

The AXO series of drop in swirl diffusers are designed to be applied in air conditioning, ventilation and heating systems. They can either be cut into a lay-in grid tile or used to completely replace a 595mm or 598mm square tile. The design of this grille and its flat plate mounting generates a swirl effect on the air giving a high Coander adhesion to the ceiling. This obtains a high induction index and reduces stratification.

The individual turning vanes allow you to change the direction of imporation angle and adjust the diffuser to suit varying throw requirements. These are 360°/180° opposite, or all the air going in one direction.

The Unique click and clean hinged removeable core system enables easy access through the core, without the use of tools. By pressing the spring release catches the core hinges down for easy cleaning.

### Specification & Construction:

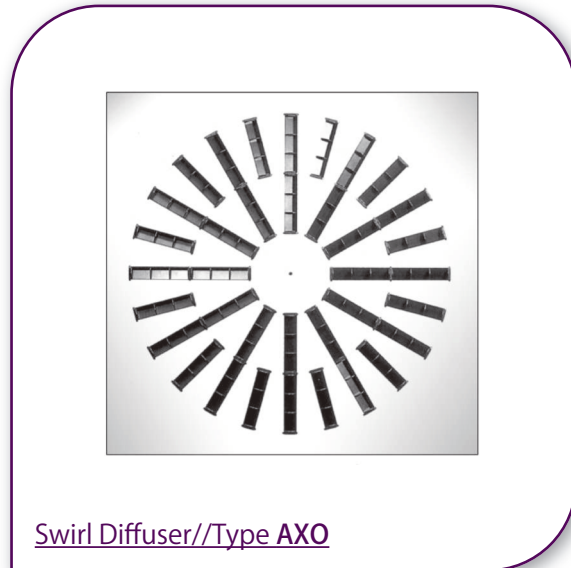
These units can be manufactured from either steel or aluminium and are fabricated by punching out individual slots and mounting the adjustable pattern control blade. The plenum boxes are held to the grilles by a centrally located screw and bar.

### Sizes:

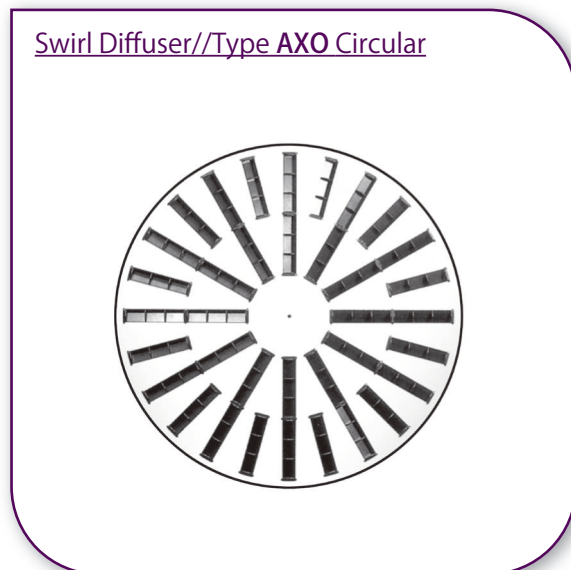
Circular units start at 150mmØ and square panels go up to 1200mm x 600mm.

### Finish:

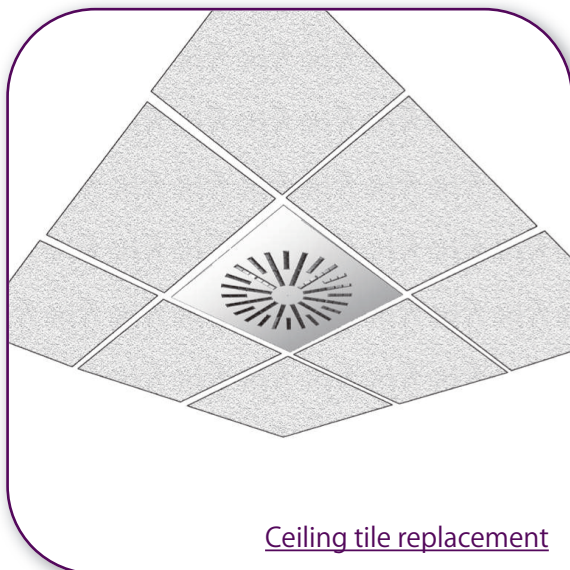
Standard finish is white 9010 matt with black pattern control blades. However white pattern control blades



Swirl Diffuser//Type AXO



Swirl Diffuser//Type AXO Circular



Ceiling tile replacement

are available at an extra 20%. Alternative standard RAL colours are available at extra charge.

### Alternative Designs:

We are able to offer a high capacity variation of this diffuser, which can take volumes of up to 280ltrs with 3½ metre throws.

### Fixing:

All units are suitable for hidden fixing via a screw into a hidden bar mounted inside the plenum box.

Adjustable vanes emit a uniform air flow over the ceiling. The AXO series diffusers allow a flow variation of 60% while keeping the airstream stable. These diffusers can be used at heights from 2.6 to 4 metres and at a temperature differential up to 10°C.

**Material:**

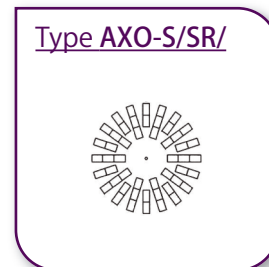
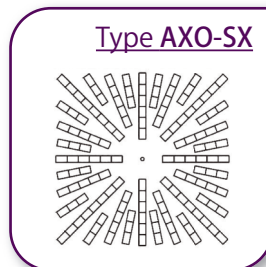
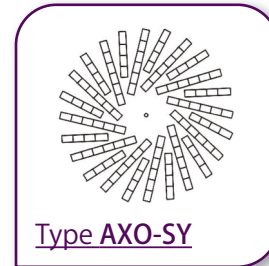
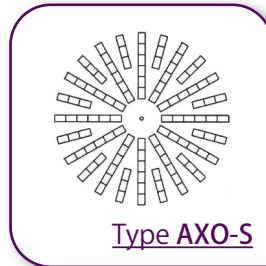
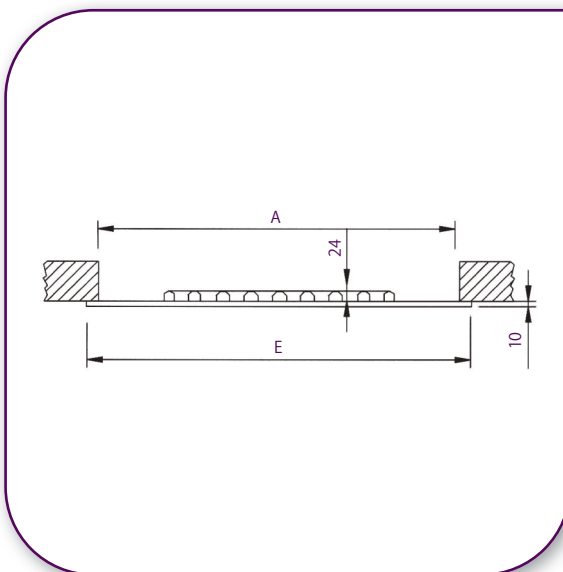
Diffuser made of steel sheet and sectorised deflection vanes made of injected plastic, ABS type, black. All diffusers are provided with a seal on the back of the frame in order that the joint with the ceiling is airtight.

**Plenum:**

Plenum with circular adaptors which includes supports to hang from the ceiling. Made in galvanised steel.

**Type AXO-S, AXO-SX & AXO-SY Sizes**

	E	A
310	308	289
400	395	376
500	495	476
600	595	576
625	620	601
800	795	776
825	820	801



The plenums can be supplied with a damper, PLXO-R, or without it, PLXO-SR.

Optionally, the plenums are thermoacoustically insulated by foam, which has a coefficient thermic conductivity of 0.04 w/mk.

**Classification:**

**AXO-S** - Square diffuser with vanes in circular radial arrangement.

**-SY** - Vanes in circular radial arrangement, inclined in relation to the centre.

**-SX** - Vanes in square radial arrangement, to maximise the effective area of the diffuser.

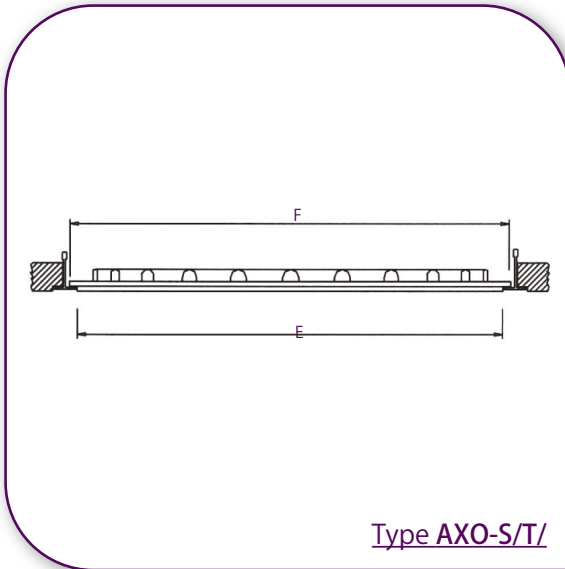
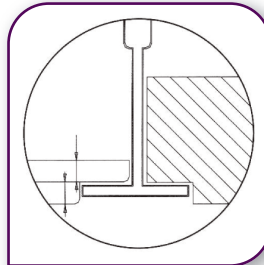
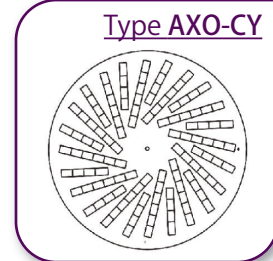
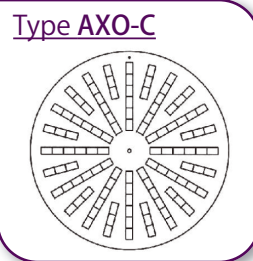
**/SR/** - Reduced face area in relation to the diffuser size.

**Type AXO-S/SR, AXO-SX/SR & AXO-SY/SR/ Sizes**

	E	A
600-400	595	576
600-500	595	576
625-400	620	601
625-500	620	601

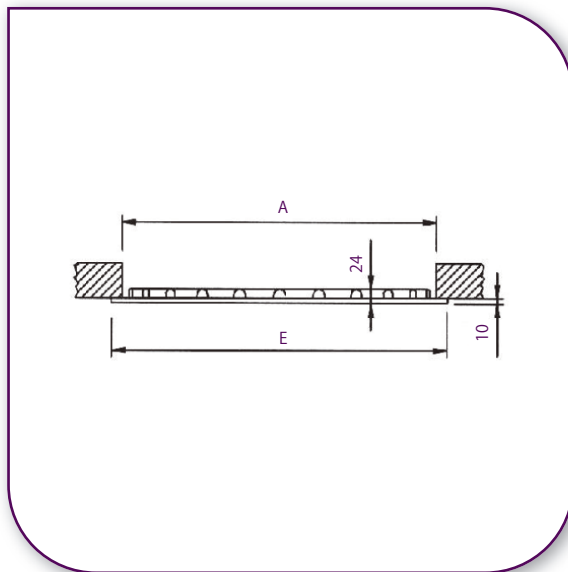
**Classification:**

- /T/ - Diffuser with angled borders, to replace an angled false ceiling tile.
- C - Circular diffuser with vanes in circular radial arrangement.
- CY - Vanes in circular radial arrangement, inclined in relation to the centre.



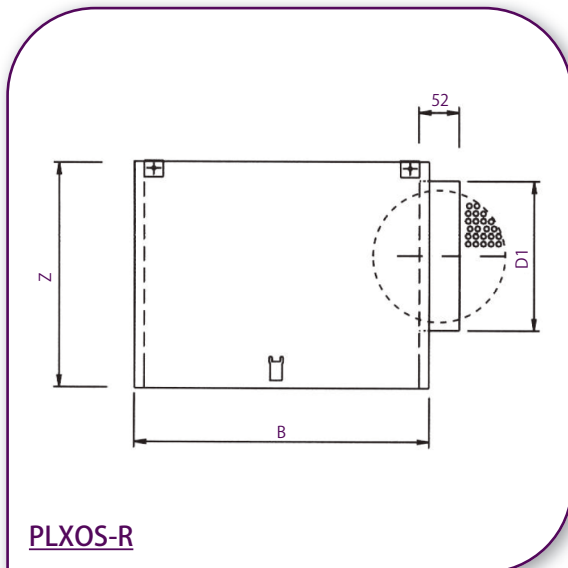
Type AXO-C, AXO-CY Sizes		
	E	A
400	400	376
500	500	476
600	600	576
625	625	601
800	800	776
825	825	801

Type AXO-S/T/, AXO-SX/T/ & AXO-SY/T/ Sizes		
	E	F
400	372	393
500	472	493
600	572	593
625	602	623
800	772	793
825	802	823

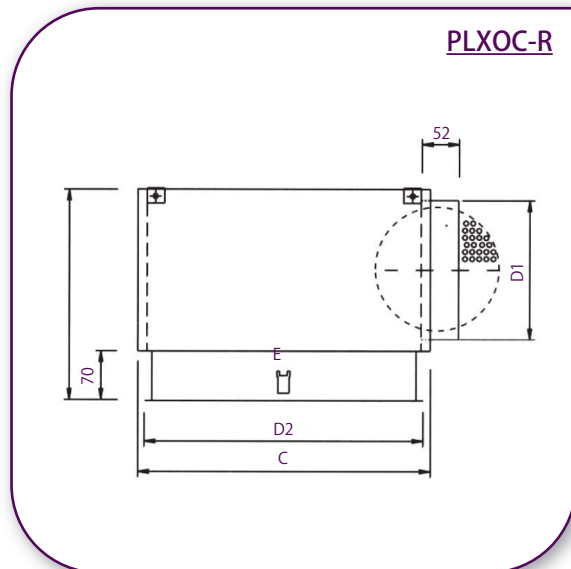


### Accessories:

- Plenum box with a lateral circular connection for square diffusers. It includes supports to hang from the ceiling. Made in galvanised steel.
- Plenum box with a lateral circular connection for circular diffusers.



PLXOS Sizes			
	B	Z	D1
310	305	300	198
400	390	300	198
500	490	300	198
600	590	350	248
625	615	350	248
800	790	415	313
825	815	415	313



PLXOC, PLXOC/S/ Sizes				
	D2	C	Z	D1
400	395	415	300	198
500	495	515	300	198
600	595	615	350	248
625	620	640	350	248
800	795	815	415	313
825	820	840	415	313

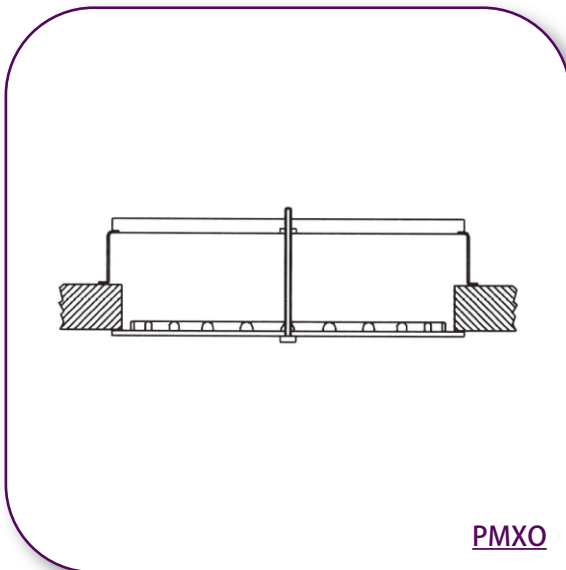
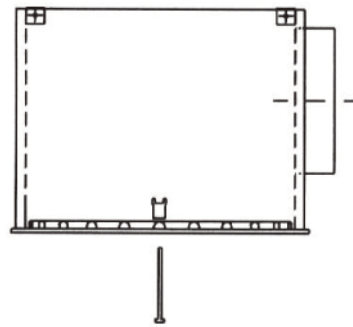
- Plenum box with a flow damper in the spigot.
- Plenum box with an upper circular neck connector.
- Plenum box thermoacoustically insulated by foam.

### Fixing Systems:

**PLXO** - Connection into the plenum box by means of a central screw, to hang the assembly from the ceiling with drop rods.

**PMXO** - Hidden fixing with a crossbar and central screw. Suitable for mounting in false ceiling with rectangular duct. Constructed in galvanised steel.

### PLXO



PMXO

### Finishes:

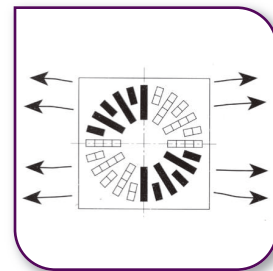
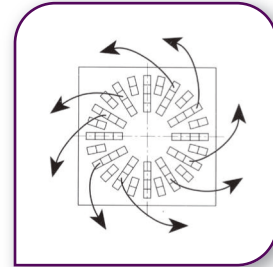
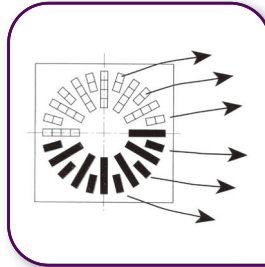
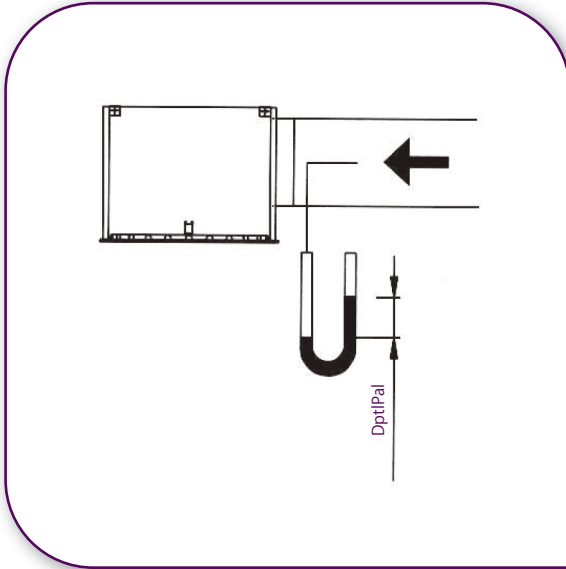
Polyester powder-coated in the following colours:  
RAL 9010 - White,  
RAL - Other colours at an additional cost.

### Packing:

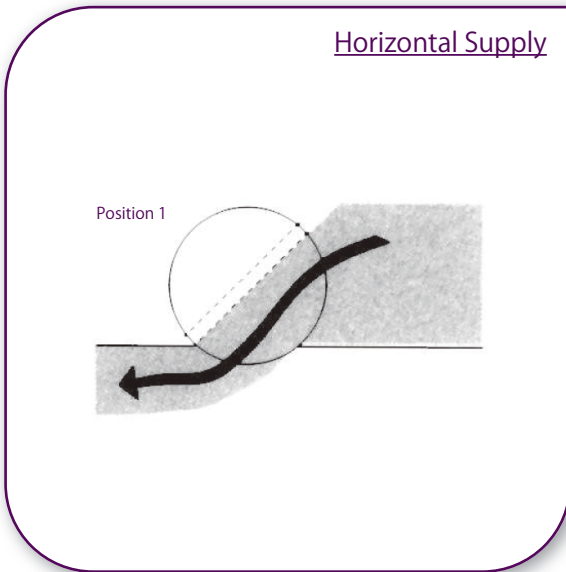
Individual packing with polyethelene film as well as shockproof protector.

### System of attachment:

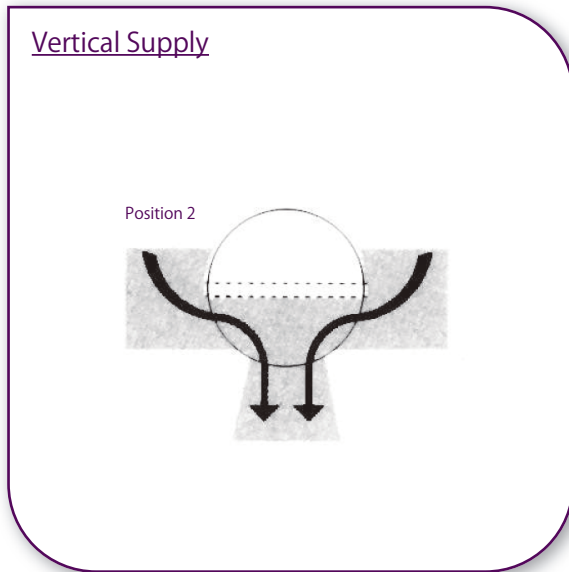
Diffuser mounting to the plenum by means of a central screw and holders to hang the set to the ceiling.



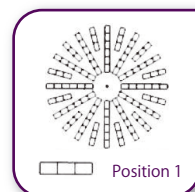
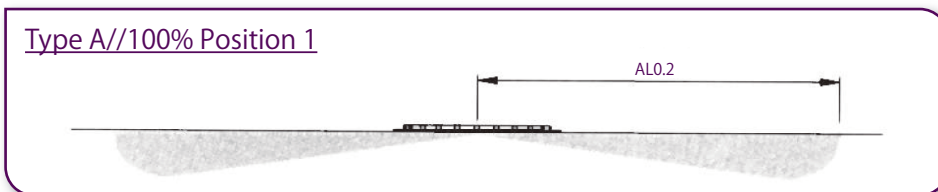
Horizontal Supply



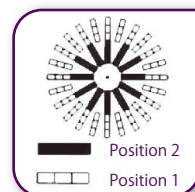
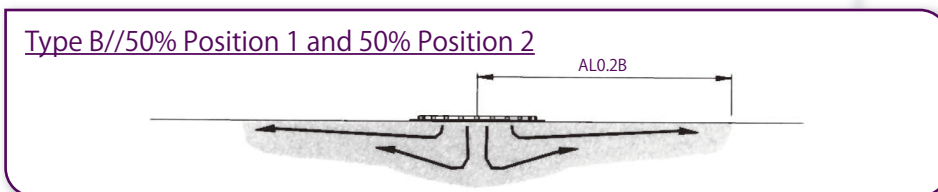
Vertical Supply



Type A//100% Position 1

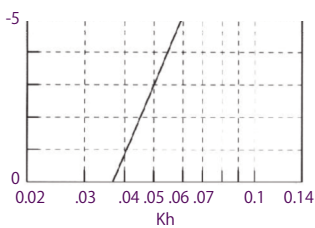


Type B//50% Position 1 and 50% Position 2



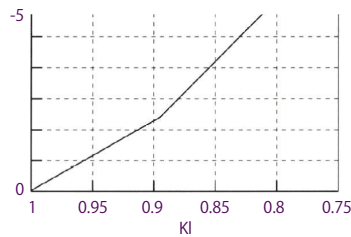


### Correction Factor for Vertical Diffusion (bV) for DT(-)

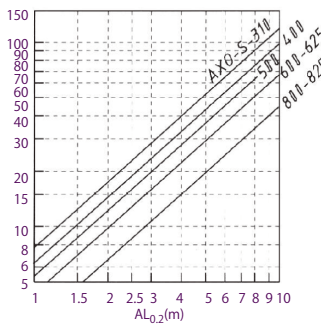
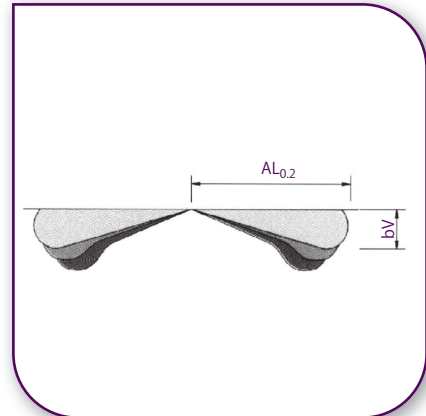


Kh = Correction factor for vertical diffusion

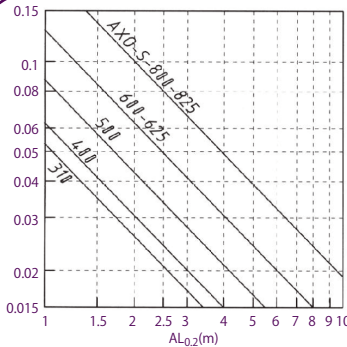
### Correction Factor for Throw (L0.2) DT(-)



KI = Correction factor for throw  $bV = Kh \times AL_{0.2}$   
 $AL_{0.2}/Dt < 0.7 = KI \times AL_{0.2}$

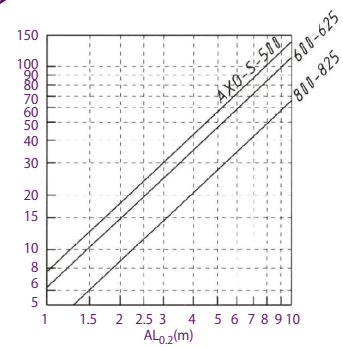


Induction Ratio//Supply Type A



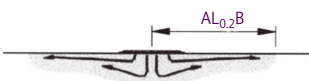
$\frac{Dt}{Dt_z} = \frac{t_{local} - t_x}{t_{local} - t_{sup}}$

Temperature Ratio



Induction Ratio//Supply Type B

### Type B - 50% Position 1 & 50% Position 2



$$AL_{0.2}B = KB \times AL_{0.2}$$

### Correction Factor for Throw Type B

AXO-S	KB
500	0.75
600-625	0.74
800-825	0.7

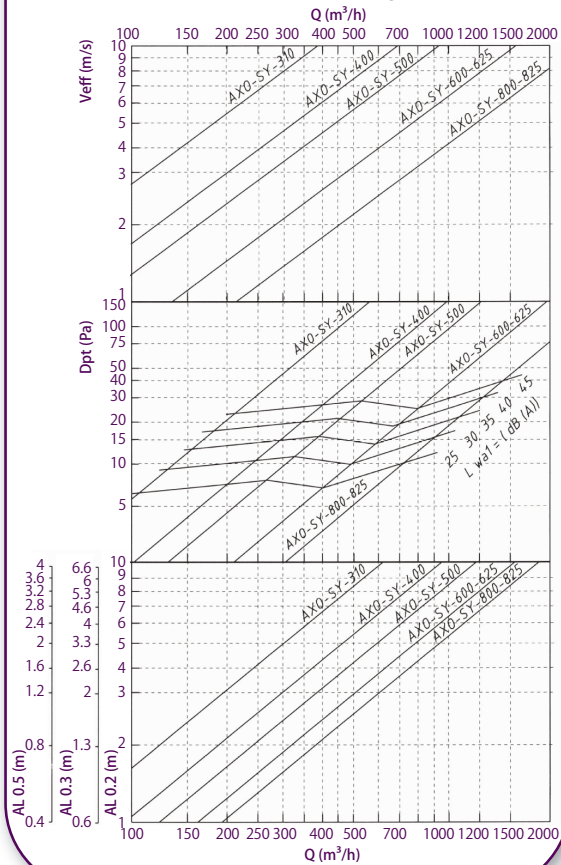
Example: AXO-S-600-625  
 $Q = 600\text{m}^3/\text{H}$   
 $AL\ 0.2 = 4\text{m}$   
 $AL\ 0.2B = 0.74 \times 4 = 2.96\text{m}$   
 $i = 28$

Recommended Velocity		
AXO-S	V min m/s	V max m/s
310	2.5	4.5
400	2.5	4.5
500	2.5	4.5
600	2.5	4.5
625	2.5	4.5
800	2.5	4.5
825	2.5	4.5

Effective Face Area m <sup>2</sup>			
AXO-S	Aeff m <sup>2</sup>	Q min m <sup>3</sup> /h	Q max m <sup>3</sup> /h
310	0.0096	87	155
400	0.0201	181	326
500	0.029	261	470
600	0.044	396	713
625	0.044	396	713
800	0.068	612	1102
825	0.068	612	1102

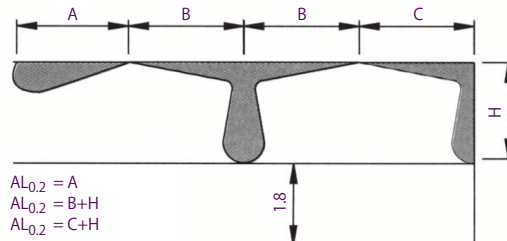
Correction Factor for DPt & LWA1				
AXO-S		100% Open	50% Open	10% Open
310	DPt/Kp/	1	1.2	2.4
	Lwa1/Kf	0	3	13
400	DPt/Kp/	1	2	3.6
	Lwa1/Kf	0	10	22
500	DPt/Kp/	1	1.6	4
	Lwa1/Kf	0	7	17
600	DPt/Kp/	1	1.33	3.3
	Lwa1/Kf	0	3	15
625	DPt/Kp/	1	1.33	3.3
	Lwa1/Kf	0	3	15
800	DPt/Kp/	1	1.8	2.9
	Lwa1/Kf	0	13	21
825	DPt/Kp/	1	1.8	2.9
	Lwa1/Kf	0	13	21

Effective Velocity, Pressure Loss & Sound Power Level Throw with Ceiling Effect



$$DPt = Kp \times DPt$$

$$Lwa = Lwa1 + Kf$$



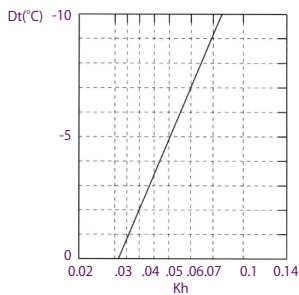
$$AL_{0.2} = A$$

$$AL_{0.2} = B+H$$

$$AL_{0.2} = C+H$$

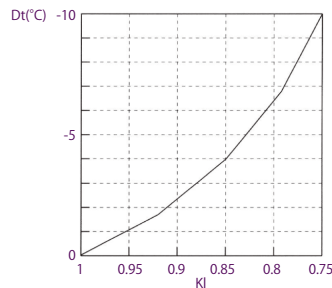


### Correction Factor for Vertical Diffusion (bV) for DT(-)

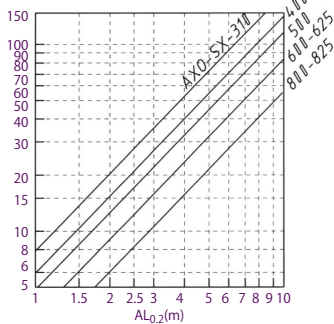
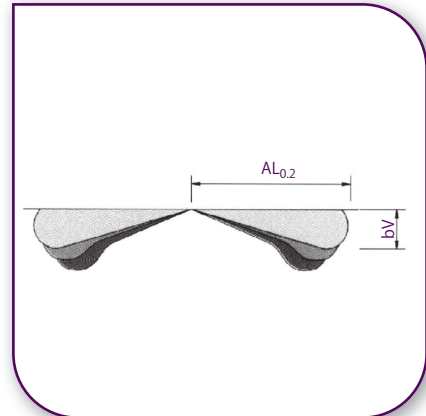


Kh = Correction factor for vertical diffusion

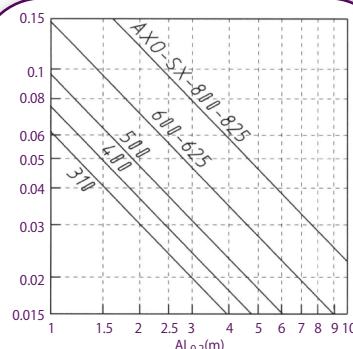
### Correction Factor for Throw (L0.2) DT(-)



Kl = Correction factor for throw  $bV = Kh \times AL_{0.2}$   
 $AL_{0.2}/Dt < 0 = Kl \times AL_{0.2}$

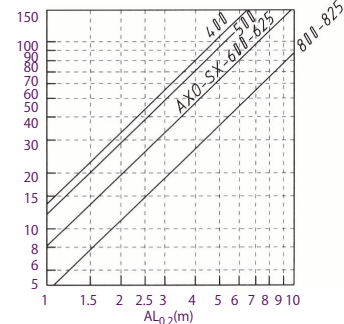


Induction Ratio//Supply Type A



$\frac{Dt}{Dtz} = \frac{t_{local} - t_x}{t_{local} - t_{sup}}$

Temperature Ratio



Induction Ratio//Supply Type B

### Type B - 50% Position 1 & 50% Position 2



$$AL_{0.2}B = KB \times AL_{0.2}$$

### Correction Factor for Throw Type B

AXO-SX	KB
400	0.75
500	0.65
600-625	0.6
800-825	0.65

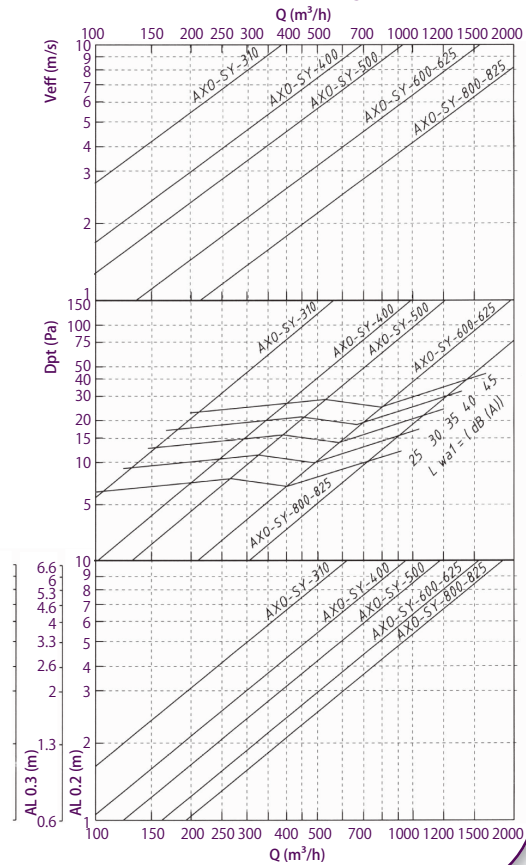
Example: AXO-SX-800-825  
 $Q = 800\text{m}^3/\text{H}$   
 $AL_{0.2} = 4.25\text{m}$   
 $AL_{0.2}B = 0.6 \times 4.25 = 2.55\text{m}$   
 $i = 28$

Recommended Velocity		
AXO-SY	V min m/s	V max m/s
310	2.5	4.5
400	2.5	4.5
500	2.5	4.5
600	2.5	4.5
625	2.5	4.5
800	2.5	4.5
825	2.5	4.5

Effective Face Area m <sup>2</sup>			
AXO-SY	Aeff m <sup>2</sup>	Q min m <sup>3</sup> /h	Q max m <sup>3</sup> /h
310	0.001	90	162
400	0.0181	163	293
500	0.025	225	405
600	0.043	387	697
625	0.043	387	697
800	0.068	612	1102
825	0.068	612	1102

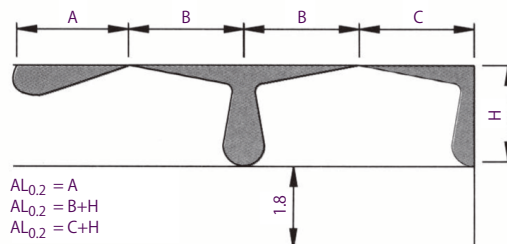
Correction Factor for DPt & LWA1				
AXO-SY		100% Open	50% Open	10% Open
310	DPt/Kp/	1	1.2	2.4
	Lwa1/Kf	+0	+3	+13
400	DPt/Kp/	1	2	3.6
	Lwa1/Kf	+0	+10	+22
500	DPt/Kp/	1	1.6	4
	Lwa1/Kf	+0	+7	+17
600	DPt/Kp/	1	1.33	3.3
	Lwa1/Kf	+0	+3	+15
625	DPt/Kp/	1	1.33	3.3
	Lwa1/Kf	+0	+3	+15
800	DPt/Kp/	1	1.8	2.9
	Lwa1/Kf	+0	+13	+21
825	DPt/Kp/	1	1.8	2.9
	Lwa1/Kf	+0	+13	+21

Effective Velocity, Pressure Loss & Sound Power Level Throw with Ceiling Effect

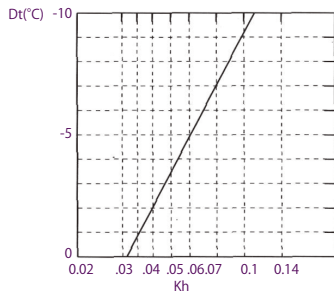


$$DPt = Kp \times DPt$$

$$Lwa = Lwa1 + Kf$$

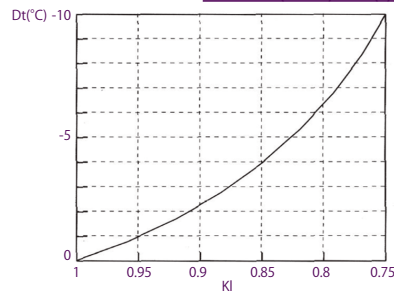


### Correction Factor for Vertical Diffusion (bV) for DT(-)

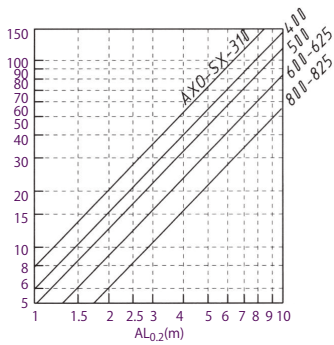
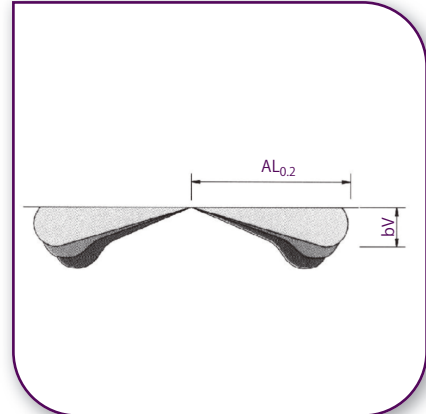


Kh = Correction factor for vertical diffusion

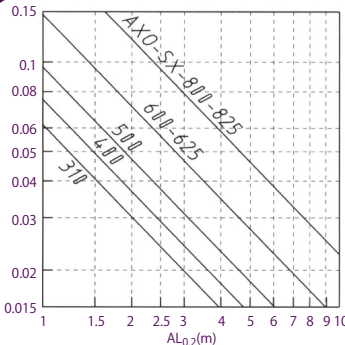
### Correction Factor for Throw (L0.2) DT(-)



Kl = Correction factor for throw  $bV = Kh \times AL_{0.2}$   
 $AL_{0.2}/Dt < 0 = Kl \times AL_{0.2}$

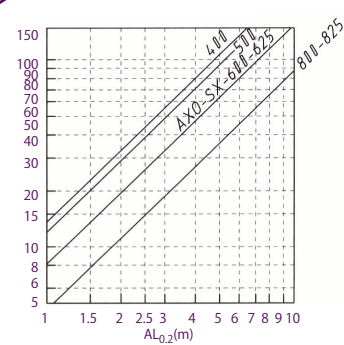


Induction Ratio//Supply Type A



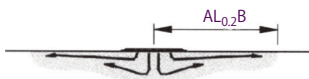
$\frac{Dt_l}{Dt_z} = \frac{t_{local} - t_x}{t_{local} - t_{sup}}$

Temperature Ratio



Induction Ratio//Supply Type B

### Type B - 50% Position 1 & 50% Position 2

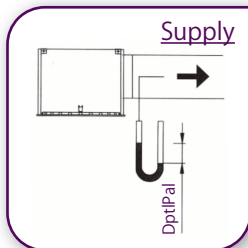
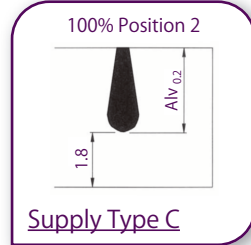
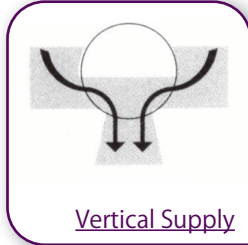


$$AL_{0.2}B = KB \times AL_{0.2}$$

### Correction Factor for Throw Type B

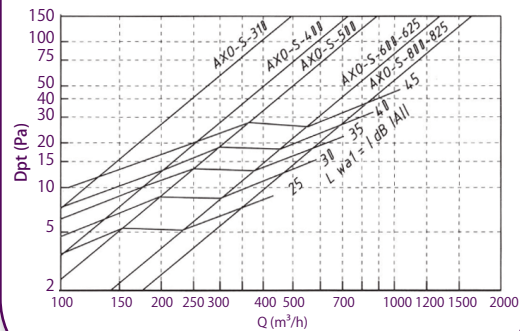
AXO-S	KB
500	0.75
600-625	0.75
800-825	0.7

Example: AXO-S-600-625  
 $Q = 600\text{m}^3/\text{H}$   
 $AL_{0.2} = 4\text{m}$   
 $AL_{0.2}B = 0.74 \times 4 = 3\text{m}$   
 $i = 287$

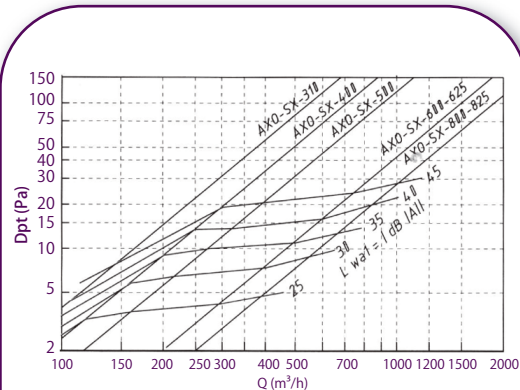


Example: AXO-S-600-625  
Q = 600m<sup>3</sup>/H  
DT/+5/  
AL 0.2 = 4m  
AL v 0.2 = 0.7 x 4 = 2.8m

### Pressure Loss & Sound Power Level: Extract//Type AXO-S



AXO-S	DT/+0/	DT/+5/	DT/+10/
310 (Kv)	0.78	0.55	0.47
400 (Kv)	0.81	0.56	0.5
500 (Kv)	0.75	0.53	0.47
600 (Kv)	0.89	0.74	0.57
625 (Kv)	0.89	0.74	0.57
800 (Kv)	0.9	0.78	0.6
825 (Kv)	0.9	0.78	0.6

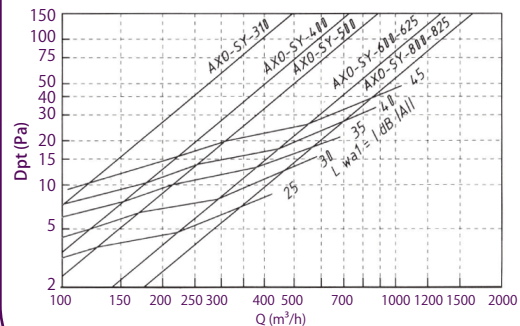


### Pressure Loss & Sound Power Level: Extract//Type AXO-SX

AXO-SX	DT/+0/	DT/+5/	DT/+10/
310 (Kv)	0.75	0.53	0.44
400 (Kv)	0.76	0.54	0.47
500 (Kv)	0.7	0.5	0.4
600 (Kv)	0.8	0.7	0.53
625 (Kv)	0.8	0.7	0.53
800 (Kv)	0.85	0.74	0.57
825 (Kv)	0.85	0.74	0.57

### Pressure Loss & Sound Power Level: Extract//Type AXO-SY

AXO-SY	DT/+0/	DT/+5/	DT/+10/
310 (Kv)	0.75	0.53	0.44
400 (Kv)	0.76	0.54	0.47
500 (Kv)	0.7	0.5	0.4
600 (Kv)	0.84	0.72	0.55
625 (Kv)	0.84	0.72	0.55
800 (Kv)	0.85	0.74	0.57
825 (Kv)	0.85	0.74	0.57



DT/+ = T supply - T room