

# FSAF24-BAL(-S) US

Spring Return, 24 V, 3-Position, 100% Open Override  
Operation at 250°F for limited time per UL555S testing



Technical Data		FSAF24-BAL(-S) US
Power supply		24 VAC ± 20% 50/60 Hz 24 VDC ± 10%
Power consumption	running	AC 9.5 VA 6.5W DC 6W
	holding	AC 5 VA 3W DC 3W
Transformer sizing		10 VA (class 2 power source 24V only)
Electrical connection		3 ft, 18 GA, 1/2" conduit connector
Overload protection		electronic throughout 0 to 95° rotation
Control signal		24 VAC/DC 3-position
Angle of rotation		20° to 95°, pot adjustable
Torque		133 in-lb [15 Nm]
Direction of rotation	spring	reversible with cw/ccw mounting
Position indication		visual indicator, 0° to 95° (0° spring return position)
Manual override		3mm hex crank (shipped w/actuator)
Running time	motor	<75 seconds @ 250°F [121°C]
	spring	< 20 seconds
Humidity		5 to 95% RH non-condensing
Ambient temperature		-22°F to 122°F [-30°C to 50°C]
Storage temperature		-40°F to 176°F [-40°C to 80°C]
Housing		NEMA type 1/IP40 (with flex conduit)
Housing material		zinc coated metal
Agency listings†		cULus to UL873 and CSA C22.2 No. 24-93
Noise level (max)	running	<45 dB(A)
	spring	<62dB(A)
Servicing		maintenance free
Quality standard		ISO 9001, 5 year Belimo warranty
Weight		5.3 lbs (2.4 kg)
		5.7 lbs (2.6 kg) for -S model

FSAF24-BAL-S US	
Auxiliary switch	2 x SPDT 7A resistive, 2.5A inductive at 120/250VAC. UL listed, double-insulated, one switch is set at 10°, one is adjustable 30° to 90°

## Application

For 3-position control of UL555S rated dampers in HVAC. Actuator sizing should be done in accordance with the damper manufacturer's tests. In the absence of other information, use 10 in-lb of torque per square foot of area for opposed blade and 14 in-lb for parallel blade fire and smoke dampers at 1000 fpm air velocity.

The FSAF24-BAL is specifically designed to balance the air flow in ducts and simultaneously provide control of fire and smoke dampers. 0V = spring closed. 24V on wire 2, not 3 = drive to the potentiometer position (balanced flow). 24V on wire 3, regardless of the status of wire 2 = drive full open (smoke control extraction or pressurization). See Application Bulletin for details.

## Operation

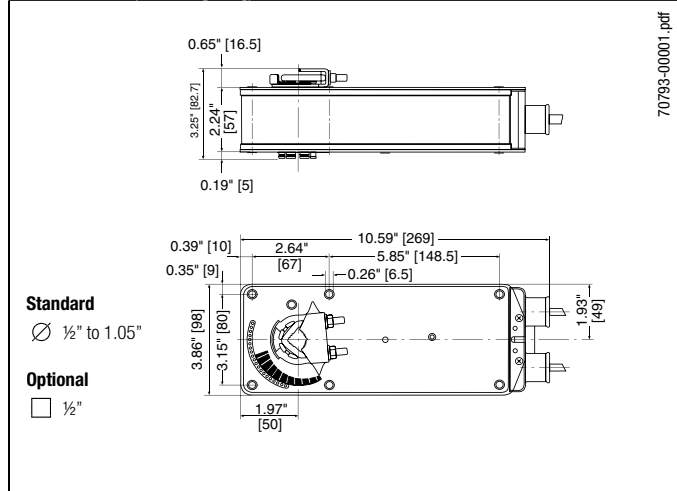
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## SAFETY NOTE

The actuator contains no components which the user can replace or repair.

## Dimensions (Inches [mm])



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**Accessories (AF series accessories may be employed)**

IND-AF2	Damper position indicator
K4-1 US	Universal clamp for up to 1.05" dia. jackshafts
KH-AF	Crank arm for up to 3/4" round shaft (Series 2)
KH-AF-1	Crank arm for up to 1.05" jackshaft (Series 2)
KH-AFV	V-bolt kit for KH-AF and KH-AF-1
Tool-01	10 mm wrench
ZDB-AF2	Angle of rotation limiter
ZG-100	Universal mounting bracket
ZG-101	Universal mounting bracket
ZG-103	Universal mounting bracket
ZG-104	Universal mounting bracket
ZG-106	Mounting bracket for Honeywell® Mod IV replacement or new crank arm type installations
ZG-107	Mounting bracket for Honeywell® Mod III or Johnson® Series 100 replacement or new crank arm type installations
ZG-108	Mounting bracket for Barber Colman® MA 3../4..., Honeywell® Mod III or IV or Johnson® Series 100 replacement or new crank arm type installations
ZG-AF	Crank arm adaptor kit for AF/NF
ZG-AF108	Crank arm adaptor kit for AF/NF
ZS-100	Weather shield (metal)
ZS-150	Weather shield (polycarbonate)
ZS-300	NEMA 4X housing
22965-00001	12 mm form fit square shaft adaptor

For an overview of how to apply the accessories, see Belimo Mechanical Accessories and refer to the Belimo Mounting Methods Guide.

**NOTE:** When using FSAF24-BAL(-S) US actuators, only use accessories listed on this page.

**Typical Specification**

Where indicated on drawings, combination fire and smoke and balancing dampers shall be controlled by Belimo FSAF24-BAL or equal actuators. The actuators must be designed so that they may be used for either clockwise or counter clockwise failsafe operation. Actuator shall open damper in <75 seconds per UL555S and shall spring closed in under 20 seconds. Actuators shall have a 5-year warranty and be manufactured under ISO9001 International Quality Control Standards.

Actuator shall have an adjustable Maximum Opening Potentiometer which shall be used by the TAB contractor to adjust flow to that portion of the system fed by the damper.

The actuator shall spring closed if either the smoke detector or alarm system removes power from it. Actuator shall spring closed if the primary temperature thermdisc opens due to high ambient of >165°F or as otherwise indicated on drawings.

The actuator shall drive full open if either the smoke control system 100% open override or Fire Fighters Smoke Control Station override is activated. Damper shall spring closed again if the thermdisc of a combination fire and smoke damper opens due to high temperature (typically 250°F).

**Wiring Diagrams**

**INSTALLATION NOTES**

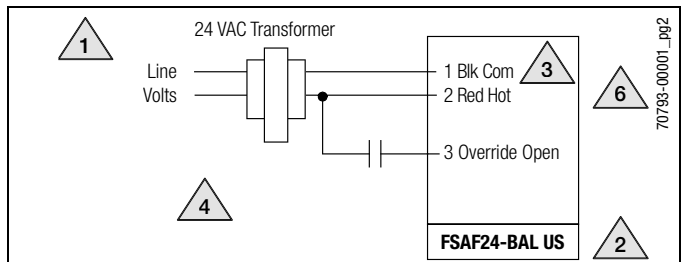
- 1 Provide overload protection and disconnect as required.
- 2 **CAUTION Equipment Damage!**  
Actuators may be connected in parallel. Power consumption and input impedance must be observed.
- 3 Actuator may also be powered by 24 VDC.
- 4 Only connect Hot, Wire 2 to Wire 3 override control
- 5 For end position, interlock control, fan start-up, etc., FSAF24-BAL-S incorporates two built-in auxiliary switches: 2 x SPDT, 7A resistive, 2.5A inductive 120/250 VAC, UL listed, one switch is fixed at 10°, one adjustable 30° to 90°
- 6 For end position indication, interlock control, fan startup, etc., FSAF24-SR-S US incorporates two built-in auxiliary switches: 2 x SPDT, 7A resistive, 2.5A inductive 120/250 VAC, UL Approved, one switch is fixed at 10°, one is adjustable 30° to 90°.

**APPLICATION NOTES**

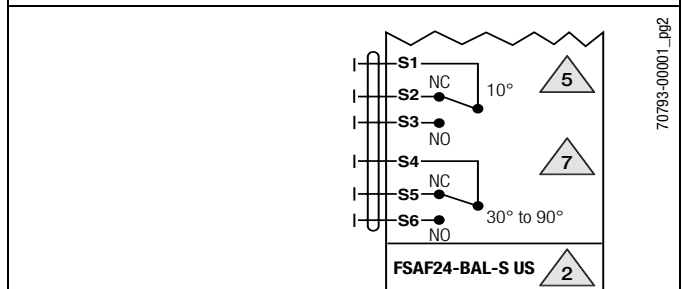
- 6 Meets UL requirements without the need of an electrical ground connection.
- 7 Double insulated

**WARNING Live Electrical Components!**

During installation, testing, servicing and troubleshooting of this product, it may be necessary to work with live electrical components. Have a qualified licensed electrician or other individual who has been properly trained in handling live electrical components perform these tasks. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.



**Override control**



**Auxiliary switch**

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