Benefits
Dampers and shutters are used to prevent undesirable backdrafts into a building or to control airflow through a system. When mounted in a wall application shutters can limit the amount of precipitation that enters a building.

Large Units
Large size units may require the use of multiple panels. These panels can be shipped either mechanically fastened together or shipped loose for field assembly.

Motorized
For motorized large single panel and multiple panel units may require the use of multiple motorpacks or actuators to operate.

Submittals
Consult submittal drawing for number of actuators and dimensional information.

Blade
The damper blades are the moving parts of a damper / shutter. Blades are attached to an axle. Axle are located at either the edge or center of the blades.

Frame
The frame is the structure of the damper and shutter. When installed, the frame must be square and true and not ‘racked’ for proper operation.

Jamb Seal
Low leakage dampers may have this additional construction feature. The jam seal reduces the gap between the end of the blade and the frame to limit leakage.

Flange
The flange adds stiffness and provides a location for installation fasteners.

Actuators
Sometimes referred to as “motorpacks”. They motorize the damper operation and typically power the damper open or shutter open. Used in low airflow applications or in installation where damper control is desired. The addition of a transformer may be required to meet the specified voltage. See page 23 for additional details.

Blade Seal
Attached to the edge of the blade and limits air leakage.

Linkage
(Not shown)
Links the blades together to operation in unison. Also connects the blades to the actuator. Linkage can be either exposed at the tip of the blades or concealed at the frame.

Filler Plate
This plate closes the gap, typically at the bottom, between the last blade and the frame.
Features and Benefits
- Exhaust application
- Extruded aluminum frame
- Aluminum blades
- Aluminum hinge pins with nylon bushings

Associated Products
ACE, ACRU, AQ, CVR, ETE, GR, HEE, HLC, HXE, LP, PR, REBE, SRSH, TLC, TR, TRE

BD - BACKDRAFT DAMPER

Features and Benefits
- Exhaust application
- Extruded aluminum frame
- Aluminum blades
- Aluminum hinge pins with nylon bushings
- Motor pack shipped loose for field installation
- Available voltages – 110, 220, 440V

Associated Products
ACE, ACRU, AQ, CVR, ETE, GR, HEE, HLC, HXE, LP, PR, REBE, SRSH, TLC, TR, TRE

BDM - BACKDRAFT DAMPER MOTORIZED
BDI - BACKDRAFT DAMPER INTAKE

Features and Benefits
• Supply application
• Extruded aluminum frame
• Aluminum blades
• Aluminum hinge pins with nylon bushings
• Aluminum wrapper

Associated Products
AQ, ASP, ASP-T, CVR-S, ETS, GI, HEF, HES, HXS, KSP, PR, REBS, TR, TRE

BDMI - BACKDRAFT DAMPER MOTORIZED INTAKE

Features and Benefits
• Supply application
• Extruded aluminum frame
• Aluminum blades
• Aluminum hinge pins with nylon bushings
• Aluminum wrapper
• Available voltages – 110, 220, 440V

Associated Products
AQ, ASP, ASP-T, AQ, CVR-S, ETS, GI, HEF, HES, HXS, KSP, PR, REBS, TR, TRE
**Features and Benefits**
- Supply application
- Extruded aluminum frame
- Aluminum blades
- Aluminum hinge pins with nylon bushings

**Associated Products**
- AQ, CFS, ETS, HEF, HES, HXS

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**Features and Benefits**
- Rolled galvanized frame
- Galvanized blades
- Plated steel axle
- Synthetic bearings
- Available voltages – 110, 220, 440V

**Associated Products**
- AQ, CFS, CVR-S, ETS, GI, HEF, HER, HES, HXS, SEP
BDMICL - BACKDRAFT DAMPER MOTORIZED CENTER PIVOT LOW LEAKAGE (GALVANIZED)

Features and Benefits
- AMCA Low Leakage Class 1A Rated
- Galvanized steel frame
- Galvanized airfoil shape blades
- Blade and jamb seals
- Available voltages – 24, 110, (220 & 440 with transformer)

Associated Products
ACE, ACRU, AQ, CVR, ETE, GR, HEE, HLC, HXE, LP, PR, REBE, SRSH, TLC, TR, TRE

BDMICLA - BACKDRAFT DAMPER MOTORIZED CENTER PIVOT LOW LEAKAGE ALUMINUM

Features and Benefits
- AMCA Low Leakage Class 1A Rated
- Extruded aluminum frame
- Extruded aluminum airfoil shape blades
- Blade and jamb seals
- Available voltages – 24, 110, (220 & 440 with transformer)

Associated Products
ACE, ACRU, AQ, CVR, ETE, GR, HEE, HLC, HXE, LP, PR, REBE, SRSH, TLC, TR, TRE
GSS & GSH – GRAVITY DISCHARGE SHUTTER ALUMINUM STANDARD & HEAVY DUTY

Features and Benefits
- Aluminum frame
- Aluminum blades (Std 0.025” / Hvy 0.052”)
- Vinyl blade edge gasket
- Standard Duty used for velocity between 400 – 2000 FPM
- Heavy Duty used for velocity up to 3000 FRPM

Associated Products
AW, EW, PAC Fans, X.Stream, XW

MSS & MSH – MOTORIZED DISCHARGE SHUTTER ALUMINUM STANDARD & HEAVY DUTY

Features and Benefits
- Aluminum frame
- Aluminum blades (Std 0.025” / Hvy 0.052”)
- Vinyl blade edge gasket
- Standard Duty used for velocity between 0 – 2000 FPM
- Heavy Duty used for velocity up to 3000 FPM
- Available voltages – 24, 110, 220, 440V
  Transformers may be required

Associated Products
AW, EW, PAC Fans, X.Stream, XW
**Features and Benefits**
- Rolled galvanized frame
- Galvanized blades with stainless steel pivots
- Vinyl blade edge gasket
- For velocity between 600 – 3000 FPM

**Associated Products**
AW, EW, PAC Fans, X.Stream, XW
Features and Benefits
- Rolled galvanized frame
- Galvanized blades with plated steel pivots
- Use in supply or reversible flow units
- Available voltages - 24, 110, 220, 440V
  Transformers may be required

Associated Products
AW, EW, PAC Fans, X.Stream, XW

Features and Benefits
- Standard galvanized steel
- Optional aluminum construction
- Standard 45° design as shown
- Available in 90° design for supply application
- Provides a degree of protection against weather.

MIC - MOTORIZED CENTER PIVOT INTAKE SHUTTER
MICL - MOTORIZED CENTER PIVOT Low Leakage (Galvanized)

Features and Benefits
- AMCA Low Leakage Class 1A Rated
- Galvanized steel frame
- Galvanized airfoil shape blades
- Blade and jamb seals
- Available voltages – 24, 110, (220 & 440 with transformer)

Associated Products
AW, EW, PAC Fans, X.Stream, XW

MICLA - MOTORIZED CENTER PIVOT Low Leakage Aluminum

Features and Benefits
- AMCA Low Leakage Class 1A Rated
- Extruded aluminum frame
- Extruded aluminum airfoil shape blades
- Blade and jamb seals
- Available voltages – 24, 110, (220 & 440 with transformer)

Associated Products
AW, EW, PAC Fans, X.Stream, XW
BD - BACKDRAFT DAMPER

Features and Benefits
- Extruded aluminum frame
- Aluminum blades
- Aluminum hinge pins with nylon bushings

Associated Products
DB, DBX, SDB, SQI, SQN, TDB

BDM - BACKDRAFT DAMPER MOTORIZED

Features and Benefits
- Extruded aluminum frame
- Aluminum blades
- Aluminum hinge pins with nylon bushings
- Motor pack shipped loose for field installation
- Available voltages - 110, 220, 440V

Associated Products
DB, DBX, SDB, SQI, SQN, TDB
**BDMCL - MOTORIZED CENTER PIVOT LOW LEAKAGE (GALVANIZED)**

**Features and Benefits**
- AMCA Low Leakage Class 1A Rated
- Galvanized steel frame
- Galvanized airfoil shape blades
- Blade and jamb seals
- Available voltages – 24, 110, (220 & 440 with transformer)

**Associated Products**
SQN

**BDMCLA - MOTORIZED CENTER PIVOT LOW LEAKAGE ALUMINUM**

**Features and Benefits**
- AMCA Low Leakage Class 1A Rated
- Extruded aluminum frame
- Extruded aluminum airfoil shape blades
- Blade and jamb seals
- Available voltages – 24, 110, (220 & 440 with transformer)

**Associated Products**
SQN
**Features and Benefits**
- Rolled structural frame
- Aluminum blades
- Aluminum hinge pins with nylon bushings
- Bronze bearings
- Standard with locking handle and provisions for field install actuator.

**Associated Products**
CV, TCN

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**Features and Benefits**
- Rolled aluminum frame
- Aluminum blades
- Aluminum hinge pins with bronze bushings
- Locking quadrant handle operation.

**Associated Products**
CV

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**IVD - INLET VANE DAMPER EXTERNAL**

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**VCD - VOLUME CONTROL DAMPER**
Features and Benefits
- Rolled galvanized frame
- Galvanized blades with stainless steel pivots
- Vinyl blade edge gasket
- Motorized are wired to product’s 24-volt internal power supply

Associated Products
ERV, ERVX

BDI/BDMI & BDI-H/BDMI-H & BDI-VC/BDMI-VC
AUTOMATIC / MOTORIZED BACKDRAFT DAMPER EXHAUST AIR
BDMIC, BDMIC-H, & BDMIC-VC
MOTORIZED INTAKE CENTER PIVOT DAMPER

Features and Benefits
• Rolled galvanized frame
• Galvanized blades with plated steel pivots
• Wired to product’s 24-volt internal power supply

Associated Products
ERV, ERVX

BDMICI, BDMIC-H & BDMIC-VC
INSULATED MOTORIZED CENTER PIVOT DAMPER

Features and Benefits
• Rolled galvanized frame
• Galvanized blades with stainless steel pivots and encapsulated Styrofoam insulation
• Jamb seals and vinyl blade edge gasket
• Wired to product’s 24-volt internal power supply

Associated Products
ERV, ERVX
Compute-A-Fan® is a fast, accurate and easy-to-use fan-selection program. This tool gives point-and-click access to COOK’s entire line of fans, blowers, gravity ventilators, energy recovery ventilators, and laboratory exhaust systems. A comprehensive, cross-reference interface allows the user to select fans based upon the product specifications of any major manufacturer.

Visit the Design Tools section to download.

Application Notes:
Traditional outdoor air intake ‘rule-of-thumb’ has been, intake velocity shall not exceed 500 feet per minute to prevent rainwater entrainment into the building or system. This leads to increasing the size of fresh air intakes to reduce intake velocity. However, large openings allow more wind driven rain to enter the building.

While shutters and dampers, when shut, can prevent wind driven rain from entering a building, it may not be practical to shut every fresh air intake when it rains.

Weatherhoods or AMCA licensed Wind Drive Rain louvers are a better solution in keeping wind-driven rain from entering air intake openings.

Features and Benefits
• AMCA Low Leakage Class 1A Rated
• Galvanized steel frame
• Galvanized airfoil shape blades
• Blade and jam seals
• Wired to product’s 24-volt internal power supply

Associated Products
ERV, ERVX
ADSS & ADSH – GRAVITY DISCHARGE SHUTTER ALUMINUM STANDARD & HEAVY DUTY

Features and Benefits
- Aluminum frame
- Aluminum blades (Std 0.025” / Hvy 0.052”)
- Vinyl blade edge gasket
- Standard Duty used for velocity between 400 – 2000 FPM
- Heavy Duty used for velocity up to 3000 FRPM

Associated Products
CA DWDI, CA SWSI, CA-4 DWDI, CA-4 SWSI, CAF-DW, CF SWSI, CF-4 SWSI, CPA, CPA-A, CPS, CPS-A, CPV

MDSS & MDSH – MOTORIZED DISCHARGE SHUTTER ALUMINUM STANDARD & HEAVY DUTY

Features and Benefits
- Aluminum frame
- Aluminum blades (Std 0.025” / Hvy 0.052”)
- Vinyl blade edge gasket
- Standard Duty used for velocity between 0 – 2000 FPM
- Heavy Duty used for velocity up to 3000 FRPM
- Available voltages – 24, 110, 220, 440V
  Transformers may be required

Associated Products
CA DWDI, CA SWSI, CA-4 DWDI, CA-4 SWSI, CAF-DW, CF SWSI, CF-4 SWSI, CPA, CPA-A, CPS, CPS-A, CPV
Features and Benefits
- Rolled galvanized frame
- Galvanized blades with stainless steel pivots
- Vinyl blade edge gasket
- For velocity between 600 – 3000 FPM

Associated Products
CA DWI, CA SWSI, CA-4 DWI, CA-4 SWSI, CAF-DW, CF SWSI, CF-4 SWSI, CPA, CPA-A, CPS, CPS-A, CPV, Material Handler

Features and Benefits
- Rolled galvanized frame
- Galvanized blades with stainless steel pivots
- Vinyl blade edge gasket
- For velocity between 0 – 3000 FPM
- Available voltages – 24, 110, 220, 440V
  Transformers may be required

Associated Products
CA DWI, CA SWSI, CA-4 DWI, CA-4 SWSI, CAF-DW, CF SWSI, CF-4 SWSI, CPA, CPA-A, CPS, CPS-A, CPV, Material Handler
Features and Benefits
• Rolled structure frame
• Aluminum blades
• Aluminum hinge pins with nylon bushings
• Bronze bearings
• Standard with locking handle and provisions for field install actuator.

Associated Products
CA SWSI, CA-4 SWSI, CAF-DW, CF SWSI, CF-4 SWSI, CPA, CPA-A, CPS, CPS-A, CPV

Features and Benefits
• Rolled structure frame
• Aluminum blades
• Aluminum hinge pins with nylon bushings
• Bronze bearings
• Standard with locking handle and provisions for field install actuator
• Design to replace product’s inlet cone

Associated Products
CA DWDI, CA SWSI, CA-4 DWDI, CA-4 SWSI, CAF-DW, CF SWSI, CF-4 SWSI, CPA, CPA-A, CPS, CPS-A, CPV
ISOLATION DAMPER

Features and Benefits
- Prevents backflow through non-energized units. Required in laboratory N+1 designed system.
- Either gravity or motorized.
- Available voltages – 24, 110, 220 or 440. Some sizes and voltages may require transformer.*
- Standard in aluminum construction. Optional galvanized or stainless-steel.
- Isolation damper is coated to match unit.
- Isolation damper are installed in either the mixing box (as shown) or isolation box for accessible. Isolation damper can be mount in the LEC (Laboratory Exhauster Curb) but this is not recommended due to the lack of accessibility.

*Maintaining the safety and access of the Exhaust system is essential. Consult submittal drawings for details.

MIXING BOX DAMPER

Features and Benefits
- Selected to control the amount of additional air mixed in with the laboratory exhaust air.
- With Laboratory Exhauster controlled by a VFD additional air is needed to maintain plume height.
- Increase volume through unit for higher discharge velocity and plume rise.
- Either manual or modulating control style center pivot damper.
- Standard in aluminum construction. Optional galvanized or stainless-steel.
- Mounted in a mixing box.
- Mixing box damper is coated to match the unit.

Associated Products
Power Plume, QMXLE, QMXVP, TCNHBLE
ISOLATION DAMPER

Features and Benefits
• Prevents backflow through non-energized units. Required in laboratory N+1 designed system.
• Either gravity or motorized.
• Available voltages – 24, 110, 220 or 440. Some sizes and voltages may require transformer.*
• Standard in aluminum construction optional galvanized or stainless-steel
• Isolation damper is coated to match unit.
• Isolation damper are installed at the inlet either the mixing box (as shown) or in the ductwork.

*Messent submittal drawings for details

MIXING BOX DAMPER

Features and Benefits
• Selected to control the amount of additional air mixed in with the laboratory exhaust air.
  • With Laboratory Exhauster controlled by a VFD additional air is needed to maintain plume height.
  • Increase volume through unit for higher discharge velocity and plume rise.
• Either manual or modulating control style center pivot damper.
• Standard in aluminum construction Optional galvanized or stainless-steel
• Mounted in a mixing box
• Mixing box damper is coated to match the unit.

Associated Products
CAVP
Features and Benefits
- MIC mounted in the intake or intake extension
- Available voltages – 110, 220, 440V
  Transformers may be required

Associated Products
KSP

STACK DAMPER ASSEMBLY

Features and Benefits
- Also known as “Butterfly dampers”
- Design to be either a stand-alone product or as an add-on accessory.
- Aluminum or galvanized blades
- Lorenized steel housing with option for aluminum construction.
- Automatic spring opener available for heat release.

Associated Products*
AI, AVA, VA

ROUND DAMPER

Features and Benefits
- Aluminum frame
- Aluminum Blades
- Aluminum hinge pins with nylon bearings
- Backdraft damper for round duct

Associated Products
ACW
Features and Benefits
• Frame and blades are fiber reinforced plastic
• Blades are available in either parallel or opposed blade action.
• Joints are bonded with industrial grade epoxy adhesive.
• All resin has Class I flame spread rate of 25 or less and includes ultra-violet protection.

Associated Products
FCP

Features and Benefits
• Frame and blades are fiber reinforced plastic
• Available with counterbalance option.
• Joints are bonded with industrial grade epoxy adhesive.
• All resin has Class I flame spread rate of 25 or less and includes ultra-violet protection.

Associated Products
FCE, FCRU

FIBERGLASS CONTROL DAMPER

FIBERGLASS BACKDRAFT DAMPER
Motorpack or Actuator
Motorpacks / actuators are a type of geared motor used to motorize damper operation. This section covers the additional terms associated with these components.

2-position
Refers to an actuator that is designed to move, under power, from a starting position to a physical or electro-mechanical stop position. Typical arrangement is **Normally Closed / Power Open**. Another option is **Power Close / Normally Open**. This type of 2-position actuator can be used in conjunction with gravity or other non-powered ventilation equipment. With either type, when de-energized the motorpack will return to the original position by means of a spring return.

Spring Return
Spring return is a spring that can be either internal to the actuator or a separate external spring.

Modulating
Refers to a type of actuator designed to move to a specific position based on a control signal. These type of actuators require both power to operate the actuator and control wiring. Control wiring can be either 0-10 VDC or 4-20mA.

End Switch / Auxiliary Contacts
Used to indicate the position of the damper blade. Also used as a proving switch prior to energizing primary HVAC equipment. Can be used with either Modulating or 2-position actuators. End switches can be either integral to the actuator or separate external device.
Transformer
Step-down transformer may be required to change the incoming power from the available line voltage to match the actuator voltage.

Holding Amps
The current required to keep a two-position actuator at its powered stop location.

Running Amps
The current rating of the actuator in operation. This is resistance load versus a traditional inductive motor load.

Mounting
Actuator and motorpacks require a method of mounting to the damper. The location may be either in the airstream or out-of-the-airstream, sometimes called frame mounting. Depending on the application, installation and content of the airstream will determine the appropriate location.

Direct Couple vs. Linkage
Actuators must be connected to the blades in order to operate. One method is direct coupled. In this method a blade axle is extended through the damper frame. Direct coupled actuators are used when the actuator is frame mounted. Linkage connection are used with the actuator in the airstream. Depending on the design of the actuator a jack shaft maybe required to connect to linkage.