

Damper Actuators

Spring Return NF ... series



Technical Databook



Spring return actuator	TF..	LF..	NF..	AF..	AFR..
ON/OFF	2 Nm	4 Nm	7 Nm	15Nm	15Nm
AC 24 V 50/60 Hz, DC 24 V	TF24	LF24-S	NF24**	AF24	AFR24
Auxiliary switch build-in 1 x SPDT	TF24-S	LF24-S			AFR24-S
Auxiliary switch build-in 2 x SPDT			NF24-S**	AF24-S	
AC 230 V 50/60 Hz	TF230	LF230	NF230	AF230	AFR230
Auxiliary switch build-in 1 x SPDT	TF230-S	LF230-S			AFR230-S
Auxiliary switch build-in 2 x SPDT			NF230-S	AF230-S	
3-point	TF24-3	LF24-3*			
Modulating					
AC 24 V 50/60 Hz, DC 24 V					
Control signal DC 2(0)..10V, feedback DC 2..10V	TF24-SR	LF24-SR	NF24-SR	AF24-SR	AFR24-SR
Running time -motor	<75s *	40-75 s *	~150 s	~150 s	
-spring return	<25s	~20 s	~ 60 s	~16 s	
Shaft diameter	6...12 mm	8...16 mm	10...20 mm	10...20 mm	10...20 mm
Sound power level -motor		Max. 50 dB(A)	Max. 55 dB(A)	Max. 45 dB(A)	Max. 45 dB(A)
-spring return		62 dB(A)	62 dB(A)	62 dB(A)	62 dB(A)
Electrical connection	Cable 1 m				
Direction of rotation	Selected by mounting L/R				
Angle of rotation	Max. 95°				
Mechanical limiter	YES				
Service life	>60,000 full cycles				
Position indicator	YES				
Degree of protection	IP42				IP54
EMC	CE according to 89/336/EEC				
Ambient temperature	-30°C ... +50°C				
Non-operation temperature	-40°C ... +80°C				

* LF24-3 and all -SR types are 150 s.

** NF24(-S) running time -motor 75 s, -spring return 60 s.

Note:

Using Belimo Damper actuators:

- The actuators listed in this catalogue are intended for the operation of air dampers in HVAC systems.
- The damper actuator is not allowed to be used outside the specified field of application, especially in aircraft.
- The enclosure of the actuator equipment may only be opened by the manufacturer. It contains no components which the user can replace or repair.
- 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.

Torque requirements:

- When calculating the torque required to operate dampers, it is essential to take into account all the data supplied by the damper manufacturer concerning cross sectional area, design, mounting and air flow condition.

Spring return actuators, Open/Close

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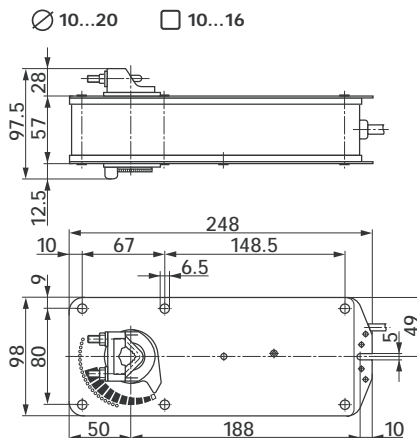


- For operation of air control dampers that perform safety function
- Torque 7 Nm
- Nominal voltage AC/DC 24 V
- 1 wire control
- Integrated auxiliary switch NF24-S

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	5 W @ running / 3 W @ holding
	Wire/transformer sizing	8 VA
	Max. peak current	5.8 A @ 5 ms
	Auxiliary switch NF24-S	2 x SPDT, 6 (3) A, AC 250 V <input type="checkbox"/>
	Switching points	10°, 85°
Functional data	Connection cable - Motor	Cable 1 m, 2x0.75mm ²
	- Auxiliary switches NF24-S	Cable 1 m, 6x0.75mm ²
	Torque - Motor	min. 7 Nm @ nominal voltage
	- Spring	min. 7 Nm
	Direction of rotation	Selectable by mounting L/R
	Angle of rotation	Max. 95° (35...100% adjustable by rotation limiter)
	Running time	Motor < 75 s, spring return < 60 s (Temp =20°C)
	Sound power level	Motor max. 55 dB(A), spring ≈ 62 dB(A)
	Position indication	Mechanical
	protection class	III (safety extra-low voltage)
Working conditions	Service life	≈ 60 000 operations
	Degree of protection	IP54
	Ambient temperature range	-30 ... +50°C
	Non-operation temperature	-40 ... +80°C
	Humidity	To EN 60335-1
	EMC	CE according to 89/336EEC,92/31/EEC,93/68/EEC
	Low Voltage Directive	CE according to 73/23/EEC
Dimensions / weight	Maintenance	Maintenance free
	Weight	3000 g

Dimensions [mm]



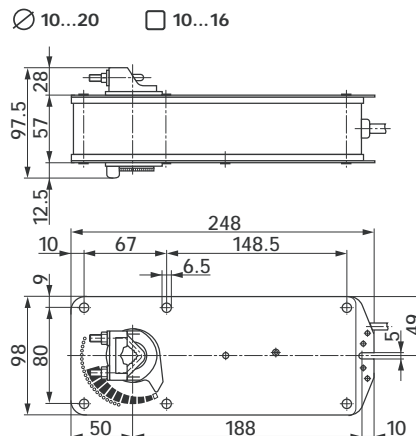
- For operation of air control dampers that perform safety function
- Torque 7 Nm
- Nominal voltage AC/DC 24 V
- Control signal DC 2(0) ... 10 V
- Position feedback DC 2 ... 10 V



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 ... 26.4 V
	Power consumption	5 W @ running / 3 W @ holding
	Wire/transformer sizing	6 VA
	Max. peak current	5.8 A @ 5 ms
	Control signal	2(0) ... 10 VDC (input impedance 100 kΩ)
	Operating range	2 ... 10 VDC (for 0...100%)
	Measurement voltage	2 ... 10 VDC @ 0.5 mA (for 0...100%)
	Connection cable	Cable 1 m, 4 x0.75 mm ²
	Synchronisation tolerance	± 5 %
Functional data	Torque - Motor - Spring	min. 7 Nm @ nominal voltage min. 7 Nm
	Direction of rotation - Motor - Spring return	selectable with L/R switch selectable by mounting L/R
	Angle of rotation	Max. 95° (35...100% adjustable by rotation limiter)
	Running time	Motor 150 s, Spring return < 60 s (Temp=20°C)
	Sound power level	Motor max. 55 dB(A), spring≈62 dB(A)
Working conditions	Position indication	Mechanical
	Service life	≈ 60 000 operations
	Protection class	III (safety extra-low voltage)
	Degree of protection	IP54
	Ambient temperature range	-30 ... +50°C
	Non-operation temperature	-40 ... +80°C
	Humidity test	To EN 60335-1
	Maintenance	Maintenance free
Dimensions / weight	EMC	CE according to 89/336/EEC,92/31/EEC,93/68/EEC
	Weight	3000 g

Dimensions [mm]



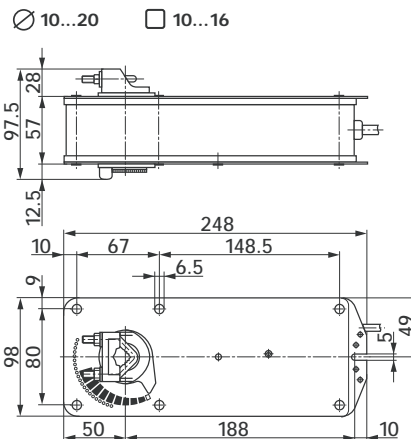


- For operation of air control dampers that perform safety function
- Torque 7 Nm
- Nominal voltage AC 230 V
- 1 wire control
- Integrated auxiliary switch (NF230-S)

Technical data

Electrical data	Nominal voltage	AC 230 V 50/60 Hz
	Nominal voltage range	AC 198 ... 264 V
	Power consumption	5 W @ running / 3 W @ holding
	Wire/transformer sizing	7 VA
	Max. peak current	5.8A @ 5 ms
	Auxiliary switch NF230-S	2 x SPDT, 6 (3) A, AC 250 V <input type="checkbox"/>
	Switching points	10°, 85°
Functional data	Connection cable - Motor	Cable 1 m, 2x0.75mm ²
	- Auxiliary switchesNF230-S	Cable 1 m, 2x0.75mm ²
	Torque - Motor	min. 7 Nm @ nominal voltage
	- Spring	min. 7 Nm
	Direction of rotation	Selectable by mounting L/R
	Angle of rotation	Max. 95° (35...100% adjustable by rotation limiter)
	Running time	Motor 150 s, Spring return < 60 s (Temp=20°C)
Working conditions	Sound power level	Motor max. 55 dB(A), spring≈62 dB(A)
	Position indication	Mechanical
	Service life	≈ 60 000 operations
	Degree of protection	IP54
	Protection class	II (safety extra-low voltage)
	Ambient temperature range	-30 ... +50°C
	Non-operation temperature	-40 ... +80°C
Dimensions / weight	Humidity test	To EN 60335-1
	EMC	CE according to 89/336EEC,92/31/EEC,93/68/EEC
	Low Voltage Directice	CE according to 73/23/EEC
	Maintenance	Maintenance free
	Weight	3000 g

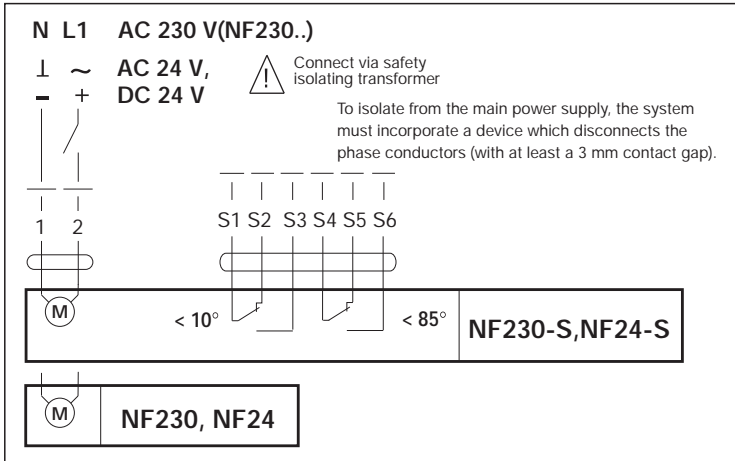
Dimensions [mm]



Wiring diagram: NF..

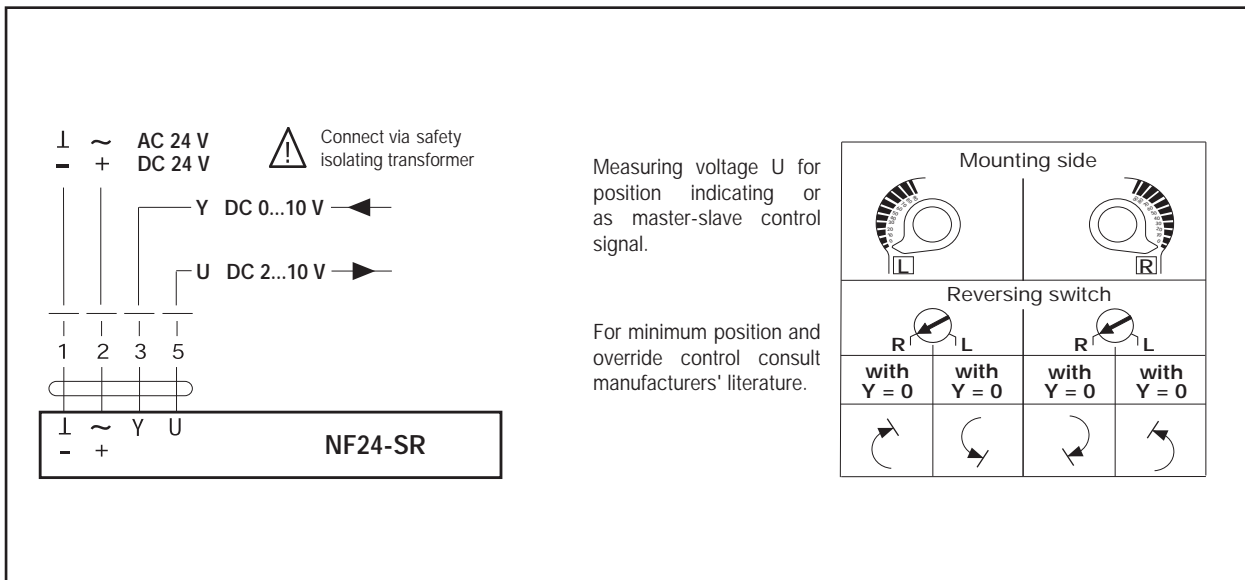
Notes:

- Parallel connection of several actuators is possible.
- Power consumption must be observed.



Notes:

- Connection via safety isolating transformer!
- Parallel connection of several actuator is possible.
- Power consumption must be observed.



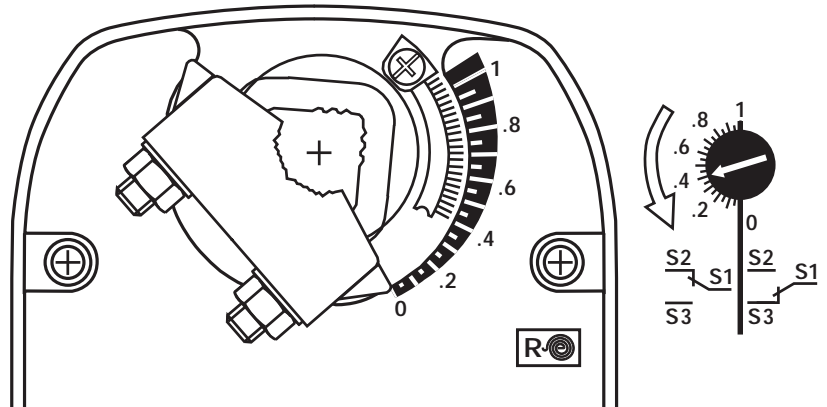
Auxiliary switch adjustment for Spring Return actuators

LF..-S (Mounting side R)

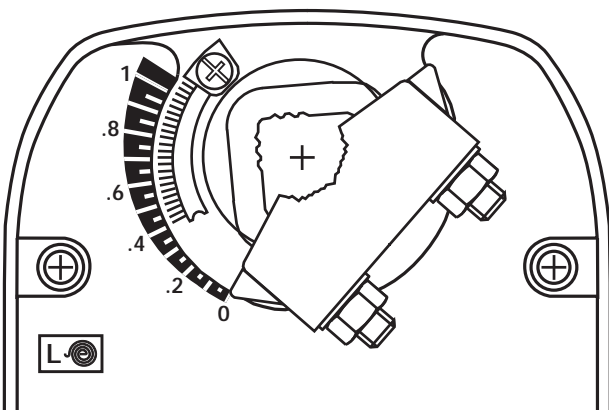
Starting point: Actuator in safe position

Procedure

- Turn the knob of the auxiliary switch until the tip of the arrow is pointing to the required switching position (see right).
Example: Switching point setting = .4 corresponds to 40% angle of rotation.
- When the actuator runs to the operating position (ccw ↺), the switch knob will also rotate counter-clockwise (ccw ↺) and the auxiliary switch will operate as the tip of the arrow passes the scale zero (S1-S3 linked).



LF..-S (Mounting side L)



Starting point: Actuator in safe position

Procedure

- Turn the knob of the auxiliary switch until the tip of the arrow is pointing to the required switching position (see left).
Example: Switching point setting = .4 corresponds to 40% angle of rotation.
- When the actuator runs to the operating position (cw ↻), the switch knob will also rotate clockwise (cw ↻) and the auxiliary switch will operate as the tip of the arrow passes the scale zero (S1-S3 linked).

Innovation, Quality and Consultancy: A partnership for motorizing HVAC actuators



www.belimo.com

Belimo regional head offices

EU BELIMO Automation AG
Brunnenbachstrasse 1
8340 Hinwil, Switzerland
Tel: + 41 43 843 61 11
Fax: + 41 43 843 62 68
E-Mail: info@belimo.ch

AP BELIMO Actuators (Shanghai) Trading Ltd.
No.479 Chun Dong Road, Building C-2, Xin Zhuang Industry Park
Shanghai 201108, P.R.China
Tel: + 86 21 5483 2929
Fax: + 86 21 5483 2930
www.belimo.com

US BELIMO Aircontrols (USA), Inc.
43 Old Ridgebury Road
Danbury, CT 06813-2928, USA
Tel: + 800 543-9039 / 203 791-9915
Fax: + 800 228-8283 / 203 791-9919

93010-00069

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Or contact your nearest Sales Representative