



MAKE-UP AIR

Model: SDF
Standard Capacity,
Direct-Fired,
Make-Up Air Units

› **SDF Series**

Model: SDF10

- Flow capacity up to 2,200 CFM
- Heat capacity up to 235 MBH

Model: SDF12

- Flow capacity up to 3,500 CFM
- Heat capacity up to 375 MBH

Model: SDF15

- Flow capacity up to 6,800 CFM
- Heat capacity up to 625 MBH

Model: SDF18

- Flow capacity up to 9,500 CFM
- Heat capacity up to 1,040 MBH

Model: SDF20

- Flow capacity up to 14,000 CFM
- Heat capacity up to 1,500 MBH



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› **Listings and Certifications**

PennBarry SDF Make-Up Air units are ETL listed.



PennBarry SDF Make-Up Air units are also certified by the Canadian Standard Association (File #3.7b-2006.)



PennBarry reserves the right to make changes at any time, without notice, to models, construction, specifications, options, availability, etc. This bulletin illustrates the appearance of PennBarry products at the time of publication. To view the latest updates, visit PennBarry at www.pennbarry.com.

Introduction

Make-Up Air



SDF

› Make-Up Air Systems

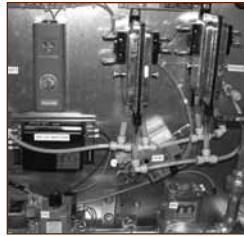
Direct-Fired Make-Up Air Systems are widely used in kitchen and food-service operations to replace stale or foul exhaust air with fresh and clean outside air.

PennBarry's SDF make-up air systems offer unsurpassed economy, application versatility, low-maintenance durability, and exceptional product support.

SDF models are provided in capacities from 800 to 14,000 CFM with 100% fresh air heated by either natural or LP gas.

› Unique Gas Burner Adjustment System

Safety and efficiency depend on proper air velocity across the burner. Installation static pressures may require burner profile adjustments. Our system includes an automatic profile adjustment mechanism for ensuring the correct burner pressure drop during field startup. Other controls prevent firing if the airflow velocity is outside an acceptable high or low range.



› Fan Assembly

Fan-motor assemblies are built for high performance and quick service. A DWDI forward curved fan is mated to an EPACT-compliant motor, and a V-belt drive package is designed with a safety factor of 30% over motor nameplate capacity. The component assembly is mounted to a vibration isolated base.



› Control Panel

Safely concealed behind a lift-off, weather-tight access door, PennBarry's SDF electrical and gas controls are designed for fail safe performance during startup and operation. A power disconnect switch and gas-inlet fitting are on the cabinet exterior. Modular electrical and gas controls feature positive-locking connectors and fittings for exceptional reliability.



› Housing

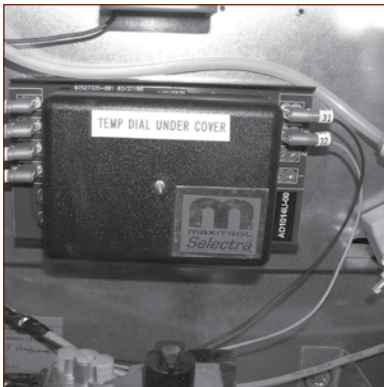
The SDF components are housed in a lightweight, non-corroding cabinet built on a tubular frame and is fully insulated.



› Standard Features

- Rigid Channel Base
- Extruded Aluminum-Tube Frame
- Weather-Tight, Non-Corrosive Skin
- Foil-Faced Interior Insulation
- Lift-Out Access Panels with Gaskets & Handles
- Integral Lifting, Mounting, Suspension Points
- Horizontal (End) or Down Discharge
- DWDI Forward-Curved Fan
- Fan Bearings Rated for L10 Life of 100,000 Hrs. Min.
- Fan & Motor Vibration Isolators (Neoprene Rubber)
- Drive Motor with Variable-Pitch Sheaves
- IEC Motor Starter(s) and Overload Protection
- Maxitrol Series 14 Discharge Temperature Control (at Unit)
- Remote Control Panel (NEMA 1, 2 & 5 Enclosures)
- Non-Fused Disconnect Switch
- Installation Wiring Harnesses & Flexible Conduit
- Pre-Wired and Pre-Piped Unit Control Modules
- Aluminum Cast Burner with 30:1 Turndown Capability
- Automatic Burner Profile Adjustment System
- Direct Ignition with Low Fire Start
- Flame Safeguard Controls with Remote Reset
- ETL Certification to ANSI Design Standards
- 100% Factory Tested (Mechanical & Functional)

› Maxitrol Series 14



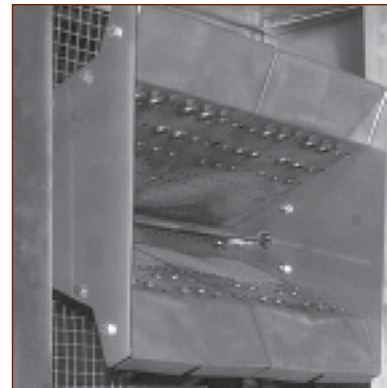
Discharge temperature control (at unit.)

› Weather-Tight, Lift-Off Panels



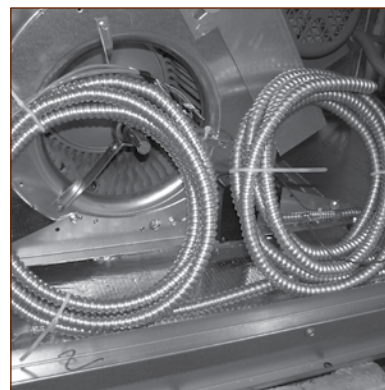
Weather-tight, lift-off panels allow easy access to controls, burner, and blower-motor sections.

› Burner



PennBarry's SDF burner technology includes low-maintenance, cast aluminum manifolds with non-clogging, stainless steel mixing plates.

› Pre-wired Conduit



Pre-wired conduit (8 feet) is supplied for making power and control connections; pigtails are marked for quick field tie-in.

Options and Accessories

Make-Up Air



SDF

› Options Available

- DX or CW Cooling Coil
- Evaporative Cooling
- Filtered Inlet Hood
- Side-Access Filter w/ 2" Aluminum or 30% Filters
- Maxitrol Series 14 Discharge Temperature Control (Dial at Remote)
- Maxitrol Series 44 SpaceTemperature Control (Dial at Remote)
- Motorized Inlet Damper or Discharge Damper (Shipped Loose)
- Gravity-Style Backdraft Damper Assembly
- Duct Curb or Full-Unit Roof Curb (Flat or Pitched)
- Low Temperature Limit (Freeze Protection)
- Painted Cabinet (Any Color, Industrial Enamel)

› Motorized Damper



A parallel-blade, motorized inlet or discharge damper (optional) features a 24V actuator, pre-wired for field connection. (Gravity-style, backdraft damper assemblies are also available.)

› Inlet Hood



An optional inlet hood features a clamshell style filter rack with replaceable polyester filters or cleanable aluminum-mesh filters. No tools are needed to change filters.

› Remote Control Panel



Maxitrol Series 14 discharge temperature Control (Dial at remote)

› Heating Capacities¹

Model	Gas Manifold Size (IPS)	Max MBH ²	Min. Pressure Req. @ Max. MBH (In. W.C.)	Max. Inlet Gas Pressure (In. W.C.)
SDF10	1/2	235	7	14
SDF12	1/2	375	8	14
SDF15	3/4	625	8	14
SDF18	3/4 ³	1,040	9	14
SDF20	1	1,500	13	28

Notes:

- Maximum MBH Capacities listed are based on a unit operating at 750-foot elevation and an outside air (OA) temperature of -10°F.
- Ratings are for both natural and propane gas, and are limited to the lesser of the maximum MBH shown or a temperature rise of 100°F.
- If the MBH required is greater than 625 MBH, a 1" manifold will be required.

› Static Pressure Drops*

Cabinet & Options	In. W.C.
Cabinet	0.80
Filtered Inlet Hood	0.30
Motorized Inlet Damper	0.10
Motorized Discharge Damper	0.20
Side Access Filter	0.25

*Total Static Pressure Drop: After adding the losses from the cabinet and options, also add project-specific ductwork losses (user provided).

› Model Selection, Fan and Motor Requirements

Unit CFM	Model	Fan and Motor Requirements @ Total Static Pressure Shown												Outlet Velocity (FPM)
		.80"		1.00"		1.25"		1.50"		1.75"		2.00"		
		RPM	BHM	RPM	BHM	RPM	BHM	RPM	BHM	RPM	BHM	RPM	BHM	
800	SDF10	888	0.22	1004	0.26	1134	0.31	1251	0.37	1357	0.42	1454	0.48	965
1,000		883	0.27	989	0.32	1110	0.38	1227	0.44	1336	0.54	1436	0.61	1,206
1,250		880	0.35	986	0.41	1103	0.48	1210	0.59	1310	0.66	1406	0.74	1,507
1,500		888	0.44	985	0.55	1101	0.64	1208	0.72	1305	0.83	1397	0.92	1,808
1,700		903	0.56	994	0.64	1102	0.75	1206	0.87	1303	0.97	1395	1.10	2,050
1,950		932	0.71	1014	0.81	1114	0.92	1210	1.07	1303	1.19	1392	1.30	2,351
2,200		972	0.91	1045	1.00	1136	1.14	1225	1.26	1312	1.39	1396	1.55	2,652
2,100	SDF12	744	0.56	831	0.66	933	0.81	1029	0.95	1120	1.14	1205	1.30	1,440
2,400		748	0.66	832	0.79	929	0.93	1020	1.11	1107	1.27	1190	1.43	1,646
2,650		755	0.78	836	0.90	930	1.08	1018	1.23	1101	1.39	1181	1.58	1,817
2,950		766	0.92	844	1.08	934	1.24	1019	1.41	1099	1.60	1176	1.77	2,023
3,200		777	1.09	853	1.22	941	1.39	1023	1.59	1101	1.77	1176	1.95	2,195
3,500		794	1.27	865	1.41	950	1.62	1030	1.81	1106	2.00	1178	2.24	2,400
3,200	SDF15	659	0.80	727	0.94	808	1.15	889	1.35	966	1.56	1038	1.75	1,558
4,000		683	1.15	749	1.30	824	1.50	892	1.74	957	1.96	1022	2.25	1,948
5,000		729	1.72	786	1.91	854	2.20	920	2.43	983	2.67	1040	2.93	2,435
6,000		786	2.52	837	2.75	899	3.12	957	3.41	1014	3.69	1070	3.97	2,922
6,800		836	3.37	884	3.63	941	3.95	996	4.27	1048	4.60	1099	4.92	3,312
6,000	SDF18	520	1.74	570	1.95	630	2.28	689	2.58	746	2.91	803	3.36	2,093
6,875		539	2.29	584	2.53	639	2.84	692	3.24	744	3.57	795	3.92	2,398
7,750		560	2.88	604	3.27	655	3.60	704	3.94	751	4.29	798	4.65	2,703
8,625		583	3.66	625	4.00	674	4.41	720	4.79	764	5.27	807	5.65	3,008
9,500		608	4.46	647	4.84	695	5.43	740	5.88	782	6.29	822	6.71	3,313
9,000	SDF20	511	2.92	549	3.34	596	3.77	641	4.23	687	4.74	732	5.39	2,116
10,000		533	3.70	569	4.04	613	4.50	655	4.98	696	5.59	737	6.13	2,351
11,000		558	4.52	592	4.88	633	5.47	672	6.17	711	6.50	748	7.04	2,586
12,000		584	5.58	616	5.98	655	6.48	692	7.01	728	7.68	764	8.24	2,821
13,000		611	6.69	642	7.12	679	7.78	714	8.33	748	8.90	782	9.49	3,056
14,000		640	8.07	669	8.54	704	9.12	737	9.71	770	10.48	802	11.10	3,291

Model Selection Notes: CF = Consult Factory Fan Performance (RPM, CFM) is based on operation at 750-ft. elevation with 70°F discharge (supply air) temperature. Brake Horsepower (BHP) ratings include motor drive losses.

Dimension Data

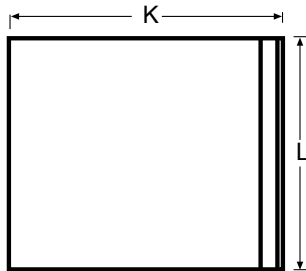
Make-Up Air



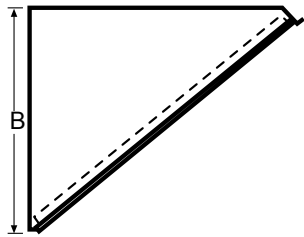
SDF

› Options

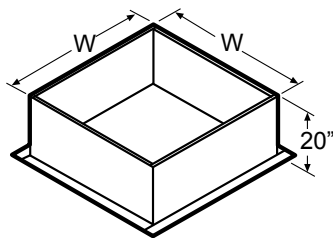
Filtered Inlet Hood
(Shipped Loose,
Requires Final Assembly)



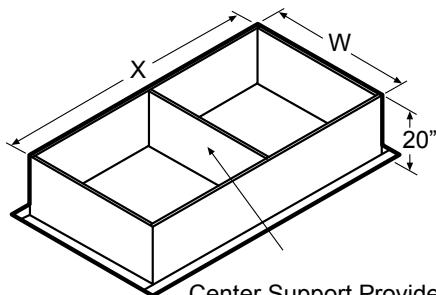
Plan View



Side View

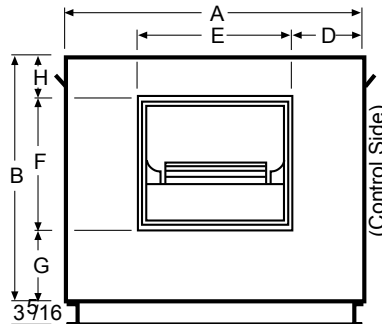


Standard Roof Curb
(Includes Curb Skirt On Unit)

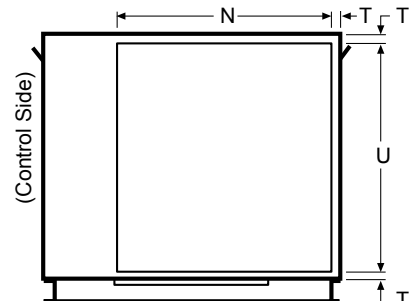


Center Support Provided
On SDF12 And Above

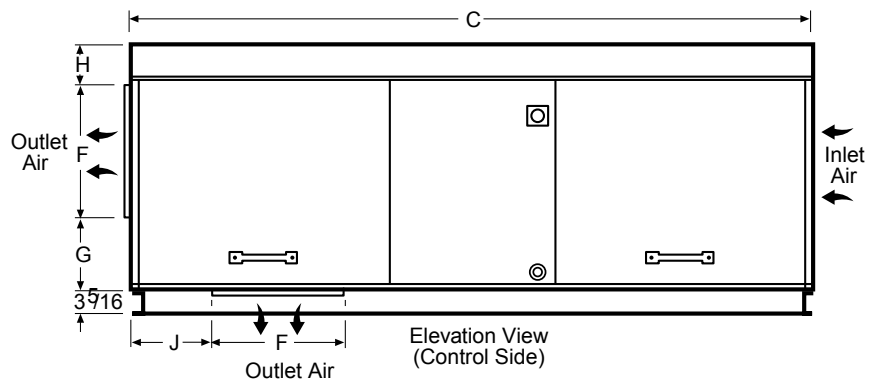
› Cabinets



Discharge End



Inlet End



Elevation View
(Control Side)

Model	Size, Inches			Supply Air Details, inches						Other Dimensions, inches						
	A	B	C	D	E	F	G	H	J	K	L	N	T	U	W	X
SDF10	28	24	50	10-1/2	12-1/2	13-3/8	6-7/8	3-3/4	8	27	22-7/8	19-7/8	1	22	24	46
SDF12	32	30	72	7-3/16	17-5/8	15-7/16	8-1/4	6-5/16	9-1/4	32	27-7/8	22-7/8	1	28	28	68
SDF15	40	33	92	9-11/16	20-5/8	17-7/8	9-3/8	5-3/4	10-1/2	41	34-7/8	28-7/8	1	31	36	88
SDF18	48	38	96	12-1/16	23-7/8	20-7/8	11	6-1/8	12-1/4	37-1/2	42-7/8	36-7/8	1	36	44	92
SDF20	55	48	96	14-1/8	26-3/4	26-3/4	12-15/16	8-5/16	13-1/2	47	52-7/8	43-7/8	1	46	51	92

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› **Model**

SDF

› **Size**

10
12
15
18
20

› **Heat**

0 = None
H = Heated

› **Heat Capacity**

(input BTU performance)

› **Airflow**

(input CFM performance)

› **External Static Pressure**

(input pressure from system)

› **Unit Static Pressure**

(input pressure from catalog for cabinet & options (Pg. 7))

› **Gas Inlet Pressure**

(input gas pressure to unit)

› **Housing Material**

G = Galvanized*
A = Aluminum
*Standard

› **Discharge Orientation**

D = Down
H = Horizontal (End)

› **Motor HP**

1/2
3/4
1
1 1/2
2
3
5
7 1/2
10

› **Voltage**

B = 115
E = 208
G = 230
P = 460
R = 575

› **Phase**

1 = Single
3 = Three

› **Hertz**

5 = 50
6 = 60

› **Type**

S = Std*
P = Premium
V = VFD**

*Single Phase Only

**VFD Option Must Also Include VFD Controls

› **Enclosure**

O = ODP
T = TEFC

Gas Manifolds Options

› **Ignition Type**

D = Direct Ignition
I = Interrupted Pilot

› **Option**

F = FM
I = IRI

› **Inlet Damper**

0 = None
1 = Motorized
2 = Gravity Backdraft
3 = Motorized w/ Spring Return

› **Discharge Damper***

0 = None
1 = Motorized Discharge Damper (Loose)
2 = Gravity Backdraft - End Discharge
3 = Gravity Backdraft - Down Discharge
4 = Motorized w/ Spring Return

*Shipped Loose on Down Discharge Units

› **Inlet Hood**

0 = None
1 = Inlet Hood w/ 2" Aluminum Filters
2 = Inlet Hood w/ Birdscreen

› **Side Access Filter Section**

0 = None
A = 2" Aluminum Filter
P = 2" 30% Filter

› **Discharge Diffuser**

0 = None
N = 3-Way w/ No blades
H = 3-Way w/ Horizontal Blades
V = 3-Way w/ Horiz. And Vert. Blades
Z = 4-Way w/ Horiz. Blades

› **Mounting Accessories**

0 = None
ER = Equipment Rails (up to 20" High)*
FD = Flat Duct Curb w/ 2 Legs Knocked Down*
PD = Pitched Duct Curb w/ 2 Legs K.D.**
FF = Flat Full Curb K.D.**
PF = Pitched Full Curb K.D.**
FC = Welded, Flat Common Curb for Supply and Exhaust
PC = Welded Pitched Common Curb for Supply and Exhaust

*Specify Quantity

**Standard 20" High

› **Mounting Accessories Options**

› **Fully Welded Curb***

0 = No
W = Welded

*For Knocked Down Version Only

› **Insulation Liner**

0 = None
T = Thermafiber
F = Foil Faced

› **Wood Nailer**

0 = None
N = Nailer

› **Cabinet Insulation**

0 = Standard 1" Foil Faced
1 = Delete Std 1" Foil Faced
2 = Double Wall w/ 1" Insulation

› **Exterior Paint**

0 = None
A = Enamel, Base Unit
B = Epoxy, Base Unit
C = Enamel, Base Unit w/ Inlet Hood
D = Epoxy, Base Unit w/ Inlet Hood
E = Enamel, Base Unit w/ Inlet Hood and Side Access Filter Section
F = Epoxy, Base Unit w/ Inlet Hood and Side Access Filter Section

› **Interior Paint**

0 = None
Y = Interior Paint

Product Configuration

Make-Up Air



SDF

› Disconnect Switch

0 = None
N = Non-fused (Standard)
F = Fused

› Maxitrol 14 Dial

0 = Dial at Unit (Standard)
D = Dial at Remote

› Maxitrol 44 Dial at Remote

0 = None
D = Dial at Remote

› Pigtail Extension*

0 = None
1 = 5' Add
2 = 10' Add
*Standard Length is 8 Ft.

› Remote Panel

0 = No Remote Panel
R = Remote Panel (Standard)
4 = NEMA 4X Panel

› Mild Weather Stat

0 = None
M = Mild Weather Stat

› Room Temp Cycle Stat

0 = None
R = Room Stat

› Low Temp Limit Switch

0 = None
L = Low Temp Limit Switch

› Room Override for Maxitrol 14 (a)

0 = None
R = Room Override

› Smoke Detector (Loose)

0 = None
S = Smoke Detector (Loose)

› Time Clock (a)

0 = None
M = Mechanical Time Clock
E = Electronic Time Clock

› Filter Monitoring (a)

0 = None
C = Clogged Filter Light
M = Magnehelic
P = Photohelic

› Service Switch at Unit Panel

0 = None
S = Service Switch

› 120V GFI Outlet-Mounted

0 = None
F = 120V GFI (Powered by Unit)
M = 120V GFI (Powered by Others)

› VFD Controls*

0 = None
H = Hi/Lo VFD Control
*Required with VFD Motor Option

› Heaters for VFD Outdoor Mounting*

0 = None
H = Heaters for VFD
*Add For Outdoor Unit

› Proof of Closure Switch

0 = None
C = Proof of Closure Switch

› High Gas Pressure Switch

0 = None
1 = High Gas Pressure Switch
2 = High & Low Gas Pressure Switch

› Exhaust Fan Motor Contactor (b)

0 = None
C = EF Motor Contactor

› Exhaust Fan Interlocking Control Relay

0 = None
I = EF Interlocking Control Relay

› Exhaust Fan Motor Starter (b)

0 = None
M = EF Motor Starter
F = EF Motor Starter Fused

› High Pressure Regulator*

0 = None
P = High Pressure Regulator
*Furnish Min + Max Pressures

› Notes

- a.) These options require the addition of a 'Remote Panel' option.
- b.) Furnish exhaust fan quantity, HP, voltage & phase.

› Products Covered

PennBarry Fans and Ventilators (each, a “PennBarry Product”)

› Two Year Limited Warranty For PennBarry Model SDF

PennBarry warrants to the original commercial purchaser that the PennBarry Products will be free from defects in material and workmanship for a period of two (2) years from the date of shipment.

› Exclusive Remedy

PennBarry will, at its option, repair or replace (without removal or installation) the affected components of any defective PennBarry Product; repair or replace (without removal or installation) the entire defective PennBarry Product; or refund the invoice price of the PennBarry Product. In all cases, a reasonable time period must be allowed for warranty repairs to be completed.

› What You Must Do

In order to make a claim under these warranties:

- You must be the original commercial purchaser of the PennBarry Product.
- You must promptly notify us, within the warranty period, of any defect and provide us with any substantiation that we may reasonably request.
- The PennBarry Product must have been installed and maintained in accordance with good industry practice and any specific PennBarry recommendations.

› Exclusions

These warranties do not cover defects caused by:

- Improper design or operation of the system into which the PennBarry Product is incorporated.
- Improper installation.
- Accident, abuse or misuse.
- Unreasonable use (including any use for non-commercial purposes, failure to provide reasonable and necessary maintenance as specified by PennBarry, misapplication and operation in excess of stated performance characteristics).
- Components not manufactured by PennBarry.

› Limitations

- In all cases, PennBarry reserves the right to fully satisfy its obligations under the Limited Warranties by refunding the invoice price of the defective PennBarry Product (or, if the PennBarry Product has been discontinued, of the most nearly comparable current product).
- PennBarry reserves the right to furnish a substitute or replacement component or product in the event a PennBarry Product or any component of the product is discontinued or otherwise unavailable.
- PennBarry’s only obligation with respect to components not manufactured by PennBarry shall be to pass through the warranty made by the manufacturer of the defective component.

› General

The foregoing warranties are exclusive and in lieu of all other warranties except that of title, whether written, oral or implied, in fact or in law (including any warranty of merchantability or fitness for a particular purpose).

PennBarry hereby disclaims any liability for special, punitive, indirect, incidental or consequential damages, including without limitation lost profits or revenues, loss of use of equipment, cost of capital, cost of substitute products, facilities or services, downtime, shutdown or slowdown costs.

The remedies of the original commercial purchaser set forth herein are exclusive and the liability of PennBarry with respect to the PennBarry Products, whether in contract, tort, warranty, strict liability or other legal theory shall not exceed the invoice price charged by PennBarry to its customer for the affected PennBarry Product at the time the claim is made.

Other PennBarry Products

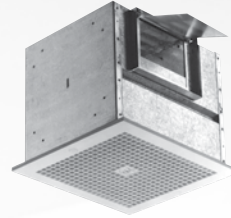
Centrifugal Products



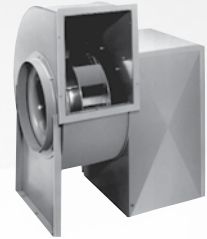
› **Domex**
Centrifugal
Roof Exhausters



› **Fumex**
Kitchen Hood Centrifugal
Roof Exhausters



› **Zephyr**
Ceiling and Inline Fans



› **Dynamo**
Centrifugal Blowers



› **Centrex Inliner**
Centrifugal Inline Fan



› **LC Dynafan**
Low Contour Centrifugal
Roof Exhausters

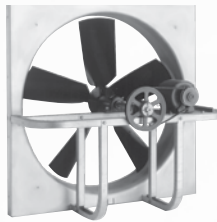


› **ESI**
Efficient Silent
Inline Fan



› **Fume Exhaust**
Curb Mounted
Centrifugal Fans

Axial | Gravity Products



› **Breezeway**
Propeller Wall Fan



› **Hi-Ex**
Power Roof Ventilator



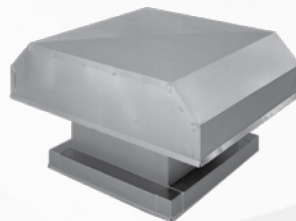
› **Tubeaxial**
Inline Fans



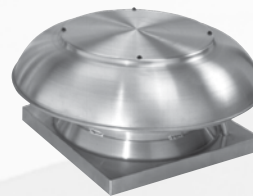
› **Vaneaxial**
Inline Fans



› **Powered Airette**
Axial Roof Ventilators



› **Airette**
Gravity Intake/Relief Hood



› **Domex Axial**
Axial Roof Ventilators



› **Axcentrix**
Bifurcator Fan



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For more information, contact your local PennBarry Sales
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