



BENEDITO  
Design

A D I



SELECCIÓN  
ADI · FAD 2005

Patented

**klin**  
SYSTEM



## PLAY adjustable sectors diffuser

The adjustable sectors diffusers **PLAY** are designed to be used, in HVAC systems and they can be mounted in false ceilings or suspended from the ceiling.

As a result of the collaboration with **Benedito Design**, the original concept of **PLAY** diffusers represents, not only an innovative technical solution for present architecture, but is also a vanguard in design of air diffusers.

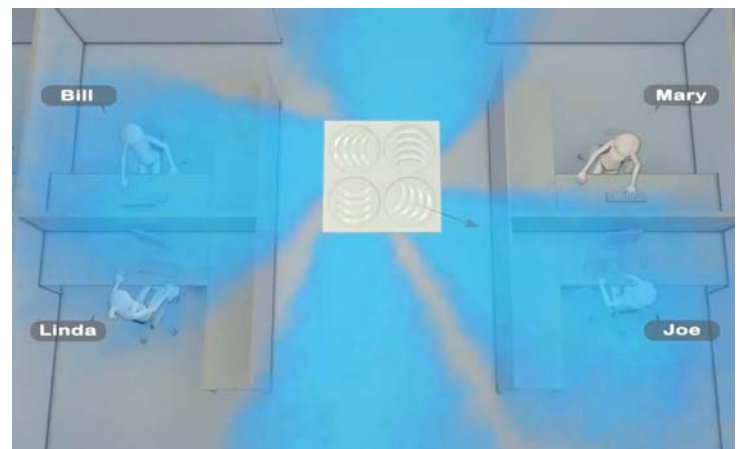
- Manually adjustable sectors
- 1, 2, 3 or 4-way diffusion, or swirl arrangement
- Designed for both CAV and VAV installations
- Suitable from 2,6 up to 4 meters high at a temperature differential up to 12°C.

### PLAY diffuser advantages

- Easily adaptable to different spaces
- QS and QM modules with reduced free area for different airflow rates.
- Manually adjustable air direction

### PLAY diffuser Benefits

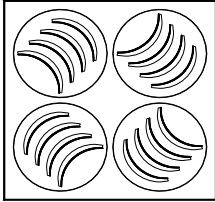
- ✓ It improves people's comfort by avoiding unwanted drafts.
- ✓ Uniform installation with QS and QM modules.
- ✓ Unique and avant-garde facilities.



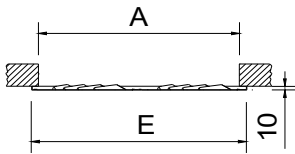
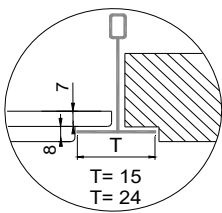
- ☐ Homes
- ☐ Offices
- ☐ Hotels

**PLAY-S**  
**PLAY-KLIN**  
**PLAY-C**  
**PLAY-R**

## PLAY-S



## PLAY-S.../T.../



	E	A
600	595	576
610	605	586
625	620	601
675	670	651

## PLAY-S

### CLASSIFICATION

**PLAY-S** Square diffuser able to act like a 1, 2, 3, 4-way or swirl diffuser.

**.../QM/** Diffuser with medium effective section.  
82% free area compared to standard PLAY.

**.../QS/** Diffuser with small effective section.  
55% free area compared to standard PLAY.

**.../T15/** Panel with angled borders to replace an angled ceiling tile profile 15 mm.

**.../T24/** Panel with angled borders to replace an angled ceiling tile profile 24 mm.

### MATERIAL

Diffusers are constructed from galvanised steel and nylon bearings.

All diffusers are provided with a seal on the back of the frame in order to ensure airtight contact of the perimeter, with the plenum box or ceiling.

STANDARD



QM



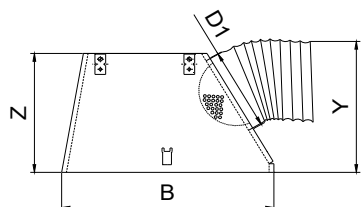
82% Afree

QS

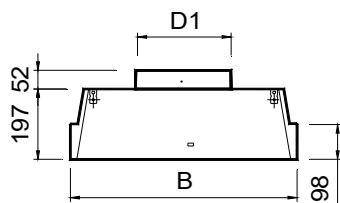


55% Afree

## BOXSTAR

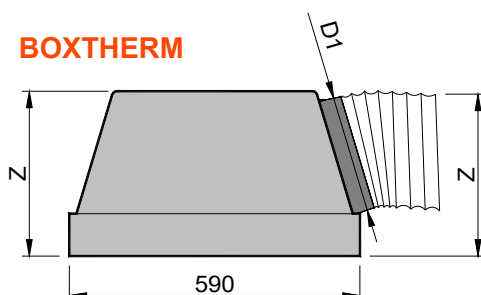


## BOXSTAR/S



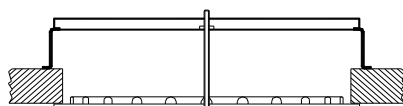
	B	B	Z	Y	D1
600-D1:250	590	590	350	375	248
600-D1:200	590	590	300	325	198
610-D1:250	600	600	350	375	248
610-D1:200	600	600	300	325	198
625-D1:250	615	615	350	375	248
625-D1:200	615	615	300	325	198
675-D1:250	665	665	350	375	248
675-D1:200	665	665	300	325	198

## BOXTHERM

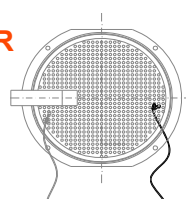


	Z	D1
BOXTHERM 600-DIAM250	350	248
BOXTHERM 600-DIAM200	300	198

## PMXO



## COR



Blanca abrir  
White open

Negra cerrar  
Black close

## ACCESSORIES

**BOXSTAR** Pyramidal plenum box with a lateral circular connection. It includes supports to hang from the ceiling. The crossbar is supplied separately to be assembled manually on the work site. Made in galvanised steel.

**...-R** Plenum box with a flow damper in the spigot.

**.../S/** Upper circular connection plenum box .

**.../AIS/** Thermally insulated plenum box with foam. Density 30 kg / m<sup>3</sup> ISO 845. Thermal conductivity 20° C\_0,040 W / m°K ISO 3386/1. Classified reaction to fire B-s2, d0 EN 13501-1.

**BOXTHERM** Thermo acoustically insulated plenum box with a lateral circular connection.

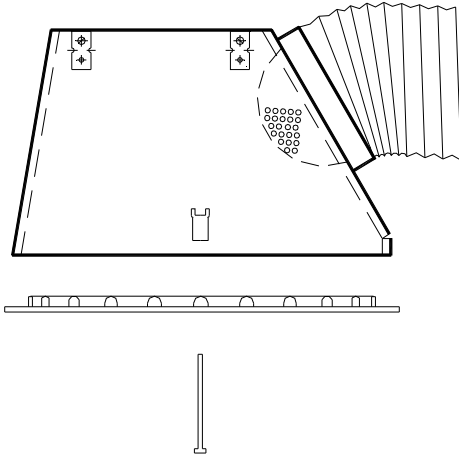
**...-R** Plenum box with a flow damper in the spigot.

**PMXO** Crossbar suitable for mounting in false ceiling with rectangular duct.

**COR** Set of 2 cords to regulate the plenum damper type-R from the face of the diffuser.



1)



## FIXING SYSTEMS

1) Connection into the crossbar or to the plenum box by means of central screw.

## FINISHES

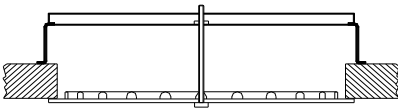
**M9016** Painted white similar to RAL 9016 (85-95% gloss)

**R9016S** Painted white RAL 9016 semi-matt (60-70% gloss)

**R9010S** Painted white RAL 9010 semi-matt (60-70% gloss)

**RAL...** Painted in other RAL colours

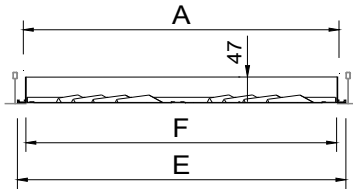
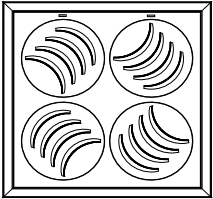
1)



## SPECIFICATION TEXT

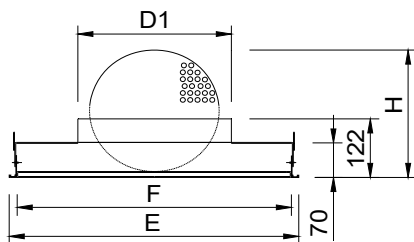
Supply and mounting of square multi-directional diffuser by 4 adjustable sectors able to act like a 1, 2, 3, 4-way or swirl series **PLAY-S+BOXSTAR M9016 dim. 600** constructed from galvanised steel paint in white **M9016**. With lateral circular connection pyramidal plenum box **BOXSTAR**. Manufacturer **MADEL**.

## PLAY-S-KLIN



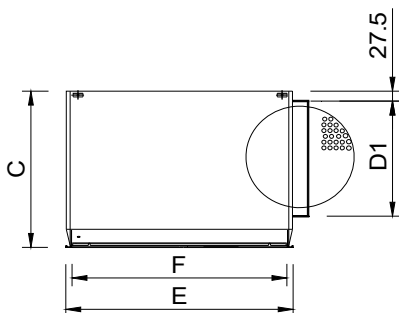
	E	F	A
600	595	565	569
610	605	575	579
625	620	590	594
675	670	640	544

## PLAY-S-KLIN+PLK...-R



	E	F	D1	H
600	595	563	313	353
610	605	573	313	353
625	620	588	313	353
675	670	638	313	353

## PLAY-S-KLIN+PLK/L/...-R



	E	F	D1	C
600	595	563	313	435
610	605	573	313	435
625	620	588	313	435
675	670	638	313	435

## PLAY-S-KLIN

### CLASSIFICATION

**PLAY-S-KLIN** Hinged removable core diffuser for the easy access to the installations above the ceiling with no need of tools, by means of PUSH fasteners.

By slightly pressing on the invisible latch, the core opens, remaining hinged on one side. If needed the core can be easily removed for maintenance of HVAC installations.

**.../QM/** Diffuser with medium effective section.

82% free area compared to standard PLAY.

**.../QS/** Diffuser with small effective section.

55% free area compared to standard PLAY.

### MATERIAL

Diffusers are constructed from galvanised steel and nylon bearings.

### ACCESORIOS

**PLK** Plenum box fixed to the diffuser with an upper connection. Made in galvanised steel.

**...-R** Plenum box with a flow damper in the spigot.

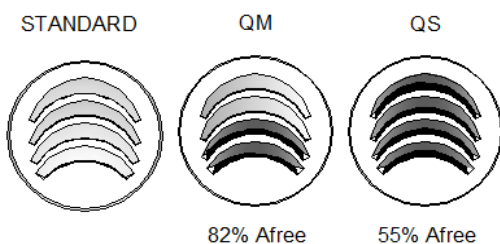
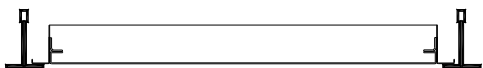
**.../L/** Plenum box with a lateral connection.

**.../AIS/** Thermally insulated plenum box with foam. Density 30 kg / m<sup>3</sup> ISO 845. Thermal conductivity 20° C\_0,040 W / m°K ISO 3386/1.

Classified reaction to fire B-s2, d0 EN 13501-1.



1)



## FIXING SYSTEMS

1) Fixing with supports to hang from the ceiling with drops rods.

## FINISHES

**M9016** Painted white similar to RAL 9016 (85-95% gloss)

**R9016S** Painted white RAL 9016 semi-matt (60-70% gloss)

**R9010S** Painted white RAL 9010 semi-matt (60-70% gloss)

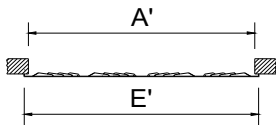
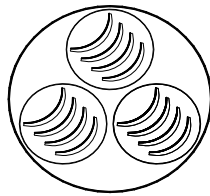
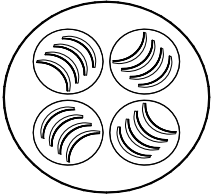
**RAL...** Painted in other RAL colours

## SPECIFICATION TEXT

Supply and mounting of square multi-directional diffuser by 4 adjustable sectors able to act like a 1, 2, 3, 4-way or swirl, with hinged removable core without tools, by pressing on the invisible PUSH fasteners, series **PLAY-S-KLIN+PLK-R M9016 dim. (mm)** constructed from galvanised steel paint in white **M9016**. With upper circular connection plenum box and air flow damper in the spigot **PLK-R**. Manufacturer **MADEL**.

## PLAY-C - 825

## PLAY-C - 625



	E	A
625	625	601
825	825	801

### STANDARD

### QM

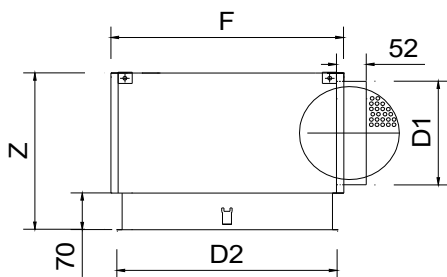
### QS



82% Afree

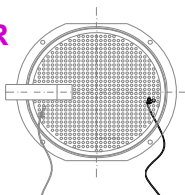
55% Afree

## PLXOC



	D2	F	Z	D1
625	620	640	350	248
825	820	840	415	313

## COR



Blanca abrir  
White open

Negra cerrar  
Black close

## PLAY-C

### CLASSIFICATION

**PLAY-C** Circular diffuser able to act like a 1, 2, 3, 4-way or swirl diffuser.

**.../QM/** Diffuser with medium effective section.

82% free area compared to standard PLAY.

**.../QS/** Diffuser with small effective section.

55% free area compared to standard PLAY.

### MATERIAL

Diffusers are constructed from galvanised steel and nylon bearings.

All diffusers are provided with a seal on the back of the frame in order to ensure airtight contact of the perimeter, with the plenum box or ceiling.

### ACCESSORIES

**PLXOC** Plenum box with a lateral circular connection. Made in galvanised steel.

**...-R** Plenum box with a flow damper in the spigot.

**.../S/** Plenum box with an upper connection.

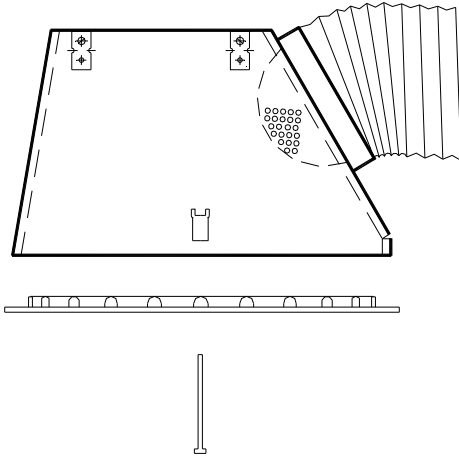
**.../AIS/** Thermally insulated plenum box with foam. Density 30 kg / m<sup>3</sup> ISO 845. Thermal conductivity 20° C 0,040 W / m°K ISO 3386/1.

Classified reaction to fire B-s2, d0 EN 13501-1.

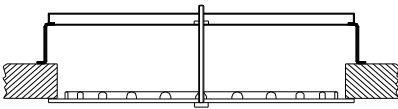
**PMXO** Crossbar suitable for mounting in false ceiling with rectangular duct.

**COR** Set of 2 cords to regulate the plenum damper type-R from the face of the diffuser.

1)



1)



## FIXING SYSTEMS

1) Connection into the crossbar or to the plenum box by means of central screw.

## FINISHES

**M9016** Painted white similar to RAL 9016 (85-95% gloss)

**R9016S** Painted white RAL 9016 semi-matt (60-70% gloss)

**R9010S** Painted white RAL 9010 semi-matt (60-70% gloss)

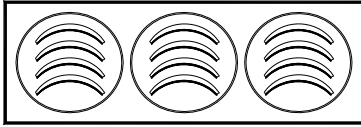
**RAL...** Painted in other RAL colours

## SPECIFICATION TEXT

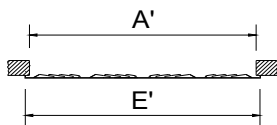
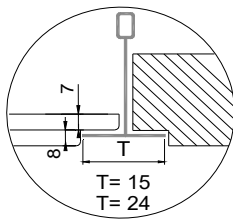
Supply and mounting of circular multi-directional diffuser by adjustable sectors able to act like a 1, 2, 3, 4-way or swirl series **PLAY-C+PLXOC M9016 dim. 625** constructed from galvanised steel paint in white M9016. With lateral circular connection plenum box **PLXOC**. Manufacturer **MADEL**.



## PLAY-R



## AXO-R.../T.../



	E	A	E'	A'
1000 300	1000	981	295	276
1000 310	1000	981	308	289
1200 300	1195	1176	295	276
1250 310	1245	1226	308	289

STANDARD

QM

QS



82% Afree

55% Afree

## PLAY-R

### CLASSIFICATION

**PLAY-R** Rectangular diffuser able to act like a 1 or 2-way diffuser.

**.../QM/** Diffuser with medium effective section.

82% free area compared to standard PLAY.

**.../QS/** Diffuser with small effective section.

55% free area compared to standard PLAY.

**.../T15/** Panel with angled borders to replace an angled ceiling tile profile 15 mm.

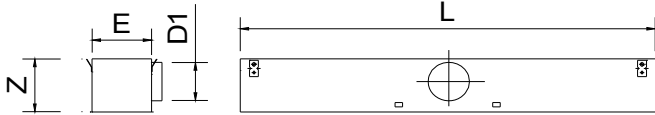
**.../T24/** Panel with angled borders to replace an angled ceiling tile profile 24 mm.

### MATERIAL

Diffusers are constructed from galvanised steel and nylon bearings.

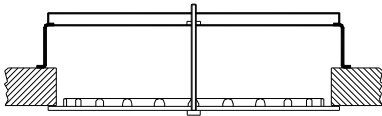
All diffusers are provided with a seal on the back of the frame in order to ensure airtight contact of the perimeter, with the plenum box or ceiling.

## PLXOR

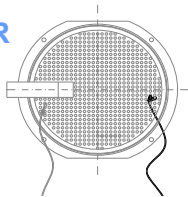


	L (mm)	Z	E	D1
1000 300	990	324	270	248
1000 310	990	324	285	248
1200 300	1190	324	270	248
1250 310	1240	324	285	248

## PMXO



## COR

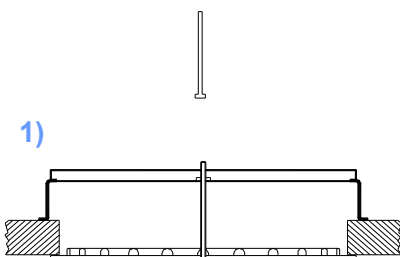
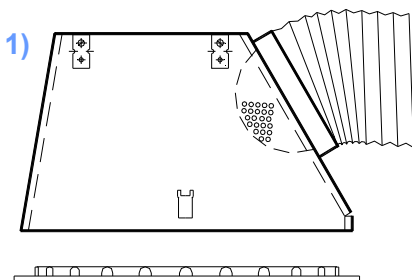


Blanca abrir

White open

Negra cerrar

Black close



## ACCESSORIES

**PLXOR** Plenum box with a lateral circular connection. Made in galvanised steel.

**...-R** Plenum box with a flow damper in the spigot.

**.../S/** Plenum box with an upper connection.

**.../AIS/** Thermally insulated plenum box with foam. Density 30 kg / m<sup>3</sup> ISO 845. Thermal conductivity 20° C 0,040 W / m°K ISO 3386/1. Classified reaction to fire B-s2, d0 EN 13501-1.

**PMXO** Crossbar suitable for mounting in false ceiling with rectangular duct.

**COR** Set of 2 cords to regulate the plenum damper type-R from the face of the diffuser.

## FIXING SYSTEMS

1) Connection into the crossbar or to the plenum box by means of central screw.

## FINISHES

**M9016** Painted white similar to RAL 9016 (85-95% gloss)

**R9016S** Painted white RAL 9016 semi-matt (60-70% gloss)

**R9010S** Painted white RAL 9010 semi-matt (60-70% gloss)

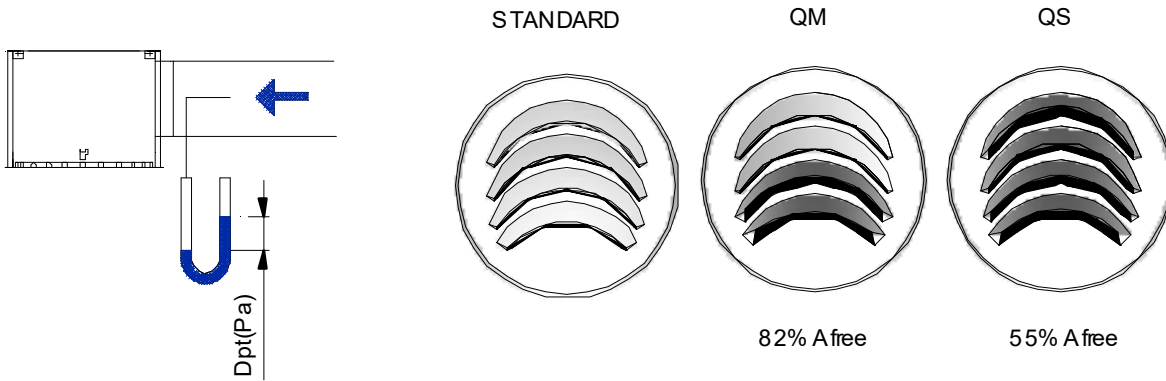
**RAL...** Painted in other RAL colours

## SPECIFICATION TEXT

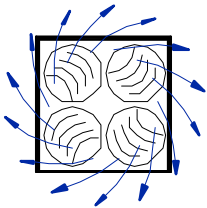
Supply and mounting of rectangular multi-directional diffuser by adjustable sectors able to act like a 1 or 2-way series **PLAY-R+PLXOR M9016 dim. 1000x300** constructed from galvanised steel paint in white **M9016**. With lateral circular connection plenum box **PLXOR**. Manufacturer **MADEL**.



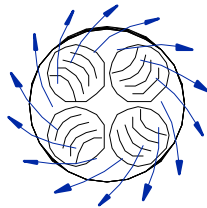
PLAY SERIES



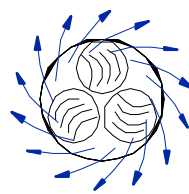
PLAY-S 625



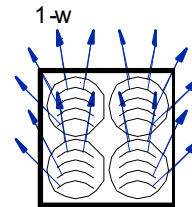
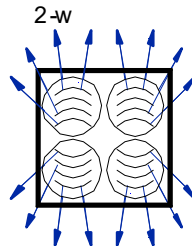
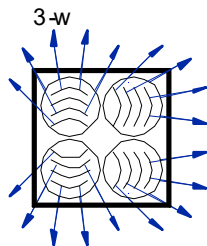
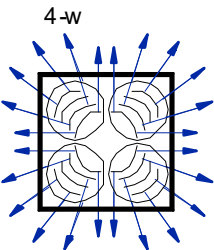
PLAY-C 825



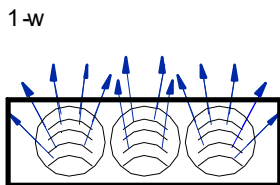
PLAY-C 625



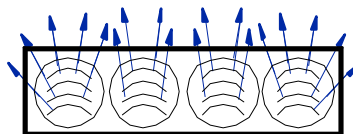
PLAY-S 600  
PLAY-S 625



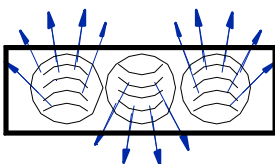
PLAY-R 1000 300  
PLAY-R 1000 310



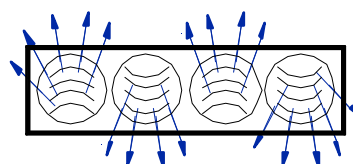
PLAY-R 1200 300  
PLAY-R 1250 310



2-w



2-w



## PLAY-S (same technical data for 600, 610, 625 or 675)

## PLAY-C

### RECOMMENDED VELOCITY.

PLAY	Vmin m/s	Vmax m/s
-S 600	2,5	4,7
-S 625	2,5	4,7
-C 625	2,5	4,9
-C 825	2,5	4,7

### FREE FACE AREA (m2).

PLAY	Afree m2	Qmin. m3/h	Qmax. m3/h
-S 600	0,04	360	680
-S 625	0,04	360	680
-C 625	0,03	270	530
-C 825	0,04	360	680

### CORRECTION FACTOR FOR Dpt AND Lwa1.

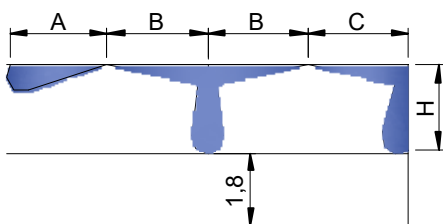
...-S+BOXSTAR-R ...-C+PLXOC-R		100% Open	50% Open	10% Open
-S 600	Dpt (Kp)	1	1,5	2,3
	Lwa1 (Kf)	+0,8	+1,2	+1,5
-S 625	Dpt (Kp)	1	1,5	2,3
	Lwa1 (Kf)	+0,9	+1,2	+1,5
-C 625	Dpt (Kp)	1	1	1,4
	Lwa1 (Kf)	+0,8	+0,7	+1,2
-C 825	Dpt (Kp)	1	1,5	2,3
	Lwa1 (Kf)	+0,9	+1	+0,8

		QM	QS
-S 600	Kp	1,2	2,7
	Kl	1,1	1,26
-S 625	Kp	1,2	2,7
	Kl	1,1	1,26
-C 625	Kp	1,2	2,7
	Kl	1,1	1,26
-C 825	Kp	1,2	2,7
	Kl	1,1	1,26

$$Dpt1 = Kp \times Dpt$$

$$AL'02 = Kl \times AL02$$

$$Lwa = Lwa1 + Kf$$



$$AL_{0,5} (m) = 4$$

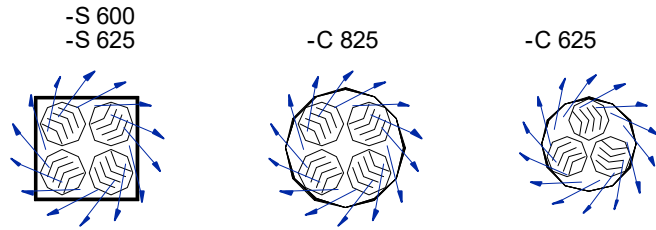
$$AL_{0,3} (m) = 6,6$$

$$AL_{0,2} (m) = 10$$

$$AL_{0,2} = A$$

$$AL_{0,2} = B+H$$

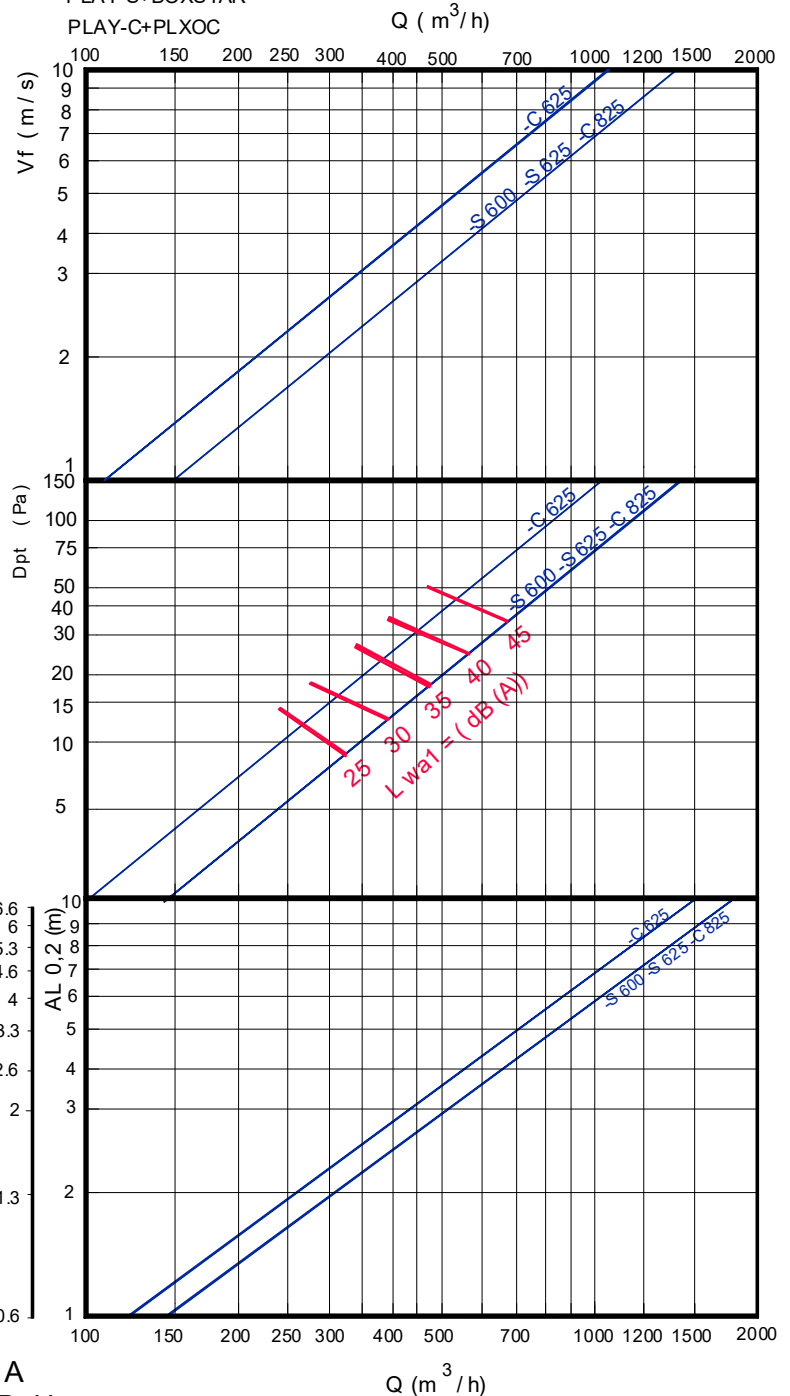
$$AL_{0,2} = C+H$$



FREE VELOCITY, PRESSURE LOSS AND SOUND POWER LEVEL, THROW WITH CEILING EFFECT.

PLAY-S+BOXSTAR

PLAY-C+PLXOC

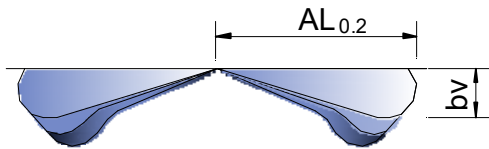
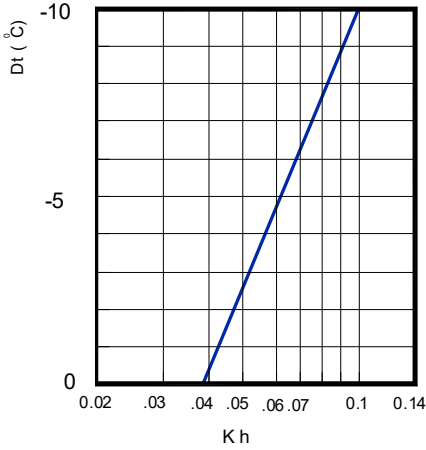


**PLAY-S** (same technical data for 600, 610, 625 or 675)

**PLAY-C**

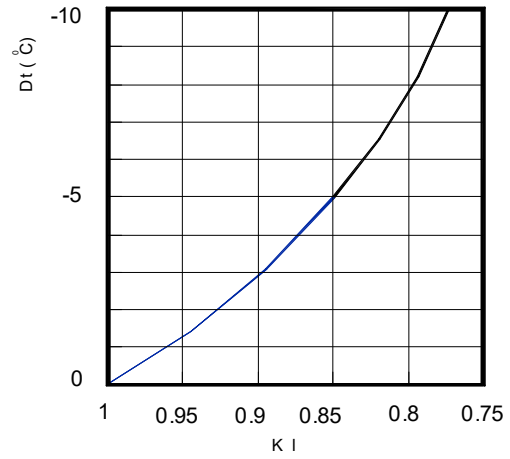
CORRECTION FACTOR FOR VERTICAL DIFFUSION (bv) FOR DT (-).

Kh = Correction factor for vertical diffusion.



CORRECTION FACTOR FOR THROW (L 0.2) DT (-).

KI = Correction factor for throw.

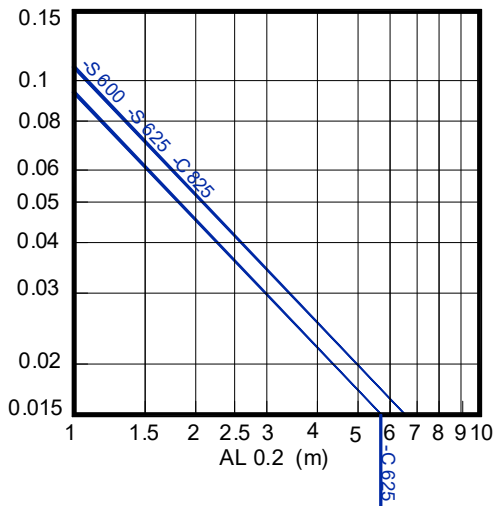


$$bv = Kh \times Al_{0.2}$$

$$AL'_{0.2} (Dt < 0) = KI \times AL_{0.2}$$

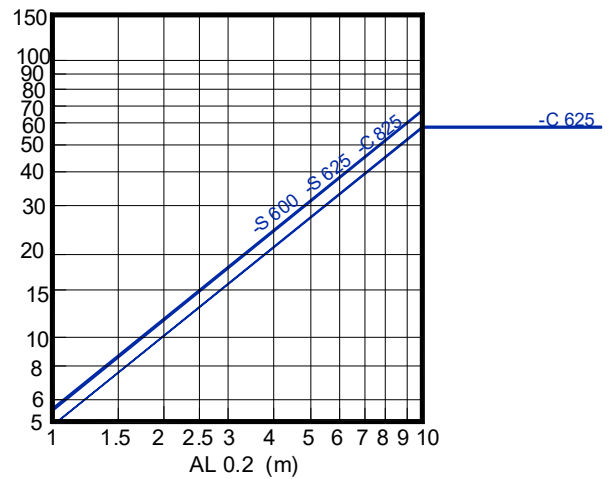
TEMPERATURE RATIO.

$$\frac{Dt_l}{Dt_z} = \frac{t_{room} - t_x}{t_{room} - t_{supply}}$$



INDUCTION RATIO.

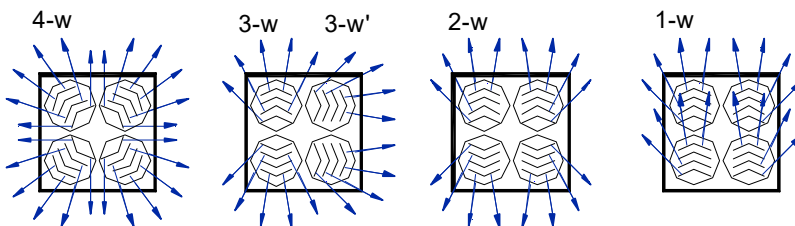
$$i = \frac{Q_r}{Q_0} = \frac{Q_{total\ at\ x}}{Q\ of\ supply}$$



**PLAY-S** (same technical data for 600, 610, 625 or 675)

**PLAY-KLIN** (same technical data for 600, 610, 625 or 675)

-S 600  
-S 625



RECOMMENDED VELOCITY.

PLAY	Vmin m/s	Vmax m/s
-S 600 -S 625	2,5	3,5

FREE VELOCITY, PRESSURE LOSS AND SOUND POWER LEVEL,  
THROW WITH CEILING EFFECT.

FREE FACE AREA (m2).

PLAY	Afree m2	Qmin. m3/h	Qmax. m3/h
-S 600 -S 625	0,04	360	504

CORRECTION FACTOR FOR DPt AND Lwa1.

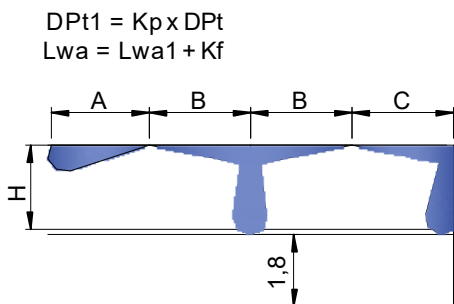
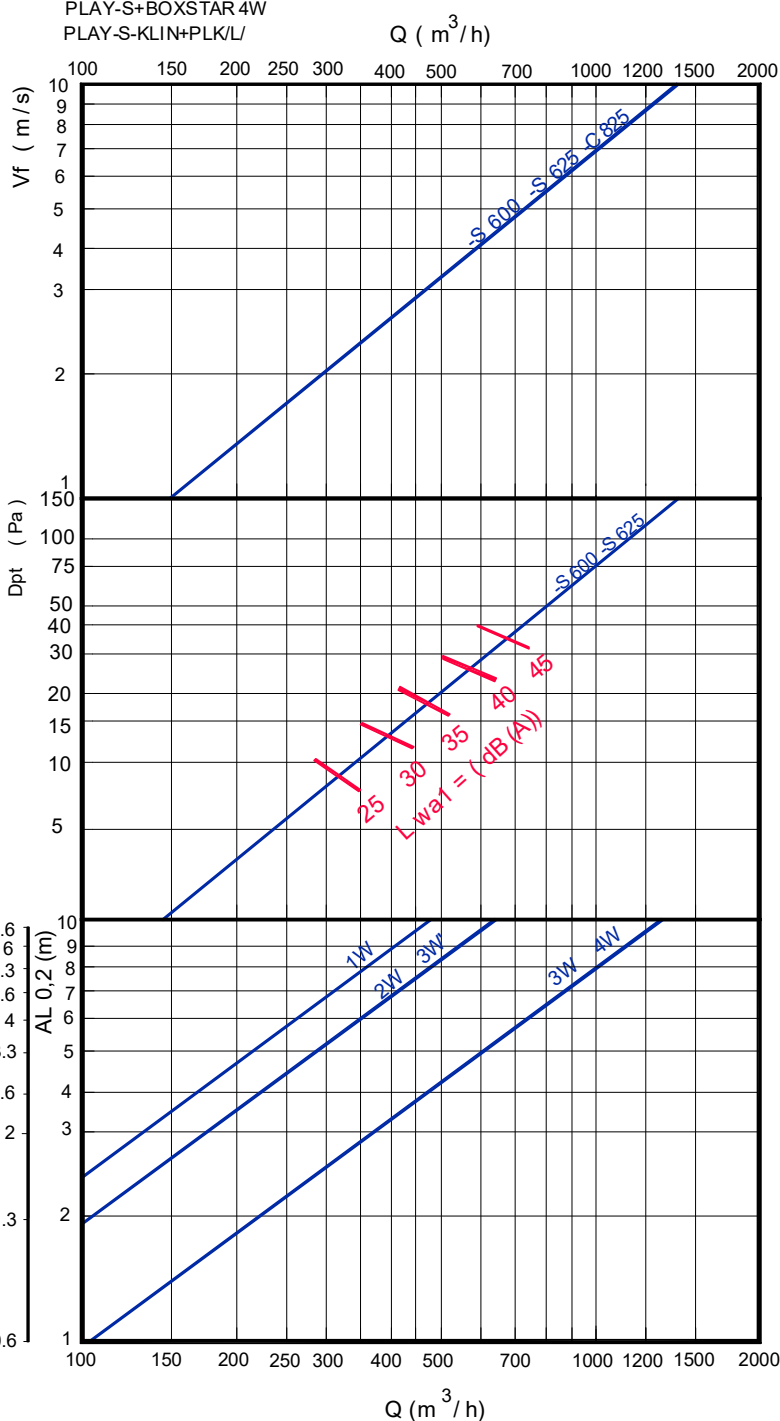
PLK/L-R BOXSTAR-R		100% Open	50% Open	10% Open
-S 600	Dpt (Kp)	1	1,5	2,3
-S 625	Lwa1 (Kf)	+0,8	+1,7	+1,7

		QM	QS
-S 600	Kp	1,2	2,7
	KI	1,1	1,26
-S 625	Kp	1,2	2,7
	KI	1,1	1,26

$DPt1 = Kp \times DPt$

$AL'02 = KI \times AL02$

$Lwa = Lwa1 + Kf$



$DPt1 = Kp \times DPt$

$Lwa = Lwa1 + Kf$

$AL_{0,2} = A$

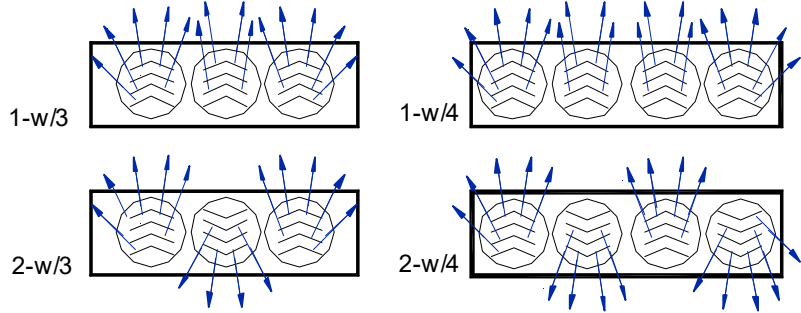
$AL_{0,2} = B+H$

$AL_{0,2} = C+H$

# PLAY-R

PLAY-R 1000x300  
PLAY-R 1000x310

PLAY-R 1200x300  
PLAY-R 1200x310



### RECOMMENDED VELOCITY.

PLAY	Vmin m/s	Vmax m/s
-R 1000x300 -R 1000x310	2,5	3,5
-R 1200x300 -R 1200x310	2,5	3,5

### FREE FACE AREA (m2).

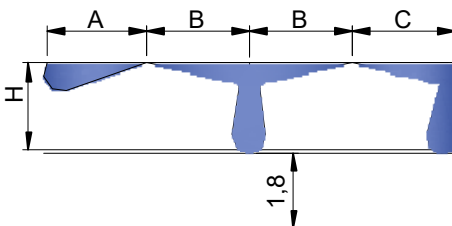
PLAY	Afree m2	Qmin. m3/h	Qmax. m3/h
-R 1000x300 -R 1000x310	0,03	270	378
-R 1200x300 -R 1200x310	0,04	360	504

### CORRECTION FACTOR FOR Dpt AND Lwa1.

PLXOR-R		100% Open	50% Open	10% Open
-R 1000x300	Dpt (Kp)	1	1	1,4
-R 1000x310	Lwa1 (Kf)	+0,7	+1,7	+2,5
-R 1200x300	Dpt (Kp)	1	1,5	2,3
-R 1200x310	Lwa1 (Kf)	+0,7	+1,7	+2,4

		QM	QS
1000x300	Kp	1,2	2,7
1000x310	Kl	1,1	1,26
1200x300	Kp	1,2	2,7
1200x310	Kl	1,1	1,26

$Dpt1 = Kp \times Dpt$   
 $AL_{0,2} = Kl \times AL_{0,2}$   
 $Lwa = Lwa1 + Kf$



$AL_{0,2} = A$   
 $AL_{0,2} = B+H$   
 $AL_{0,2} = C+H$

FREE VELOCITY, PRESSURE LOSS AND SOUND POWER LEVEL,  
THROW WITH CEILING EFFECT.

PLAY-R+PLXOR 1-W

Q (m<sup>3</sup>/h)

