

# M9208-250 Remote Mounting Kit

## Installation Instructions

M9208-250

Part No. 34-636-2200, Rev. A  
Issued August 29, 2014

Refer to the [QuickLIT website](#) for the most up-to-date version of this document.

### Applications

**IMPORTANT:** Use this M9208-250 Remote Mounting Kit only to control equipment under normal operating conditions. Where failure or malfunction of the remote mounting kit could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the control system. Incorporate and maintain other devices, such as supervisory or alarm systems or safety or limit controls, intended to warn of or protect against failure or malfunction of the remote mounting kit.

**IMPORTANT :** Utiliser ce M9208-250 Remote Mounting Kit uniquement pour commander des équipements dans des conditions normales de fonctionnement. Lorsqu'une défaillance ou un dysfonctionnement du remote mounting kit risque de provoquer des blessures ou d'endommager l'équipement contrôlé ou un autre équipement, la conception du système de contrôle doit intégrer des dispositifs de protection supplémentaires. Veiller dans ce cas à intégrer de façon permanente d'autres dispositifs, tels que des systèmes de supervision ou d'alarme, ou des dispositifs de sécurité ou de limitation, ayant une fonction d'avertissement ou de protection en cas de défaillance ou de dysfonctionnement du remote mounting kit .

The M9208-250 Remote Mounting Kit enables M9208 Series Electric Spring Return Actuators to drive damper blades through a linkage from a remote mounted position inside the duct. The kit is specially configured for Johnson Controls® D1300 Series Dampers, but suitable for use with a wide variety of dampers.

The M9208-250 Remote Mounting Kit is intended for applications that require displacement perpendicular or parallel to the mounting surface.

Mount the M9208-250 Remote Mounting Kit internally or externally on a duct, damper, or air handling unit. The factory installed actuator gripper and retaining ring must be discarded when the M9208-250 Remote Mounting Kit is used.

### Installation

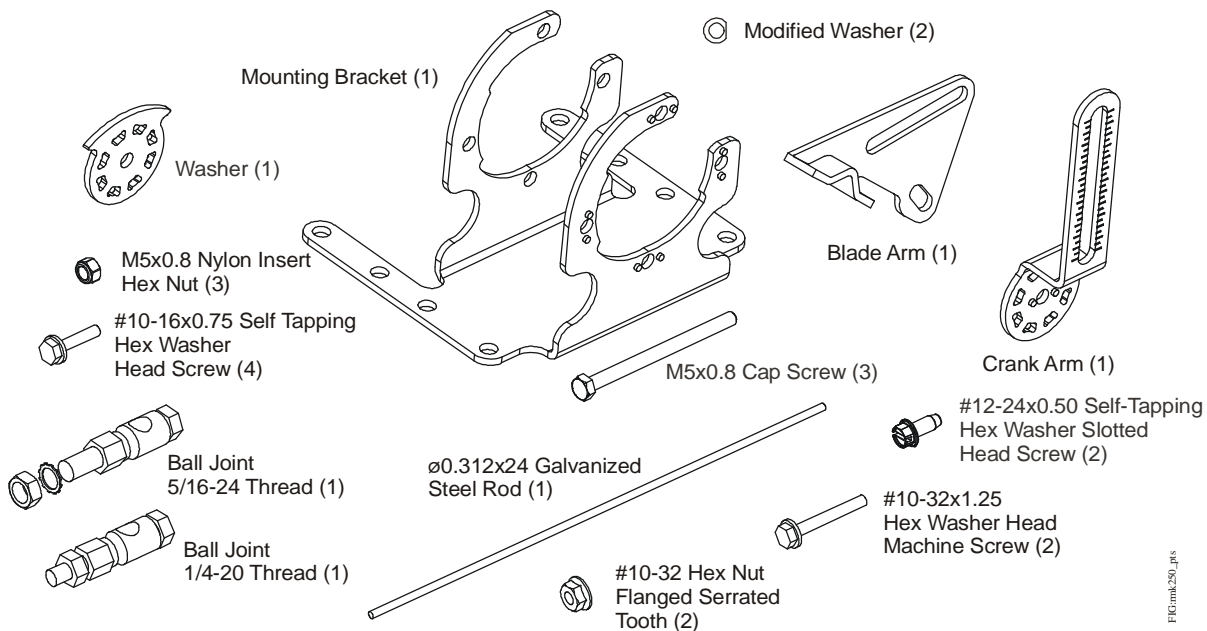
#### Parts Included

See Figure 1 for the parts included in the M9208-250 Remote Mounting Kit.

**Note:** Refer to the appropriate installation instructions listed in Table 1 for complete actuator mounting and adjustments.

**Table 1: Actuators, and Corresponding Documentation for M9208-250 Remote Mounting Kit**

Actuator	Installation Instruction
<b>M9208-Bxx</b>	<i>M9208-Bxx-3 Series On/Off Electric Spring Return Actuators Installation Instructions (Part No. 34-636-2103)</i>
<b>M9208-AGx</b>	<i>M9208-AGx-x Series On/Off and Floating Point Electric Spring Return Actuators Installation Instructions (Part No. 34-636-2170)</i>
<b>M9208-GGx</b>	<i>M9208-GGx-x Series Proportional Electric Spring Return Actuators Installation Instructions (Part No. 34-636-2189)</i>

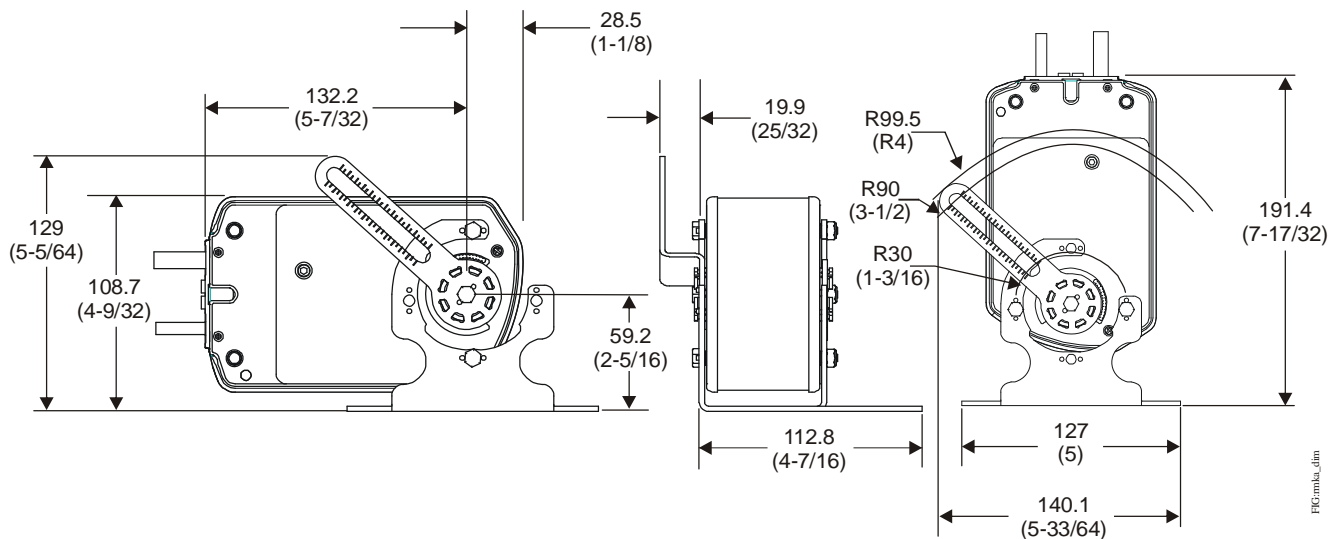


**Figure 1: Parts Included in M9208-250 Remote Mounting Kit**

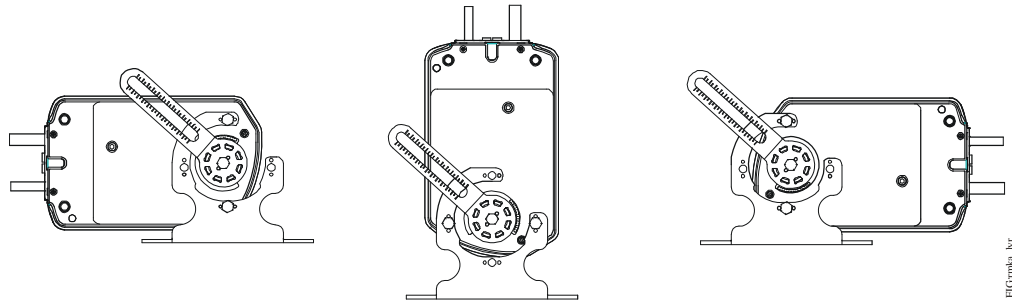
### Dimensions

See Figure 2 and Figure 3 for overall dimensions and proper mounting orientations.

The actuator has two general mounting positions, horizontal and vertical, but can be mounted in six different ways: horizontal left, vertical, and horizontal right, and all of which have the option of side A or side B direction. See Figure 3.



**Figure 2: M9208-250 Remote Mounting Kit Overall Dimensions, mm (in.)**



**Figure 3: M9208-250 Remote Mounting Kit with Actuator, Horizontal Left, Vertical, and Horizontal Right**

## Mounting

### Location Considerations

Prior to installation, consider the following factors to determine the best location:

- linkage rod must be oriented perpendicular to the damper face to provide clearance from rotating damper blades
- mounting position of the actuator crankarm
- operation of the damper: normally open or normally closed
- direction of rotation for the damper
- actuator spring return direction: Clockwise (CW) or Counterclockwise (CCW)

**Note:** If the actuator is in a difficult-to-reach location, adjust the auxiliary switches and stroke settings before continuing with the installation. Adjustable stroke instructions are detailed in the section [Setup and Adjustments](#).

### Mounting Positions

The M9208-250 Remote Mounting Kit allows the installer to select spring-return direction as required by the application. The label on the actuator indicates the spring-return direction.

To set the spring-return direction of the actuator when mounted in a bracket, rotate the actuator as required. Flip the actuator over to choose CW or CCW spring-return direction.

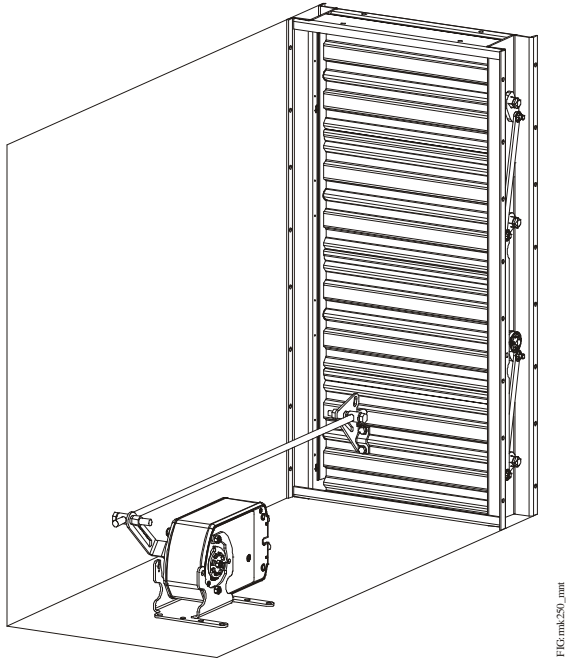
### Installing the Remote Mounting Kit

See Figure 5 for the hole mounting pattern of the mounting bracket. The hole pattern locates the actuator crankarm assembly with respect to the drive blade, jackshaft, or crankarm to be driven.

**IMPORTANT:** Remotely mounted M9208 Series actuators can develop high linear and rotational forces. Confirm that mounting surfaces are sufficiently rigid and strong before installing the remote mounting kit.

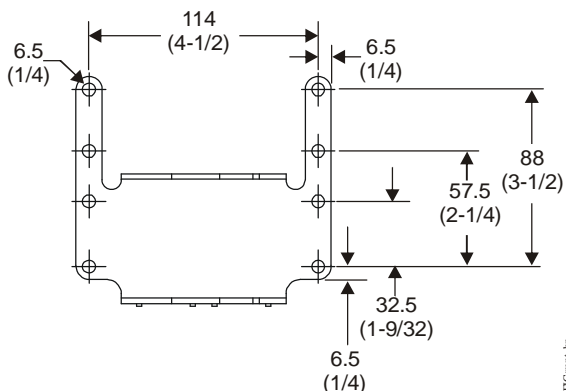
Consider the length of the linkage rod and attachment point of the damper blade arm when choosing the mounting location. To install the mounting bracket:

1. Locate the mounting bracket so that the linkage rod is approximately perpendicular to the face of the damper when attached to the driven blade. Johnson Controls D1300 Series Dampers should be driven from the No. 1 blade as illustrated in Figure 4.



**Figure 4: Typical Mounting Configuration**

2. Use a center punch to mark the hole locations for the bracket in the duct or damper frame. See Figure 5.



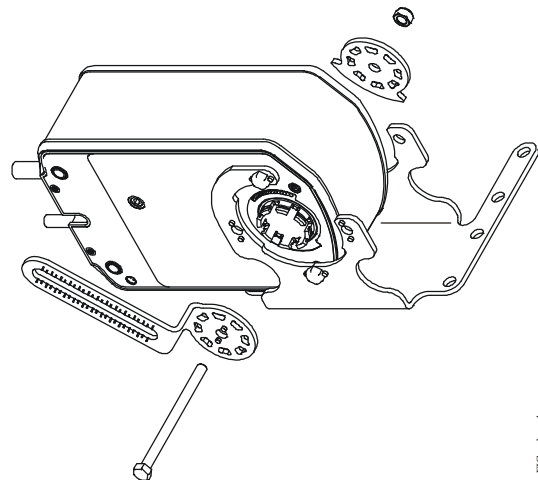
**Figure 5: Hole Patterns in Mounting Brackets with Dimensions, mm (in.)**

3. Fasten the mounting bracket by drilling the #10-16 x 0.75 in. self-tapping screws through the holes in the mounting bracket and into the duct or damper frame.

**IMPORTANT:** All user adjustable features of the actuator are accessible when mounted in the bracket. Depending on the orientation and model used, the bracket may cover up the scale on the label for the adjustable switch.

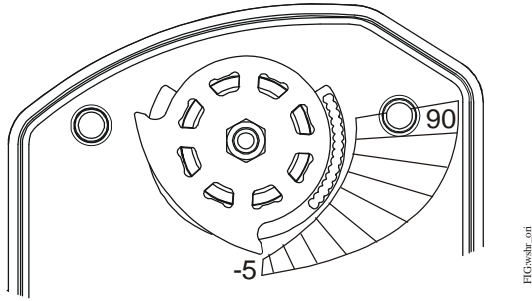
4. Using two M5 cap screws, secure the actuator to the mounting bracket as shown in Figure 2 and Figure 3. The raised buttons on the mounting bracket are used for anti-rotation of the cap screw, allowing installation with only one wrench. Install the M5 nylon insert hex nuts using the recommended torque of 1.7 to 2.3 N·m (15 to 20 lb·in.).
5. Install the crankarm and washer using the M5 cap screw and nylon insert hex nut, as shown in Figure 6 and Figure 7. The raised buttons on the crankarm are used for anti-rotation of the cap screw, allowing installation with only one wrench. Install the M5 nylon insert hex nut using the recommended torque of 1.7 to 2.3 N·m (15 to 20 lb·in.).

**Note:** Proper orientation of the crankarm is critical for correct operation. Observe the full open and close positions of the actuator, and ensure that the crankarm does not interfere with the mounting surface.



**Figure 6: Actuator Crankarm with Washer Assembly**

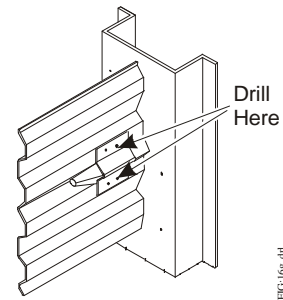
6. Placing the washer in the orientation shown in Figure 7 allows for use of the adjustable end-stop if desired.



**Figure 7: Washer Orientation on Actuator**

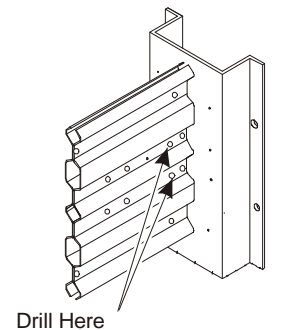
7. Assemble the 5/16-24 ball joint in the crankarm:
  - a. Remove the hex nut from the ball joint.
  - b. Insert the ball joint through the slot in the crankarm. A 2.56 in. (65 mm) crank radius matches the maximum radius of the damper blade arm and is preferred for installations that require a 90° actuator and damper blade rotation.
  - c. Add the serrated lock washer and tighten the ball joint hex nut using the recommended torque of 2.3 to 2.8 N·m (20 to 25 lb·in.).
8. Using a 3/16 inch (or equivalent) bit, drill two holes for the blade arm. For best results on Johnson Controls D1300 Series Dampers, use the following drilling guidelines:

- 16-gauge blades: drill out the first punch marks from the end channel.



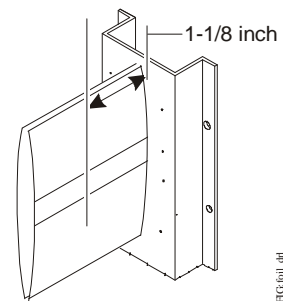
**Figure 8: 16-Gauge Blades**

- Double-piece blades: drill out the second set of nuggets from the end channel.



**Figure 9: Double-Piece Blades**

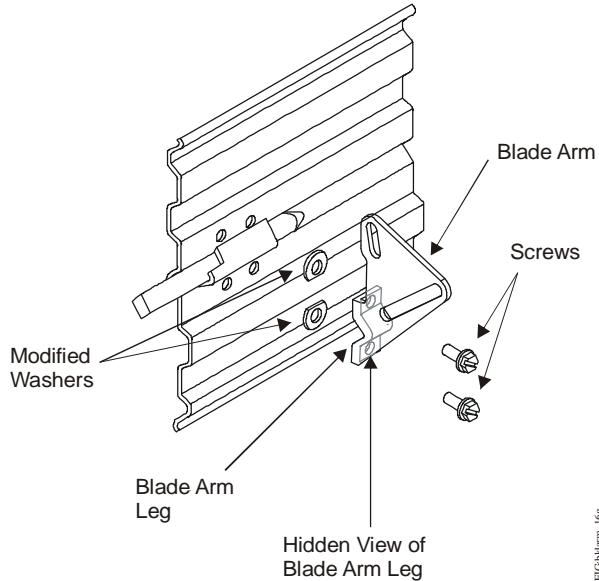
- Airfoil blades: measure 1-1/8 inches from the end channel and drill on the lines etched in the blade.



**Figure 10: Airfoil Blades**

9. Secure the blade arm to the driven blade.

- 16-gauge blade: Use the two #12-24 x 1/2 in. hex-head, self-tapping screws, and the modified washers. See Figure 11.



**Figure 11: Attaching to 16-Gauge Blades**

- Double-piece blade: Use the two #12-24 x 1/2 in. hex-head, self-tapping screws.
  - Airfoil blade: Use the two #10-32 x 1-1/4 in. hex-head screws and two #10-32 hex nuts.
10. Assemble the 1/4-20 ball joint in the blade arm:
    - a. Remove the hex nut from the ball joint.
    - b. Insert the ball joint through the long slot in the blade arm. A ball joint placement at the furthest end of the slot results in a 2.56 in. radius and is preferred for installations that require a 90° actuator and damper blade rotation.

- c. Add the serrated lock washer and tighten the ball joint hex nut using the recommended torque of 2.3 to 2.8 N·m (20 to 25 lb·in.)

11. With the M9208 series actuator and damper blades in the spring return position, attach the linkage rod to the ball joints. The recommended torque for the ball joint set screws is 17 to 20 N·m (150 to 175 lb·in.)

## Setup and Adjustments

### Adjusting the Linkage



#### **CAUTION: Risk of Property Damage.**

Before applying power to an electric actuator that is installed in a damper application using a remote-mount linkage kit, confirm that actuator end stops are used to control the stroke applied to the damper linkage. Failure to use actuator end stops to control the stroke can lead to premature equipment failure and/or property damage.

#### **MISE EN GARDE : Risque de dégâts matériels.**

Avant la mise sous tension d'un actionneur électrique installé dans une application de registre utilisant un kit d'accouplement monté à distance, vérifier que les butées de fin de course de l'actionneur sont utilisées pour contrôler la course appliquée à l'accouplement de registre. La non-utilisation des butées de fin de course de l'actionneur pour contrôler la course de l'accouplement de registre peut provoquer une défaillance prématurée de l'équipement et/ou des dégâts matériels.

Make the necessary adjustments to fit the actuator's stroke limit to the application:

- Adjust the position of the ball joints in the slots at either end of the linkage rod to achieve the desired motion of the damper blade while using the actuator's internal end-stops for stroke control, whenever practical.
- Apply the external adjustable end-stop if linkage adjustment is not practical. An end-stop is supplied with the actuator or can be ordered separately (M9208-603 Adjustable Stop Kit). Refer to the Limiting Rotation Range Using M9208-603 Adjustable Stop Kit section of the actuator installation instructions, listed in Table 1, for limiting the stroke of the actuator. When using the M9208-100 Remote Mounting Kit, the washer is used to limit the stroke in place of the gripper.

**IMPORTANT:** Adjustable stop is for use with limiting the driving stroke only. Using the stop in the spring return direction could damage the actuator or linkage parts.

## Checkout

Use the following steps to ensure that the actuator assembly components function properly, and that the actuator operates freely from one rotation limit to the other.

1. Connect all control wires to the actuator.

**Note:** Refer to the Wiring section of the actuator installation instructions listed in Table 1.

2. Apply power to the actuator.
3. Cycle the actuator fully in both CW and CCW directions. Ensure that the mechanism's stroke is limited by the actuator internal or external end-stops.
4. Ensure that the crankarm properly exercises the full range of the drive blade, jackshaft, or crankarm as required by the application without over-driving the linkage hardware.

If the actuator is not operating properly, refer to the appropriate actuator installation instructions indicated in Table 1.



**Building Efficiency**

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