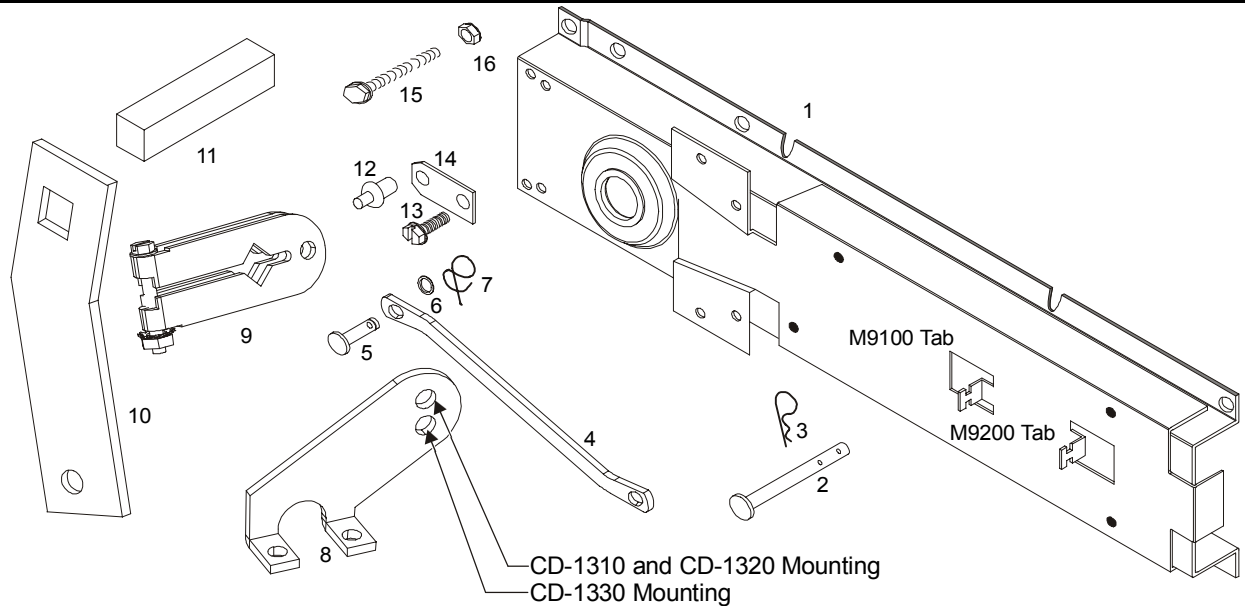


## DMPR-KC254 Inside Frame Mounting Kit Installation (For Use with Johnson Controls Dampers Only)



**Figure 1: Component Identification**

**Table 1: List of Components**

Item	Description	Quantity	Item	Description	Quantity
1	Inside Frame Mounting Bracket	1	9	Crank Arm Retainer	1
2	Actuator Clevis Pin	2	10	Crank Arm	1
3	Cotter, Hair Spring	2	11	3/8-inch Square Shaft	1
4	Crossover Linkage	1	12	1/4 inch Diameter x 13/32 inch Drive Rivet	1
5	Linkage Clevis Pin	2	13	No. 12-24 x 1/2 inch Hex-head, Thread-forming Screws	5
6	Washer	2	14	Reinforcement Link	1
7	S-Clip	2	15	No. 10-32 x 1-1/4 inch Hex-head Screw, Airfoil Blade	2
8	Blade Arm	1	16	No. 10-32 Hex Lock Nut, Airfoil Blade	2

### Individual Parts

- Item 1 is available as DMPR-KC255.
- Items 2 and 3 are available as DMPR-KC257.
- Items 5, 6, and 7 are available as DMPR-KC258.
- Item 8 is available as DMPR-KC055.
- Items 12, 13, and 14 are available as DMPR-KC256.

### Tools Required

- wrench, adjustable to 1 inch
- drill bit (1/4, 3/16 and 15/64 inch) and drill
- hammer and center punch
- nut driver, 5/16 inch
- flat-blade screwdriver, 6-inch shank with 5/16-inch blade

## General

The DMPR-KC254 Inside Frame Mounting Kit is designed to mount M9108, M9116, M9124, and M9216 actuators exclusively to Johnson Controls dampers in applications requiring the actuator within the airstream.

**Table 2: Downstream Drive Blade**

Panel Height, inches	Blade
24 or less	No. 1 or 3
Greater than 24 but less than 48	No. 3 or 5
Greater than 48	No. 5 or 7

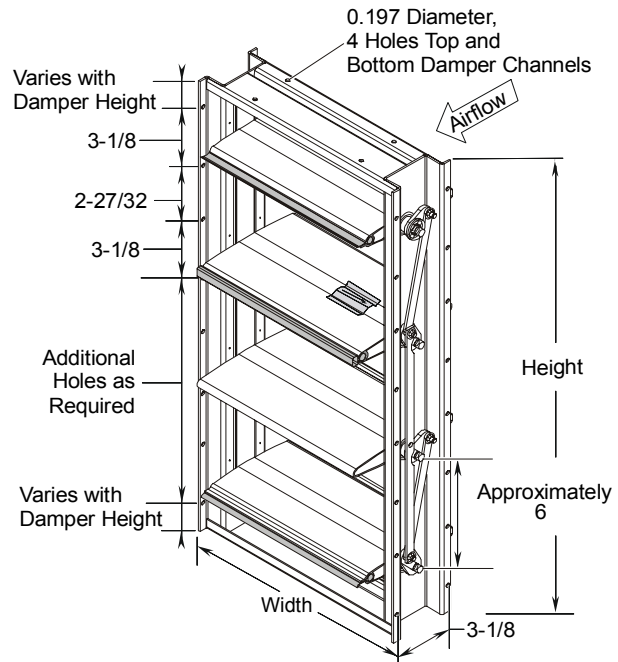
**Table 3: Upstream Drive Blade**

Panel Height, inches	Blade
24 or less	No. 3
Greater than 24 but less than 48	No. 3 or 5
Greater than 48	No. 5 or 7

The actuator mounting should be made to the driving blade identified in Table 2 or 3.

Note: Mounting on the downstream (labeled air leaving) side requires a minimum of two blades. Mounting on the upstream (opposite labeled air leaving) side requires a minimum of three blades.

**IMPORTANT:** Carefully read the Inside Frame Mounting Kit instructions prior to installation. The inside frame mounting bracket (item 1) does not mount the same as the standard universal mounting bracket.



**Figure 2: Standard Johnson Controls Damper Mounting Holes, inches**

Note: Unless specified, illustrations show installation downstream on the right side.

# Mounting

## Inside Frame Mounting Bracket

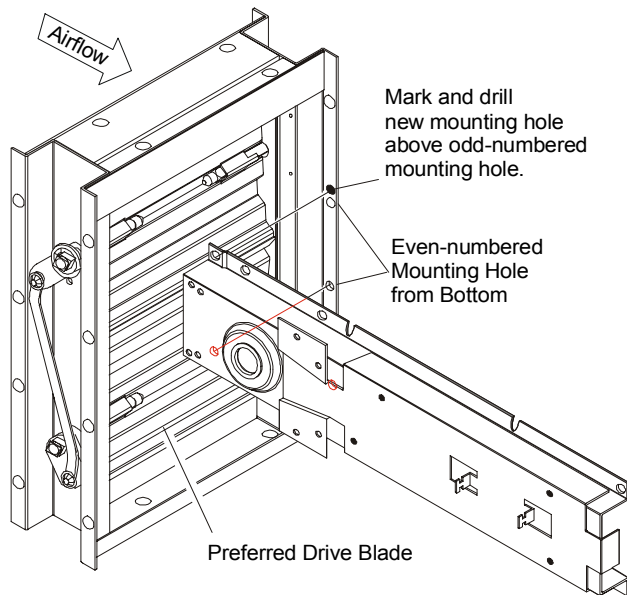


Figure 3: Installing Bracket Downstream, Right Side

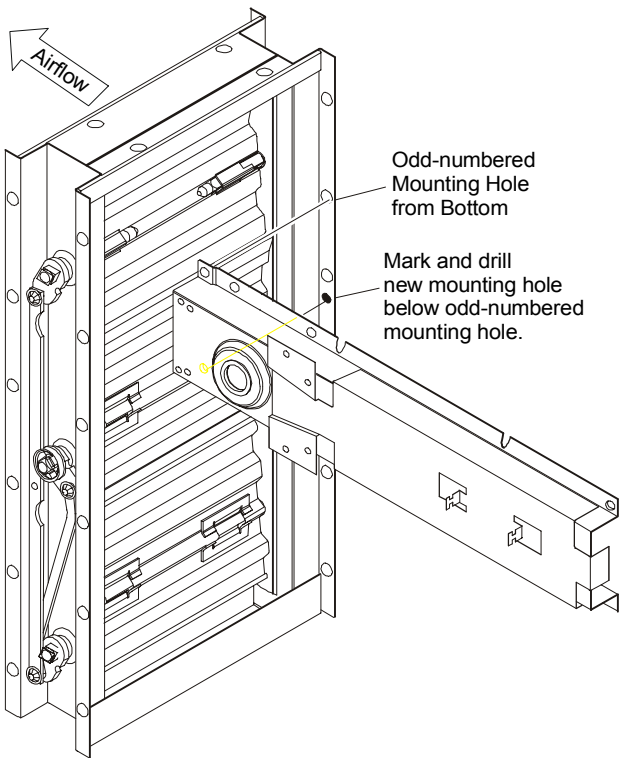


Figure 4: Installing Bracket Upstream, Right Side

1. Place the universal mounting bracket to the inside of the damper frame and align as follows:

Downstream mounting will have the lower mounting hole of the bracket align with even-numbered holes from the bottom of the damper frame, which will be 1-1/2 inches above the center of the drive blade.

Upstream mounting will have the top mounting hole of the bracket align with odd-numbered holes from the bottom of the damper frame, which will be 1-1/2 inches below the drive blade.

**IMPORTANT:** For proper installation, the frame mounting bracket will not align with existing holes in the damper frame.

2. Mark the location on the frame for the additional hole and use a hammer and center punch to provide a drill guide.

Note: On upstream mounting, the third blade from the bottom is the lowest the actuator may be mounted.

3. Use a drill with a 3/16 inch drill bit (or equivalent) to provide the required mounting hole.

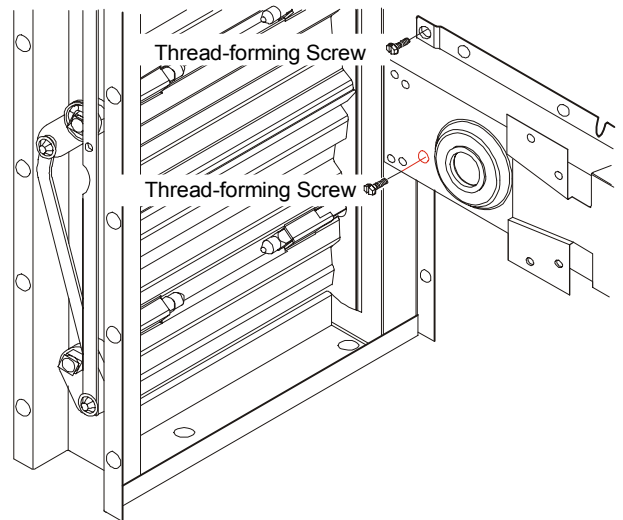
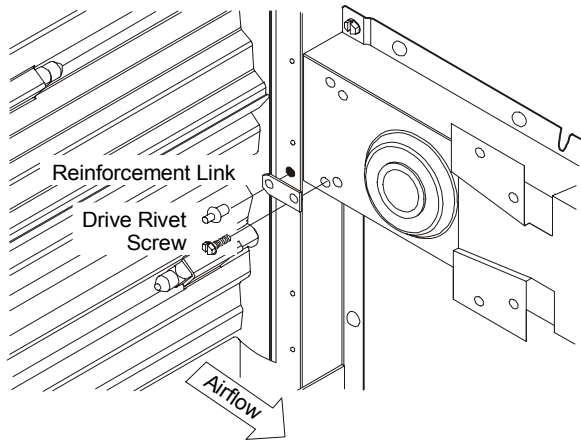
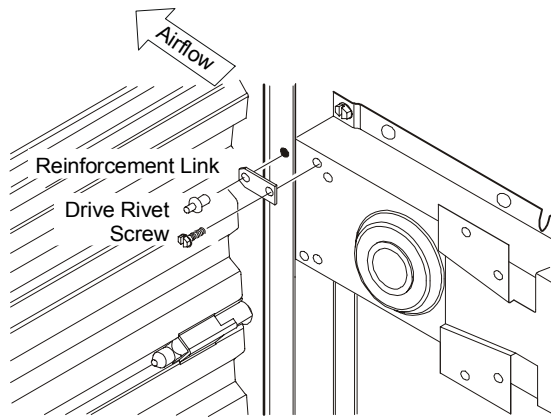


Figure 5: Installing Universal Mounting Bracket

4. Secure by using two No. 12-24 x 1/2 inch hex-head, thread-forming screws as shown in Figure 5.



**Figure 6: Installing Reinforcement Link, Downstream**



**Figure 7: Installing Reinforcement Link, Upstream**

5. Install the reinforcement link to the universal mounting bracket with one No. 12-24 x 1/2 inch hex-head, thread-forming screw as shown in Figure 6 or 7. Do not tighten.

**Note:** The reinforcement link position is different between downstream and upstream mounting.

6. Mark the position of the hole for the drive rivet.
7. With the reinforcement link out of the way, use a hammer and center punch to provide a drill guide at the location marked in Step 5.
8. Using a 1/4 inch (or equivalent) bit, drill one hole for the reinforcement link at the drill guide made in Step 6.
9. Reposition the reinforcement link and insert the drive rivet.
10. Hammer the pin in the rivet flush with the rivet head to secure the link to the frame.

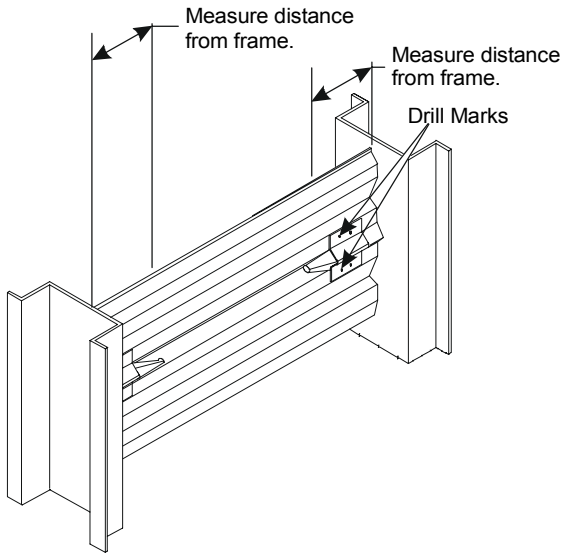
**Note:** With coupled dampers, two mounting brackets may be mounted back-to-back for optimum rigidity.

## Blade Arm

**Table 4: Blade Arm Location**

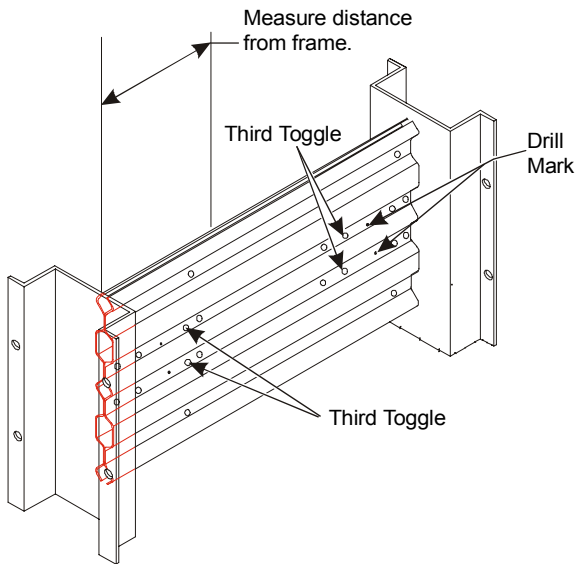
Mounting	Actuator	Blade Type	Downstream		Upstream	
			Drill Location	Drill Distance	Drill Location	Drill Distance
Right	M9100	16-Gauge	Second Drill Mark	1-3/4 inches	2-1/2 inches	2-1/2 inches
		Two-Piece	Drill Mark	1-3/4 inches	Third Toggle from Right	2-1/2 inches
		Airfoil	1-3/4 inches	1-3/4 inches	2-1/2 inches	2-1/2 inches
	M9200	16-Gauge	2-1/2 inches	2-1/2 inches	3-7/16 inches	3-7/16 inches
		Two-Piece	Third Toggle from Right	2-1/2 inches	3-7/16 inches	3-7/16 inches
		Airfoil	2-1/2 inches	2-1/2 inches	3-7/16 inches	3-7/16 inches
Left	M9100	16-Gauge	2-1/2 inches	2-1/2 inches	Second Drill Mark	1-3/4 inches
		Two-Piece	Third Toggle from Left	2-1/2 inches	Drill Mark	1-3/4 inches
		Airfoil	2-1/2 inches	2-1/2 inches	1-3/4 inches	1-3/4 inches
	M9200	16-Gauge	3-7/16 inches	3-7/16 inches	2-1/2 inches	2-1/2 inches
		Two-Piece	3-7/16 inches	3-7/16 inches	Third Toggle from Left	2-1/2 inches
		Airfoil	3-7/16 inches	3-7/16 inches	2-1/2 inches	2-1/2 inches

- Using a 3/16 inch (or equivalent) bit, drill two holes for the blade arm. For best results:



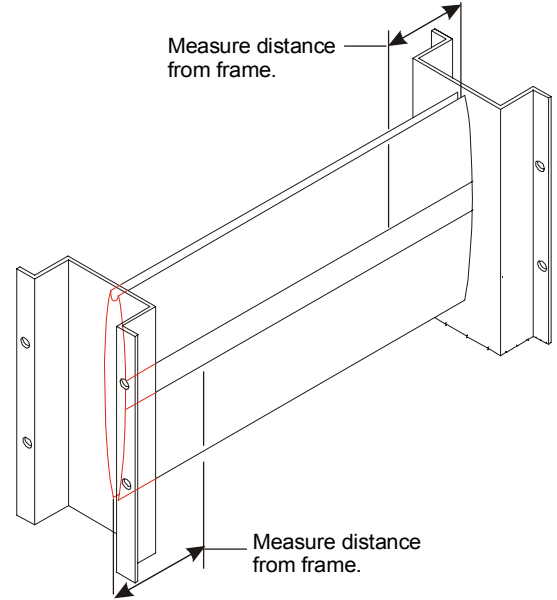
**Figure 8: 16-Gauge Blades**

- 16-gauge Blades--As defined in Table 4, drill holes at locations shown in Figure 8. The holes will be in line with the drill marks on the blade.



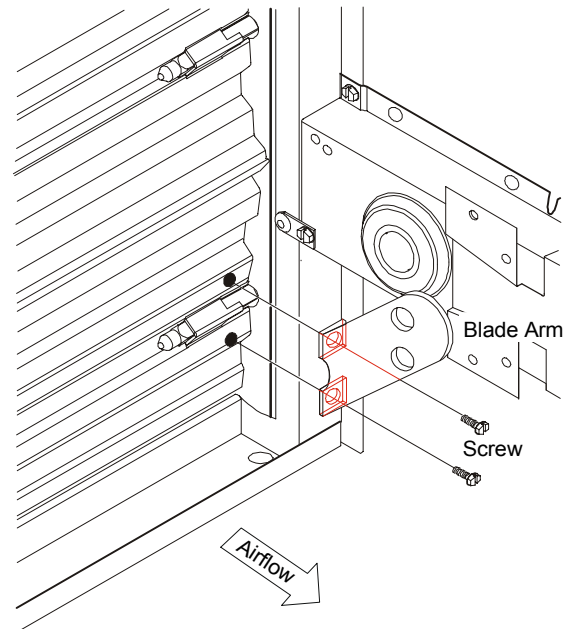
**Figure 9: Double-Piece Blades**

- Double-piece Blades--As defined in Table 4, drill holes at locations shown in Figure 9. The holes will be in line with the drill marks on the blade.

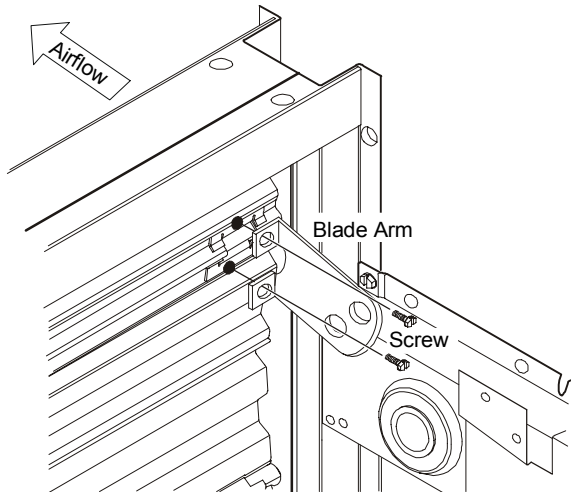


**Figure 10: Airfoil Blades**

- Airfoil Blades --As defined in Table 4, measure from the end channel as shown in Figure 10, and drill on the lines etched in the blade.



**Figure 11: Mounting Blade Arm Downstream on Right Side of Damper**



**Figure 12: Mounting Blade Arm Upstream on Right Side of Damper**

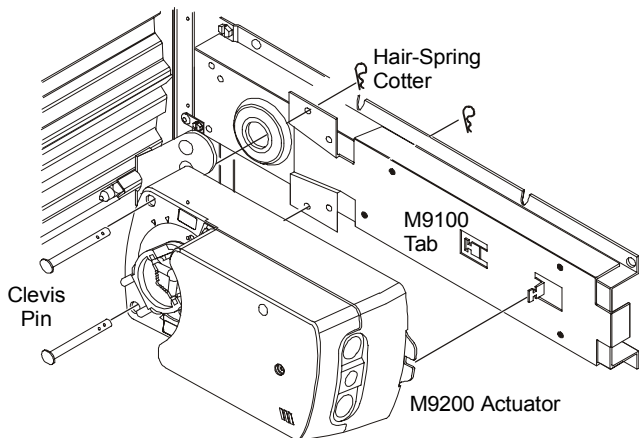
2. Secure the blade arm to the preferred driving blade. Refer to Figures 11 and 12 for applications.
  - 16-gauge and Double-piece Blades--Use two No. 12-24 x 1/2 inch hex-head, thread-forming screws.
  - Airfoil Blade--Use the two No. 10-32 x 1-1/4 inch long hex-head screws and two No. 10-32 hex lock nuts included with kit.

## Actuator

**Table 5: Actuator Position**

Mounting	Actuator Type	Normally Closed Actuator Rotation Setting	Normally Closed Actuator Rotation	Normally Open Actuator Rotation Setting	Normally Open Actuator Rotation
Downstream Right	M9100	Factory Setting	CW - Power	Jumper W1 to RA	CCW - Power
	M9200	Factory Setting	CW - Power CCW - Spring Return	Reverse Sleeve in Hub	CCW - Power CW - Spring Return
Downstream Left	M9100	Jumper W1 to RA	CCW - Power	Factory Setting	CW - Power
	M9200	Reverse Sleeve in Hub	CCW - Power CW - Spring Return	Reverse Sleeve in Hub	CW - Power CCW - Spring Return
Upstream Right	M9100	Jumper W1 to RA	CCW - Power	Factory Setting	CW - Power
	M9200	Reverse Sleeve in Hub	CCW - Power CW - Spring Return	Factory Setting	CW - Power CCW - Spring Return
Upstream Left	M9100	Factory Setting	CW - Power	Jumper W1 to RA	CCW - Power
	M9200	Factory Setting	CW - Power CCW - Spring Return	Reverse Sleeve in Hub	CCW - Power CW - Spring Return

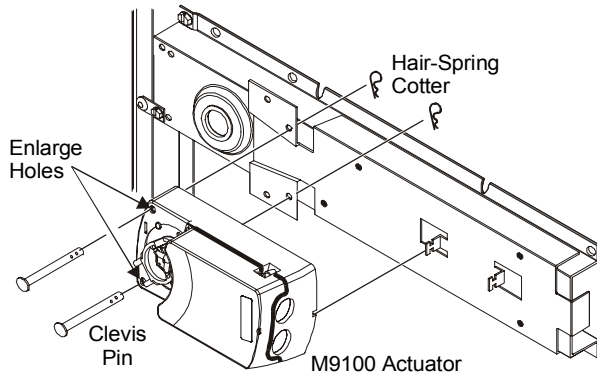
Note: Set the actuator rotation prior to installing the actuator to the mounting bracket: CW = Clockwise, CCW = Counterclockwise.



**Figure 13: Installing M9200 Actuator**

To install an M9200 actuator:

1. Set the actuator as specified in Table 5.
2. Use a hammer to flatten the M9100 tab against the bracket.
3. Install the actuator so that the anti-rotation tab on the bracket is inserted into the slot in the actuator.
4. Install the clevis pins through the actuator housing.
5. Install one hair-spring cotter to each clevis pin to secure the actuator to the bracket.

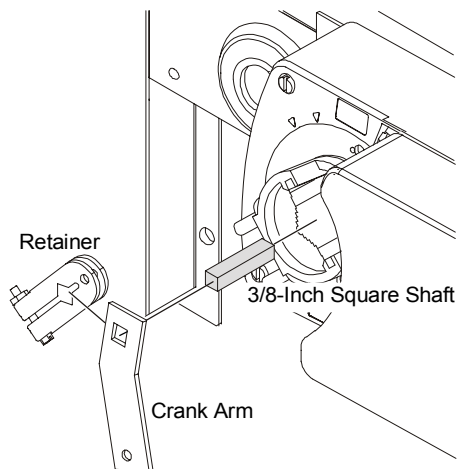


**Figure 14: Installing M9100 Actuator**

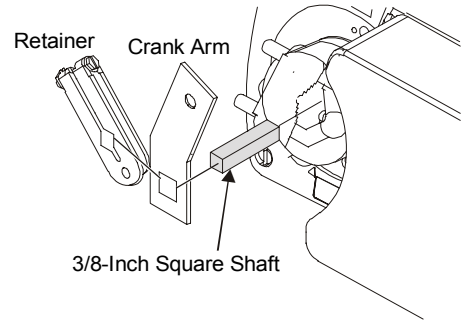
To install an M9100 actuator:

1. Set the actuator as specified in Table 5.
2. Use a drill with a 15/64 inch drill bit and enlarge the two mounting holes on the actuator by the coupler.
3. Install the actuator so that the anti-rotation tab on the bracket is inserted into the slot in the actuator.
4. Install the clevis pins through the actuator housing.
5. Install one hair-spring cotter to each clevis pin to secure the actuator to the bracket.

## Linkage

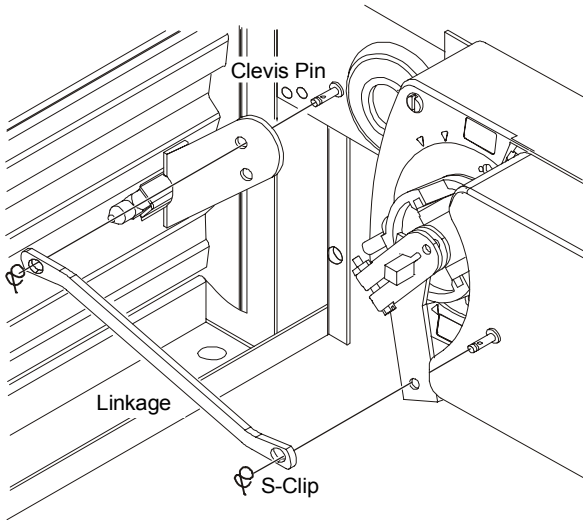


**Figure 15: Installing Crank Arm, Right-Hand Downstream, Left-Hand Upstream**



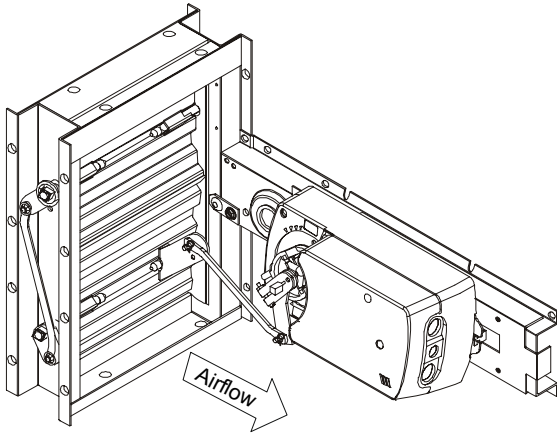
**Figure 16: Installing Crank Arm, Left-Hand Upstream, Right-Hand Downstream**

1. Remove the plastic angle indicator from the actuator.
2. Install the 3/8-inch square shaft into the actuator and secure by tightening the two nuts on the actuator clamp.
3. Insert the crank arm into the crank arm retainer until the square holes align and then slide it over the 3/8-inch square shaft, as shown in Figure 15 for downstream application, and Figure 16 for upstream application.
4. Slide the crank arm assembly flush to the actuator hub. Use a screwdriver and 5/16 inch open-end wrench to secure the crank arm in place.
5. Manually open the actuator 2 to 3 degrees to connect the linkage.
  - M9100--Press the gear release and rotate the coupler.
  - M9200--Use the manual crank. Remove it from the cover and insert the squared portion until it is firmly seated. Rotate the manual crank in a clockwise direction approximately four turns and then lock it in position by winding the manual crank counterclockwise until a slight resistance is felt.



**Figure 17: Installing Linkage**

6. Install the linkage to the crank arm using one clevis pin, washer, and S-clip.
7. Install the other side of the linkage to the hole in the blade arm for the type of damper being used. Secure using one clevis pin, washer, and S-clip.



**Figure 18: Completed Right-Hand Downstream Assembly**

*The performance specifications are nominal and conform to acceptable industry standards. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.*

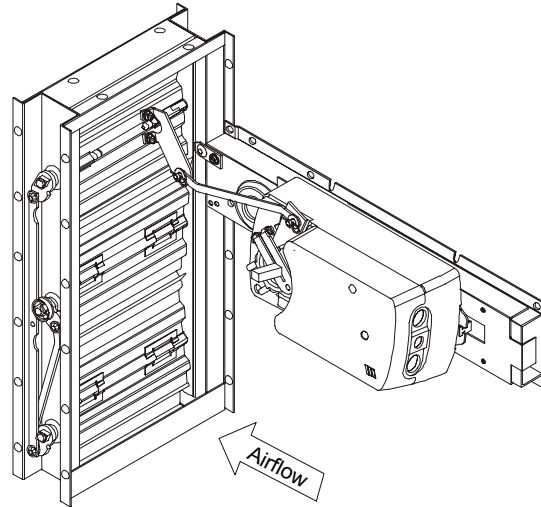
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**Figure 19: Completed Right-Hand Upstream Assembly**

## Checkout Procedures

1. Supply power to the actuator and operate the damper for at least three complete cycles.
  2. Verify that the damper blades open and close fully.
- There are no adjustments to the linkage.