

M9000-103 and M9000-104 14 VA Transformers

The M9000-103 and M9000-104 are Class 2 transformers that handle 24 VAC, 14 VA power requirements. The M9000-103 is designed for 120/24 VAC applications, and the M9000-104 is designed for 230/24 VAC applications. These transformers can be used for all M9100 and M9216 applications and a variety of control applications that require 24 VAC at 60 Hz.

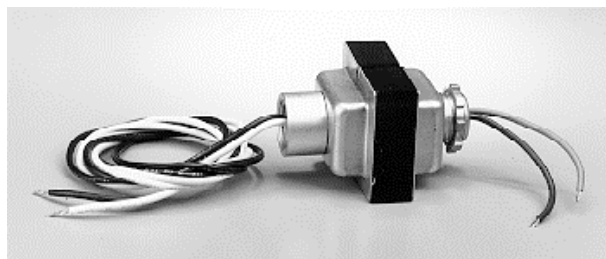


Figure 1: M9000-10x Transformer

Features and Benefits	
<input type="checkbox"/> Female Threaded Conduit Hub	Accepts flexible conduit without a handi-box
<input type="checkbox"/> Compact Design	Accommodates installation in a limited space
<input type="checkbox"/> Split Bobbin Design	Provides best primary/secondary isolation
<input type="checkbox"/> Conduit Hub Mounting	Mounts directly to M9000 Series actuators
<input type="checkbox"/> Choice of Primary Voltages	Meets 120 or 230 VAC power requirements
<input type="checkbox"/> Color-coded Lead Wires	Provides simplicity and standardization of wiring
<input type="checkbox"/> UL and cUL Listed	Meets U.S. and Canadian requirements for Class 2 transformers

Dimensions

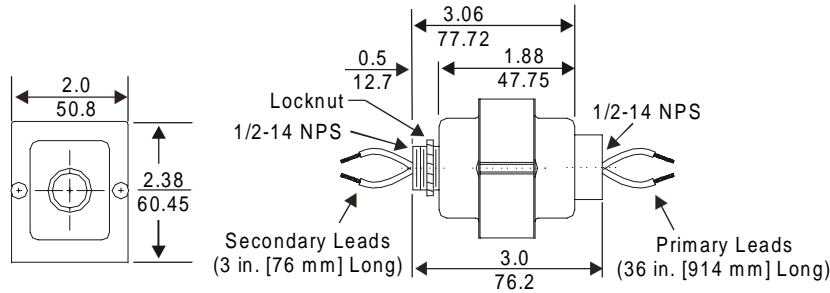


Figure 2: Transformer Dimensions, in. (mm)

Installation

Tools Required

- Phillips No. 1 and 2 screwdrivers
- 1/8 in. (3 mm) flat-blade screwdriver

M9100

IMPORTANT: The transformers can be directly mounted to all M9100 actuators, except the M9104-AGA-2N and M9104-AGS-2N.

To install the transformer:

1. Loosen the actuator cover screw with a Phillips No. 1 screwdriver, and remove the actuator cover. (See Figure 3.)

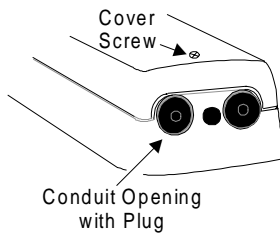


Figure 3: Location of Cover Screw and Conduit Plugs

2. Use fingertip to push the plastic plug out of the conduit opening, closest to the M9100 power terminals. (See Figure 3.)
3. Remove the locknut on the transformer hub. (See Figure 2.)

4. Screw the transformer into the unplugged threaded conduit opening.

CAUTION: Equipment Damage Hazard.
Do not overtighten the transformer into the conduit opening, or damage to the actuator threads may occur.

M9216

To install the transformer:

1. Loosen the actuator cover screw using a Phillips No. 2 screwdriver, and remove the actuator cover.
2. Use fingertip to push the plastic plug out of the conduit opening, closest to the M9216 power terminals.
3. Slide the capture nut (supplied with the actuator) into the slot located inside of the unplugged conduit opening. (See Figure 4.)

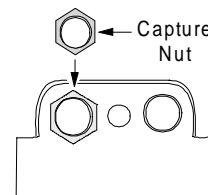


Figure 4: Capture Nut

4. Insert the conduit adaptor (supplied with the actuator) into the unplugged conduit opening. Hand-tighten by turning in a clockwise direction as shown in Figure 5.

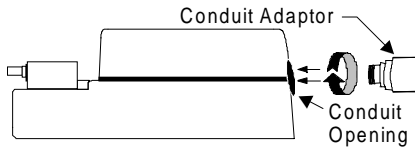


Figure 5: Inserting the Conduit Adaptor

5. Remove the locknut on the transformer hub. (See Figure 2.)
6. Screw the transformer into the conduit adaptor.

Wiring



WARNING: Electrical Shock Hazard.

Disconnect all power supplies before wiring connections are made to avoid possible electrical shock or damage to the equipment.



CAUTION: Equipment Damage Hazard.

Check all wiring connections before applying power to the system. Short-circuited or improperly connected wires will result in permanent damage to the equipment.

IMPORTANT: All wiring must be in accordance with the National Electrical Code and local electrical regulations.

Refer to the *Mounting* and *Wiring* sections of the appropriate *M9100 Series Electric Motor Actuator Product/Technical Bulletin* or *M9200 Series Electric Motor Spring Return Actuator Product/Technical Bulletin* (FAN 268.1, 1628.3, or 977) for instructions on mounting the actuator and wiring connections.

1. Complete the secondary wiring after the transformer is mounted.
2. Connect the transformer's primary lead wires to the line voltage power supply.

The color designations for the primary and secondary lead wires are found in Table 1. Refer to Figure 6 for wiring configurations.

Table 1: Color Code

Primary	Secondary
Common, White	Common, Brown
120 VAC, Black	24 VAC, Orange
230 VAC, Yellow	

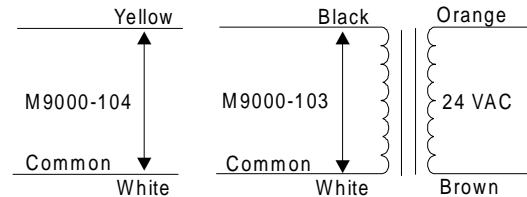


Figure 6: Transformer Wiring

Checkout

After installation is complete, turn on the power supply. Place the controlled equipment in operation, and observe it through at least one complete cycle. Make sure it functions as intended.

Repairs and Replacements

Field repairs must not be made. For a replacement, refer to Table 2 and contact the nearest Johnson Controls representative.

Ordering Information

Table 2: Products Available

Product Code Number	Description
M9000-103	14 VA Transformer, 120/24 VAC, 60 Hz
M9000-104	14 VA Transformer, 230/24 VAC, 60 Hz
M9000-100	Conduit Adaptor Kit for M9200 Series actuators only (10 sets/box)

Specifications

Product	M9000-103 and M9000-104 14 VA Transformers
Power Requirements	M9000-103: 120 VAC, 60 Hz M9000-104: 230 VAC, 60 Hz
Full Load Secondary Voltage	24.0 ±1.0 VAC
Open Circuit Secondary Voltage	26.5 ±0.5 VAC (no load)
Finish	Endbells and fittings are zinc plated.
Ambient Operating Temperature	-4 to 122°F (-20 to 50°C)
Ambient Storage Temperature	-40 to 187°F (-40 to 86°C)
Mounting	Primary: 1/2-14 NPS female fittings Secondary: 1/2-14 NPS male fitting for direct connection to M9000 Series actuators
Electrical Connections	Primary: 14 AWG (2.08 sq mm) wire, 36 in. (914 mm) long Secondary: 18 AWG (0.82 sq mm) wire 3 in. (76 mm) long
Dimensions (H x W x D)	2.38 x 2.0 x 3.0 in. (60 x 51 x 76 mm)
Shipping Weight	1.1 lb (0.5 kg)
Agency Compliance	UL 1585 Listed, cUL C22.2 No. 66 Listed, Class 2

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.



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