



**NEX**

**Concave Elements Architectural Swirl Diffusers**

**COMFORT THROUGH RELIABILITY**

**EFFECTIV**  TM

**Feb 6 2022**

## NEX SERIES

### Architectural Swirl Diffusers



Fixed and reliable high induction swirl pattern



Architecturally appealing - choice of concave elements color



Multiple jets of various size to better handle velocity variations



High tolerance to air entering the diffuser at an angle



High air flow at relatively low sound power



High tolerance to temperature and humidity variations



High induction causes rapid reduction of air velocity and temperature difference



Square and round shapes available



Lay-in, duct mounted or drywall mounted, suitable for all ceilings



Heavy-gauge steel or aluminum face construction with ABS elements



Matching high-performance PERFAIR plenums, choice of top or side connection



PERFAIR have built-in anti-seismic attachment tabs and air equalizer/volume damper



**NEX-S & NEX-C**  
by MADEL®

**PATENTED**



## Some Applications



Ideal when combination of comfort, high cfm, low noise and appealing look is required



Ideal when reliable performance is required despite variable or uncertain conditions



Restaurants, bars, hotels, stores, lobbies



Offices, including ones with closed work spaces



Art galleries



Childcare



Schools and classrooms



Meeting rooms



Clean rooms



Multi-purpose rooms



NEX Architectural Swirl Diffusers by EffectiV HVAC™ and MADEL® are designed to be applied in air conditioning, ventilation and heating systems. The design of unique concave elements of diffusion in radial arrangement supplies the air in a swirl pattern while leveraging the coanda effect. The resulting airflow is more evenly spread and its high induction ratio helps reduce stratification.

NEX Concave Elements, combined with a PERFAIR high-performance plenum mixing box, emit a uniform airflow throughout the passage section despite variations in supplied air temperature and velocity, as well as non-ideal duct installation.

The NEX series diffusers admit a flow variation of 60% while keeping the air stream stable. For optimal conditions, NEX 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).

The air pattern reliability, high level of induction rate and reduced air stratification allow for designs with a much higher level of comfort and provide opportunities for significant energy savings.

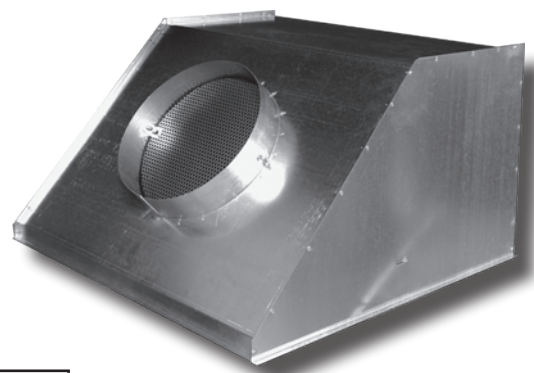
The face and plenum box are ordered separately and attached together with a screw through the face which is fixed in the plenum crossbar.

NEX Concave Elements are made of ABS tested in accordance to UL 94 HB *Standard for Tests for Flammability of Plastic Materials for Parts in Devices and Appliances - Horizontal Burning Test*

## Plenum Selection

NEX swirl diffusers are available with a wide selection of PERFAIR plenums to suit any type of application. PERFAIR-SS with side connection is the most popular plenum for Square Diffusers and only requires 14" of ceiling space.

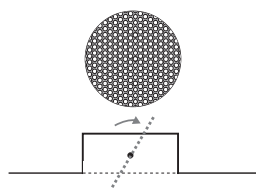
All PERFAIR plenums come with antiseismic tabs and perforated air volume damper / air equalizer.



**PERFAIR-SS**

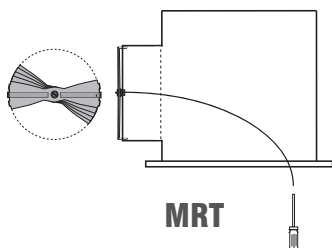
Plenum Model	Face Type	Connection	Recommended For
PERFAIR-CS	Round	Side	False or closed ceiling
PERFAIR-CT	Round	Top	Open ceiling with visible duct coming from top
PERFAIR-SS	Square	Side, Angle	False or closed ceiling
PERFAIR-SSS	Square	Side	Open ceiling with visible duct coming from side
PERFAIR-ST	Square	Top	Open ceiling with visible duct coming from top
PERFAIR-XS	Square	Side, Oval	Very limited ceiling space (6" min)
PERFAIR-XSS	Square	Side, Rect.	Very limited ceiling space (5" min)

## Integrated Air Volume Dampers



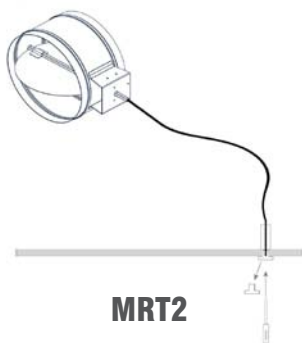
**R**

Perforated damper + air equalizer (Standard)



**MRT**

Manually operated damper, cable inside the plenum, adjustment through face



**MRT2**

Manually operated damper, cable through wall with termination fixture



**EB**

Battery operated electro-balance damper with remote control, cable through face



**EB2**

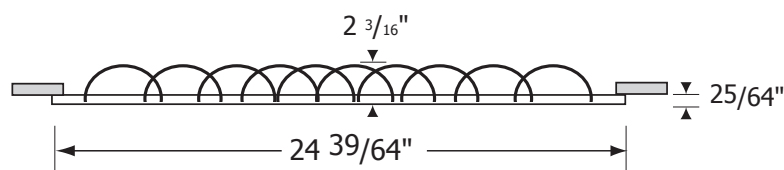
Battery operated electro-balance damper with remote control, cable through wall with termination fixture

## NEX-C Round Architectural Swirl Diffuser

Dim	Free Area (sqf)	Min cfm	Max cfm
16" (400mm)	0.22	45	285
25" (625mm)	0.47	200	500



**NEX-C**



## NEX-C 16 + PERFAIR-CS or PERFAIR-CT Performance Data

16" Diameter Face (Imperial)

400 mm Diameter Face (Metric)

Neck Size (inches)	Neck (fpm) Velocity	200	300	400	500	600	700	800	1000
	Velocity Pressure (H <sub>2</sub> O)	0.002	0.006	0.01	0.016	0.022	0.031	0.041	0.062
6	CFM		59	79	98	118	137	157	196
	Pressure Loss (in.w.g.)		0.01	0.02	0.02	0.03	0.05	0.1	0.1
	NC		<15	<15	17	22	26	29	35
	Throw (ft) - Coanda Effect		1-2-3	2-3-4	2-4-6	3-4-7	3-5-8	4-6-9	4-7-11
	Throw (ft) - No Ceiling Effect		1-2-3	1-2-3	2-3-4	2-3-5	2-4-6	2-4-6	3-6-8
8	CFM	70	105	140	175	209	244	279	
	Pressure Loss (in.w.g.)	0.01	0.03	0.05	0.1	0.1	0.1	0.2	
	NC	<15	19	26	32	37	41	44	
	Throw (ft) - Coanda Effect	2-3-4	2-4-6	3-5-8	4-7-10	5-8-12	6-9-14	6-10-16	
	Throw (ft) - No Ceiling Effect	1-2-3	2-3-4	2-4-6	3-5-7	4-6-9	4-7-10	5-8-12	

### 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.

# NEX-C 25 + PERFAIR-CS or PERFAIR-CT Performance Data

24 5/8" Diameter Face (Imperial)

625mm Diameter Face (Metric)

Neck Size (inches)	Neck (fpm) Velocity	400	500	600	700	800	1000	1200	1400	1600
	Velocity Pressure (H2O)	0.01	0.016	0.022	0.031	0.041	.062	0.09	0.122	0.16
6	CFM	79	98	118	137	157	196	236	275	314
	Pressure Loss (in.w.g.)		-	-	-	-	0.01	0.01	0.01	0.01
	NC		< 15	< 15	< 15	< 15	< 15	17	20	22
	Throw (ft) - Coanda Effect		1-2-4	2-3-4	2-3-5	2-4-6	3-5-7	4-6-9	4-7-10	5-8-12
	Throw (ft) - No Ceiling Effect		1-2-3	1-2-3	2-3-4	2-3-4	2-4-6	3-4-7	3-5-8	4-6-9
8	CFM	140	175	209	244	279	349	419	489	559
	Pressure Loss (in.w.g.)	-	-	0.01	0.01	0.01	0.02	0.02	0.03	0.04
	NC	< 15	< 15	< 15	17	20	24	28	31	34
	Throw (ft) - Coanda Effect	2-3-5	3-4-7	3-5-8	4-6-9	4-7-11	5-9-13	6-10-16	7-12-18	8-14-21
	Throw (ft) - No Ceiling Effect	2-3-4	2-3-5	2-4-6	3-5-7	3-5-8	4-7-10	4-8-12	6-9-14	6-10-16
10	CFM	218	273	327	382	436	545	654		
	Pressure Loss (in.w.g.)	0.01	0.01	0.014	0.018	0.024	0.036	0.052		
	NC	15	20	23	26	29	33	37		
	Throw (ft) - Coanda Effect	3-5-8	4-7-10	5-8-12	6-10-14	7-11-16	8-14-21	10-16-25		
	Throw (ft) - No Ceiling Effect	2-4-6	3-5-8	4-6-9	4-7-11	5-8-12	6-10-15	7-12-19		
12	CFM	314	393	471	550	628				
	Pressure Loss (in.w.g.)	0.01	0.017	0.03	0.04	0.05				
	NC	22	27	30	33	36				
	Throw (ft) - Coanda Effect	5-8-12	6-10-15	7-12-18	8-14-21	9-15-23				
	Throw (ft) - No Ceiling Effect	4-6-9	4-7-11	5-9-13	6-10-16	7-11-17				

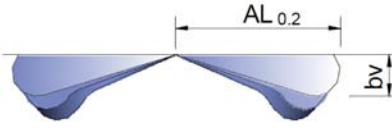
## Performance Notes

- 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.

Damper Correction Factor		100% Open	50% Open	10% Open
16"D (400mm)	Pressure Loss	x1	x1.2	x2.4
	NC	+1.6	+1.9	+1.1
25"D (625mm)	Pressure Loss	x1	x1.5	x4.8
	NC	+2	+2.75	+1.5



## NEX-C + PERFAIR-CS or PERFAIR-CT Performance Data (continued)

Delta T Correction Factors			 <p> <math>b_v = k_h \times \text{Throw}</math>  <math>\text{Throw}'(\Delta T) = K_I \times \text{Throw}</math> </p> <p> <math>K_h</math> = Correction Factor for Vertical Diffusion  <math>K_I</math> = Throw Correction Factor  <math>AL_{0.2}</math> = Distance at which velocity reaches 40 fpm         </p>
$\Delta T$ (F)	$K_h$	$K_I$	
0	.037	1	
-2	.041	.945	
-4	.046	.905	
-6	.052	.87	
-8	.056	.835	
-10	.065	.82	
-12	.071	.79	
-15	.084	.78	

Ratios (16")			Ratios (25")		<p> <b>induced room air = supplied cfm * i</b>   induced room air = cfm mixed for given throw </p> <hr/> <p> <b>Delta T (Throw) = Delta T (Supply) * Delta T Ratio</b>   Delta T (Supply) = T (Room) - T (Supply)  Delta T (Throw) = T (Room) - T (Throw) </p>
Throw (ft)	i	Delta T Ratio	i	Delta T Ratio	
4	8	0.052	5	0.12	
6	14	0.032	9	0.068	
8	18	0.026	13	0.051	
10	24	0.02	16	0.04	
15	38	0.01	26	0.027	
20	38	-	38	0.02	
25	71	-	47	0.016	
30	-	-	60	-	

### How to Specify NEX-C

Supply and mounting of round high induction swirl diffuser with radial concave elements NEX-C, dimension 25 inches or 625 mm. Constructed from galvanized steel face panel powder coated in white M9016, with ABS elements. Shall be supplied and installed with PERFAIR high performance plenum box featuring integrated air equalizer and volume damper, security tabs, crossbar and long screw for easy face attachment. By EffectiV HVAC / MADEL.

### How to Specify NEX-ALU-C

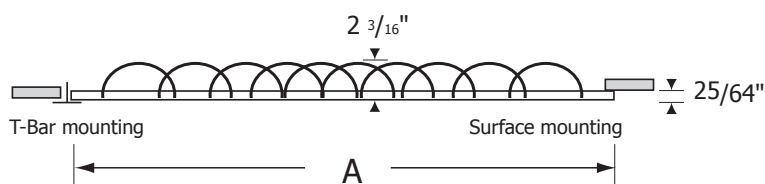
Supply and mounting of round high induction swirl diffuser with radial concave elements NEX-C, dimension 25 inches or 625 mm. Constructed from heavy gauge aluminum face panel powder coated in white M9016, with ABS elements. Shall be supplied and installed with PERFAIR high performance plenum box featuring integrated air equalizer and volume damper, security tabs, crossbar and long screw for easy face attachment. By EffectiV HVAC / MADEL.

## NEX-S Square Diffuser, Radial Vanes

Dim A	Free Area (sqf)	CFM Min	CFM Max
12"x12" (299mm)	0.22	100	250
24"x24" (605mm)	0.47	200	500



NEX-S



## NEX-S + PERFAIR or BOXSTAR Performance Data

12" x 12" Face (Imperial)

299mm x 299mm Face (Metric)

Neck Size (inches)	Neck (fpm) Velocity	400	500	600	700	800	1000	1200	1400	1600
	Velocity Pressure (H2O)	0.01	0.016	0.022	0.031	0.041	.062	0.09	0.122	0.16
5	CFM	55	68	82	95	109	136	164	191	218
	Pressure Loss (in.w.g.)	0.008	0.012	0.017	0.023	0.03	0.046	0.065	0.087	0.113
	NC	< 15	< 15	< 15	< 15	< 15	15	20	23	26
	Throw (ft) - coanda	1-2-3	2-3-4	2-3-5	2-4-5	2-4-6	3-5-8	4-6-9	4-7-11	5-8-12
6	CFM	79	98	118	137	157	196	236	275	314
	Pressure Loss (in.w.g.)	0.02	0.015	0.03	0.05	0.06	0.09	0.13	0.17	0.21
	NC	< 15	< 15	< 15	15	20	25	30	33	41
	Throw (ft) - coanda	2-3-4	2-4-5	3-4-7	3-5-8	4-6-9	4-7-11	5-9-13	6-10-15	7-11-17
8	CFM	140	175	209	244	279	349			
	Pressure Loss (in.w.g.)	0.05	0.07	0.1	0.14	0.18	0.24			
	NC	17	22	27	31	34	42			
	Throw (ft) - coanda	3-5-8	4-6-10	5-8-12	5-9-14	6-10-16	8-12-19			

### 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.
- No ceiling effect: multiply values by 0.7



## NEX-S + PERFAIR or BOXSTAR Performance Data (continued)

24" x 24" Face (Imperial)

605mm x 605mm Face (Metric)

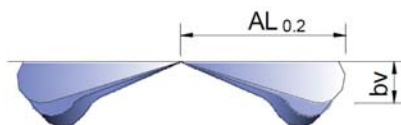
Neck Size (inches)	Neck (fpm) Velocity	400	500	600	700	800	1000	1200	1400	1600
	Velocity Pressure (H <sub>2</sub> O)	0.01	0.016	0.022	0.031	0.041	.062	0.09	0.122	0.16
6	CFM		98	118	137	157	196	236	275	314
	Pressure Loss (in.w.g.)		0.01	0.01	0.01	0.02	0.03	0.04	0.06	0.07
	NC		< 15	< 15	< 15	< 15	15	19	22	25
	Throw (ft) - coanda		1-2-4	2-3-4	2-3-5	2-4-6	3-5-7	4-6-9	4-7-10	5-8-12
8	CFM	140	175	209	244	279	349	419	489	559
	Pressure Loss (in.w.g.)	0.02	0.02	0.03	0.04	0.06	0.09	0.12	0.17	0.21
	NC	< 15	< 15	16	19	22	27	31	35	38
	Throw (ft) - coanda	2-3-5	3-4-7	3-5-8	4-6-9	4-7-11	5-9-13	6-10-16	7-12-18	8-14-21
10	CFM	218	273	327	382	436	545	654	764	
	Pressure Loss (in.w.g.)	0.036	0.055	0.077	0.104	0.133	0.205	0.29	0.389	
	NC	17	22	26	29	32	37	40	44	
	Throw (ft) - coanda	3-5-8	4-7-10	5-8-12	6-10-14	7-11-16	8-14-21	10-16-25	12-19-29	
12	CFM	314	393	471	550	628				
	Pressure Loss (in.w.g.)	0.07	0.11	0.15	0.21	0.27				
	NC	25	30	34	37	40				
	Throw (ft) - coanda	5-8-12	6-10-15	7-12-18	8-14-21	9-15-23				

### 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.
- No ceiling effect: multiply values by 0.7

Damper Correction Factor		100% Open	50% Open	10% Open
12"x12" (299mm)	Pressure Loss	x1	x1.2	x2.4
	NC	+1.6	+1.9	+1.1
24"x24" (605mm)	Pressure Loss	x1	x1.4	x4
	NC	+2	+2.74	+1.5

Delta T Correction Factors				
	12"x 12" (299mm)		24"x 24" (605mm)	
Δ T (F)	Kh	KI	Kh	KI
0	.037	1	.037	1
-2	.041	.945	.041	.945
-4	.046	.905	.046	.905
-6	.052	.87	.052	.87
-8	.056	.835	.056	.82
-10	.065	.82	.065	.82
-12	.071	.79	.071	.79
-15	.084	.78	.084	.78



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

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

Kh = Correction Factor for Vertical Diffusion

KI = Throw Correction Factor

AL<sub>0.2</sub> = Distance at which velocity reaches 40 fpm

## NEX-S + PERFAIR or BOXSTAR Performance Data (continued)

Ratios					
Distance (ft)	i (12")	i (24")	Delta T Ratio (12")	Delta T Ratio (24")	
4	7	5	0.053	0.12	<b>induced room air = supplied cfm * i</b>  induced room air = cfm mixed for given throw
6	14	9	0.033	0.068	
8	18	13	0.025	0.051	
10	22	16	0.019	0.04	<b>Delta T (Throw) = Delta T (Supply) * Delta T Ratio</b>  Delta T (Supply) = T (Room) - T (Supply) Delta T (Throw) = T (Room) - T (Throw)
15	39	26	-	0.027	
20	55	38	-	0.02	
25	72	47	-	0.016	
30	90	60	-	-	

### How to Specify NEX-S

Supply and mounting of square high induction swirl diffuser with concave elements model NEX-S. Constructed from galvanized steel face panel powder coated in white M9016, with ABS concave elements. Shall be supplied and installed with PERFAIR high performance plenum box featuring integrated air equalizer and volume damper, security tabs, crossbar and long screw for easy face attachment. By EffectiV HVAC / MADEL.

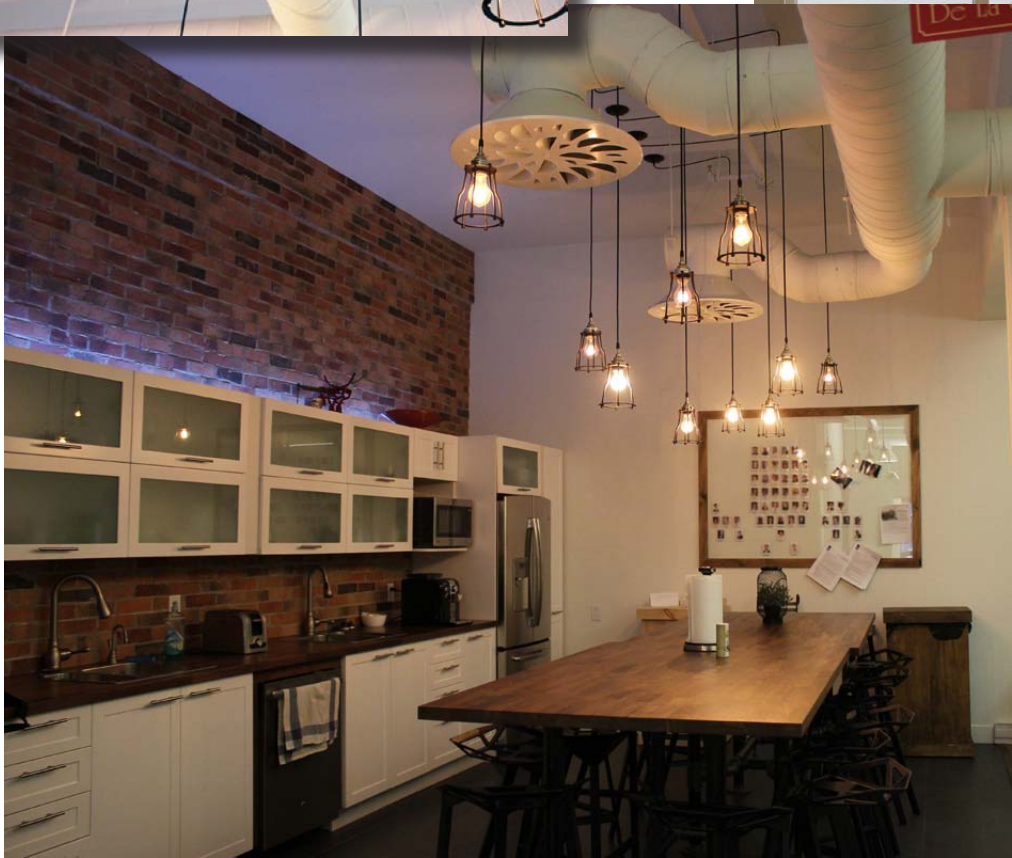
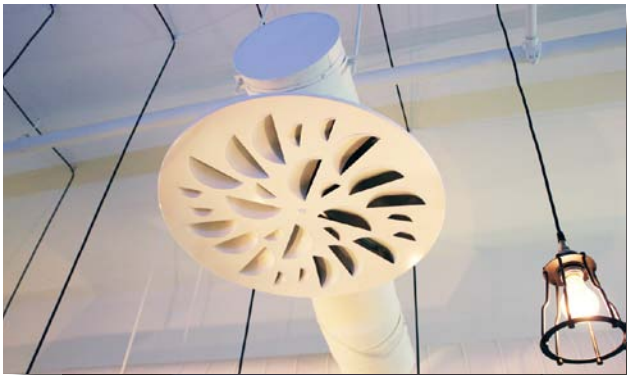
### How to Specify NEX-ALU-S

Supply and mounting of square high induction swirl diffuser with concave elements model NEX-S. Constructed from heavy gauge aluminum face panel powder coated in white M9016, with ABS concave elements. Shall be supplied and installed with PERFAIR high performance plenum box featuring integrated air equalizer and volume damper, security tabs, crossbar and long screw for easy face attachment. By EffectiV HVAC / MADEL.



How to Order NEX Series

NEX-	S	24	+ PERFAIR-ST	24	10	
			Plenum	Neck Diameter		6" 8", 10" or 12" D
				Match Face Dim		Match Product Face
				PERFAIR-CS		Round, Side Entry
				PERFAIR-CT		Round, Top Entry
				PERFAIR-SS		Square, Side Entry
			PERFAIR-ST		Square, Top Entry	
			Concave Elements Color	Std	White by default	
				/EN	Night	
				/EV	Pistachio Green	
				/EL	Lavender Blue	
				/ER	Red	
			Face Dimension	12	12"x12" Square Face	
				16	16" Diameter Face	
				24	24"x24" Square Face	
				25	25" Diameter Face	
			Model	C	Seel, Round	
				S	Steel, Square	
				ALU-C	Aluminum, Round	
				ALU-S	Aluminum, Square	

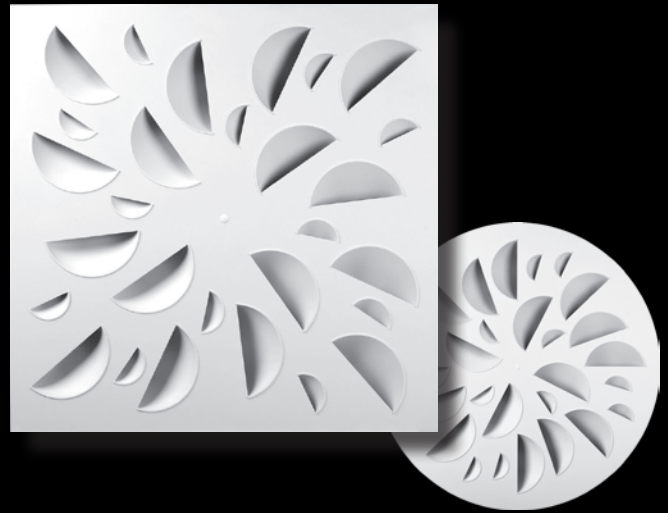






# NEX

## Concave Elements Swirl Diffusers



A picture is worth a thousand words, yet this revolutionary diffuser is more than just about the look. Its high induction swirl pattern, created by multiple jets, mixes supply air with room air more efficiently, ultimately providing a higher level of comfort in the room. Another great step in the new era of air distribution.

### NEX STEP... PICK YOUR CONCAVE ELEMENTS COLOR



Pistachio Green



Lavender Blue



Red



Night

Available in square and circular shapes, NEX diffusers are suitable for suspended ceilings, closed ceilings and open ceilings. NEX can easily replace standard diffusers in existing buildings for instant look and comfort improvement.



*Innovative Solutions by*

**EFFECTIV** 