



SPRINGBACK

MODULATING Spring Return Actuators

3.15

Application

The JOVENTA **SPRINGBACK** electric, spring return damper-actuator series has been specially developed for the motorized operation of safety air dampers (anti-icing) in air conditioning systems, smoke evacuation dampers and sealing dampers. When the control signal is applied the actuator drives the damper to the operational position, while evenly tensioning the integrated spring. After a power failure the stored energy in the spring immediately brings the damper to the safety position. Manual operation is automatically cancelled when the actuator is in electrical operation.

The compact design and universal adapter fitted with limitation of rotation angle make this JOVENTA actuator highly versatile.

Key features

- DC0...10V or 0...20 mA control
- Load-independent running time
- Up to 5 actuators in parallel operation possible
- Plug-in terminal block connection
- Simple direct mounting with universal adapter on Ø 10-mm to 20-mm shaft or 10-mm to 16-mm square shaft. 77-mm min shaft length
- Selectable direction of rotation
- Limitation of rotation angle
- Manual positioning with crank handle
- 2 adjustable auxiliary switches
See back page for settings
- Automatic shut-off at end position (overload switch)
- Energy saving at end positions
- Actuators available with 1 m halogen-free cable
- Customized versions available
- Devices meet CE requirements

Accessories

- ZK damper linkage selection
- ZKG ball joints
(see data sheet 6.10)

Nomenclature/Specification/Technical data

DM1.1F	AC/DC24V	
DM1.1FS	AC/DC24V	with 2 auxiliary switches
.....K		with 1 m halogen-free cable

Actuator		DM1.1F(S)
Torque		16 Nm
Damper area*		3.0 m ²
Running time motor		90 s
Running time spring return		10 s
Supply voltage		AC/DC24V
Frequency		50-60 Hz
Power consumption		
- Running		7.0 W
- At end position		0.6 W
Dimensioning		12.0VA / 6A @ 2 ms
Weight		2.7 kg
Control signal	Y1	DC0...10V
Control signal	Y2	0...20 mA
Position signal	U	DC0...10V
Angle of rotation / working range		90° (93° mech.)
Angle of rotation / limitation		0°...30° and 90°...60°
Service lifetime		60,000 rotations
Auxiliary switches		3(1.5)A, AC230V
Setting range / adjustable		5°...85° < infinity
Noise level		50 dB (A)
Protection class		II
Degree of protection		IP 54
Cable aperture connection		PG11
Mode of action		Type 1
Ambient conditions		
- Operating temperature		-20...+50°C / IEC 721-3-3
- Storage temperature		-30...+60°C / IEC 721-3-2
- Humidity		5...95% r.F.
Service		Maintenance free
Standards	Mechanics	EN 60 529 / EN 60 730-2-14
	Electronics	EN 60 730-2-14
	EMC Emissions	EN 50 081-1:92 / IEC 61 000-6-3:96
	EMC Immunity	EN 50 082-2:95 / IEC 61 000-6-2:99

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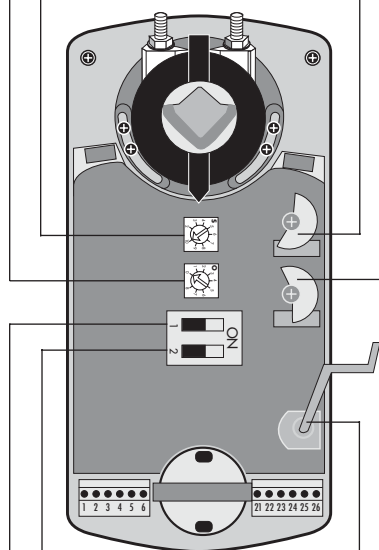
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Start-point **O**

Working range **S**

Auxiliary switch **b**

Auxiliary switch **a**



Crank handle

Action **d2**

Self-adapting **d1**

Control signal: Factory setting

Control signal Y1 DC0...10V
Input resistance $R_i = 200 \text{ k}\Omega$

Control signal Y2 0...20 mA
Input resistance $R_i = 388 \Omega$

Position signal U DC0...10V
Load resistance $R \geq 10 \text{ k}\Omega$

Micro-switch **d1**

self-adapting
OFF



self-adapting
ON



The self-adapting mode is activated by switching the micro-switch **d1** to **ON**. In this mode the running time, control signals Y1 and Y2 and the output signal U will set to match the mechanically selected range of rotation. The minimum working range that can be adapted to is 30° . During the self-adapting procedure the actuator finds and stores both end positions. Even after a power failure the stored values can be recalled. If the angle of rotation is changed the actuator will automatically match the new working range.

Changing the control signal setting

The potentiometers **O** and **S** help to match control signals Y1 and Y2 to any make of controller.

Example 1

Control signal Y1 working between DC2...10V

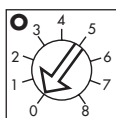
Setting: Starting point **O** = 2
Working range **S** = 8

Example 2

Control signal Y2 working between 6...18 mA

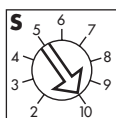
Setting: Starting point **O** = 3
Working range **S** = 6

Start-point **O**



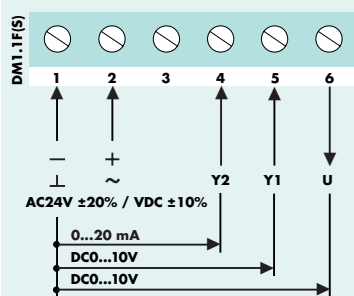
Scale O	0	1	2	3	4	5	6	7	8
for Y1 (VDC)	0	1	2	3	4	5	6	7	8
for Y2 (mA)	0	2	4	6	8	10	12	14	16

Working range **S**



Scale S	2	3	4	5	6	7	8	9	10
for Y1 (VDC)	2	3	4	5	6	7	8	9	10
for Y2 (mA)	4	6	8	10	12	14	16	18	20

Wiring diagram



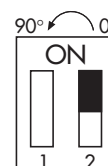
Action Setting

The action of control signal Y1 and Y2 can be reversed by switching the micro-switch **d2**. This reverses the action of the output signal U.

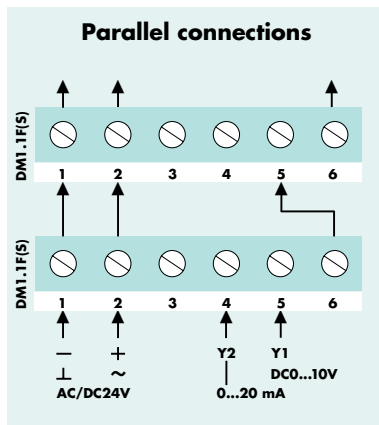
Normal operation.
By increasing control signal Y1 or Y2, tensioning of the spring will occur.



Reverse operation.
By decreasing control signal Y1 or Y2, tensioning of the spring will occur.



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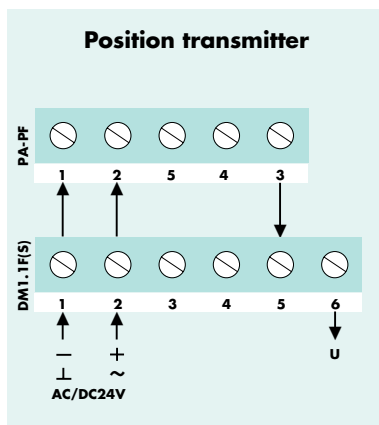
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Parallel operation

For parallel operation of the actuators DM1.1F(S), the DC0...10V output signal $U = DC0...10V$ is connected, from the master actuator through terminal 6, to the slave actuator through terminal 5 etc.

Caution:

Parallel connection of up to a maximum of 5 actuators possible.

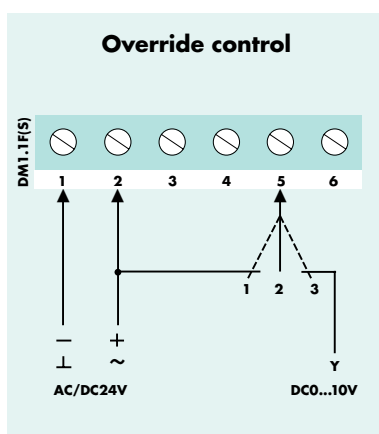


Position transmitter

The actuator DM1.1F(S) can also be controlled using the JOVENTA Positioner (PA-PF) with control signal of DC0...10V. For further information concerning the PA and PF Positioner please refer to data sheet 6.20.

Caution:

Parallel connection of up to a maximum of 5 actuators possible.

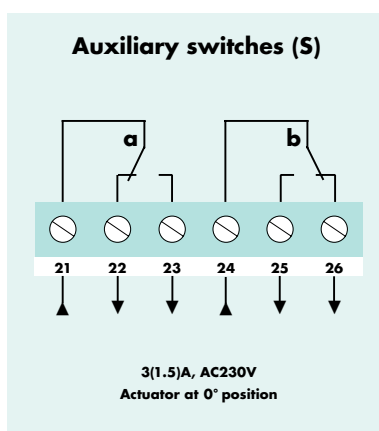


Override control

The actuator DM1.1F(S) can be forced to override control when wired in accordance with the relevant diagram on the left.

Switch position:

- 1 = Actuator runs at 10 V
- 2 = Actuator runs at 0 V
- 3 = Automatic control operation

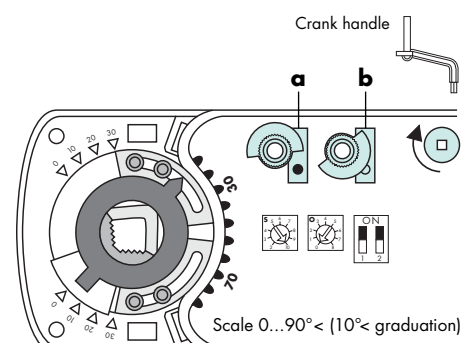


Auxiliary switch settings

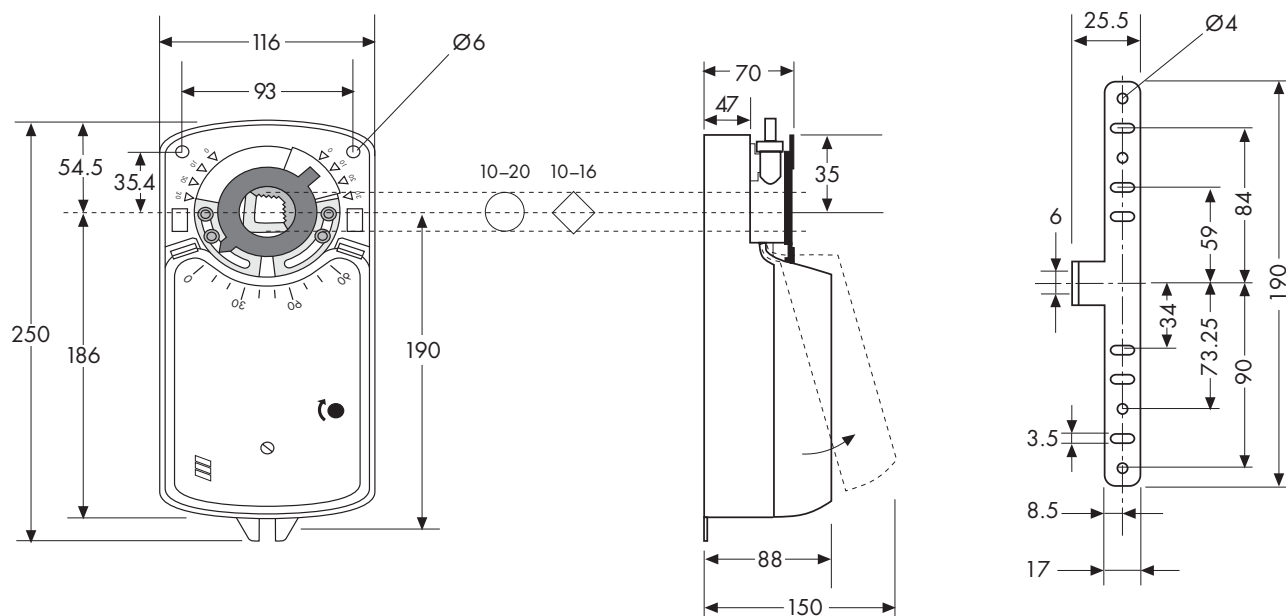
Factory setting

- Switch **a** on 10°
- Switch **b** on 80°

The switching position can be manually changed to any required position by turning the ratchet.



Dimensions in mm

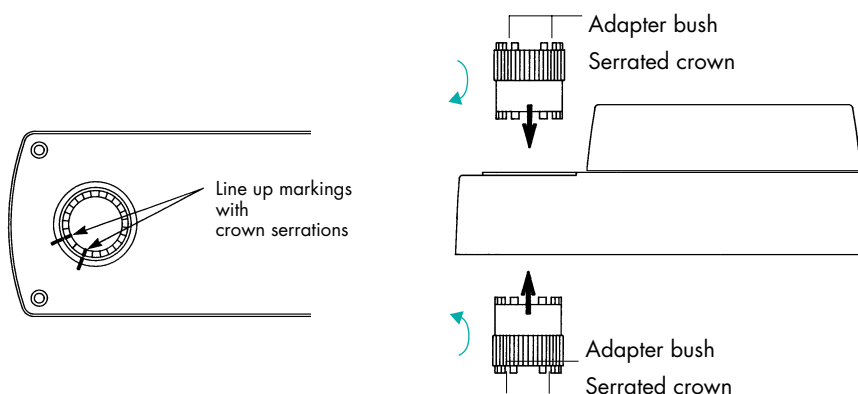


Changing the direction of rotation

The change in rotation direction is achieved by removing the adapter bush from one side and replacing it in the other side.

Factory setting:
Clockwise rotation.

Changing the direction of rotation



Angle of rotation

The 90° angle of rotation/working range can, through segments 1 and 2, be reduced by up to 30° from both end positions.

Limitation of rotation angle

