



**Technology That  
Saves Lives**

## **Fire and Smoke Damper Actuators**



Discover the advantages  
[www.belimo.us](http://www.belimo.us)

**BELIMO**<sup>®</sup>

# Belimo is the worldwide leader in fire and smoke actuation



Belimo is the global market leader in life safety actuators due to our industry expertise and continuous innovations that have increased safety levels in buildings over the past decades. Life safety actuators are UL tested and listed with all major damper manufacturers. They exceed required building codes resulting in reduced risk and ensuring proper protection.

- Lowest power consumption life safety actuators available in the market
- ISO 9001 certified quality control and a 5-year warranty assure reliable operation with exceptional customer support
- Complaint with life safety codes and standards



# Protecting lives and assets

Effective fire protection saves lives in the case of emergency, helps minimize property damage, and secures continued operation. The best protection against the spread of fire and smoke through air ducts is provided by motorized fire and smoke dampers to create fire compartments. Belimo fire and smoke damper actuators automatically move into their safety positions to keep the dampers closed during a fire. Belimo fire and smoke damper actuators are designed for operation in smoke and combination fire and smoke dampers in ventilation and air conditioning systems with a torque range from 18 in-lbs to 180 in-lbs at 350°F. For maximum safety, fire and smoke actuators meet all codes for commercial buildings.

“Belimo makes HVAC control devices that we can trust and provide a long lasting system for our clients.”

**Matt Paonessa, Project Engineer**  
**Andersen Construction, Seattle, WA**



## Proven Reliability

Built from the highest quality materials, Belimo fire and smoke actuators ensure reliable performance in extreme conditions.



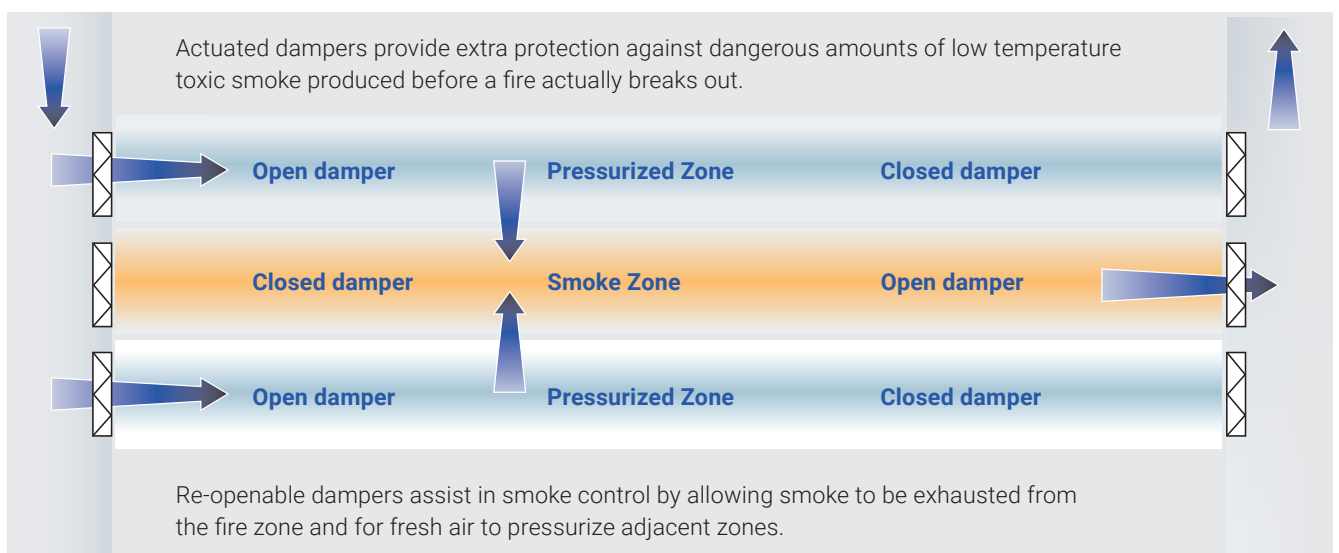
## Low Power Consumption

Belimo's microcontrollers allow motors to deliver high torque at low current draw while running cooler for a longer service life.



## Optimized Functionality

Belimo actuators can be controlled from a central location and integrated into safety systems allowing for a relatively smoke free environment for occupants to efficiently exit and firefighters to enter.

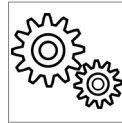


# Optimized functionality for maximum safety



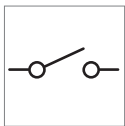
## Steel spring assembly

Pretensioned, heat-resistant steel spring assembly closes damper without loss of torque at elevated temperatures.



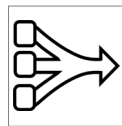
## Gear boxes

Reliable performance with no fretting, corrosion, or peeling in extreme conditions.



## Auxiliary switches

Available in various configurations, switches signal damper position for testing in smoke control systems and where indicator lights are required.



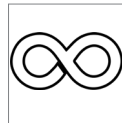
## Modulating models

Allows three dampers to be replaced by one – fire, smoke, and control.



## Linkage kit

Linkage supports indirect mounting or pneumatic retrofit projects.



## Long service life

Actuators are designed for 30,000 safety cycles at the rated load, exceeding the legal minimum requirements.



## Steel-toothed, cold-weld clamp

Low thermal expansion coefficient steel clamp is the safest way to hold damper shafts without slipping.



## Testing

Life cycle tests with rated load, 250°F and 350°F cycle test, input voltage, and functional tests to ensure fail-safe operation.



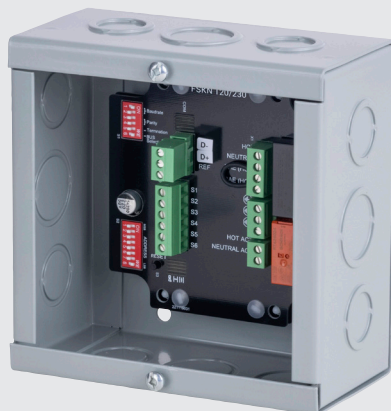
## UL 2043 Listed

Actuators exceed all UL requirements and are tested and qualified according to UL 2043 for use in air plenums as per IMC 602.2 and NEC 300.22 (c).



## Maintenance free

Actuator does not need to be periodically cycled.



## BACNET LIFE SAFETY DAMPER REMOTE INSPECTION MODULE

- Inspection of inaccessible dampers is possible.
- Reduce automatic testing and generate inspection reports.
- Systems commissioning more efficiently performed.
- Frequent testing can be performed at a minimal cost.
- Increase in the integrity of life safety.

# Fire and smoke damper actuator specification

## Smoke and combination fire and smoke actuators in section 233300, or equivalent

1. All smoke and combination fire and smoke dampers shall be provided with Belimo Aircontrols FS series actuators. Equivalents shall be approved before submission of bid. Acceptable actuators include FSTF, FSLF, FSNF, FSAF (A or B).
2. Actuators shall be UL 873 or UL 60730 listed.
3. Actuator and damper shall have UL 555 & UL 555S listing by the manufacturer for 250°F <350°F>.
4. Actuators shall be UL2043 listed for low smoke generation in environmental air spaces and air moving plenums as required by NFPA 70 Section 300.22 (C) and the International Mechanical Code Section 602. Housing shall be steel or plastic; aluminum is not permitted.
5. Actuators shall have a manufacturer's 5-year warranty and be manufactured under ISO 9001 quality control. For replacement of existing competitor motors, NYC OTCR or CSFM listing shall have been obtained.
6. Actuators shall have electronic or microcontroller-based motor control providing:
  - a. Electronic cut off at full open so that no noise is generated while holding open. Holding noise level must be inaudible.
  - b. Overload protection so that the actuators are incapable of burning out if stalled before reaching full rotation.
7. The actuators shall be directly coupled and employ a steel-toothed cold-weld V-bolt clamp for connecting to damper shafts. Aluminum clamps or set-screw attachment are not permitted.
8. Where direct coupling is impossible due to space constraints or geometry of damper installation, linkages designed specifically for the actuator shall be employed.
9. Dampers shall be installed straight and true, level in all planes, and square in all dimensions. Dampers shall move freely without undue stress due to twisting, racking, bowing, or other installation error. Do not install in areas where moisture can penetrate damper or actuator or where actuator temperature continuously exceeds 120°F.
10. Modulating or balancing damper actuators shall have FSAFB24-SR, 2-10 V or 4-20 mA control with an appropriate potentiometer or analog output from building automation system.
11. Actuators shall be sized per damper manufacturer's UL family of standards listings.
12. Voltage: Two-position actuators shall be [24 VAC] [120 VAC]. Proportional actuators shall be 24 VAC.
13. Accessories:
  - a. Integral actuator auxiliary switches shall be provided on all actuators connected to the Firefighters' Smoke Control System (FSCS) panel per Chapter 9 of the International Building Code. One switch for when the damper is in the closed position; one for when the damper is in the open position.
  - b. Where dampers are inaccessible, a [momentary] [keyed] test switch with open and closed position indicator lights shall be mounted were accessible for code required periodic testing.

### Alternate b.




A remote FSKN BACnet testing system shall be installed and wired to the BACnet BAS per the damper schedule.

## MASTER FORMAT

- Section 23 33 13.28 - Smoke Control Dampers
- Section 23 33 33.29 - Combination Fire and Smoke Dampers



# Uncompromised safety

	Model #	Power Supply			Power Consumption		Running Time		Control Input		Auxiliary Switches	
		24 VAC/DC	120 VAC	230 VAC	VA Rating Running	Motor Drive	Fail-Safe	On/Off	2 SPST	2 SPDT		
 <p>FSAF*A Series 180 in-lbs [20 Nm] Approx. 18 sq. ft. @ 350°F</p>	FSAF24A	■			32*	<25	<15	■				
	FSAF24A-S	■			32*	<25	<15	■	■			
	FSAF120A		■		38*	<25	<15	■				
	FSAF120A-S		■		38*	<25	<15	■	■			
	FSAF230A			■	37*	<25	<15	■				
	FSAF230A-S			■	37*	<25	<15	■	■			
 <p>FSAFB Series 180 in-lbs [20 Nm] Approx. 18 sq. ft. @ 250°F</p>	FSAFB24-SR	■			9	<75	<20	2-10 VDC				
	FSAFB24-SR-S	■			9	<75	<20	2-10 VDC			■	
 <p>FSNF Series 70 in-lbs [8 Nm] Approx. 12 sq. ft. @ 350°F</p>	FSNF24 US	■			27*	<15	<15	■				
	FSNF24-S US	■			27*	<15	<15	■			■	
	FSNF120 US		■		27*	<15	<15	■				
	FSNF120-S US		■		27*	<15	<15	■			■	
	FSNF230 US			■	27*	<15	<15	■				
	FSNF230-S US			■	27*	<15	<15	■			■	
 <p>FSLF Series 30 in-lbs [3.5 Nm] Approx. 4 sq. ft. @ 350°F</p>	FSLF24 US	■			15*	<15	<15	■				
	FSLF24-S US	■			15*	<15	<15	■	■			
	FSLF120 US		■		17*	<15	<15	■				
	FSLF120-S US		■		17*	<15	<15	■	■			
	FSLF230 US			■	17*	<15	<15	■				
	FSLF230-S US			■	17*	<15	<15	■	■			
 <p>FSTF Series* 18 in-lbs [2 Nm] Approx. 1.5 sq. ft. @ 250°F</p>	FSTF24 US	■			3	<75	<25	■				
	FSTF24-S US	■			3	<75	<25	■	■			
	FSTF120 US		■		3.5	<75	<25	■				
	FSTF120-S US		■		3.5	<75	<25	■	■			
	FSTF230 US			■	5.5	<75	<25	■				
	FSTF230-S US			■	5.5	<75	<25	■	■			

\*See retrofit installation instructions for details.

Note: Damper sizes given at 2000 fpm [10 m/s].

FSTF actuators only for dampers less than 1.5 sq.ft. at 250°F.

FSLF for dampers 4 sq.ft. and less at 350°F. No linkages are currently available.

FSNF for dampers 4-12 sq.ft. at 350°F and use FSAF\*A for larger dampers and multisection applications. Linkages are available for FSAF\*A & FSAFB, FSNF, and FSTF.

\* VA Rating Note: The FSAF\*A, FSNF, and FSLF series actuators draw more current when driving against any stops. Neither UL nor Belimo require any local fusing or breakers. If used, see individual data sheets for end stop current draws and current limit values.

# Fire and smoke damper actuator replacement solutions

Building and fire codes are confusing. With over 30 years of technical experience with fire marshals and building officials, Belimo can provide the training, code guidance, and replacement solutions needed for you to maintain a reliable, safe, and efficient building.

Instructions and additional resources on retrofitting the following fire and smoke damper actuators can be found online.

## Air Balance, Inc.

Honeywell, MultiProducts, Siebe

## Greenheck Dampers

MultiProducts, Siebe/ Barber Coleman, Siemens, Honeywell

## Honeywell

Actuator Replacements

## Nailor

Honeywell, Siebe, MultiProducts

## Pneumatic Actuators

Competitor to Belimo

## Pottorff

MultiProducts, Prefco

## Ruskin

Honeywell, Siebe/Barber Coleman, MultiProducts, Negator, Phillips

## Safe Air and Dowco

Honeywell, Imperial, MultiProducts, Siebe, Honeywell, and other replacement information



A comprehensive offering with extensive replacement instructions are located at [www.belimo.us/firesmoke](http://www.belimo.us/firesmoke).

# Exceptional service

For over 40 years, Belimo has successfully focused on the heating, ventilation, and air conditioning markets providing quality solutions that will increase energy efficiency and reduce installation costs with the fastest delivery times in the industry. Our innovative products have always been designed to help achieve objectives better, faster, and more economically. Investing in new technology is key to our success, and Belimo will continue to offer products to help businesses succeed.



5-year warranty



Global support



Tested quality



On-time delivery



Extensive service



Complete product range

## Belimo Americas

USA, Latin America, and the Caribbean: [www.belimo.us](http://www.belimo.us)

Canada: [www.belimo.ca](http://www.belimo.ca), Brazil: [www.belimo.com.br](http://www.belimo.com.br)

Belimo Worldwide: [www.belimo.com](http://www.belimo.com)

**BELIMO**<sup>®</sup>