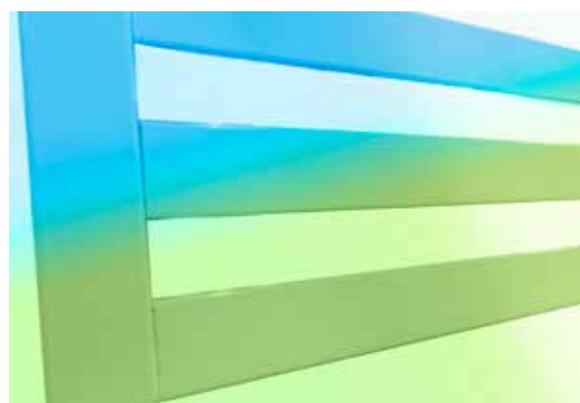
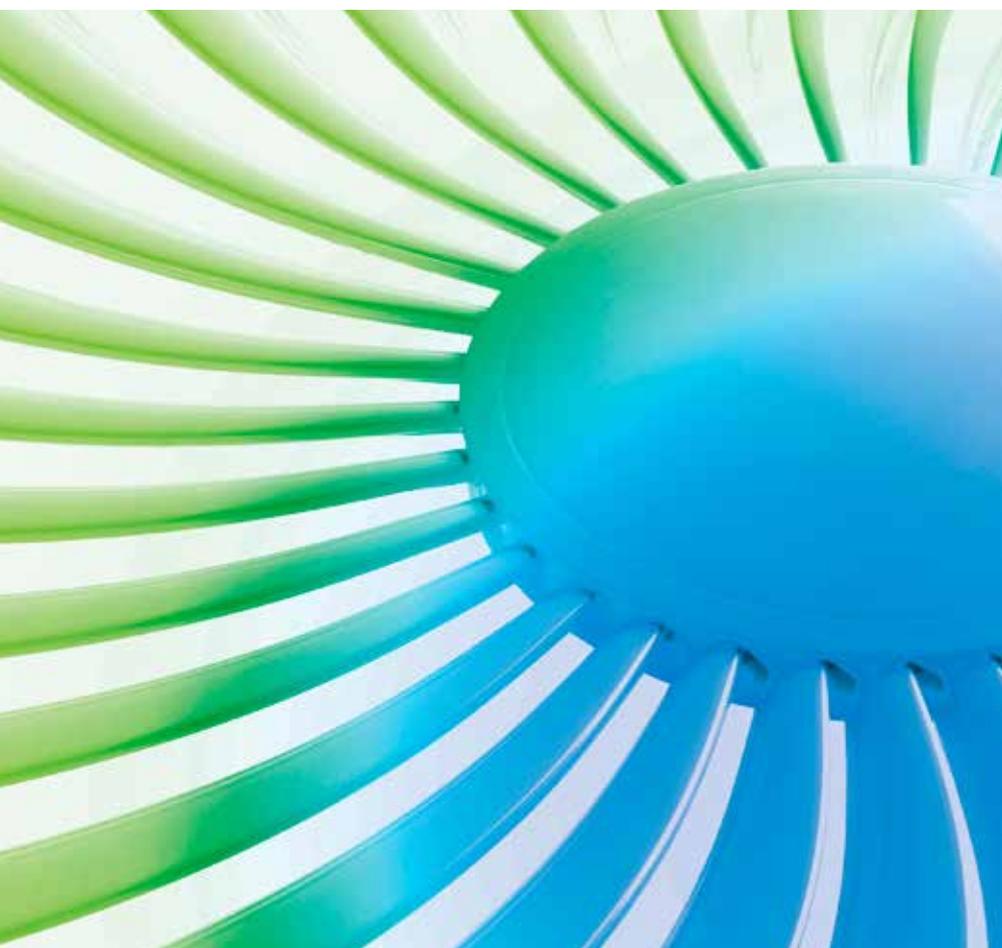
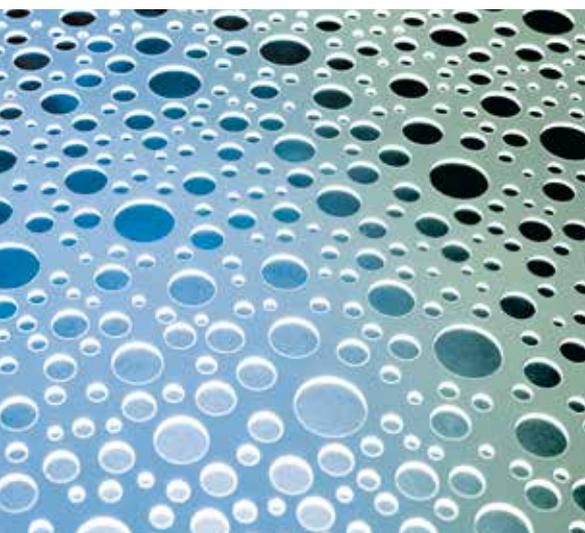


▶ **Aesthetic, functionality  
and efficiency** ▶▶

**X-GRILLE · AIRNAMIC  
XARTO · TJN · ALS · DUL**



## ► X-GRILLE ventilation grilles ►►

### Traditionally innovative

As early as in the mid 1950s, the Brothers TROX started manufacturing professional ventilation grilles that created only a minimal aerodynamic drag. Even in those days an attractive design and perfect craftsmanship were among the top priorities.

### Intelligent details

With the new X-GRILLE ventilation grilles, their innovative functions and their aesthetic design, TROX offers its customers a new energy-optimised product with a whole range of sophisticated details.

Two variants, Basic and Cover, are available in all standard sizes. Making use of existing installation openings is therefore usually no problem at all.

The seamless design is achieved by two factors: The screws for fixing the ventilation grille are covered, hence not visible, and the blades are almost completely flush with the frame.

The newly developed hollow blades are supported in the centre and have a symmetric, aerodynamic profile that enables their energy-efficient use for both supply air and extract air applications. This new structure results also in an acoustically optimised air distribution.

The powder-coated blades are interlinked (linkage not visible) and can be adjusted in groups of up to nine blades to achieve, for example, a spreading of the airflow.



*As early as in the mid 1950s, the Brothers TROX GmbH started manufacturing high-quality ventilation grilles*

The symmetric blades of the X-GRILLE ventilation grilles are powder-coated and interlinked at the end pieces – virtually invisible from the outside.



## ► Aesthetic and functional

### Basic design variant

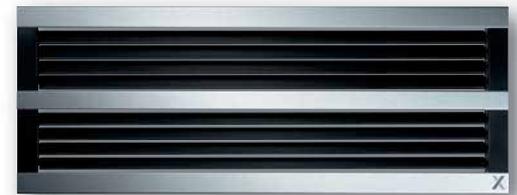
The high-quality X-GRILLE Basic variant is particularly attractive due to its new frame profile. The very thin, gently sloped and welded mitre frame adds to the subtle design and forms a smooth boundary.

The X-GRILLE Basic variant is powder-coated and just like the Cover variant available in all RAL colours.

### Cover design variant

The X-GRILLE Cover variant is made of high-quality aluminium; cover plates and frame are interconnected in a modular design. The clip-fixed, exchangeable cover plates allow for a lively two-colour look. No installation frame is required for fixing the grilles which are instead simply screwed onto the wall or ceiling; the screws are covered by the clip-fixed aluminium profiles.

This aesthetic design is ideal for linear arrangement.



Rectangular



40 to 3,200 l/s · 140 to 11,400 m<sup>3</sup>/h



B: 225 to 1,225 mm  
H: 125 to 525 mm



Steel and aluminium

### Advantages

- Energy-efficient and acoustically optimised air distribution
- Symmetric blade profile for two-way entry flow
- Uniform look and easy adjustment due to concealed blade linkage
- Use of existing attachment kits
- Easy replacement due to standard installation dimensions

### X-GRILLE Basic

- Seamless appearance due to flat frame construction

### X-GRILLE Cover

- Covered fixing screws
- Ideal for linear arrangement



Due to the new frame construction the blades are almost completely flush with the frame and the frame is flush with the installation surface



### TROX AIRNAMIC® swirl diffusers

From the initial concept to the prototype and through to production, new products benefit from the unique know-how of the TROX development engineers.

The new AIRNAMIC® swirl diffusers are the result of consistent development work on the basis of new materials and production technologies. This new generation completely redefines the flow characteristics of air diffusers and brings together various benefits in one product type.

### New 3D geometry of air control blades

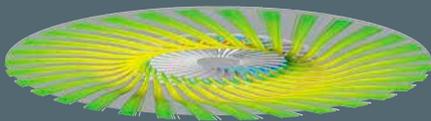
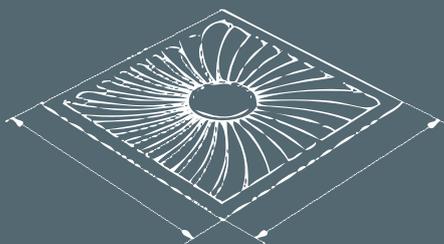
Thanks to the 3D geometry of the air control blades combined with a completely new air distribution element and a revised damper blade, pressure loss and sound power have been significantly reduced.

In the TROX Airflow laboratory, the improved air discharge characteristics were clearly demonstrated. With a volume flow rate of 740 m<sup>3</sup>/h, the noise level of an AIRNAMIC® Q / 600, for example, is only 30 dB(A) and can therefore be hardly noticeable in a normal office environment.

### High-performance swirl generation

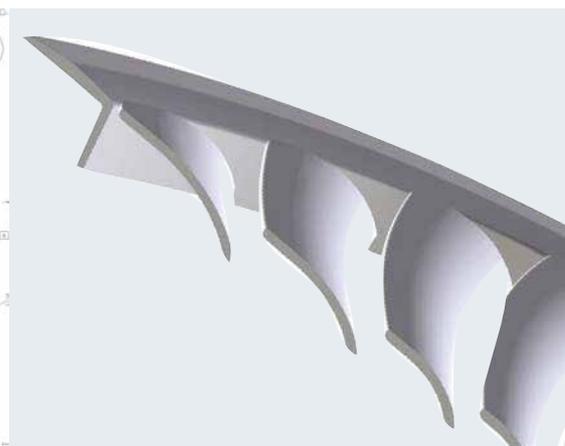
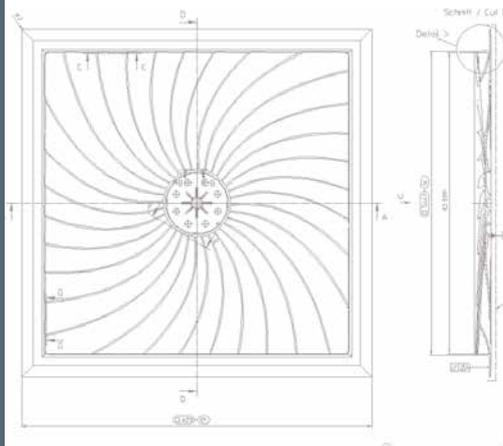
Alongside the reduction in the noise level, swirl generation was also the focus of the quality-assured development cycle. With the aid of air control blades that have three dimensional profiled contours, an optimum swirl generation is guaranteed even with high volume flow rates. This ensures reduced air velocities and temperature differences in the occupied zone so that even the most demanding comfort standards can be met.

The same air change rate can be achieved without any loss in wellbeing with smaller or a reduced number of air diffusers. This is a considerable cost saving, particularly on large projects.



*From the idea through to production, each TROX product passes through a quality-assured development cycle.*

**The three dimensionally profiled blade contour ensures an optimum air discharge.**



## Shape and material

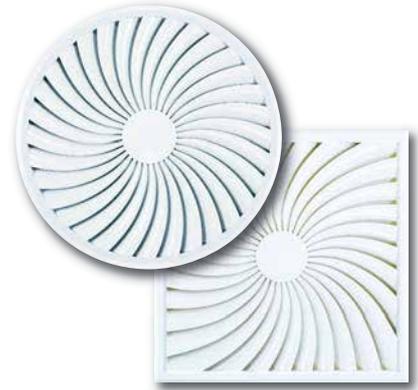
The use of high-quality ABS plastic and state-of-the-art production techniques enable these extraordinary 3D blade contours to be produced. Added to this is the consistent quality-assured production process which ensures that the highest quality and production standards are permanently achieved.

## AIRNAMIC® product characteristics

- High volume flow rates with low sound power thanks to 3D blade contours
- Excellent levels of comfort thanks to low air velocities and temperature differences
- Plastic components are flame retardant V0 rated to UL 94

Optimised plenum box with newly developed air distribution element:

- Even supply air discharge from diffuser
  - Acoustically optimised damper blade for flow rate balancing
  - Spigot with double lip seal
- 
- Suitable for all types of ceilings
  - Reduced weight, numerous options of surface finish, range of sizes and configurations for all types of ceiling systems



☒+ Circular, square

➡ Ø 40–345 l/s · 145–1240 m³/h  
□ 30–385 l/s · 110–1385 m³/h

◀▶ Ø 400, 600 mm  
□ 300, 600, 625 mm

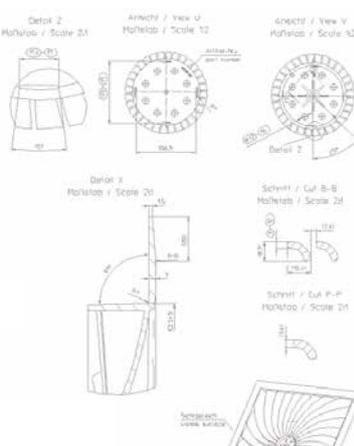
## ► Attractive design ►►

The ventilation benefits of the type AIRNAMIC® are rounded off by the aesthetic advantages of the attractive design. The air diffusers are available in circular and square configurations.

Along with the standard colour RAL 9010, various colours and surface finishes are possible. This allows the diffusers to be seamlessly integrated into various interior architectural design concepts.



The new AIRNAMIC® air diffusers are produced in white as standard. On request, special versions can be supplied in any RAL colour and with individual surface finishes.



## ► XARTO, Technology meets design ►►



**Innovative design:**  
Plenum box with new damper blade, 3D air control blade and designer face plate



**TROX understands the** art of competently handling air like no other company. For decades, TROX has been continually raising the bar by producing excellent products for the ventilation and air conditioning of buildings. The new type XARTO® diffusers offer the customer a wide range of possibilities thanks to their unique design.

### **TROX swirl diffusers from the type XARTO® range**

Like all TROX products, the new XARTO® swirl diffusers meet the most demanding requirements in terms of technology, comfort and design. Whether it be classic, modern or flamboyant, – the various styles of the diffuser face enable owners and architects to achieve optimum integration in their design.

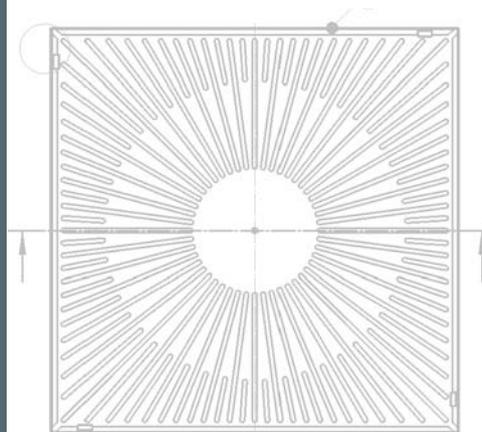
### **High-performance swirl generation with excellent levels of comfort**

The combination of swirl unit, newly developed air distribution element and innovative plenum box provides high volume flow rates, a low sound power level and low differential pressure.

### **New 3D geometry of air control blades**

The air control blades of the swirl unit have three-dimensionally profiled contours to create an efficient swirl. Hence, the air velocities and temperature differences in the occupied zone are very low, and the level of comfort is excellent.

A spigot with double lip seal provides a low leakage connection of the plenum box to the ducting, and a damper blade for flow rate balancing simplifies commissioning.





☒ Square

↻ 90–275 l/s · 325–990 m<sup>3</sup>/h

◀▶ 600, 625 mm

### XARTO® swirl diffuser

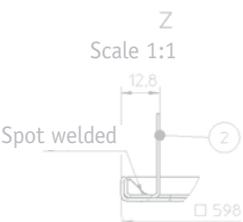
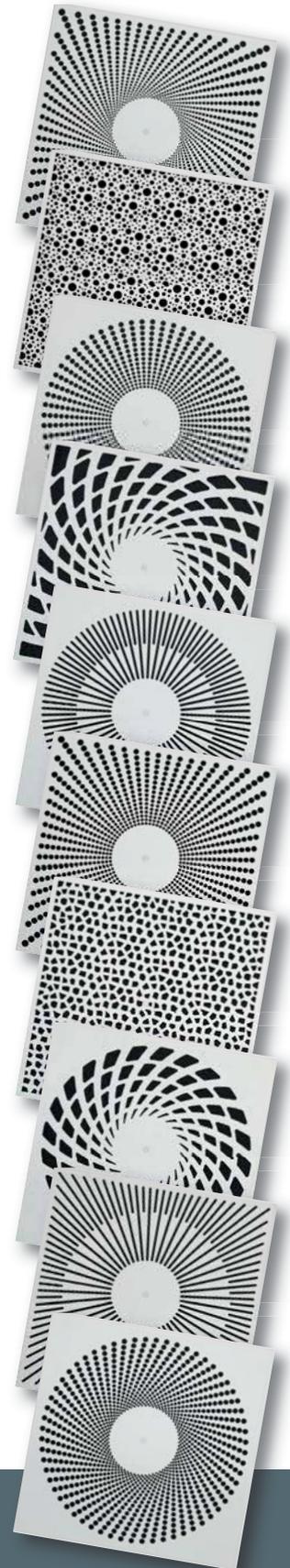
The XARTO® swirl diffusers with their designer steel face plates offer the opportunity for beauty and elegance.

This type provides design consultants with a large selection of refined designs so that every creative or architectural design concept can be achieved.

- Ten design variants for the most demanding aesthetic requirements
- High volume flow rates with a comparatively low sound power level
- Excellent levels of comfort as a result of low air velocities and low temperature differences in the occupied zone
- Plastic components are flame retardant V0 rated to UL 94

Optimised plenum box with newly developed air distribution element:

- Even supply air discharge from diffuser
- Acoustically optimised damper for flow rate balancing
- Spigot with double lip seal



Scale 1:1



Technology meets design:  
With the type XARTO®,  
TROX is demonstrating a  
perfect symbiosis of  
efficient technology and  
sophisticated design.

## ► TJN, Good air quality for large internal spaces ►►



*TROX jet nozzles at the IAA trade fair in Frankfurt, Germany*



*TJN without swirl unit for discharge range reduction*



*TJN with swirl unit for discharge range reduction*

### **Acoustically and technically optimised**

Jet nozzles are the preferred solution where the supply air has to travel large distances from the point of discharge to the occupied zone.

The new TJN jet nozzles have been developed from the successful TROX DUK jet nozzles. The new product type is not only aesthetically attractive but also more energy efficient; plus it offers improved acoustic properties. The complete jet nozzle is made of high-grade polymer and available in RAL white aluminium or pure white. The versatile jet nozzles create a comfortable climate in large internal spaces even under the most diverse temperature conditions.

### **Innovative swirl unit reduces the discharge range**

The swirl unit, which is available as an option and can be easily attached, is a technical innovation. It enables a two-step reduction of the discharge range to 80% or 60% and is hence ideal for smaller spaces. The remarkable acoustic optimisation is achieved by air control blades with unique saw tooth edges.

### **Defined setting of the swivel angle**

The swivel angle for the supply air flow, or jet, can be adjusted in 5° increments within a range from +30° to -30°, or even be limited. Due to this innovative feature the TJN jet nozzle can be set precisely to the required swivel angle, and the targeted comfort criteria are actually achieved.



*Self-adjusting drive with preset swivel angle*

### Self-adjusting nozzle with shape memory alloy

Shape memory alloys (SMA), also called memory metals, 'remember' their original shape and return to that pre-deformed shape when heated. The deformation, or change of shape, is based on a temperature-dependent change of the crystal lattice. The compact shape memory actuator is placed directly in the airflow of the jet nozzle such that it can react to changes in the supply air temperature.

The effect of the SMA is such that the swivel angle of the jet nozzle is automatically adjusted within a temperature range of about 18 °C to 28 °C, and the comfort criteria in the occupied zone are ensured. The adjustment happens much faster than with conventional expansion materials. Neither an actuator drive nor extensive wiring is required.

### Advantages of the TJN jet nozzle

- Up to 6 dB less noise than with DUK jet nozzles due to optimised nozzle contours
- Jet angle can be adjusted, limited, and fixed
- Two-step reduction of the discharge range for smaller spaces
- High-grade polymer in RAL white aluminium or pure white
- Simple installation due to bayonet fixing at the discharge ring
- Self-adjusting variant with short response time due to actuator made of shape memory alloy
- Flat external motor ensures compact installation and increased energy efficiency
- Integration with measurement and control system is possible
- Five sizes, each available for duct (rectangular or circular) or direct connection
- All variants are also available with outer casing for visible areas



*Self-adjusting variant with SMA actuator*



*Easily attachable swirl unit for discharge range reduction*



*Energy-efficient due to external actuator*



Circular



20 to 1000 l/s • 72 to 3600 m<sup>3</sup>/h



ø 160, 200, 250, 315, 400 mm

*TROX jet nozzles  
in the Hamburg airport, Germany*

## ▶ ALS, Linear diffusers for ceiling installation ▶▶



-  Linear construction
-  Lengths from 600 to 2,500 mm  
Slots width: 15, 20, 25 mm
-  45 - 650 m<sup>3</sup>/h (Q per linear metre)
-  Aluminium

Linear diffusers type ALS with an attractive profile design provided with flat frontal profiles made of extruded aluminium sections, to be selected from 1 to 6 slots for air supply or return. These features allow air direction control according to room requirements.

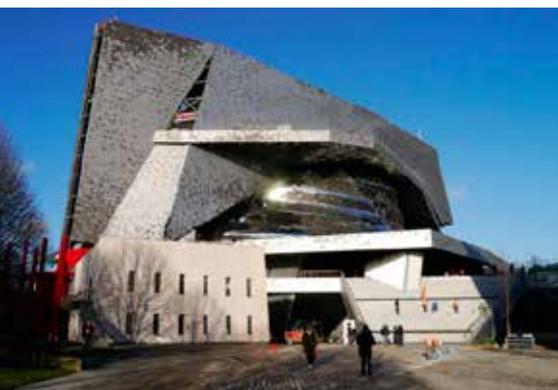
These diffusers are available with 3 different slot width – 15, 20 and 25 mm – to guarantee accurate thermal selection and integration in any architectural solution.

Supply air flow direction is oriented by integrated air blades and an adjustable blade damper made of perforated sheet steel connected to the plenum spigot to balance the air volume flow. Air flow can be set either horizontal or vertical by just the movement of the air blades.

For an optimum horizontal air supply without air steam drop, ALS diffusers must be installed flushed to the ceiling.

Optionally, linear diffusers type ALS can be provided with end caps and isolated plenum boxes for better acoustic performance.

These diffusers are suitable for installation in variable and constant air volume flow systems for rooms with heights from 2,6 to 4,0 m.



Philharmonie Building in Paris  
(France)



ALS installed in the Krystal Kule, Istanbul  
(Turkey)

## ► Linear jet nozzles Type DUL ►►



-  Linear construction
-  Lengths from 250 to 1,250 mm  
Slots width: 15, 20, 25, 30, 35 mm
-  250 - 900 m<sup>3</sup>/h (Q per linear metre)
-  Aluminium



Santa Francesca Cabrini Church Rome  
(Italy)



Porsche Dealership Milan (Italy)  
CFD tested

Innovative linear jet nozzles type DUL made by TROX.

DUL jet nozzles have been designed for their installation in areas where discharged air has to travel long distances to the occupied zone also with high induction levels, considering maximum levels of aesthetic integration.

Their innovative design allows similar technical features to standard TROX's jet nozzles (types DUE and DUE-M) – but in a lineal arrangement – also for their perfect integration with other elements provided in the architectural space.

This new construction variant has been developed in a range of 5 different slot width from 15 to 35 mm., which allows a perfect adjustment of the air volume flow supplied according to room requirements.

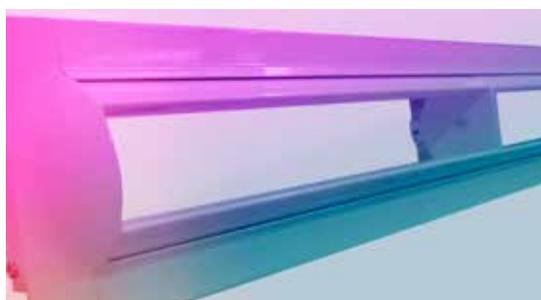
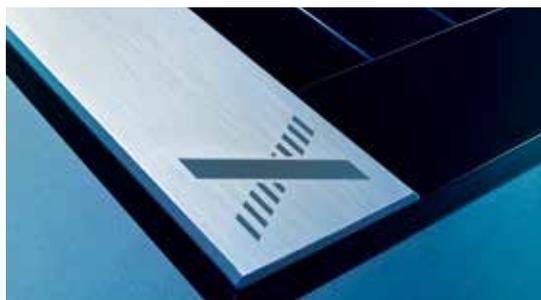
Also the pivoting movement of the nozzle within the range of  $\pm 30^\circ$  facilitates the orientation of the volume flow either in cooling or heating operational mode.

Optionally, these jet nozzles can be provided with plenum boxes with different connecting spigots diameters for optimization of their acoustic performances and lower pressure drop levels.

### Main features:

- 5 nominal sizes available: from 15 to 35 mm
- Suitable for rooms with high requirements of air induction and long distances until the occupied zone
- Plenum box under request
- Quick and homogeneous air-mixture with reduced sound power levels
- Air volume flow direction easy to control and addressed within a range of  $\pm 30^\circ$
- Surface painted to any RAL colour

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**TROX<sup>®</sup> TECHNİK**

The art of handling air

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