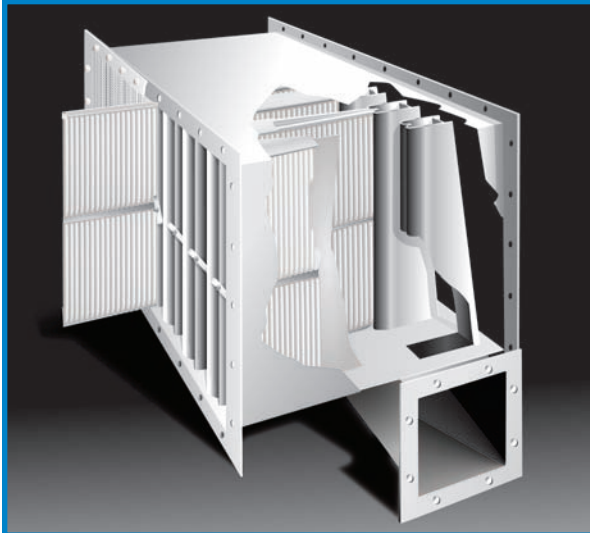


# Dynavane®

Self-cleaning Inertial Air Cleaner



Large air volume,  
constant pressure drop,  
self-cleaning, high  
efficiency air cleaner



The Dynavane consists of multiple blade packs, a housing and a bleed outlet assembly. Units may be combined for higher airflow.

The Camfil Farr Dynavane is a compact, self-cleaning, inertial separator. It is designed to handle large volumes of air at high velocities, while operating at a constant airflow resistance. The Dynavane incorporates inertial separation, providing high dust removal efficiency of airborne particulate matter.

The Dynavane is normally self-cleaning and does not require routine maintenance. It is designed to provide long, trouble-free service under the most difficult conditions.

Dynavane blade packs are removable. This unique feature facilitates thorough inspection or service, if necessary.

Extensive testing under laboratory and field conditions has proven the Dynavane to be one of the most effective high volume air cleaners for use in single and multi-stage filtering systems. It has been demonstrated over many years of application that the Dynavane inertial separator will perform efficiently in a wide variety of operating conditions.

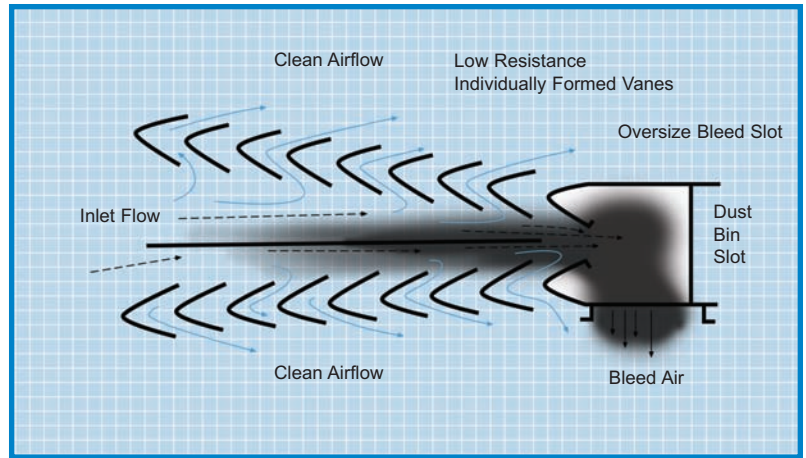
Standard, pre-engineered Dynavane assemblies are available in sizes ranging from one single cell to the modular arrangement of 112 cells. The Dynavane operates effectively at volumes of 500 CFM (850 m<sup>3</sup>/h) to 2000 CFM (3400 m<sup>3</sup>/h) per cell with comparatively low resistance. Multiple units can be combined to handle even greater air volumes with minimal space requirements.

The Dynavane's efficiency is dependent on the size and specific gravity of the dust particles, as well as the air approach velocity and bleed air rate. Large variations in inlet temperature also affect collection efficiency. Normal design condition is for a bleed rate of 10% of the inlet airflow (or 11 % of the clean airflow) at ambient temperature, and a dust specific gravity of 2.54.



Camfil Farr	Product sheet
Dynavane®	4207- 1009
Camfil Farr - clean air solutions	

The Dynavane operates on the principle of inertial separation. As the mixture of dust and air enters the Dynavane, most of the air changes direction, separating itself from the dust as it passes through the vanes. Because of its greater mass and natural movement (inertia), the dust continues in a straight line with 10% of the incoming air (the "bleed air") through the bleed slot and into the dust bin duct. The dust-laden bleed air may then be discharged directly back to the surrounding atmosphere or into a secondary dust collector.



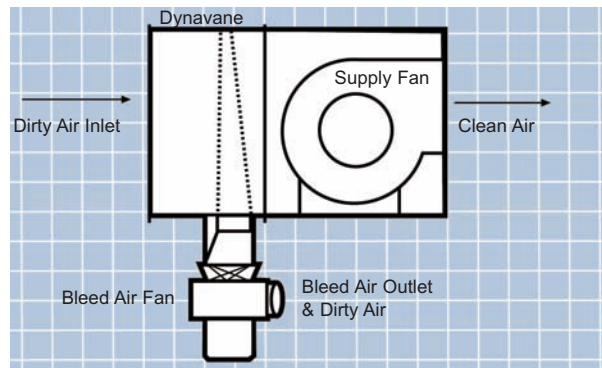
Operation of the Dynavane on dusts with different specific gravities and/or at different air temperatures may be investigated via the size correction charts on the following pages. Because temperature effects are secondary, corrections to Dynavane performance for normal ambient temperature variations is not necessary.

Dynavane blade packs may require periodic cleaning depending on concentration levels and consistency of contaminant. In these instances the blade packs are easily removed for cleaning. Caution should be exercised in the application of the Dynavane when dealing with oily or sticky contaminant. Additional application and performance information is available from Camfil Farr.

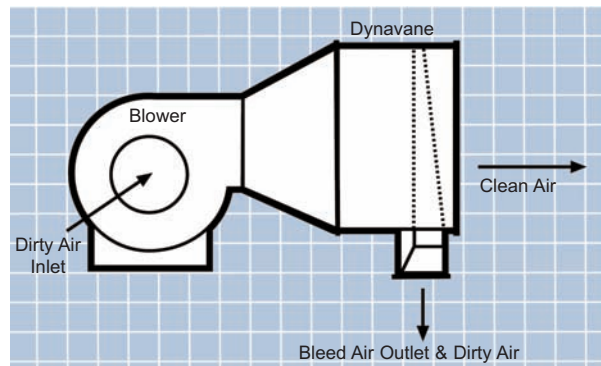
Vanes are computer optimized and individually die-formed, thus, providing superior performance characteristics over stamped louvers. Because of this unique construction method, the Camfil Farr Dynavane achieves the absolute minimum in contaminant penetration.

The Dynavane's performance is unequalled as a pre-cleaner or as a single-stage system.

Dynavane cells and enclosures are fabricated of carbon steel, optional stainless steel or aluminum. The standard Dynavane meets requirements for most applications which operate at continuous temperatures of up to 250°F (121°C). For higher temperatures or corrosive atmospheres, the stainless steel option should be considered.



Suction System - Frequently used on ventilation installations with the fan located downstream of the Dynavane. A small auxiliary fan is the most practical method of attaining the recommended 10% bled airflow.



Pressure System - Pressure system fan location is upstream of the Dynavane. A bleed air fan is not required with this system if the bleed ducting is kept to a minimum, and the pressure on the downstream side of the Dynavane is at least 0.25" w.g. (0.06 kPa).

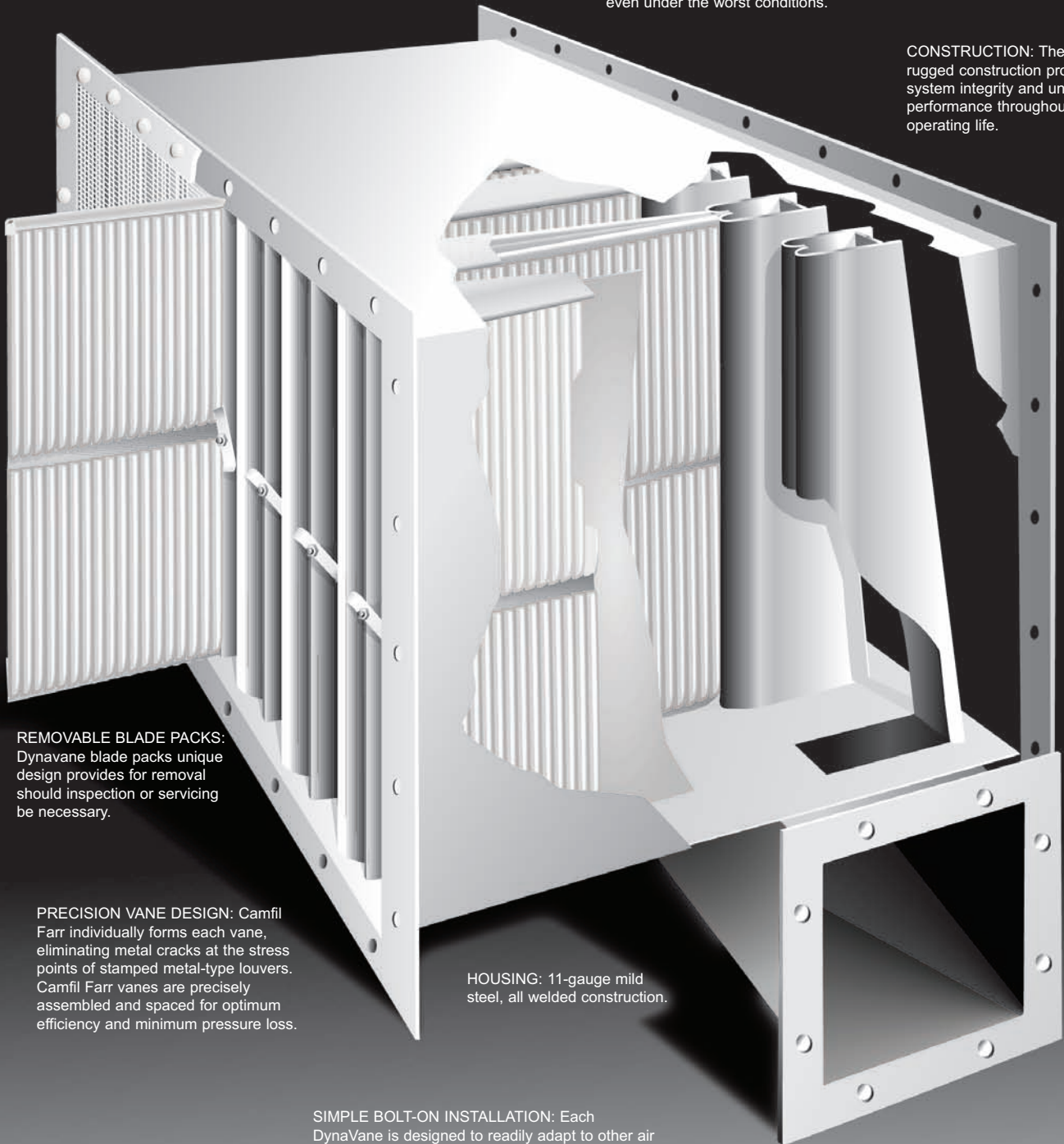
Secondary filters may be used downstream of the Dynavane, in either system, to achieve any desired level of cleanliness. Resistance on the clean air side of the Dynavane, on pressure systems, may require bleed damper to prevent overbleed.

**INLET SCREEN:** Four-mesh galvanized inlet screen keeps out large debris.

**TAPERED CELLS:** Unique engineering design controls airflow for efficient dirt removal at lowest pressure drop.

**BLEED SLOT:** Rounded bleed air slot entry is an integral part of the dust pan. The rounded slot minimizes obstruction or plugging even under the worst conditions.

**CONSTRUCTION:** The Dynavane's rugged construction provides for system integrity and uniform performance throughout its operating life.



**REMOVABLE BLADE PACKS:** Dynavane blade packs unique design provides for removal should inspection or servicing be necessary.

**PRECISION VANE DESIGN:** Camfil Farr individually forms each vane, eliminating metal cracks at the stress points of stamped metal-type louvers. Camfil Farr vanes are precisely assembled and spaced for optimum efficiency and minimum pressure loss.

**HOUSING:** 11-gauge mild steel, all welded construction.

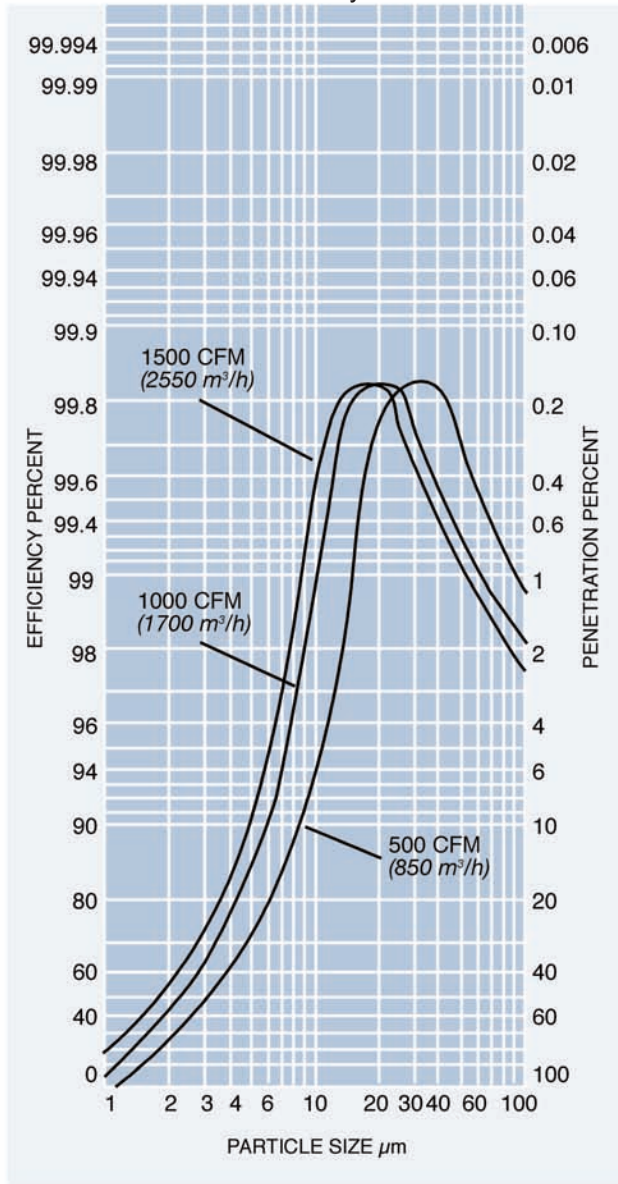
**SIMPLE BOLT-ON INSTALLATION:** Each DynaVane is designed to readily adapt to other air handling equipment. Mounting flanges on the periphery of both air entering and air exiting sides make installation fast and trouble-free.

**BLEED AIR MANIFOLD:** Individual cell dust bins discharge separated dirt into a common manifold. The manifold outlet may be ordered on the right side, the left side, or bottom center of the Dynavane.

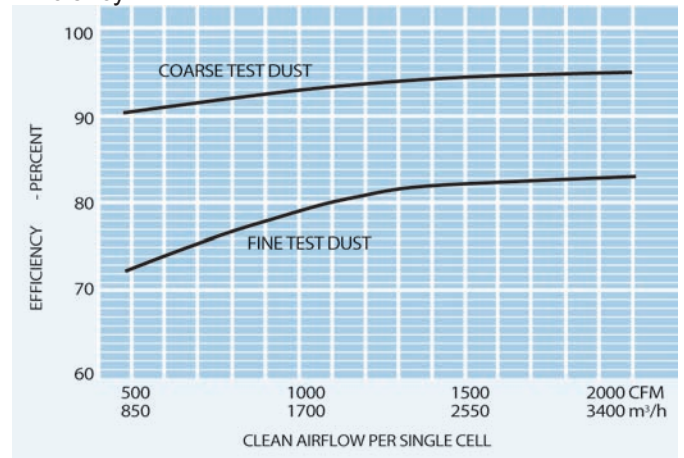
All components are primed and finished with a top coat of gray enamel.

# Performance

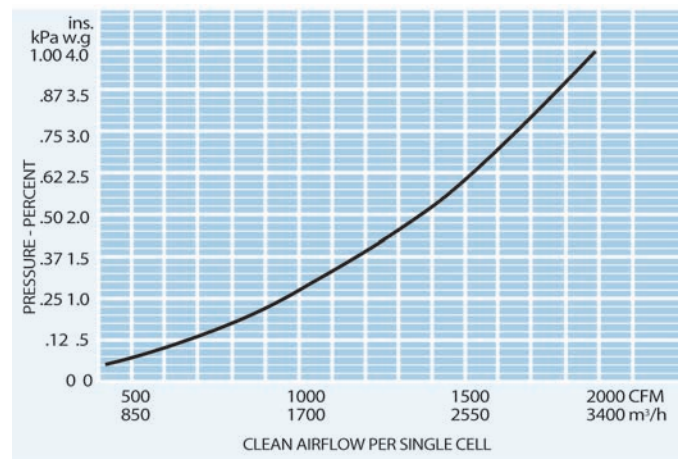
Particle size versus efficiency



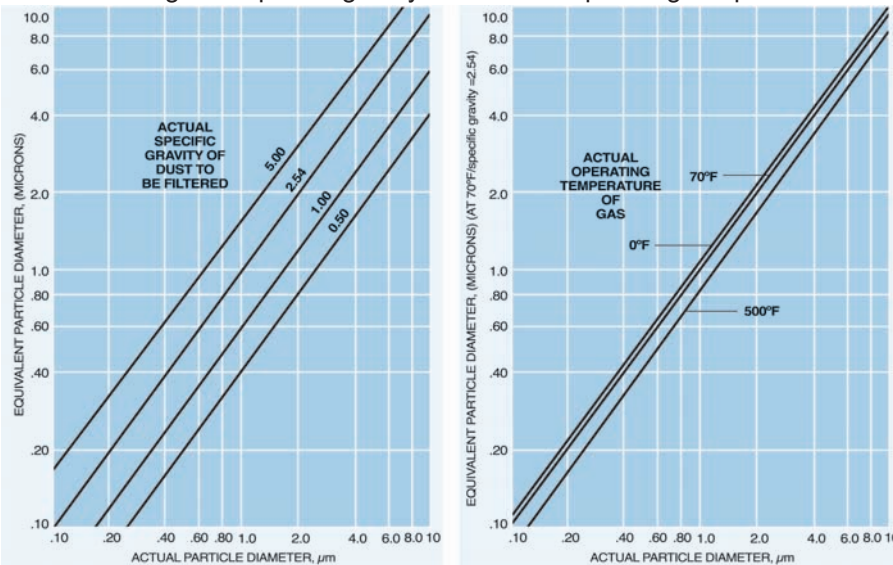
Efficiency



Airflow resistance



Effect of changes in specific gravity of dust and operating temperature

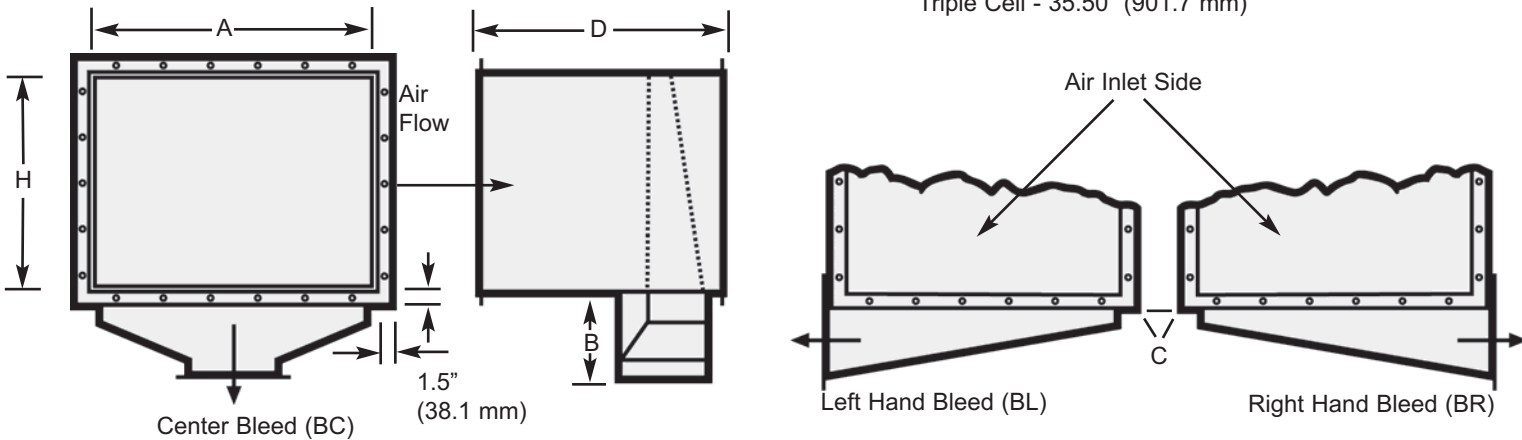


Performance curves on this page were prepared based on a standard temperature of 70° F (21° C) and a specific gravity of dust of 2.54. Variations from these "standards" will somewhat affect efficiency. Temperatures exceeding 250° F (121° C) may require Dynavanes constructed of stainless steel for optimum performance. For operating temperatures exceeding 500° F (260° C) contact your Camfil Farr representative. The charts demonstrate that as temperature increases, and/or specific gravity decreases, the air cleaner treats the dust as if particles were smaller.

HEIGHT (H)  
 Single Cell - 24.00" (609.6 mm)  
 Double Cell - 47.94" (1217.7 mm)  
 Triple Cell - 71.88" (1825.8 mm)

FLANGE WIDTH  
 1DV & 2DV - 1.5" (38.1 mm)  
 3DV - 2.0" (50.8 mm)

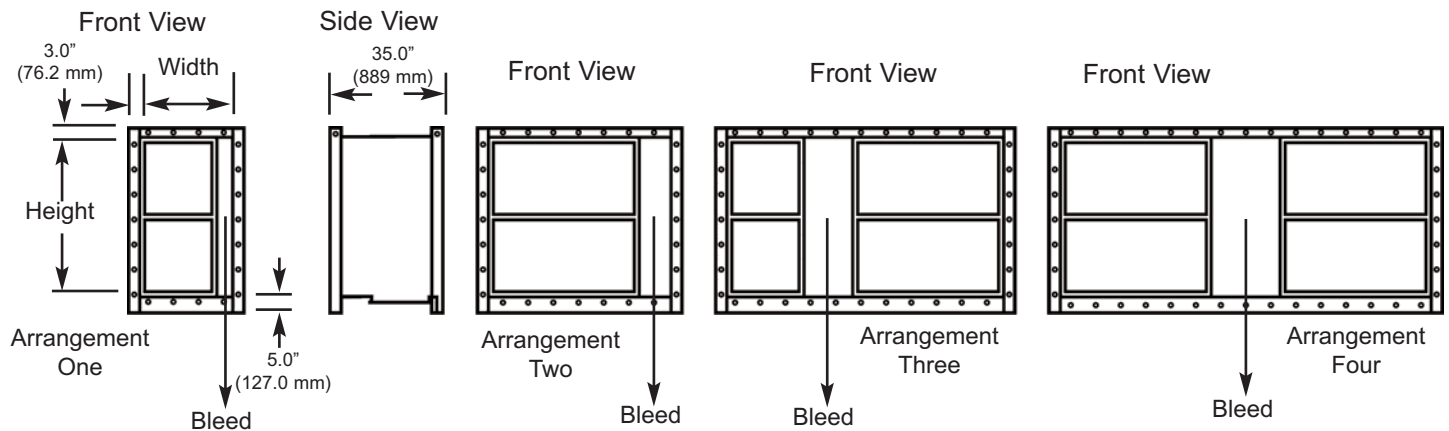
DEPTH (D)  
 Single Cell - 25.50" (647.7 mm)  
 Double Cell - 30.50" (774.7 mm)  
 Triple Cell - 35.50" (901.7 mm)



Note: See sales drawings 125557 (1DV), 12555 (2DV) and 400987 (3DV) for respective sizes and detailed dimensions.

### Multi-Cell Banks

For higher airflow, or to fit special physical requirements, multi-cell Dynavane banks may be the solution. Four basic arrangements are offered ranging from 10 to 112 cells. All cells are horizontally inclined and incorporate a side plenum, discharging bleed air down. These banks can be grouped to accommodate even higher airflow than shown. Bleed manifolds are sized for suction system utilizing bleed blowers. Do not use multi-cell banks on pressure systems.



Airflow (cfm) per Cell at Various Pressure Drops					
0.75" w.g.		1.00" w.g.		1.25" w.g.	
Clean	Bleed	Clean	Bleed	Clean	Bleed
810	90	935	104	1060	118

Based on standard air. If temperature and/or pressure are different, use correction factors.

### Ordering Information

Specify number 045496-000 and size from the charts on the next two pages.  
 On arrangements 1 and 2, also specify right or left-hand bleed. Arrangements 3 and 4 are center bleed.  
 See sales drawing 045496 for detail.

# Dimensions & Capacities

Dynavane

Model Designation	Number of Cells Wide	Airflow (cfm) at Various Dynavane Pressure Drops						Dimensions (inches)			Weight (lbs)
		0.75" w.g.		1.0" w.g.		1.25" w.g.		A	B	C	
		Clean	Bleed	Clean	Bleed	Clean	Bleed				
1DV Single Cell High	1	810	90	935	104	1060	118	5.75	4.62	4.25	110
	2	1620	180	1870	208	2120	236	10.75	5.25	6.31	168
	3	2430	270	2805	312	3180	353	15.75	5.94	7.88	226
	4	3240	360	3740	416	4240	471	20.75	6.81	8.81	284
	5	4050	450	4675	519	5300	589	25.75	7.69	9.62	342
	6	4860	540	5610	623	6360	707	30.75	8.62	10.38	400
	7	5670	630	6545	727	7420	824	35.75	9.50	11.06	458
	8	6480	720	7480	831	8480	942	40.75	10.44	11.75	516
	9	7290	810	8415	935	9540	1060	45.75	11.38	12.38	574
	10	8100	900	9350	1039	10600	1178	50.75	12.31	12.94	632
	11	8910	990	10285	1143	11660	1296	55.75	13.25	13.44	690
	12	9720	1080	11220	1247	12720	1413	60.75	14.19	14.00	748
	13	10530	1170	12155	1351	13780	1531	65.75	15.19	14.50	806
	14	11340	1260	13090	1454	14840	1649	70.75	16.12	15.00	864
	15	12150	1350	14025	1558	15900	1767	75.75	17.12	15.44	922
	16	12960	1440	14960	1662	16960	1884	80.75	18.06	15.88	980
	17	13770	1530	15895	1766	18020	2002	85.75	19.03	16.31	1038
	18	14580	1620	16830	1870	19080	2120	90.75	20.00	16.75	1096
	19	15390	1710	17765	1974	20140	2238	95.75	20.97	17.19	1154
	20	16200	1800	18700	2078	21200	2356	100.75	21.94	17.56	1212
2DV Double Cell High	1	1620	180	1870	208	2120	236	5.75	4.62	4.25	233
	2	3240	360	3740	416	4240	471	10.75	5.19	6.50	342
	3	4860	540	5610	623	6360	707	15.75	5.75	8.88	451
	4	6480	720	7480	831	8480	942	20.75	6.31	11.25	50
	5	8100	900	9350	1039	10600	1178	25.75	7.00	12.94	669
	6	9720	1080	11220	1247	12720	1413	30.75	7.81	14.00	778
	7	11340	1260	13090	1454	14840	1649	35.75	8.69	15.00	887
	8	12960	1440	14960	1662	16960	1884	40.75	9.56	15.88	996
	9	14580	1620	16830	1870	19080	2120	45.75	10.44	16.75	1105
	10	16200	1800	18700	2078	21200	2356	50.75	11.31	17.56	1214
	11	17820	1980	20570	2286	23320	2591	55.75	12.25	18.31	1323
	12	19440	2160	22440	2493	25440	2827	60.75	13.12	19.06	1432
	13	21060	2340	24310	2701	27560	3062	65.75	14.06	19.75	1541
	14	22680	2520	26180	2909	29680	3298	70.75	14.94	20.50	1650
	15	24300	2700	28050	3117	31800	3533	75.75	15.88	21.12	1759
	16	25920	2880	29920	3324	33920	3769	80.75	16.81	21.75	1868
	17	27540	3060	31790	3532	36040	4004	85.75	17.75	22.38	1977
	18	29160	3240	33660	3740	38160	4240	90.75	18.69	23.00	2086
	19	30780	3420	35530	3948	40280	4476	95.75	19.62	23.56	2195
	20	32400	3600	37400	4156	42400	4711	100.75	20.56	24.12	2304
3DV Triple Cell High	1	2430	270	2805	312	3180	353	5.75	4.75	4.25	360
	2	4860	540	5610	623	6360	707	10.75	5.25	6.75	535
	3	7290	810	8415	935	9540	1060	15.75	5.75	9.00	710
	4	9720	1080	11220	1247	12720	1413	20.75	6.50	11.50	885
	5	12150	1350	14025	1558	15900	1767	25.75	7.00	14.00	1060
	6	14580	1620	16830	1870	19080	2120	30.75	7.50	16.25	1235
	7	17010	1890	19635	2182	22260	2473	35.75	8.25	18.00	1410
	8	19440	2160	22440	2493	25440	2827	40.75	9.00	19.00	1585
	9	21870	2430	25245	2805	28620	3180	45.75	10.00	20.25	1760
	10	24300	2700	28050	3117	31800	3533	50.75	10.75	21.25	1895
	11	26730	2970	30855	3428	34980	3887	55.75	11.74	22.25	2110
	12	29160	3240	33660	3740	38160	4240	60.75	12.50	23.00	2285
	13	31590	3510	36465	4052	41340	4593	65.75	13.50	23.75	2460
	14	34020	3780	39270	4363	44520	4947	70.75	14.25	24.75	2635
	15	36450	4050	42075	4675	47700	5300	75.75	15.00	25.50	2810
	16	38880	4320	44880	4987	50880	5653	80.75	16.00	26.25	2985
	17	41310	4590	47685	5298	54060	6007	85.75	17.00	27.00	3160
	18	43740	4860	50490	5610	57240	6360	90.75	17.75	27.75	3335
	19	46170	5130	53295	5922	60420	6713	95.75	18.75	28.50	3510
	20	48600	5400	56100	6233	63600	7067	100.75	19.50	29.25	3685

Arrangement 1				Arrangement 2				Arrangement 3				Arrangement 4				
Size	# of Cells	Width (ins)	Weight (lbs)	Size	# of Cells	Width (ins)	Weight (lbs)	Size	# of Cells	Width (ins)	Weight (lbs)	Size	# of Cells	Width (ins)	Weight (lbs)	Height (ins)
1-10	10	29.88	845	2-10	20	59.31	1500	3-10	30	88.94	2135	4-10	40	118.38	2780	51.25
1-11	11	29.88	919	2-11	22	59.31	1628	3-11	33	88.94	2315	4-11	44	118.38	3015	56.25
1-12	12	29.88	993	2-12	24	59.56	1756	3-12	36	89.19	2495	4-12	48	118.38	3250	61.25
1-13	13	30.06	1067	2-13	26	60.00	1884	3-13	39	89.81	2675	4-13	52	119.19	3485	66.25
1-14	14	30.31	1141	2-14	28	60.19	2012	3-14	42	90.31	2855	4-14	56	120.03	3720	71.25
1-15	15	30.50	1215	2-15	30	60.56	2140	3-15	45	90.44	3035	4-15	60	120.88	3955	76.25
1-16	16	30.69	1289	2-16	32	60.94	2268	3-16	48	91.38	3215	4-16	64	121.69	4190	81.25
1-17	17	30.91	1363	2-17	34	61.44	2396	3-17	51	92.12	3395	4-17	68	122.44	4425	86.25
1-18	18	31.09	1437	2-18	36	61.75	2524	3-18	54	92.62	3575	4-18	72	123.22	4660	91.25
1-19	19	31.28	1511	2-19	38	62.19	2652	3-19	57	93.19	3755	4-19	76	123.94	4895	96.25
1-20	20	31.53	1585	2-20	40	62.62	2780	3-20	60	93.88	3935	4-20	80	125.00	5130	101.25
1-21	21	31.88	1659	2-21	42	63.31	2908	3-21	63	94.94	4115	4-21	84	126.38	5365	106.25
1-22	22	32.25	1733	2-22	44	64.06	3036	3-22	66	96.06	4295	4-22	88	127.75	5600	111.25
1-23	23	32.59	1807	2-23	46	64.81	3164	3-23	69	97.19	4475	4-23	92	128.12	5835	116.25
1-24	24	32.94	1881	2-24	48	65.50	3292	3-24	72	98.19	4655	4-24	96	130.50	6070	121.25
1-25	25	33.31	1955	2-25	50	66.25	3420	3-25	75	99.31	4835	4-25	100	132.25	6305	126.25
1-26	26	33.66	2029	2-26	52	66.88	3548	3-26	78	100.31	5015	4-26	104	133.56	6540	131.25
1-27	27	34.03	2103	2-27	54	67.69	3676	3-27	81	101.50	5195	4-27	108	135.00	6775	136.25
1-28	28	34.38	2177	2-28	56	68.31	3804	3-28	84	102.44	5375	4-28	112	136.38	7010	141.25

**Data Notes**

1. Clean airflow plus bleed airflow equals inlet flow.
2. See how to calculate bleed air below.
3. Consult charts on page 4 for other capacity and resistance data.
4. Airflow per cell below 450 cfm (765m<sup>3</sup>/h) (clean) is not recommended.
5. Based on standard air. If temperature and or pressure are different use correction factors as follows; Performance curves as published herein are based on a standard temperature of 70° F (21° C) and a specific gravity of dust of 2.54. Variations from these "standards" may affect efficiency. Temperatures exceeding 250°F (121° C) may require the use of stainless steel construction for optimum performance. For operating temperatures exceeding 500°F (260° C), contact your Camfil Farr representative. The charts on page 4 show that as temperature increases, and/or specific gravity decreases, the air cleaner treats the dust as if particles were smaller.

**How to calculate bleed air:**

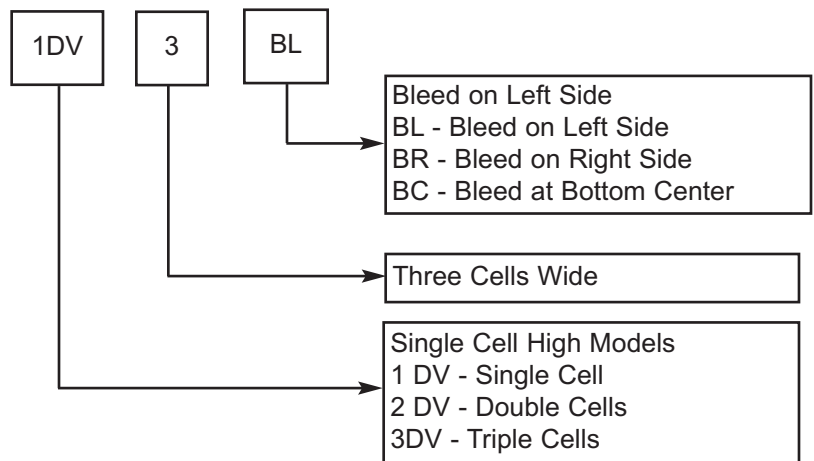
Bleed air volume is 11.1% of the clean air requirement. For example, bleed airflow for a clean air volume of 1000 cfm is 110 cfm.

$$1000 \text{ cfm (1700 m}^3\text{/h)} \times .111 \text{ (11.1\%)} \\ = 111 \text{ cfm (187 m}^3\text{/h)}$$

On suction systems, the static pressure requirement for the bleed air fan will be the sum of (1) the losses of the intake system (ie: louvers, screens, transitions, elbows, etc.) up to the inlet of the Dynavane, (2) the inlet to outlet resistance of the Dynavane, and (3) the losses in the bleed air ducting.

Note: Intake system loss calculations should be based on inlet airflow, which is the sum of the clean and bleed airflow. In the example above, it would be 1110 cfm.

**Model Description**



Note: See table on page 6 for 1DV, 2DV, and 3DV, Dynavane dimensions.

**How to size Dynavanes:**

On the pages 6 and 7, the various Dynavane configurations are listed. A few simple steps will provide the information needed to select the one best suited to your installation.

1. Determine the airflow required and the airflow resistance acceptable to the application.
2. On the charts on pages 6 and 7, look up the Dynavane model which will provide the necessary airflow at the resistance selected.
3. Various sizes (example: six single-cell or three double-cell) meet similar airflow requirements. After comparing the dimensional information, order the model which fits the applications space requirements.

Air cleaners shall be Camfil Farr Dynavane inertial separators. They shall be factory fabricated and assembled. Each air cleaner shall consist of a housing, a bleed air manifold, cell bodies, blade packs, bullnoses, and inlet screen. All finished components are primed and finished with a top coat of gray enamel. The Dynavane shall consist of one or more cells depending on airflow and resistance requirements. Individual cells shall include two removable blade packs and have a maximum center-to-center (width) dimension of 5" (127 mm) and shall be 24" (610 mm) in length.

**HOUSING** — Housings shall be constructed of not less than 11-gauge steel. The housing shall be of all welded construction and equipped with continuous standing flanges around the periphery of both the air entering and the air exiting sides. Flanges shall have pre-drilled bolt holes to facilitate field installation.

**BLEED AIR MANIFOLD** — Housings shall be equipped with a bleed air manifold constructed of not less than 11-gauge steel all welded steel construction and equipped with continuous standing flange with pre-drilled bolt holes to facilitate field connection. Manifolds shall be sized to provide uniform airflow through each cell's dust bin for proper balance and dust removal.

**BLADE PACKS** - Blade packs shall be constructed of not less than 20-gauge steel with Heli-arc welded construction. Blade pack vanes shall be individually formed and welded. Vanes shall be arranged to provide a circuitous path to the air flow and redirect the air toward the clean air outlet. The air passageway between adjacent blades shall have a minimum width of 0.19" (4.83 mm). Blade packs shall be removable to allow for inspection or service.

**BULLNOSE** — The bullnose shall be aerodynamically formed of 16-gauge steel to provide proper air entry. One bullnose will be required for each two blade pack to properly direct air to each tapered cell. Bullnose clamps shall be constructed of 0.19" (4.83 mm) steel and shall be retained by 5/16" threaded stock welded to the center divider. Center dividers shall be constructed of 16-gauge steel.

**BLEED SLOT** — Bleed slots shall be an integral part of each dust bin. The bleed slot/dust bin shall be constructed of not less than 16-gauge steel. The bleed slot shall have a rounded entry configuration to minimize obstruction or plugging under heavy dust concentrations.

**INLET SCREEN** — Inlet screens shall consist of a 26-gauge, four-mesh, galvanized hardware cloth integrally supported by a double layered 16-gauge galvanized steel frame. Inlet screens shall be bolted to the Dynavane housing.

**EFFICIENCY** — When tested in accordance with the general requirements outlined in SAE J726, the Camfil Farr Dynavane air cleaner efficiency shall not be less than 93% on Standardized Coarse Air Cleaner Test Dust at a clean airflow rate of 1000 CFM (1700 m<sup>3</sup>/h) per single cell using a bleed rate equaling 10% of inlet airflow. Inlet to clean air outlet resistance shall not exceed 1.20" w.g. (0.30 kPa) at 1000 CFM (1700 m<sup>3</sup>/h) clean airflow.

Camfil Farr has a policy of uninterrupted research, development and product improvement. We reserve the right to change designs and specifications without notice.

**Camfil Farr, Inc.**

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