

Installation, Operation and Maintenance

D(M) 24-70-T Series Actuator

SUPERSEDES: New

EFFECTIVE: September 30, 2016

Plant ID No. 001-4271

Installation

IMPORTANT: Use the D(M)24-70-T Series Electric Non-Spring Return Actuator only to control equipment under normal operating conditions. Where failure or malfunction of the actuator 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 actuator.

Mounting

IMPORTANT: The actuator is intended for indoor mounting only, with no direct exposure to water beyond NEMA 2 conditions. Use an appropriate shield or enclosure where the environment exceeds NEMA 2 specifications.

You may mount the D(M)24-70-T Series actuators in any convenient orientation.

IMPORTANT: The tab on the anti-rotation bracket must fit midpoint in the actuator slot to prevent actuator binding and premature wear.

Rotation Range

The actuator is factory set for 0 to 90° rotation. To change the rotation range to less than 90°, use the top scale on the actuator cover, refer to Figure 3, and proceed as follows:

1. Press and hold the gear release, and rotate the actuator coupler Counterclockwise (CCW) to the 0° position. Release the gear release.

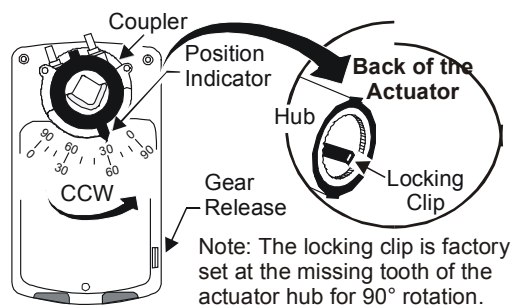


Figure 3: Actuator Components

2. Turn the actuator over. Use a flat-blade screwdriver to release the locking clip, and remove the coupler from the front of the actuator.

3. Reinsert the coupler into the front of the actuator, and align the position indicator with the starting point of the desired rotation range.

IMPORTANT: Advancing the coupler 90° from the factory setting prevents the actuator from driving in either the Clockwise (CW) or CCW direction.

4. Push the coupler into the actuator until the locking clip snaps over the hub, securing it in place.

Note: To change the rotation range on:

-(A) models with auxiliary switches, one or both of the switches may need adjustment. Reference auxiliary switches section.

Feedback Signal

For the modulating models, changing the rotation range changes the feedback signal and the operating range proportionally. (See Figure 4.)

		Rotation Range							
		Coupler Adjustment							
		90°	75°	60°	45°	30°	15°	0°	
		0°	15°	30°	45°	60°	75°	90°	
Direct Acting (DA)	0-10 V Feedback	10.0 V	8.3 V	6.7 V	5.0 V	3.3 V	1.7 V	0.0 V	
	2-10 V Feedback	10.0 V	8.7 V	7.3 V	6.0 V	4.7 V	3.3 V	2.0 V	
Reverse Acting (RA)	0-10 V Feedback	0.0 V	1.7 V	3.3 V	5.0 V	6.7 V	8.3 V	10.0 V	
	2-10 V Feedback	2.0 V	3.3 V	4.7 V	6.0 V	7.3 V	8.7 V	10.0 V	
Direct or Reverse Acting	0-135 ohms Feedback	135 Ω	113 Ω	90 Ω	68 Ω	45 Ω	23 Ω	0 Ω	
	0-1000 ohms Feedback	1000 Ω	833 Ω	667 Ω	500 Ω	333 Ω	167 Ω	0 Ω	

Note: 0 to 10 V or 2 to 10 V feedback is available on all modulating models.

Figure 4: Nominal Feedback Signal Relative to the Rotation Range

Wiring

CAUTION: Risk of Electric Shock.

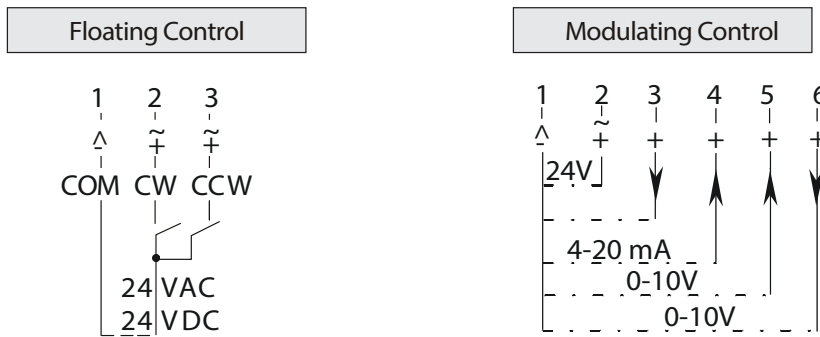
Disconnect the power supply before making electrical connections to avoid electric shock.

CAUTION: Risk of Property Damage.

Do not apply power to the system before checking all wiring connections. Short circuited or improperly connected wires may result in permanent damage to the equipment.

IMPORTANT: Make all wiring connections in accordance with local, national, or regional regulations.

Wiring: (Terminal Block)



Through the Conduit Openings

Depending on the model selected, use one or both conduit openings. The threaded actuator conduit openings accept 1/2 in. trade size conduit fittings. Refer to Figure 6 and proceed as follows:

1. Loosen the cover screw with a Phillips No. 1 screwdriver, and remove the actuator cover.

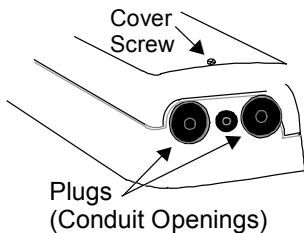


Figure 6: Location of the Conduit Openings

2. Push the plastic plug out of the conduit opening with fingertip.
3. Use the Phillips screwdriver to puncture a hole through the center of the plug, and reinsert the plug into the conduit opening.

Note: For applications requiring metal conduit, thread the conduit fitting into the conduit opening and hand tighten.

IMPORTANT: Use flexible metallic tubing or its equivalent with the fitting. Do not overtighten the conduit fitting into the actuator to avoid damaging the actuator threads.

4. Insert the cable wires through the plastic plug or conduit fitting, and connect to the terminal block using the applicable wiring diagrams in Figure 5.

5. Perform the procedures appropriate to the specific application, as described in the Tandem Operation and Setup and Adjustments sections.

6. Re-attach the cover and tighten the cover screw.

Jumper Settings

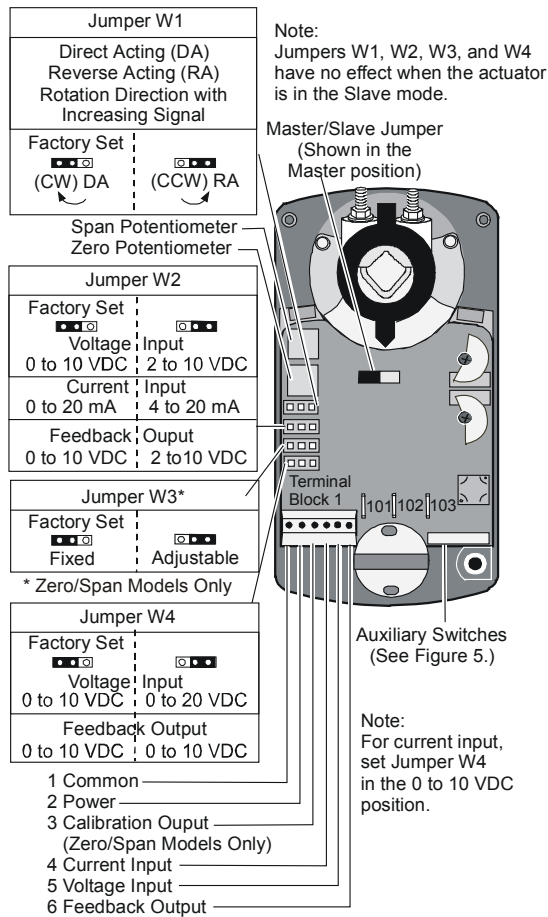


Figure 8: Settings on Modulating Models

D-Series Models

To set one of these models for RA operation, reverse the control wiring connections at Terminal 2 and Terminal 3. (See Terminal Block 1 in Figure 5.)

DM-Series Models

To set one of these models for RA operation, proceed as follows:

1. Press and hold the gear release, rotate the actuator coupler until it is in the full CW position, and release the gear release.
2. Move Jumper W1 from the factory-set DA position to the RA position. (See Figure 8.)
3. Apply power and then a control signal to the actuator to verify that the actuator is fully CW at minimum control input, and fully CCW at maximum control input.

Jumpers

D-Series models come factory set with the Master/Slave Jumper in the master position and have no additional jumpers. Modulating models come factory set with Jumper W1 in the DA position. Additional jumpers factory set as follows: Jumper W2 is in the 0 to 10 VDC or 0 to 20 mA position, and Jumper W4 is in the 0 to 10 VDC position. (See Figure 8.)

Note: The D-Series models do not have jumpers.

Setup and Adjustments

Direction of Action

In the DA mode (factory set), a minimum control signal drives the actuator to the full CCW position, and a maximum control signal drives it fully CW. In the Reverse Acting (RA) mode, a minimum control signal drives the actuator to the full CW position, and a maximum control signal drives it fully CCW. To set an actuator for RA, proceed to the section for the appropriate model.

IMPORTANT: Adjust the rotation range before changing the direction of action.

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