

# Honeywell

# Fire and Smoke Damper Actuator Field Replacement Guide

## REPLACEMENT GUIDE



## APPLICATION

Safety should never be left to chance. Honeywell fire and smoke actuators are designed to meet both UL-555 and UL555S 350°F safety requirements for fire and smoke applications, if applicable. Fast-acting actuators close dampers in 15 seconds, and the integral spring return ensures the consistent, proper level of torque. For the highest level of occupant safety, you can count on Honeywell.

Fire and Smoke actuators and assemblies must function properly during a fire or life-safety emergency. Honeywell Fire and Smoke Actuators provide fast action when timeliness is key in preventing the spread of fire and smoke. Proper installation and periodic performance testing are required to ensure fire and smoke damper assemblies will fully function should an emergency occur.

The following guidelines are crucial to keep fire and smoke damper assemblies operating properly, and to stay in adherence to standards and codes.

## FIRE CODE REFERENCES AND INFORMATION

Honeywell Fire and Smoke Actuators are designed to meet both UL555 and UL555S safety requirements for combined fire and smoke applications, if applicable.

The following maintenance guidelines are a summary of the National Fire Protection Association (NFPA) Codes as well as Air Movement and Control Association (AMCA) and Honeywell manuals. We recommend that you become familiar with NFPA 80, 90A, 92A & B, and 105 and AMCA publication 503. Be aware that other codes, such, International Building Code (IBC), regional, state and local codes, may also apply to your area.

## REPLACEMENT GUIDELINES

### Actuator Specifications

UL555 and UL555S require fire and smoke actuators to be tested to 20,000 close and reopen cycles and close within 75 seconds. UL555 also requires them to be rated to either 250°F or 350°F. If UL does not apply to your region, please omit.

Honeywell fire and smoke actuators are rated to 30,000 cycles, operate within 15 seconds, and are rated to 350°F.

### Applications

Combined Fire and smoke dampers are used to maintain fire barrier ratings when walls and floors are penetrated by ductwork.

Smoke dampers are used to prevent the passage of smoke through the HVAC system or from one side of a fire-rated separation to the other. They may be dedicated to this function or also function as HVAC dampers.



38-00001-02

## Damper Manufacturer's Guidelines

When replacing actuators, it is important to follow the guidelines that are provided by the damper manufacturer for the damper assembly. When replacing a fire and smoke actuator the replacement should be either like-for-like with the original, factory-mounted actuator, or a technically superior product where the total assembly has passed UL testing with the damper manufacturer.

Please refer to the damper manufacturer's guidelines for details.

## MAINTENANCE INFORMATION

Fire and Smoke damper assemblies must undergo periodic performance testing to be properly maintained and to ensure they are functioning and will function in a fire or life-safety emergency.

The NFPA codes require combined fire and smoke dampers be tested and inspected at the time the system is commissioned, after it has been balanced, and one year after installation. Then they need to be tested and inspected every 4 years, except in hospitals, where they need to be tested and inspected every 6 years. See "Option 1" and "Option 2" in this section for detailed test instructions.

AMCA suggests that smoke dampers be tested at least semi-annually. Smoke dampers should be operated, and the correct outputs should be observed, to verify operation. These tests need to also be conducted under standby power, if used.

Honeywell Fire and Smoke Actuators are found in combination fire and smoke damper assemblies that use a bi-metallic disc type thermostat to interrupt electrical power to the actuator at a specified temperature. Once the specified temperature is reached, power will be interrupted and the spring return of the actuator will close the damper. When these actuators are used in smoke damper applications, they are usually controlled by smoke detectors or fire alarms.

Periodic inspection includes:

1. Verify that there is full unobstructed access to the damper
2. Test the damper with normal HVAC airflow and verify that it opens following either Option 1 or Option 2. There should be no interference due to rust, damaged frame or blades, or other moving parts.

*Option 1: Dampers with Position Indication Wired to indication Lights, or Control Panels:*

Switches can be wired to local or remote control panels or building automation systems (BAS) to indicate that the damper is in the fully-open position, fully-closed position, or neither.

- a. Use the signal from the damper's position indication device to confirm that the damper is in the fully-open position.
- b. Remove electrical power or air pressure from the actuator to allow the actuator's spring return feature to close the damper.

- c. Use the signal from the damper's position indication device to confirm that the damper reaches its fully-closed position.
- d. Re-apply electrical power to re-open the damper.
- e. Use the signal from the damper's position indication device to confirm the damper reaches its fully-open position.

*Option 2: Dampers without position indication:*

- a. Visually confirm that the damper is fully-open position.
  - b. Ensure that all obstructions, including hands, are out of the path of the damper blades.
  - c. Remove electrical power or air pressure from the actuator to allow the actuator's spring return feature to close the damper.
  - d. Visually confirm that the damper closes completely.
  - e. Re-apply electrical power to re-open the damper.
  - f. Visually confirm that the damper is in the fully open position.
3. If the damper is not operable, it must be repaired as soon as possible. If the actuator has failed, replace it with a UL approved actuator if required. See Table 1. See Figs. 2-3 for mounting and installation information and Figs. 4-9 for wiring. After these repairs, the damper should be tested again.
  4. If there is a latch, verify that it is operable.
  5. Perform any other damper manufacture recommended maintenance such as lubrication.
  6. Following the test and any repairs, document the location of the damper, the date, the inspector, and deficiencies or repairs. Keep the record for the life of the damper, and have it available as you may need to show it to an inspector.



**Fig. 1. Typical Fire and Smoke Damper Assembly.**

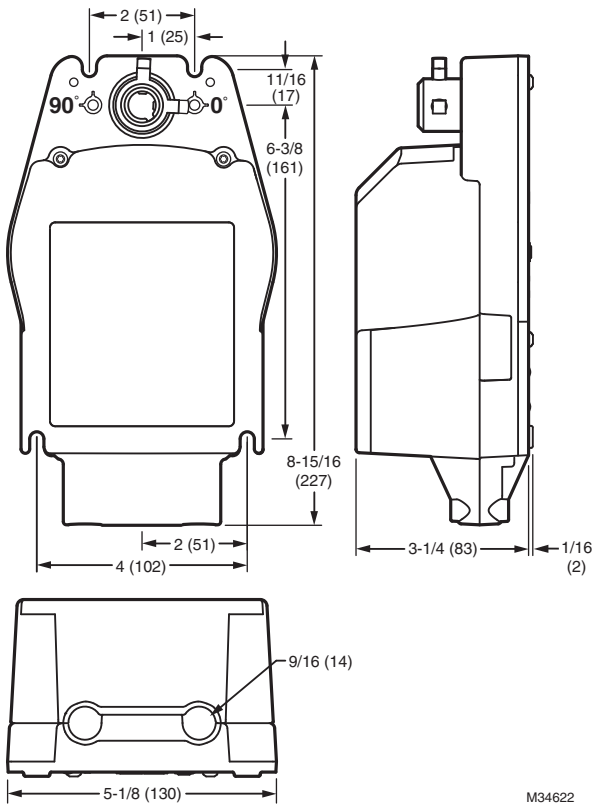
Source: AMCA International: Guide for Commissioning and Periodic Performance Testing of Fire, Smoke, and other Life Safety Related Dampers, 2012.

# PRODUCT INFORMATION

Torque	Model Number	Voltage	SPST Aux Switch	Legacy Honeywell	Belimo Cross	Siemens Cross
30 lb-in (3.4 Nm)	MS4104F1010	120 Vac	0	ML4115A1009 ML4115A1017 ML4115B1008 ML4115B1016 ML4115H1002 ML4115J1009 ML4202F1000 ML4302F1008	FSLF120 US	None
	MS4104F1210	120 Vac	2 Internal	None	FSLF120-S US	None
	MS4604F1010	230 Vac	0	ML4115C1007 ML4115C1015 ML4115D1006 ML4115D1014 ML4702F1009 ML4802F1007	FSLF230 US	None
	MS4604F1210	230 Vac	2 Internal	None	FSLF230-S US	None
	MS8104F1010	24 Vac	0	ML8115A1005 ML8115A1013 ML8115B1004 ML8115B1012 ML8115H1008 ML8115J1005 ML8202F1006 ML8302F1004	FSLF24 US	None
	MS8104F210	24 Vac	2 Internal	None	FSLF24-S US	None
80 lb-in (9 Nm)	MS4109F1010	120 Vac	0	MS4209F1007 MS4309F1005	FSNF120 US	GND221.1U
	MS4109F1210	120 Vac	2 Internal	None	FSNF120-S US	GND226.1U
	MS4609F1010	230 Vac	0	MS4709F1014 MS4809F1012	FSNF230 US	GND321.1U
	MS4609F1210	230 Vac	2 Internal	None	FSNF230-S US	GND326.1U
	MS8109F1010	24 Vac	0	MS8209F1003 MS8309F1001	FSNF24 US	GND121.1U
	MS8109F1210	24 Vac	2 Internal	None	FSNF24-S US	GND126.1U
175 lb-in (20 Nm)	MS4120F1006	120 Vac	0	None	FSAF120 US	GGD221.1U
	MS4120F1204	120 Vac	2 Internal	None	FSAF120-S US	None
	MS4620F1005	230 Vac	0	None	FSAF230 US	GGD321.1U
	MS4620F1203	230 Vac	2 Internal	None	FSAF230-S US	None
	MS8120F1002	24 Vac	0	None	FSAF24 US	GGD121.1U
	MS8120F1200	24 Vac	2 Internal	None	FSAF24-S US	None

**Table 1. Fire and Smoke Cross Reference.**

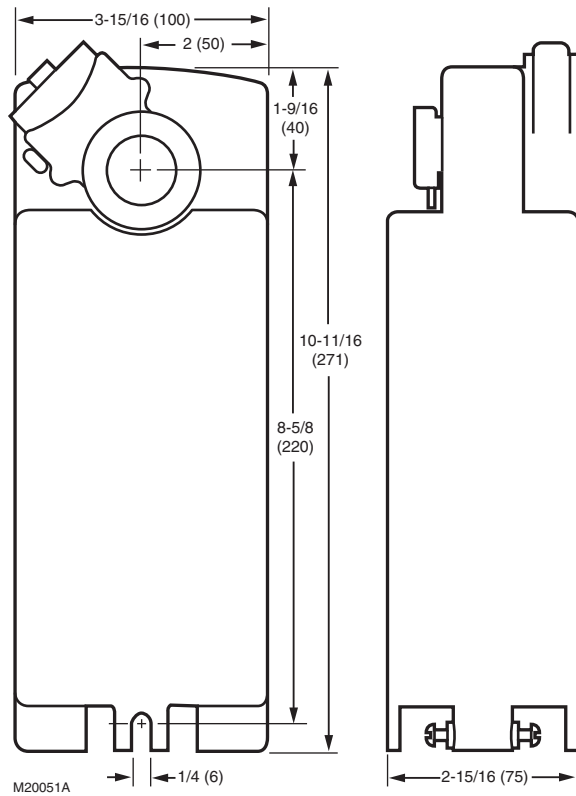
## INSTALLATION AND WIRING



**Fig. 2. Dimensions for MS4104, MS4109, MS4604, MS4609, MS8104, and MS8109 Series actuators.**

See the following literature for further details and mounting instructions:

- Product Data and Installation Instructions: 63-2740
- Specification data: 38-00006



**Fig. 3. Dimensions for MSXX20F actuators.**

See the following literature for further details and mounting instructions:

- Product Data and Installation Instructions: 63-2584
- Specification Data: 63-2592

# Wiring

For 30 lb-in and 80 lb-in (3.4 Nm, 9 Nm) models:

For 175 lb-in (20 Nm) models:

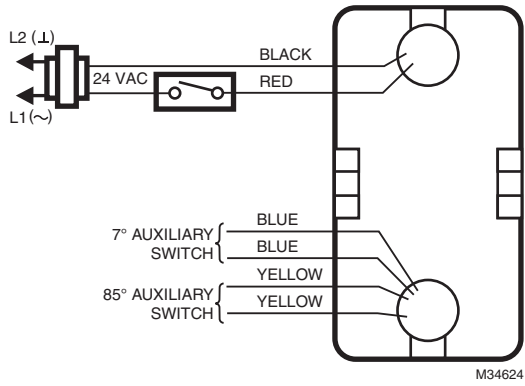


Fig. 4. Typical 24 Vac wiring.

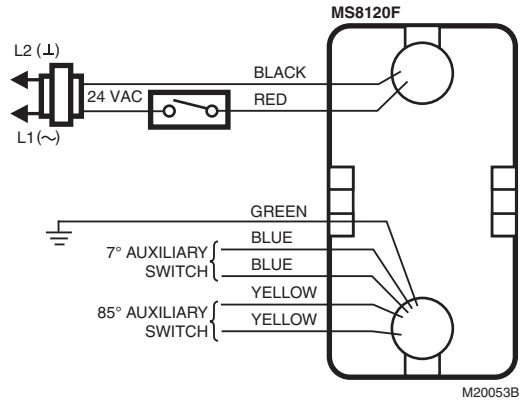


Fig. 7. Typical 24 Vac wiring

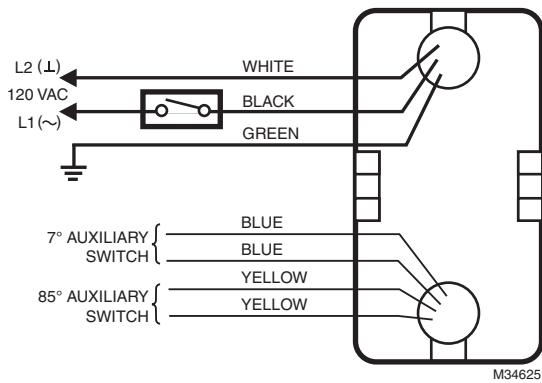


Fig. 5. Typical 120 Vac wiring.

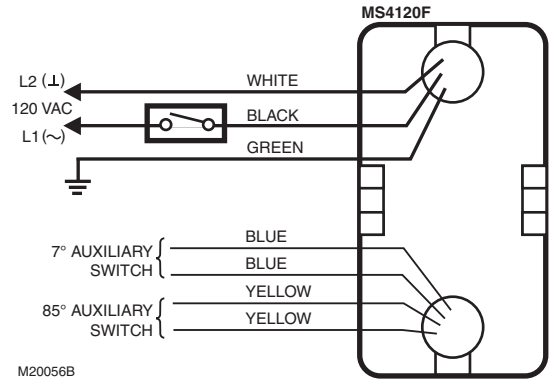


Fig. 8. Typical 120 Vac wiring.

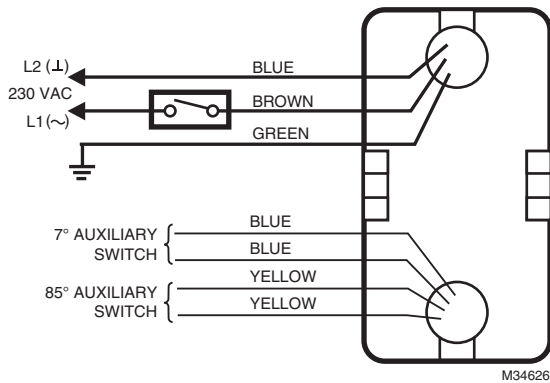


Fig. 6. Typical 230 Vac wiring.

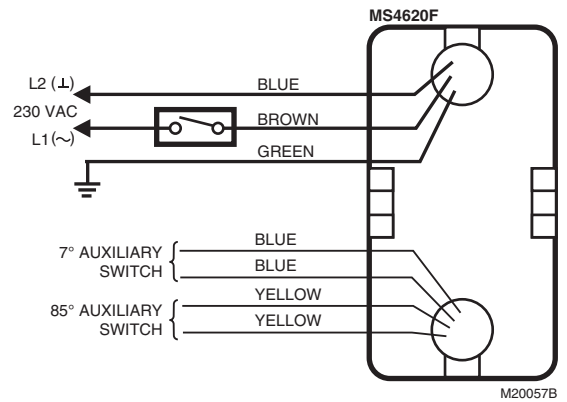


Fig. 9. Typical 230 Vac wiring.





By using this Honeywell literature, you agree that Honeywell will have no liability for any damages arising out of your use or modification to, the literature. You will defend and indemnify Honeywell, its affiliates and subsidiaries, from and against any liability, cost, or damages, including attorneys' fees, arising out of, or resulting from, any modification to the literature by you.

**Home and Building Technologies**

In the U.S.:

Honeywell