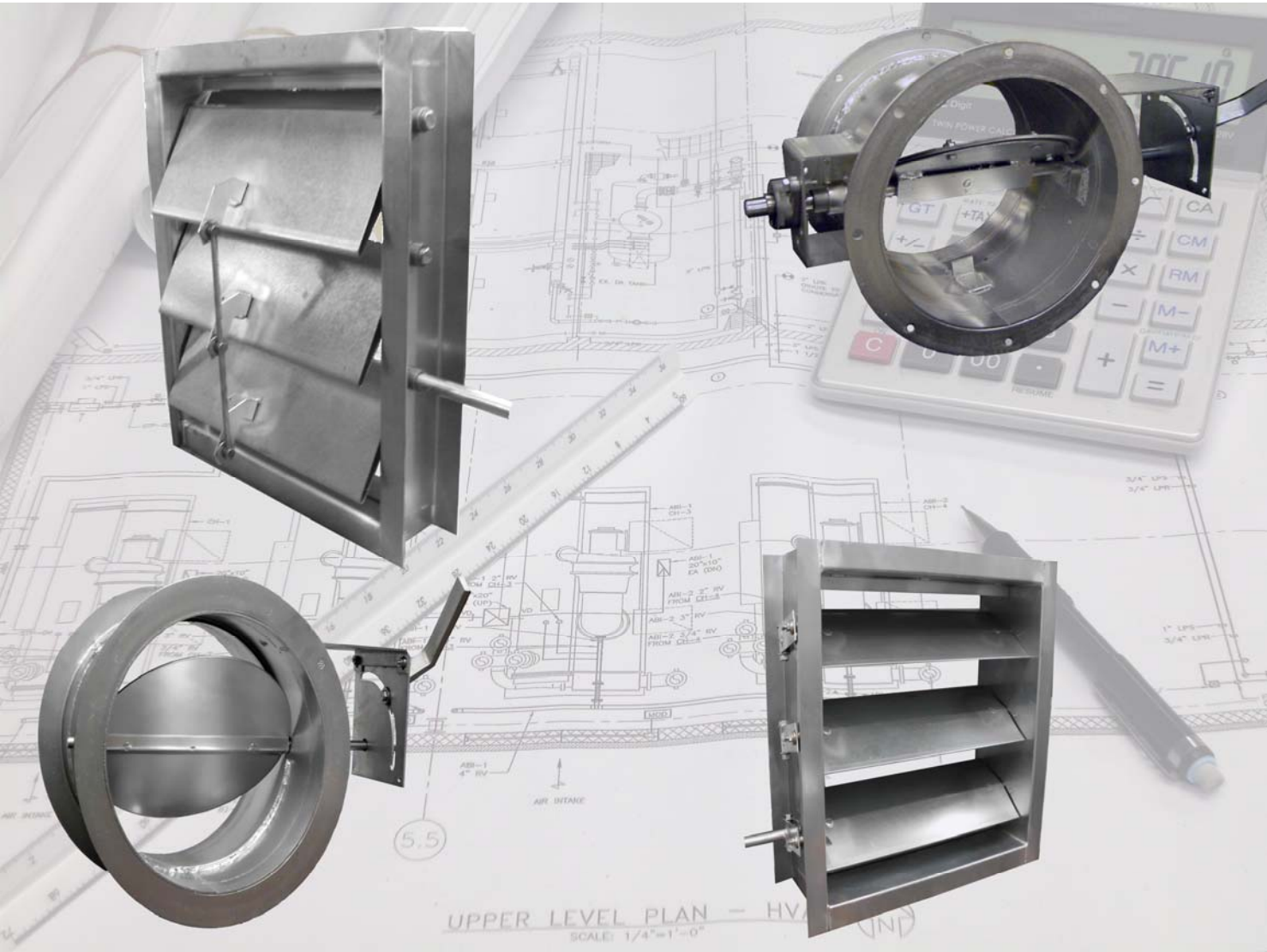


ARROW UNITED INDUSTRIES

Building Tomorrow's Ventilation Today

Heavy Duty Dampers

Industrial, Power Plant & Commercial Applications



ARROW UNITED INDUSTRIES has specialized in the design and manufacturing of air control products for over 50 years. We have grown with exposure to state-of-the technology and the most advanced methods of manufacturing. This is reflected in Arrow United's quality products. This publication describes various types of our standard Industrial Products designed to meet special conditions of temperature, pressure, velocity and system environment. Arrow United is eager to work closely with the Engineering community on projects requiring special applications.

Industrial Backdraft Dampers

These heavy duty dampers are designed to permit air in one direction at a specified pressure and to prevent a reverse flow. Field adjustable counterweights are available for pre-determined opening pressures.

Model: 400 “Tear Drop Design” To 10” w.g. Static Pressure at 6000 fpm.

STANDARD SPECIFICATIONS

Frame: 14 gauge galvanized steel when neither width nor height exceeds 18”.
10 Gauge galvanized steel when either width or height exceeds 18:

Blades: 16 gauge galvanized steel

Bearings: Bronze Oilite

Axle: 3/4” diameter steel

Linkage: Single for panel under 20” wide
Double For panels over 20” wide

Seals: Polyurethane. Special seals on blades and jambs may be added for low leakage.

Counterweights: Adjustable to assist or resist opening. (Optional)

Max. Temp.: 250 °F.



Model 900 “Tear Drop” Design” For Extra Heavy-Duty Applications.

STANDARD SPECIFICATIONS

Frame: 2” x 10” x 2” – 12 gauge galvanized steel channel.

Bearings: Ball bearing pressed into frame.

Axle: 3/4” diameter steel, with positive locked to blade.

Linkage: Plated Steel

Seals: Silicone rubber seals on blade ends.
None at Jambs

Counterweights: Adjustable, to assist or resist opening.



PERFORMANCE DATA (dampers with assist counterweights)

WITHOUT DUCT					WITH DUCT			
START OPEN		FULL OPEN			START OPEN		FULL OPEN	
MODEL	FACE VELOCITY	PRESSURE DROP	FACE VELOCITY	PRESSURE DROP	FACE VELOCITY	PRESSURE DROP	FACE VELOCITY	PRESSURE DROP
400	100 fpm	.20" w.g.	5000 fpm	5.8" w.g.	30 fpm	.10" w.g.	5000 fpm	1.5" w.g.
900	100 fpm	.05" w.g.	3500 fpm	2.4" w.g.	150 fpm	.05" w.g.	3500 fpm	.40" w.g.

Light Duty Industrial Dampers

Model 303:

To 10" w.g. Static Pressure

SPECIFICATIONS

Frame: 14 gauge galvanized steel, 8" deep "Channel Shaped" frame.

Blade: 16 gauge galvanized steel 6" Centers.

Shaft: 1/2" diameter plated cold finish stub shaft, plug welded to blade continuous length drive shaft on drive blade.

Bearings: Stainless steel flanged sleeve, pressed fit into frame.

Linkage: Plated steel arm located in jamb. 5/16" Dia. Inter-connecting rods with stainless steel pivot trunnion.

Operator: 6" Extended shaft.

Finish: Mill

Max. Temp.: 250° F. For temperature above 250°F., consult factory.

Max. Panel Size: 48" x 96" I.D.

Min. Panel Size: 6" x 6-3/4" I.D. Single Blade
12" x 12" I.D. for Opposed Blade Operation.



Model 304:

To 20" w.g. Static Pressure

SPECIFICATIONS

Frame: 14 gauge galvanized steel, 8" deep "Channel Shaped" frame.

Blade: 16 gauge galvanized steel 6" Centers.

Shaft: 3/4" diameter plated cold finish stub shaft, plug welded to blade and a continuous length drive shaft on drive blade.

Bearings: Stainless steel flanged sleeve, pressed fit into frame.

Linkage: Plated steel arm located in jamb. 5/16" Dia. Inter-connecting rods with stainless steel pivot trunnion.

Operator: 6" Extended shaft (shown w/ optional hand quadrant).

Finish: Mill

Max. Temp.: 250° F. For temperature above 250°F., consult factory.

Max. Panel Size: 48" x 96" I.D.

Min. Panel Size: 6" x 6-3/4" I.D. Single Blade
12" x 12" I.D. for Opposed Blade Operation.



SELECTED PERFORMANCE DATA

MODEL	DAMPER WIDTH	SYSTEM PRESSURE	SYSTEM VELOCITY	PRESSURE DROP FULL OPEN	LEAKAGE WITH SEALS CFM / SQ. FT.
303	48"	4"	3,000 fpm	.25" w.g.	4
304	48"	6"	3,000 fpm	.25" w.g.	4

Heavy Duty Industrial Dampers

Model 421:

To 6" w.g. Static Pressure At 2500 fpm.

SPECIFICATIONS:

- Frame:** 2" x 10" x 2" 12 Ga. Formed Steel Channel Frame
- Blade:** 12 ga. Formed Galvanized Steel (Single Thickness).
- Min. Blade Width:** 6 3/4"
- Max. Blade Width:** 9 3/4"
- Shaft:** 1/2" diameter, corrosion resistant plated steel stub shaft.
Drive blade is continuous length.



Model 422:

To 8" w.g. Static Pressure At 2500 fpm.

SPECIFICATIONS:

- Frame:** 2" x 10" x 2" 12 Ga. Formed Steel Channel Frame
- Blade:** 12 ga. Formed Galvanized Steel (Single Thickness).
- Shaft:** 3/4" diameter, corrosion resistant plated steel stub shaft.
Drive blade is continuous length.

Model 423:

To 10" w.g. Static Pressure At 2500 fpm.

SPECIFICATIONS:

- Frame:** 2" x 10" x 2" 12 Ga. Formed Steel Channel Frame
- Blade:** 10 ga. Formed Galvanized Steel (Single Thickness).
- Shaft:** 3/4" diameter, corrosion resistant plated steel stub shaft welded to blades.
Drive blade is continuous length.



Other Standard Specification for Models 421, 422 and 423

- Bearing:** Bronze Oilite flanged sleeve bearing, pressed into frame.
- Linkage:** Chevron type formed bracket of 1/8" thick steel. Trunnion is machined pivot plated steel with a 5/16 rod.

Max. Temp.: 250° F.

Min. Panel Size: 6" x 6-3/4" I.D. (Single Panel)
6" x 15" I.D. (Opposed Blade)

Max. Panel Size: 48" x 96" I.D. (Without Seals)
48" x 72" I.D. (With Seals)

- 421, 422, 423 shown with optional:

 - perimeter flange holes
 - stainless steel flanged sleeve bearings

SELECTED PERFORMANCE DATA					
MODEL	DAMPER WIDTH	SYSTEM PRESSURE	SYSTEM VELOCITY	PRESSURE DROP FULL OPEN	LEAKAGE WITH SEALS CFM / SQ. FT.
421	48"	6"	2,500 fpm	.28" w.g.	30.1
422	48"	8"	2,500 fpm	.28" w.g.	30.1
423	48"	10"	2,500 fpm	.28" w.g.	30.1

- Dampers may be constructed of other than standard materials when required to meet special conditions.
- For options and detailed specifications, see individual data sheets.
- Reducing blade length will increase static pressure limits.

Heavy Duty Industrial Dampers

Model 530:

To 12" w.g. Static Pressure

SPECIFICATIONS:

Frame: 2" x 10" x 2" 12 Ga. Formed Steel Channel Frame

Blade: 16 ga. Airfoil Design up to a maximum length of 48 inches.
12 ga. Airfoil Design up to a maximum length of 60 inches.

Shaft: 3/4" diameter, corrosion resistant plated steel shaft.

Bearing: Stainless steel flanged sleeve, bolted to frame.

Linkage: Located in jamb, 1/2" diameter interconnecting rod with trunnion pivot fastener.

Max. Temp.: 450° F. For temperatures above 450° F please consult factory.

Min. Panel Size: 6" x 6" I.D. (Single Panel)
6" x 12" I.D. (Opposed Blade)

Max. Panel Size: 60" x 96" I.D.



Model 531:

To 20" w.g. Static Pressure

SPECIFICATIONS

Frame: 2" x 10" x 2" 10 Ga. Formed Steel Channel Frame

Blade: 12 ga. Airfoil Design up to maximum length of 48 inches.
10 ga. Airfoil Design up to a maximum length of 60 inches.

Shaft: 3/4" diameter, corrosion resistant plated steel shaft up to 48" in length and 1" diameter up to 60" in length.

Bearing: Stainless steel flanged sleeve, bolted to frame.

Linkage: Located in jamb, 1/2" diameter interconnecting rod with trunnion pivot fastener.

Max. Temp.: 450° F. For temperatures above 450° F please consult factory.

Min. Panel Size: 6" x 6" I.D. (Single Panel)
6" x 12" I.D. (Opposed Blade)

Max. Panel Size: 60" x 96" I.D.



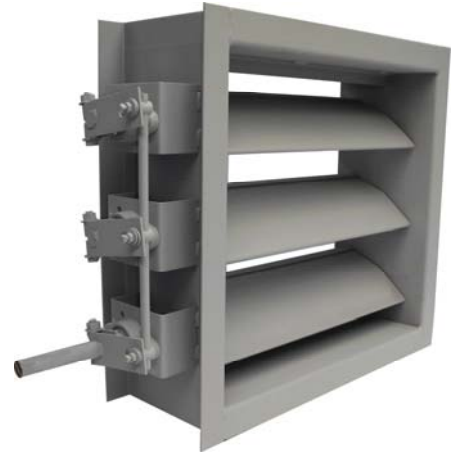
PERFORMANCE DATA (48" x 48" DAMPER)					
MODEL	DAMPER WIDTH	SYSTEM PRESSURE	SYSTEM VELOCITY	PRESSURE DROP FULL OPEN	LEAKAGE WITH SEALS CFM / SQ. FT.
530	60"	1"	4000 fpm	.30" w.g.	5.5
	60"	4"	4000 fpm	.30" w.g.	12.6
	60"	8"	4000 fpm	.30" w.g.	19.8
	60"	12"	4000 fpm	.30" w.g.	28
531	60"	1"	4000 fpm	.30" w.g.	4.8
	60"	5"	4000 fpm	.30" w.g.	10.6
	60"	10"	4000 fpm	.30" w.g.	15.4
	60"	15"	4000 fpm	.30" w.g.	18.8
	60"	20"	4000 fpm	.30" w.g.	21.7

Heavy Duty Industrial Dampers

Model 540: Hi-Temperature Process Control Damper To 15" w.g. Static Pressure

SPECIFICATIONS:

- Frame:** 2" x 10" x 2" 10 Ga. Formed Steel Channel Frame
- Blade:** 10 ga. Airfoil Design up to maximum length of 60 inches.
- Shaft:** 1" diameter, cold finish steel.
- Bearing:** Ball Bearings, mounted on a stand-off bracket with stuffing box and replicable packing.
- Linkage:** Located in jamb, 1/2" diameter inter-connecting rod with trunnion pivot fastener.
- Max. Temp.:** 800° F. For temperatures above 800° F contact factory.
- Min. Panel Size:** 6" x 6" I.D. (Single Panel)
6" x 12" I.D. (Opposed Bade)
- Max. Panel Size:** 60" x 96" I.D.



Model 545: For Clean Air Applications To 10" w.g. Static Pressure

SPECIFICATIONS:

- Frame:** 2" x 10" x 2" 12 Ga. Formed Steel Channel Frame
- Blade:** Extruded Aluminum 8" Wide Arrow-Foil Design
- Shaft:** 3/4" diameter plated steel stub shaft with a positive interlock into blade section.
- Linkage:** Formed 12 galvanized steel. Trunnion is machined pivot plated steel with a 1/2" diameter plated steel interconnecting rod.
- Bearings:** Sintered stainless steel oilite flanged sleeve bolted to frame.
- Operator:** Manual hand quadrant or lever arm for motor actuator.
- Min. Panel Size:** 12" x 8 1/4" ID (Single Panel)
12" x 16" I.D. (Opposed Bade)
- Max. Panel Size:** 60" x 96"
- Max. Temp.:** 400° F. For temperatures above 400° F contact factory.



SELECTED PERFORMANCE DATA					
MODEL	DAMPER WIDTH	SYSTEM PRESSURE	SYSTEM VELOCITY	PRESSURE DROP FULL OPEN	LEAKAGE WITH SEALS CFM / SQ. FT.
540	60"	15"	4,000 fpm	.60" w.g.	15
545	60"	10"	4,000 fpm	.42" w.g.	15

Round Industrial Dampers

Model 580R:

To 12" w.g. Static Pressure

SPECIFICATIONS

Frame: Fabricated steel channel. Channel depth equal to the blade diameter of 10" or less.

Blade: Single thickness with reinforcing gussets welded to blade parallel to air flow as required.

Shaft: Plated steel continuous length shaft welded to blade.
 1/2" diameter shaft on units 6" to 12" in diameter
 3/4" diameter shaft on units 13" to 24" in diameter
 1" diameter shaft on units 25" to 48" in diameter

Bearing: Sintered stainless steel flanged sleeve pressed in the frame

Min. Panel Size: 6" Diameter

Max. Panel Size: 48" Diameter

Max. Temp.: 250° F. (Consult factory for higher temperature requirements)



Model 580-R Max S.P. 12" w.g.							
INSIDE DIAMETER		FRAME				BLADE THICKNESS	SHAFT DIA.
ABOVE	THROUGH	DEPTH	Flange Height	Flange Max. Dia.	Flange Gauge		
6"	12"	10 GA.	1"	6"	11	12 GA.	1/2"
			1 - 1/8"	8"	11		
			1 - 1/4"	9"	11		
			1 - 3/8"	10"	11		
			1 - 1/2"	12"	11		
12"	24"	10" 10 GA.	1-1/2" x 1-1/2"	24"	3/16"	10 GA.	3/4"
24"	26"	10" 10 GA.	1-1/2" x 1-1/2"	26"	3/16"	10 GA. to 36" Dia.	1"
27"	48"		2" x 2" x	27" x 48"		10 GA. w/ Gussets 36" to 48" Dia.	

Construction may be with other than standard materials when required to meet special conditions as temperature, pressure, velocity, system environment or other specifications.

PERFORMANCE DATA (48" x 48" DAMPER SIZE)					
DAMPERS WITH LOW LEAKAGE SYSTEM					
MODEL	DAMPER WIDTH	SYSTEM PRESSURE	SYSTEM VELOCITY	PRESSURE DROP FULL OPEN	LEAKAGE WITH SEALS CFM / SQ. FT.
580-R	48"	1"	4,000 fpm	.05" w.g.	0.0005
	48"	4"	4,000 fpm	.05" w.g.	0.18
	48"	8"	4,000 fpm	.05" w.g.	0.24

Round Industrial Dampers

Model 581R: Round Industrial Damper To 20" w.g. Static Pressure

SPECIFICATIONS:

Frame: Fabricated steel channel. Channel depth equal to the blade diameter of 10" or less.

Blade: Single thickness steel with reinforcing gussets welded to blade parallel to air flow as required.

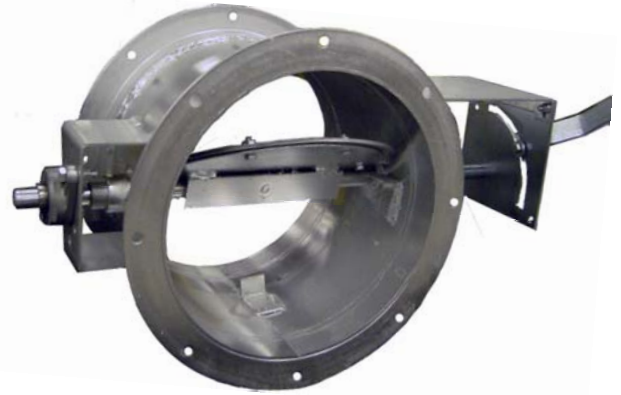
Shaft: Plated steel continuous length shaft welded to blade.
1/2" diameter shaft on units 6" to 10" in diameter
3/4" diameter shaft on units 11" to 12" in diameter
1" diameter shaft on units 13" to 48" in diameter

Bearing: Sintered stainless steel flanged sleeve pressed in the frame

Min. Panel Size: 6" Diameter

Max. Panel Size: 48" Diameter

Max. Temp.: 250° F. (Consult factory for higher temperature requirements)



581-R shown with optional:

- perimeter flange holes
- ball bearing & stand-off
- low leak seal system

Model 581-R Max S.P. 20" w.g.							
INSIDE DIAMETER		FRAME				BLADE THICKNESS	SHAFT DIA.
ABOVE	THROUGH	DEPTH	Flange Height	Flange Max. Dia.	Flange Gauge		
6"	10"	10" GA.	1"	6"	11	10 GA.	1/2"
			1 - 1/8"	8"	11		
			1 - 1/4"	9"	11		
			1 - 3/8"	10"	11		
			1 - 1/2"	12"	11		
10"	12"	10" 10 GA.	1-1/2" x 1-1/2"	24"	3/16"	10 GA.	3/4"
12"	24"	10" 10 GA.	1-1/2" x 1-1/2"	26"	3/16"	7 GA. to 36" Dia.	1"
24"	36"	10" 10 GA.	2" x 2"	27" to 48"	3/16"	7 GA. w/ Gussets 36" to 48" Dia.	
36	48	10" 10 GA.	1-1/2" x 1-1/2"	24"	3/16"	7 GA. w/ 2 gussets	
			2" x 2"	27" to 48"		7GA. w/ 3 gussets	

Construction may be with other than standard materials when required to meet special conditions as temperature, pressure, velocity, system environment or other specifications.

PERFORMANCE DATA (48" x 48" DAMPER SIZE)					
DAMPERS WITH LOW LEAKAGE SYSTEM					
MODEL	DAMPER WIDTH	SYSTEM PRESSURE	SYSTEM VELOCITY	PRESSURE DROP FULL OPEN	LEAKAGE WITH SEALS CFM / SQ. FT.
581-R	48"	1"	7,000 fpm	.18" w.g.	0.0005
	48"	5"	7,000 fpm	.18" w.g.	0.2
	48"	10"	7,000 fpm	.18" w.g.	0.27
	48"	15"	7,000 fpm	.18" w.g.	0.34

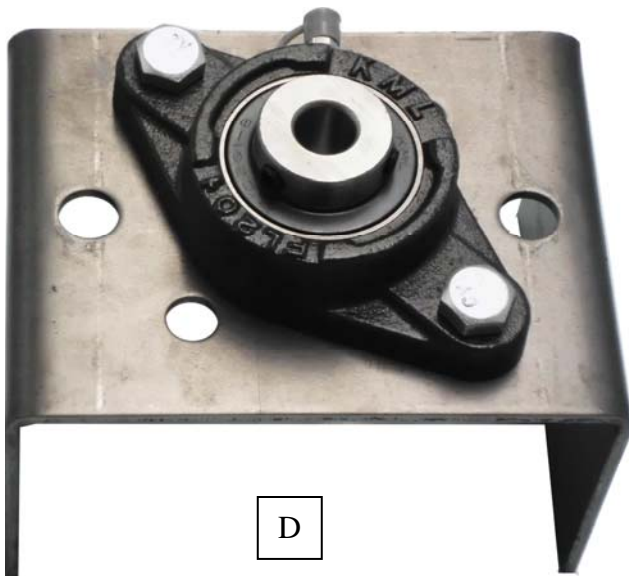
Industrial Damper Options

Industrial Damper Options for Certain Models

- A. Stainless Steel Flange Sleeve Bearing (press fit)
- B. Bronze Oilite Flanged Sleeve Bearing (press fit)
- C. Stainless Steel Flanged Sleeve (Bolted to Frame)
- D. Ball Bearing Mounted On Stand-Off Bracket
- E. Packing Boxes and Replaceable Packing
- F. Perimeter Mounting Holes In Flange
- G. Neoprene Blade Edge Seals (Not Shown)
- H. Stainless Steel Jamb Seals (Not Shown)



F



D



A



B



E



C



Arrow Multi-Zone Dampers

Model 354:

Double Deck Multi-Zone Damper

SPECIFICATIONS:

Leakage: less than 4 cfm per sq. ft. at 3.5" w.g.

Frame: Fabricated 16 gauge galvanized steel
6" to 8" frame depth.

Blade: 16 gauge galvanized steel, plug welded to shaft

Blade Partition: Extruded Aluminum

Deck Dividers: 16 gauge galvanized steel

Shaft: ½" diameter plated steel continuous length shaft welded to blade.

Bearing: Oil Impregnated Bronze

Duct Cleats: Installed as specified

Option:

Aluminum w/ Arrow-Foil Blades

Leakage less than ½% at 5" w.g.



Model 356:

Triple Deck Multi-Zone Damper

SPECIFICATIONS:

Leakage: less than 4 cfm per sq. ft. at 3.5" w.g.

Frame: Fabricated 16 gauge galvanized steel
10" or 12" frame depth

Blade: 16 gauge galvanized steel, plug welded to shaft

Blade Partition: Extruded Aluminum

Deck Dividers: 8" deep, 16 gauge galvanized steel

Shaft: ½" diameter plated steel continuous across all three decks
and extends 6" on the drive side. Hot and cold decks are
spring loaded to closed position.

Seals: Jamb and deck divider seals are neoprene foam. Blade seals are
a flexible Edge seals.

Bearing: Each zone segment contains a blade in each of the three decks.
All blades ride on sintered bronze oil impregnated bearings.

Duct Cleats: Galvanized steel "S" cleats are provided between all zones on
the discharge side of the damper.



Arrow Industrial Finishes

To help protect your investment on Arrow Industrial Dampers, we can supply your Industrial Dampers with the following finishes:

- **Mill Finish**

No Coating

- **Ameron**

- **Amerlock**

- Amerlock #400 is a two part epoxy finish that is applied to the Arrow Industrial Dampers that are schedule to be installed in a caustic environment.

- **Amercoat**

- Amercoat #90HS is a two part high performance epoxy finish that is applied to our Industrial Dampers that are schedule to be installed in environment that exposes the damper to a chlorine enriched atmosphere.

- **High Temperature**

- **Maximum Service Temperature 500° F (260°C)**

- High Solids/Low V.O.C. heat resistant coating is based on one component specially modified epoxy resin. The coating is air dry by polymerization and oxidation to form a tough, durable, heat, chemical and moisture vapor resistant film.

