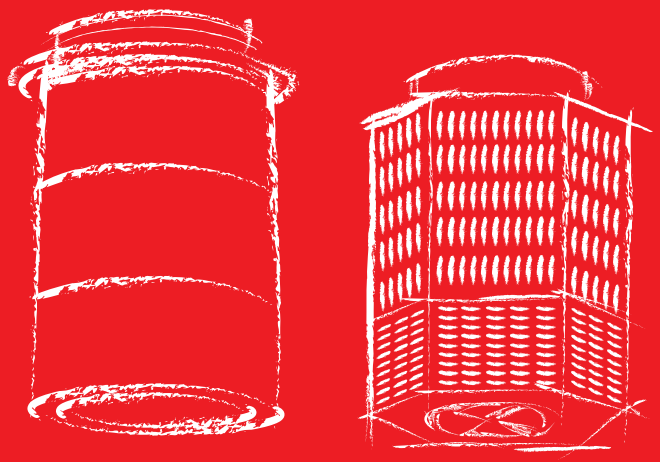

Catalog 1.1.6

Industrial Diffusers

ILV
VVA

nad
KLIMA

Model ILV

Model VVA

content

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ILV Industrial Air Displacement Diffuser

The ILV diffuser was designed to adequately respond to the particular needs of industrial settings.

This diffuser offers the possibility to select multiple diffusion configurations, for example;
- a horizontal (cooling) airflow, a vertical air flow (heating) or a localized diffusion of air towards areas with high heat or harmful emissions.

The ILV diffuser is installed directly below the ceiling or it is freely suspended. It is directly connected to a circular air feeding duct.

The ILV versatility allows to reach maximum range in heating and cooling modes. Air is pushed with a strong level of induction, although not producing air currents in the occupied zone. With the ILV, tair is pulsed so that pollutants are sucked into the system thus concentration of harmful emissions is reduced more than in a conventional ventilation system.

Areas of application
- Industrial workspaces
- Commercial spaces
- Overheated workspaces
- Polluted workspaces
- Ceiling heights between 4 m to 15 m
- For airflows of 1000 m^3/h

Benefits
- Adjustable air flow from horizontal to vertical
- Rapid reduction of speed and temperature
- No air currents generated when in cooling mode
- Localized air displacement in overheated areas
- Comfortable manual adjustment with a cable
- Can be refitted with a motor even after primary installation
- Installation without a plenum
- Easily accessible actuator

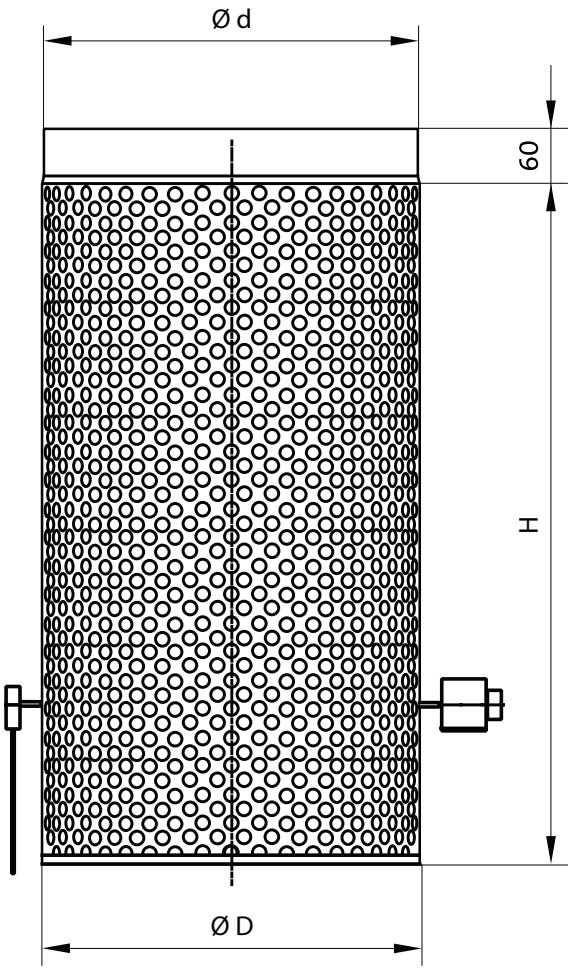
Configuration

The ILV diffuser is composed of a circular, perforated, galvanized steel mesh, which forms the main body of the diffuser. The interior consists of four diffuser rings guiding the air.

A rotary valve is installed on the last ring-which can be opened or closed using the air control mechanism-to create either a horizontal or vertical airflow.

The register crosses the central axis and exits on a side of the diffuser's main body as far as the adjustment knob. This knob can be manual or motorized.

The knob is directly fixed to one of the four air director rings situated between the diffuser mesh and the adjustment mechanism. When in stop position, the register's positioning ensures it stays inside the diffuser. The ILV diffuser is installed directly into the air intake system, without requiring a plenum.



Size	DN 355	DN 450	DN 630
Ød	353	448	628
ØD	355	450	630
Height H	640	800	1120

Subject to technical changes.
Version 2018

Functioning

When the register is closed, air is oriented horizontaly and directed across the perforated mesh. The precise placement of the air guiding rings guarantees a uniform air diffusion at all diffuser heights.

When the register is completely opened (90°) , air is pushed vertically to attain great heights of penetration, even at high temperatures.

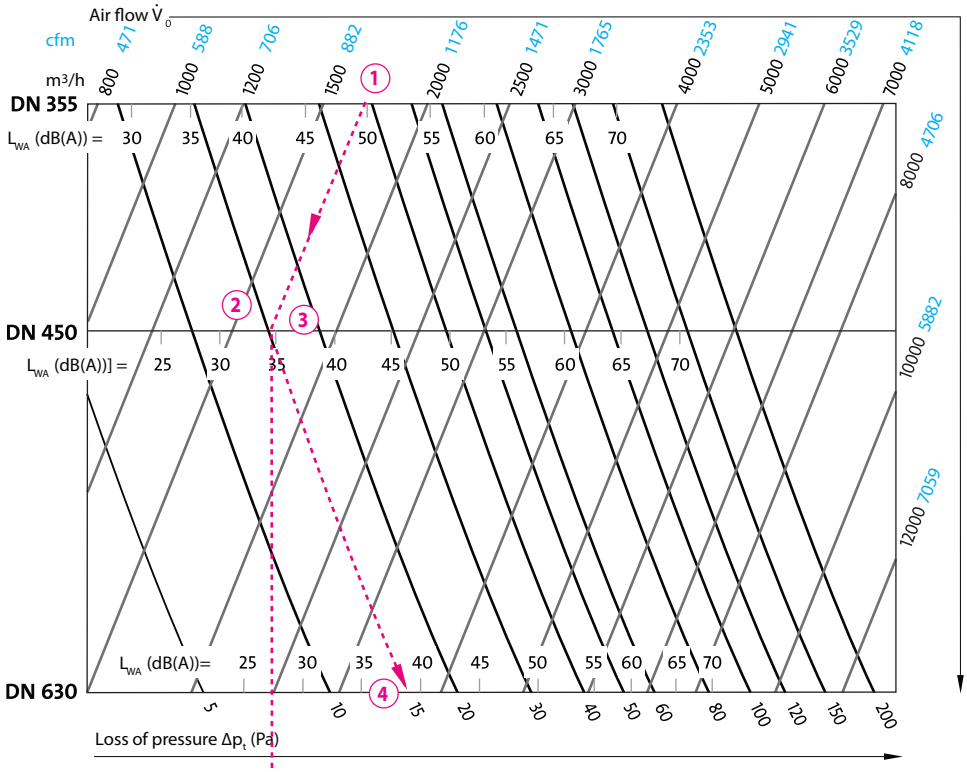
The airflow direction is achieved with a manual or motorized mechanism.

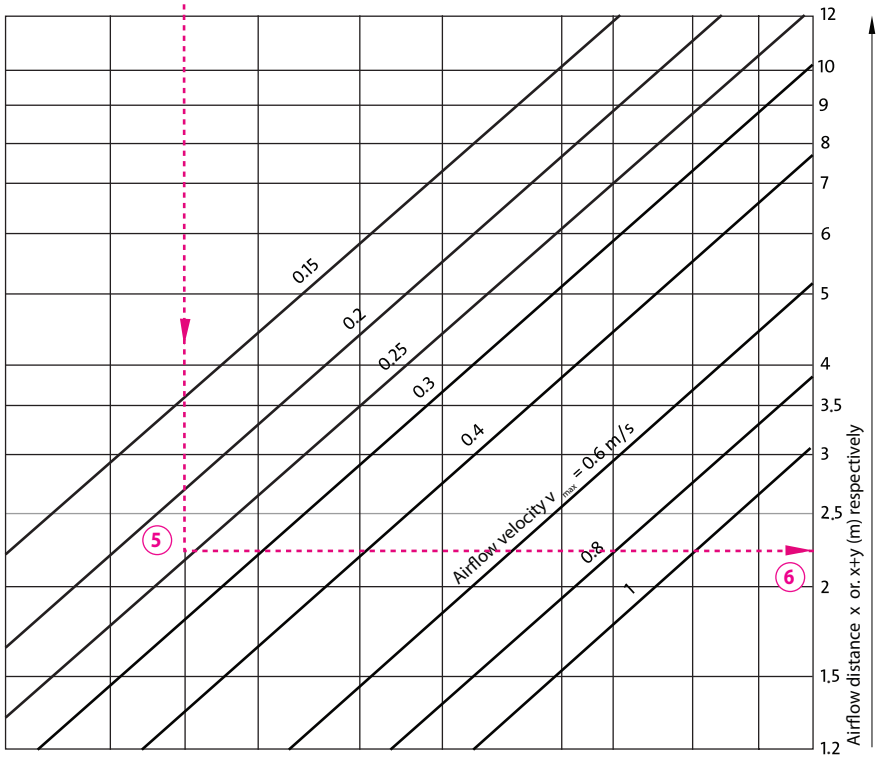
Aerodynamic Data

Nominal size	L_{WA} (db(A))	V_0 (m^3/h)	ΔP (Pa)	*Minimum spacing (m)	**y (m)
DN 355	30 35 40	900 1050 1200	10 15 20	~ 2 ~ 2 3	4.0 4.5 5.0
DN 450	30 35 40	1400 1700 2000	10 15 20	~ 2 3 4	5.0 6.0 7.0
DN 630	30 35 40	2600 3100 3800	10 15 20	3 4 5	6.5 7.5 8.5

Note: * The minimum space between tow diffusers for installation heights is 3.0 m, so that air speeds in occupied zones do not exceed 0.2 m/s.
**The vertical penetration height; y = for ΔT = +15°C.

Horizontal flow below the ceiling and example





The absorption of the room is not considered.

Example

Specifications :

Airflow / diffuser: V = 1700 m³/h (1)
Nominal Dimension: DN 450 (2)
Maximum air speed: V_{MAX} = 0.25 m/s (5)
Temperature difference: ΔT_0 = 10°C (7)

Required:

1- Level of acoustic power L_{WA} and loss of pressure ΔPt
2- Airflow trajectory: X
3- Vertical penetration: Y_{MAX}
4- Vertical deviation of the jet: Y
5- Penetration speed of the airflow: V_{MAX}
6- Temperature ratio

Solution:

1. For an airflow of 1700 m3/h, we read on the "Horizontal airflow without influence from the ceiling": L_{WA} = 35 dB (A) (3) and ΔPt = 15 Pa (4)

2. Follow the airflow trajectory a = 2.25 m. (6)

3. From the "Vertical penetration in cooling mode" diagram and a temperature difference of 10°C, (7) we obtain: Y_{MAX} = 8 m (8)

4. For a horizontal distance x = 2.25 m (which is the airflow trajectory), we see a vertical jet deviation of Y = 1.5 m. (9)

5. The speed of the airflow penetration is V_{MAX} = 1 m/s (10)

6. The temperature ratio obtained is ΔTxy / ΔT_0 = 0.17 (11)

Subject to technical changes.
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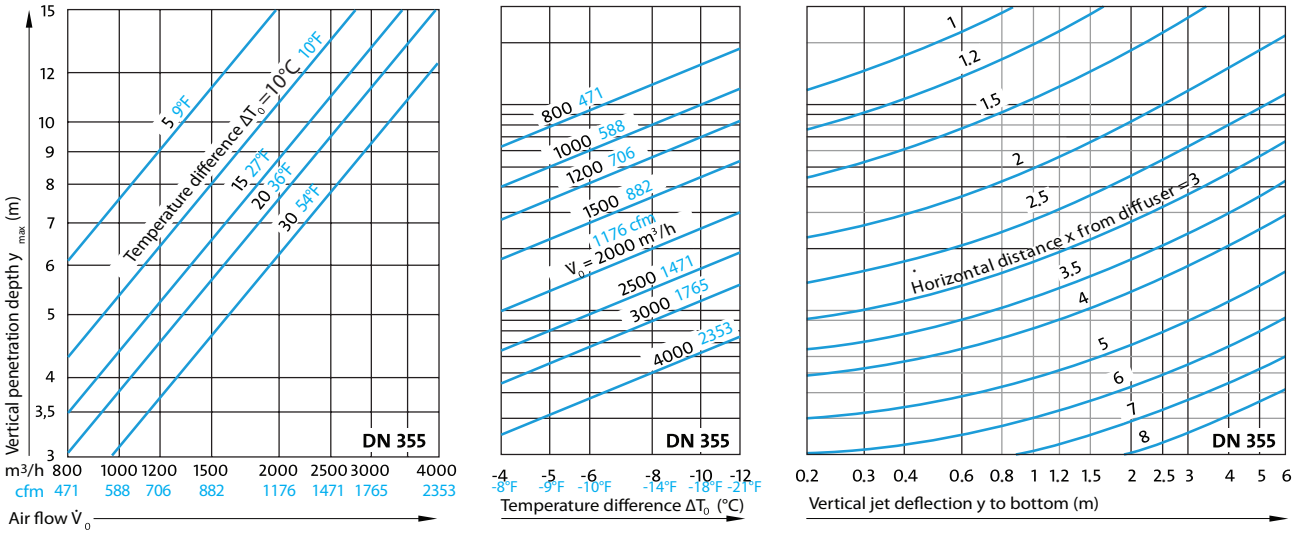
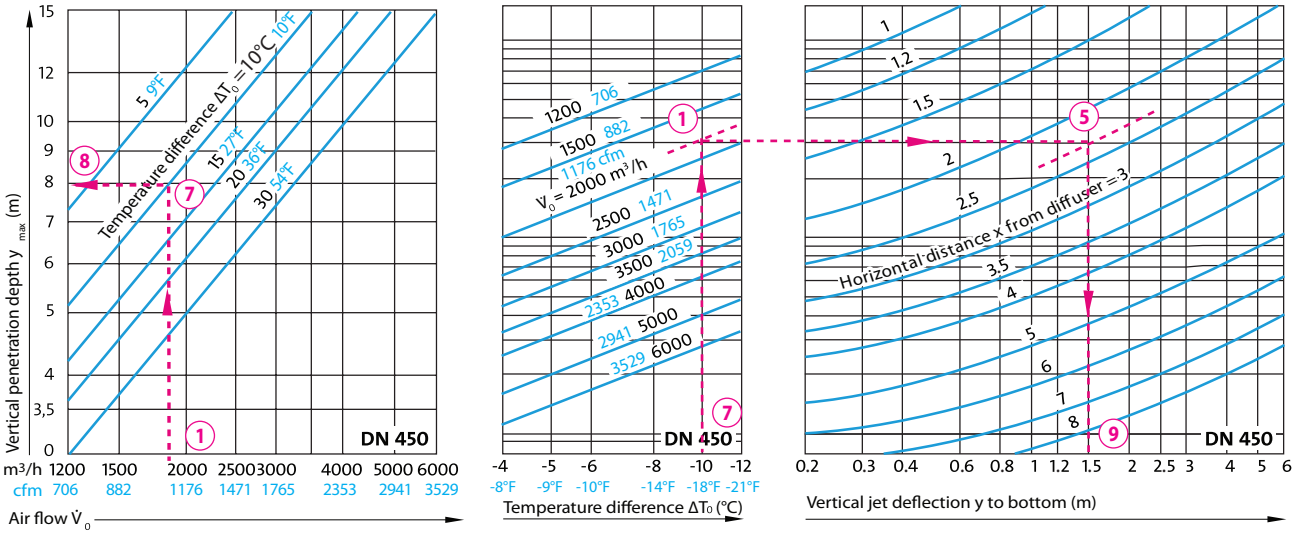
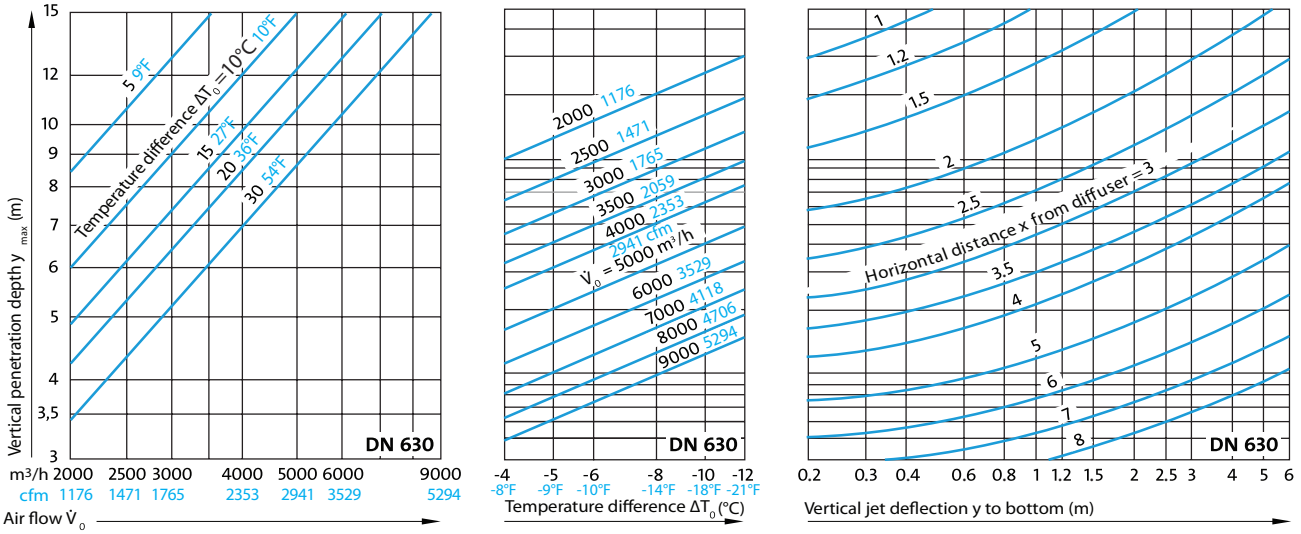
Vertical penetration in cooling mode

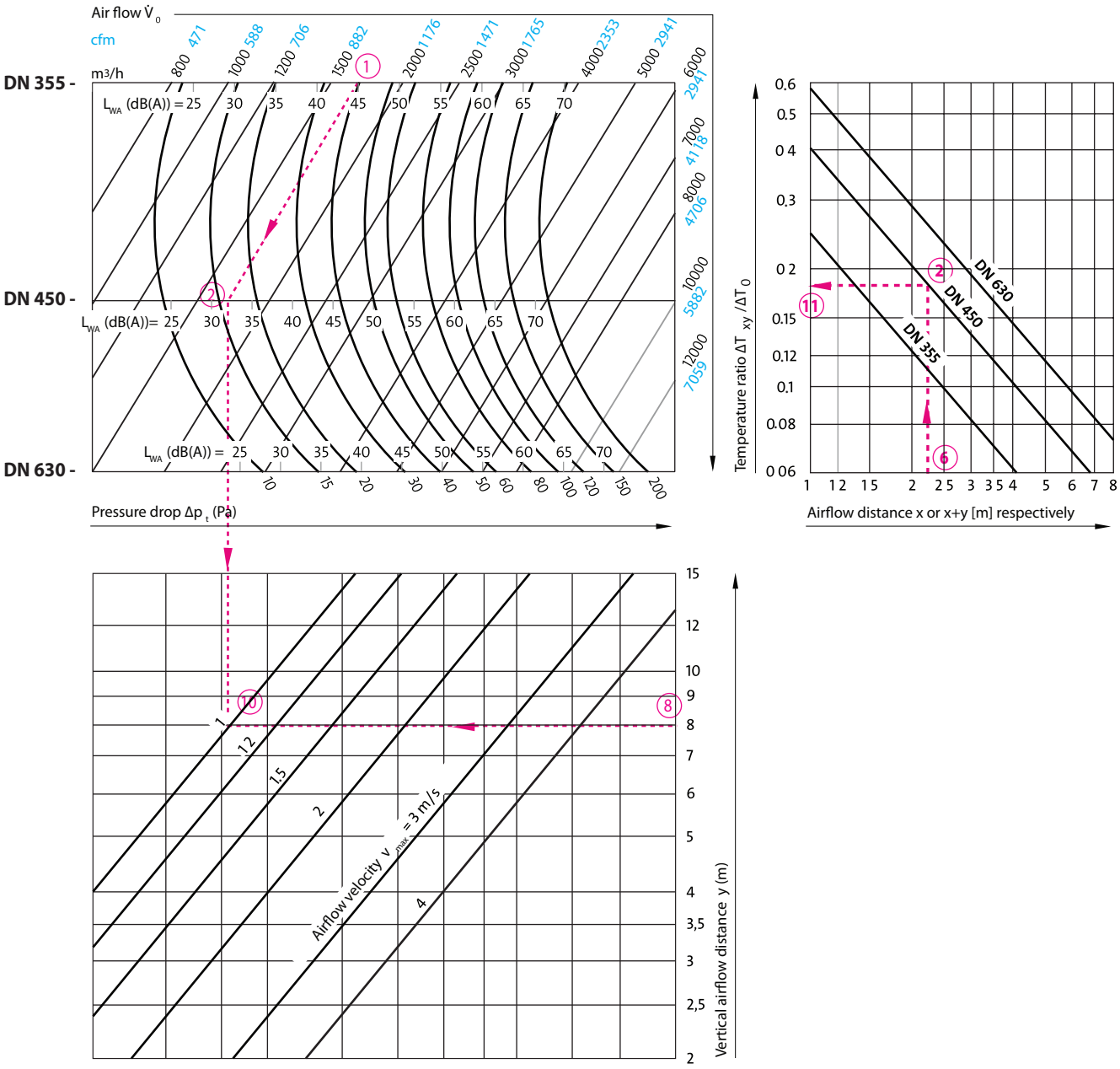






Diagrams

Temperature behavior for a vertical airflow



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Specifications

1. Description and physical characteristics

1.1 The ILV diffusers shall be composed of a circular diffusion mesh, three air flow director rings and a manual or motorized adjustment mechanism included in the diffuser.

1.2 The adjustment mechanism shall be composed of a register, mounted on a horizontal transversal axis and a knob.

1.3 The diffuser, its parts and the register shall be manufactured in unpainted galvanised steel. RAL colors shall be available.

1.4 When completely opened, the register positioning shall ensure that it remains within the diffuser.

1.5 The ILV shall be available in three nominal dimensions; 355, 450 and 630.

2. Performance

2.1 The performance of ILV diffusers shall guarantee, as indicated, the loss of pressure and acoustic power generated, and shall demonstrate a cross-sectional view of the critical airflow trajectory in cooling and heating modes.

3. Connection

The connection shall be made directly to the air supply duct without a plenum.

4. Balancing

The NAD Klima ILV diffusers balancing shall be executed by an certified air balancing technician.

5. Quality required: NAD Klima ILV model

Codification

ILV					Product
	355, 450, 630				Nominal dimension
		C = Cable adjustment (manual) M = Motorized adjustment			Adjustment
			XXXX = Galvanized steel ____ = RAL color (write the color number of RAL)		Diffuser color
ILV	**-** **355**	**-** **C**	**-** **XXXX**		Exemple

Blue: Standard

Description, area of application and benefits
Aerodynamic data

VVA
Variable air displacement diffuser

The VVA variable air displacement diffuser was designed for industrial applications. It offers the possibility of diffusing very large air quantities without creating air currents in work zones.

The VVA can be adapted to suit many conditions and operational situations.

Areas of application
- Industries
- Commercial spaces
- Overheated workspaces
- Polluted workspaces
- Workspaces with ceiling heights from 4 m to 15 m
- Airflow volumes from 1000 m^3/h to 10,000 m^3/h

Benefits
- Rapid reduction of temperature and speed
- No air currents when in cooling mode
- Localized air movement in important zones
- Simple adjustment lever
- Wall mounting
- Depending on the situation, the diffusion adjustment can be made even after installation.

VVA Configuration
The VVA diffuser constits of a main hexagonal diffuser bodys in which we find rows of vertical and horizontal clips guiding air at the outlet (see DAL 359).

In a suspended installation, rows of "clips" are arranged around the diffuser's main (hexagonal) body. Therefore. if the diffuser encounters obstacles, it is possible to block the air outlets in front of them.

Due to the helical effect and the clips, the VVA is adaptable to a multitude of work situations encountered in industrial settings (perpendicular on the side, upwards diagonally, downwards diagonally, diagonal towards left or right). This particularity makes the VVA very interesting in industrial settings, where we encounter particular diffusion requirements in each work area.

Aerodynamic Data

Nominal Size	L_{WA} (db(A))	$\dot{V}_0$ (m^3/h)	ΔP (Pa)	*Minimum spacingm (m)	**y (m)
DN 400	40 50 60	2000 3000 4000	25 40 70	4 6 8	5 7 9
DN 500	45 50 60	4000 6000 8000	30 50 100	4 6 8	6 9 12
DN 630	45 55 65	5000 7000 10000	60 80 125	6 8 10	6 9 12

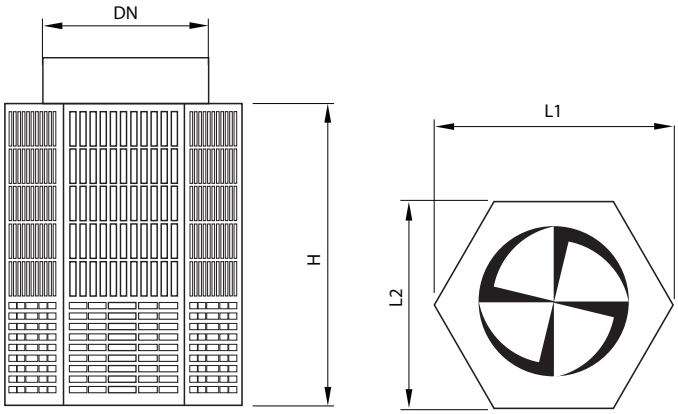
Note: *The minimum spacing between two diffusers at installation heights of 3.0 m when cooling ;
**The penetration depth when heating (y) for ΔT= +10°C

Subject to technical changes.
Version 2018

Adjustment of airflow

The basic settings in cooling mode are obtained by varying the roller's type and order. Furthermore, continuous alternation between horizontal and vertical airflow shall be achieved with an adjustment with the opening on the bottom.

The following variations in settings shall be possible:
- Manual setting with a cable mechanism
- Manual setting with a command cable



Specifications

1. Description and physical characteristics

1.1 The VVA's hexagonal shape shall be made of galvanized steel.
1.2 The VVA diffuser shall have horizontal slots at the bottom and vertical at the top of each of its six faces, in which are inserted ABS air deflectors (rollers).
1.3 The diffuser, its components and the register shall be made of unpainted galvanised steel.
1.4 The air deflectors (clips) shall be black.
1.5 The control mechanism for airflow adjustment can be manual or with a cable or by regulating motors and connection wires.
1.6 The nominal dimensions shall be 400, 500 and 630.

2. Connection

The VVA diffuser shall be designed to be connected directly to an air supply duct without a plenum.

3. Balancing

The VVA diffuser's balancing shall be executed by a certified air balancing technician, who has recognized professional qualification.

4. Quality required: NAD Klima VVA model

VVA, Specialized Industrial Diffuser

Size	DN 400	DN 500	DN 630
L1	600	700	850
L2	520	606	730
Height H	565	655	880

Codification

VVA					**Product**
	400, 500, 630				**Nominal dimension**
		C = Cable adjustment M = Motorized adjustment			**Adjustment**
			XXXX = Galvanized steel ____ = RAL color (write the RAL color number)		**Diffuser color**
ILV	**400**	**C**	**XXXX**		**Exemple**

Blue: Standard

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