

## FSDR-511 Combination Fire Smoke Damper Round Steel Blade

### APPLICATION & DESIGN

Model FSDR-511 is a combination fire smoke damper with round style blades. The FSDR-511 is qualified to 3,000 ft/min and 4 in. wg for operation and dynamic closure in emergency fire smoke situations. Model FSDR-511 may be installed horizontally or vertically (with axle running horizontally) and is rated for airflow and leakage in either direction.

### RATINGS

#### UL 555 Fire Resistance Rating

**Fire Rating:** 1 1/2 hours  
**Dynamic Closure Rating:** Actual ratings are size dependent  
**Velocity:** Up to 3,000 ft/min  
**Pressure:** 4 in. wg

#### UL 555S Leakage Rating

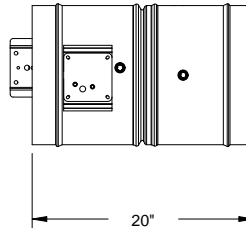
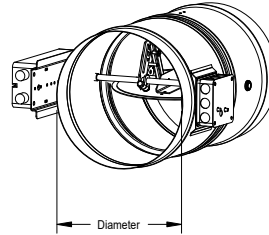
**Leakage Class:** I  
**Operational Rating:** Actual ratings are actuator dependent  
**Velocity:** Up to 3,000 ft/min  
**Pressure:** 4 in. wg  
**Temperature:** Up to 350 F

### PRODUCT DETAILS

**Frame Material:** Galvanized steel  
**Frame Thickness:** 20 ga  
**Blade Material:** Double skin galvanized steel  
**Blade Thickness:** 14 ga equivalent  
**Axle Material:** 0.500 in. steel  
**Axle Bearings:** Bronze  
**Closure Device:** RRL  
**Closure Temperature:** 165 F  
**Partition Depth:** 8.5 in.  
**Sizing Method:** Nominal

### ACTUATOR INFORMATION

**Actuator Type:** 120 VAC  
**Operating Mode:** Two Position  
**Actuator Operation:** Spring Return  
**Actuator Mounting:** External  
**Fail Position:** Closed  
**NEMA Enclosure:** 1  
**Time Cycle:** Standard  
**Actuator Temperature:** 350 F  
**Velocity:** 2,000 ft/min



### STOCK NOTES

- Closure devices 165° F RRL
- Two retainer plates
- Sizes: 6", 8", 10", 12", 14"

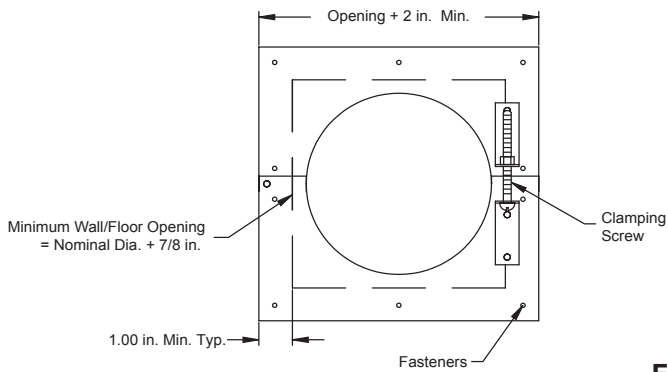
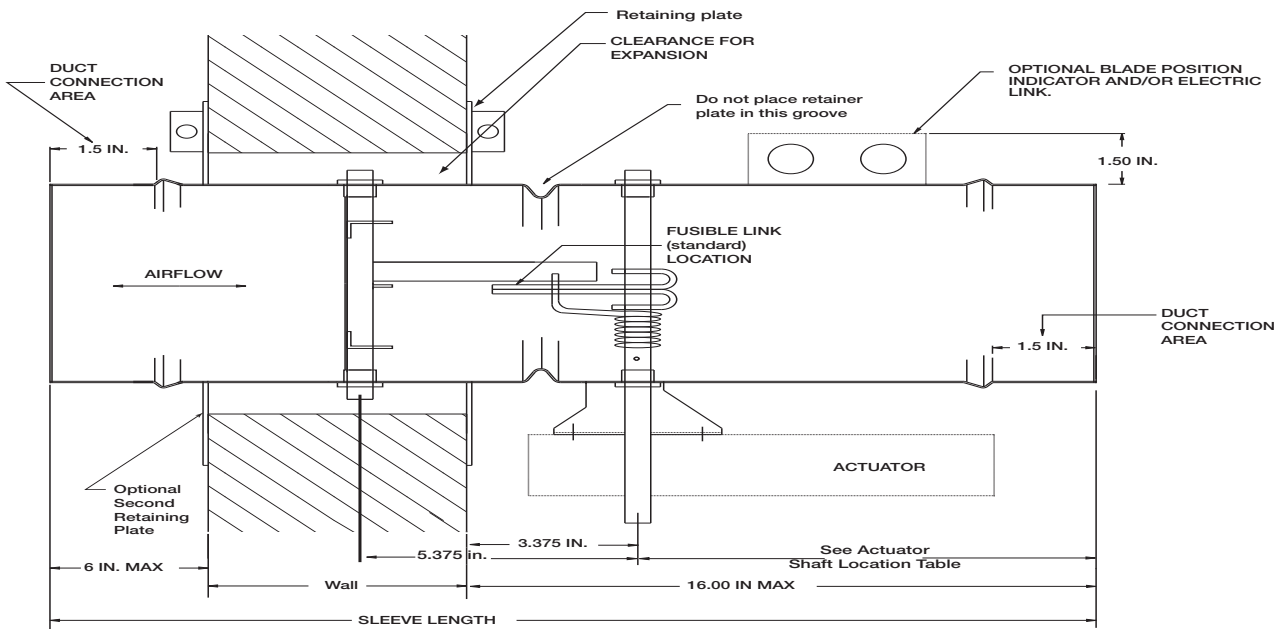
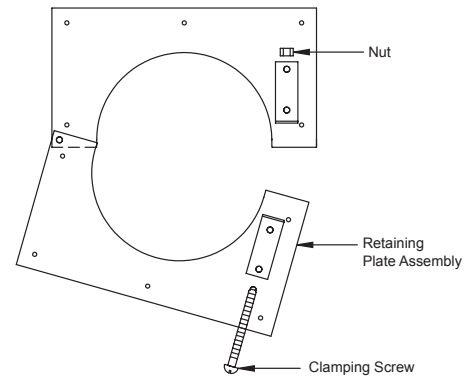


Figure 1



TOP VIEW OF DAMPER

Figure 2

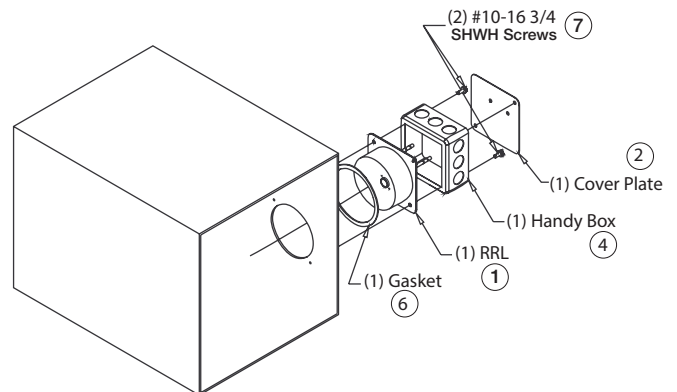
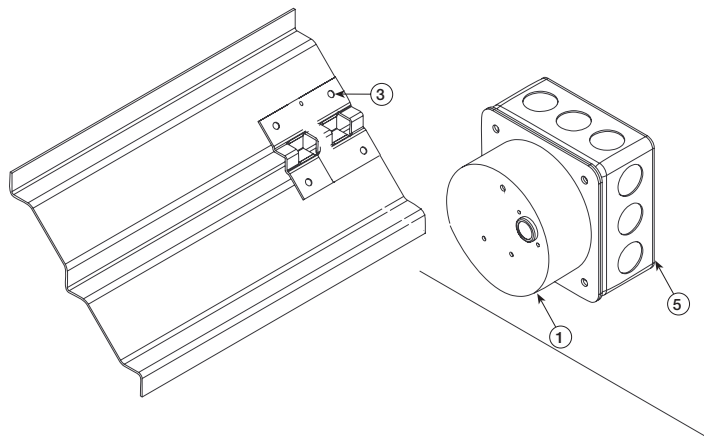
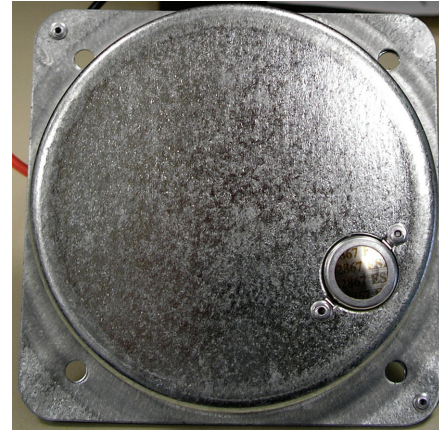
Actuator Shaft Location (in inches)				
Control Device	Diameter (in inches)			
	≥ 6 to ≤ 10 <sup>1</sup> / <sub>8</sub>	> 10 <sup>1</sup> / <sub>8</sub> to ≤ 11 <sup>1</sup> / <sub>8</sub>	> 11 <sup>1</sup> / <sub>8</sub> to ≤ 14 <sup>1</sup> / <sub>8</sub>	> 14 <sup>1</sup> / <sub>8</sub>
Fusible Link	3 <sup>1</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>16</sub>	3 <sup>1</sup> / <sub>16</sub>
RRL	5 <sup>11</sup> / <sub>16</sub>	4 <sup>11</sup> / <sub>16</sub>	4 <sup>11</sup> / <sub>16</sub>	4 <sup>11</sup> / <sub>16</sub>
RRL/OCI	7 <sup>7</sup> / <sub>16</sub>	7 <sup>7</sup> / <sub>16</sub>	7 <sup>7</sup> / <sub>16</sub>	7 <sup>7</sup> / <sub>16</sub>
TOR	7 <sup>7</sup> / <sub>16</sub>	7 <sup>7</sup> / <sub>16</sub>	7 <sup>7</sup> / <sub>16</sub>	7 <sup>7</sup> / <sub>16</sub>

## APPLICATION

The RRL Option replaces the fusible link on a combination fire smoke damper with an electric sensor (thermostat). The sensor has a fixed temperature setting (usually 165° F [74°C]) and performs the same function as the fusible link that it replaces. The sensor interrupts power to the actuator and the actuator's spring return mechanism causes the damper to close.

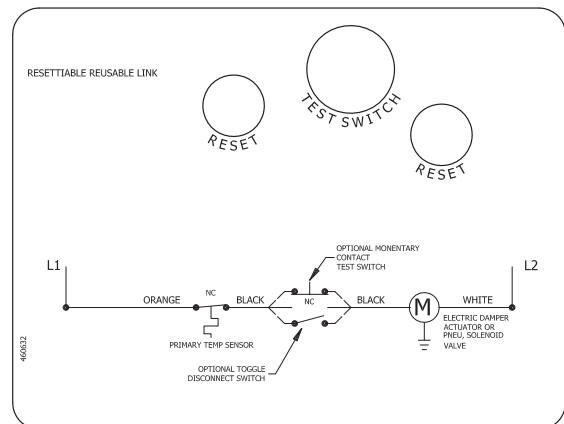
The sensor is of the manual reset type and can be reset after the temperature has cooled down below the sensor set point. Before resetting any sensor, a careful inspection of the damper and sensor should be made as exposure to actual fire conditions may render these devices unusable.

This option requires factory installation of the damper actuator and factory wiring of the electric sensor to meet UL requirements for fire dampers. If the damper is equipped with a pneumatic actuator, an EP switch is required with an appropriate electric power circuit, to allow the electric thermostat to control the pneumatic actuator.



Item Number	Part Number	Qty.	Description
1	820734 (165°) 821278 (212°) 824671 (250°) 824672 (350°)	1	RRL Switch Box
2	658593	1	4 in. x 4 in. Cover Plate
3	415555	4	Tek Screws, HWH, #10-16x.5
4	380864	1	4 in. x 4 in. Handy Box
5	460632	1	Label
6	370119	1	EPDM Gasket
7	415926*	2	TCS, SHWH, #10-16x.75 Screws

\* Can also use equivalent #10 nut and bolt combination such as 415416 (STH #10-32x.5) and 415385 (Hex nut #10-32).



WIRING DIAGRAM

# FSLF120-FC US

On/Off, Spring Return, 350°F [177°C] for half hour, 120VAC, 15 Seconds Cycle Time



## Technical Data

Power Supply	120 VAC, ±10%, 50/60 Hz
Power consumption in operation	18 VA
Power consumption in rest position	4 W, 5.5 VA (50 Hz 8 VA), End stop 27 VA, 0.25 A slow blow fuse *
Shaft Diameter	3/8" to 1/2" round, centers on 1/2"
Electrical Connection	3 ft [1 m], 18 GA appliance cable with 1/2" conduit connector
Overload Protection	electronic throughout 0° to 95° rotation
Electrical Protection	grounded enclosure, 120V
Angle of rotation	95°
Torque motor	30 in-lb [3.5 Nm] from 32...350°F [0...177°C]
direction of rotation motor	reversible with CW/CCW mounting
direction of rotation spring-return	reversible with CW/CCW mounting
Position indication	visual indicator, 0° to 95° (0° is full spring return position)
Running time motor	<15 sec at rated voltage and torque 32...122°F [0...50°C]
Running time emergency control position	<15 sec
Ambient humidity	5 to 95% RH non-condensing
Ambient temperature	32...122°F [0...50°C]
Non-operating temperature	-40...176°F [-40...80°C]
Degree of Protection	IP30, NEMA 1
Housing material	zinc coated steel
Agency Listing	cULus acc. to UL60730-1A/-2-14, CAN/CSA E60730-1:02, Listed to UL 2043 - suitable for use in air plenums per Section 300.22(C) of the NEC and Section 602 of the IMC. NYC Department of Buildings MEA 197-07-M California State Fire Marshal Listing 3210-1593:102
Noise Level (Fail-Safe)	45 dB (A) motor, 62 dB (A) spring, inaudible holding
Maintenance	maintenance free
Quality Standard	ISO 9001
Weight	4.04 lb [1.8 kg]

† UL File XAPX.E108966

## Fire & Smoke damper actuator

### Application

The type FSLF 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.

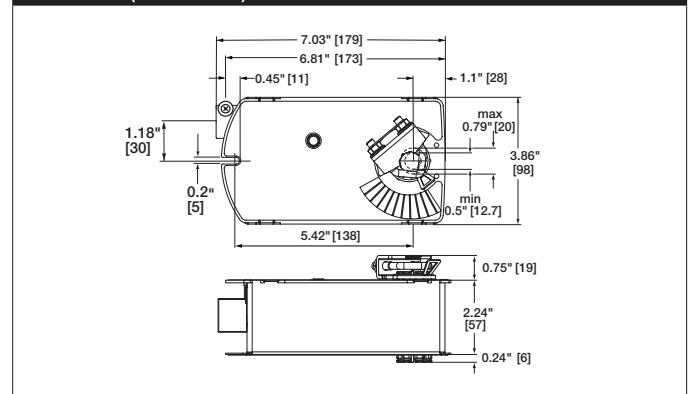
IMPORTANT 24VDC NOTE: The FSLF24 & -S models will not operate below 24VDC. A filtered and regulated power supply must be used.

### Operation

Mounting of the actuator to the damper axle shaft or jackshaft is via a 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.

### Dimensions (Inches[mm])



### Safety Notes

\* Neither UL nor Belimo require individual fusing of FSLF actuators.

The FSLF draws higher peak current when driving against its end stop or any other type of stop. Given the technology of fuses & breakers, this requires the value of fuse or breaker to be increased to avoid nuisance opening or tripping. A 1 amp slow blow should be used for 24VAC. A 0.25 amp slow blow should be used for 120VAC. A .125 amp slow blow should be used for 230V.

#### SAFETY NOTES

Wiring and installation must comply with all local electrical and mechanical codes.

The actuator contains no components which the user can replace or repair. Cables are not plenum rated and require flex conduit.

1/2" Threaded Connector: Screw a conduit fitting into the actuator's metal bushing. Jacket the actuator's input wiring with suitable flexible conduit. Properly terminate the conduit in a suitable junction box.

3/8" Flex Connector (-FC models): Mount the flexible conduit into the actuator's metal bushing by means of the provided screw with a torque of 1.2 Nm. Jacket the actuator's input wiring with suitable flexible conduit. Properly terminate the conduit in a suitable junction box.

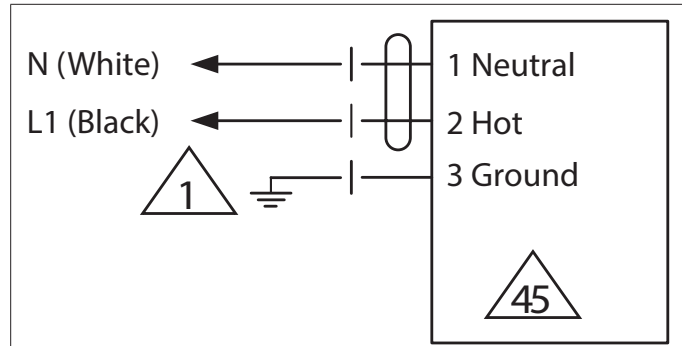
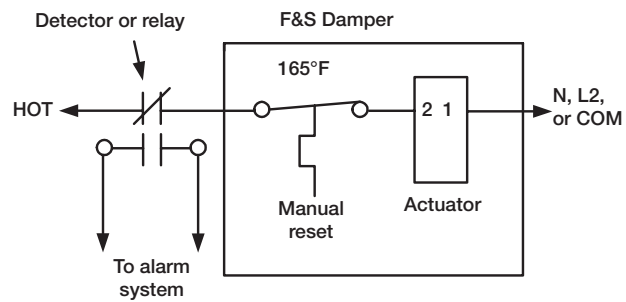
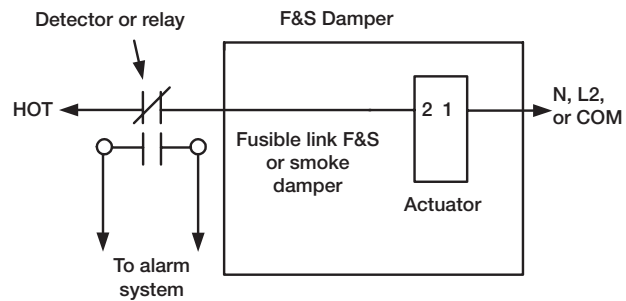
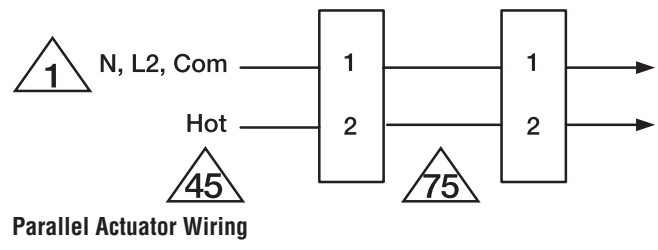
Accessories	
---BAE165 US	165° F electric thermal sensor, SPST, normally closed.
---S2A-F US	Auxiliary switch, 2x SPDT, 3A (0.5A inductive) @250 VAC max.

**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 (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 be powered in parallel. Power consumption must be observed.
- Ground present on some models.


**120 VAC**

**Typical containment damper control wiring**

**Typical smoke or fusible link damper wiring**

**Parallel Actuator Wiring**