BELIMO

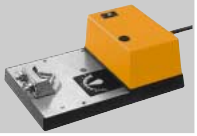
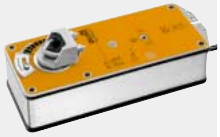
Actuators for heating,
ventilation, air-conditioning

2. SM-4
Product Information
Damper actuators

SM

I0028811

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 m²	1.5 m²	3 m²	3.6 m²	6 m²	0.8 m²	3 m²

i0099805

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:

☐ LM... ☐ NM... ☐ AM... ☐ GM... ☐ LF... ☐ AF... ☐ AFR... ☐ Electrical accessories

Please also send information on:

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

☐ Please call us back

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Selection table

			SM24	SM220	SM240	SM230	SM24-SR	SM24-SRP	SM24-SR90	SM24-SRS	SM220-SR
Torque		15 Nm									
Nominal voltage		AC 24 V		●				●	●	●	●
		DC 24 V		●							
		AC 230 V			●	●	●				●
Running time		≈ 80 s			●	●					
		80...150 s					●				
		90...150 s		●							
		100...200 s						●	●	●	●
Control	Open/Close	Single-wire					●				
		2-wire		●	●	●					
	Modulating	DC 0...10 V or 0...20 V phasecut						●			
		DC 0...10 V									●
		Controller L&G Polygyr DC 0...10 V							●		
		Potentiometer 135...140 Ω								●	
		Positioner Belimo SGA or SGF									●
Direction of rotation reversible (right/left)				●	●	●	●	●	●	●	●
Manual operation by pushbutton				●	●	●	●	●	●	●	●
Continuous position feedback								●	●		
Adjustable electrical working range											●

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.

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SM24 Damper actuator 15 Nm

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Dampers up to approx. 3 m²

Open/Close actuator (AC/DC 24 V)

2-wire control

Improved functional safety
The damper actuator has no limit switches and is overload-proof. It stops automatically when it reaches the damper or actuator end stop.

Easy functional check
A functional check of damper operation is simplicity itself: the gearing can be disengaged by simply pressing a pushbutton on top of the case. While the pushbutton remains depressed, the damper can be operated by hand.

Simple installation
The damper actuator is fitted with a universal spindle clamp for quick and easy mounting directly on the damper spindle. The actuator is supplied with an anti-rotation strap for fixing it in position.

Electrical accessories

S1, S2	Auxiliary switches, page 13
SZS	Mid-position switch, page 14
P…	Feedback potentiometer, page 15

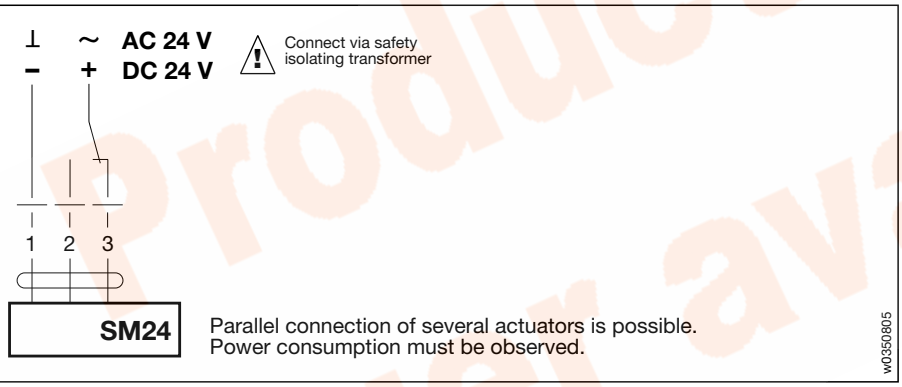
Mechanical accessories

ZG-SM2	Damper linkage kit, page 17
ZDB	Limit stop, page 17

Mounting instructions, page 18

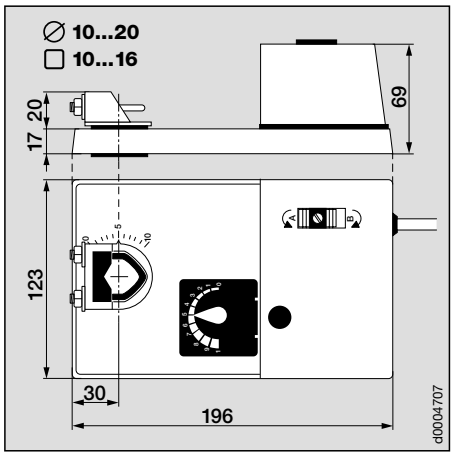
Important
Read the notes about the use and torque requirements of the damper actuators on page 3.

Wiring diagram



Technical data	SM24	
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
For wire sizing	4 VA	
Power consumption	1.8 W	
Connecting cable	0.9 m, 3×0.75 mm²	
Direction of rotation	reversible with switch A/B	
Torque at rated voltage	min. 15 Nm	
Angle of rotation	mechanically limited to 95°	
Running time	90…150 s (0…15 Nm)	
Sound power level	max. 45 dB (A)	
Position indication	0…10 (0 = stop ↶) and reversible indicator	
Protection class	(safety extra-low voltage)	
Degree of protection	IP 54 (bottom cable entry)	
Ambient temp. range Non-operating temp. Humidity test	– 30… + 50 °C – 40… + 80 °C to EN 60335-1	
EMC	CE according to 89/336/EEC, 92/31/EEC, 93/68/EEC	
Maintenance	maintenance free	
Weight	1400 g	

Dimensions



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Dampers up to approx. 3 m²

Open/Close actuator (AC 230 V)

2-wire control

Improved functional safety
The damper actuator has no limit switches and is overload-proof. It stops automatically when it reaches the damper or actuator end stop.

Easy functional check
A functional check of damper operation is simplicity itself: the gearing can be disengaged by simply pressing a pushbutton on top of the case. While the pushbutton remains depressed, the damper can be operated by hand.

Simple installation
The damper actuator is fitted with a universal spindle clamp for quick and easy mounting directly on the damper spindle. The actuator is supplied with an anti-rotation strap for fixing it in position.

Electrical accessories

S1, S2	Auxiliary switches, page 13
SZS	Mid-position switch, page 14
P…	Feedback potentiometer, page 15

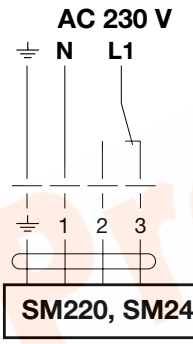
Mechanical accessories

ZG-SM2	Damper linkage kit, page 17
ZDB	Limit stop, page 17

Mounting instructions, page 18

Important
Read the notes about the use and torque requirements of the damper actuators on page 3.

Wiring diagram



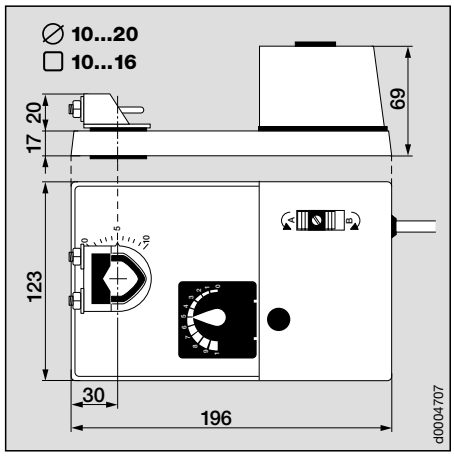
To isolate from the main power supply, the system must incorporate a device which disconnects the phase conductors (with at least a 3 mm contact gap).

Parallel connection of several actuators is possible (up to 20).

w0351805

Technical data	SM220, SM240
Nominal voltage	AC 230 V 50/60 Hz
Nominal voltage range	AC 198…264 V
For wire sizing	13 VA @ 50 Hz, 14 VA @ 60 Hz
Power consumption	13 W @ 50 Hz, 14 W @ 60 Hz
Connecting cable	0.9 m, 4×0.75 mm²
Direction of rotation	reversible with switch A/B
Torque at rated voltage	min. 15 Nm @ 50 Hz min. 10 Nm @ 60 Hz
Angle of rotation	mechanically limited to 95°
Running time	≈ 80 s
Sound power level	max. 45 dB (A)
Position indication	0…10 (0 = stop ↶) and reversible indicator
Protection class	I (with PE conductor)
Degree of protection	IP 54 (bottom cable entry)
Ambient temp. range Non-operating temp. Humidity test	– 30… + 50 °C – 40… + 80 °C 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	1600 g

Dimensions



SM230 Damper actuator 15 Nm

BELIMO

Dampers up to approx. 3 m²

Open/Close actuator (AC 230 V)

Control by single-pole contact (single-wire control)

Improved functional safety
The damper actuator has no limit switches and is overload-proof. It stops automatically when it reaches the damper or actuator end stop.

Easy functional check
A functional check of damper operation is simplicity itself: the gearing can be disengaged by simply pressing a pushbutton on top of the case. While the pushbutton remains depressed, the damper can be operated by hand.

Simple installation
The damper actuator is fitted with a universal spindle clamp for quick and easy mounting directly on the damper spindle. The actuator is supplied with an anti-rotation strap for fixing it in position.

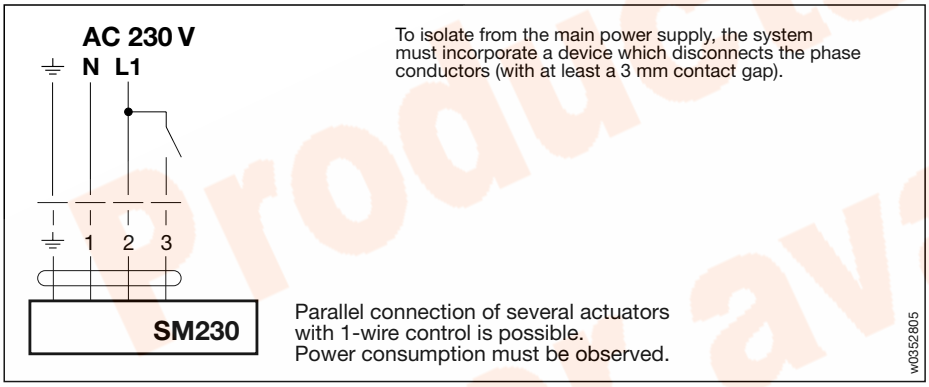
Electrical accessories
S1, S2 Auxiliary switches, page 13
P… Feedback potentiometer, page 15

Mechanical accessories
ZG-SM2 Damper linkage kit, page 17
ZDB Limit stop, page 17

Mounting instructions, page 18

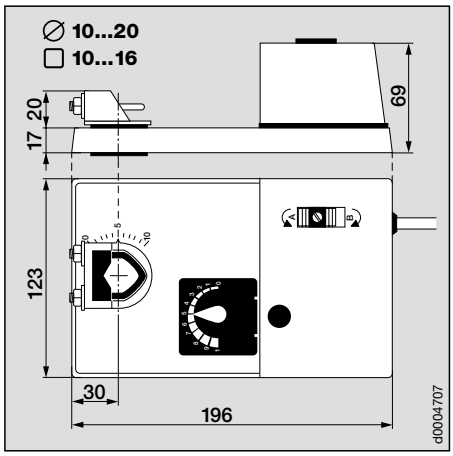
Important
Read the notes about the use and torque requirements of the damper actuators on page 3.

Wiring diagram



Technical data	SM230
Nominal voltage	AC 230 V 50/60 Hz
Nominal voltage range	AC 198…264 V
For wire sizing	17 VA @ 50 Hz, 20 VA @ 60 Hz
Power consumption	1.6 W @ 50 Hz, 2 W @ 60 Hz
Connecting cable	0.9 m long, 4×0.75 mm²
Direction of rotation	reversible with switch A/B
Torque	min. 15 Nm (at rated voltage)
Angle of rotation	mechanically limited to 95°
Running time	80…150 s (0…15 Nm)
Sound power level	max. 45 dB (A)
Position indication	0…10 (0 = stop ↶) and reversible indicator
Protection class	I (with PE conductor)
Degree of protection	IP 54 (bottom cable entry)
Ambient temperature range Non-operating temperature Humidity test	−30… + 50 °C −40… + 80 °C 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	1600 g

Dimensions



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Dampers up to approx. 3 m²

Modulating damper actuator (AC/DC 24 V)

Control DC 0…10 V or 0…20 V phasecut

Position feedback DC 2…10 V

Versatility of control
Combining two different methods of control in a single damper actuator ensures greater flexibility at the planning stage.

Improved functional safety
The damper actuator has no limit switches and is overload-proof. It stops auto-matically when it reaches the damper or actuator end stop.

Easy functional check
A functional check of damper operation is simplicity itself: the gearing can be disengaged by simply pressing a pushbutton on top of the case. While the pushbutton remains depressed, the damper can be operated by hand.

Simple installation
The damper actuator is fitted with a universal spindle clamp for quick and easy mounting directly on the damper spindle. The actuator is supplied with an anti-rotation strap for fixing it in position.

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

S1, S2	Auxiliary switches, page 13
P…	Feedback potentiometer, page 15
*SG…24	Positioners
*ZAD24	Digital position indicator

Mechanical accessories

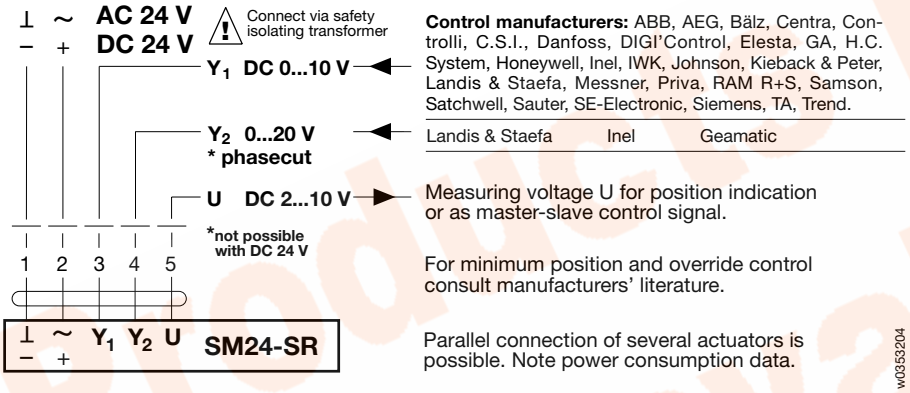
ZG-SM2	Damper linkage kit, page 17
ZDB	Limit stop, page 17

Control and monitoring functions, page 8

Mounting instructions, page 18

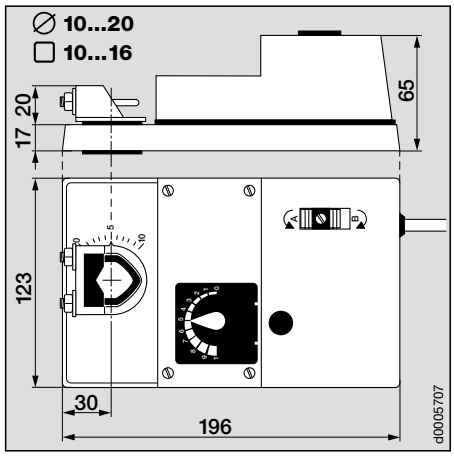
Important
Read the notes about the use and torque requirements of the damper actuators on page 3.

Wiring diagram



Technical data	SM24-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	5 VA
Power consumption	3 W
Connecting cable	0.9 m long, 5×0.75 mm²
Control signal Y_1 Control signal Y_2	DC 0…10 V @ input resistance 100 kΩ (0.1 mA) 0…20 V phasecut @ input resistance 8 kΩ (50 mW)
Operating range	DC 2…10 V (at control signal Y_1) 2…10 V phasecut (at control signal Y_2)
Measuring voltage U	DC 2…10 V @ max. 0.5 mA (for 0…100% angle of rotation)
Synchronisation tolerance	± 5%
Direction of rotation (at Y = 0 V)	reversible with switch A/B at switch position A ↶ resp. B ↷
Torque	min. 15 Nm (at rated voltage)
Angle of rotation	mechanically limited to 95°
Running time	100…200 s (0…15 Nm)
Sound power level	max. 45 dB (A)
Position indication	0…10 (0 = stop ↶) and reversible indicator
Protection class	⧫ (safety low voltage)
Degree of protection	IP 54 (bottom cable entry)
Ambient temperature range Non-operating temperature Humidity test	– 30… + 50 °C – 40… + 80 °C to EN 60335-1
EMC	CE according to 89/336/EEC, 92/31/EEC, 93/68/EEC
Maintenance	maintenance free
Weight	1460 g

Dimensions



Control and monitoring functions SM24-SR

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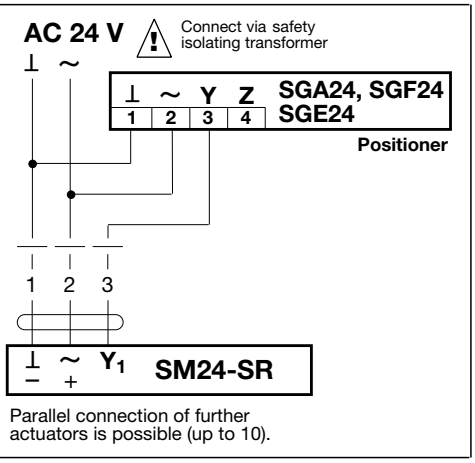
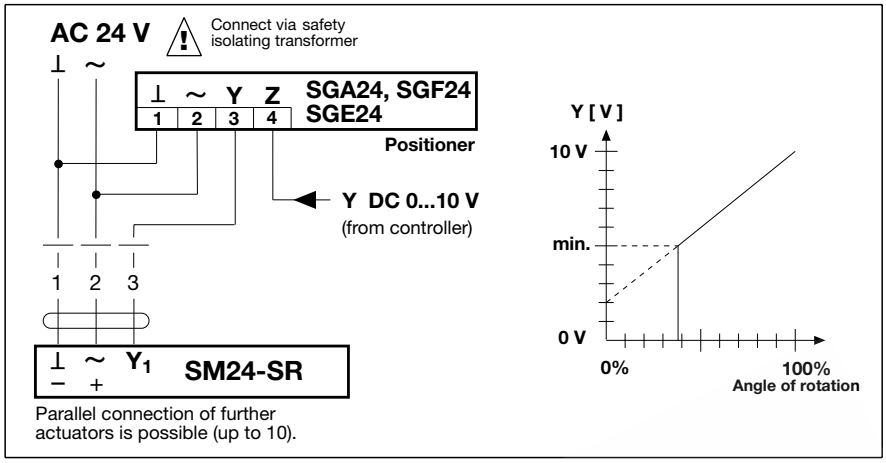
Remote control 0...100%



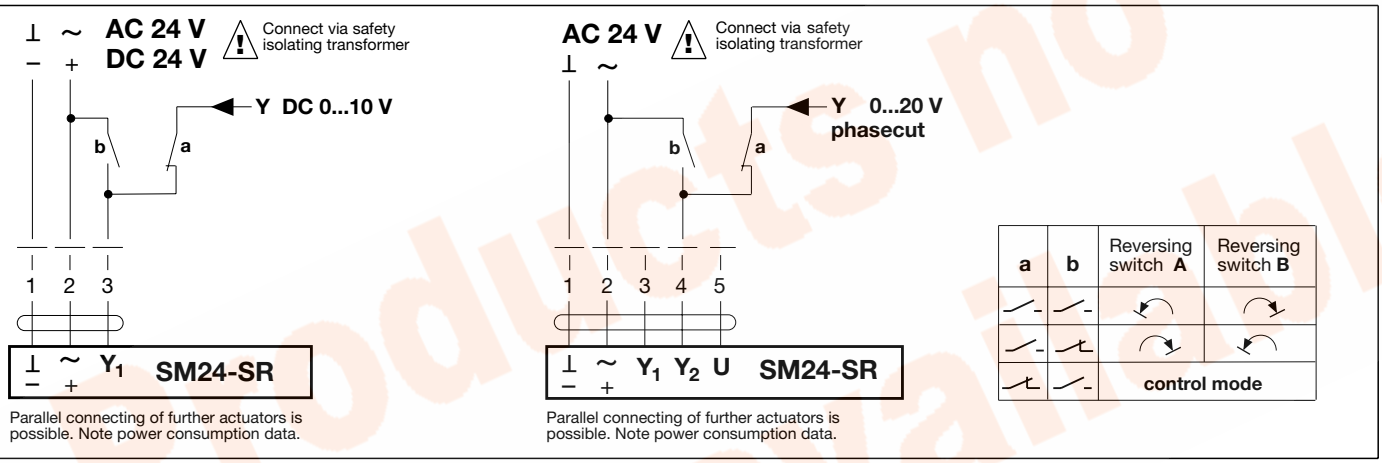
Parallel connection of further actuators is possible (up to 10).

Minimum position



Parallel connection of further actuators is possible (up to 10).

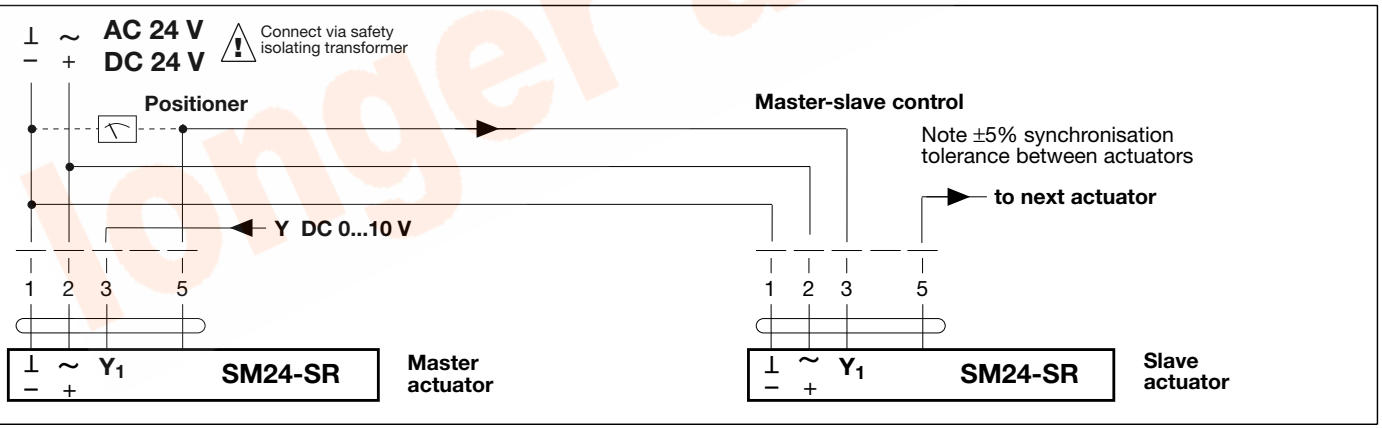
Override control



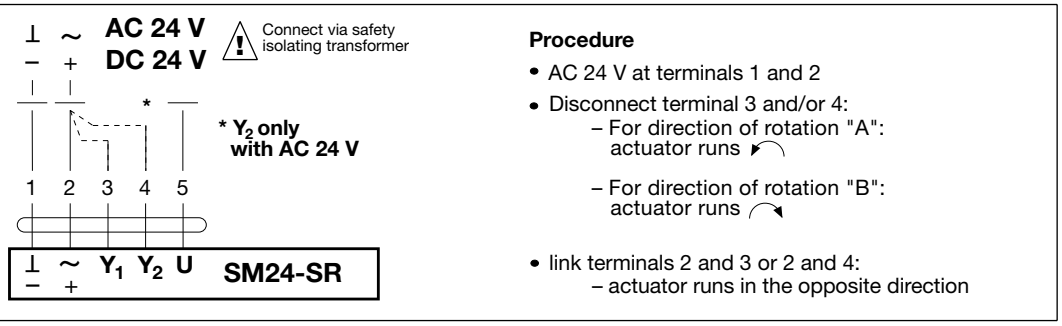
Parallel connecting of further actuators is possible. Note power consumption data.

Parallel connecting of further actuators is possible. Note power consumption data.

Position indication and/or master-slave control (depending on position)



Function monitoring



Procedure

- AC 24 V at terminals 1 and 2
- Disconnect terminal 3 and/or 4:
  - For direction of rotation "A": actuator runs ↶
  - For direction of rotation "B": actuator runs ↷
- link terminals 2 and 3 or 2 and 4:
  - actuator runs in the opposite direction

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Dampers up to approx. 3 m²

Modulating damper actuator (AC/DC 24 V)

Suitable for L & G Polygyr control DC 0…10 V

Position feedback DC 0.5…9.5 V

Versatility of control
Control is effected by a controller L & G Polygyr DC 0…10 V, or a positioner 0…1000 Ω.

Improved functional safety
The damper actuator has no limit switches and is overload-proof. It stops automatically when it reaches the damper or actuator end stop.

Easy functional check
A functional check of damper operation is simplicity itself: the gearing can be disengaged by simply pressing a pushbutton on top of the case. While the pushbutton remains depressed, the damper can be operated by hand.

Simple installation
The damper actuator is fitted with a universal spindle clamp for quick and easy mounting directly on the damper spindle. The actuator is supplied with an anti-rotation strap for fixing it in position.

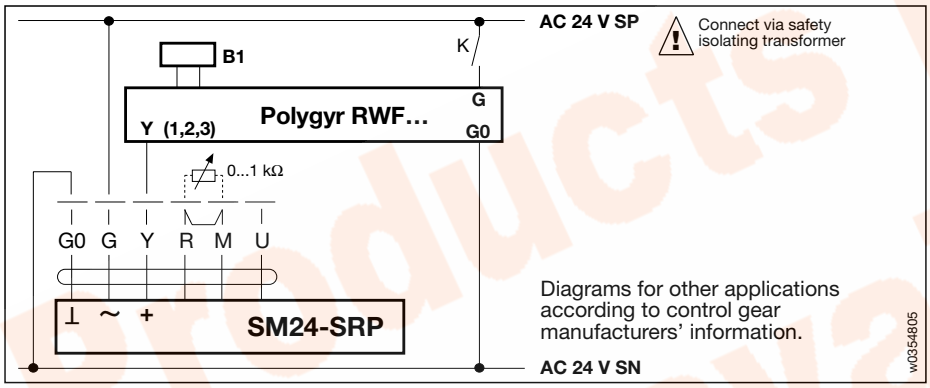
Electrical accessories* (see Doc. 2. Z-…)
S1, S2 Auxiliary switches, page 13
P… Feedback potentiometer, page 15
*ZAD24 Digital position indicator

Mechanical accessories
ZG-SM2 Damper linkage kit, page 17
ZDB Limit stop, page 17

Mounting instructions, page 18

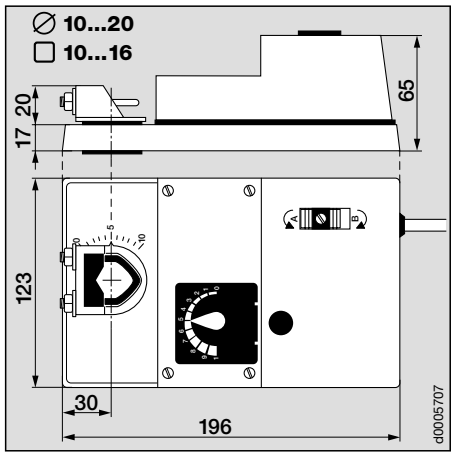
Important
Read the notes about the use and torque requirements of the damper actuators on page 3.

Wiring diagram



Technical data	SM24-SRP
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	5 VA
Power consumption	3 W
Connecting cable	0.9 m long, 6×0.75 mm²
Control signal Y	DC 0…10 V @ from L & G Polygyr
Input resistance	100 kΩ (0.1 mA)
Operating range	DC 0.5…9.5 V
Positioning signal R	0…1 kΩ from potentiom. positioner (bridge R/M removed)
Measuring voltage U	DC 0.5…9.5 V @ max. 0.5 mA
Synchronisation tolerance	± 5%
Direction of rotation (at Y = 0 V)	reversible with switch A/B
	at switch position A ↶ resp. B ↷
Torque	min. 15 Nm (at rated voltage)
Angle of rotation	mechanically limited to 95°
Running time	100…200 s (0…15 Nm)
Sound power level	max. 45 dB (A)
Position indication	0…10 (0 = stop ↶) and reversible indicator
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	1460 g

Dimensions



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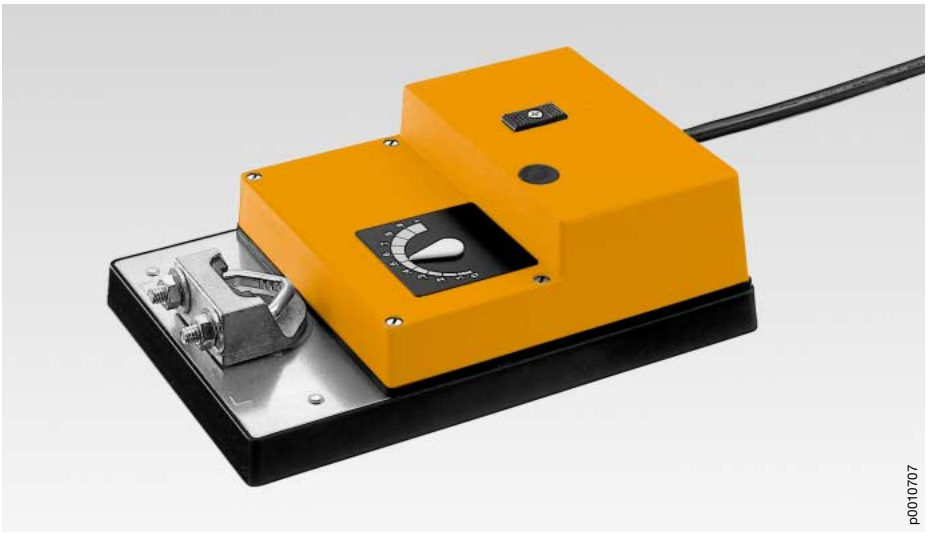


Dampers up to approx. 3 m²

Modulating damper actuator (AC/DC 24 V)

Suitable for 135…140 Ω potentiometric control

Versatility of control
Control is effected by a controller or a positioner with a 135…140 Ω potentiometer.

Improved functional safety
The damper actuator has no limit switches and is overload-proof. It stops automatically when it reaches the damper or motor end stop.

Easy functional check
A functional check of damper operation is simplicity itself: the gearing can be disengaged by simply pressing a pushbutton on top of the case. While the pushbutton remains depressed, the damper can be operated by hand.

Simple installation
The damper actuator is fitted with a universal spindle clamp for quick and easy mounting directly on the damper spindle. The actuator is supplied with an anti-rotation strap for fixing it in position.

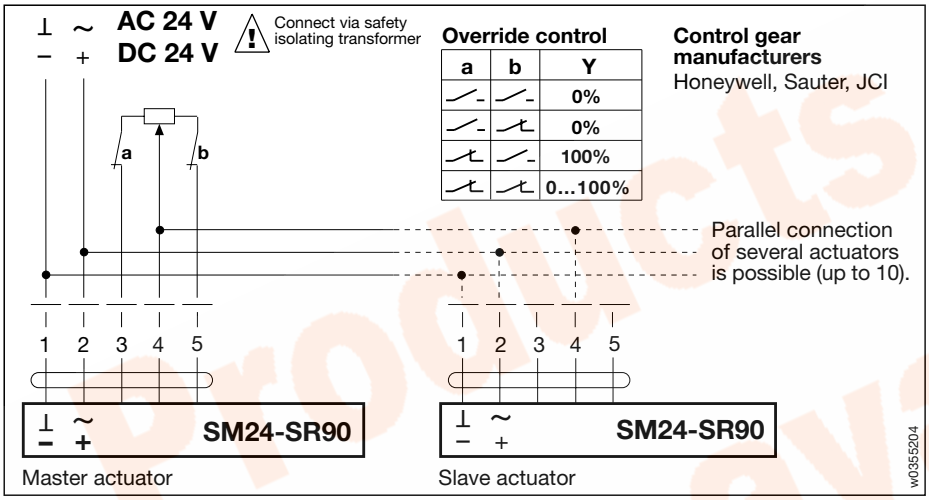
Electrical accessories
S1, S2 Auxiliary switches, page 13
P… Feedback potentiometer, page 15

Mechanical accessories
ZG-SM2 Damper linkage kit, page 17
ZDB Limit stop, page 17

Mounting instructions, page 18

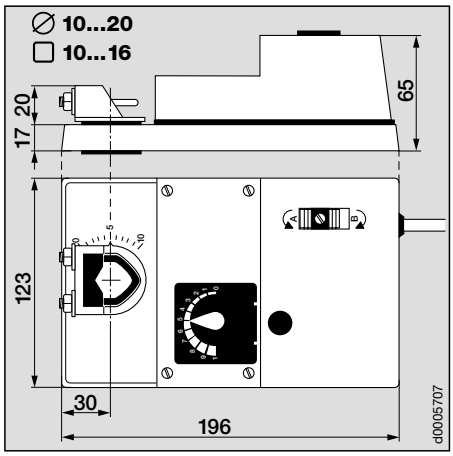
Important
Read the notes about the use and torque requirements of the damper actuators on page 3.

Wiring diagram



Technical data	SM24-SR90
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	6 VA
Power consumption	3.2 W
Connecting cable	0.9 m long, 5×0.75 mm²
Control signal Y Positioner	0…135 Ω ≙ 0…100% from positioner potentiometer 135…140 Ω (0.2 W)
Synchronisation tolerance	± 5%
Direction of rotation	reversible with switch A/B
Torque	min. 15 Nm (at rated voltage)
Angle of rotation	mechanically limited to 95°
Running time	100…200 s (0…15 Nm)
Sound power level	max. 45 dB (A)
Position indication	0…10 (0 = stop ↶) and reversible indicator
Protection class	(safety low voltage)
Degree of protection	IP 54 (bottom cable entry)
Ambient temperature range Non-operating temperature Humidity test	– 30… + 50 °C – 40… + 80 °C to EN 60335-1
EMC	CE according to 89/336/EEC, 92/31/EEC, 93/68/EEC
Maintenance	maintenance free
Weight	1600 g

Dimensions



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Dampers up to approx. 3 m²

Modulating damper actuator (AC 24 V)

Control DC 0…10 V

Adjustable working range

Improved functional safety
The damper actuator has no limit switches and is overload-proof. It stops automatically when it reaches the damper or motor end stop.

Easy functional check
A functional check of damper operation is simplicity itself: the gearing can be disengaged by simply pressing a pushbutton on top of the case. While the pushbutton remains depressed, the damper can be operated by hand.

Simple installation
The damper actuator is fitted with a universal spindle clamp for quick and easy mounting directly on the damper spindle. The actuator is supplied with an anti-rotation strap for fixing it in position.

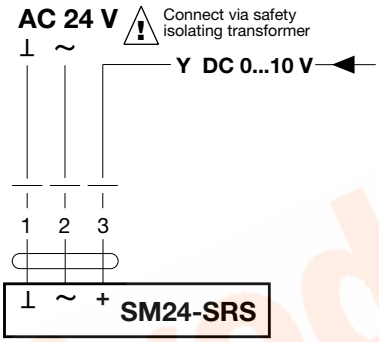
Electrical accessories
S1, S2 Auxiliary switches, page 13
P… Feedback potentiometer, page 15

Mechanical accessories
ZG-SM2 Damper linkage kit, page 17
ZDB Limit stop, page 17

Mounting instructions, page 18

Important
Read the notes about the use and torque requirements of the damper actuators on page 3.

Wiring diagram



Control manufacturers: ABB, AEG, Bälz, Centra, Controlli, C.S.I., Danfoss, DIGI'Control, Elesta, GA, H.C. System, Honeywell, Inel, IWK, Johnson, Kieback & Peter, Landis & Staefa, Messner, Priva, RAM, R+S, Samson, Satchwell, Sauter, SE-Electronic, Siemens, TA, Trend.

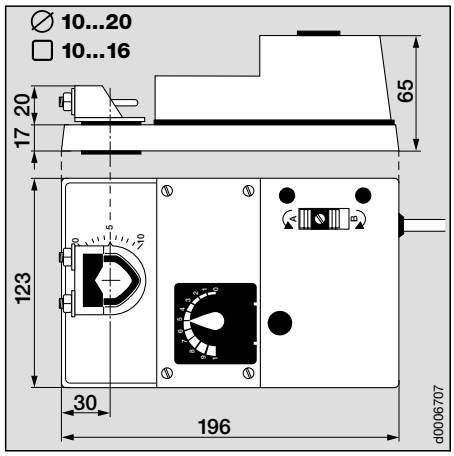
For minimum position and override control consult manufacturers' literature.

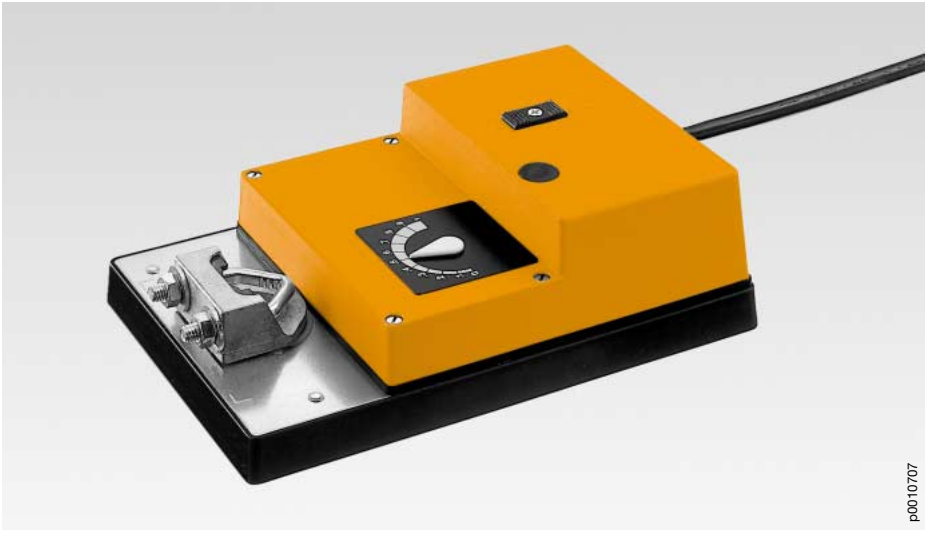
Parallel connection of several actuators is possible. Note power consumption data.

w0356805

Technical data	SM24-SRS
Nominal voltage	AC 24 V 50/60 Hz
Nominal voltage range	AC 19.2...28.8 V
For wire sizing	5 VA
Power consumption	3 W
Connecting cable	0.9 m long, 3×0.75 mm²
Control signal Y	DC 0…10 V @ input resistance 100 kΩ (0.1 mA)
Starting point U_o Span ΔU Factory setting	adjustable DC 2.0…8.4 V (scale 0…80%) adjustable DC 1.6…8.0 V (scale 20…100%) U_o = DC 2.0 V, ΔU = DC 8.0 V
Synchronisation tolerance	± 5%
Direction of rotation (at Y = 0 V)	reversible with switch A/B at switch position A↶ resp. B↷
Torque	min. 15 Nm (at rated voltage)
Angle of rotation	mechanically limited to 95°
Running time	100…200 s (0…15 Nm)
Sound power level	max. 45 dB (A)
Position indication	0…10 (0 = stop ↶) and reversible indicator
Protection class	(safety low voltage)
Degree of protection	IP 54 (bottom cable entry)
Ambient temperature range Non-operating temperature Humidity test	– 30… + 50 °C – 40… + 80 °C to EN 60335-1
EMC	CE according to 89/336/EEC, 92/31/EEC, 93/68/EEC
Maintenance	maintenance free
Weight	1400 g

Dimensions





Dampers up to approx. 3 m²

Modulating damper actuator (AC 230 V)

Control by BELIMO-positioner SGA or SGF

Improved functional safety
The damper actuator has no limit switches and is overload-proof. It stops automatically when it reaches the damper or actuator end stop.

Easy functional check
A functional check of damper operation is simplicity itself: the gearing can be disengaged by simply pressing a pushbutton on top of the case. While the pushbutton remains depressed, the damper can be operated by hand.

Simple installation
The damper actuator is fitted with a universal spindle clamp for quick and easy mounting directly on the damper spindle. The actuator is supplied with an anti-rotation strap for fixing it in position.

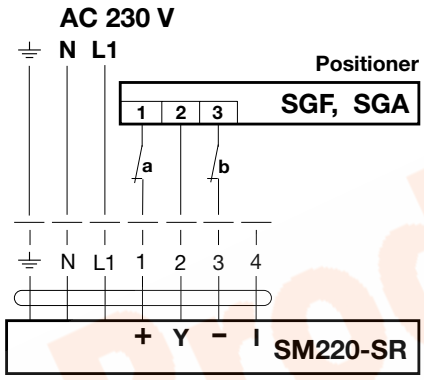
Electrical accessories* (see Doc. 2. Z-…)
S1, S2 Auxiliary switches, page 13
P… Feedback potentiometer, page 15
*SGF Positioner
*SGA Positioner
*ZAD220 Digital position indicator

Mechanical accessories
ZG-SM2 Damper linkage kit, page 17
ZDB Limit stop, page 17

Mounting instructions, page 18

Important
Read the notes about the use and torque requirements of the damper actuators on page 3.

Wiring diagram



To isolate from the main power supply, the system must incorporate a device which disconnects the phase conductors (with at least a 3 mm contact gap).

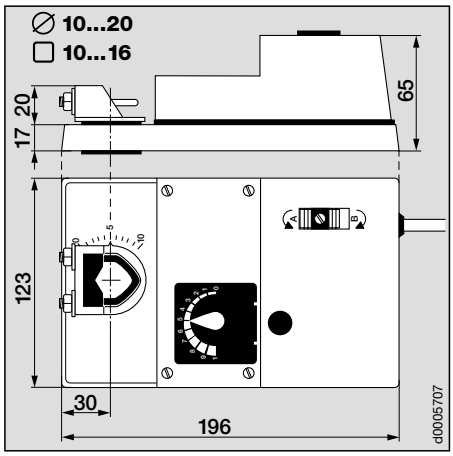
Override control

a	b	Y
⌐	⌐	0%
⌐	⌙	100%
⌙	⌐	0%
⌙	⌙	0…100%

Parallel connection of several actuators is possible (up to 10).

Technical data	SM220-SR
Nominal voltage	AC 230 V 50/60 Hz
Nominal voltage range	AC 198…264 V
For wire sizing	5 VA
Power consumption	4.5 W
Connecting cable	0.9 m long, 7×0.75 mm²
Control signal Y Input resistance	0…100% from positioner SGF, SGA 100 kΩ (0.1 mA)
Operating range	DC 1.5…7.5 V
Output signal I	0…100 µA (for digital position indicator ZAD220)
Synchronisation tolerance	± 5%
Direction of rotation (at Y = 0 V)	reversible with switch A/B at switch position A ↶ resp. B ↷
Torque	min 15 Nm (at rated voltage)
Angle of rotation	mechanically limited to 95°
Running time	100…200 s (0…15 Nm)
Sound power level	max. 45 dB (A)
Position indication	0…10 (0 = stop ↶) and reversible indicator
Protection class	I (with PE conductor)
Degree of protection	IP 54 (bottom cable entry)
Ambient temperature range Non-operating temperature Humidity test	– 30… + 50 °C – 40… + 80 °C 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	1550 g

Dimensions



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Compatible with SM… and GM… damper actuators

(GM…: see documentation 2.GM-…)

Application

The auxiliary switch units S1 and S2 are intended for the signalling of end positions or for performing switching functions at any angular position.

Easy switch setting

A spindle provides a positive drive to the switch mechanism from the rotary motion of the damper actuator. The switching points of the microswitches can be set anywhere in the range from 0 to 10 by means of a dial and are then locked with a screw. The switch position can be read off at any time.

Simple installation

The auxiliary switch units S1 and S2 are suitable for direct mounting on Type SM… damper actuators or on Type P… feedback potentiometers. (The stack-mounting of two auxiliary switch units or of one unit and a Type SZS mid-position switch unit is not possible.)

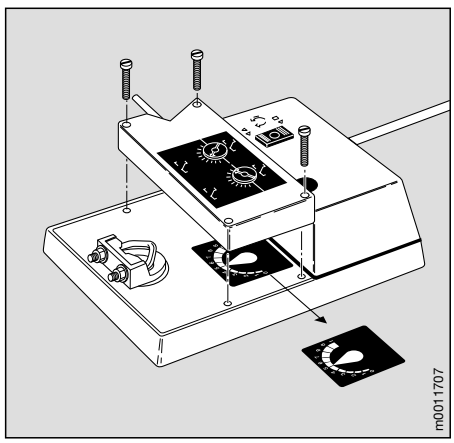
Four extra-long screws are supplied for mounting the unit on Type SM…-SR… and P… equipment.

Switch setting

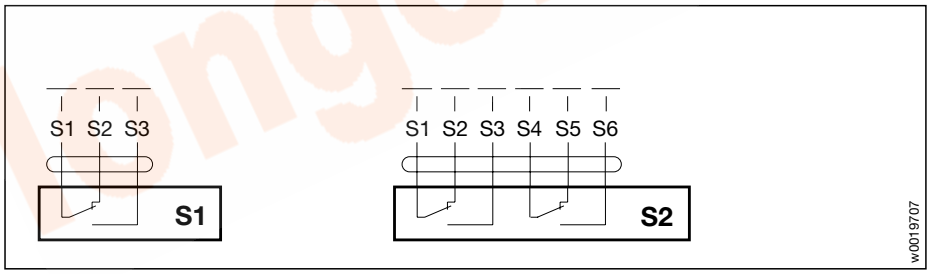
1. Turn the damper actuator by hand to position 0.
2. Loosen the locking screw in the centre of the setting dial.
3. Rotate the dial until the arrow is pointing at the required switching point on the scale (0…10).
4. Re-tighten the locking screw.
5. Check the switching points by manual operation of the actuator; the setting dial turns at the same time. The microswitches operate whenever the arrow passes position 0 or 10 (white lines). The symbols indicate the respective switch positions.

Note

The reversible indicator plate and the pointer must be removed when using an auxiliary switch unit S1, S2.



Wiring diagram



Technical data	S1	S2
Number of switches	1×SPDT	2×SPDT
Switching capacity	6 A (2.5 A) AC 250 V	
Connecting cable	0.9 m, 3×0.75 mm²	0.9 m, 6×0.75 mm²
Switching point	Adjustable over full actuator rotation 0...10. Pre-setting by scale possible, settings lockable.	
Protection class	II (all-insulated)	
Degree of protection	IP 54	
Ambient temperature range Non-operating temperature Humidity test	– 30… + 50 °C – 40… + 80 °C to EN 60335-1	
Weight	150 g	210 g

Compatible with SM24, SM220, SM240 and GM24, GM220, GM240 damper actuators

(GM…: see documentation 2.GM-…)

Application

The SZS mid-position switch unit allows any required intermediate position to be preset.

Easy switch setting

A spindle provides a positive drive to the switch mechanism from the rotary motion of the damper actuator. The switching points of the microswitches can be set anywhere in the range from 0 to 10 by means of a dial and are then locked with a screw.

Remote control

As an alternative to using an SZS unit, it is better for many applications to be able to set the intermediate positions remotely, e. g. from the switchgear cubicle, instead of at the damper actuator itself. This arrangement requires the use of a positioner and a modulating damper actuator. Another advantage is that it allows several actuators to be connected in parallel.

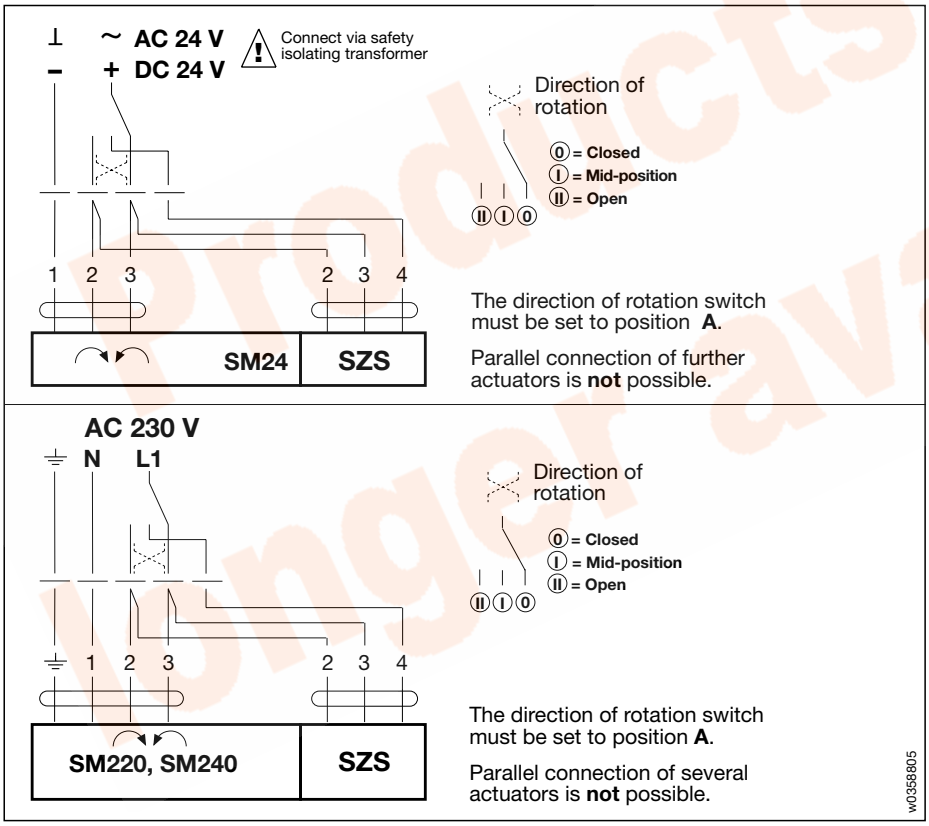
Simple installation

The SZS mid-position switch unit is suitable for direct mounting on Type SM… damper actuators or on Type P… feedback potentiometers. (The stack-mounting of two SZS units or of one SZS unit and a Type S 1 or S 2 auxiliary switch unit is not possible.)

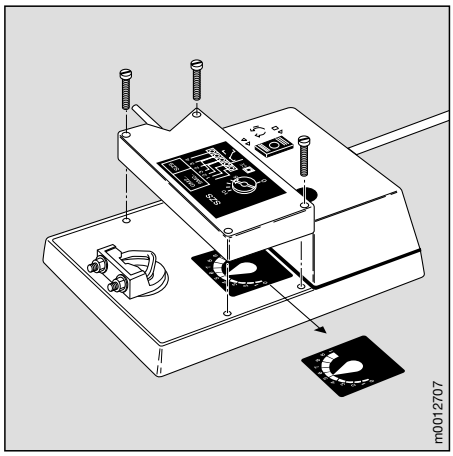
Note

The reversible indicator plate and the pointer must be removed when using a mid-position switch unit SZS.

Wiring diagram



Technical data	SZS
Connecting cable	0.9 m, 3×0.75 mm²
Switching point	Adjustable over full actuator rotation 0…10. Pre-setting by scale possible, settings lockable.
Setting accuracy	2° rotation (at clamp)
Protection class	II (all-insulated)
Degree of protection	IP 54
Ambient temperature range Non-operating temperature Humidity test	– 30… + 50 °C – 40… + 80 °C to EN 60335-1
Weight	150 g



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Compatible with SM... and GM... damper actuators

(GM...: see documentation 2.GM-...)

Application

The feedback potentiometer P... is used for the modulating control of dampers in conjunction with proportional action controllers with rigid feedback. It can also be used in conjunction with normal commercially-available systems for damper positions indication or as a positioner for actuators operating in parallel.

No adjustment needed

A spindle transmits the rotary motion of the actuator to the potentiometer. It is a positive drive and no adjustment is needed. If necessary, two feedback potentiometers can be mounted on top of each other.

Simple installation

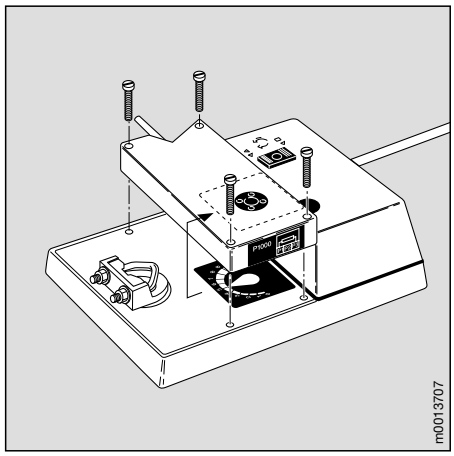
The Type P... feedback potentiometer can be mounted directly on Type SM... damper actuators or on top of a second feedback potentiometer unit. A unit can also be stack-mounted with a Type S1 or S2 auxiliary switch unit or a Type SZS mid-position switch unit.

Four extra-long screws are supplied for mounting the unit on Type SM...-SR... and P... equipment.

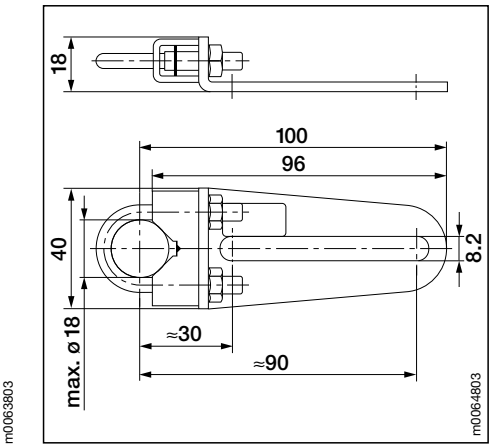
Wiring diagram

Types		Resistance data
P 140	Feedback potentiometer	140 Ω
P 200	Feedback potentiometer	200 Ω
P 500	Feedback potentiometer	500 Ω
P 1000	Feedback potentiometer	1000 Ω
P 2000	Feedback potentiometer	2000 Ω
P 2800	Feedback potentiometer	2800 Ω

Technical data	P...
Resistance data Tolerance	as above ± 5%
Rating	1 W
Linearity	± 2%
Resolution	1% min.
Residual resistance	max. 5% on both sides
Connecting cable	0.9 m, 3×0.75 mm²
Degree of protection	IP 54
Ambient temperature range Non-operating temperature Humidity test	–30... +50 °C –40... +80 °C to EN 60335-1
Weight	150 g



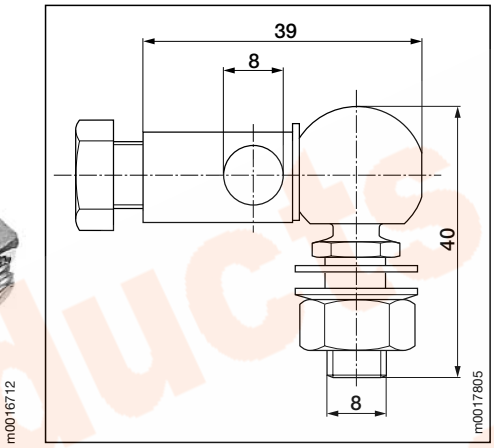
KH8, KH6



KH8 **Universal crank arm**
Zinc-plated steel; suitable for damper spindles 10…18 mm diameter or 10…14 mm², slot width 8.2 mm

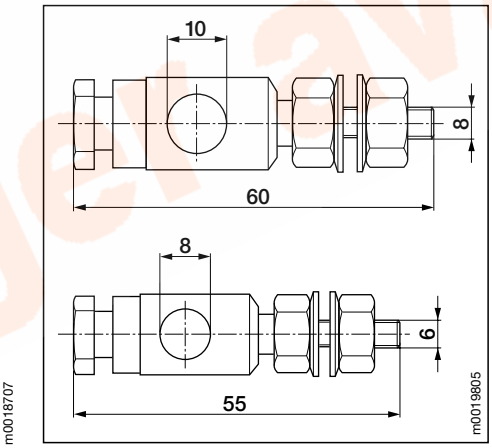
KH6 **Universal crank arm**
as Type KH8, but slot width 6.2 mm.

KG8



KG8 **Ball joint**
Zinc-plated steel; suitable for use with KH8 universal crank arms and round steel rod 8 mm diameter.

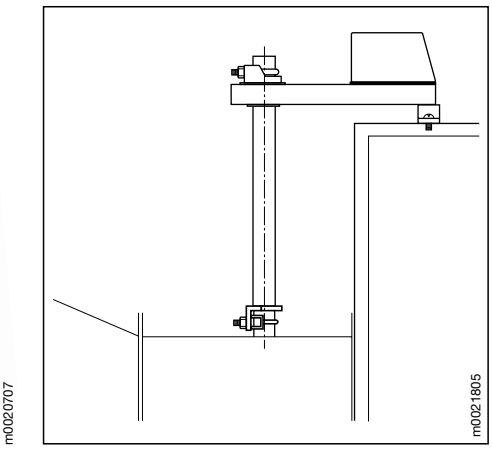
KG10, KG6



KG10 **Ball joint**
Zinc-plated steel; suitable for use with KH8 and KH6 universal crank arms and round steel rod 10 mm diameter.

KG6 **Ball joint**
Zinc-plated steel; suitable for use with KH 6 universal crank arms and round steel rod 8 mm diameter.

AV10–18



AV10–18 **Universal spindle extension**
approx. 240 mm long; for damper spindles 10…18 mm diameter or 10…14 mm².

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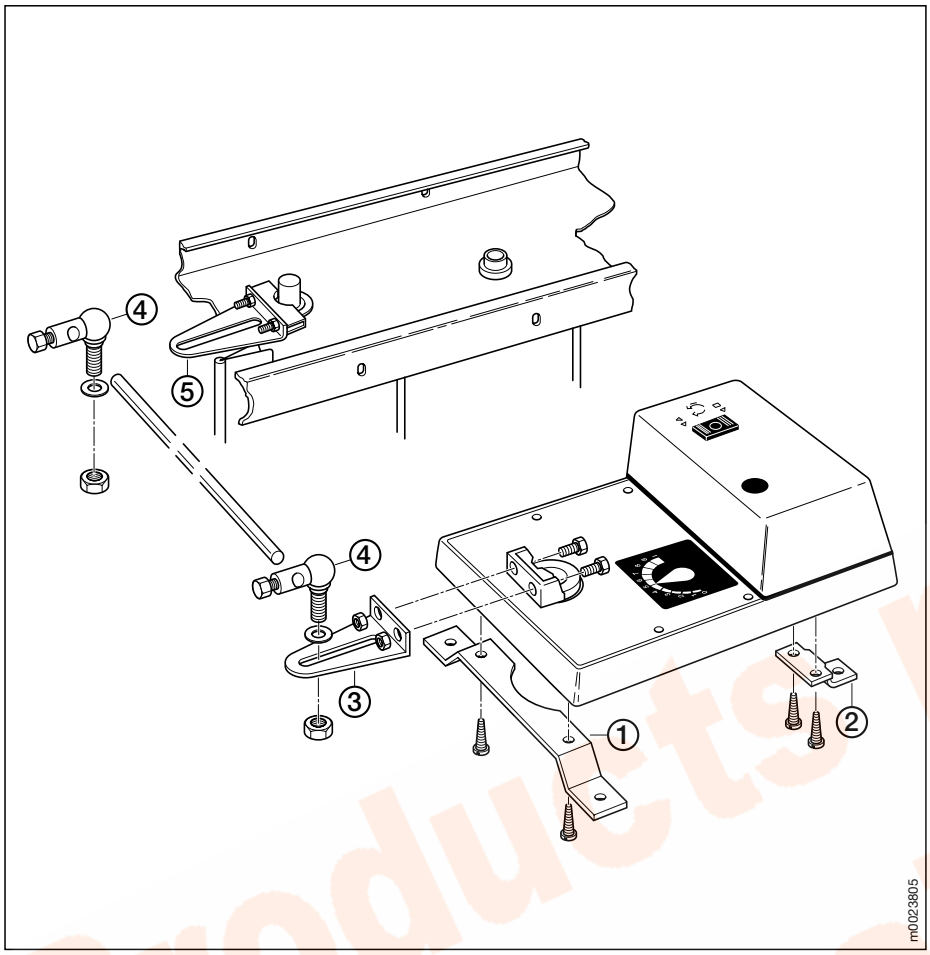
Damper linkage kit ZG-SM2



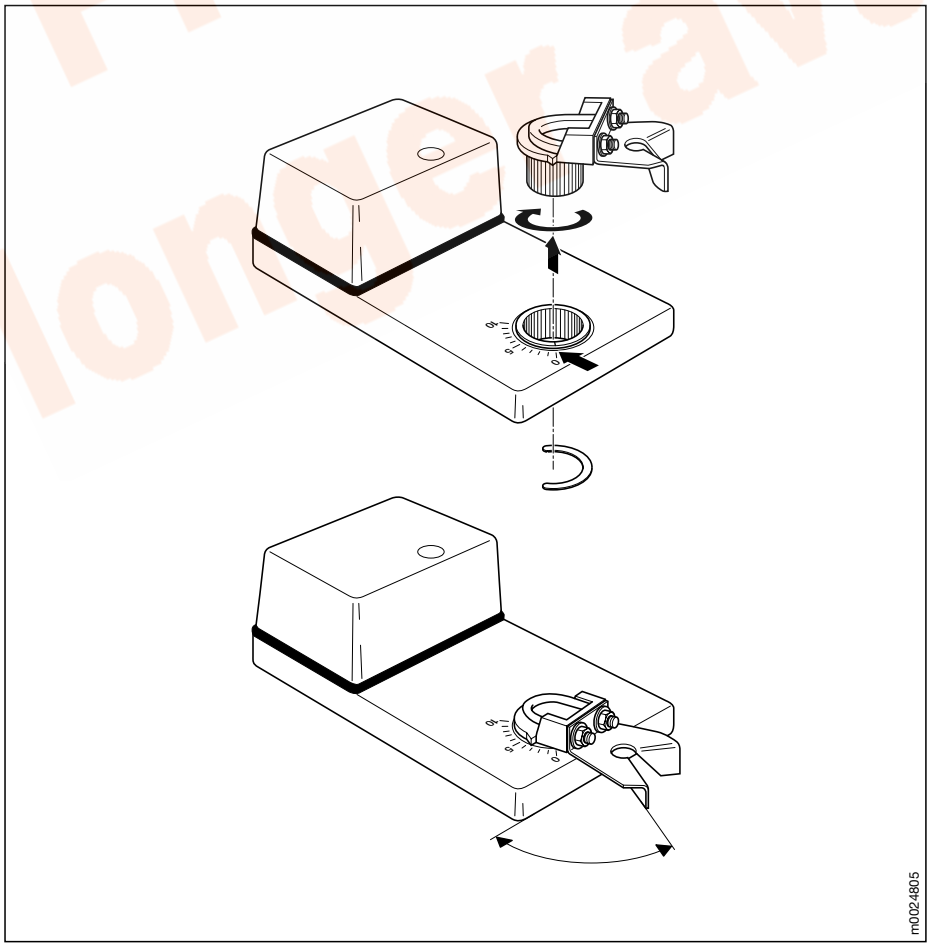
Application
Damper linkage kit is employed when direct actuation of the damper is impossible and a linkage must be used.

Kit specification
① – Front mounting bracket
② – Rear mounting bracket
③ – Crank arm
④ – 2 ball joints KG8
– 2 bolts M 6×16
– 7 self-tapping screws

Assembly
– Screw the front ① and rear ② mounting brackets to the underside of the actuator baseplate
– Remove the V-bolt
– Bolt the crank arm ③ in position
– Mount the actuator in a suitable position on a secure base with 3 screws
– The 3-point fixing and the 10 mm clearance at the base ensure trouble-free mounting even when the mounting surface is irregular
– Adjust and tighten the damper linkage and ball joints

⑤ Universal crank arm:
order separately, not included with the ZG-SM2 mounting accessory.

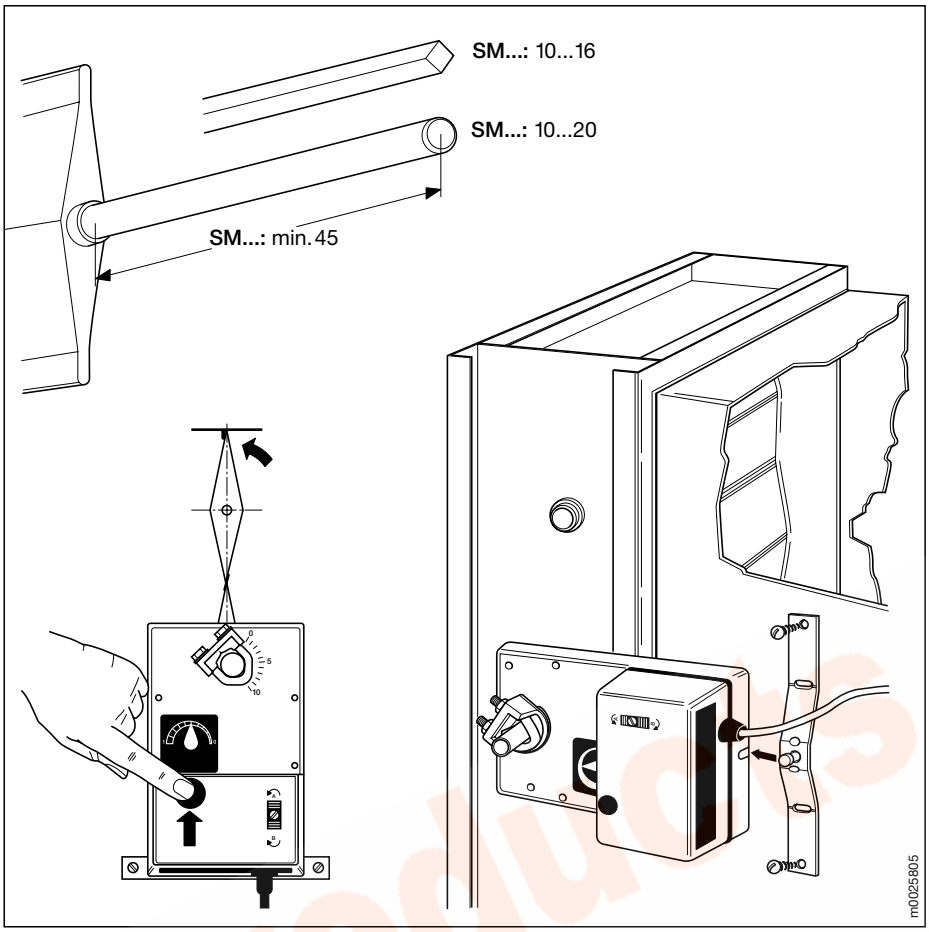
Limit stop ZDB



Application
Limit stop ZDB is used on damper actuators SM… when an angle of rotation of less than 90° needs to be limited mechanically but the damper does not have a fixed stop on its own.
The limit can be set in 10° steps.

Assembly
– Remove the nuts from the V-bolt of the clamp
– Fit the limit stop and finger tighten the nuts
– Pull off the clamp, after first removing the circlip, turn it to the required angular position (the limit) and push it back on
– Replace the circlip
– Slip the actuator onto the damper spindle and assemble according to the instructions

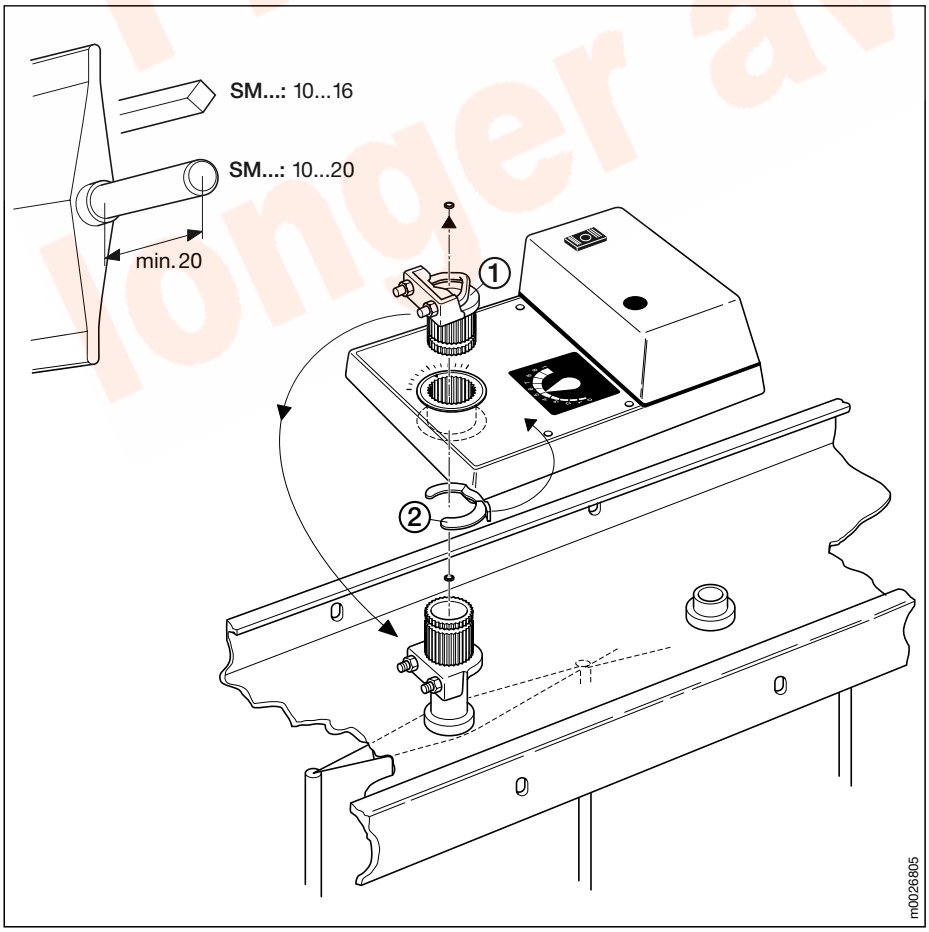
Mounting instructions for damper spindles at least 45 mm long.



Preparations
- Place the actuator on the damper spindle
- Finger tighten the nuts on the V-bolt
- Bend the anti-rotation strap to fit, if necessary
- Fix the strap in position

Mounting and adjustment
- Move the damper to the closed position
- Disengage the gears by pressing the manual override pushbutton on the housing cover
- Turn the clamp to one division from the closed position and allow the gears to re-engage
- Align the actuator at 90° to the damper spindle
- Tighten the nuts on the V-bolt

Mounting instructions for damper spindles at least 20 mm long or when overlapping the damper frame.



Mounting and adjustment
- Disengage the gears by pressing the manual override pushbutton on the housing cover
- Turn the clamp to one division from the closed position and allow the gears to re-engage
- Remove the clip ② and take out the clamp ①
- Slip the clamp onto the damper spindle
- Move the damper to the closed position
- Fit the actuator onto the clamp
- Replace the clip
- Bend the anti-rotation strap to fit
- Fix the strap in position

Notes on both methods of mounting
- The universal spindle extension AV10–18 is available for use in special cases
- Select direction of rotation with switch A/B
- The indicator plate is reversible

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