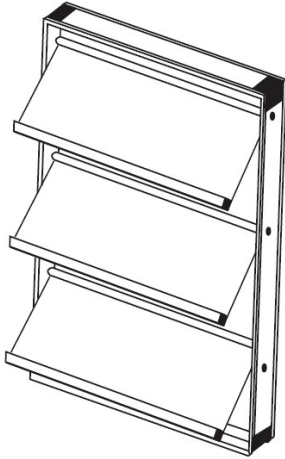


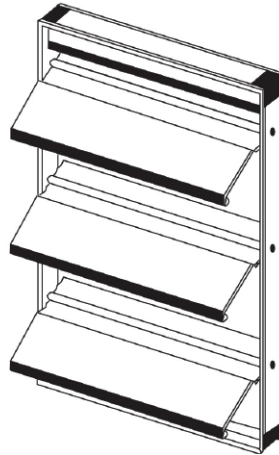


# BASIC BACKDRAFT DAMPER INSTALLATION, OPERATION & MAINTENANCE

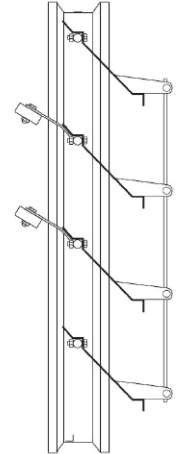
The following installation instructions apply to the following NCA backdraft damper models:  
XABD-1, -2, CBD-112, HDB-M, -H, FBD and BDD-SS.



XABD-1



XABD-2



CBD-112

## Application & General Notes:

These installation instructions apply to steel, fabric, stainless steel and aluminum Backdraft Dampers of the weighted, counter-balanced, non-weighted and fabric blade type. The dampers are designed for operation in the vertical orientation with blades running horizontal or in the horizontal orientation in either the upblast or downblast application. The dampers are meant for exhaust and intake applications.

## Safety Warning:

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

## Receiving & Handling:

Check for damage when this product is received. If damage is found, record all necessary information on the bill of lading and file a claim with the final carrier. Check to be sure that all parts of the shipment are accounted for.

## Electrical Guidelines:

Electrical input may be needed for products discussed within this IOM. All wiring shall be done in accordance with the latest edition of the National Electrical Code ANSI/NFPA-70, any local codes that may apply and wiring diagrams developed in compliance with the job or project design and specifications.

Electrical input work should be performed by a qualified electrician. Verify power before wiring actuator. NCA is not responsible for damage to or failure of the unit caused by incorrect field wiring. Follow all instructions carefully.

## Storage:

Store in a safe location away from construction traffic, material etc. to prevent damage. Cover with some sort of plastic cover in order to protect against excessive moisture, dirt and debris. Store in an area protected by the elements.

This IOM manual is the property of the owners, and is required for future maintenance. Please leave it with the owner when the job is complete.



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## Pre-Installation Notes and Guidelines:

These notes and guidelines are formulated in order to aid in completing the damper installation in a timely and efficient manner.

- A. Check the schedules for proper damper locations within the building.
- B. Inspect damper for damage before installing.
- C. Dampers must be installed free from twisting or racking.
- D. DO NOT compress or stretch the damper into the opening.
- E. DO NOT lift the damper by the blades or actuator (handle damper using frame or sleeve).
- F. DO NOT install screws or fasteners in the damper that could potentially interfere with the unexposed blade linkage and prevent proper damper operation.
- G. The damper and actuator must be protected from dirt, dust and foreign materials before and after installation.
- H. When painting, wall-texturing, insulating or any other foreign material is being sprayed within 5 feet of the damper, the damper must be sufficiently covered and protected.

## Maximum & Minimum Size Backdraft Dampers:

MODEL	MINIMUM SIZE	MAXIMUM SIZE <sup>2</sup>
XABD-1	6 x 6 (152 x 152)	36 x 52 (914 x 1321)
XABD-2	6 x 6 (152 x 152)	40 x 52 (1015 x 1321)
CBD-112	6 x 12 (152 x 304)	48 x 72 (1219 x 1829)
HDB-M	6 x 8 (152 x 203)	48 x 72 (1219 x 1829)
HDB-H	12 x 12 (305 x 305)	48 x 72 (1219 x 1829)
FBD	6 x 6 (152 x 152)	36 x 24 (914 x 609)
BDD-SS <sup>1</sup>	6 x 6 (152 x 152)	30 x 72 (762 x 1829)

<sup>1</sup>Stainless Steel Model.

<sup>2</sup>All Backdraft dampers can be provided in unlimited multiple sections.  
(All dimensions in parentheses ( ) are in millimeters.)

## General Installation Instructions:

The following are general installation guidelines for NCA's backdraft dampers. It is important to note that backdraft damper materials, sizes and applications vary widely. Consult proper literature on each model for specific construction details.

1. NCA recommends that the damper be located at a minimum distance equal to half of the fan diameter AWAY from the fan discharge.
2. Single section backdraft dampers as well as multiple section backdraft damper assemblies must be installed square and free from racking or twisting (see Figure 1). In order to ensure the damper is not racked, measurements AF should equal BE and measurements AB should equal CD in Figure 2 within a tolerance of 1/8" (1.5 mm).
3. Multiple damper assemblies are not restricted to a maximum number of sections, but the single section units are restricted to the maximum and minimum sizes in Table 1 on page 2 of this document.
4. Refer to the "Multiple Sections Installation Details" within this document for further guidance on multiple section dampers.
5. Use shims as needed between damper frame and duct opening or opening space to prevent the distortion of the frame by fasteners holding it place. Support braces should be used at every horizontal mullion (multiple section dampers) and vertically at every 8 feet (2.4 m) for strength.

**Note:** Dampers being installed in high velocity applications may require more bracing. Attachment, framing and anchoring of damper assemblies into openings, ductwork or walls/floors is the responsibility of the installer. These variables should be determined by field engineers for each specific installation.

6. Damper blades, axles and linkages must operate proficiently without binding. Before system operation, all dampers should be cycled after installation to assure proper operation.

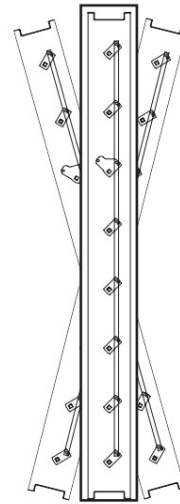
**Note:** Damper blades must always be running horizontally when installing the backdraft damper in the vertical orientation.

## Installation Instructions for Standard Frame Models:

The following instructions should be used as a guideline to installing backdraft dampers with a standard (non-flanged) frame in a wall penetration or duct. Refer to the General Installation Instructions above prior to following these steps.

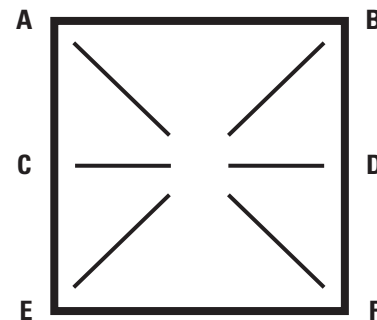
1. The backdraft damper will be approximately 1/4" (6mm) smaller than the duct or opening.
2. Insert the backdraft damper into the duct/opening (see Figure 3). Ensure that the bottom of the damper frame sits flat on the sill of the opening/duct to prevent twisting, sagging or uplifting.

Figure 1



Do not twist, rack or bend. Install damper plumb and square in opening.

Figure 2



AF = BE  
AB = CD

Figure 3

Standard Frame Backdraft Damper Model shown.

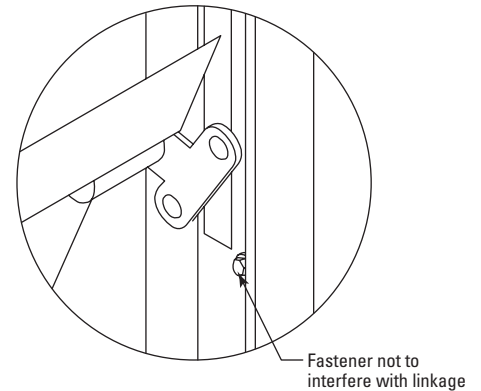


## Installation Instructions for Standard Frame Models (contd):

3. Install the damper using mounting angles or clips (3/8" (10mm) high (max) x 1" (25mm) wide (min) x 20 Ga. (1mm) thick (min)) - clips by others. Arrange the clips against the perimeter of the front and back of the damper frame, securing the clips to ductwork.
4. Minimum of 2 fasteners per side should be used on both faces of the damper as well as all four sides (head, sill and both jambs). Fasteners should be spaced 12" (305mm) on center.

**Note:** Be sure that fasteners DO NOT interfere with the linkage of the backdraft damper (see Figure 4).

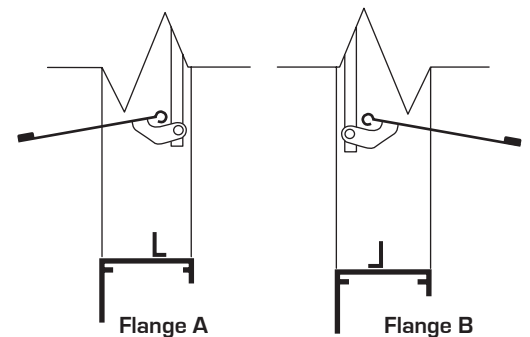
Figure 4



## Installation Instructions for Flanged Frame Models:

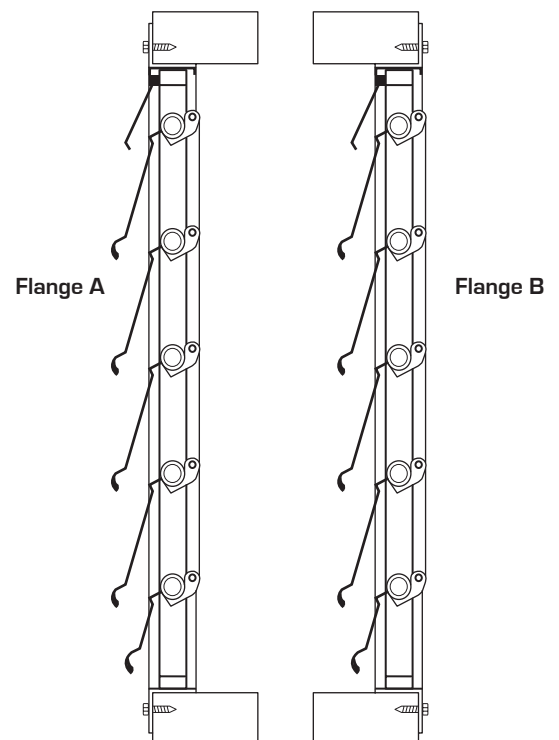
The following instructions should be used as a guideline to installing backdraft dampers with a flanged frame (Flange A or Flange B - see Figure 5) in a wall penetration. Refer to the General Installation Instructions on previous page prior to following these steps.

Figure 5



1. The backdraft damper will be approximately 1/4" (6mm) smaller than the duct or opening.
2. Insert the backdraft damper into the duct/opening (see Figure 6). Ensure that the bottom of the damper frame sits flat on the sill of the opening/duct to prevent twisting, sagging or uplifting.
3. Pre-drill the fastener holes in the backdraft damper flange before placing in the opening to reduce the chance of twisting and/or bending.
4. Secure the backdraft damper's flange using the appropriate fasteners (see Figure 6).
5. It is recommended that a minimum of two fasteners per side be used (head, sill and both jambs) (see Figure 6). Fasteners should be spaced 12" (305mm) on center.
6. Do not overtighten the fasteners, it may cause damage or twisting of the damper.

Figure 6



## Multiple Section Installation Instructions:

Dampers larger than the maximum single section size (see Table 1) are manufactured in multiple section assemblies and shipped for field assembly. The following instructions should be used as a guideline to assembling and installing multi-section backdraft dampers in the field. Refer to the General Installation Instructions on page 2 prior to following these steps.

1. Assemble sections together using the diagram in Figure 7 if labeling is present on the dampers.
2. Use an appropriate fastener (for example - #10 TEK screw 2" (51mm) min. long) to connect the individual sections together to form the multi-section assembly (see Figure 8).
3. Place the first horizontal screw (if needed) between the top blade and second blade as seen in Detail 1 of Figure 8 and Figure 9. Subsequent horizontal screws should be spaced in between every other blade as seen in Detail 2 of Figure 8.
4. Vertical fasteners should be placed at a maximum distance of 8" (203mm) from edge of frame and from center to center of each screw as seen in Detail 3 of Figure 8.
5. It is important to ensure that the fasteners DO NOT interfere with the blades, linkages or axles of the dampers (see Figure 9).
6. Dampers are designed to be self supporting in the maximum single section sizes. However, when single sections are combined to make multi-section assemblies, support braces may be needed to ensure the structural integrity of the assembly against system pressures.

Figure 7

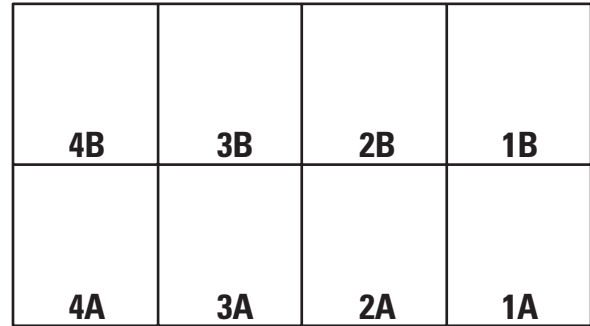


Figure 8

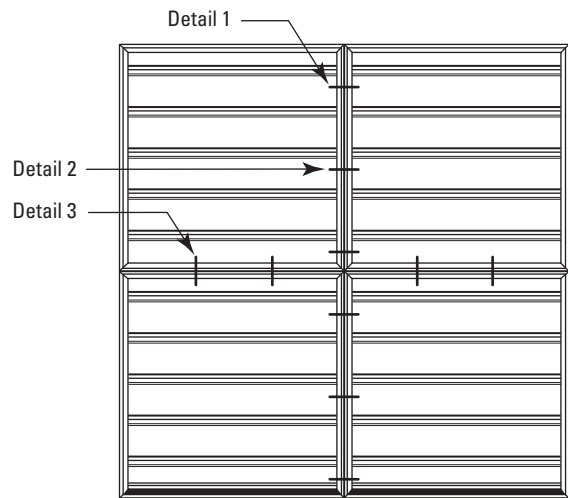
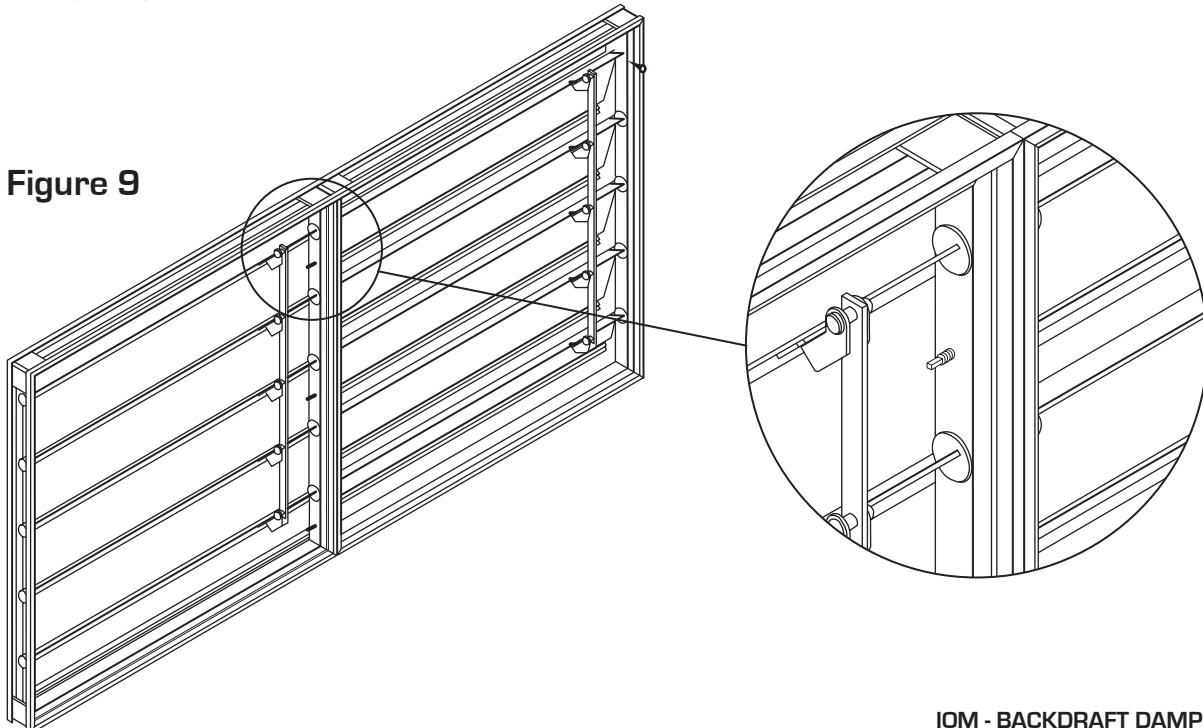


Figure 9





# BASIC BACKDRAFT DAMPER INSTALLATION, OPERATION & MAINTENANCE INSTRUCTIONS

## Actuator Connections (if applicable):

Electrical 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. Be sure to check actuator for proper voltage and current draw. Tampering with the actuator's installation or connecting the actuator to an improper voltage and current may void the warranty.

## Damper Operation, Testing and Maintenance

The procedures discussed here are intended to insure that nothing interferes with a damper's proper operation and to identify and eliminate a number of potential situations that could occur and interfere with said operation.

### Backdraft Damper Operation:

All NCA backdraft dampers are operated at the factory, however pre-installation testing of its operation should be conducted. Wire the actuator (if being used) per correct wiring diagrams. Ensure that the weights on the blades (if applicable) are performing the correct action that is needed (helping the blades shut or helping the blades stay open).

**WARNING:** During any operating, inspection or testing of backdraft dampers, NCA recommends the following:

1. Caution is advised when removing power from the damper's actuator. Actuators have very strong internal springs that may slam closed causing an abrupt interruption of airflow. As this could cause damage to ductwork, consideration should be given to conducting these tests without system airflow.
2. When removing power from the actuator to check damper operation, be sure to keep fingers, hands and any other body parts out of the blade travel path to prevent injury.
3. Check proper actuator operation. If defective, contact damper manufacturer for replacement procedures.

### Backdraft Damper Testing:

Testing of the damper and actuators prior to installation is imperative to ensure proper wiring and function of the damper. There are not periodic testing requirements for backdraft dampers, however, consult the actuator's manufacturer recommendations regarding periodic testing and maintenance if applicable.

### Backdraft Damper Maintenance:

Backdraft dampers that are properly applied, appropriately installed, and demonstrated to function as intended should require no specific preventive maintenance. However, NCA recommends that obstructions, dirt build up, and any rust or corrosion be removed using mild solvents or detergents. No lubrication is required, however if it is desired, damper tracks and blade hinges may be lubricated using a dry lubricant.

**Never use a petroleum based lubricant as it will attract dust and eventually impede a damper's operation.**

### Message from NCA:

This installation, operation and maintenance instruction document is intended to provide *general* instructions for multiple different NCA models of backdraft dampers. Each specific application of backdraft dampers may vary and may require other considerations when it comes to the installation, operation and maintenance of the damper.

As a part of NCA's continuous improvement program, NCA reserves the right to make further improvements or changes without notice.