



**INDUSTRIAL CONTROL DAMPERS**

**Model HD-492 Level VI Rating**

**APPLICATION AND DESIGN**

Model **HD-492** is a Round Industrial Air Control Damper with a single skin 3/16" to 3/8" thick steel blade. This model consist of a heavy duty flanged frame (10 ga to 3/16" plate steel) designed for direct attachment to the ductwork or equipment. **HD-492** model is ideal for balancing and/or shut off HVAC applications in the industrial systems with many options to meet your needs.

**STANDARD CONSTRUCTION**

(see table below for specifics)

- Frame: Carbon steel
- Blades: Steel, reinforced as required
- Axles: Plated steel
- Bearings: Bronze sleeve 200°F max
- Finish: Baked Powder Polyester
- Blade Stop: Single Point (not req'd with 1000°F blade gasket)
- Seals: None

**SIZE LIMITATIONS**

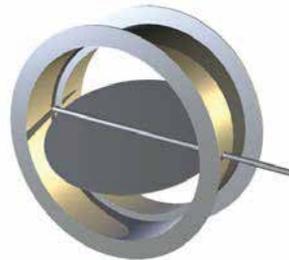
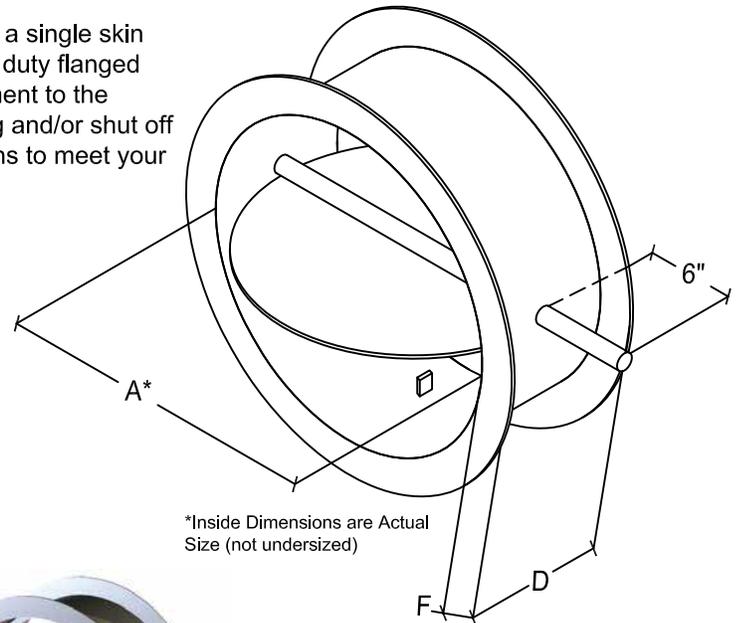
Minimum Size: 4" Diameter  
 Maximum Size: 72" Diameter

**RATINGS** (see page 2)

- Velocity: 6400 fpm
- Pressure: 20 in w.g.- differential pressure
- Temperature: Bronze Brg. -20°F ~ 200°F (Standard)
- Stainless Brg. 200°F ~ 1,000°F (Optional)

**OPTIONS**

- Rolled bar stop (1/2" x 1/4" bar thru 17", 1/2" x 1/2" bar over 17")
- Crosslinked closed cell seal with rolled bar (190°F)
- Silica/Woven hi-temp, low leak, 1000° F seal
- Bolt Holes
  - one side  both sides
- Bearings (see page 3)  
 Type \_\_\_\_\_ Upgrade \_\_\_\_\_
- Hand Quadrant # \_\_\_\_\_
- Actuator Mounting Plate
- Stainless Steel Construction
  - 304  316  Other \_\_\_\_\_
- Powder Coated Epoxy



**BLADE/FRAME SECTIONS**



Diameter/ID (A)		Frame		Flange Width F	Axle Diameter	*Blade Thickness
Above	Through	Depth D	Gauge			
3.99"	12"	6"	10	1.25"	0.5"	3/16" (thk)
12"	20"	8"	10	1.5"	0.5"	3/16" (thk)
20"	24"	8"	10	1.5"	0.75"	3/16" (thk)
24"	32"	8"	10	2.0"	0.75"	1/4" (thk)
32"	40"	8"	3/16" (thk)	2.0"	0.75"	1/4" (thk)
40"	48"	8"	3/16" (thk)	2.0"	1.0"	1/4" (thk)
48"	54"	8"	3/16" (thk)	2.0"	1.5"	3/8" (thk)
54"	60"	8"	3/16" (thk)	2.0"	1.5"	3/8" (thk)
60"	72"	8"	3/16" (thk)	2.0"	2"	3/8" (thk)

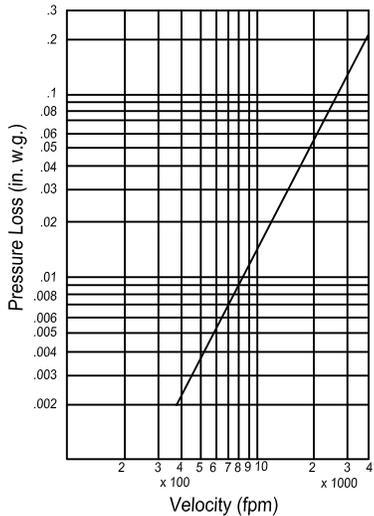
\*blades reinforced as required.

Job Name:	<input type="checkbox"/> <b>MODEL HD-492</b>
Location:	
Architect:	
Engineer:	
Contractor:	

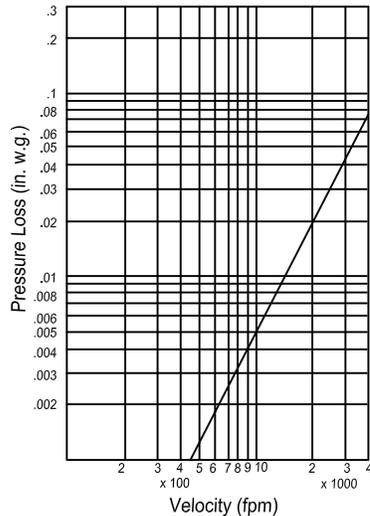
**Pressure Drop Data**

The HVAC system has many factors that effect its internal pressure losses. Dampers in the system is one contributing factor. These dampers have been tested per AMCA Standard 500-D, Fig. 5.3 (ductwork upstream and downstream). There are many influences the ductwork configuration that could effect the performance below such as other objects close to the dampers, elbows or turns near the dampers, internally mounted actuators, etc. This data will assist the designer in the analysis of the system.

Pressure Drop  
12" dia. Damper



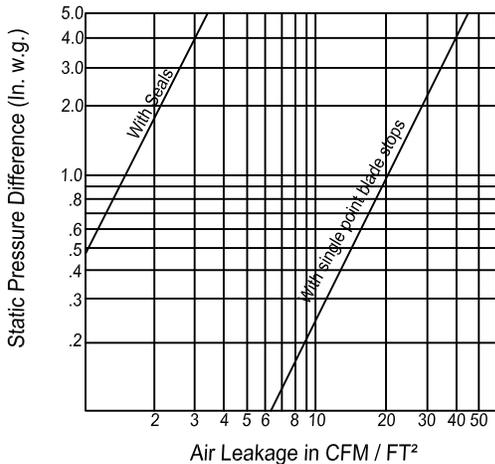
Pressure Drop  
36" dia. Damper



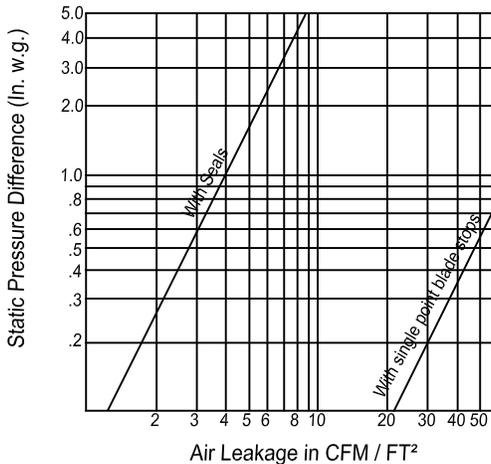
**Leakage Data**

The damper leakage shown below is per AMCA Standard 500-D . The leakage shown is without seals (standard contruction) and with seals, crosslink closed cell or silica/woven. The damper is in the fully closed position.

Leakage  
12" Diameter Damper

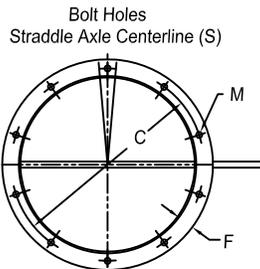
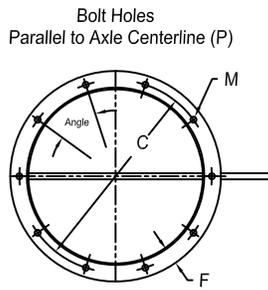


Leakage  
36" Diameter Damper



Bolt Holes: Standard construction is **no** bolt holes. Optional: Bolt holes in one flange or both flanges

If bolt holes are required, CVS recommends either pattern shown on the drawings below. The patterns shown below "Parallel to Axle" or "Straddle Axle" drawings should be specified when ordering. The table below also gives further details and recommendations on our standard hole patterns. Should a custom hole pattern be required, then it must be approved and sent in at time of order.



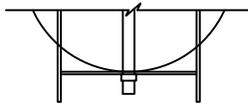
CVS Recommended Bolt Hole Pattern  
(Bolt Holes Parallel to Axle Centerline)

Diameter/ID (A)		Number of Holes	Mounting Hole Diameter "M"	Bolt Circle Diameter "C"	Degrees Between Holes
Above	Through				
4"	5"	4	3/8"	*	90
5"	8"	6	3/8"	*	60
8"	11"	6	7/16"	*	60
11"	18"	8	7/16"	*	45
18"	24"	12	7/16"	*	30
24"	36"	16	7/16"	*	22.5
36"	58"	24	7/16"	*	15
58"	60"	32	9/16"	*	11.25
60"	72"	36	9/16"	*	10

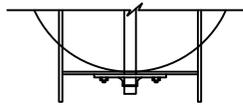
\* Bolt Circle Diameter = Damper Diameter + Flange Height + 1/4"

Quantity	Max. Temp. (if higher than 250°F)	A Diameter	Bolt Hole Information			
			# of Holes	M Dia.	C Dia.	Placement (P or S)

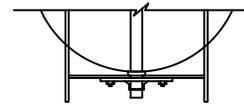
## BEARING AND SHAFT OPTIONS



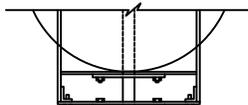
Standard: Bronze sleeve or Type I Stainless Steel sleeve



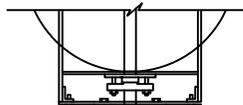
Type II Two Hole Flange Ball Bearing



Type II(i) Two Hole Flange Ball Bearing with O-ring



Type V Two Hole Flange Ball Bearing with O-ring



Type VI Two Hole Flange Ball Bearing with Packing Gland

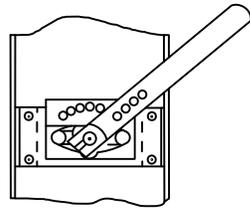
### Bearing Options:

Type I	Stainless Steel Pressed Bushing	Type V	(Outboard) Two Hole Flange pressed steel housing Ball- Permanently Lubricated (-30° to 200°F) with O-ring
Type II	Two Hole Flange Pressed Steel Housing Ball- Permanently Lubricated (-30F to 200°F)	Type VI	(Outboard) Two Hole Flange pressed steel housing Ball- Permanently Lubricated (-30° to 200°F) with Packing Gland Over 200° F (500° F packing gland material will be supplied)
Type III	(Outboard) pressed bronze bushing with O-ring seal		
Type IV	(Outboard) pressed Stainless steel bushing with O-ring seal		

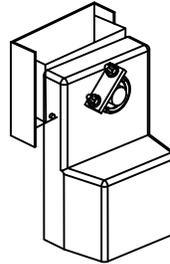
### Bearing Up-grade Options:

a...	Upgrade Type II, V, & VI to cast iron housing	f...	Upgrade Type II, V, & VI to All Stainless Steel (-30° to 200°F)
b...	Grease fitting in lieu of Permanently Lubricated	g...	Upgrade Type II, V, & VI Add Bearing Cover for Harsh environments
c...	Upgrade Type II, V, & VI to High Temp. (-30° to 400°F)	h...	Upgrade Type II, V, & VI to Thermo-plastic (-30° to 200°F) Harsh environments
d...	Upgrade Type II, V, & VI to High Temp. graphite (-30° to 750°F)	i...	Upgrade Type II to include O-ring
e...	Upgrade Type II, V, & VI to High Temp. graphite (-450° to 1000°F)		

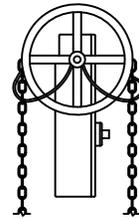
Model **HD-492** has available many operators shown below Consult factory for other operators not shown.



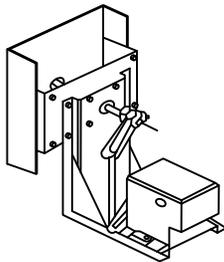
Hand Quadrant #2



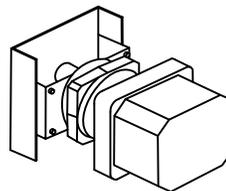
Direct Drive Mounted  
Electric Actuators



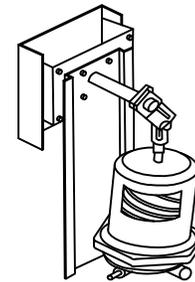
Pull Chain and  
Worm Gear



Foot Mounted Actuators  
Such as Honeywell,  
Siebe/Barber Coleman



RCS Surepowr TM



Pneumatic Diaphragm

**SPECIFICATIONS:**

Industrial Round 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 gauge steel (10 ga - 3/16" plate) rolled with a 1-1/4" minimum depth flange/web. The damper blade shall be of a single thickness, heavy gauge steel (3/16" plate < 24"D, 24"-48"D = 1/4" plate, 3/8" thick plate > 54"). The axle shall be a continuous length of 1/2" dia. up to 20", 3/4" dia. up to 40", 1" dia. up to 48", 1.5" dia up to 60", and 2" dia over 60". Bearings shall be of the bronze 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 6400 fpm at a pressure differential of 20" wg. Damper shall be Model HD-492 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 Crosslinked Closed Cell (190°F maximum temperature) or Silica/woven Hi-temp (Up to 1000°F) {Specifier to choose one}. Damper leakage for a 36" diameter damper to be less than 4 cfm/ft² at 1" w.g. and less than 8 cfm/ft² at 4" w.g. shall be submitted for approval on manufacturer's submittal data. Bearing type upgrades may be specified.