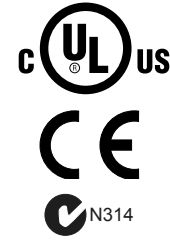


## MS4120F, MS4620F,S; MS8120F,S; S2024-F; S20230-F Fast-Acting, Two-Position Actuators FOR FIRE/SMOKE CONTROL APPLICATIONS



The MS4120F; MS4620F,S; MS8120F,S; S2024-F, and S20230-F Fast-Acting, Two-Position Actuators are spring return direct coupled actuators (DCA) for on/off damper control. The actuator accepts an on/off signal from a single-pole, single-throw (spst) controller. Reversible mounting allows actuator to be used for either clockwise (cw) or counterclockwise (ccw) spring rotation.

Designed to operate reliably in smoke control systems requiring Underwriter's Laboratories Inc. UL555S ratings up to 350°F.

### SPECIFICATIONS

#### Models:

| Model                      | Voltage in Vac | Internal Auxiliary Switches |
|----------------------------|----------------|-----------------------------|
| MS4120F1006                | 120            | None                        |
| MS4120F1204                | 120            | 2 SPST <sup>a</sup>         |
| MS4620F1005                | 230            | None                        |
| MS4620F1203                | 230            | 2 SPST <sup>a</sup>         |
| MS8120F1002                | 24             | None                        |
| MS8120F1200                | 24             | 2 SPST <sup>a</sup>         |
| S2024-F (MS8120S1006)      | 24             | None                        |
| S20230-F (MS4620S1009)     | 230            |                             |
| S2024-F-SW2 (MS8120S1204)  | 24             | 2 SPDT <sup>a</sup>         |
| S20230-F-SW2 (MS4620S1207) | 230            |                             |

<sup>a</sup> Internal switches are designed to pass UL555S requirements (at 350°F).

#### Dimensions:

- See Fig. 1.

#### Device Weight:

- 7 lb (3.2 kg).

#### Stroke:

- 95° ± 3°, mechanically limited.

#### Electrical Ratings:

- Power Input:
  - MS4120F: 120 Vac ±10%, 60 Hz.
  - MS4620F,S, S20230-F: 230 Vac ±10%, 50/60 Hz.
  - MS8120F,S; S2024-F: 24 Vac +20%, -10%, 50/60 Hz (Class 2).
- Power Consumption:
  - MS4120F: Driving: 0.35A, 35W. Holding: 0.15A, 10W.
  - MS4620F,S; S20230-F: Driving: 0.20A, 35W. Holding: 0.14A, 10W.
  - MS8120F,S; S2024-F: Driving: 45 VA. Holding: 10 VA.

### SPECIFICATION DATA

### FEATURES

- Reversible mounting facilitates use in either clockwise (cw) or counterclockwise (ccw) spring rotation.
- No special cycling required during long-term holding.
- Integral spring return ensures level of return torque.
- Stainless steel internal spring.
- Fifteen-second spring return timing.
- No audible noise during holding.
- Patent pending design eliminates need for limit switches to reduce power consumption.
- Models available for 24, 120, and 230 Vac.
- Ninety-five degree angle of rotation.
- Actuator holds rated torque at reduced power level.
- Die-cast aluminum housing.
- Housing design allows flush mounting to damper.
- Self-centering shaft adapter (SCSA), patent pending.
- Designed to operate reliably in smoke control systems requiring Underwriter's Laboratories Inc. UL555S ratings up to 350°F.

### MS4120F, MS4620F, MS8120F

- High temperature Teflon® lead wires.
- Models available with integral high temperature (350°F) SPST position-indicating switches (7°, 85°).

### S2024-F, S20230-F, MS4620S, MS8120S

- Double-insulation rating.
- High-temperature, halogen-free, silicone-free leadwires.
- Models available with integral SPDT position-indicating switches (7°, 85°).

#### Electrical Connections:

- Lead Wires:
  - MS4120F, MS4620F, MS8120F: 1m Teflon wire.
  - MS4620S, MS8120S, S2024-F, S20230-F: 1m halogen-free wire.
- Two integral 3/8 in. flexible conduit connections.

#### Timing (At Rated Torque and Voltage):

- Drive Open: 15 seconds typical.
- Spring Close: 15 seconds typical.

#### Auxiliary Switches:

- Ratings (maximum load): 250 Vac, 5A resistive, 3A inductive.
- Settings (fixed): 7° nominal stroke, 85° nominal stroke.



**Torque Rating (at rated voltage):**

- Typical Holding (minimum at 350°F): 175 lb-in. (20 N•m).
- Spring Return (minimum at 350°F): 175 lb-in. (20 N•m).
- Stall Maximum (fully open at 75°F): 425 lb-in. (48.0 N•m).
- 350°F Minimum Driving: 175 lb-in. (20 N•m).

**Design Life (at Rated Voltage):**

- 30,000 full stroke cycles.

**Minimum Damper Shaft Length:**

- 1 in. (25 mm); 3-1/4 (83 mm) recommended.

**Cycling Requirements:**

- Prolonged holding-period (1 year) testing of these actuators has been performed with no spring return failures. The actuator and the internal spring are designed to require no special cycling during long-term holding.
- Honeywell recommends following all local, state and national codes for periodic testing of the entire smoke control system. Refer to National Fire Protection Association (NFPA) National Fire Codes®: NFPA90A, NFPA92A and NFPA92B for your application.
- NFPA recommends periodic examination of each fire/smoke damper (semi-annually or annually) to ensure proper performance.

**Mounting:**

- Self-centering shaft adapter.
- Round Damper Shafts: 0.5 to 1.06 in.
- Square Damper Shafts: 1/2 to 3/4 in.
- Actuator can be mounted with shaft in any position.

**IMPORTANT**

*Honeywell does not recommend using linkages with these actuators because side-loading of the output hub reduces actuator life.*

**Noise Rating (Maximum):**

- Driving or Spring Return: 70 dBA.
- Holding: 20 dBA (no audible noise).

**Temperature Ratings:**

**IMPORTANT**

*The actuators are designed to meet UL555S standards at 350°F (176°C). These actuators must be tested with the damper to achieve this rating.*

- Ambient: -40°F to 130°F (-40°C to 55°C).
- Shipping and Storage: -40°F to 140°F (-40°C to 60°C).

**Humidity Ratings:**

- 5% to 95% RH noncondensing.

**Environmental Protection Ratings:**

- NEMA2 and IP54 when mounted on a horizontal shaft.

**Accessories:**

- 205649 Mounting Bracket (not supplied with actuator).

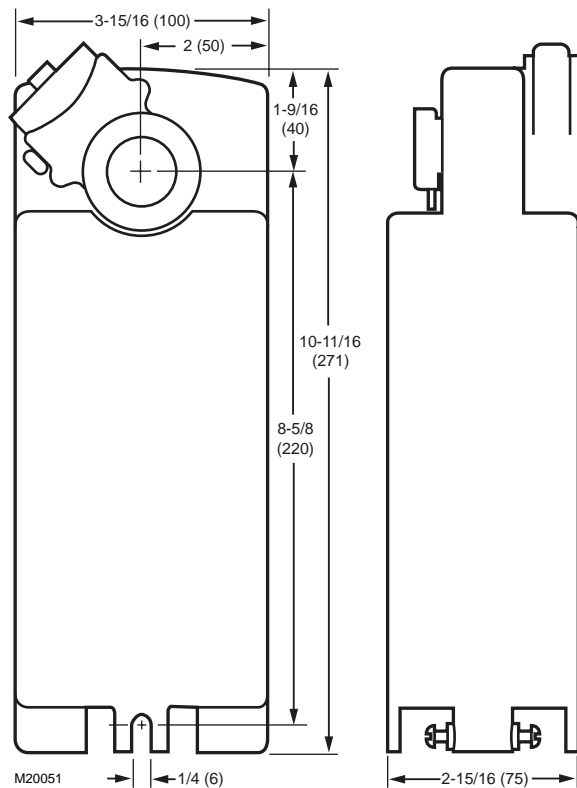
**Approvals:**

|   | MS4120F | MS4620F,<br>MS8120F | S20230-F,<br>S2024-F,<br>MS4620S,<br>MS8120S |
|---|---------|---------------------|--|
| UL/cUL  | X       | X                   |  |
| UL873 Plenum Rating, File No. E4436; Guide No. XAPX. <sup>a</sup> | X       | X                   |  |
| CE  |         | X                   | X  |
| C-TICK  |         | X                   | X  |

<sup>a</sup> Plenum applications require that conductors be enclosed in conduit (see Wiring section for conduit details).

**Controller Type:**

MS4120F: Line voltage (120 Vac), 2-position, spst (Series 40).  
 MS4620F,S; S20230-F: Line voltage (230 Vac), 2-position, spst (Series 40).  
 MS8120F,S; S2024-F: Low voltage (24 Vac), 2-position, spst (Series 80).



**Fig. 1. Dimensions in in. (mm).**

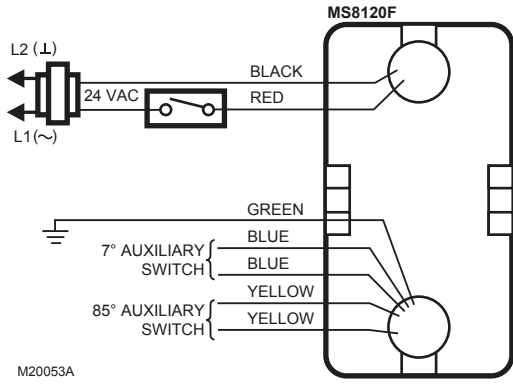


Fig. 2. Typical 24 Vac wiring (MS Series).

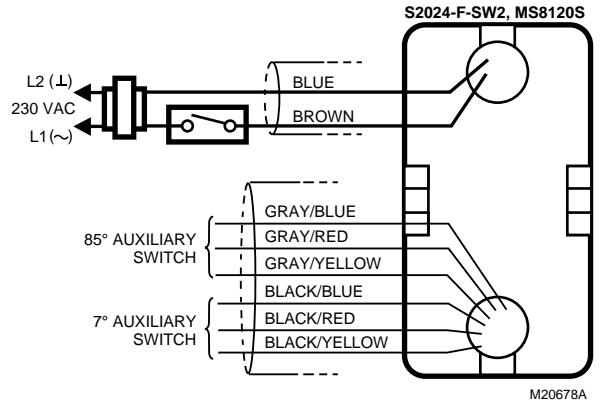


Fig. 5. Typical 24 Vac wiring (S20 Series).

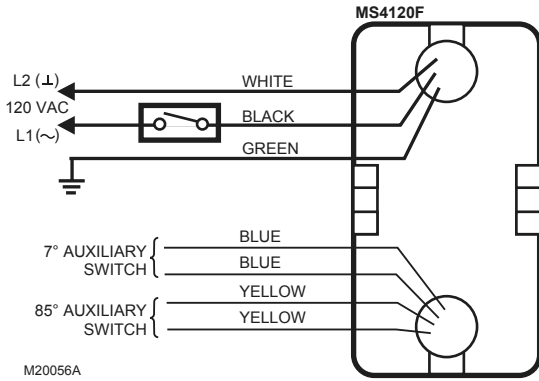


Fig. 3. Typical 120 Vac wiring.

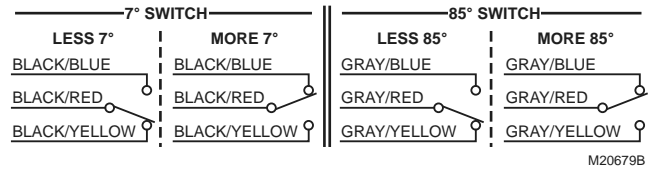


Fig. 6. Auxiliary switch wiring (S20 Series).

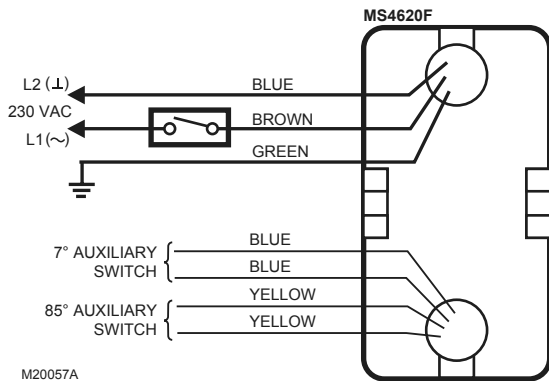


Fig. 4. Typical 230 Vac wiring (MS Series).

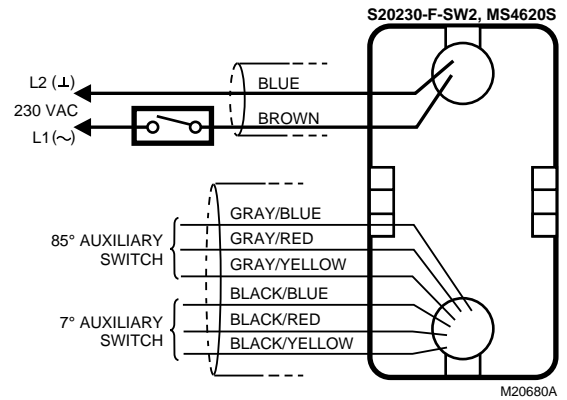


Fig. 7. Typical 230 Vac wiring (S20 Series).

MS4120F, MS4620F,S; MS8120F,S; S2024-F; S20230-F FAST-ACTING, TWO-POSITION ACTUATORS

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