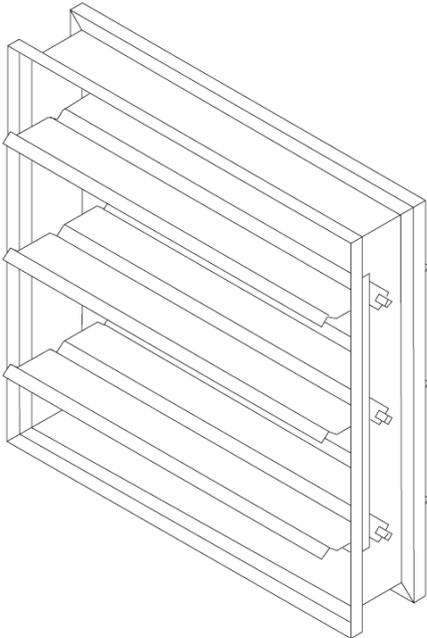




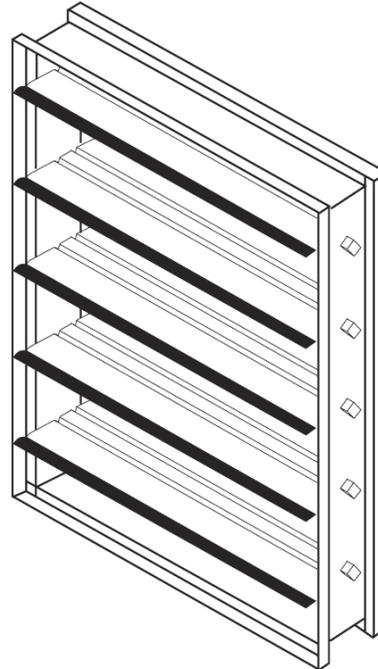
Installation, Operation, & Maintenance Manual

4000 Series Control Dampers

Vertical and Horizontal Mount



4000 Series Damper



4100 Series Damper

SAFETY WARNING:
Improper installation, adjustment, alteration, service or maintenance can cause property damage, injury or death. Read the installation, operating, and maintenance instructions thoroughly before installing or servicing this equipment.

Receiving and Handling

Upon receiving dampers, check for both obvious and hidden damage. If damage is found, record all necessary information on the bill of lading and file a claim with the carrier. Check to be sure that all parts of the shipment, including accessories, are accounted for.

Dampers must be kept dry and clean. Indoor storage and protection from dirt, dust and the weather is highly recommended. Do not store at temperatures in excess of 100°F (37°C).

Installation, Operation, and Maintenance Instructions

Pre-Installation Guidelines

The basic intent of a proper installation is to secure the volume control damper into the opening in such a manner as to prevent distortion and disruption of damper operation. The following check list will aid in completing the damper installation in a timely and effective manner.

1) Check the schedules for proper damper locations within the building. Visually inspect the damper for damage.

2) Lift or handle damper using sleeve or frame. Do not lift damper using blades, linkage, actuators, or jackshafting. When handling multiple sections assemblies, use sufficient support to evenly lift at each section mullion (see drawing). Do not drag, step on, apply excessive bending, twisting, or racking.

3) Do not install screws in damper frame that will interfere with unexposed blade linkage and prevent damper blades from opening and/or closing.

4) Damper must be installed into duct or opening square and free of twist or other misalignment. Damper must not be squeezed or stretched into duct or opening. Out of square, racked, twisted or misaligned installations can cause excessive leakage and/or torque requirements to exceed damper/actuator design.

5) Damper and actuator must be kept clean, dry and protected from dirt, dust and other foreign materials prior to and after installation. Examples of such foreign materials include but are not limited to:

- a) Mortar dust
- b) Drywall dust
- c) Firesafing materials
- d) Wall texture
- e) Paint overspray

6) Damper should be sufficiently covered as to prevent overspray if wall texturing or spray painting will be performed within 5 feet (1.50m) of the damper. Excessive dirt or foreign material deposits on damper can cause excessive leakage and/or torque requirements to exceed damper/actuator design.

7) ACCESS: Suitable access (actuators maintenance, etc.) must be provided for damper inspection and servicing. Where it is not possible to achieve sufficient size access, it will be necessary to install a removable section of duct.

Electrical Guidelines

All electrical and or pneumatic connections to damper actuators should be made in accordance with applicable codes, ordinances and regulations.

SAFETY DANGER !

Electrical input may be needed for this equipment. This work should be performed by a qualified electrician.

SAFETY CAUTION !

Verify power requirements before wiring actuator. Alumavent is not responsible for any damage to, or failure of the unit caused by incorrect field wiring. Electrical and/or pneumatic connections to damper actuators should be made in accordance with wiring and piping diagrams developed in compliance with applicable codes, ordinances and regulations.

Installation - Failure to follow instructions will void all warranties

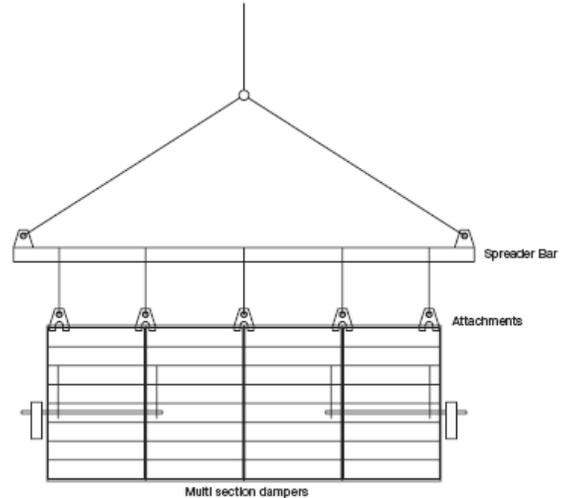
1. INSTALLING MULTIPLE SECTION DAMPERS

A damper assembly is not restricted to a maximum number of sections, but must not exceed the section sizes and overall sizes shown below. The 4000 series damper is intended to be self supporting only in its largest single section size. Multiple section damper assemblies may require bracing to support the weight of the assembly and to hold against system pressure. Alumavent recommends appropriate bracing to support the damper horizontally. Support ductwork in area of damper to prevent sagging due to damper weight.

Damper Model	Max Single Section Size	Max Size for Multi Section Dampers
4000 Damper	48 x 72	Unlimited
4100 Damper	48 x 72	Unlimited

Cycle the dampers by hand before installation to ensure freedom of movement.

The damper sections must be attached together with #10 x 3/4 in. (19mm) max. sheet metal screws, 1/4 in. (6mm) diameter nuts and bolts, tack or spot welds, or 3/16 in. (4mm) diameter steel pop rivets.



Installation (continued)

Attachments must be spaced a maximum of 6 inches on centers and a maximum of 3 inches from corners. Attachments must be made on front face and back face (air entering and air exiting side) of damper sections.

2. If more than two sections wide, unit ships as a multiple section assembly and a single section together. The single section is joined to the side of the multiple section where the jackshaft extends past the frame 4 inches.

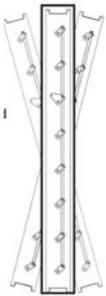
3. Duct opening or opening square should measure 1/4 inch (6mm) larger than damper dimension and should be straight and level.

4. If no holes are present in frame, drill 1/4 inch (6mm) diameter holes at 6 inch (52mm) centers and fasten frames together with 1/4 inch (6mm) #20 (.03mm) bolts and nuts.

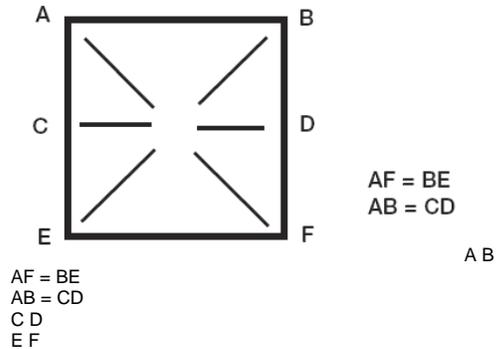
5. Use shims between damper frame and duct opening or opening space to prevent distortion of frame by fasteners holding it in place. Brace at every horizontal mullion and vertically brace at every 8 feet of damper width for strength. Dampers in high velocity (2000 fpm [610m per second]) may require more bracing. Note: Alumavent dampers are specifically designed and engineered for structural integrity based on model and conditions. Attachment, framing, mating flanges, and anchoring of damper assemblies into openings, ductwork, or walls is the responsibility of the installer. Design calculations for these retaining and supporting members should be determined by field engineers for that particular installation.

6. If damper actuator is to be mounted out of the air stream, the extension pin should extend approximately 4 inches (100mm) beyond the frame. On jack shafted units, the jackshaft should extend through the jackshaft bearing assembly and approximately, 6 inches (152mm) beyond the frame.

7. Individual damper sections, as well as entire multiple section assemblies must be completely square and free from racking, twisting, or bending. Measure diagonally from upper corners to opposite lower corners of each section.



Do not twist or bow. Mount damper plumb in the opening.



8. Damper blades, axles, and linkage must operate without binding. Before system operation, cycle dampers after installation to assure proper operation. On multiple section assemblies, all sections should open and close simultaneously.

Damper Maintenance

Alumavent's dampers are designed to be trouble free and hassle free under normal operation. Dampers are to be installed square and straight so as to prevent binding during operation. The following annual damper maintenance suggestions will help to insure proper damper operation and increase the life expectancy of the damper.

Foreign Matter

Over the course of time, dirt and grime may collect on damper surfaces. The damper surfaces should be cleaned to prevent hindrance to airflow.

Moving Parts

Make sure that parts such as linkage, bearings, blades, etc. that are intended to move freely, can do so. Lubricating these components can prevent possible rusting and unnecessary friction increase. Use only a moli-spray oil or similar graphite based oil as regular lubricating oil will attract dirt.

Bearings. Synthetic, oil impregnated, and ball bearings (without grease fittings) do not require lubrication. Ball bearings with grease fittings require only minimal grease.

Closure

Remove foreign materials that may be interfering with blade closure or effective sealing of the blades with each other or with the frame.

Operation

While operating the damper through its full cycle, check to see that the blades open and close properly. If there is a problem, check for loose linkage, especially at the actuator. Tighten the linkage where required.

Warranty

Alumavent warrants this equipment to be free from defects in material and workmanship for a period of one year from the purchase date. Any units or parts which prove to be defective during the warranty period will be repaired or replaced at our option. Alumavent shall not be liable for damages resulting from misapplication or misuse of its products. Alumavent will not be responsible for any installation or removal costs. Alumavent will not be responsible for any service work or back charges without prior written authorization.

Damper Trouble Shooting

The following is a cause and correction list for common concerns with the dampers.

Symptom	Possible Cause	Corrective Action
Damper does not fully open and/or fully close	Frame is 'racked' causing blades to bind on jamb seals	Adjust frame such that it is square and plumb
	Actuator linkage loose	Close damper, disconnect power, adjust and tighten linkage
	Defective motor	Replace
	Screws in damper linkage	Locate screws and remove
	Actuator linkage hitting wall or floor	Damper installed too far into wall. Move out
	Contaminants on damper	Clean with a non oil-based solvent (see Damper Maintenance)
Actuator runs hot or makes a humming noise	Actuator prohibited from reaching end of stroke	Disconnect linkage from jackshaft, open damper, power actuator to end of spring, tighten linkage. Verify amp draw.

