












AXO-HEPA
High Induction Swirl Diffusers with HEPA Filter

EFFECTIVE  [®]

AXO SERIES

High Induction Swirl Diffusers with HEPA Filter

-  99.995% High efficiency H14 HEPA filter included
-  Removable face for easy access and filter change
-  High induction airflow for high efficiency air mixing and faster removal of contaminants
-  Individually adjustable high induction mixing vanes, available in black or white
-  Multiple sizes available of optimal supply between 70 cfm and 460 cfm
-  Adjustable from horizontal swirl to directional or downward
-  High tolerance to air volume and temperature variations
-  High air flow at relatively low sound power
-  High induction causes rapid reduction of air velocity and temperature difference



AXO-HEPA 538

AXO-HEPA High Induction Swirl Diffusers with HEPA Filter by EffectiV HVAC™ and MADEL® have the dual function of filtering the air and diffusing the filtered air in the room, both with very high efficiency.

It consists of a plenum box made from polystyrene with a circular intake on the side, equipped with a removable high induction swirl diffuser face for high turbulence airflow.

AXO-HEPA diffusers are equipped with a pressure intake that controls pressure loss in the filter. AXO-HEPA units are suitable for installations that require very pure, germ-free air such as clean rooms and pharmaceutical laboratories.

H14 filters for terminal units are provided with an extruded aluminum frame finished with epoxy paint, and both sides are provided with a protective aluminum grille. The mini pleated filter pack made of micro fiberglass maintains the proper shape via spacers by continuous hot fusion.

The design of the filter assembly with micro fiberglass ensures minimal pressure drop and laminar flow.

The structure is sealed with elastomer polyurethane to eliminate the risk of air bypass.

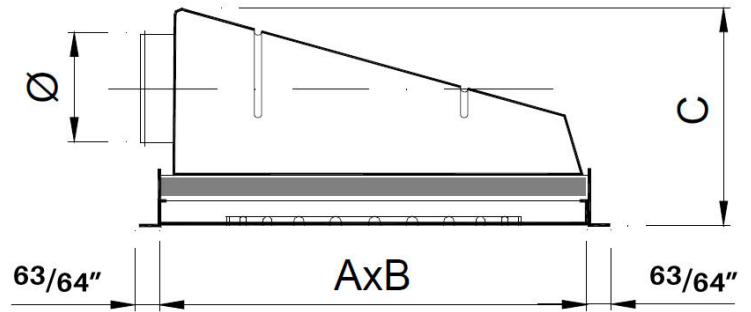
Each filter is tested and labelled according to EN 1822. The test report is delivered with each product.

The individually adjustable vanes support multiple angles to adapt the airflow to virtually any environment. The design of the induction vanes and radial arrangement supplies the air in a swirl pattern while leveraging the Coanda effect.

The resulting high induction airflow mixes the room air more efficiently than other diffusers. The benefits of high induction are reduced stratification and more even temperature in the room, improved thermal comfort, increase in energy efficiency, and efficient removal of contaminants in the room.

The AXO series diffusers admit a flow variation of 60% while keeping the air stream stable. For optimal conditions, AXO-HEPA diffusers may be used in ceilings 8.5 up to 13 feet (2.6 up to 4 meters) high, with a temperature differential up to 22°F (12°C).

Quick Selection



Model	A x B	C	Neck	Min cfm	Max cfm	Nominal cfm	Pressure Drop (in.w.g.)
AXO-HEPA 330	12 63/64"	13 37/64"	6 3/4"	71	106	88	0.602
AXO-HEPA 482	18 31/32"	13 37/64"	6 3/4"	188	282	235	0.602
AXO-HEPA 538	21 3/16"	14 3/8"	7 3/4"	235	353	294	0.602
AXO-HEPA 635	25"	14 3/8"	7 3/4"	306	459	382	0.602

Note: Min cfm and Max cfm are recommended values for optimal performance and can be exceeded in VAV applications.

HEPA FILTER

Model #	RH14
Effectiveness MPPS	99.995%
Classification EN 1822:2009	H14
Final Pressure Drop	1.606 in.w.g.
Maximum Pressure Drop	25"
Maximum Relative Humidity	90%



FINISH

Powder coated in white RAL9010, with either black or white induction vanes.



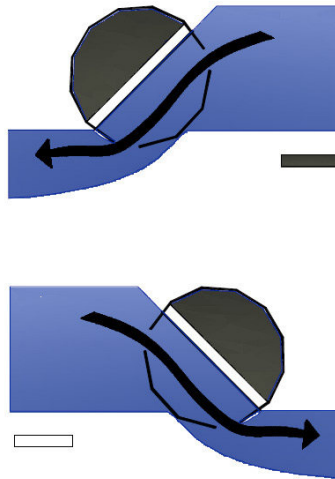
Plenum

White polystyrene plenum box with circular side duct connection, and a pressure intake to control filter pressure loss.

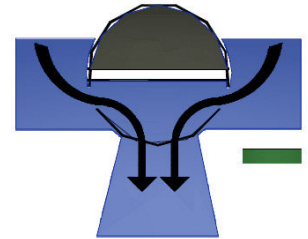


AXO Vanes Positioning

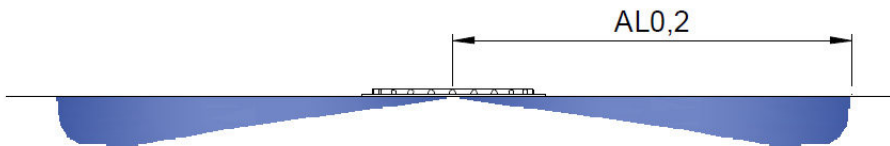
HORIZONTAL SUPPLY.
POSITION 1.



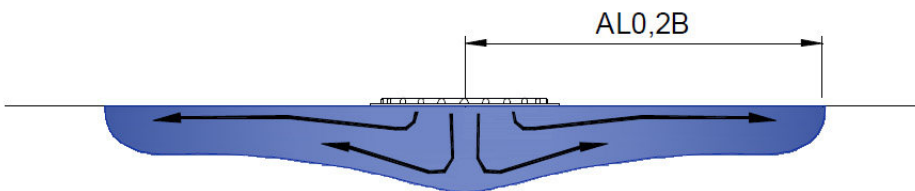
VERTICAL SUPPLY.
POSITION 2.



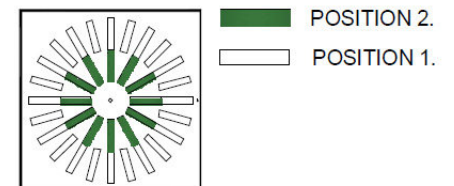
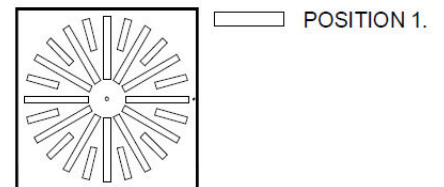
TYPE A. 100% POSITION 1.



TYPE B. 50% POSITION 1 AND 50% POSITION 2.



$AL_{0.2}$ = Distance at which velocity reaches 40 fpm



Type B Throw Correction Factor	
Dim	Correction Factor
24" x 24" (605mm)	0.74

Type B = 50% position 1, 50% position 2

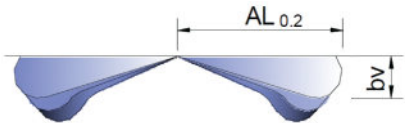
AXO-HEPA Performance Data

Model	Neck (fpm) Velocity	200	300	400	500	600	700	800	900	1000
330	CFM	53	80	107	134	160	187	214	241	267
	Pressure Loss (in.w.g.)	0.422	0.562	0.703	0.783					
	NC	< 15	22	30	35					
	Throw (ft) - Coanda Effect	2-3-4	3-4-7	4-6-9	5-7-11					
	Throw (ft) - No Ceiling Effect	1-2-3	2-3-5	3-4-7	3-6-9					
482	CFM	53	80	107	134	160	187	214	241	267
	Pressure Loss (in.w.g.)	0.221	0.289	0.357	0.426	0.466	0.51	0.562	0.602	0.643
	NC	< 15	< 15	< 15	16	20	24	27	30	33
	Throw (ft) - Coanda Effect	1-2-3	2-3-4	2-4-6	3-5-7	4-6-9	4-7-10	5-8-12	5-9-13	6-10-15
	Throw (ft) - No Ceiling Effect	1-1-2	1-2-3	2-3-4	2-4-6	3-4-7	3-5-8	4-6-9	4-7-10	4-7-11
538	CFM	70	105	140	175	209	244	279	314	349
	Pressure Loss (in.w.g.)	0.229	0.301	0.361	0.426	0.49	0.522	0.566	0.614	0.663
	NC	< 15	< 15	< 15	18	23	27	30	34	36
	Throw (ft) - Coanda Effect	1-2-3	2-3-5	2-4-6	3-5-8	4-6-9	4-7-11	5-8-12	6-9-14	6-10-16
	Throw (ft) - No Ceiling Effect	1-2-2	1-2-4	2-3-5	2-4-6	3-5-7	3-5-8	4-6-9	4-7-11	5-8-12
635	CFM	70	105	140	175	209	244	279	314	349
	Pressure Loss (in.w.g.)	0.193	0.261	0.313	0.361	0.418	0.454	0.49	0.522	0.562
	NC	< 15	< 15	< 15	< 15	16	19	22	25	27
	Throw (ft) - Coanda Effect		2-3-4	2-3-5	3-4-7	3-5-8	4-6-9	4-7-11	5-8-12	5-9-13
	Throw (ft) - No Ceiling Effect		1-2-3	2-3-4	2-3-5	2-4-6	3-5-7	3-5-8	4-6-9	4-7-10

Performance Notes

- NC Value based on 10 db room attenuation.
- Throw Values are based on isothermal air and terminal velocities of **100 fpm, 60 fpm and 40 fpm** respectively.

Delta T Correction Factors		
Δ T (F)	Kh	KI
0	.036	1
-2	.041	.985
-4	.046	.975
-6	.052	.965
-8	.058	.95
-10	.065	.935
-12	.072	.925
-15	.084	.91



$bv = kh \times \text{Throw}$

$\text{Throw}'(\Delta T) = KI \times \text{Throw}$

Kh = Correction Factor for Vertical Diffusion
 KI = Throw Correction Factor
 $AL_{0.2}$ = Distance at which velocity reaches 40 fpm

Induction Ratio						
Throw (ft)	i 330	i 482	i 538 (A)	i 538 (B)	i 635 (A)	i 635 (B)
4	10	7	6	9	7	7
6	17	13	12	17	9	14
8	23	18	16	24	11	19
10	29	24	20	30	16	25
15	48	39	33	50	26	42
20	65	55	46	73	37	60
25	100	72	58	97	47	80

induced room air = supplied cfm * i

induced room air = cfm mixed for given throw

Delta T Ratio				
Throw (ft)	330	482	538	635
4	0.046	0.052	0.082	0.115
6	0.028	0.034	0.047	0.068
8	0.022	0.026	0.035	0.052
10	0.017	0.019	0.028	0.04
15	-	-	0.018	0.027
20	-	-	0.01	0.02
25	-	-	-	0.016

Delta T (Throw) = Delta T (Supply) * Delta T Ratio

Delta T (Supply) = T (Room) - T (Supply)
 Delta T (Throw) = T (Room) - T (Throw)

How to Specify AXO-HEPA

Supply and mounting of high induction swirl diffuser model AXO with individually adjustable radial vanes. Removable face panel made in anodized aluminum or galvanized steel powder coated in white M9010, integrated in a white polystyrene plenum box with circular side duct connection. Shall include a HEPA filter H14 with a pressure intake to control filter pressure. ABS adjustable diffusion vanes shall have airflow straighteners on the back of the vanes. By EffectiV HVAC / MADEL.

How to Order AXO-HEPA Series

AXO-HEPA	-AB	538	/AA	
			Finish	
			AA	Adnodized Aluminum
			M9010	Powder Coated RAL 9016
		Dimension	330	71 - 106 cfm
			482	188 - 282 cfm
			538	235 - 353 cfm
			635	306 - 459 cfm
	Induction Vanes Color		AB	White Induction Vanes
			AN	Black Induction Vanes

