ICEMAC
Ice Machines & Cooling Systems

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JET NOZZLE DIFFUSER

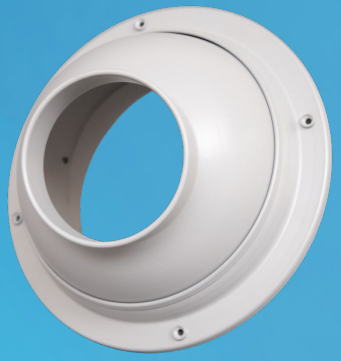
Data Sheet

Product Data Sheet

Product Overview

The **ICEMAC Jet Nozzle** is an advanced air distribution system meticulously designed to deliver precise and powerful airflow over long distances. Ideal for spaces with **high ceilings**, such as **concert halls, theaters, museums**, and other large environments, it ensures targeted ventilation, heating, or cooling without sacrificing efficiency or aesthetics.

Engineered to deliver **horizontal and vertical airflow** with **±30° adjustable angles**, the Jet Nozzle provides flexibility for both comfort and performance. Its aerodynamic design allows it to operate seamlessly at **high airflow rates**, achieving exceptional throw distances for superior air distribution.



Materials and Construction

Material: The Jet Nozzle is manufactured from high-quality aluminum sheet using the spinning method. This ensures durability, precision, and lightweight construction for optimal performance.

Variants:

- **ICJ1:** Single-walled Jet Nozzle.
- **ICJ2:** Double-walled Jet Nozzle for enhanced performance and versatility.

Surface Finishing

Coating Options:

- **Electrostatic Powder Coating**:
  - Standard Colors: RAL 9010 (Pure White) and RAL 9016 (Traffic White).
  - Provides a smooth, durable, and corrosion-resistant finish, suitable for demanding environments.
- **Anodized Aluminum**:
  - Offers enhanced corrosion resistance and a sleek, metallic appearance.
- **Custom Finishes**:
  - All RAL color codes are available upon request to match specific project or aesthetic requirements.

Assembly Options

Screw Mounting:

- The Jet Nozzle is securely installed using screws, ensuring stability and precision alignment during operation.
- Suitable for wall mounting in both vertical and horizontal orientations.

Accessories

KA (Duct Adaptor):

- Provides seamless and secure connection to duct systems for efficient airflow integration.

Applications

The **ICEMAC Jet Nozzle** is specifically designed for environments with **high ceilings** where conventional grilles and diffusers are not suitable. Its ability to deliver **long-distance, high-velocity airflow** makes it an ideal solution for spaces requiring precise and efficient air distribution.

Key application areas include:

- **Concert Halls and Theaters**: Ensures uniform air distribution across large audience spaces, while minimizing noise and maintaining comfort.
- **Museums and Exhibition Centers**: Provides targeted ventilation without disrupting delicate displays or artifacts.
- **Shopping malls and Auditoriums**: Efficiently circulates air over expansive spaces, enhancing comfort for visitors.
- **Industrial Facilities**: Suitable for point heating or cooling in high-ceiling environments, improving worker comfort and air quality.

With the ability to adjust airflow direction by **±30°**, the Jet Nozzle can achieve both **horizontal and vertical air throws**, enabling **focused heating, cooling, or ventilation** where it is needed most. This targeted performance not only optimizes energy efficiency but also ensures a comfortable and controlled environment.

Jet Nozzle Diffuser

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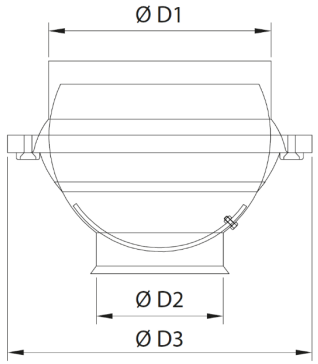
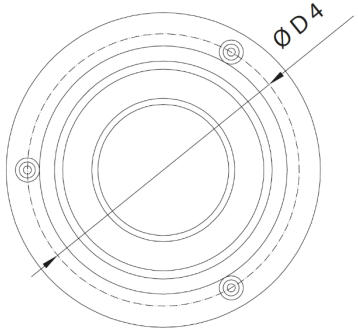
ICEMAC Jet Nozzle Diffusers Dimensions and Effective Areas

The ICEMAC Jet Nozzle is available in a variety of sizes to meet diverse airflow, performance, and installation requirements. Below are detailed tables outlining the dimensions and effective areas for both ICJ1 (Single-Walled) and ICJ2 (Double-Walled) Jet Nozzle variants:

ICJ1 – Single-Walled Jet Nozzle

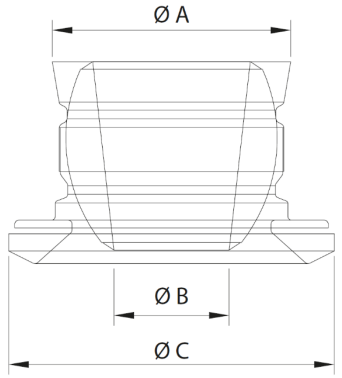
Nominal Diameter	80	120	160	200	250	315	400
Aeff (m²)	0,0013	0,0033	0,0050	0,0079	0,0120	0,0210	0,0320
ØD1 (mm)	76	114	144	191	239	294	375
ØD2 (mm)	40	65	80	100	125	165	203
ØD3 (mm)	115	157	194	249	305	360	455
ØD4 (mm)	95	135	168	227	283	339	433

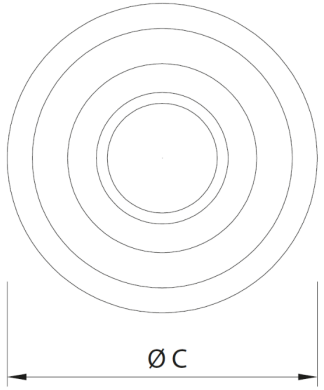




ICJ2 – Double-Walled Jet Nozzle

Nominal Diameter	120	160	200	250	315	400
Aeff (m²)	0,0028	0,0053	0,0079	0,0130	0,0230	0,0310
ØA (mm)	124	151	209	251	309	390
ØB (mm)	60	82	100	128	170	200
ØC (mm)	170	199	252	308	360	473





Jet Nozzle Diffuser Quick Selection Table

This table allows for quick and easy selection of the appropriate diffuser size based on airflow requirements and performance characteristics.

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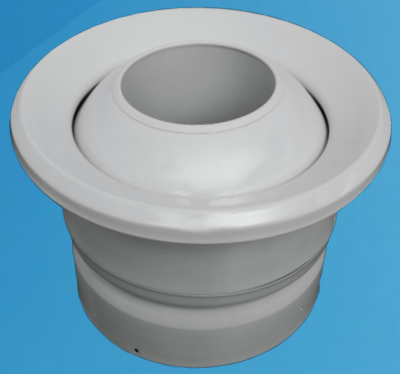
ICJ1 – Quick Selection Table

V (m³/h)	Aeff (m²)	0,0013	0,0033	0,0050	0,0079	0,0120	0,0210	0,0320
40	ueff. (m/s)	8.5						
	X0.5 - X0.3(m)	5.2 - 8.6						
	ΔPt (Pa)	44						
	SPL (dBA)	20						
100	ueff. (m/s)		8.4	5.6	3.5			
	X0.5 - X0.3(m)		5.0 - 8.4	4.2 - 6.9	3.3 - 5.4			
	ΔPt (Pa)		43	25	8			
	SPL (dBA)		19	17	15			
150	ueff. (m/s)		12.6	8.3	5.3	3.5	2	
	X0.5 - X0.3(m)		7.5 - 12.6	6.2 - 10.4	4.9 - 8.1	3.9 - 6.5	3.0 - 4.9	
	ΔPt (Pa)		96	57	17	10	3	
	SPL (dBA)		31	20	9	8	6	
200	ueff. (m/s)			11.1	7	4.6	2.6	1.7
	X0.5 - X0.3(m)			8.3 - 13.8	6.5 - 10.8	5.2 - 8.7	3.9 - 6.6	3.4 - 5.6
	ΔPt (Pa)			98	30	17	4	3
	SPL (dBA)			29	17	14	13	3
300	ueff. (m/s)				10.5	6.9	4	2.6
	X0.5 - X0.3(m)				9.8 - 16.3	7.9 - 13.1	5.9 - 9.9	5.1 - 8.5
	ΔPt (Pa)				67	38	9	6
	SPL (dBA)				30	17	4	4
400	ueff. (m/s)				14.1	9.3	5.3	3.5
	X0.5 - X0.3(m)				13.0 - 21.7	10.5 - 17.5	7.9 - 13.2	6.8 - 11.4
	ΔPt (Pa)				109	68	16	10
	SPL (dBA)				38	25	12	10
500	ueff. (m/s)					11.6	6.6	4.3
	X0.5 - X0.3(m)					13.1 - 21.8	9.9 - 16.5	8.5 - 14.2
	ΔPt (Pa)					106	25	16
	SPL (dBA)					32	19	14
600	ueff. (m/s)						7.9	5.2
	X0.5 - X0.3(m)						11.8 - 19.7	10.2 - 16.9
	ΔPt (Pa)						36	23
	SPL (dBA)						25	16
800	ueff. (m/s)						10.6	6.9
	X0.5 - X0.3(m)						15.8 - 26.3	13.6 - 22.6
	ΔPt (Pa)						65	41
	SPL (dBA)						33	25
1000	ueff. (m/s)						13.2	8.7
	X0.5 - X0.3(m)						19.7 - 32.9	16.9 - 28.3
	ΔPt (Pa)						101	64
	SPL (dBA)						40	32
1100	ueff. (m/s)							9.5
	X0.5 - X0.3(m)							19.1 - 33.9
	ΔPt (Pa)							102
	SPL (dBA)							41

Aeff (m²): Effective area
Ueff (m/s): Effective velocity
SPL (dBA): Sound level

V (m³/h): Air flow rate
$X_{0.5}$ (m): Throw distance in the comfort zone 0.5 m/s air velocity
$X_{0.3}$ (m): Throw distance in the comfort zone 0.3 m/s air velocity
ΔPt (Pa): Total pressure drop



Jet Nozzle Diffuser Quick Selection Table

This table allows for quick and easy selection of the appropriate diffuser size based on airflow requirements and performance characteristics.

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ICJ2 – Quick Selection Table

V (m³/h)	Aeff (m²)	0.0028	0.0053	0.0079	0.013	0.023	0.031
100	ueff (m/s)	9.9	5.2	3.5			
	X0.5 - X0.3 (m)	5.2 - 8.8	3.9 - 6.2	3.1 - 5.1			
	ΔPt (Pa)	41	22	7			
	SPL (dBA)	18	15	13			
150	ueff (m/s)		7.9	5.3	3.2	1.8	
	X0.5 - X0.3 (m)		5.4 - 9.4	4.9 - 8.1	3.1 - 5.8	2.5 - 4.0	
	ΔPt (Pa)		40	14	8	2	
	SPL (dBA)		19	7	7	5	
200	ueff (m/s)		10.5	7	4.3	2.4	1.8
	X0.5 - X0.3 (m)		6.9 - 10.2	5.5 - 8.8	4.2 - 7.7	3.4 - 5.6	2.8 - 4.8
	ΔPt (Pa)		73	24	14	3	2
	SPL (dBA)		28	13	12	10	3
300	ueff (m/s)			10.5	6.4	3.6	2.7
	X0.5 - X0.3 (m)			8.6 - 14.2	6.5 - 11.8	4.9 - 8.2	4.2 - 7.5
	ΔPt (Pa)			55	34	8	5
	SPL (dBA)			26	16	4	3
400	ueff (m/s)			14.1	8.5	4.8	3.6
	X0.5 - X0.3 (m)			11.0 - 18.8	8.5 - 14.9	6.1 - 11.4	5.2 - 9.5
	ΔPt (Pa)			89	57	14	8
	SPL (dBA)			34	22	11	9
500	ueff (m/s)				10.7	6	4.5
	X0.5 - X0.3 (m)				9.5 - 17.5	8.1 - 14.8	7.2 - 12.9
	ΔPt (Pa)				82	22	12
	SPL (dBA)				31	16	11
600	ueff (m/s)					7.2	5.4
	X0.5 - X0.3 (m)					9.8 - 16.9	8.2 - 14.6
	ΔPt (Pa)					32	20
	SPL (dBA)					23	14
800	ueff (m/s)					9.7	7.2
	X0.5 - X0.3 (m)					12.6 - 22.8	10.3 - 19.6
	ΔPt (Pa)					49	35
	SPL (dBA)					29	23
1000	ueff (m/s)					12.1	9
	X0.5 - X0.3 (m)					15.9 - 27.8	13.5 - 22.2
	ΔPt (Pa)					82	52
	SPL (dBA)					37	29
1100	ueff (m/s)						9.9
	X0.5 - X0.3 (m)						17.1 - 29.9
	ΔPt (Pa)						91
	SPL (dBA)						40

Aeff (m²): Effective area
Ueff (m/s): Effective velocity
SPL (dBA): Sound level

V (m³/h): Air flow rate
$X_{0.5}$ (m): Throw distance in the comfort zone 0.5 m/s air velocity
$X_{0.3}$ (m): Throw distance in the comfort zone 0.3 m/s air velocity
ΔPt (Pa): Total pressure drop