

Fire and smoke spring return actuators FSNF230 (-S), FSNF24 (-S)



70 in-lb [7.9 Nm], spring return, 350°F [177°C] for limited time, nominal 15 sec. operation



Technical Data	FSNF230(-S)	FSNF24(-S)
Power supply	230 VAC \pm 10% 50/60 Hz	24 VAC \pm 20% 50/60 Hz
Power consumption	Running: 18 W, .13A 230 VAC Holding: 6 W, .04A	
Transformer sizing	27 VA Class 2 power supply 24 VAC	
Electrical connection	3 ft [1m], 18 ga, 3 color coded leads (230V) 3 ft [1m], 18 ga, 2 color coded leads (24V) Aux switch: 3 ft [1m], 18 ga, appliance cable	
Overload protection	Electronic throughout 0 to 95° rotation Auto-restart after temporary overload	
Electrical protection	Grounded enclosure 230 V Double insulated aux switches	
Angle of rotation	95°	
Torque	70 in-lb [7.9 Nm] minimum from 32°F to 350°F [0°C to 177°C]	
Direction of rotation	Spring return can be selected by CCW/CW mounting	
Position indication	Visual indicator, 0° to 95°	
Running time	Between 32°F and 350°F [0°C to 177°C] Motor: apx. 15 sec at rated voltage and torque Spring: apx. 15 sec	
Auxiliary switches	2 x SPDT 7A (2.5A inductive)@ (FSNF24-S/230-S) 125/250VAC, UL listed, 5° and 85°	
Humidity	5 to 95% RH noncondensing	
Ambient temperature	32°F to +122°F [0°C to +50°C]	
Storage temperature	-40°F to +176°F [-40°C to +80°C]	
Housing	NEMA 1, zinc coated steel	
Gears	Steel - permanently lubricated	
Agency listings	UL listed to UL873 and CAN/CSA C22.2 No. 24, NY BEC & CSFM (24V)	
Servicing	Maintenance free	
Quality standard	ISO 9001	
Weight	6 lbs (2.75 kg.)	

Application:

The type FSNF spring-return actuator is intended for the operation of smoke and combination fire and smoke dampers in ventilation and air-conditioning systems. The actuator will meet requirements of UL555 and UL555S when tested as an assembly with the damper and will meet requirements of UBC for 15 second opening and closing.

Square footage of damper operated will depend on make and model and the temperature required.

Operation

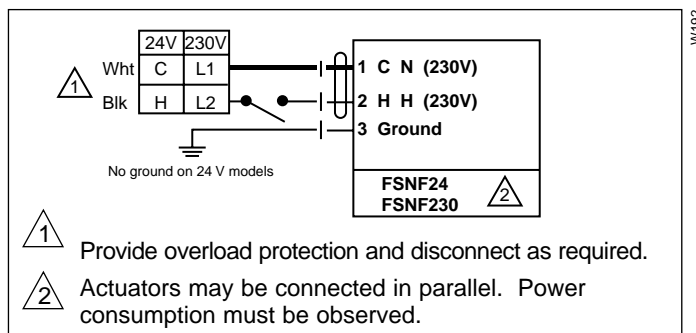
Mounting of the actuator to the damper shaft or jackshaft is via dual square shaft fittings or cold-weld clamp. Teeth in the clamp and V-bolt dig into the metal of both solid and hollow shafts maintaining a perfect connection. The specially designed clamp will not crush hollow shafts. The bottom end of the actuator is held by an anti-rotation strap or by a stud provided by the damper manufacturer.

The actuator is mounted in its fail safe position with the damper blade(s) closed. Upon applying power, the actuator drives the damper to the open position. The internal spring is tensioned at the same time. If the power supply is interrupted, the spring moves the damper back to its fail-safe position.

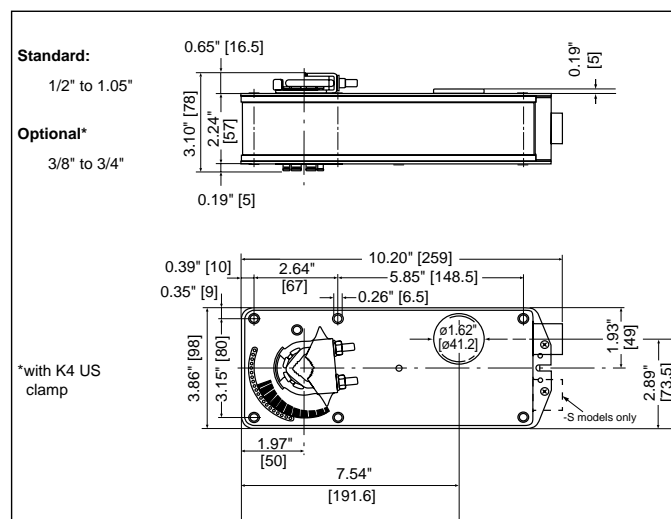
Accessories

All AF/NF linkages may be applied.
Order part 22965-00001 for square shafts.

Wiring



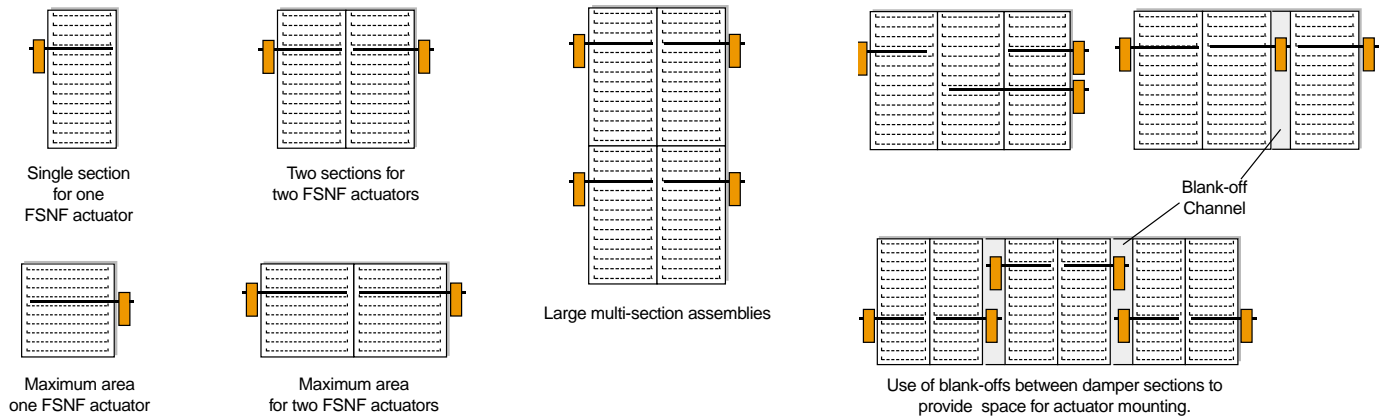
Dimensions (All ratings in brackets are metric.)



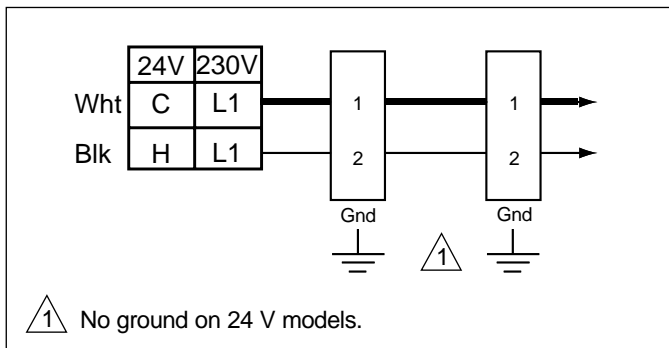
Multi-section damper assemblies – typical applications

The typical US fire-smoke damper requires 5-15 in-lb torque per square ft. [6-17 Nm per square meter] at 350°F [171°C] under dynamic load (2400 fpm [12m/s] velocity).

The FSNF will operate multi-section dampers using multiple actuators for multiple sections. Some of the methods used are shown below.



Parallel actuator wiring



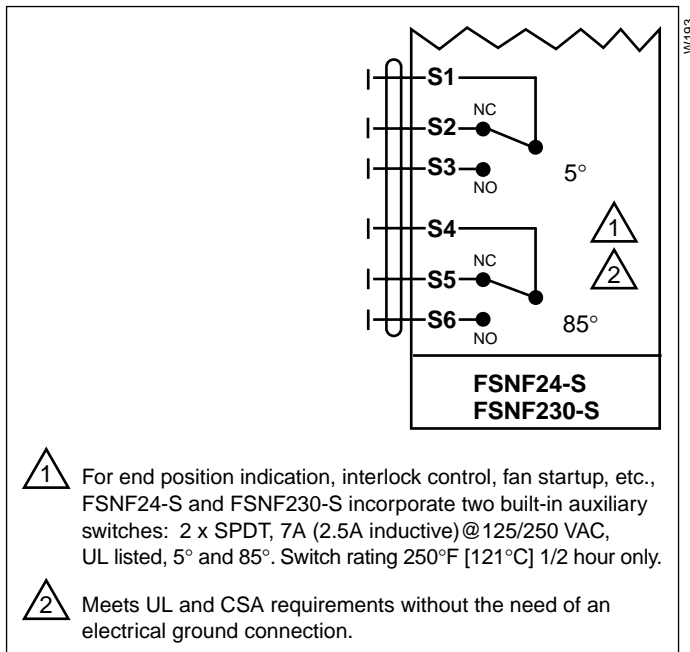
Typical specification

Smoke Control and Combination Fire and Smoke Control Actuator FSNF

All smoke and combination fire and smoke dampers shall be provided with Belimo FSNF US actuators. No substitutions allowed.

Damper and actuator shall have UL555S Listing for 350°F [171°C] (250°F [121°C]) and shall drive open in 15 seconds and spring closed in 15 seconds.

Auxiliary switch wiring for FSNF24-S, FSNF230-S



Replacement applications

When actuators fail on existing dampers, the local authority having jurisdiction sets the code requirements for replacement actuators. The local inspector or fire marshal should be consulted. In most jurisdictions, the replacement actuator must be "equal or better".

The FSNF will meet or exceed requirements, in most applications.

Caution must be used when replacing failed motors with new Belimo actuators. Many old competitive motors did not have internal springs and depended on external springs on the side of the damper or wrapped around the damper shaft to close the damper. Remove excess parts without interfering with fire functions.

In some cases, the damper must be replaced because the damper would have to undergo major modifications to replace an actuator.

Call Belimo to obtain a pdf version of a guide to replacement smoke damper actuators including a checklist for proper testing.