

**INDUSTRIAL 3V BLADE CONTROL DAMPER**  
**Model H-420**

**DESIGN / APPLICATION**

Model **H-420** (Opposed Blade Operation) and **H-421** (Parallel Blade Operation) are Industrial Air Control Damper with a 3V blade design. These models consist of a heavy duty flanged frames designed for direct attachment to the ductwork or equipment. **H-420/H-421** models are ideal for balancing and/or shut off HVAC applications in the industrial systems with many options to meet your needs.

**STANDARD CONSTRUCTION**

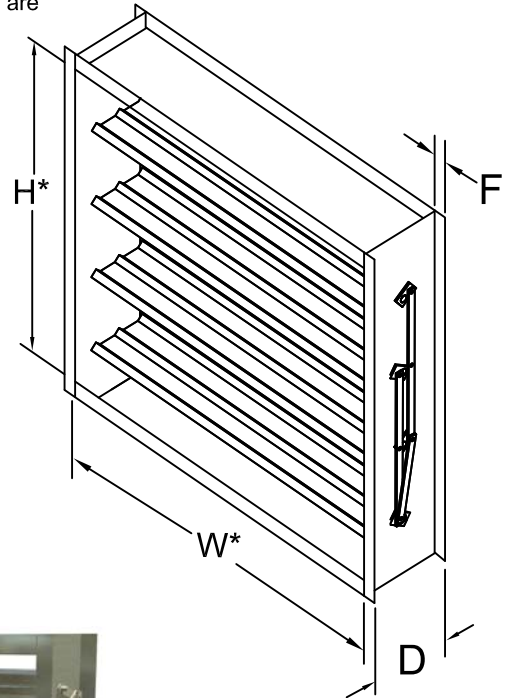
- Frame:** 8" [203mm] x 2" [51mm] x 14 ga. Galvanized steel channel
- Blades:** 14 ga. Galvanized steel, symmetrical design
- Bearing:** Bronze Sleeve 185°F [85° C] max
- Linkage:** Heavy Duty jamb linkage
- Axles:** Ø1/2" [13mm] plated steel
- Finish:** Mill galvanized with high temperature paint touch up.

**SIZE LIMITATIONS**

- Minimum Size:** 6"W x 5"H [152mm x 127mm] (single blade)  
 6"W x 9"H [152mm x 229mm] (multiple blade)
- Maximum Size:** 48"W x 96"H [1219mm x 2428mm] (single section)

**RATINGS**

- Velocity:** 2000 - 4000 fpm
- Pressure:** 3-10 in. w.g. - differential pressure
- Temperature:** Bronze Brg. -40° ~ 185°F [4° ~ 85° C] (Standard)  
 Stainless Brg. 185°F ~ 1,000°F [85° ~ 538° C] (Optional)  
 Temperatures over 250°F [121° C] require special blade and clearance. For higher temperatures, consult United Energetech.



**NOTE:** Damper blades always run horizontal and are always the first dimension (W) when ordering (example: always order W" x H").

\*Inside Dimensions are Actual Size(not undersized)

Quantity	Max. Temp. (if higher than 250°F)	"W" Width	"H" Height	Frame Depth "D" (8" [203]Std.)	Flange Width "F" (2" [51]Std.)	Bolt Hole Information (See page 3)						Remarks	
						J	N1	L Spacing	M Dia.	K	N2		C

Job Name:	<input type="checkbox"/> <b>MODEL H-420</b> (opposed blades) <input type="checkbox"/> <b>MODEL H-421</b> (parallel blades)		
Location:			
Architect:	DRAWN BY: CLJ	DATE: 7-3-06	REV. DATE: 11-18-14
Engineer:			
Contractor:	REV. NO. 39	APPROVED BY: BGT	DWG. NO.: C-1

# MODEL H-420 PERFORMANCE DATA

## Options

### Temperature Limitations

Blade seals: EPDM -40° to +250°F

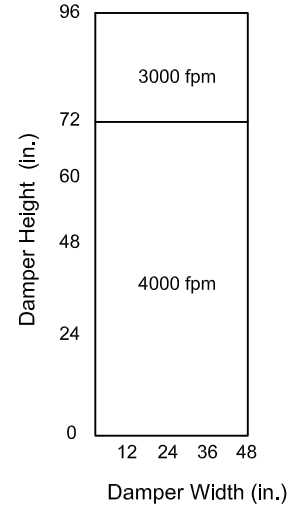
Silicone Rubber -40° to +400°F

Jamb seals: Flexible stainless steel -40° to +400°F

For higher temperatures consult United Enertech

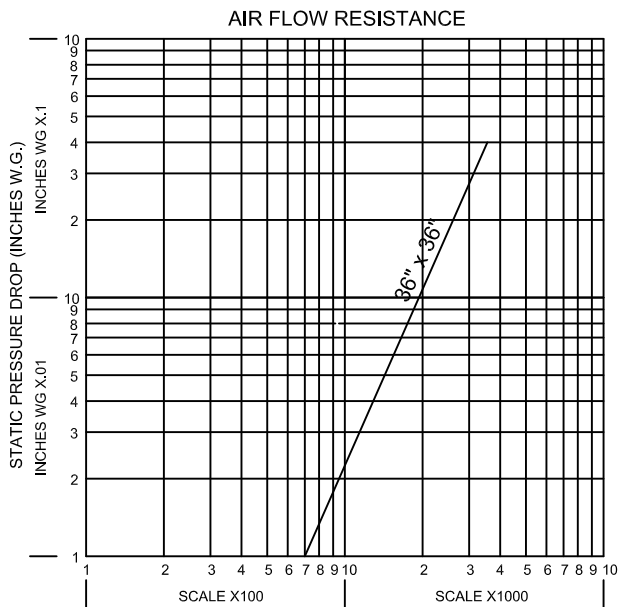
## Velocity Limitations

The graph below represents a conservative size to velocity limitation.



## Pressure Drop Data

The pressure drop on this damper (shown below) was performed per AMCA Standard 500-D, Fig. 5.3 (straight ductwork upstream and down). Other figures and system configurations can vary the pressure drop from that shown. Any variations to entering and exiting ductwork or additional objects in the ductwork should be considered when estimating the pressure drop.



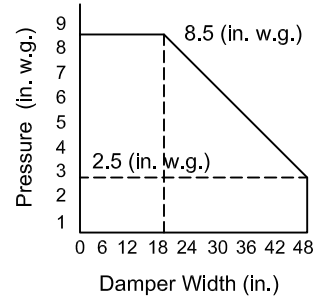
H-420 size: 36" x 36"  
(914 x 914mm)

Data corrected to standard air density

Pressure drop test per AMCA Standard 500-D, Figure 5.3.

## Pressure Limitations

Below is a graph which depicts a conservative pressure limitation based on a maximum W/360 blade deflection.



## Leakage Data

The leakage data below (with seals) is based on the damper having the options of both blade and jamb seals and with the damper blades in their fully closed position. Models H-420/421 standard construction is with no seals and its leakage is shown (Without Seals).

### Imperial Units (Forward Flow)

Air leakage is based on operation between 50° F to 104° F. All data corrected to represent air density of 0.075 lbs/ft. <sup>3</sup>	Damper Width X Height	1" w.g. (cfm/sq. ft.)	2" w.g. (cfm/sq. ft.)	3" w.g. (cfm/sq. ft.)	4" w.g. (cfm/sq. ft.)	6" w.g. (cfm/sq. ft.)	8" w.g. (cfm/sq. ft.)	*Torque (per sq. ft.)
	36" X 36"	0.89 Class 1A	1.73	3.08	4.39 Class 1	6.98	8.36 Class 1	13.3 lbs-in

\*Torque applied to hold damper in closed position

# CONSTRUCTION SPECIFICATIONS

**Frame:** 14 ga. Galvanized steel

**Blades:** 14 ga. Galvanized steel

**Axles:** 1/2" dia. plated steel (Std.)

Optional: 3/4" dia. plated steel

## FRAME & BOLT HOLE CONSTRUCTION OPTIONS

Flange (F Dim): Standard - 2"  
Optional - 1-1/2" to 4"

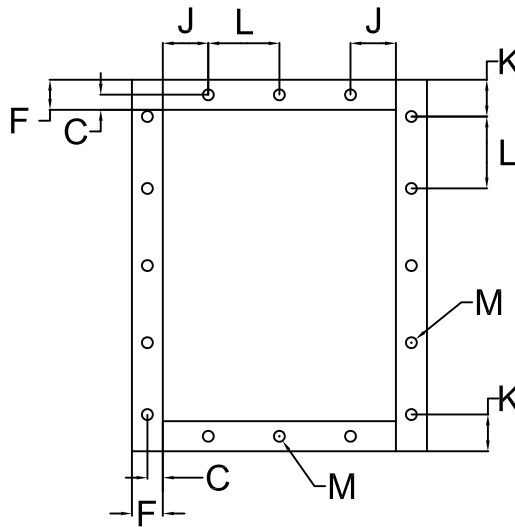
Web Depth (D Dim): Standard - 8"  
Optional - 8" to 12"

Bolt holes: (Standard construction is **no** bolt holes)  
Optional - United Enertech recommended standard pattern.

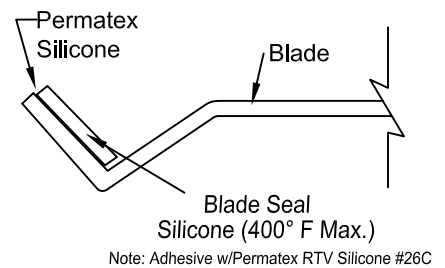
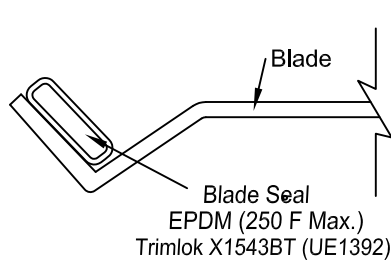
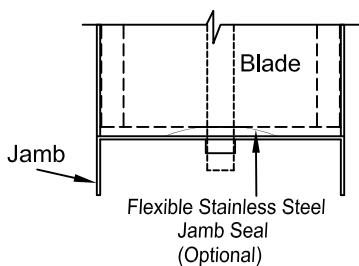
Dim. "M": 7/16" dia. hole  
Dim. "L": 6" Center to Center

**Note:** Customer must be within Min. or Max limits on table below.

Dim.	Min or Max	Standard	Description
<b>J</b>	min. 3/4"		First/Last Space in <b>Head/Sill</b>
<b>N1</b>	min. 1.0"		No. of holes in <b>Head/Sill</b>
<b>K</b>	min. F/2"		First/Last Space in <b>Jamb</b>
<b>N2</b>	min. 1.0"		No. of holes in <b>Jamb</b>
<b>C</b>	.75*D" to 3/4"	F/(2*M)"	Centerline of bolt hole from inside edge of frame
<b>L</b>	2" to 12"	6.0"	Hole Spacing
<b>M</b>	1/4" to 11/16"	7/16"	Mounting hole Diameter

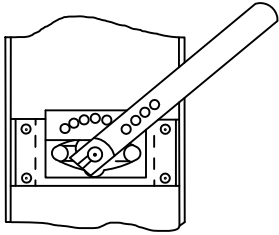


## BLADE AND JAMB SEAL OPTIONS

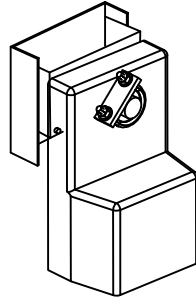


## ACTUATOR OPTIONS

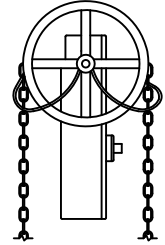
Model **H-420/421** has available many operators shown below that can be factory mounted by United Enertech. Consult factory for other operators not shown.



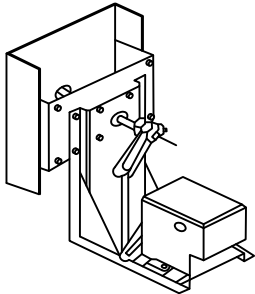
Hand Quadrant #2



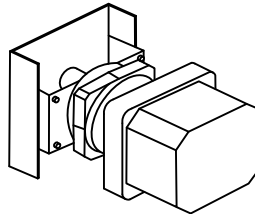
Direct Drive Mounted  
Electric Actuators



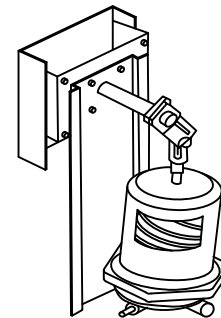
Pull Chain and  
Worm Gear



Foot Mounted Actuators  
Such as Honeywell,  
Siebe/Barber Coleman



RCS Surepower TM



Pneumatic  
Diaphragm

## Suggested Specifications

Industrial Grade Rectangular Dampers meeting the following specifications shall be furnished and installed where shown on drawings and described in the schedule. The damper frame shall consist of heavy 14 gauge steel with a 2" minimum depth flange/web. The damper blade shall be of a single thickness, heavy 14 gauge steel crimped design. The axle shall be 1/2" dia. plated steel. Bearings shall be of the bronze oilite sleeve type to minimize wear. Also submitted with submittal package is the dampers performance data such as pressure drop, leakage, and temperature ratings. The damper shall be suitable for velocities up to 4000 fpm at a pressure differential of 10" wg depending on width. Damper shall be United Enertech **Model H-420/421** or equivalent.

### ADDITIONAL INFORMATION THAT MAY BE ADDED TO SPECIFICATIONS:

Damper shall be factory supplied with Blade Seals for low leakage. Blade Seals shall be PVC (180°F), EPDM (250°F), or Silicone (450°F) {Specifier to choose one}. Damper shall also have flexible stainless steel jamb seals for low leakage. Frame and blades shall be 10 or 12 gauge galvanized or 304 Stainless Steel {Specifier to choose one}. Dampers shall be shipped with factory installed bolt hole patterns as shown on drawings.