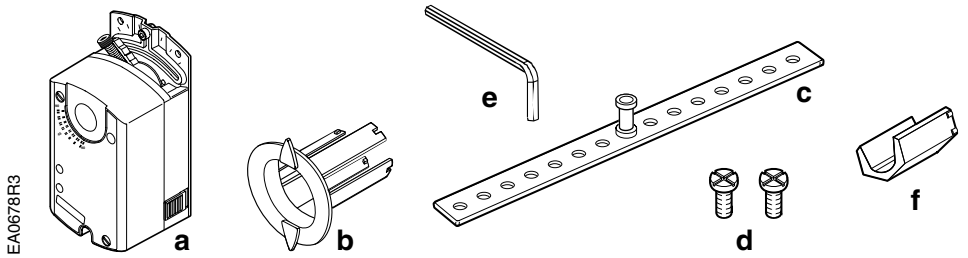
MF41-6043/MS41-6043 Series
MF41-6083/MS41-6083 Series

TAC DuraDrive Non-spring Return Direct Coupled Actuator Installation Instructions



a. Actuator
b. Position indicator
c. Anti-rotation bracket
d. Mounting screws for anti-rotation bracket
e. 4 mm hex key
f. Shaft insert for use with 3/8-inch (8-10 mm) shafts

Figure 1. Parts of the TAC DuraDrive Rotary Actuator.

Product Description

These installation instructions describe the steps for direct-coupled mounting of the TAC DuraDrive™ 35 lb-in MF41-6043 and MS41-6043 Series, and 70 lb-in MF41-6083 and MS41-6083 Series Non-spring Return Rotary Electronic Damper Actuators.

Product Numbers

Three-position control: MF41-6043, MF41-6043-502, MF41-6043-510, MF41-6083, MF41-6083-502, and MF41-6083-510

Modulating control: MS41-6043, MS41-6043-502, MS41-6043-520, MS41-6043-522, MS41-6083, MS41-6083-520, MS41-6083-522, and MS41-6083-502

Required Tools

- 4 mm hex wrench
- 4 mm (5/32-inch) drill bit and drill
- Small flat-blade screwdriver
- Marker or pencil

Estimated Installation Time

30 minutes

Warning/Caution Notations

CAUTION:	⚠	Equipment damage or loss of data may occur if you do not follow a procedure as specified.

WARNING:	⚠	Personal injury may occur if you do not follow a procedure as specified.

WARNING: ⚠ Do not open the actuator.

Instructions

NOTE: Place the actuator on the damper shaft with the front of the actuator accessible. The label is on the front side.

1. Determine whether the damper blades will rotate clockwise or counterclockwise to open. See Figure 3.
2. If the blades will rotate counterclockwise, slide the manual override switch to manual, and move the adjustment lever to the right. Return the switch to automatic. See Figure 2.

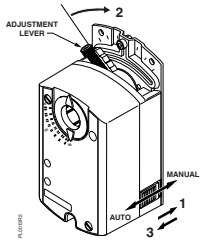


Figure 2.

3. To mount a (modulating) MS41-6043 or MS41-6083 Series actuator, set the Dual In-line Package (DIP) switches to the required positions. See Figure 3.
4. To access the DIP switches, raise the tab on the lower left side of the actuator's face. See Figure 3. The factory setting is clockwise (middle switch), with a direct-acting feedback signal (right switch).
5. Close the tab over the DIP switches.
6. To mount a (3-position) MF41-6043 or MF41-6083 Series actuator for counter-clockwise rotation, follow the *Counterclockwise Damper Rotation* instructions located in the *Wiring Diagrams* section when wiring the actuator to the controller.

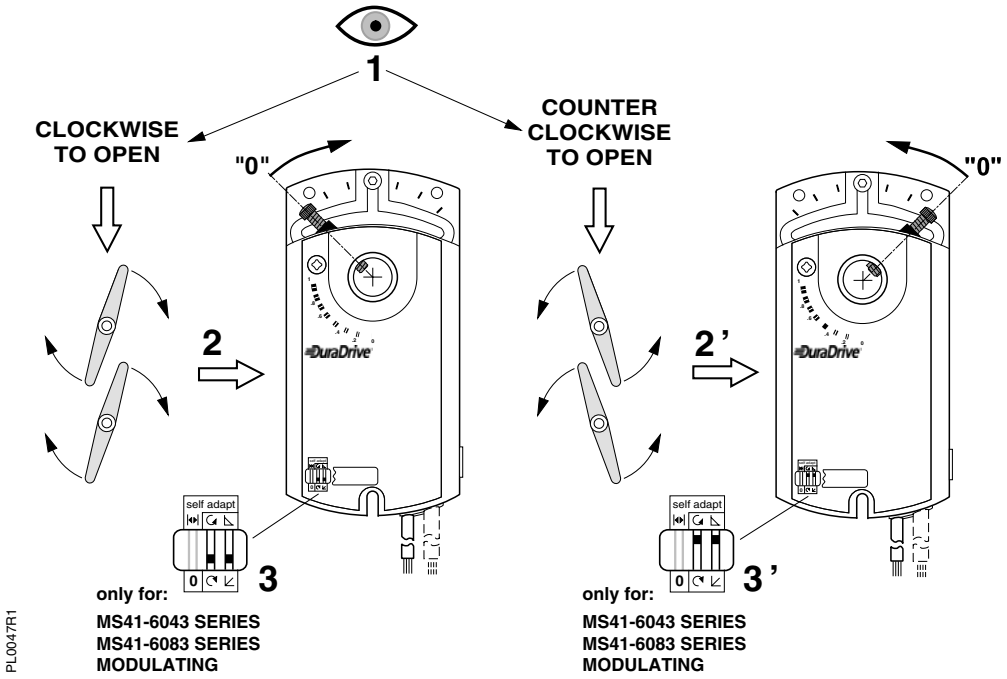


Figure 3. Setting the Direction of Rotation.

NOTE: For DIP switch setting options, see the *General Instructions F-27213-1 (MF41-6043/608)* and *F-27214-1 (MS41-6043/6083).*

Mounting and Installation

The TAC DuraDrive actuator comes with a factory installed 1/2-inch shaft guide.

If shaft size is 5/8-inch, skip Figure 5 and proceed with the instructions in Figure 6.

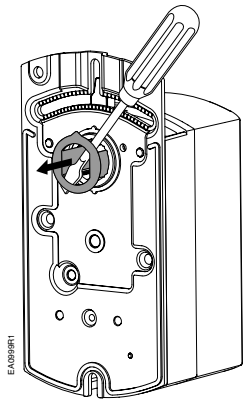
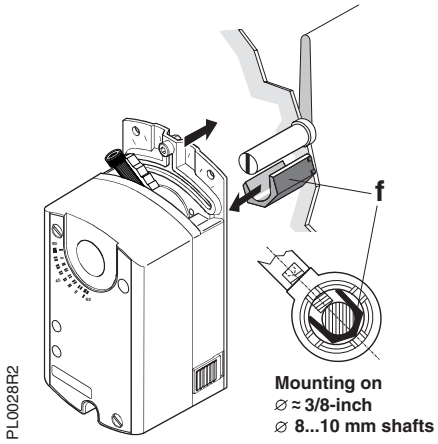


Figure 4.
Removing 1/2-inch Shaft Guide for 3/8-inch Ø or 5/8-inch Ø Shaft.

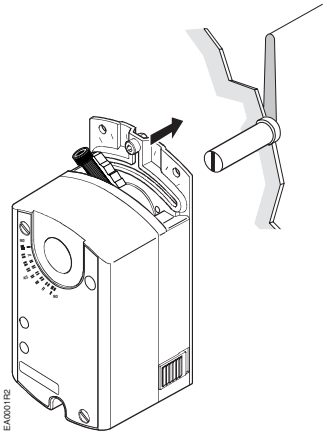


1. Remove factory installed 1/2-inch guide. See Figure 4.

   A 3/8-inch shaft adapter is provided in actuator package.

2. Hold the shaft insert so that the raised tabs are inserted last when placing the insert into the back of the actuator.
   Proceed to Figure 6, step 2.

Figure 5. 3/8-inch Ø Shaft.



1. Remove factory installed 1/2-inch guide. See Figure 4.

2. Mount actuator to shaft per Figure 6.

Figure 6. 5/8-inch Ø Shaft.

Mounting and Installation, Continued

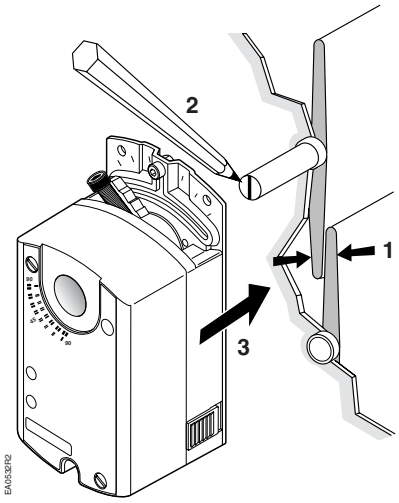


Figure 7. Mounting the Actuator to the Damper Shaft.

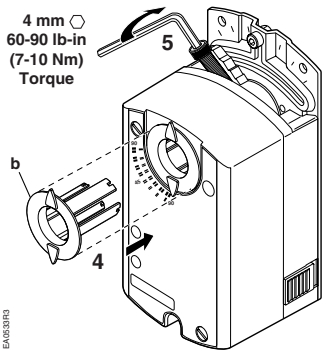


Figure 8. Installing the Position Indicator (b).

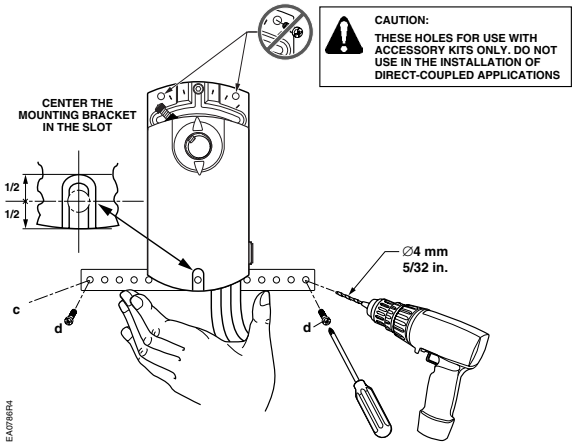


Figure 9. Attaching the Anti-rotation Bracket.

Manual Override

To move the damper blades and lock the position with no power present, do the following:

1. Slide the red manual override knob toward the back of the actuator.
2. Make adjustments to the damper position.
3. Slide the red manual override knob toward the front of the actuator.

Once power is restored, the actuator returns to automated control.

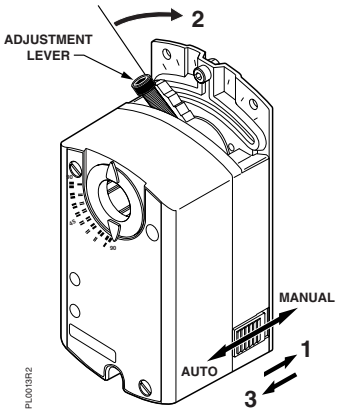


Figure 10. Manual Override.

Dual Auxiliary Switch Setting

For MF41-6043-502, MS41-6043-502, MS41-6043-522, MF41-6083-502, MS41-6083-502, and MS41-6083-522, only.

Factory setting:

A = 5° B = 85°

Use a flat-blade screwdriver to adjust the A switch. The long arm of the "†" points to the setting. Manually turn the red ring of the B switch. The narrower tab on the ring points to the setting. See Figure 10.

NOTE: The auxiliary switch setting shafts rotate with the actuator. The scale is valid only when the actuator is in the "0" position on clockwise motion.

Invert scale for counterclockwise rotation.

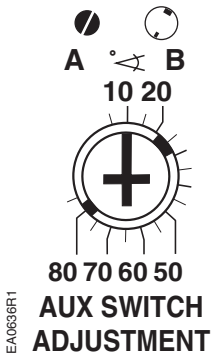


Figure 11.

Mechanical Range Adjustment

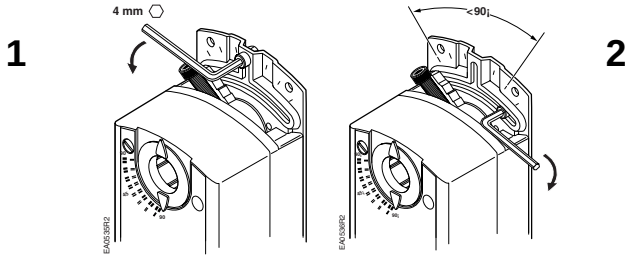


Figure 12. Moving the Mechanical Range Stop.

1. Loosen the stop set screw.
2. Move it along the track to the desired position, and fasten it in place.

Mechanical range limitation and self–adapt feature.

1. To use the entire 0 to 10V input signal to control the adjusted range, raise the tab located on the lower left-hand side of the actuator and locate the DIP switches. See Figure 3.
2. Set the self-adapt DIP switch to ◀▶ (ON). See Figure 13.
3. Close the tab over the DIP switches.

For example, if you set the locking screw at 70° and turn the self-adapt switch ON, a 5V input signal will drive the damper to 35° (50% of its adjusted range).

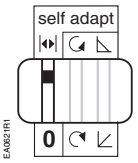


Figure 13. Self-adapt Switch in the On Position.

Factory setting 0 (OFF)

CAUTION: When turning the self-adaptive feature on, or after a software reset with the feature on, the actuator will enter a five-minute calibration cycle as the actuator adjusts to the rotation limits of the system. A software reset happens after power on, or may be caused by electrostatic discharge (ESD) at levels of 2kV and above.

Slope (Span) and Offset Adjustment

For MS41-6083-520, MS41-6083-522, MS41-6043-520, and MS41-6043-522 only.

Factory setting:
Slope (span) ΔU ≈10
Offset Uo = 0

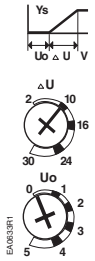


Figure 14.

Use a flat-blade screwdriver to make adjustments.
The long arm of the "†" points to the setting.

Wiring

- All wiring must conform to NEC and local codes and regulations.
- Use earth ground isolating step-down Class 2 transformers. Do not use auto transformers.
- Determine the supply transformer rating by summing total VA of all actuators used. It is recommended that one transformer power no more than 10 actuators.

WARNING:

Installations requiring CE Conformance

- All wiring for CE rated actuators must only be separated extra low voltage (SELV) or protective extra low voltage (PELV) per HD384-4-41.
- Use safety-isolating transformers (Class III transformer) per EN 61558. They must be rated for 100% duty cycle.
- Overcurrent protection for supply lines is maximum 10A.

Wiring Diagrams
MF41-6043 Series and MF41-6083 Series

24 Vac power supply
Three-position control 24 Vac

Each wire has the standard symbol printed on it. See Table 1.

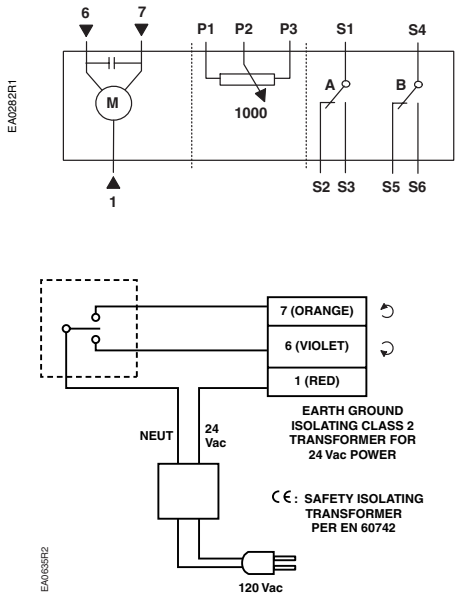


Figure 15. Three-position Control.

Counterclockwise Damper Rotation of MF41-6043 Series and MF41-6083 Series

If the damper blades turn counterclockwise to open (CCW), reverse the 6 (violet) and 7 (orange) wires at the controller.

CAUTION:

Do not wire different types of actuators (such as MF41-6153 Series) in parallel with these models.

Table 1. Three-position Control 24 Vac.

Standard Symbol	Function	Color
1	Supply (SP)	Red
6	Control signal clockwise	Violet
7	Control signal counterclockwise	Orange
Factory-installed Options		
S1	Switch A Common	Black
S2	Switch A NC	
S3	Switch A NO	
S4	Switch B Common	
S5	Switch B NC	
S6	Switch B NO	
P1	Feedback Potentiometer 0 to 100% P1 - P2	
P2	Feedback Potentiometer Common	
P3	Feedback Potentiometer 100 to 0% P3 - P2	

MS41-6043 Series and MS41-6083 Series

24 Vac power supply 0 to 10V modulating control

Each wire has the standard symbol printed on it. See Table 2.

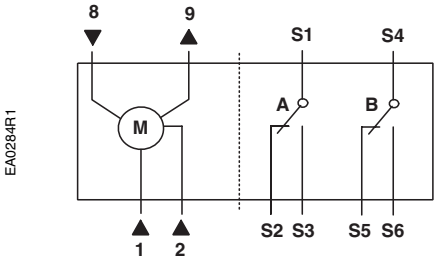


Figure 16. 0 to 10V Modulating Control.

Table 2. Modulating Control.

Standard Symbol	Function	Color
1	Supply (SP)	Red
2	Neutral (SN)	Black
8	0 to 10V input signal	Gray
9	Output for 0 to 10 Vdc position indication	Pink
Factory-installed options		
S1	Switch A Common	Black
S2	Switch A NC	
S3	Switch A NO	
S4	Switch B Common	
S5	Switch B NC	
S6	Switch B NO	

References

TAC DuraDrive Electronic Damper Actuators MS41-6043/MS41-6083 Series Non-spring Return Rotary 24 Vac Modulating Control General Instructions	F-27214-1
TAC DuraDrive Electronic Damper Actuators MF41-6083/MF41-6043 Series Non-spring Return Rotary 24 Vac Three-Position Control General Instructions	F-27213-1

Dimensions

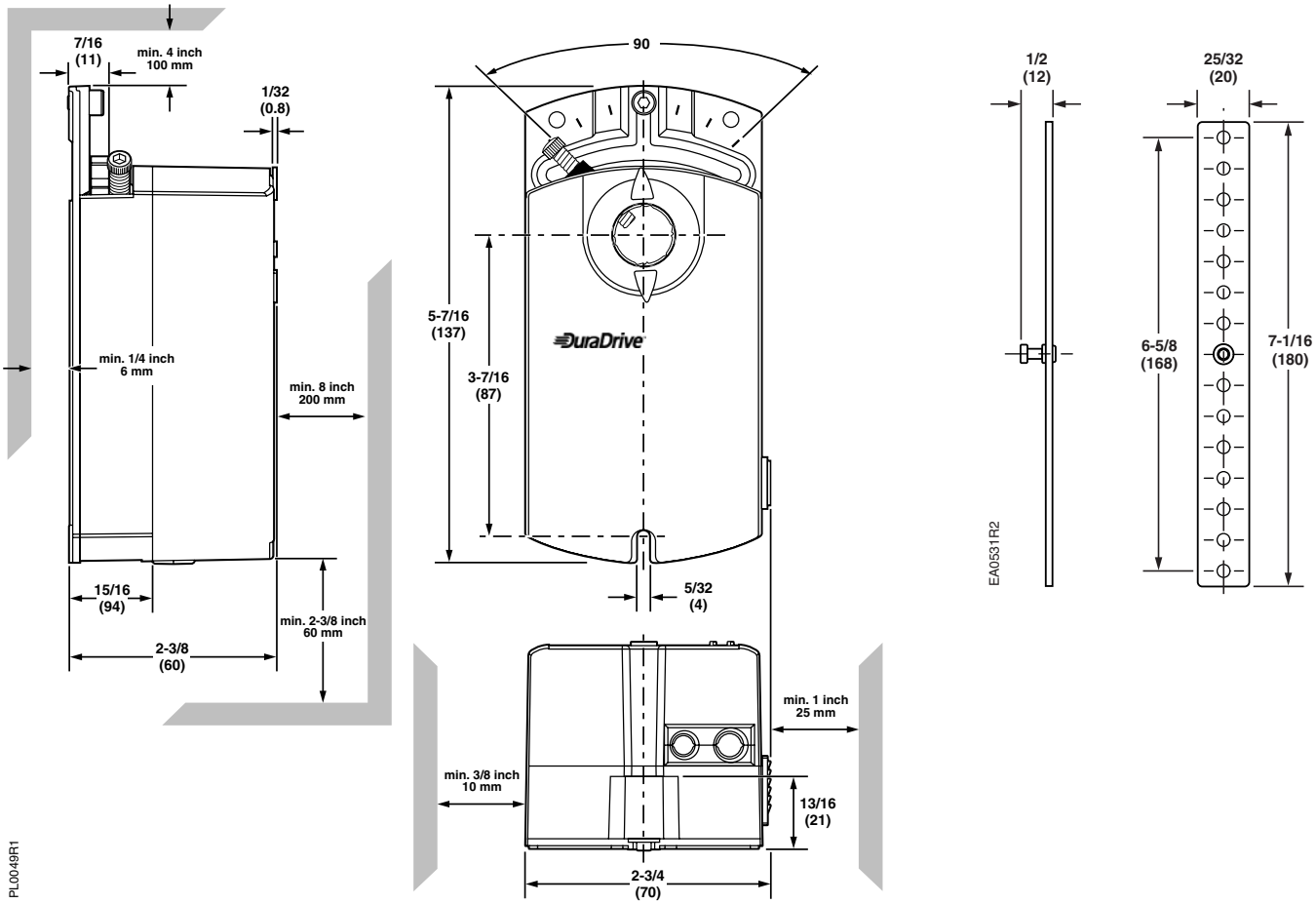


Figure 17. Dimensions of TAC DuraDrive Actuator and Anti-rotation Bracket. Dimensions in Inches (Millimeters).

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