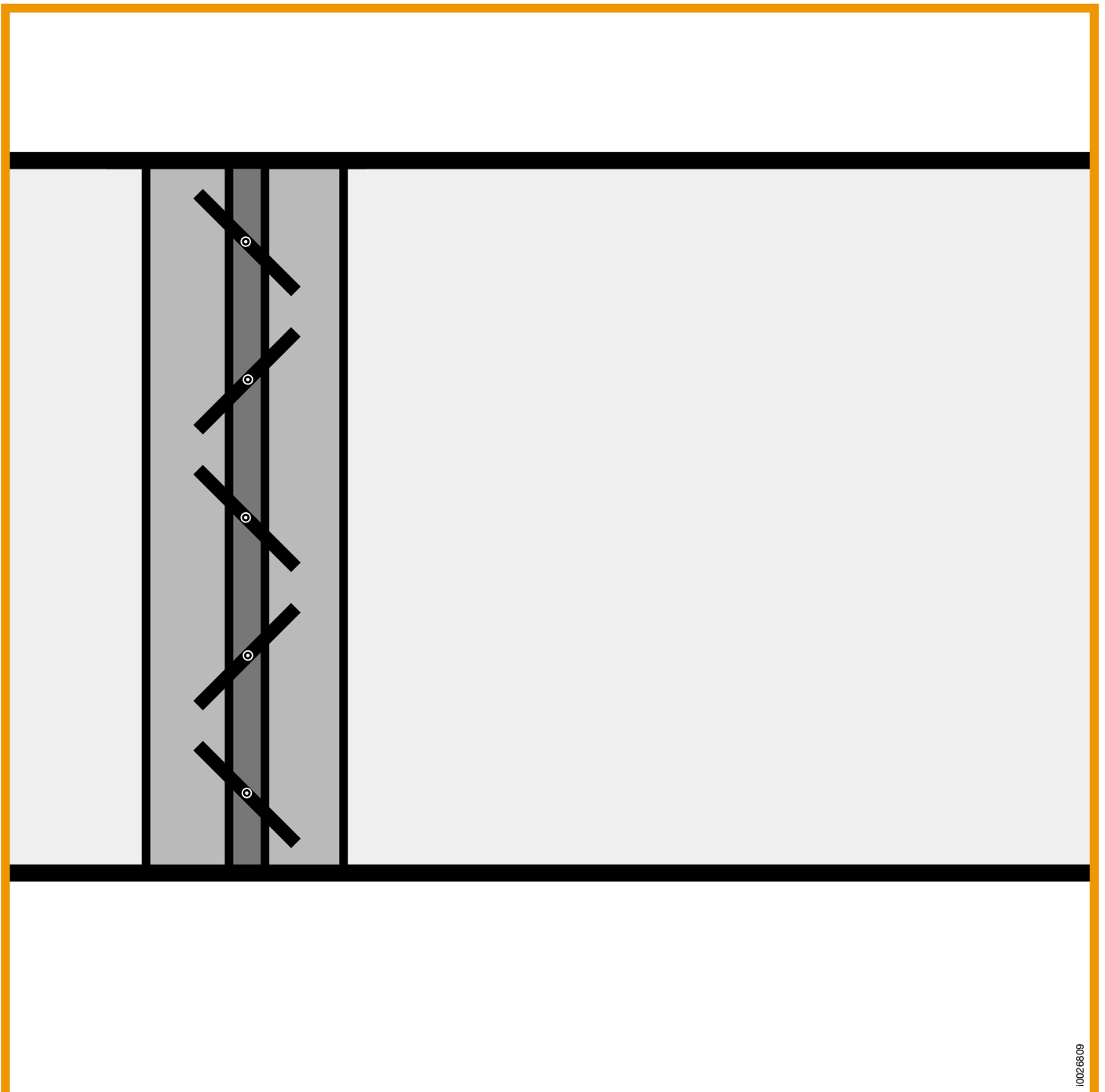


2. LM-5










Product Information

Damper actuators

LM



The complete range of damper actuators for general use in HVAC systems

Type	LM	NM	SM	AM	GM	LF	AF(R)
							
Torque	4 Nm	8 Nm	15 Nm	18 Nm	30 Nm	4 Nm	15 Nm
Spring return function	-	-	-	-	-		
For dampers up to approx.	0.8 m ²	1.5 m ²	3 m ²	3.6 m ²	6 m ²	0.8 m ²	3 m ²

10094803

For more information, please contact your Belimo Representative or order any brochures you need by fax.

Fax to: **BELIMO** (address overleaf)

Please send us product brochures on the following damper actuators:

NM... SM... AM... GM... LF... AF... AFR... Electrical accessories

Please send also information on:

- Motorized fire and smoke dampers
- Variable air-volume control (VAV-Control)
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- Linear-motion actuators and valves

Please call us back

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Selection table

		LM24	LM24-S	LM230	LM230-S	LM24-SR
Torque	4 Nm					
Nominal voltage	AC 24 V	•	•			•
	DC 24 V	•	•			•
	AC 230 V				•	•
Running time	80...110 s	•	•	•	•	•
Control	Open/Close	•	•	•	•	
	Modulating	•	•			•
Direction of rotation reversible (right/left)		•	•	•	•	•
Manual operation by pushbutton		•	•	•	•	•
Auxiliary switch potential-free			•		•	
Mechanical angle of rotation limiting		•	•	•	•	
Electronic angle of rotation limiting						•
Continuous position feedback						•
Damper rotation with universal spindle clamp		•	•	•	•	•

Actuators with damper rotation for square form-fit spindles (8 mm), actuators with running time (25...35 s), 60 mm linear adapter and actuators conforming to US standards on request.

Note

Using BELIMO damper actuators

The actuators listed in this catalogue are intended for the operation of air dampers in HVAC systems.

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 conditions.

Damper actuators, Open/Close

LM24	4
LM24-S	4
LM230	5
LM230-S	5
Mounting instructions	6
Adjusting the auxiliary switch	7

Damper actuator, modulating

LM24-SR	8
Mounting instructions	9
Control and monitoring functions	10



p0001707

Dampers up to approx. 0.8 m²
Open/Close actuator
(AC/DC 24 V)
Single-wire or 2-wire control

Application

The type LM24(-S) is intended for the operation of air control dampers in ventilation and air-conditioning systems.

Mode of operation

Open/Close control by single-wire or 2-wire system.

Product features

Simple direct mounting on the damper spindle by universal spindle clamp. An antirotation device is supplied to prevent unwanted rotation of the whole unit.

Manual operation by self-resetting pushbutton when necessary (the gearing is disengaged while the pushbutton is held depressed).

Adjustable angle of rotation with mechanical stops.

High functional reliability

The actuator is overload-proof, needs no limit switches and halts automatically at the end stops.

Flexible signalling 0...100%, with adjustable auxiliary switch (LM24-S only).

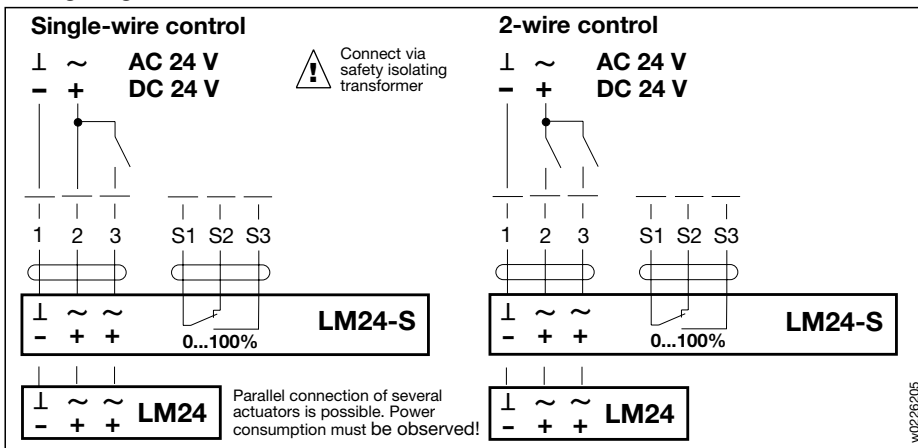
Mounting instructions, page 6

Adjusting auxiliary switch LM24-S, page 7.

Important

Read the notes about the use and torque requirements of the damper actuators on page 2.

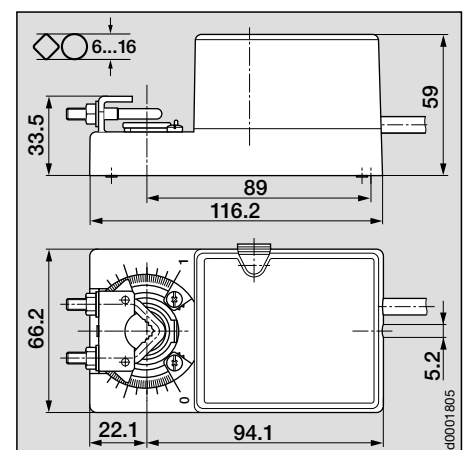
Wiring diagram



w0226205

Technical data	LM24, LM24-S
Nominal voltage	AC 24 V 50/60 Hz, DC 24 V
Nominal voltage range	AC/DC 19.2...28.8 V
For wire sizing	3 VA
Power consumption	2 W
Connecting cable	- motor 1 m long, 3 × 0.75 mm ² - auxiliary switch (LM24-S) 1 m long, 3 × 0.75 mm ²
Auxiliary switch (LM24-S)	1 × SPDT 5(2.5) A, AC 250 V <input type="checkbox"/> (adjustable 0...100% ↕)
Direction of rotation	selected with L/R switch
Manual operation	Pushbutton, self-resetting
Torque	min. 4 Nm (at rated voltage)
Angle of rotation	max. 95° (adjustable by mechanical stops)
Running time	80...110 s (0...4 Nm)
Sound power level	max. 35 dB(A)
Position indication	mechanical
Protection class	⚡ (safety low voltage)
Degree of protection	IP 54 (bottom cable entry)
Ambient temperature range	- 30... + 50 °C
Non-operating temperature	- 40... + 80 °C
Humidity test	to EN 60335-1
EMC	CE according to 89/336/EEC, 92/31/EEC, 93/68/EEC
Low Voltage Directive	CE according to 73/23/EEC
Maintenance	maintenance-free
Weight	650 g

Dimensions



d0001805



Dampers up to approx. 0.8 m²
Open/Close actuator (AC 230 V)
Control by single-pole contact (single-wire control)

Application
 The type LM230(-S) is intended for the operation of air control dampers in ventilation and air-conditioning systems.

Mode of operation
 Open/Close control by single-wire system.

Product features

Simple direct mounting on the damper spindle by universal spindle clamp. An antirotation device is supplied to prevent unwanted rotation of the whole unit.

Manual operation by self-resetting pushbutton when necessary (the gearing is disengaged while the pushbutton is held depressed).

Adjustable angle of rotation with mechanical stops.

High functional reliability
 The actuator is overload-proof, needs no limit switches and halts automatically at the end stops.

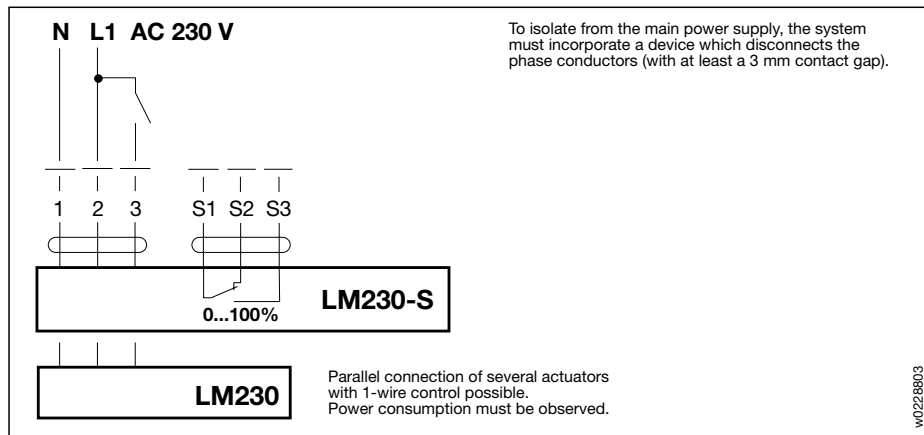
Flexible signalling 0...100%, with adjustable auxiliary switch (LM230-S only).

Mounting instructions, page 6

Adjusting auxiliary switch LM230-S, page 7.

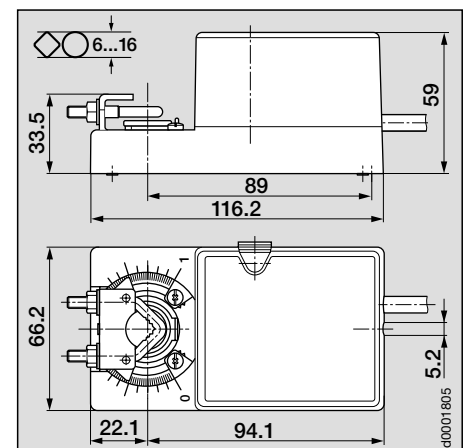
Important
 Read the notes about the use and torque requirements of the damper actuators on page 2.

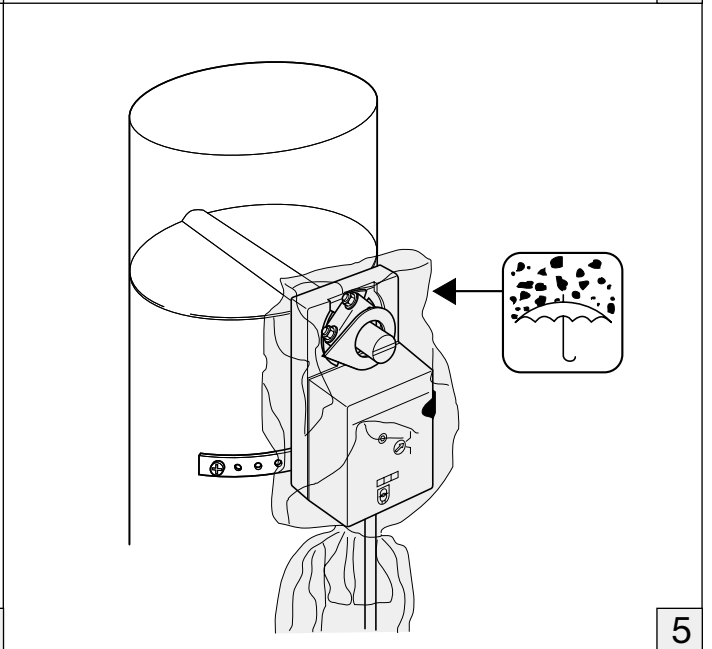
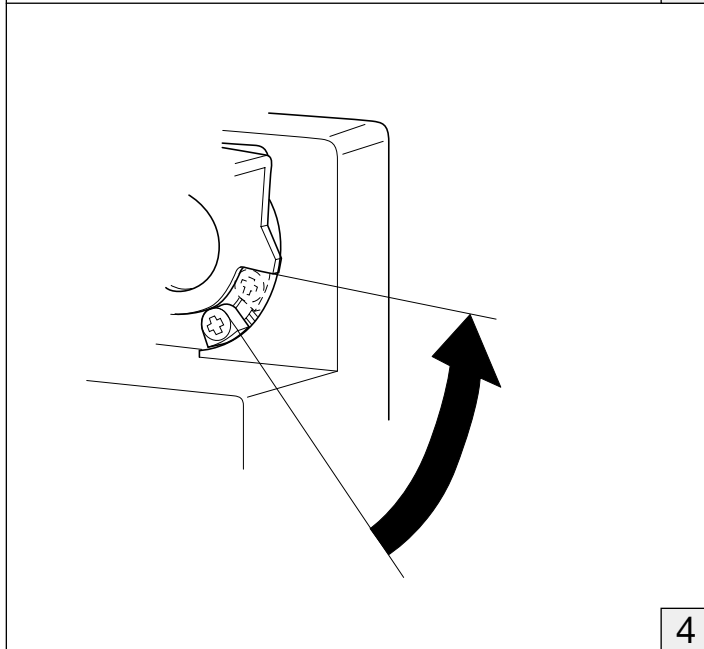
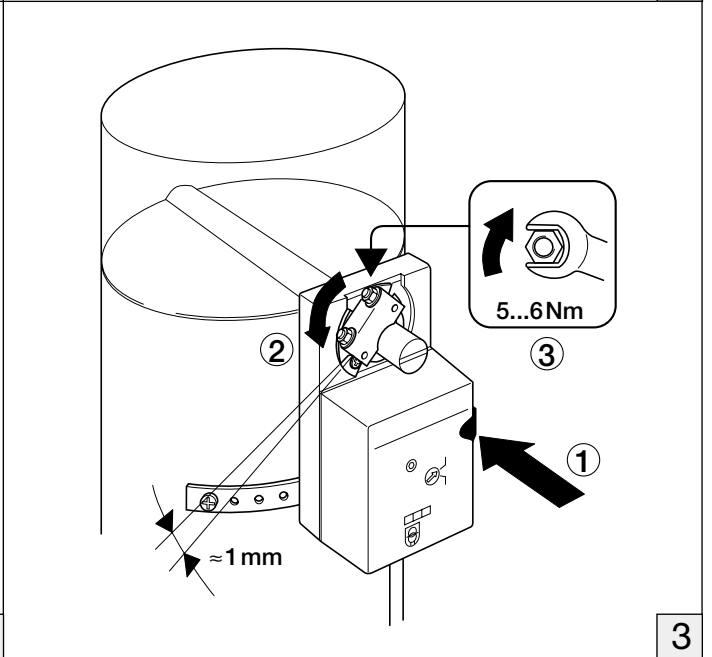
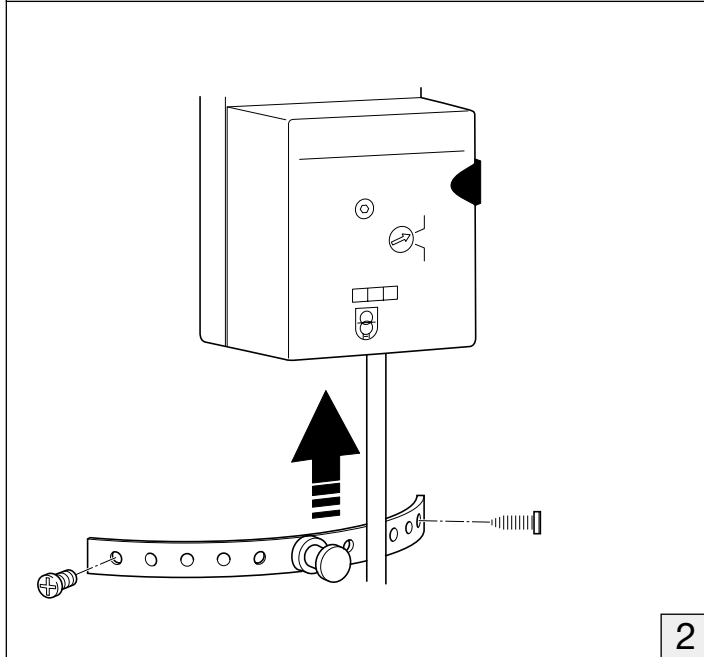
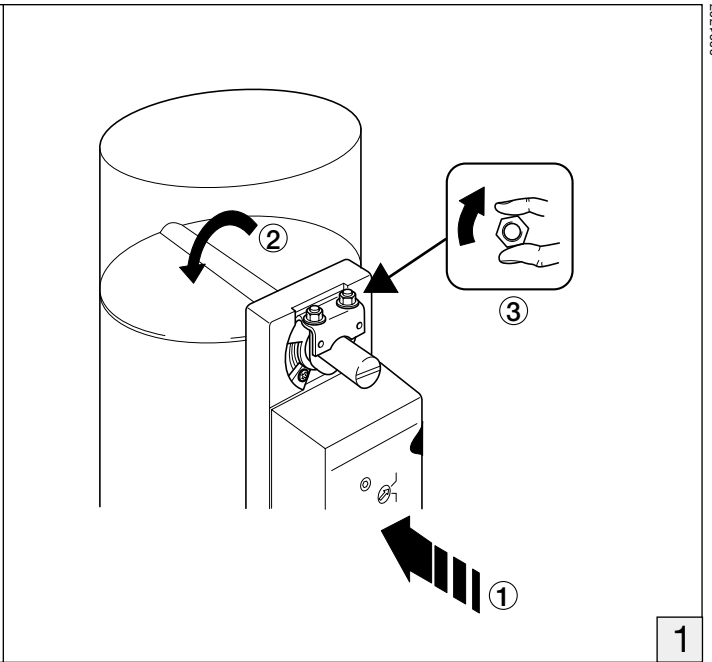
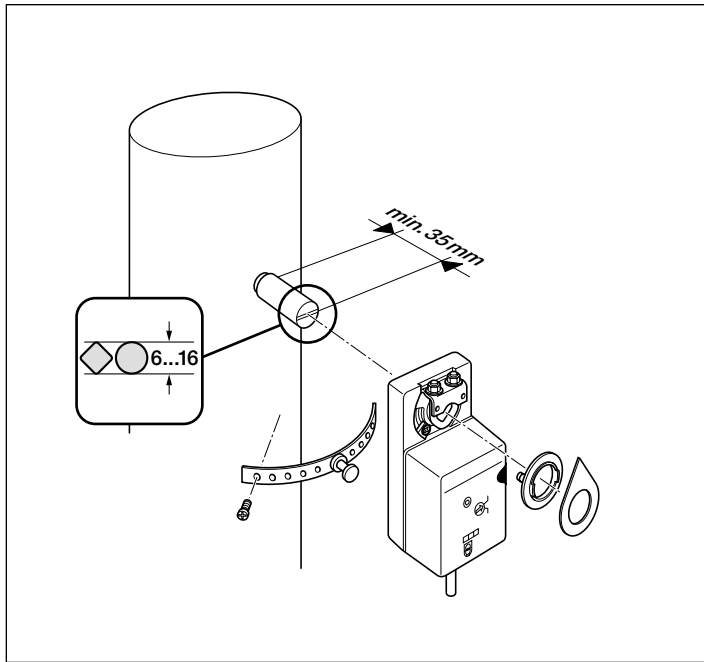
Wiring diagram



Technical data	LM230, LM230-S
Nominal voltage	AC 230 V 50/60 Hz
Nominal voltage range	AC 198...264 V
For wiring sizing	12 VA
Power consumption	1 W
Connecting cable	- motor 1 m long, 3 × 0.75 mm ² - auxiliary switch (LM230-S) 1 m long, 3 × 0.75 mm ²
Auxiliary switch (LM230-S)	1 × SPDT 5(2,5) A, AC 250 V <input type="checkbox"/>
- Switching point	adjustable 0...100% ↵
Direction of rotation	selected with L/R switch
Manual operation	pushbutton, self-resetting
Torque	min. 4 Nm (at rated voltage)
Angle of rotation	max. 95° (adjustable by mechanical stops)
Running time	80... 110 s (0... 4 Nm)
Sound power level	max. 35 dB(A)
Position indication	mechanical
Protection class	II (all insulated)
Degree of protection	IP 54 (bottom cable entry)
Ambient temperature range	- 30... + 50 °C
Non-operating temperature	- 40... + 80 °C
Humidity test	to EN 60335-1
EMC Low Voltage Directive	CE according to 89/336/EEC, 92/31/EEC, 93/68/EEC CE according to 73/23/EEC
Maintenance	maintenance-free
Weight	650 g

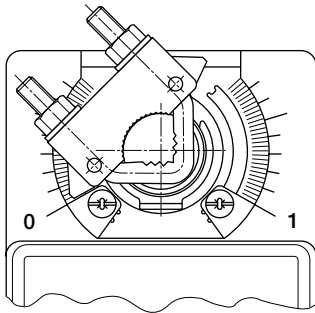
Dimensions



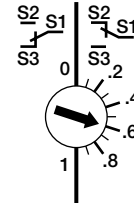


a) Referring to end stop 0

Option 1: Actuator at left-hand end stop

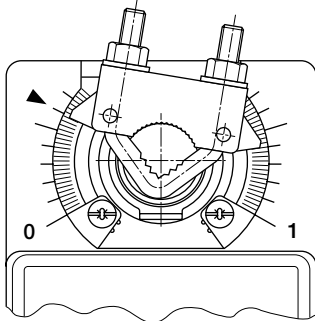


Procedure: – Turn the scale knob of the auxiliary switch clockwise (cw) from 0 until the tip of the arrow is pointing to the required switching position. The switch in the example is set to .6 (2 scale divisions cw from 0 correspond to 60% rotation).

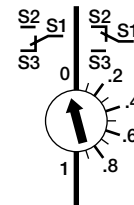


– Now, when the actuator rotates clockwise, the switch will operate at 60% angle of rotation. (Connection S1 to S3 made)

Option 2: Actuator at switching position



Procedure: – Depress the manual-operation pushbutton and move the actuator to the position where the auxiliary switch is needed to operate (e.g. at 60% angle of rotation).



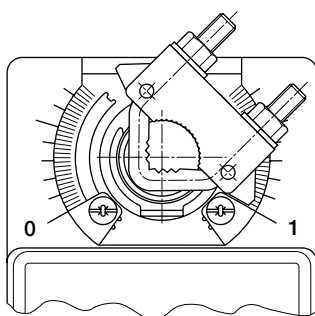
– Turn the scale knob of the auxiliary switch anticlockwise (ccw) until the tip of the arrow is just past the scale zero. (Connection S1 to S3 made and switching position set for 60% angle of rotation)

m0002707

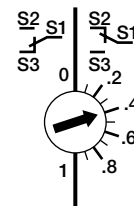
m0003707

b) Referring to end stop 1

Option 1: Actuator at right-hand end stop

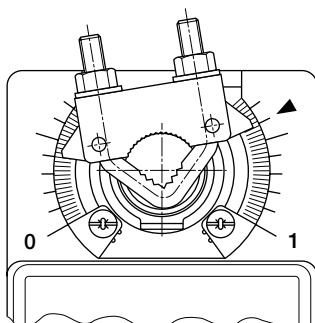


Procedure: – Turn the scale knob of the auxiliary switch anticlockwise (ccw) from 1 until the tip of the arrow is pointing to the required switching position. The switch in the example is set to .4 (6 scale divisions ccw from 1 correspond to 60% rotation).

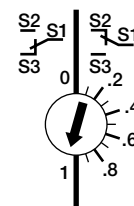


– Now, when the actuator rotates anticlockwise, the switch will operate at 60% angle of rotation. (Connection S1 to S3 made)

Option 2: Actuator at switching position



Procedure: – Depress the manual-operation pushbutton and move the actuator to the position where the auxiliary switch is needed to operate (e.g. at 60% angle of rotation).



– Turn the scale knob of the auxiliary switch clockwise until the tip of the arrow is just past the 1 on the scale. (Connection S1 to S3 made and switching position set for 60% angle of rotation)

m0004707

m0005707



Dampers up to approx. 0.8 m²

Modulating damper actuator (AC/DC 24 V)

Control DC 0...10 V and position feedback DC 2...10 V

Application

The type LM24-SR is intended for the operation of air control dampers in ventilation and air-conditioning systems.

Mode of operation

The actuator is controlled by a standard DC 0...10 V signal and runs to whatever position is specified by the signal. The purpose of measuring voltage U is to provide 0...100% electrical indication of damper position and to act as a master-slave control signal for other actuators.

Product features

Simple direct mounting on the damper spindle by universal spindle clamp. An antirotation device is supplied to prevent unwanted rotation of the whole unit.

Steplessly adjustable angle of rotation by integral potentiometer. Range matching of the working range and measuring signal U is performed automatically by the actuator.

Manual operation by self-resetting pushbutton when necessary (the gearing is disengaged while the pushbutton is held depressed).

High functional reliability

The actuator is overload-proof, needs no limit switches and halts automatically at the end stops.

Electrical accessories (see Doc. 2.Z.-)

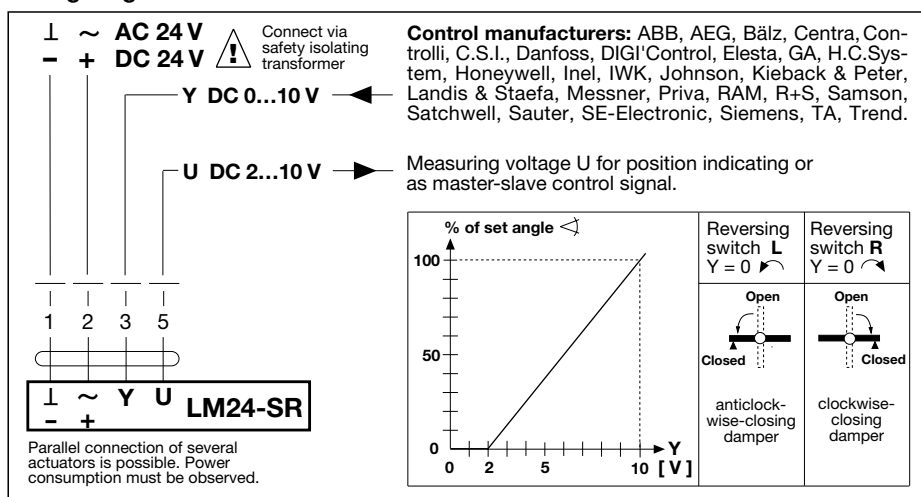
SG..24 Positioners
ZAD24 Digital position indicator

Control and monitoring functions, page 10

Important

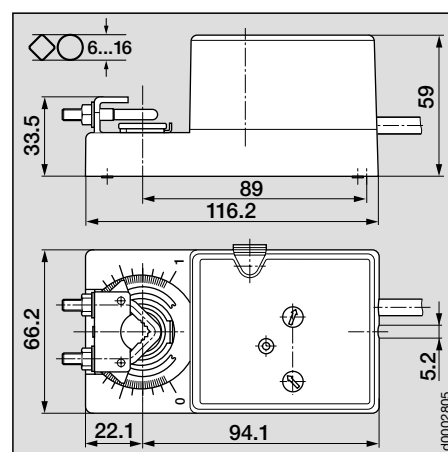
Read the notes about the use and torque requirements of the damper actuators on page 2.

Wiring diagram

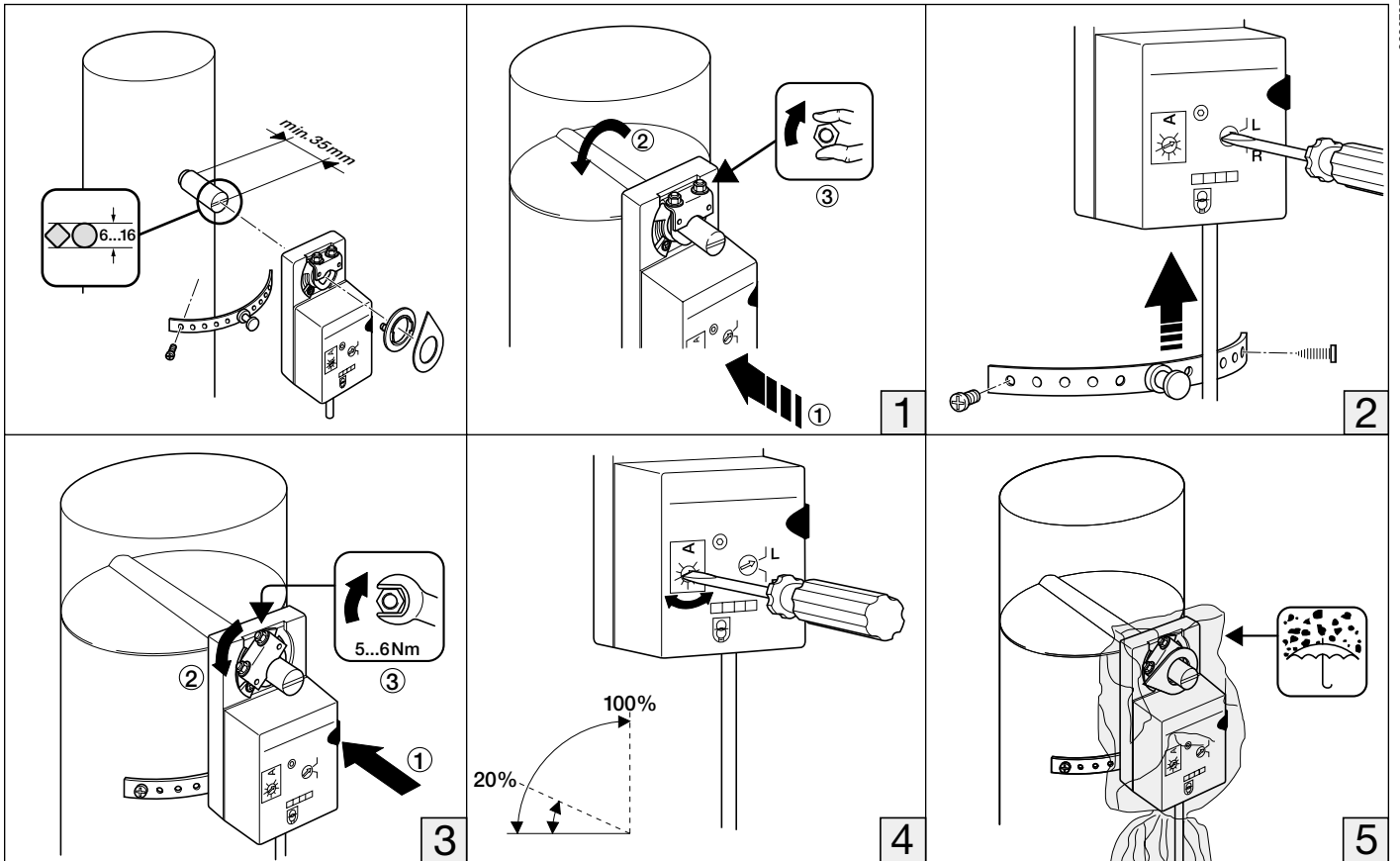


Technical data	LM24-SR
Nominal voltage	AC 24 V 50/60 Hz, DC 24 V
Nominal voltage range	AC 19.2...28.8 V, DC 21.6...28.8 V
For wire sizing	4 VA
Power consumption	2 W
Connecting cable	1 m long, 4×0.75 mm ²
Control signal Y	DC 0...10 V @ input resistance = 100 kΩ
Operating range	DC 2...10 V (for set angle of rotation)
Measuring voltage U	DC 2...10 V @ ≤ 0.5 mA (for set angle of rotation)
Synchronism tolerance	± 5%
Direction of rotation	selected with L/R switch
(at Y = 0 V)	at switch position L ↶ resp. R ↷
Manual operating	Pushbutton, self resetting
Torque	min. 4 Nm (at rated voltage)
Angle of rotation	max. 95° (adjustable with potentiometer 20...100%)
Running time	80...110 s for $\leq 95^\circ$ (0...4 Nm)
Sound power level	max. 35 dB (A)
Position indication	mechanical
Protection class	⊠ (safety low voltage)
Degree of protection	IP 54 (bottom cable entry)
Ambient temperature range	- 30... + 50 °C
Non-operating temperature	- 40... + 80 °C
Humidity test	to EN 60335-1
EMC	CE according to 89/336/EEC, 92/31/EEC, 93/68/EEC
Maintenance	maintenance-free
Weight	620 g

Dimensions

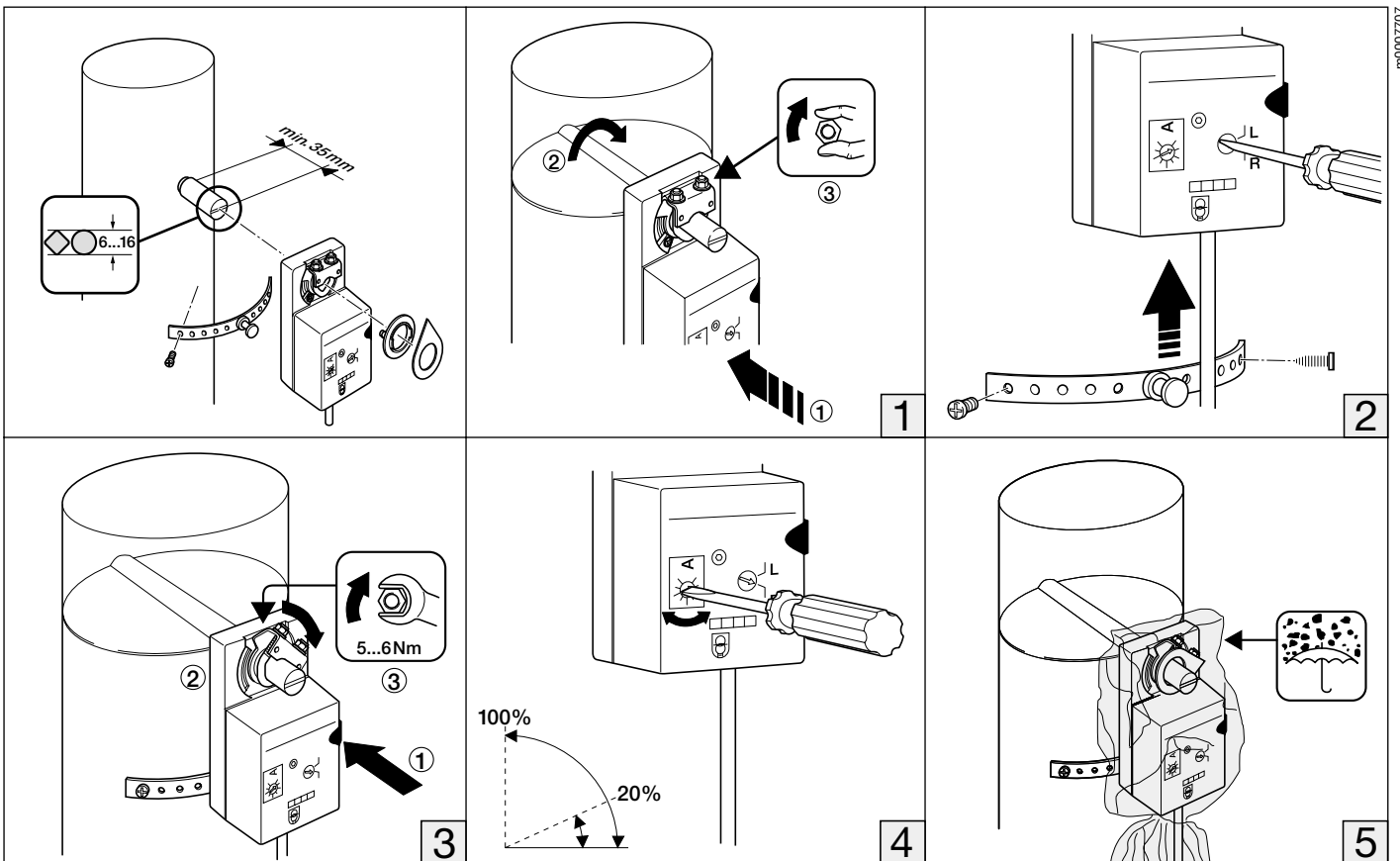


Mounting on anticlockwise-closing damper



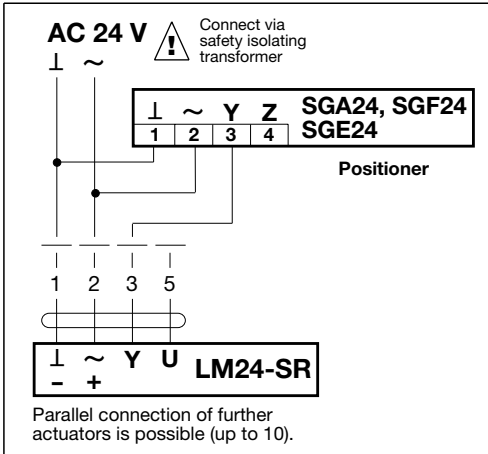
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Mounting on clockwise-closing damper

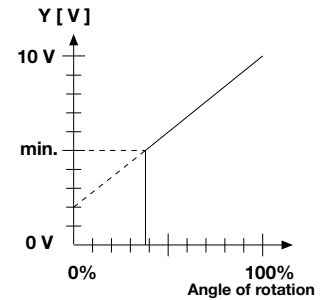
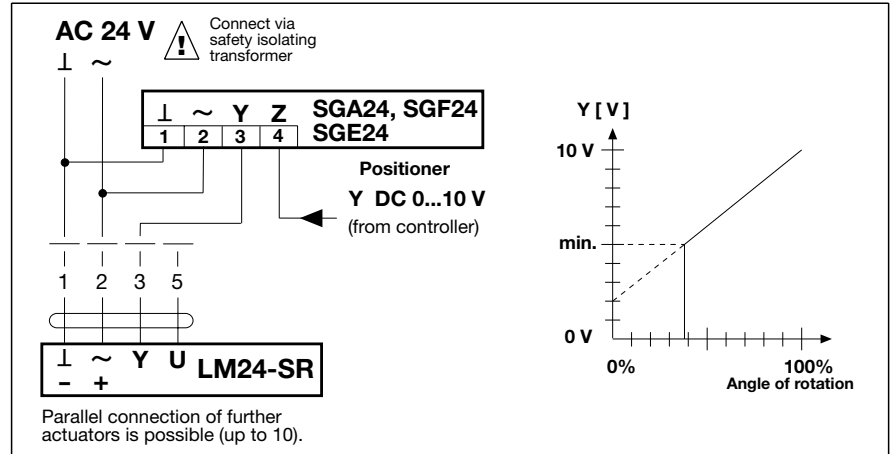


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Remote control 0...100%

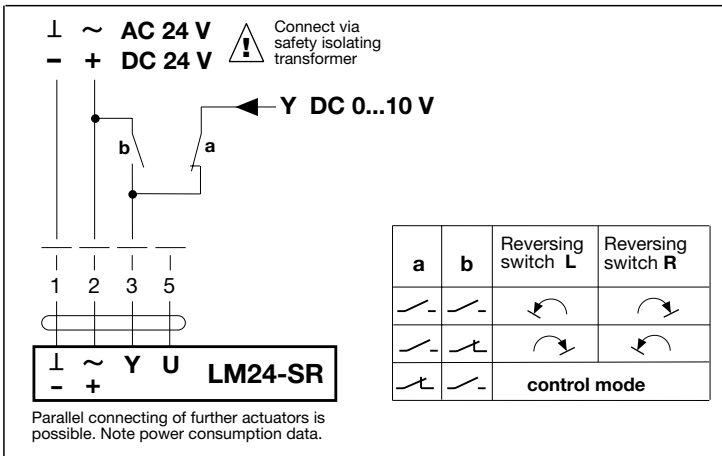


Minimum position

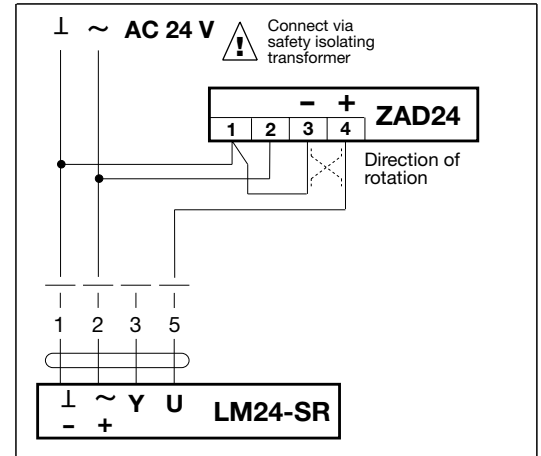


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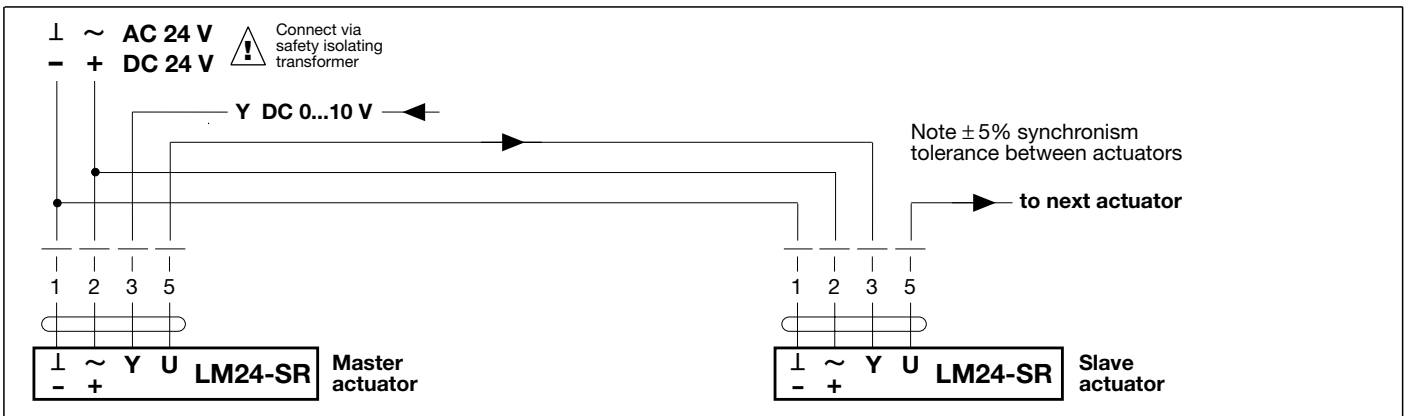
Override control



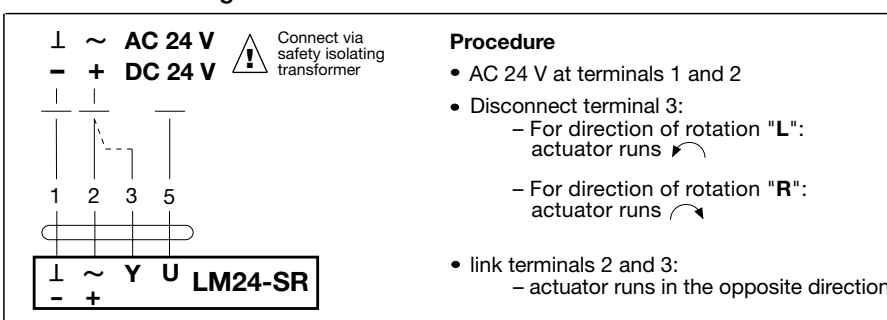
Position indication

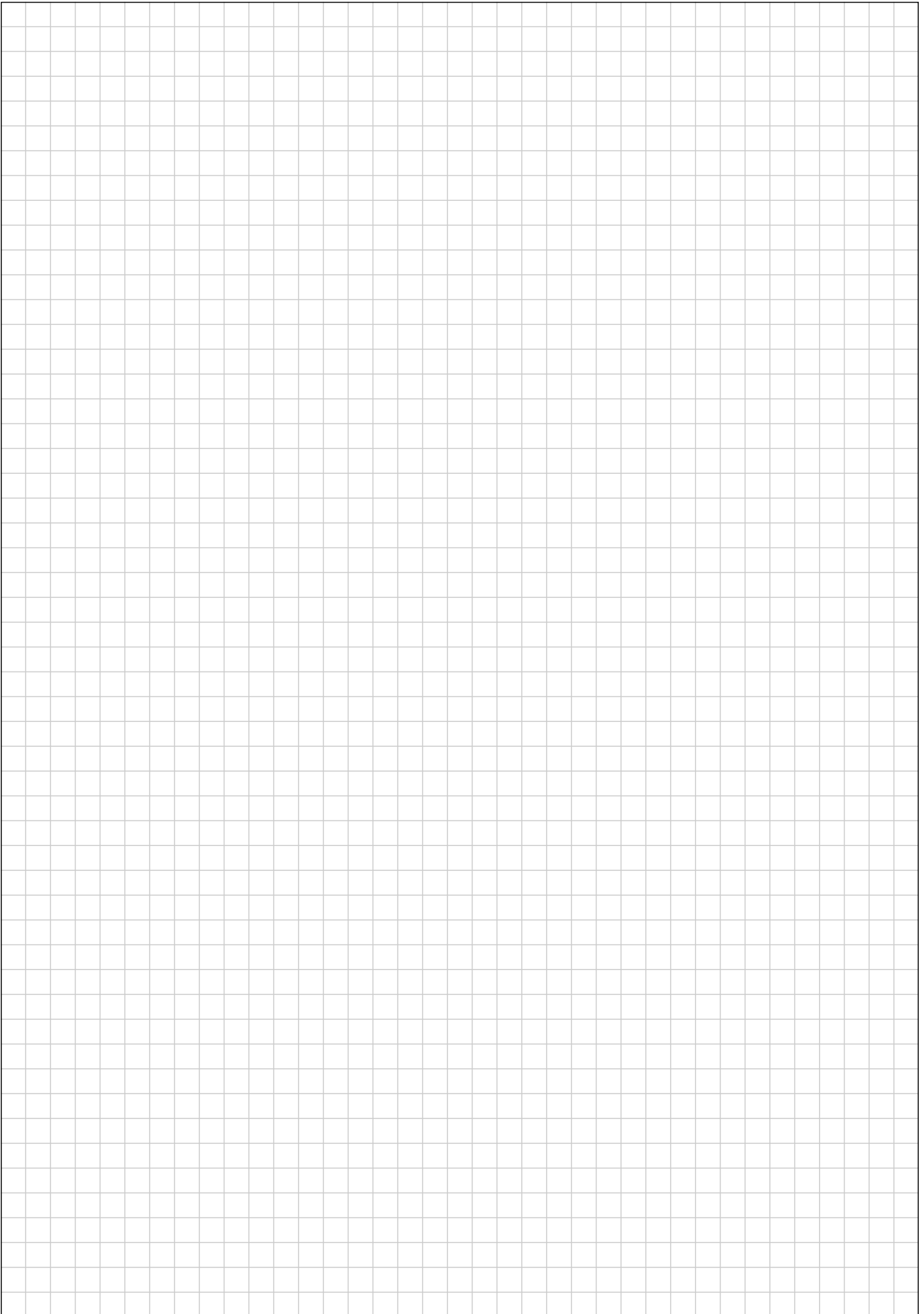


Master-slave control (depending on position)



Function monitoring





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