW montage instruktion med elektrisk motor



**20 mm hål borras i kanal där el anslutning önskas.**



**Elkabeln dras genom upp borrat hål.**



**Kabelgenomföring**



**Kabelgenomföring monteras på elkabel.**



**Kabelgenomföring monteras i kanal.**





De flesta av oss tillbringar större delen av tiden inomhus. Inomhusklimatet är avgörande för hur vi mår, hur mycket vi orkar och om vi håller oss friska.

Vi på Lindab har därför gjort till vår viktigaste uppgift att bidra till ett inomhusklimat som förbättrar människors liv. Det gör vi genom att utveckla energieffektiva ventilationslösningar och hållbara byggprodukter. Vi vill också bidra till ett bättre klimat för vår planet genom att arbeta på ett sätt som är hållbart för både människor och miljön.

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