# M9000-341 Valve Actuator Weather Shield Kit

## Installation Instructions

**Part No. 34-636-2235, Rev. A**
**Issued November 2, 2011**
*Supersedes July 6, 2011*

Refer to the QuickLIT Web site for the most up-to-date version of this document.

## Applications

The M9000-341 Weather Shield Kit is a cost-effective and durable weather shield designed to provide a degree of protection for a single Johnson Controls® VA9104, VA9203 or VA9208 Series Electric Actuator used in ball valve applications. These weather shield kits are manufactured to National Electrical Manufacturers' Association (NEMA) 4X (IP66/67) specifications and protect the electric actuator from corrosion, rain, freezing rain, sleet, and snow. The kit can be mounted indoors or outdoors; however, it may not prevent externally formed ice from restricting the motion of the rotary shaft.

Each enclosure is constructed of impact-grade polycarbonate plastic that provides excellent impact resistance. The cover features ultraviolet inhibitors that extend service life by preventing the cover from becoming brittle or damaged by the sun or other environmental elements. The transparent cover provides an unobstructed view of the electric actuator without having to disassemble the enclosure. A form-fitting seal prevents water or moisture from entering the unit and damaging the actuator.

**IMPORTANT:** The M9000-341 Weather Shield Enclosure only provides protection for the Johnson Controls M(VA)9000 Series Electric Actuator. To ensure proper operation, check that all associated equipment used in the application is suitable for the surrounding environment.

## Installation

Refer to the following documentation for more information on the VA9203 and VA9208 Series Electric Actuators used with the M9000-341 Weather Shield Enclosure:

- *VA9104-xGA-3S Series Electric Non-Spring Return Valve Actuators Installation Instructions (Part No. 14-1336-23)*
- *VA9104-xGA-2S Series Electric Non-Spring Return Valve Actuators Installation Instructions (Part No. 14-1336-15)*
- *VA9203-AGx-xx Floating Electric Spring Return Actuators Installation Instructions (Part No. 14-1380-8)*
- *VA9203-Bxx-3 On/Off Electric Spring Return Actuators Installation Instructions (Part No. 14-1380-16)*
- *VA9203-GGx-xx Proportional Electric Spring Return Actuators Installation Instructions (Part No. 14-1380-24)*
- *VA9208-AGx-x Floating Electric Spring Return Actuators Installation Instructions (Part No. 14-1379-5)*
- *VA9208-Bxx-3 On/Off Electric Spring Return Actuators Installation Instructions (Part No. 14-1379-13)*
- *VA9208-GGx-x Proportional Electric Spring Return Actuators Installation Instructions (Part No. 14-1379-21)*

### *Special Tools Needed*

- 7 mm socket
- 8 mm open-end wrench
- 5 mm (3/16 in.) flat-blade screwdriver
- 6 mm (1/4 in.) flat-blade screwdriver
- No. 2 Phillips screwdriver
- 21 mm and 22 mm open end wrench (or two adjustable wrenches)

**Figure 1: M9000-341 Weather Shield Kit**



Johnson Controls

### *Parts Included*

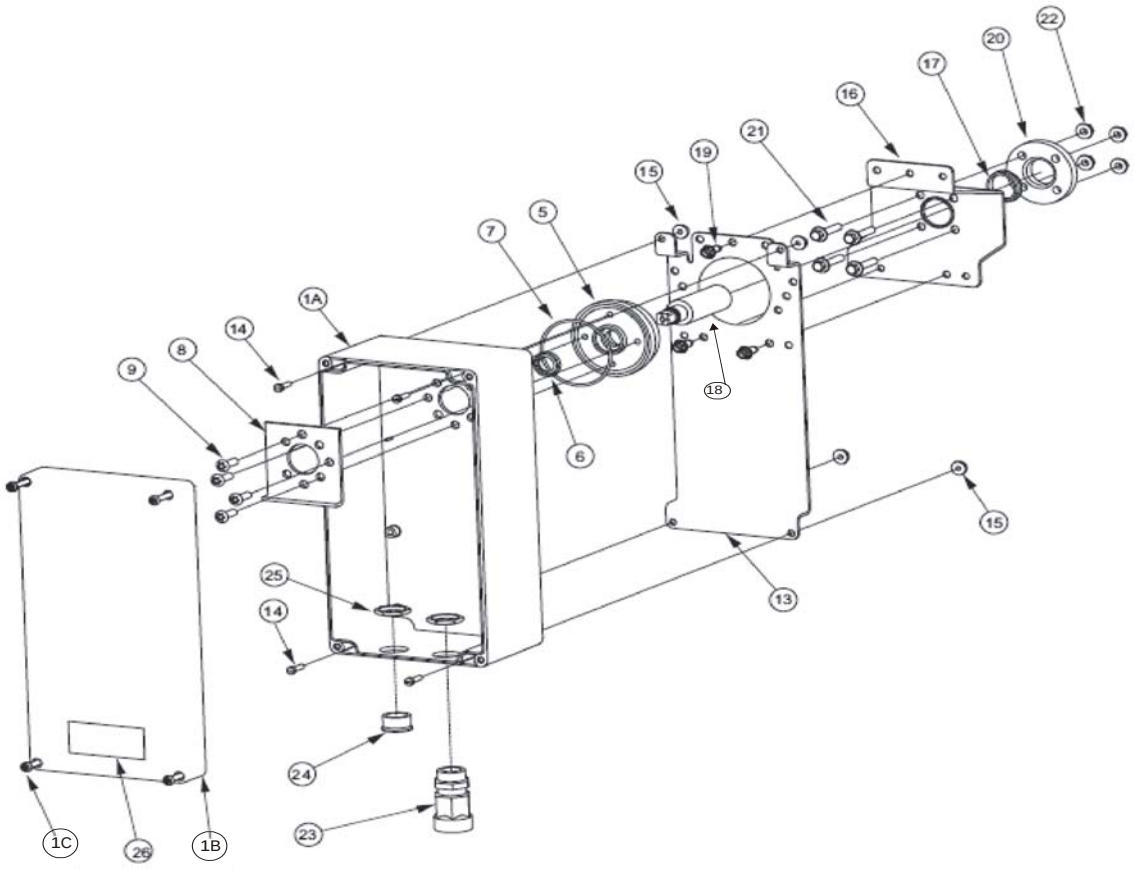


**Figure 2: Parts Included in M9000-341 Weather Shield Enclosure Kit (See Table 1)**

**Table 1: Parts Included in M9000-341 Weather Shield Enclosure Kit[1] (Part 1 of 2)**

| Item # | Quantity | Description |
|---|---|---|
| **1A** | **1** | Base, Enclosure |
| **1B** | **1** | Clear Enclosure Cover |
| **1C** | **4** | Screw, Cover (Factory Installed) |
| **5** | **1** | Bearing, Seal Carrier (Factory Installed) |
| **6** | **1** | Seal, Lip, 0.500 in. ID X 0.750 in. OD X 0.125 in. Thick (Factory Installed) |
| **7** | **1** | O-Ring, 1.989 in. ID X 0.070 in. diameter, RoHS (Factory Installed) |
| **8** | **1** | Plate, Inner (Factory Installed) |
| **9** | **4** | Screw, Button Head Torx, M5 x 0.8 x 16 mm long RoHS (Factory Installed) |
| **13** | **1** | Bracket, Mounting |
| **14** | **4** | Screw, Machine, #6-32 x 1/2 in. Slotted Pan Head, RoHS |
| **15** | **4** | Nut, #6-32 Hex, Flanged, Serrated Tooth, RoHS |
| **16** | **1** | Bracket, Valve |
| **17** | **1** | Bearing, Plastic, Flanged, Split, 20 mm ID, RoHS (Factory Installed) |
| **18** | **1** | Shaft, Valve |
| **19** | **3** | Screw, Tapping, Hex Washer Head, Slotted, Type SW, RoHS |
| **20** | **1** | Thermal Barrier, M9000-341 |

**Table 1: Parts Included in M9000-341 Weather Shield Enclosure Kit[1] (Part 2 of 2)**

| Item # | Quantity | Description |
|---|---|---|
| **21** | **4** | Screw, Hex, Flange, Serrated Tooth, Machine, M5 X 0.8 X 25 MM Long, RoHS |
| **22** | **4** | Nut, M5 X0.8 in. Hex, Flange, Serrated Tooth, RoHS |
| **23** | **2** | Gland, Cable, PG11 to 1/2 in. NPSL |
| **24** | **1** | Cap Plug, PG11 with O-Ring, RoHS |
| **25** | **2** | Nut, Hex, Single Chamfer, PG11 |
| **26** | **1** | Label, M9000-341 (Factory Installed) |

1. We recommend using a 1/2 in. liquid-tight conduit and 1/2 in. National Pipe Thread (NPT) liquid-tight fittings (purchased locally) to terminate the control wiring to the weather shield enclosure strain relief conduit fittings.

## *Dimensions*

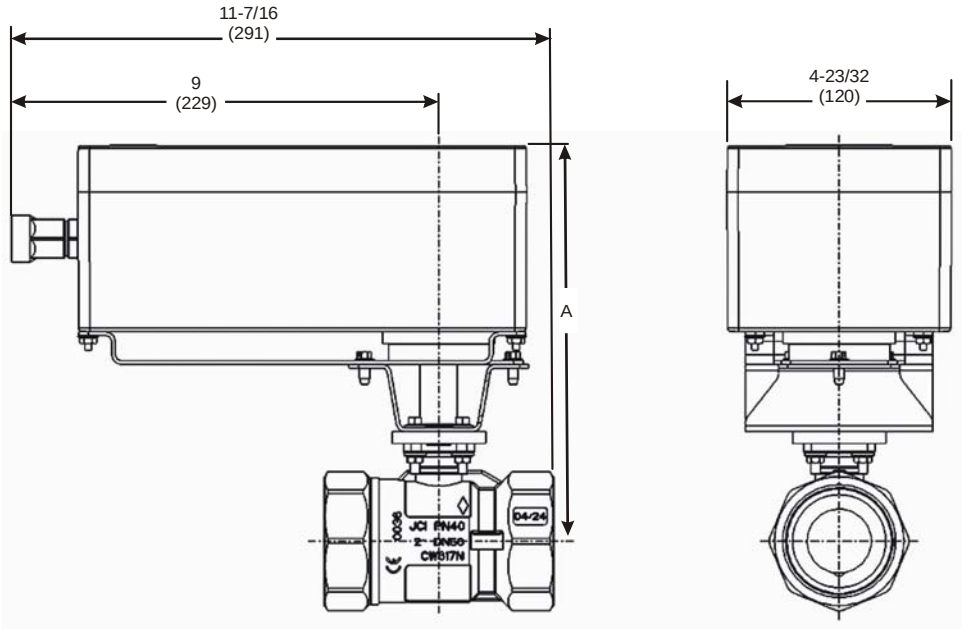


**Figure 3: Weather Shield Enclosure Dimensions, in. (mm)**
**(See Table 2.)**

**Table 2: Weather Shield Enclosure Dimensions, in. (mm)**

| Valve Size, in. (DN) | A |
|---|---|
| **1/2 (DN15)** | 7-1/2 (191) |
| **3/4 (DN20)** | 7-1/2 (191) |
| **1 (DN25)** | 7-37/64 (192) |
| **1-1/4 (DN32)** | 8 (203) |
| **1-1/2 (DN40)** | 8-11/64 (208) |
| **2 (DN50)** | 8-11/32 (212) |

## Mounting

Mount the valve in the location which allows sufficient clearance to remove the weather shield cover and actuator. Before installing the electric actuator, use an adjustable wrench to manually rotate the valve stem several times. Rotating the valve stem breaks the torque that may have built up during long-term storage.

To mount the M9000-341 Weather Shield Kit:

1. Position the valve ball and stem to the desired spring return position. To mount the actuator to Spring Return Port A (Coil) Open, turn the valve stem to the position in Figure 4. To mount the actuator to Spring Return Port A (Coil) Closed, turn the valve stem to the position in Figure 5.

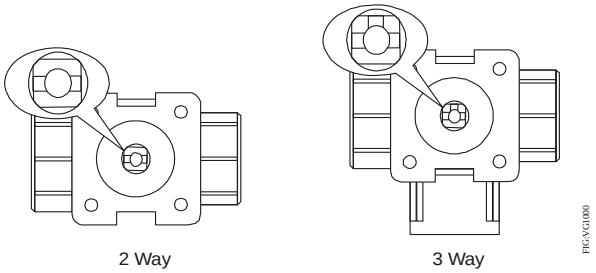


**Figure 4: Positioning the Valve Stem - Spring Return Port A (Coil) Open**

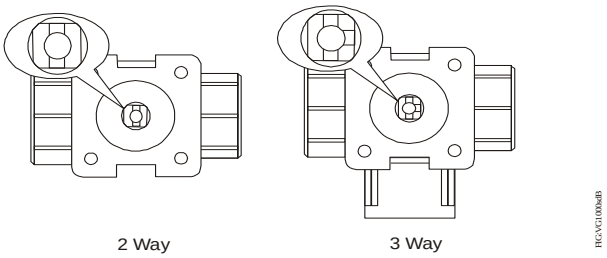


**Figure 5: Positioning the Valve Stem - Spring Return Port A (Coil) Closed**

**Note:** For the VA9104 Electric Non-Spring Return Valve Actuators, position the valve ball and stem to the zero position. Turn the valve stem to the position in Figure 4.

2. Place the Teflon® thermal barrier on ball valve actuator mounting flange by inserting the alignment rib on the bottom of the thermal barrier into the recess on mounting flange (Figure 6).

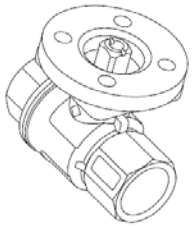

**Figure 6: Mount the Thermal Barrier**

3. Install the valve adapter bracket over the thermal barrier and attach the valve adapter bracket to the valve using the four M5 screws and flanged nuts (Figure 7). Recommended torque is 35 to 44 lb·in. (4.0 to 5.0 N·m).

**Note:** Before you full tighten the screws, temporarily install the valve shaft through the adapter bracket and engage the valve stem. This action ensures proper alignment with the valve stem and adapter bracket.

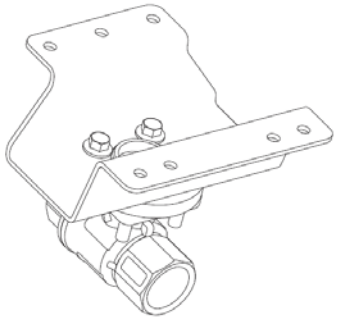

**Figure 7: Install Valve Adapter Bracket**

4. Secure the weather shield enclosure mounting bracket (Figure 8) to the valve adapter bracket by using the raised alignment aids (Figure 9) for positioning and the three 12-24 x 1/2 in. self tapping screws. Recommended torque is 25 to 28 lb·in. (2.8 to 3.2 N·m).

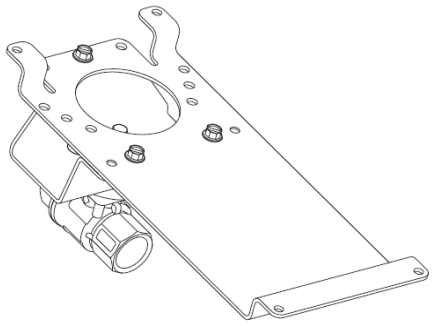

**Figure 8: Weather Shield on Mounting Bracket**

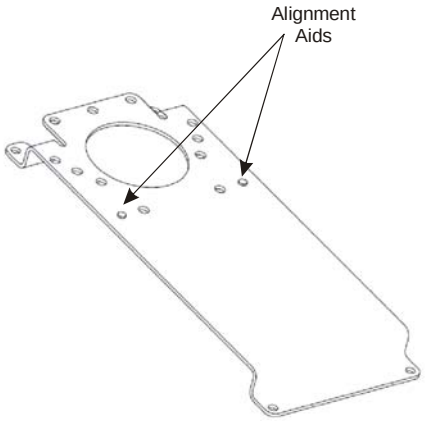


**Figure 9: Raised Alignment Aids**

5. Install the strain relief conduit adapters in the weather shield base. One adapter for actuators without switches or two adapters for actuators with switches. If you only use one adapter, seal the remaining hole with the cap plug and nut. Tighten the strain relief and/or cap plug nuts to a torque of 27 to 35 lb·in (3 to 4 N·m).
6. Align marks on top of the valve stem extension shaft with marks on the valve stem and install the weather shield base and seal assembly on the weather shield enclosure mounting bracket. Secure tightly using the four 6-32 x 1/2 in. screws and nuts.
7. Set up the valve actuator linkage according to the instructions supplied with the actuator.
8. Install the valve actuator into the weather shield feeding the electrical cables through the strain relief conduit adapters and position the actuator on to the internal bracket.

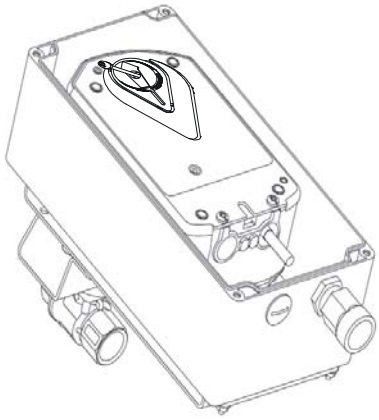

**Figure 10: Actuator within M9000-341 Weather Shield Kit**

**Note:** When you use the M9000-341 Weather Shield Kit with a VA9104 Electric Non-Spring Return Actuator, you need to trim the handle for proper alignment within the kit.

9. Tighten the M4x0.7 x 83 mm screw in the center of the fixed pointer to valve stem extension to a torque of 10 to 12 lb·in. (1.1 to 1.4 N·m). Tighten the conduit fitting to a torque of 25 to 30 lb·in. (2.8 to 3.4 N·m) to secure the electrical cord in place.
10. Install the weather shield cover and gasket assembly using the four cover screws supplied with the kit. Tighten to 5 to 8 lb·in (0.6 to 0.9 N·m).

## Repair Information

If the M9000-341 Series Weather Shield Enclosure fails to operate within its specifications, replace the unit. For a replacement weather shield, contact the nearest Johnson Controls representative.

## Technical Specifications

### *M9000-341 Weather Shield Enclosures*

| | | |
|---|---|---|
| **Materials** | **Enclosure** | Ultraviolet (UV) Resistant Polycarbonate Plastic |
| | **Enclosure Seal** | Nitrile |
| | **Cover** | Transparent UV Resistant Polycarbonate Plastic |
| | **Cover Gasket** | Polyurethane |
| **Protection Class** | | Designed to NEMA 4X, IP66/67 Specifications |
| **Actuator Ambient Operating Temperature Limits** | **VA9203** | -22 to 140°F (-30 to 60°C) |
| | **VA9208** | Standard Operating: -4 to 140°F (-20 to 60°C) |
| | | Extended Operating: -40 to -4°F (-40 to -20°C) |
| | **VA9104** | -4 to 140°F (-20 to 60°C) |
| **Weather Shield Enclosure Ambient Storage Temperature Limits** | | -40 to 176°F (-40 to 80°C) |
| **Electrical Connections** | | Strain Relief Conduit Fittings with 1/2 in. National Pipe Straight Mechanical (NPSM) Exit |
| **Shipping Weight** | **M9000-341** | 4.2 lb (1.9 kg) |

*The performance specifications are nominal and conform to acceptable industry standards. For application at conditions beyond these specifications, consult the local Johnson Controls office. Johnson Controls, Inc. shall not be liable for damages resulting from misapplication or misuse of its products.*

Johnson Controls

**Building Efficiency**
507 E. Michigan Street, Milwaukee, WI 53202





Published in U.S.A. www.johnsoncontrols.com