



**AIRTECHNIC**

www.airtechnic.gr

Air-Conditioning & Ventilation Components & Systems

- **Ceiling diffuser**  
**DCI-2**



# Ceiling diffuser DCI-2

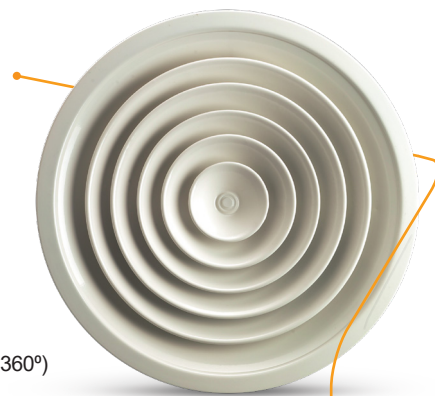
Ceiling diffusers **DCI-2** are designed for all types of air-conditioning, ventilation and heating or cooling systems. Their special design with concentric fixed blades allows high and uniform air distribution in all directions (360°) with low noise level. They are ideal for installation in areas with a large temperature difference between the inside air and the supply air.

Ceiling diffusers **DCI-2** are made of aluminium (RAL 9006 or RAL 9016). Under request, they may have volume damper with black plastic blades or perforated equalizing grid.

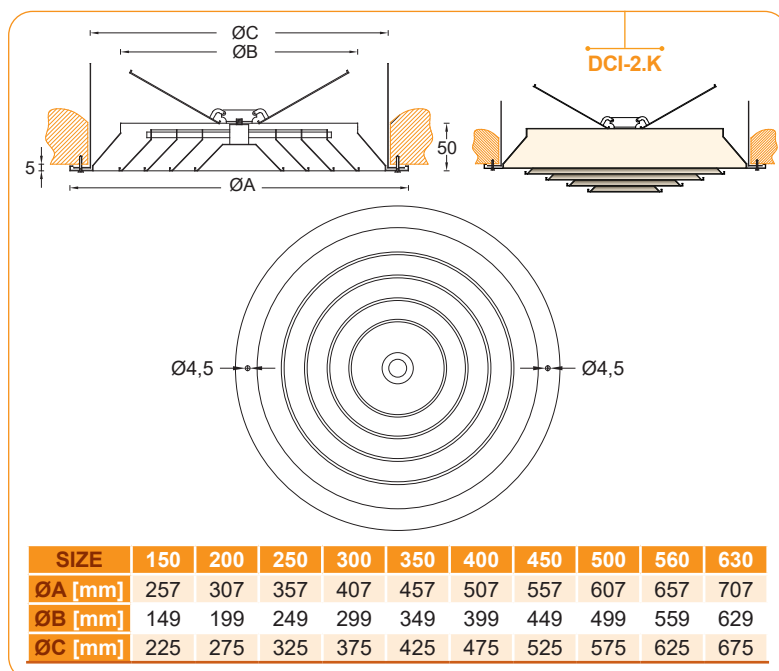
**DCI-2** Circular ceiling diffuser with fixed concentric blades for uniform air supply in all directions (360°) and outer frame for visible installation with screws.

**DCI-2.K** Circular ceiling diffuser with fixed concentric blades in a conical arrangement, for uniform air supply in all directions (360°) and outer frame for visible installation with screws.

**DCI-2.H** Circular ceiling diffuser with fixed concentric blades for uniform air supply in all directions (360°) and outer frame for hidden installation with central screw.



**DCI-2**



## CEILING DIFFUSER DCI-2 - SELECTION

The technical specifications for ceiling diffusers **DCI-2** are the following :

Diffuser diameter	Ø D [mm]
Pressure drop inside the diffuser	ΔP [Pa]
Maximum air velocity inside the diffuser	U <sub>o</sub> [m/s]
Noise level	Θ dB[A]
Temperature difference Supply / Room	ΔT °C
Horizontal stream range	X <sub>o</sub> [m]
Horizontal stream vertical drop	Y <sub>o</sub> [m]
Horizontal stream velocity at distance X	U <sub>T</sub> [m/s]
Horizontal air-stream temperature	T <sub>T</sub> °C
Distance between diffuser and point of stream collision	A <sub>s</sub> [m]

The selection of ceiling diffusers **DCI-2** will be made using the following diagrams and in accordance with the guideline **CR 1752:1998** (Ventilation for buildings - Design criteria for the indoor environment).

## CEILING DIFFUSERS DCI-2 - INSTALLATION

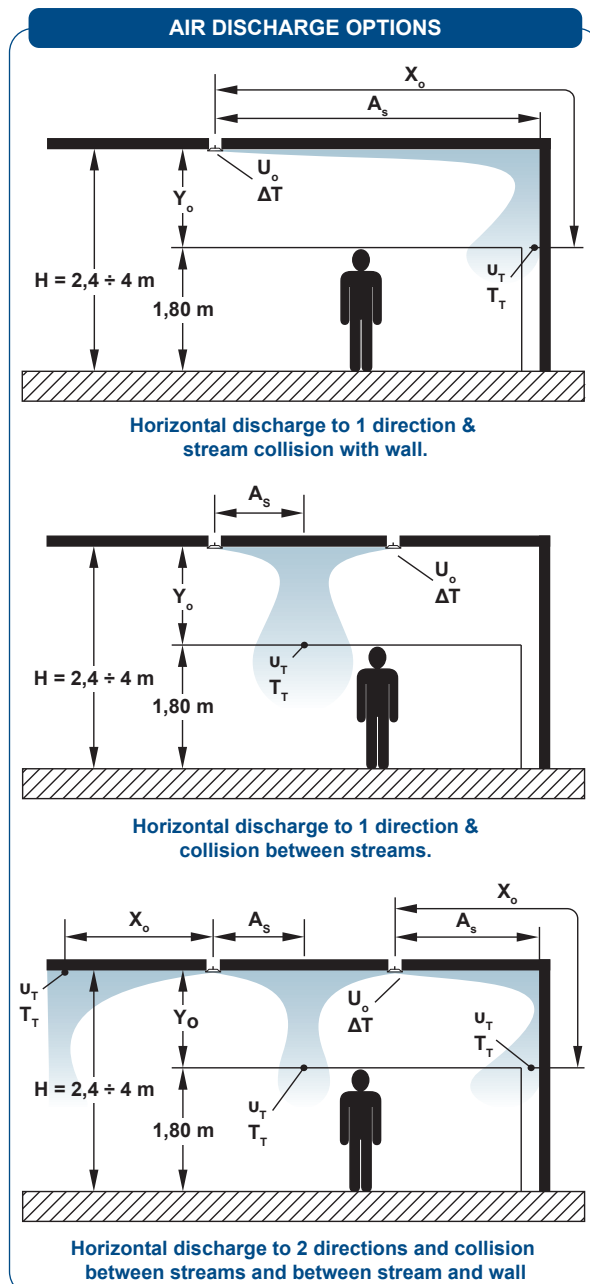
Ceiling diffusers **DCI-2** can be installed in the following ways :

### 1) Visible installation (with screws)

For easy, quick and secure installation. The number of screws required depends on the size of the diffuser.

### 2) Concealed installation (with a central screw or internal side screws)

For situations that require an aesthetically better result. Placement is achieved with internal screws, on the side of the outer frame or with a central screw within the blade core (installation with a Π-shaped frame).



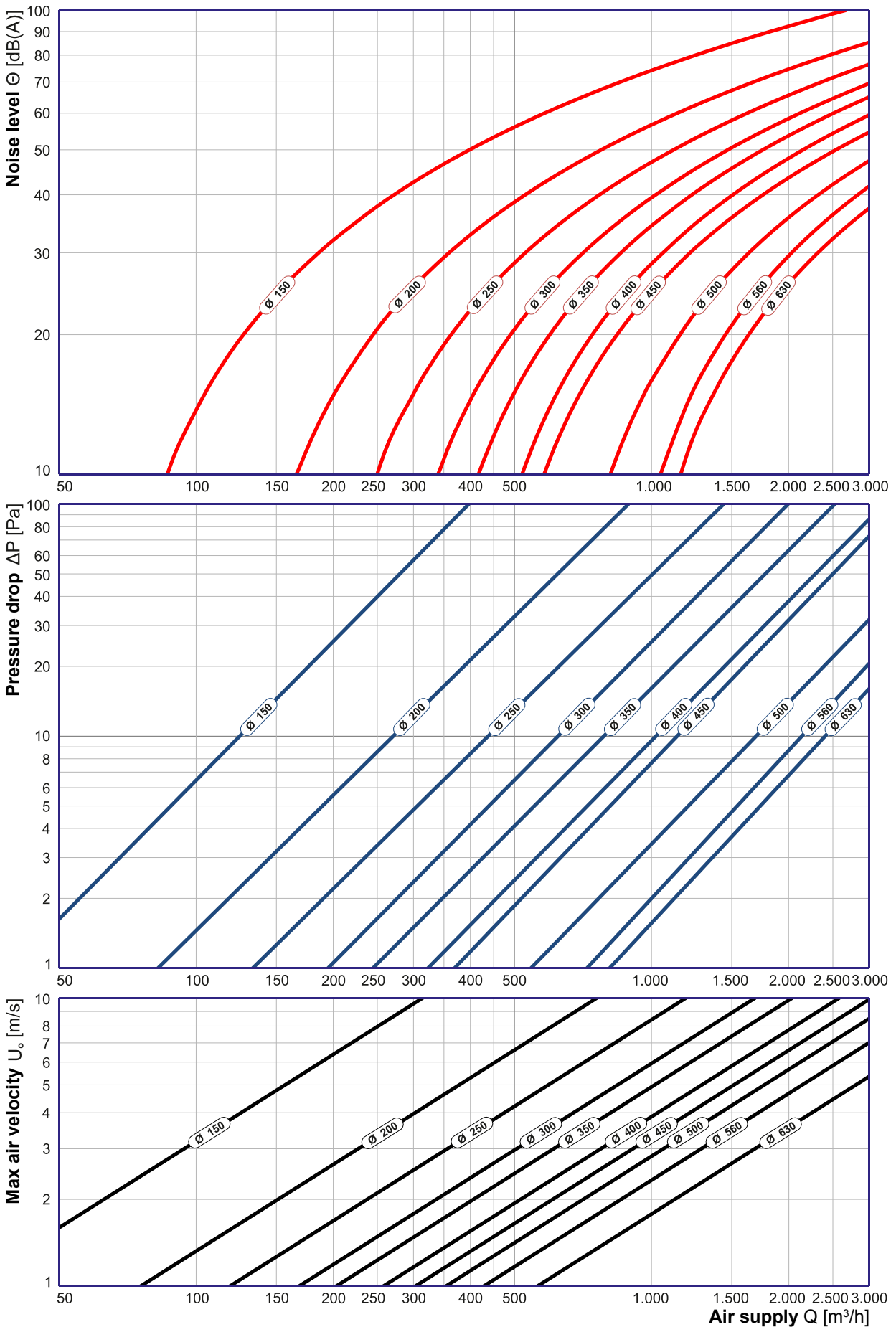
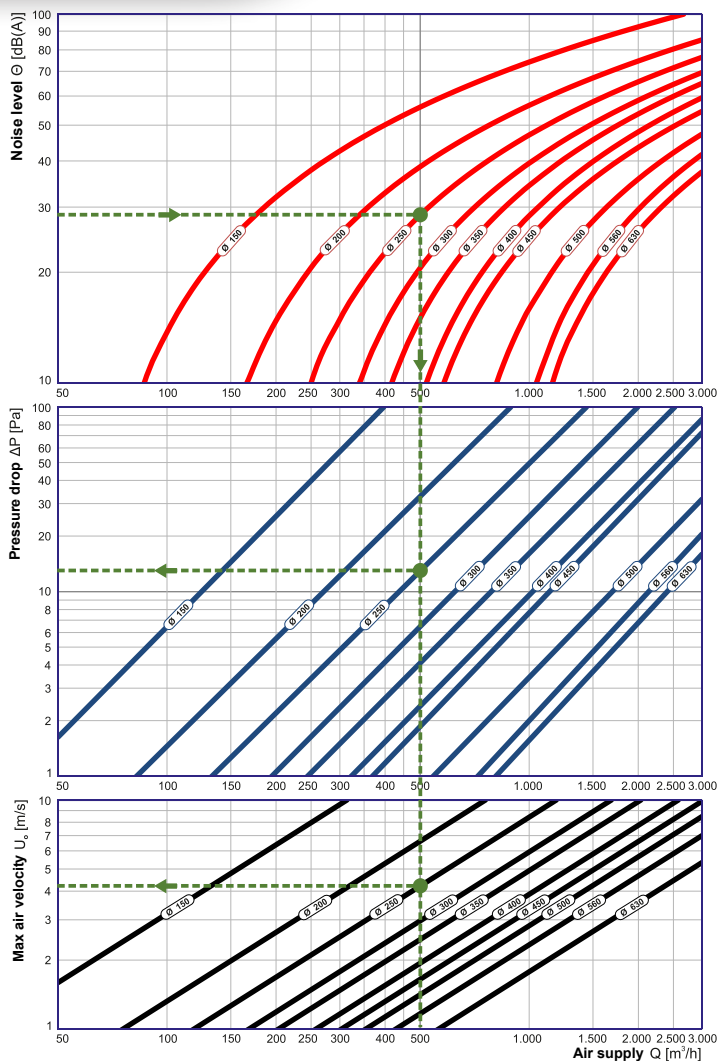
**DCI-2 - PRESSURE DROP & NOISE LEVEL CALCULATION**


DIAGRAM 1.3

DIAGRAM 1.2

DIAGRAM 1.1



The diagrams are an approximate selection method for ceiling diffusers. For more precise calculation, please use the **AIRTECHNIC** air diffusers calculation software or contact us.

DIAGRAM 1.3

DIAGRAM 1.2

DIAGRAM 1.1

#### Selection example 1 :

*Which is the size of a DCI-2 diffuser if the air flow is 500 m³/h and the installation is in an office building?*

The DCI-2 diffuser will be installed in an office. From the guideline **CR 1752:1998** (types of spaces & permissible sound pressure levels) we establish that the maximum permissible noise level must be 30 dB(A). From diagram 1.3 we estimate that, for air flow of 500 m³/h, a diffuser with size **Ø250** produces a noise level of 28,5 dB(A) which is acceptable. The maximum air velocity inside the diffuser **Ø250** is estimated from diagram 1.1 and it's equal to 4,2 m/s, while from diagram 1.2 we calculate that the pressure drop is 12,9 Pa.

#### Selection example 2 -

##### Free stream horizontal range :

*Which is the horizontal range of the diffuser of example 1, when we don't have collision between air streams and the stream velocity at total range is 0,2 m/s?*

From diagram 2.1, for diffuser size **Ø250** and air flow of 500 m³/h, we calculate the factor  $S_1 = 2,5$ . We continue to diagram 2.2, where, for factor  $S_1 = 2,5$  and stream velocity at total range equal to 0,2 m/s, we determine the factor  $S_2 = 2,55$ . Finally, from diagram 2.3, for factor  $S_2 = 2,55$  and the curve for non-collision between streams, we determine that the stream horizontal range  $X_o$  is equal to 2,55 m.

#### Selection example 3 - Stream collision :

*Which is the total horizontal range of the diffuser of example 2 when we have stream collision at a distance of 1 m from the diffuser and the stream velocity at total range is 0,2 m/s?*

In example 2 we calculated the factor  $S_2 = 2,55$ . Therefore from diagram 2.3, for factor  $S_2 = 2,55$  and the curve for stream collision at a distance  $A_s = 1$  m from the diffuser, we calculate the factor  $S_3 = 1,6$ .

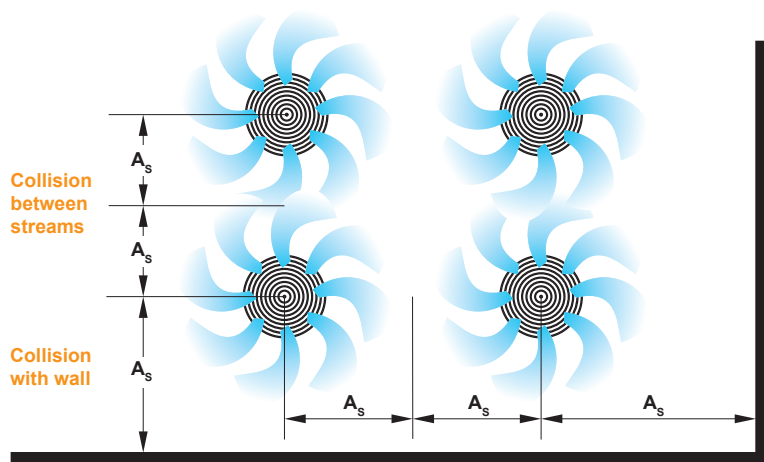
##### Case 1 : Collision between streams

If we have collision between the streams of 2 diffusers, then from diagram 2.4 for factor  $S_3 = 1,6$  and the curve for collision between streams, we determine that the stream vertical drop  $Y_o$  is equal to 1,77 m. The total range is calculated by using the following equation  $X_o = A_s + Y_o = 1 + 1,77 = 2,77$  m.

##### Case 2 : Collision of stream with wall

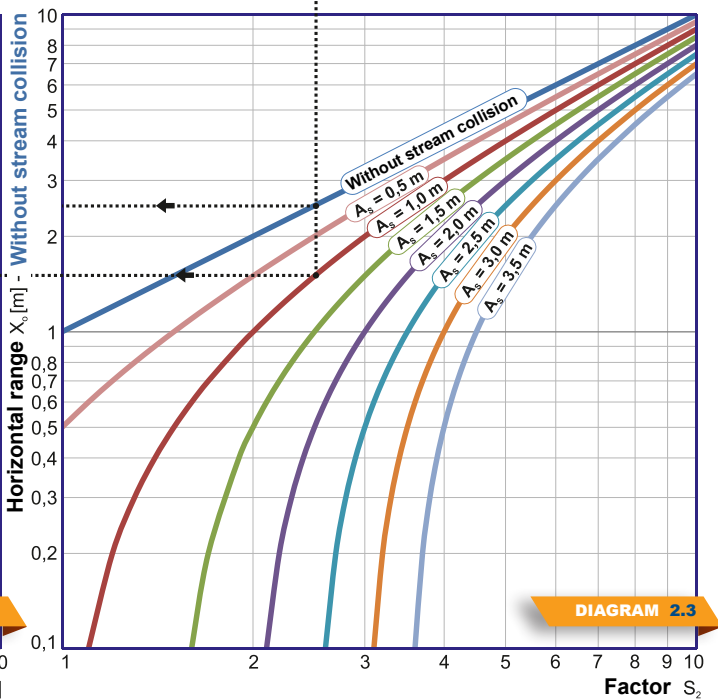
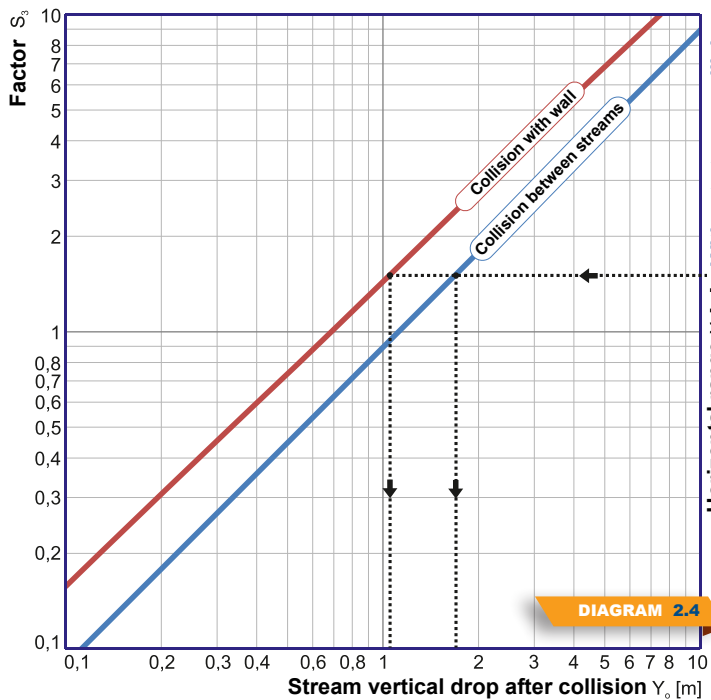
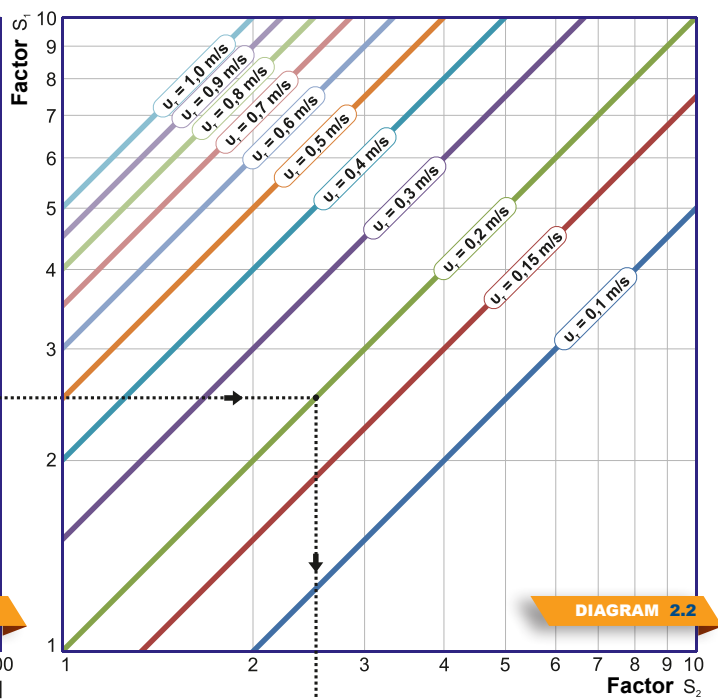
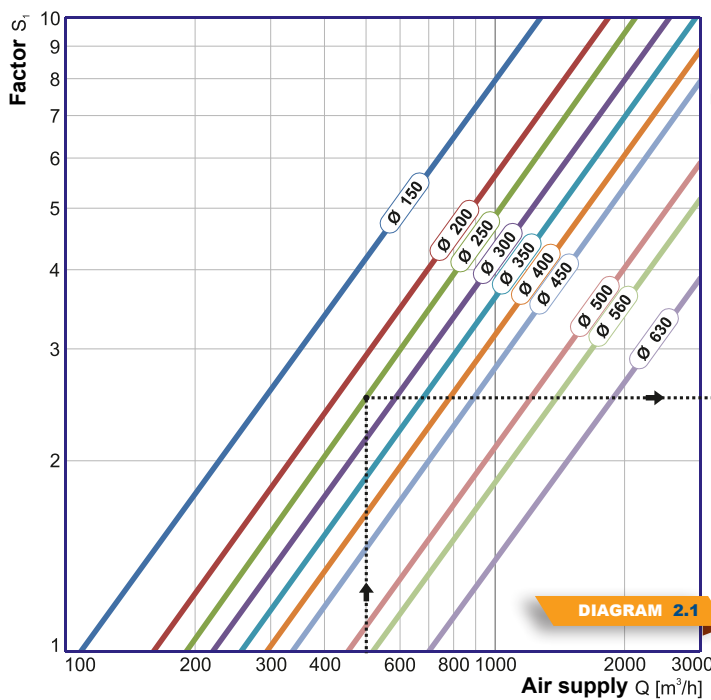
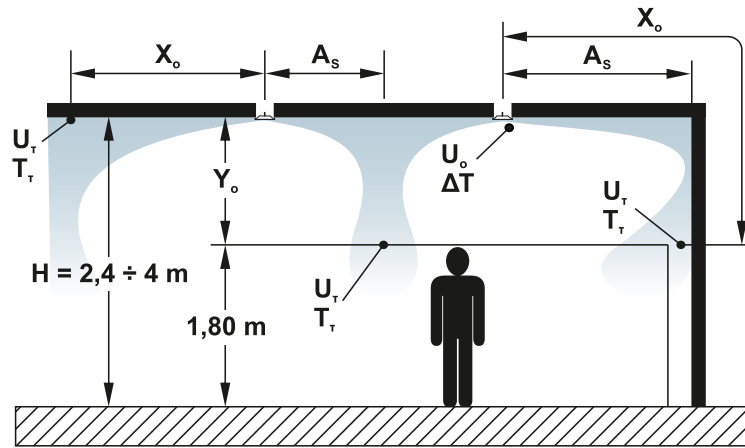
If we have collision between the stream of a diffuser and a wall, then from diagram 2.4 for factor  $S_3 = 1,6$  and the curve for collision between stream and wall, we determine that the stream vertical drop  $Y_o$  is equal to 1,18 m. The total range is calculated by using the following equation  $X_o = A_s + Y_o = 1 + 1,18 = 2,18$  m.

## CEILING DIFFUSERS DCI-2 - PLACEMENT





## FREE STREAM - HORIZONTAL RANGE | STREAM COLLISION - TOTAL RANGE





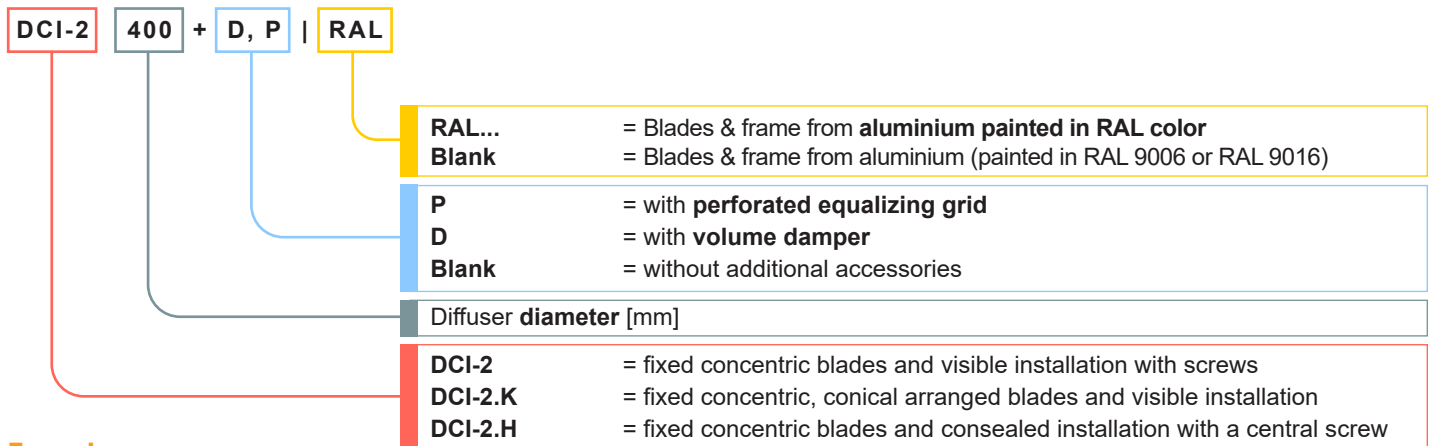


**All diffusers can be powder painted in any RAL color, upon request. For the full range of RAL colors please contact us.**



## DCI-2 - ORDER

For the proper order of ceiling diffusers **DCI-2** please use the following code :



## Examples

**DCI-2 200 + D =**

Circular ceiling diffuser DCI-2, Ø200 mm in diameter, made of aluminium (RAL 9006 or RAL 9016), with volume damper with black plastic blades.

**DCI-2 250 | 9002 =**

Circular ceiling diffuser DCI-2, Ø250 mm in diameter, made of aluminium, powder painted in RAL 9002.

## SPECIFICATIONS

### Circular ceiling diffuser, DCI-2

Circular ceiling diffuser, indicative type **DCI-2** by **AIRTECHNIC**, manufactured of aluminum painted in RAL... color (standard construction in RAL 9006 / 9016), with fixed concentric blades for uniform air supply in all directions (360°). The manufacturer will have performed measurements of the technical characteristics of the grille, in an independent laboratory according to the standard EN 12238:2002. It will have a volume damper with black plastic blades [D] / perforated equalizing grid [P]. It will be suitable for ceiling placement for air supply and visible installation with screws / concealed installation with internal screws on the side of the outer frame. The factory will be certified according to **ISO 9001:2015** (Quality Management Systems) and according to **ISO 14001:2015** (Environmental Management Systems).  
It will be manufactured by **AIRTECHNIC** type **DCI-2 / DCI-2 +D, +P**

**Circular ceiling diffuser, with type V blades, DCI-2.K**

Circular ceiling diffuser, indicative type **DCI-2.K** by **AIRTECHNIC**, manufactured of aluminum painted in RAL... color (standard construction in RAL 9006 / 9016), with fixed concentric blades for uniform air supply in all directions (360°). The manufacturer will have performed measurements of the technical characteristics of the grille, in an independent laboratory according to the standard EN 12238:2002. It will have a volume damper with black plastic blades [D] / perforated equalizing grid [P]. It will be suitable for ceiling placement for air supply and visible installation with screws / concealed installation with internal screws on the side of the outer frame. The factory will be certified according to **ISO 9001:2015** (Quality Management Systems) and according to **ISO 14001:2015** (Environmental Management Systems).  
It will be manufactured by **AIRTECHNIC** type **DCI-2.K / DCI-2.K +D, +P**

### Circular ceiling diffuser for concealed installation, DCI-2.H

Circular ceiling diffuser, indicative type **DCI-2.H** by **AIRTECHNIC**, manufactured of aluminum painted in RAL... color (standard construction in RAL 9006 / 9016), with fixed concentric blades for uniform air supply in all directions (360°). The manufacturer will have performed measurements of the technical characteristics of the grille, in an independent laboratory according to the standard EN 12238:2002. It will have a volume damper with black plastic blades [D] / perforated equalizing grid [P]. It will be suitable for ceiling placement for air supply and concealed installation with central screw within the blade core. The factory will be certified according to **ISO 9001:2015** (Quality Management Systems) and according to **ISO 14001:2015** (Environmental Management Systems).

It will be manufactured by **AIRTECHNIC** type **DCI-2.H / DCI-2.H +D. +P**



ISO 9001:2015



ISO 14001:2015



Management System  
ISO 14001:2015  
Valid until:  
2024-05-24



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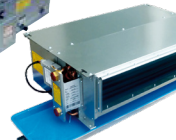
## AIR HANDLING UNITS



## HEAT EXCHANGERS



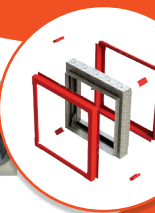
## FAN COIL UNITS



## FANS & FAN SECTIONS



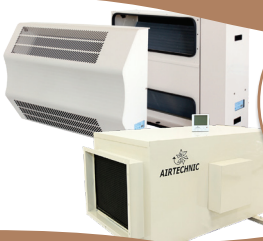
## FIRE DAMPERS



## AIR OUTLETS



## STEAM HUMIDIFIERS - DEHUMIDIFIERS



## CENTRAL VACUUM SYSTEMS



**TUBO**  
THINK CLEAN



## STAINLESS STEEL CHIMNEYS



## AIR FILTERS



## AIR CURTAINS



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