

APPLICATION NOTE

M9000 Applications
Face/Bypass

Single-Actuator Control

This application for the M9000 Series Electric Motor Actuator provides control for face and bypass dampers. It can be used with proportional or floating controllers providing the proper positioning for the dampers. Obtain the system diagrams for controller installation to verify proper termination for each actuator.

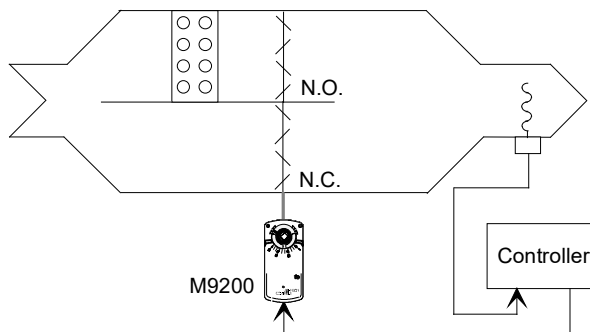


Figure 1: Face and Bypass Damper Control, Single Actuator

Several options are available for this application. One actuator can control mechanically linked dampers as shown in Figure 1; or two M9100 actuators, one Direct Acting (DA) and one Reverse Acting (RA) can be used on each independent damper as shown in Figure 5.

IMPORTANT: When using two M9216 actuators, set them so one damper opens while the other damper closes. Both M9216 actuators must always operate against, or both must always operate with, the spring return direction simultaneously.

For example, if one M9216 actuator is set for RA, and one DA, then the spring return direction must be reversed on one of the actuators. This will eliminate cumulative control errors caused by fighting the spring on only one actuator.

When a multi-section damper is involved, all sections of any given damper should operate at the same speed to prevent stability and balance problems from occurring.

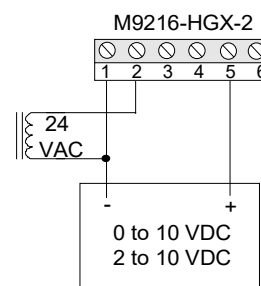


Figure 2: Voltage Controller Wiring

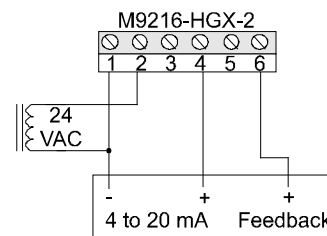


Figure 3: Current Controller with Feedback Wiring

Note: DX9100 and A350 controllers can only drive one actuator in the current mode.

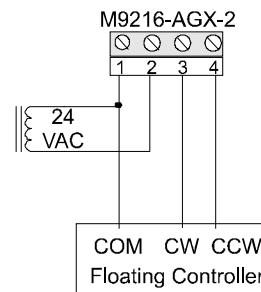


Figure 4: Floating Controller Wiring

Two-Actuator Control

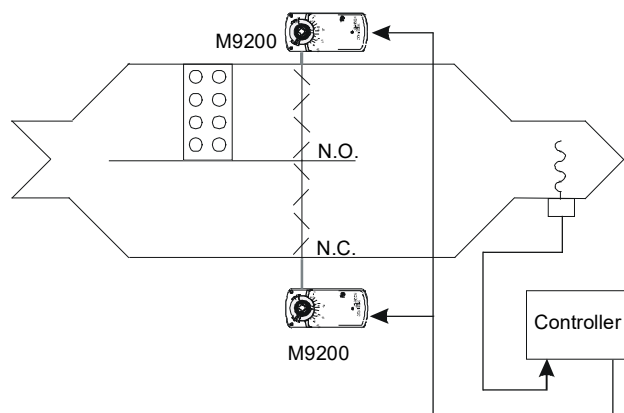


Figure 5: Face and Bypass Damper Control, Two Actuators

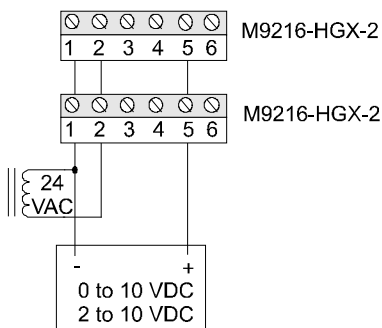


Figure 6: Voltage Controller for Wiring Two Actuators

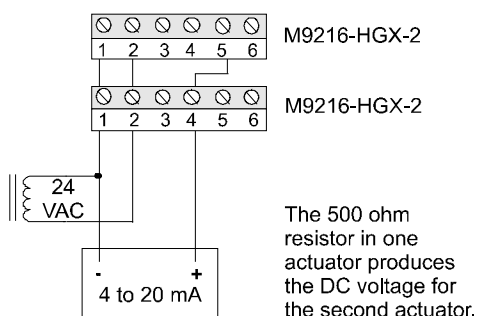


Figure 7: Current Controller for Wiring Two Actuators with Single Transformer

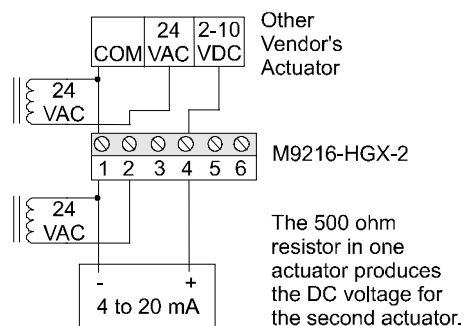


Figure 8: Current Controller for Wiring Two Actuators with Separate Transformers

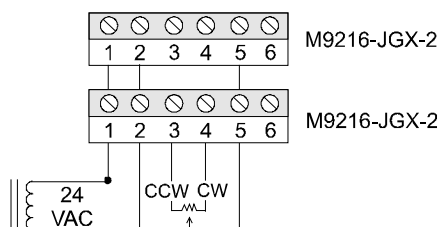


Figure 9: Resistive Controller for Subordinating Two Actuators

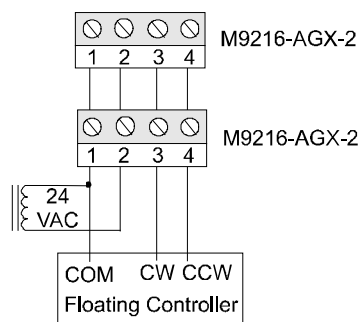


Figure 10: Floating Controller for Wiring Two Actuators

IMPORTANT: M9000 Series actuators have speed variations in response to loading; therefore, consider the installed speed of the damper and actuator(s) to avoid pressure-related problems.

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Printed in U.S.A.