

# FSAF24-S US

On/Off, Spring Return, Meets 250°F [121°C] for a Half Hour, 75 Seconds



## Technical Data

Power Supply	24 VAC $\pm$ 20%, 24 VDC -10% + 20%
Power Consumption Running	7.5 W, 10 VA
Power Consumption Holding	2 W, 4 VA, 0.15 A
Transformer Sizing	10 VA (class 2 power source 24 VAC only)
Shaft Diameter	1/2" to 1.05" round, centers on 1/2" and 3/4" with insert, 1.05" without insert
Electrical Connection	3 ft, 18 GA, 4 leads appliance cable 1/2" conduit connectors
Overload Protection	electronic throughout 0° to 95° rotation
Electrical Protection	actuators are double insulated
Angle of Rotation	mechanically limited to 95°
Torque	133 in-lbs [15 Nm] minimum
Direction of Rotation (Motor)	can be selected by CCW/CW mounting
Direction of Rotation (Fail-Safe)	can be selected by CCW/CW mounting
Position Indication	visual indicator, 0° to 95° (0° is full spring return position)
Manual Override	3 mm hex crank (shipped w/actuator)
Running Time (Motor)	75 seconds constant, independent of load
Running Time (Fail-Safe)	<20 seconds
Humidity	5 to 95% RH non-condensing
Ambient Temperature Range	-22°F to 122°F [-30°C to 50°C]
Storage Temperature Range	-40°F to 176°F [-40°C to 80°C]
Housing	NEMA type 1 / IP40
Housing Material	zinc coated steel
Gears	steel, permanently lubricated
Agency Listings†	cULus listed to UL873 and CAN/CSA C22.2 No.24, UL 2043 Listed for air plenum installation per NEC 300.22 and IMC Section 602 NYC Department of Buildings MEA 197-07-M California State Fire Marshal Listing 3210-1593:103
Noise Level (Motor)	45 db(A) motor, 62 db(A) spring, inaudible holding
Servicing	maintenance free
Quality Standard	ISO 9001
Weight	6.2 lbs. (2.8 kg.)
Auxiliary Switch	2 x SPST, 7A resistive, 2.5A inductive at 120V or 250V, double insulated, one switch at 10°, one adjustable from 30° to 90°

† UL File XAPX.E108966

**Torque min. 133 in-lb, for control of air dampers.**

## Application

For two position control of UL555S rated dampers in HVAC. Actuator sizing should be done in accordance with the damper manufacturer's specifications.

The actuator is mounted directly to a damper shaft or jackshaft 3/8" to 1.05" in diameter by means of its universal clamp. A crankarm and mounting brackets are available if the actuator cannot be direct coupled to the jackshaft or damper shaft.

Square footage of damper operated will depend on make and model of damper. Typically 12 sq.ft. minimum up to 24 sq.ft maximum will be operated for UL555S applications.

## Operation

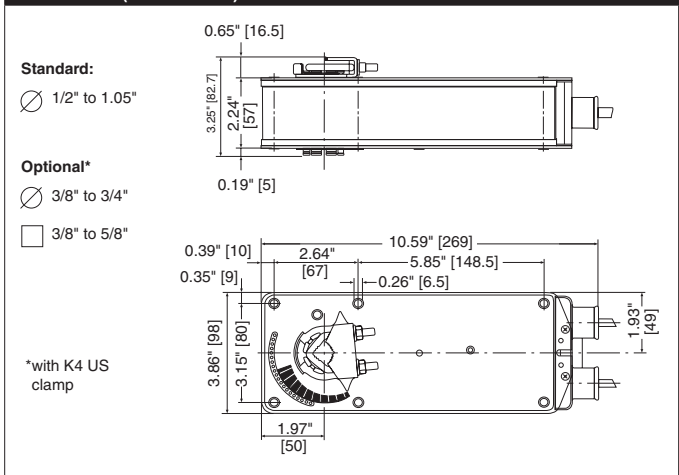
The FSAF series actuators provide true spring return operation for reliable failsafe application and positive close-off on UL555S dampers. The spring return system provides constant torque to the damper with, and without, power applied to the actuator.

The FSAF series provides 95° of rotation and is provided with a graduated position indicator showing 0 to 95°. The FSAF has a manual positioning mechanism which allows the setting of any damper position within its 95° of rotation.

The actuator is shipped in the zero fail-safe position to provide automatic compression against damper gaskets for tight shut-off. When power is applied, the manual mechanism is released and the actuator drives toward the open position where it stops rotating.

The manual override can also be released physically by the use of a crank supplied with the actuator.

## Dimensions (Inches[mm])



## Safety Notes

Screw a conduit fitting into the actuator's bushing. Jacket the actuator's input and output wiring with suitable flexible conduit. Properly terminate the conduit in a suitable junction box.

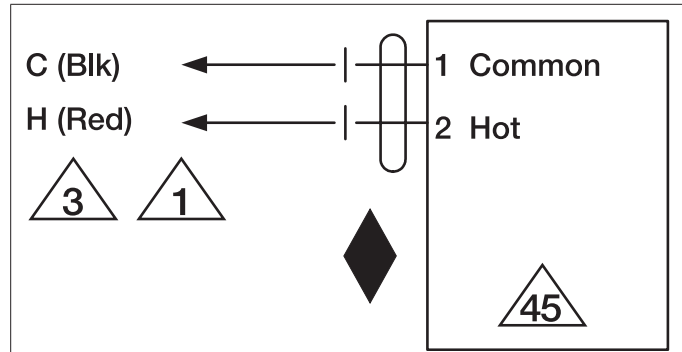
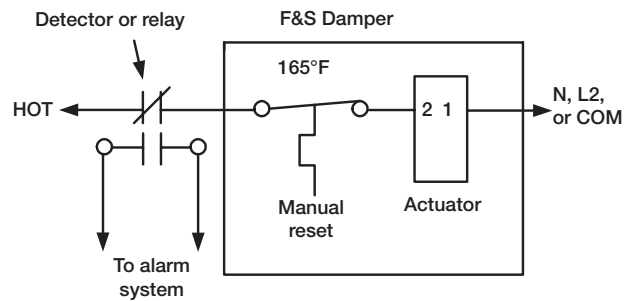
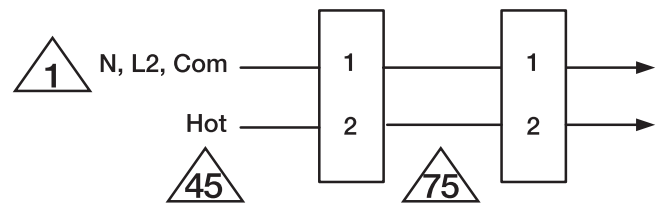
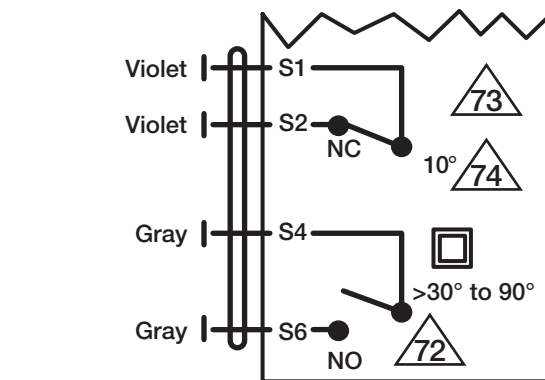
Accessories	
AF-P	Anti-rotation bracket AF/NF.
IND-AF2	Classic AF/NF position indicator.
K4-1 US	Classic AF/NF jackshaft clamp (up to 1.05").
KH-AF	Classic AF/NF crankarm for Shafts to 3/4".
KH-AF-1 US	Classic AF/NF crankarm for Jackshaft to 1.05".
SH8	Push rod for KG6 & KG8 ball joints (36" L, 5/16" diameter).
TOOL-06	8 mm and 10 mm wrench.
ZDB-AF2 US	Angle of rotation limiter for Classic AF/NF.
ZG-100	Univ. right angle bracket (17" H x 11-1/8" W x 6" base).
ZG-101	Univ. right angle bracket (13" H x 11" W x 7-7/16" base).
ZG-102	Dual actuator mounting bracket.
ZG-AF US	Classic AF/NF crankarm adaptor kit.
ZG-AF108	Classic AF/NF crankarm adaptor kit with ZG-108.
ZG-DC1	Damper clip for damper blade, 3.5" width.
ZG-DC2	Damper clip for damper blade, 6" width.
ZS-100	Weather shield - galvanneal (13" L x 8" W x 6" D).
ZS-150	Weather shield - PC w/ foam seal (16" L x 8-3/8" W x 4" D).
ZS-260	Explosion proof housing.
ZS-300-5	NEMA 4X, 316L stainless steel enclosure.
BAE165 US	165° F electric thermal sensor, SPST, normally closed.
S2A-F US	Auxiliary switch, 2x SPDT, 3A (0.5A inductive) @250 VAC max.

**Typical Specification**

All smoke and combination fire and smoke dampers shall be provided with Belimo FSTF, FSLF, FSNF, or FSAF actuators. All substitutions must be approved before submission of bid. Damper and actuator shall have UL 555S Listing for 250°F &/or 350°F. Actuator shall have been tested to UL 2043 per requirements of IMC 602.2 and NEC 300.22 (c). Where position indication is required -S models with auxiliary switches or damper blade switches will be provided per code requirements.

**Wiring Diagrams**
**APPLICATION NOTES**

- Provide overload protection and disconnect as required.
- Actuators may also be powered by 24 VDC.
- Meets cULus requirements without the need of an electrical ground connection.
- Actuators may be powered in parallel. Power consumption must be observed.
- S4 makes to S6 when actuator is powered open.
- Auxiliary switches are for end position indication or interlock control.
- Double insulated.
- Ground present on some models.


**24 VAC/DC**

**Typical containment damper control wiring**

**Parallel Actuator Wiring**

**Auxiliary Switch**