

FSD-211 Combination Fire Smoke Damper

APPLICATION & DESIGN

Model FSD-211 is a combination fire smoke damper with 3V style blades. This model is designed for operation and dynamic closure in emergency fire smoke situations. It is rated for airflow and leakage in either direction. The FSD-211 may be installed horizontally or vertically (with blades running horizontally).

RATINGS

UL 555 Fire Resistance Rating

Fire Rating: 1 1/2 hours
Dynamic Closure Rating: Actual ratings are size dependent
Velocity: Up to 2,000 ft/min
Pressure: 6 in. wg

UL 555S Leakage Rating

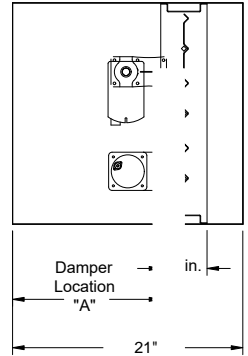
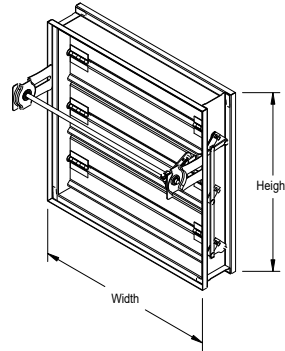
Leakage Class: I
Operational Rating: Actual ratings are size dependent
Velocity: Up to 2,000 ft/min
Pressure: 6 in. wg
Temperature: Up to 350 F depending on actuator

PRODUCT DETAILS

Frame Type: Channel
Frame Thickness: 16 ga
Mounting: Vertical
Closure Device: RRL
Closure Temperature: 165 F
Blade Action: Parallel
Blade Seal: Silicone
Axle/Linkage Material: Steel
Axle Bearings: 316 SS
Sizing: Nominal

ACTUATOR INFORMATION

Actuator Type: 120 VAC
Actuator Mounting: External
Actuator Location: Right Side
Operating Mode: Two Position
Actuator Operation: Spring Return
Fail Position: Closed
Time Cycle: Standard
Operating Temperature: 250 F
Velocity: 2,000 ft/min
Pressure: 4 in. wg
NEMA Enclosure: 1



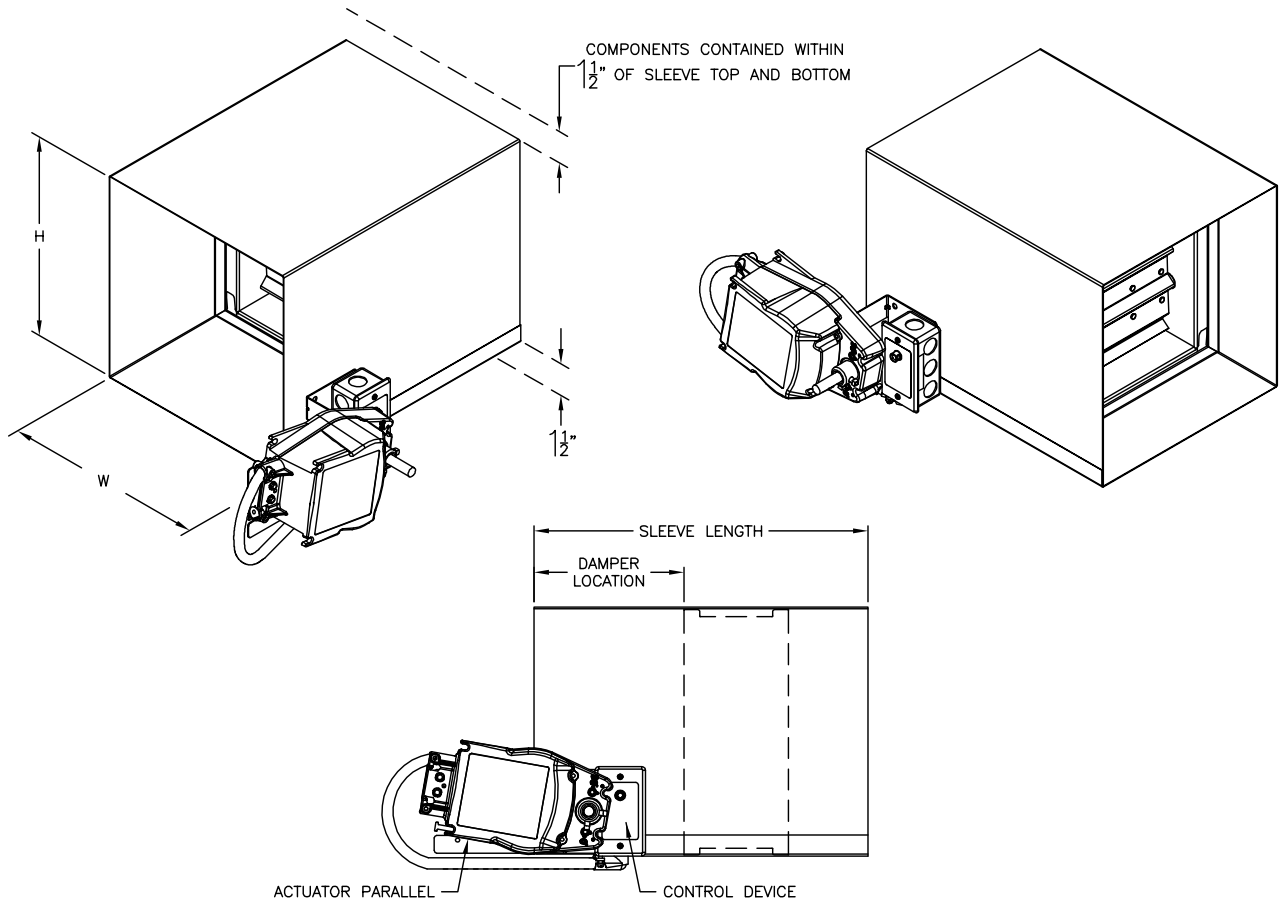
- Width and height furnished approximately 0.250 in. undersize.
- Add sleeve thickness for overall sleeved damper dimension.
- If the actuator is contained, then it does not extend more than 1.500 in. above or below the damper sleeve.

Size W x H
8" x 8"
10" x 10"
12" x 6"
12" x 8"
12" x 12"
14" x 14"
16" x 8"
16" x 16"
18" x 18"
20" x 20"
24" x 12"
24" x 24"

Compact Configuration

for Combination Fire Smoke and Smoke Dampers

Compact configuration is a type of drive assembly used for certain configurations of motorized life safety dampers. This assembly provides benefits such as a smaller footprint, faster installation time and improved consistency without affecting the damper's operation. This assembly incorporates an actuator, drive axle, mounting bracket and RRL (Reusable Resettable Link).



Applicable configurations:

Configurations outside those listed below are constructed using the traditional built up method.

Model: FSD-211, -212, -213, -311, -312; CFSD-211-2, -212-2, 211-3, -212-3, SMD-201, -202, -203, -301, -302

Size: UL qualified sizes 24 in. x 24 in. (610mm x 610mm) and less

Sleeve Length: 16 in. (406mm), 21 in. (533mm) or 24 in. (610mm) ; 20 ga. (.9mm) thickness

Closure Temperature (RRL): 165°F (74°C), 212°F (100°C)

Actuator Mounting: External Right

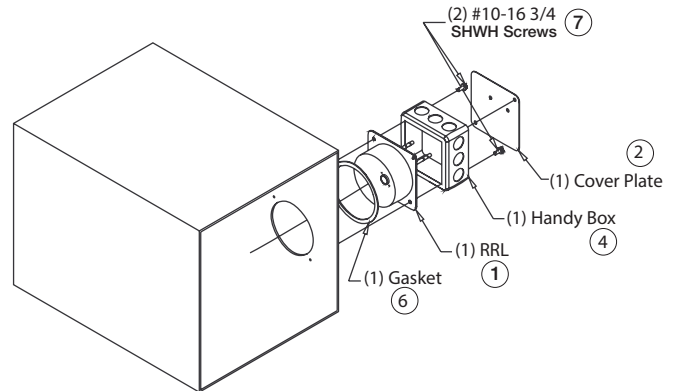
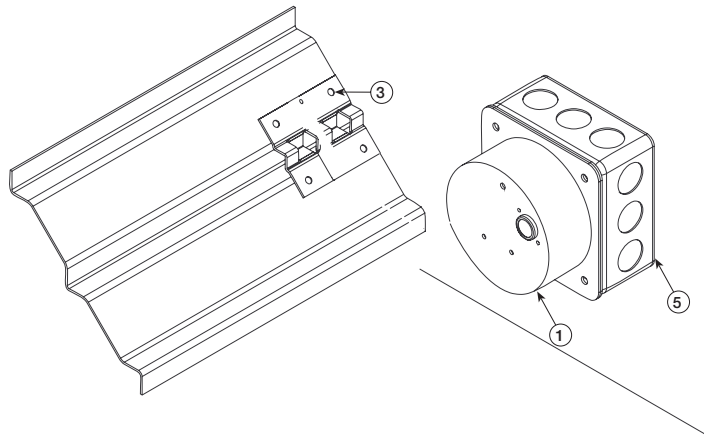
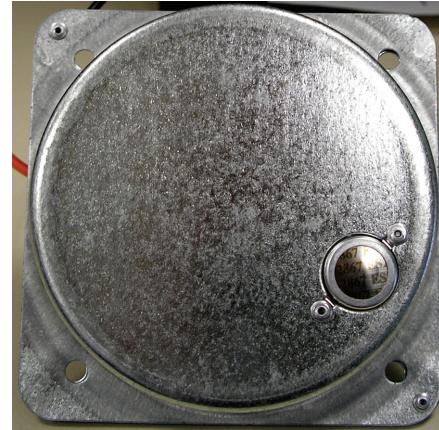
Actuator Model: Belimo FSLF and FSTF, Honeywell MSxx04 and MSxx09

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.

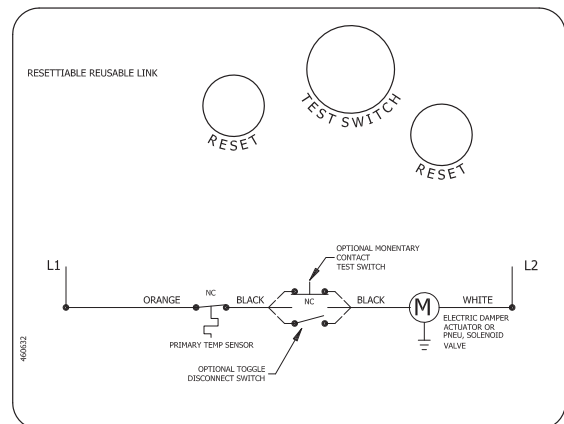
The sensor is of the manual reset type and can be reset after the temperature has cooled down below the sensor set point. Before resetting any sensor, a careful inspection of the damper and sensor should be made as exposure to actual fire conditions may render these devices unusable.

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

Greenheck's one piece retaining angle, the POC (literally named for being a "Piece of Cake") makes damper installation a breeze. The POC angle is designed by fastening four pieces together to form one piece. When installed the angles simply wraps around the sleeve of the damper and is fastened in place.

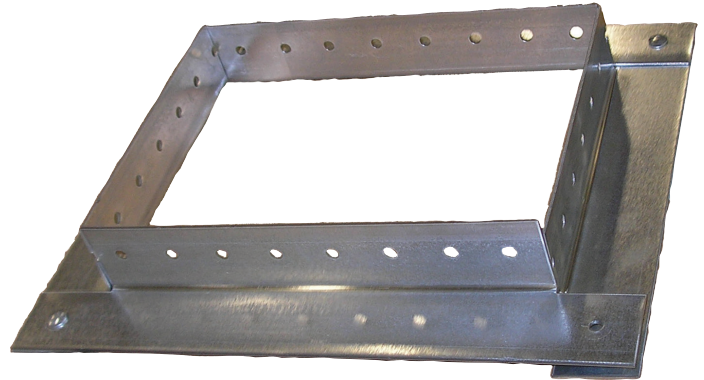
Construction

- 20 ga. (1mm) or 16 ga. (1.5mm) galvanized steel
- Sizes: 1½ in. x 1¼ in. (38mm x 32mm) or 2½ x 1½ in. (64mm x 38mm) for sizes greater than 48 inches (1219mm)

Retaining angles for 1 1/2 hour rated fire and combination fire smoke dampers with a width and height 48 in. (1219mm) or less must be a minimum of 20 ga. (1mm) steel. Retaining angles for all 3 hour rated dampers and all dampers with a width or height greater than 48 in. (1219mm) must be a minimum of 16 ga. (1.5mm).

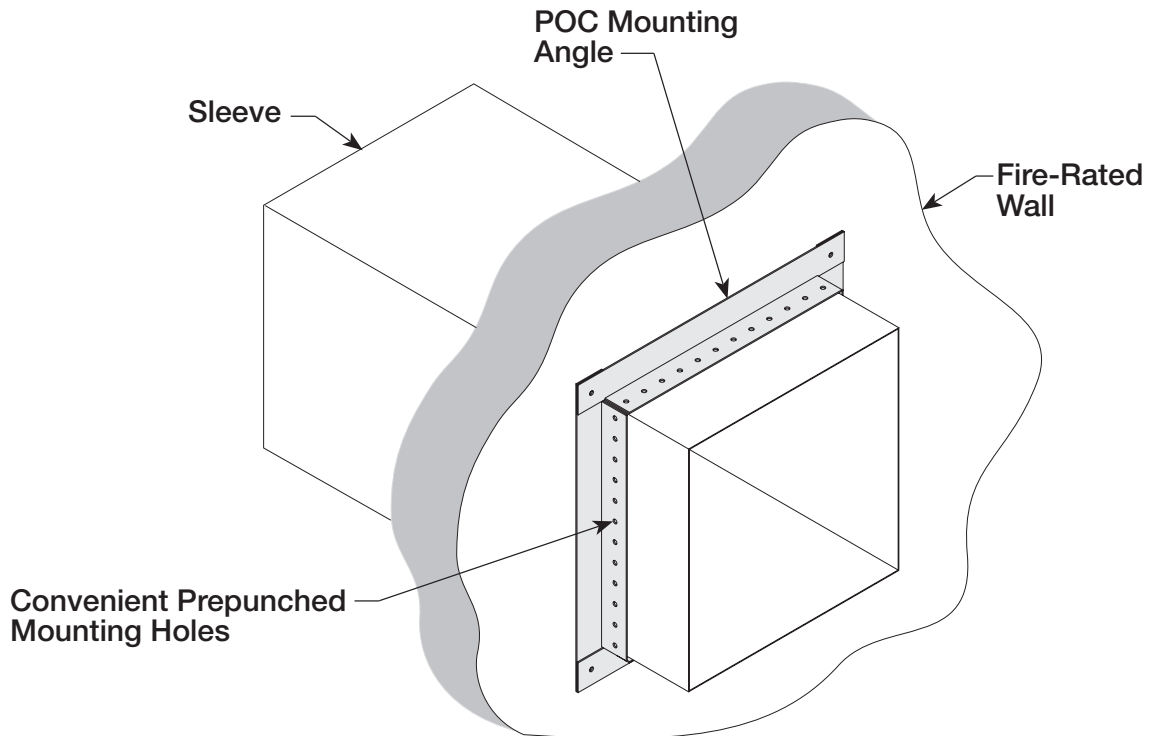
If the damper width plus damper height is less than or equal to 44 inches (1117mm), then the POC angles ship in one piece. If damper width plus damper height is greater than 44 in. (1117mm), the POC angle ships in two pieces.

The POC retaining angles meets the requirements of UL 555 and UL555S.



Retaining angle as shipped from the factory.

The four sides are connected together by rivets in three corners allowing for easy installation.

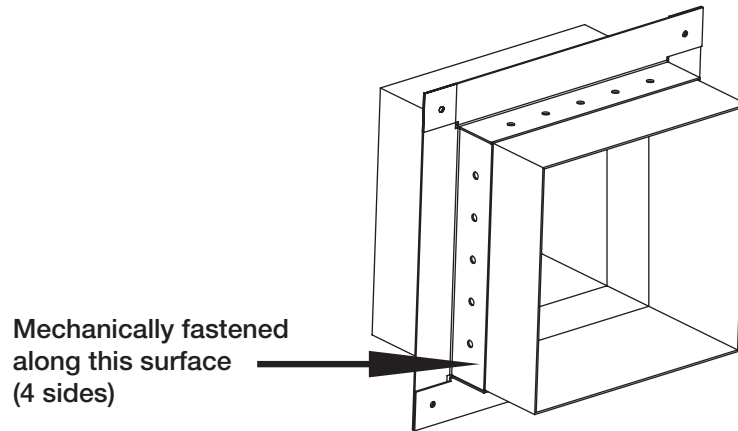


Retaining angle as mounted in the field.

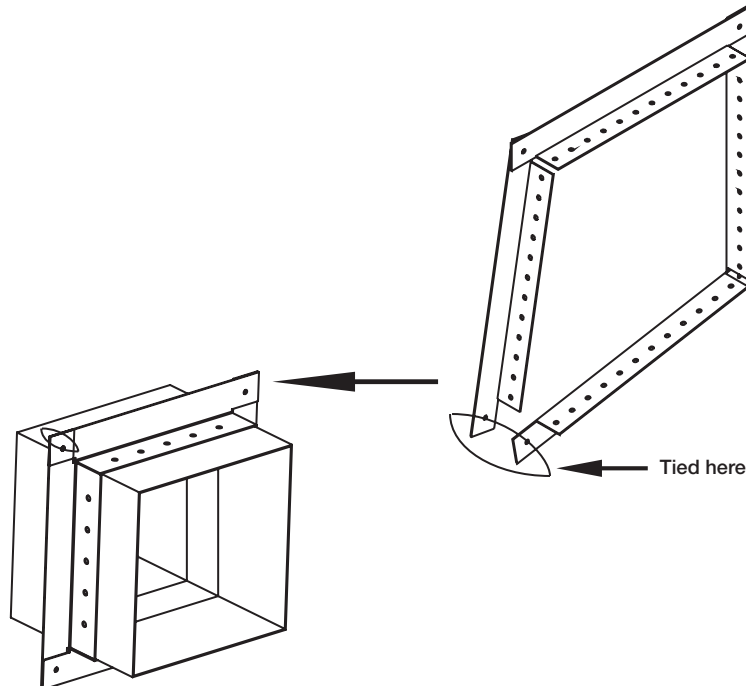
The POC angle wraps around the sleeve. The factory provides prepunched mounting holes to further simplify installation.

Available Retaining Angle Options:

- **Loose** - Angle(s) ships unattached to the damper. (DFD series , FD Series, FSD series, VCD series)
- **Single-Fastened** -Angles ships mechanically fastened to the damper sleeve at a specified location. (DFD series , FD Series, FSD series)



- **Wrapped** - Angle is wrapped around the damper sleeve and tied together. (DFD series , FD Series, FSD series)



FSTF120 US

On/Off, Spring Return Fail-Safe, 120 VAC



Technical Data	
Power Supply	120 VAC, ±10%, 50/60 Hz
Power consumption in operation	2 W, 3.5 VA
Power consumption in rest position	1.5 W, 2.5 VA
Shaft Diameter	1/4" 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	actuators are double insulated
Angle of rotation	95°
Torque motor	18 in-lb [2 Nm]
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	<75 sec @ 250°F [121°C]
Running time emergency control position	<25 sec @ 32...122°F [0...50°C]
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	IP42, NEMA 2, UL Enclosure Type 2
Housing material	UL94-5VA
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. California State Fire Marshal Listing 3210-1593:104
Noise level, motor	<45 dB (A)
Noise Level (Fail-Safe)	<62 dB (A)
Maintenance	maintenance free
Quality Standard	ISO 9001
Weight	1.59 lb [0.60 kg]

Part no.	Clamp side spring return
FSTF120 US	CW
FSTF120.1 US	CW (bulk pack)
FSTF120.1 CCW	CCW (bulk pack)
FSTF120-S US CW	CW
FSTF120-S.1 US	CW (bulk pack)
FSTF120-S.1 CCW	CCW (bulk pack)
FSTF24-S.1 US	CW (bulk pack)

† UL File XAPX.E108966

Torque 18 in-lb, 250°F for 30 min, for fire and smoke dampers

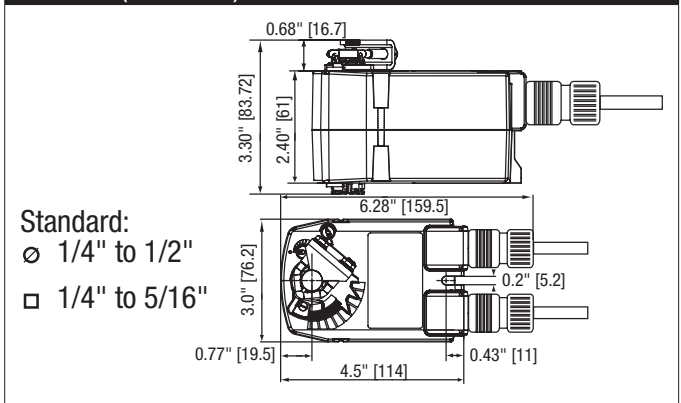
Application

The type FSTF 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. Square footage of damper operated will depend on make and model per damper manufacturer UL testing.

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) typically 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

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.

Retrofit Safety Note

Use of the FSTF for replacement of other makes of actuators is limited in damper area. The FSLF is preferred for direct coupled applications. The FSTF may be applied for linkage applications on dampers 1.5 sq.ft. and smaller at velocities under 2000 fpm.

Date created, 03/08/2019 - Subject to change. © Belimo Aircontrols (USA), Inc.

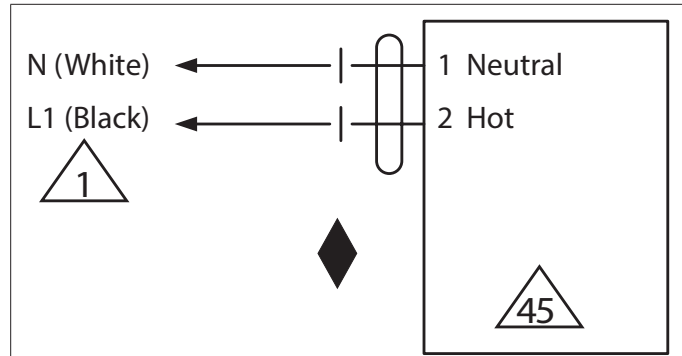
Accessories	
---KH-TF US	TFB(X) crankarm with 5/16" slot.
---KH-TF-1 US	TFB(X) crankarm with 1/4" slot.
KH-TF-1.1 US	TFB(X) crankarm for Shafts with 1/4" slot.
---TF-P	Anti-rotation bracket TF/NKQ/AM/NM/LM.
---TOOL-06	8 mm and 10 mm wrench.
---ZG-TF2	TFB(X) crankarm adaptor kit (T bracket included).
---ZG-TF112	TFB(X) crankarm adaptor kit (includes ZG-113).
---ZS-100	Weather shield - galvaneal (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).
---BAE165 US	165° F electric thermal sensor, SPST, normally closed.

Typical Specification

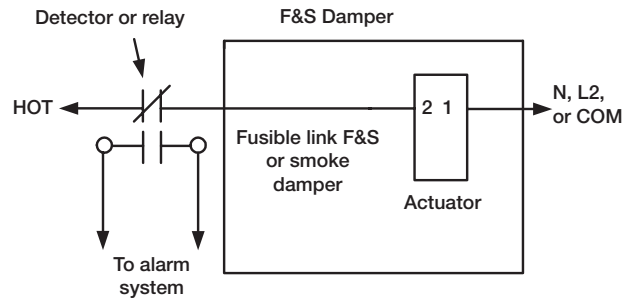
All smoke and combination fire and smoke dampers shall be provided with Belimo FSTF, FSLF, FSNF, or FSAF actuators. All substitutions must be approved before submission of bid. Damper and actuator shall have UL 555S Listing for 250°F &/or 350°F. Actuator shall have been tested to UL 2043 per requirements 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

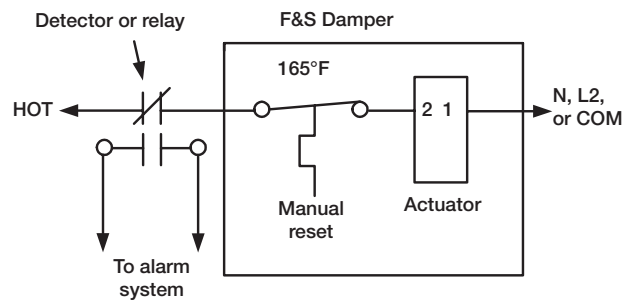
- Provide overload protection and disconnect as required.
- Actuators may be powered in parallel. Power consumption must be observed.
- Ground present on some models.
- Meets cULus requirements without the need of an electrical ground connection.



120 VAC



Typical smoke or fusible link damper wiring



Typical containment damper control wiring

