KOOLAIR

series

DF-47

Long-throw rectangular diffusers

ISO 9001
BUREAU VERITAS
Certification
Sistema de Gestión

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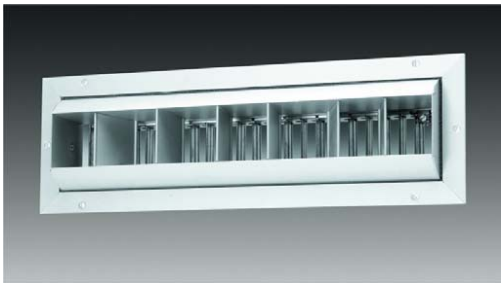
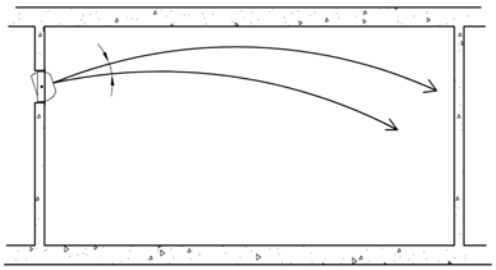
DF-47 rectangular diffuser



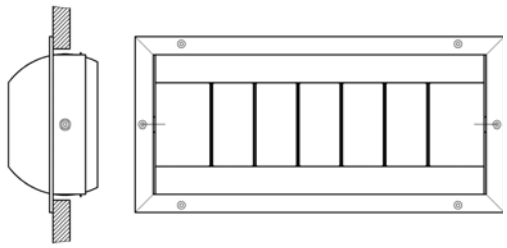
Description

The DF-47 long-throw rectangular diffuser is manufactured entirely of anodised aluminium with a natural finish. The diffuser is composed of a drum allowing the unit to be swiveled, thereby permitting the inlet airflow to be vertically positioned at an angle of ±20º. The unit is also equipped with deflecting blades for distributing the air in horizontal fan-shape or concentrating the inlet airflow in the desired direction.



Application

These long-throw, high-flow diffusers are particularly useful when the air jet should reach some distance or should be fanned out. They are specially recommended for sport centres, industrial warehouses, clean rooms, recording studios, discotheques, large premises, etc.



Dimensions and mounting

The dimensions correspond to the size of the opening. The diffuser is always screw-mounted, either directly to the surface or using the MM-47 mounting frame. Also available are 29-0-47 adjustment assemblies that can be accessed with a screwdriver from the front of the diffuser. See dimension tables on page 3.

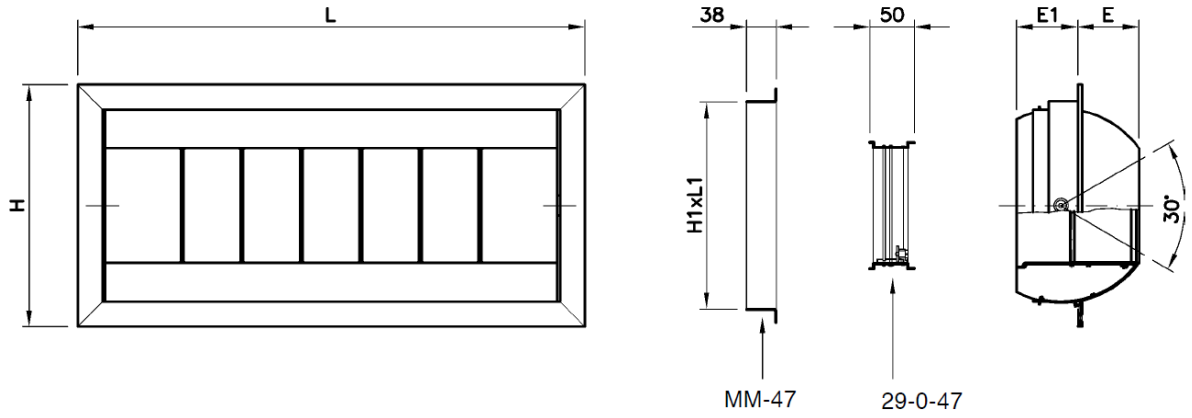
DF-47	*Rectangular, long-throw diffuser for manual operation.*
DF-47-CC	***Rectangular, long-throw diffuser for manual operation, adaptable to round duct.***
23, 26 36 312, 410	***Five sizes (see page 3)***
29-O-47	***Volume control damper.***
MM-47	***Metal mounting frame.***
AE	***Motorised mechanism.***
TR	***Thermoadjustable.***

Identification

The diffusers can be manually adjusted to adapt the inlet airflow to the needs of the room. The AE model is equipped with a motor that changes the direction of the air (up or down) for use with cold or hot air (summer or winter); this motor may be proportional or on-off (two positions).

DF-47 rectangular diffuser

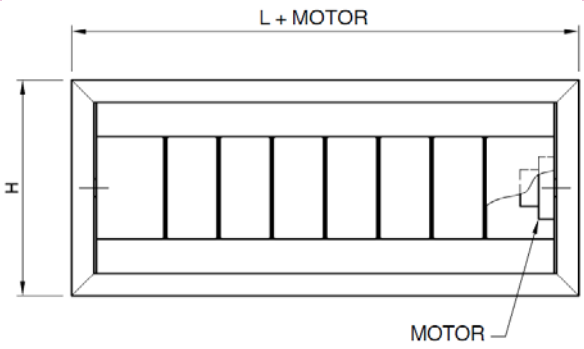
DF-47 dimensions



DF-47 dimensions

SIZE	L	H	OPENING L1 x H1		E	E1
DF−47−23	348	210	305	165	43	58
DF−47−26	652	210	610	165	43	58
DF−47−36	652	310	610	267	79	79
DF−47−312	1262	310	1219	267	79	79
DF−47−410	1110	422	1067	380	117	102

DF-47-AE dimensions (motorised)



The AE model with the motor drive is longer, due to the servo motor.

The CC model, constructed to be fitted directly to the round duct, can also be motor-driven (AE).

The diffusers can be swiveled ±20° around the horizontal symmetry axis.

DF-47 selection table

Q		Size	305x165			610x165			610x267			1219x267			1067x380		
(m^3/h)	(l/s)	A_k (m^2)	0,0198			0,0383			0,0613			0,1213			0,1508		
150	41,7	V_k (m/s)	2,1														
		$X_{0,3}$ $X_{0,5}$ $X_{1,0}$ (m)	4,6	2,7	1,4												
		ΔP_t (Pa)	3														
		L_{wA} - dB(A)	<15														
300	83,3	V_k (m/s)	4,2			2,2											
		$X_{0,3}$ $X_{0,5}$ $X_{1,0}$ (m)	9,1	5,5	2,7	6,6	3,9	2,0									
		ΔP_t (Pa)	10			3											
		L_{wA} - dB(A)	<15			<15											
450	125,0	V_k (m/s)	6,3			3,3			2,0								
		$X_{0,3}$ $X_{0,5}$ $X_{1,0}$ (m)	13,7	8,2	4,1	9,8	5,9	3,0	6,5	3,9	2,0						
		ΔP_t (Pa)	24			6			2								
		L_{wA} - dB(A)	27			<15			<15								
600	166,7	V_k (m/s)	8,4			4,3			2,7								
		$X_{0,3}$ $X_{0,5}$ $X_{1,0}$ (m)	18,3	11,0	5,5	13,1	7,9	3,9	8,7	5,2	2,6						
		ΔP_t (Pa)	42			11			4								
		L_{wA} - dB(A)	36			18			<15								
800	222,2	V_k (m/s)	11,2			5,8			3,6			1,8					
		$X_{0,3}$ $X_{0,5}$ $X_{1,0}$ (m)	24,4	14,6	7,3	17,5	10,5	5,2	11,6	7,0	3,5	8,3	5,0	2,5			
		ΔP_t (Pa)	74			20			8			2					
		L_{wA} - dB(A)	45			27			<15			<15					
1000	277,8	V_k (m/s)	14,1			7,2			4,5			2,3			1,8		
		$X_{0,3}$ $X_{0,5}$ $X_{1,0}$ (m)	>30	18,3	9,1	21,9	13,1	6,6	14,5	8,7	4,4	10,3	6,2	3,1	7,5	4,5	2,2
		ΔP_t (Pa)	116			31			12			3			2		
		L_{wA} - dB(A)	52			34			22			<15			<15		
2000	555,6	V_k (m/s)				14,5			9,1			4,6			3,7		
		$X_{0,3}$ $X_{0,5}$ $X_{1,0}$ (m)				>30	26,2	13,1	29,0	17,4	8,7	20,6	12,4	6,2	15,0	9,0	4,5
		ΔP_t (Pa)				123			48			12			8		
		L_{wA} - dB(A)				56			43			25			19		
3000	833,3	V_k (m/s)							13,6			6,9			5,5		
		$X_{0,3}$ $X_{0,5}$ $X_{1,0}$ (m)							>30	26,1	13,1	>30	18,6	9,3	22,4	13,5	6,7
		ΔP_t (Pa)							107			27			18		
		L_{wA} - dB(A)							56			38			32		
5000	1388,9	V_k (m/s)										11,5			9,2		
		$X_{0,3}$ $X_{0,5}$ $X_{1,0}$ (m)										>30	>30	15,5	>30	22,4	11,2
		ΔP_t (Pa)										76			49		
		L_{wA} - dB(A)										54			48		
6000	1666,7	V_k (m/s)													11,1		
		$X_{0,3}$ $X_{0,5}$ $X_{1,0}$ (m)													>30	26,9	13,5
		ΔP_t (Pa)													71		
		L_{wA} - dB(A)													54		
7000	1944,4	V_k (m/s)													12,9		
		$X_{0,3}$ $X_{0,5}$ $X_{1,0}$ (m)													>30	>30	15,7
		ΔP_t (Pa)													96		
		L_{wA} - dB(A)													59		

Notes

- This selection table is based on laboratory tests as per ISO 5219 (UNE 100.710) and ISO 5135 and 3741.
- ΔT is equal to 0°C (isothermal air).
- The behaviour of the air jet with different Δt is shown in the following charts.

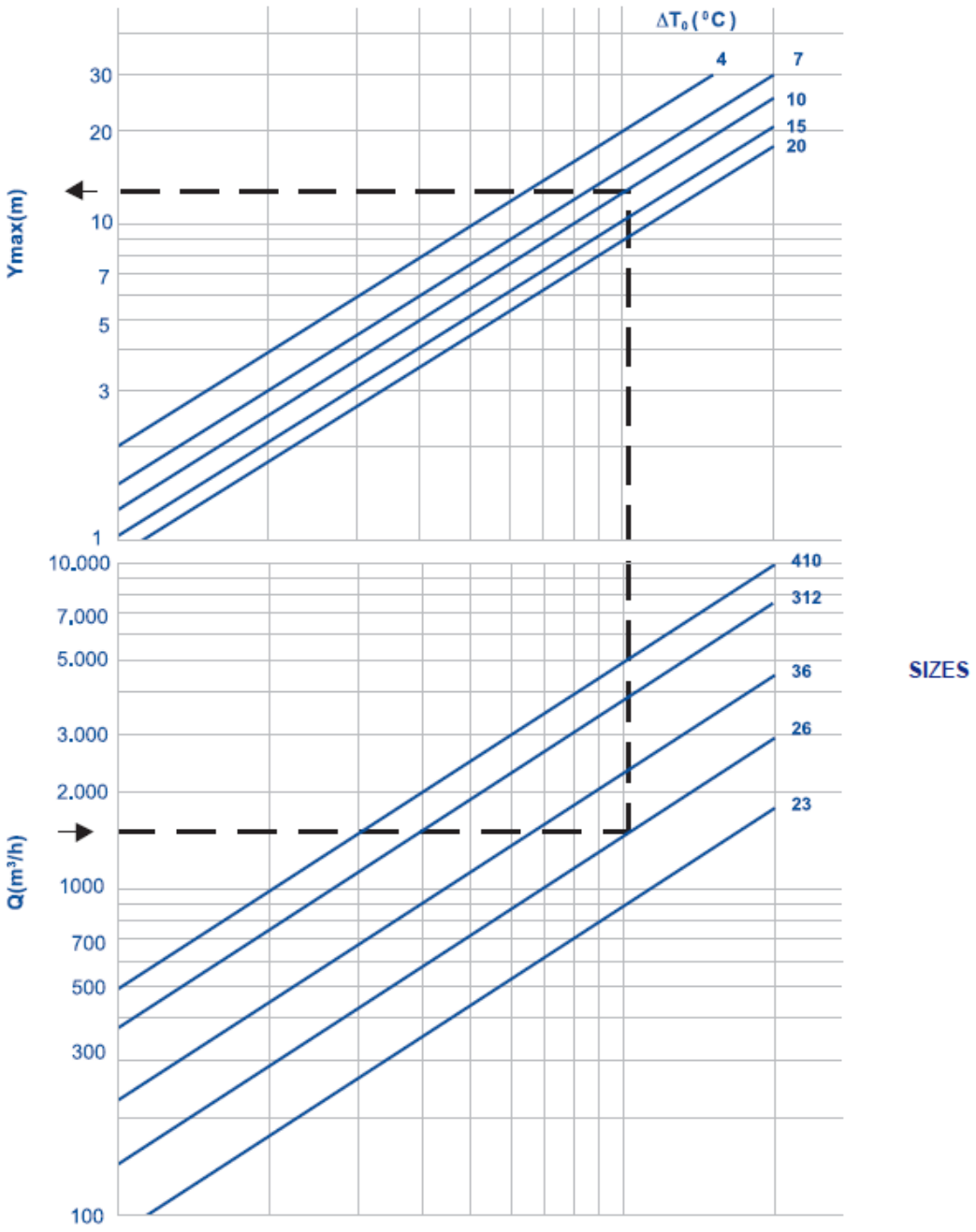
Symbols

Q = Air flow
V_K = Effective velocity
A_K = Effective area
ΔP_t = Total pressure drop
L_{wA} = Sound power
$X_{0,3}$ - $X_{0,5}$ - $X_{1,0}$ = Throw for a terminal air velocity of 0.3, 0.5 and 1.0 m/s, respectively.

DF-47 model

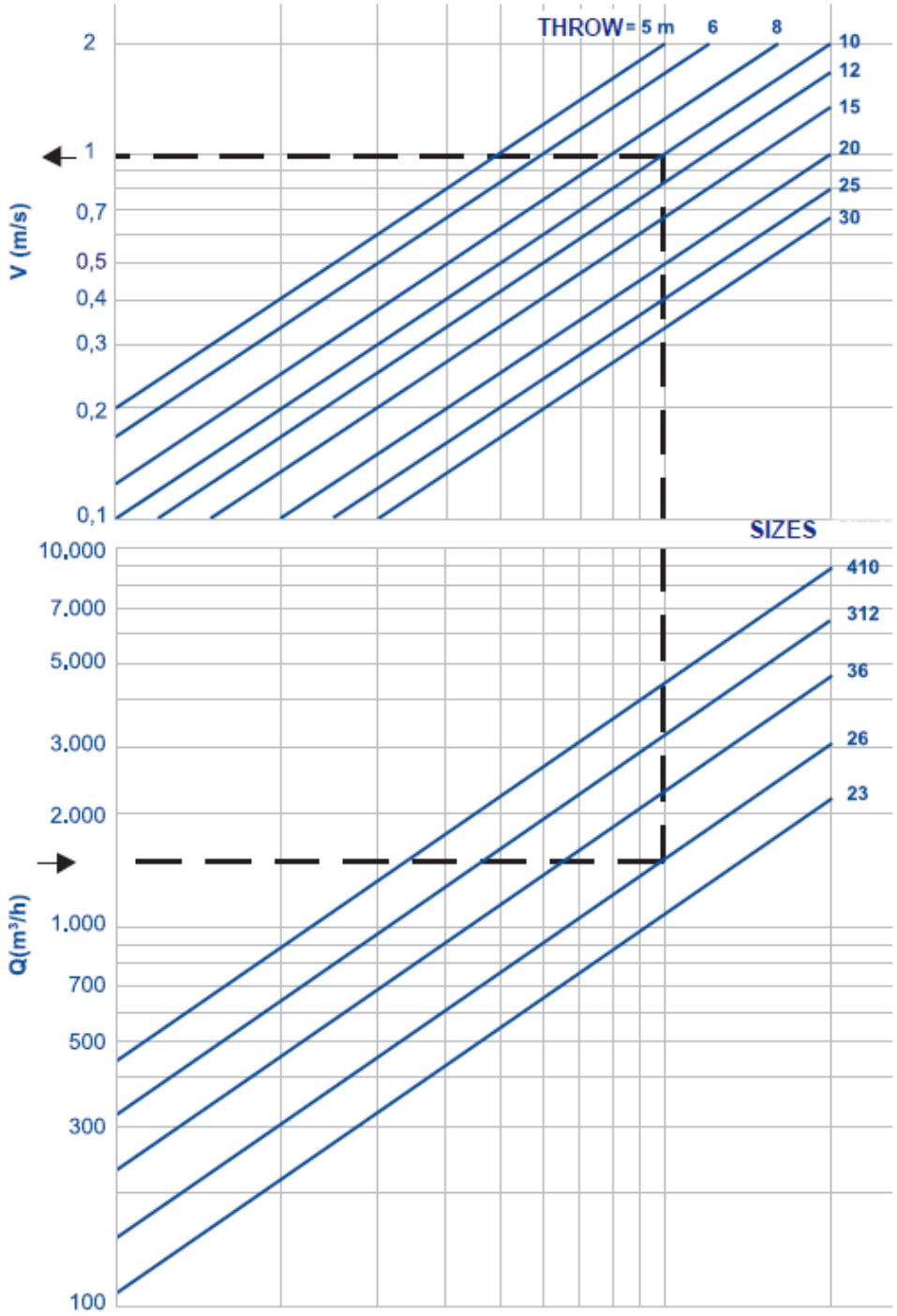
Selection charts

DF-47-1.-Maximum vertical penetration



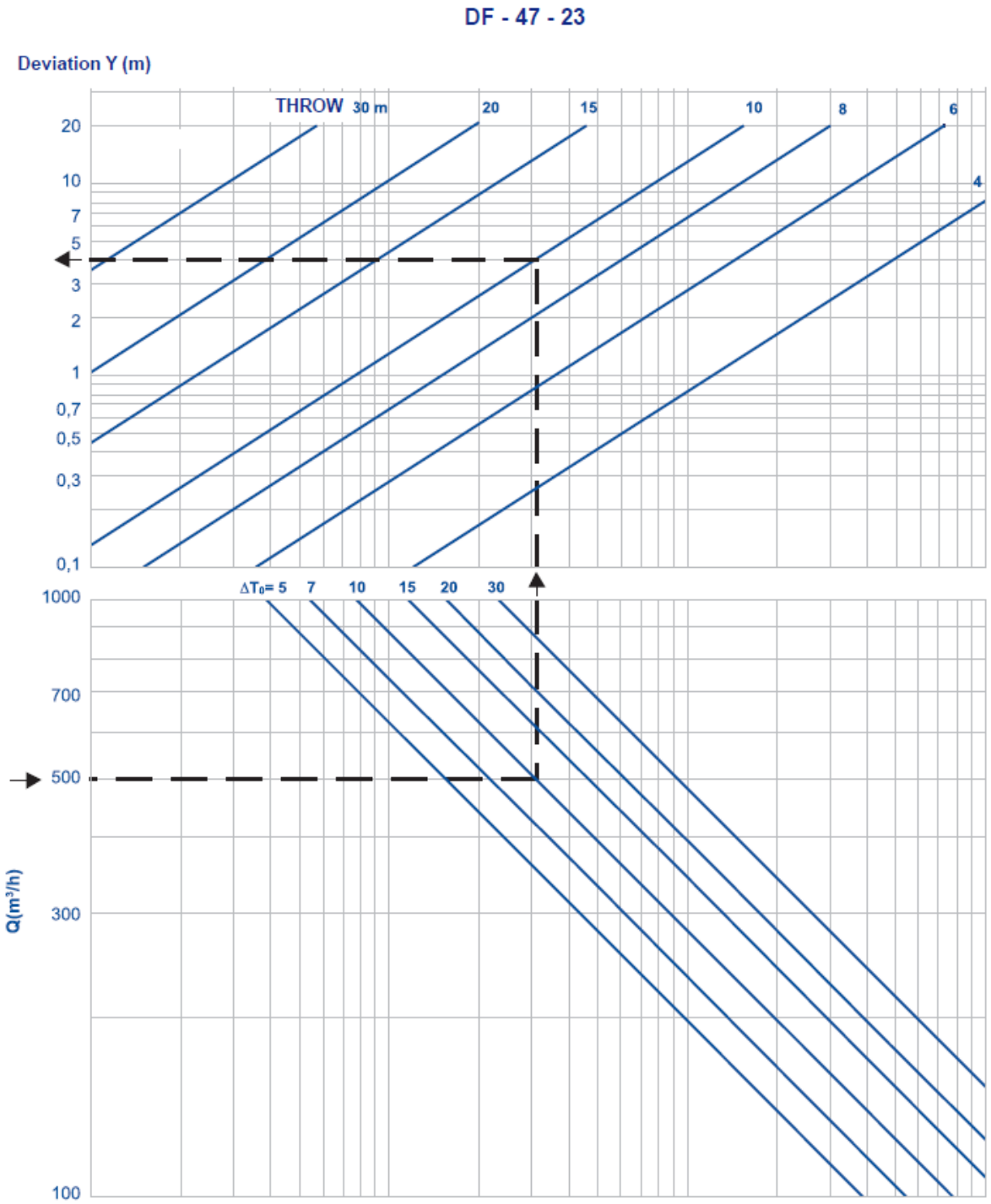
DF-47 model

DF-47-2.- Velocity of the air jet in the throw



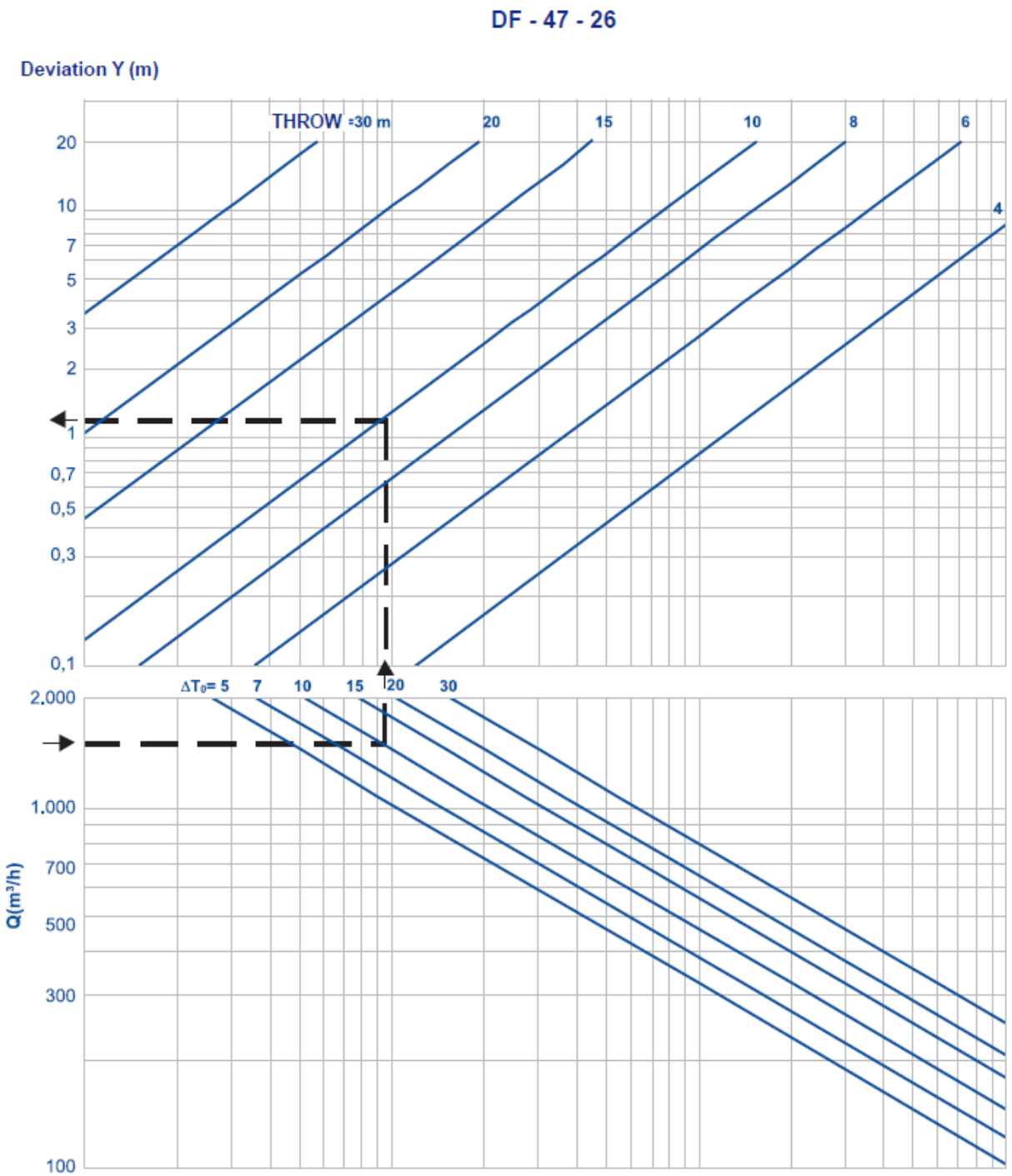
DF-47 model

DF-47-3.1.- Vertical deviation of the air jet (non-isothermal jets)



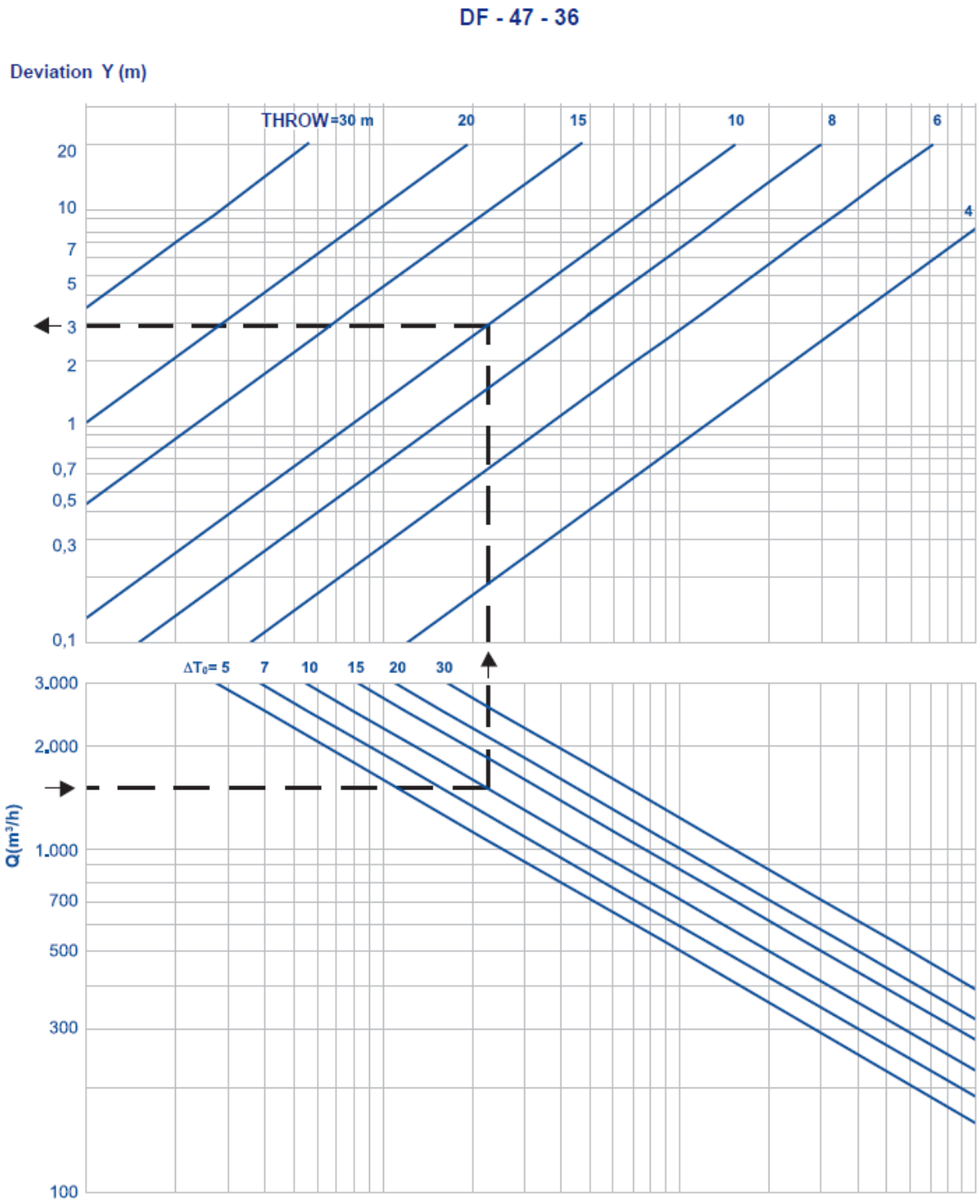
DF-47 model

DF-47-3.2.- Vertical deviation of the air jet (non-isothermal jets)



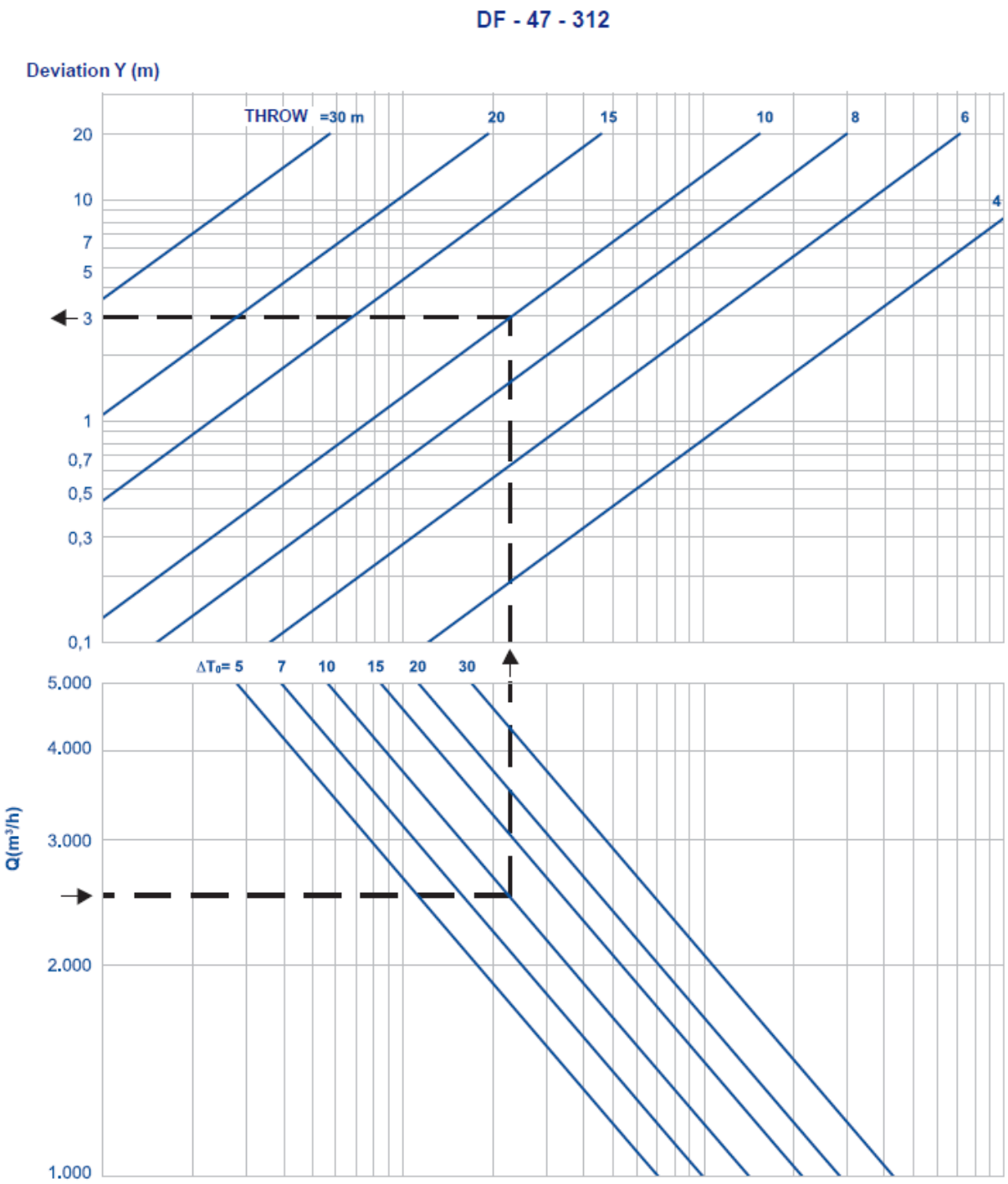
DF-47 model

DF-47-3.3.- Vertical deviation of the air jet (non-isothermal jets)



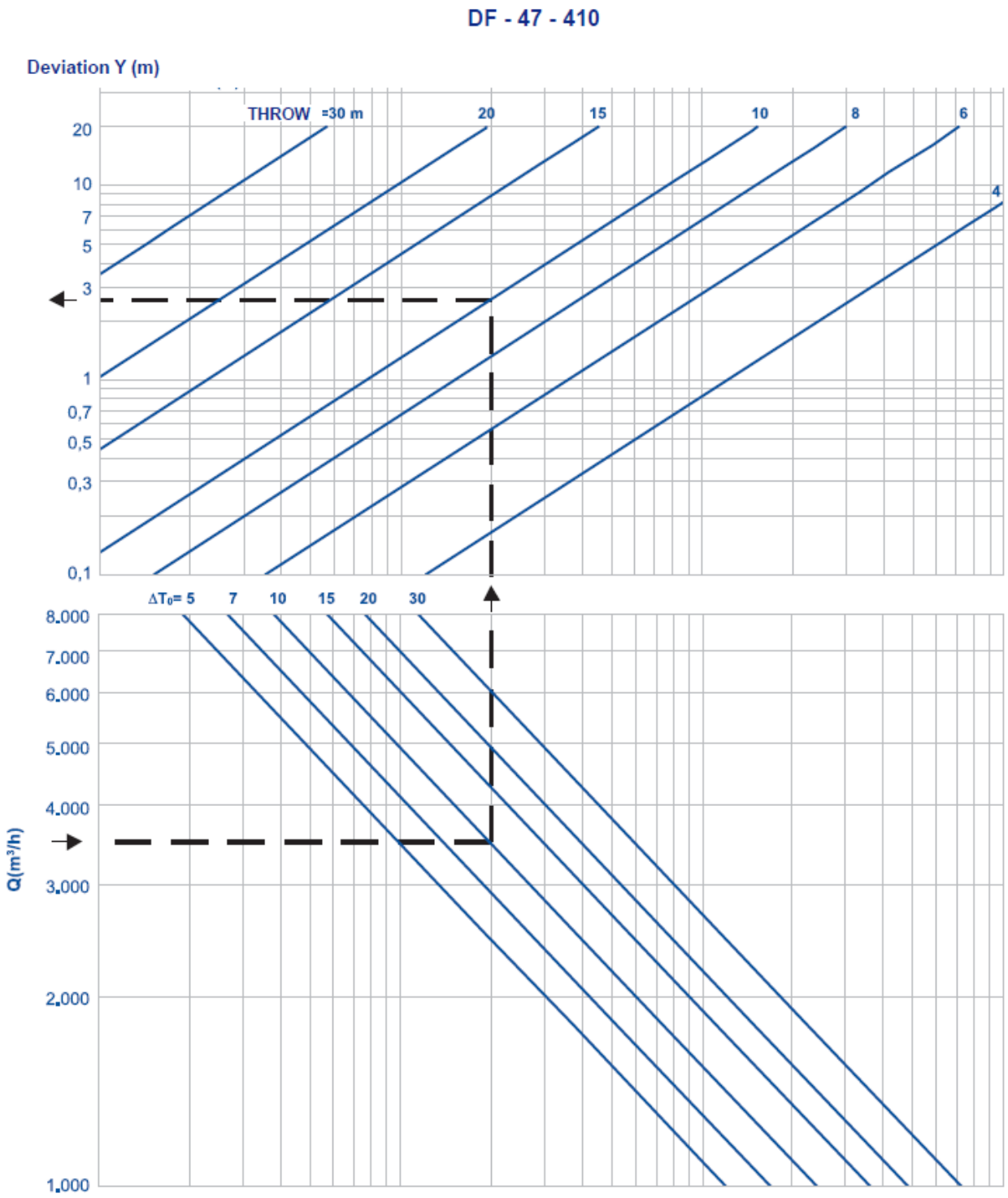
DF-47 model

DF-47-3.4.- Vertical deviation of the air jet (non-isothermal jets)



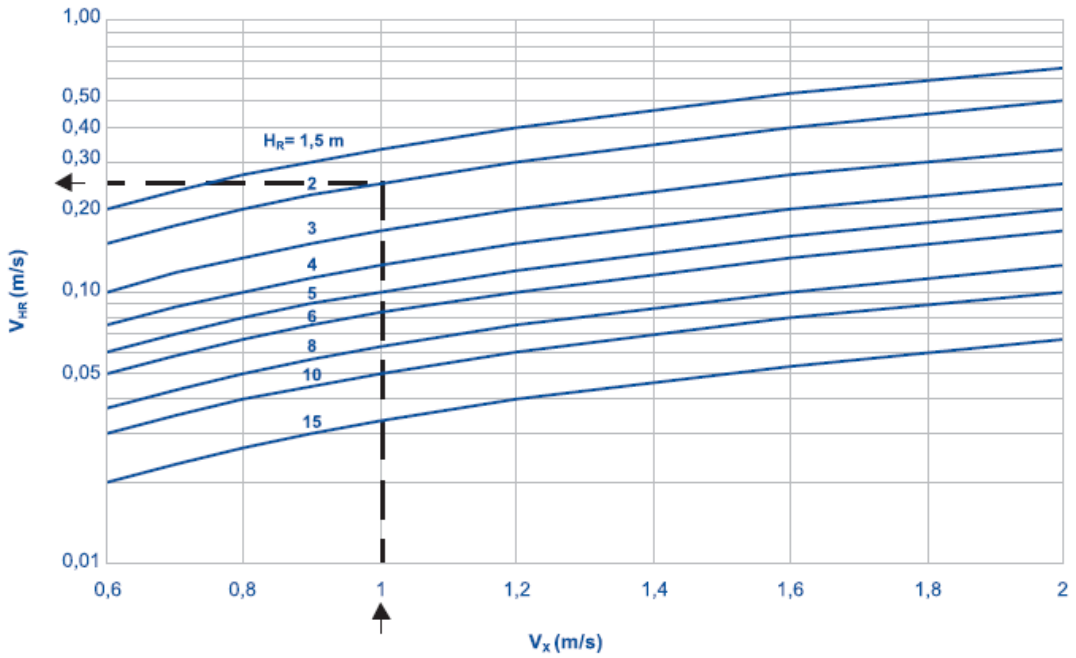
DF-47 model

DF-47-3.5.- Vertical deviation of the air jet (non-isothermal jets)

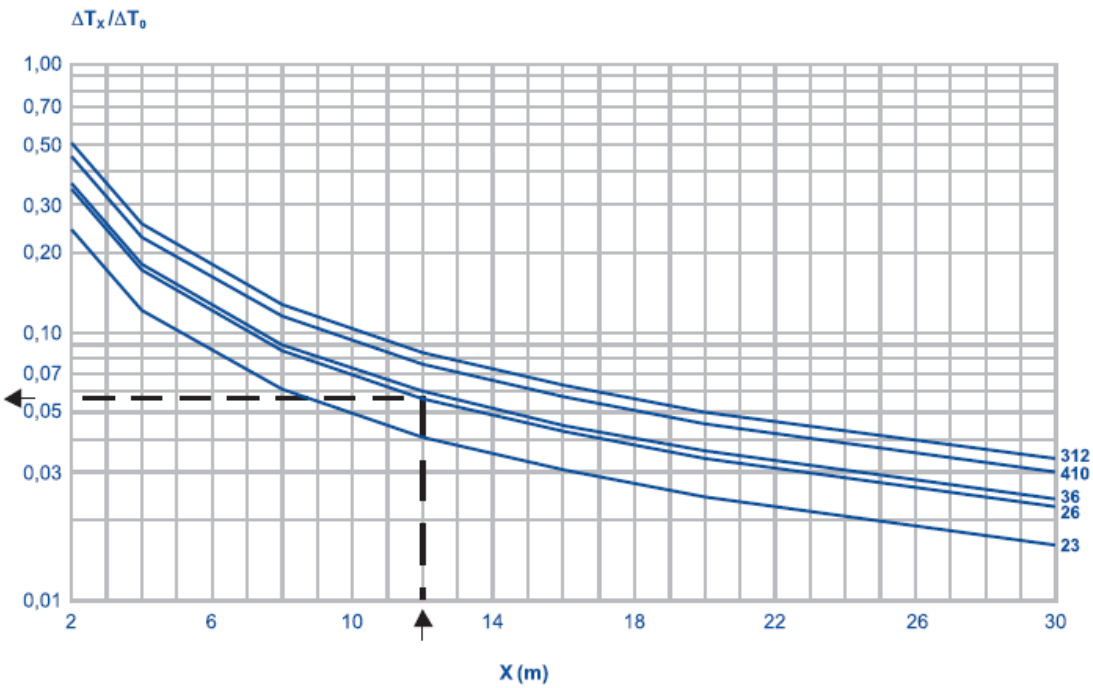


DF-47 model

DF-47-4.- Ratio between air flow velocities.

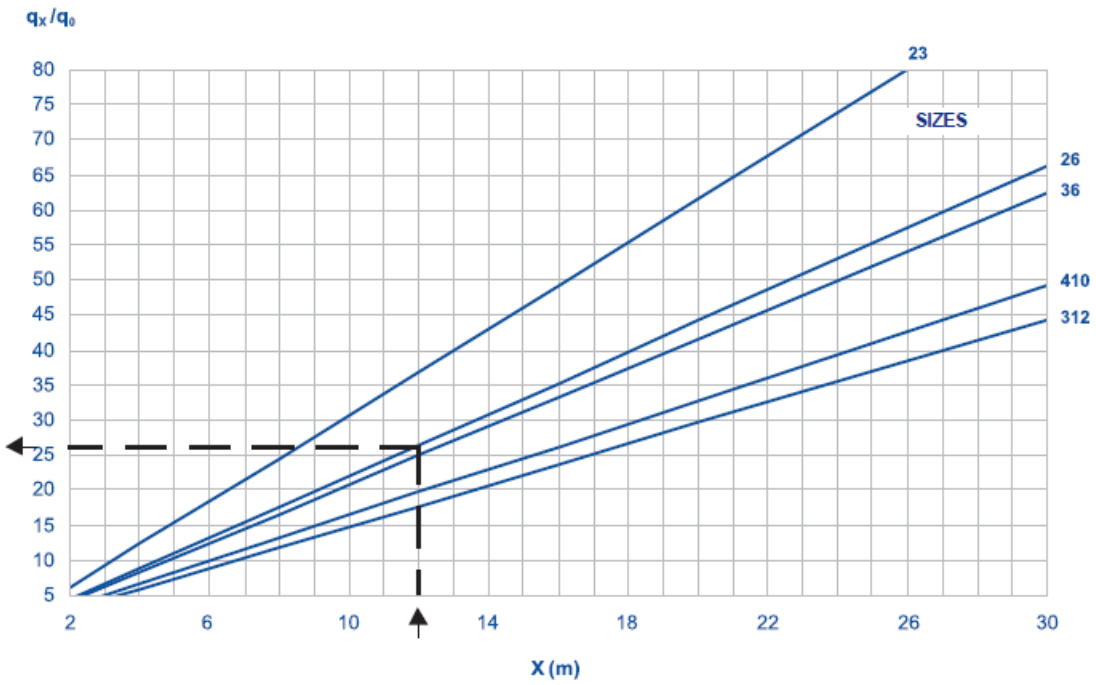


DF-47-5.- Ratio between temperature differences.

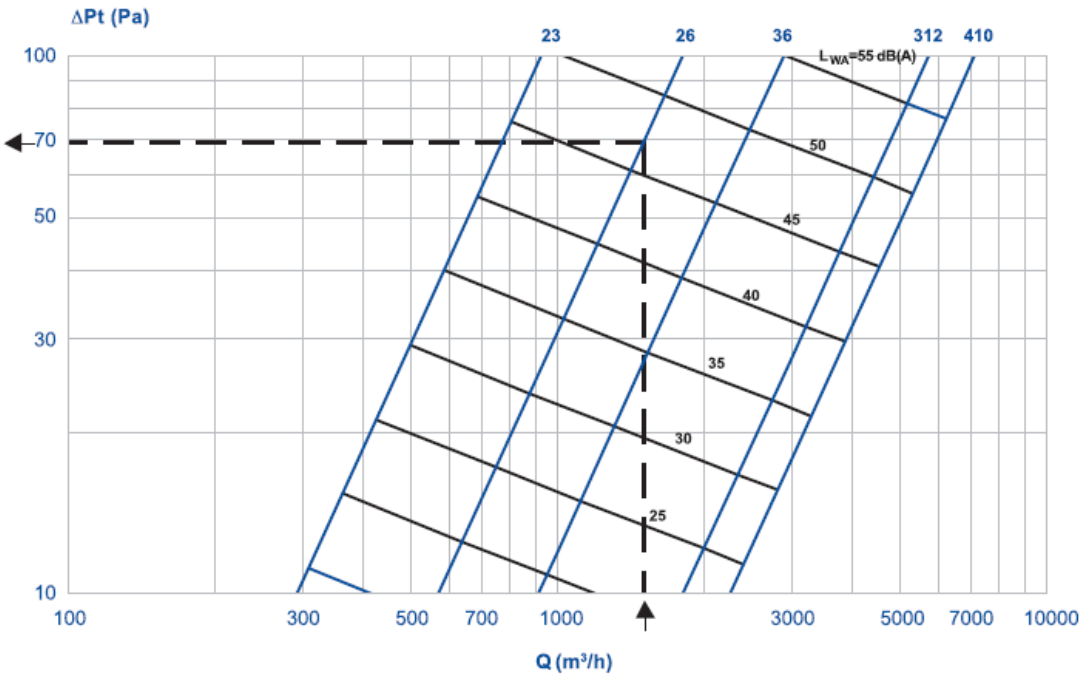


DF-47 model

DF-47-6.- Induction rate



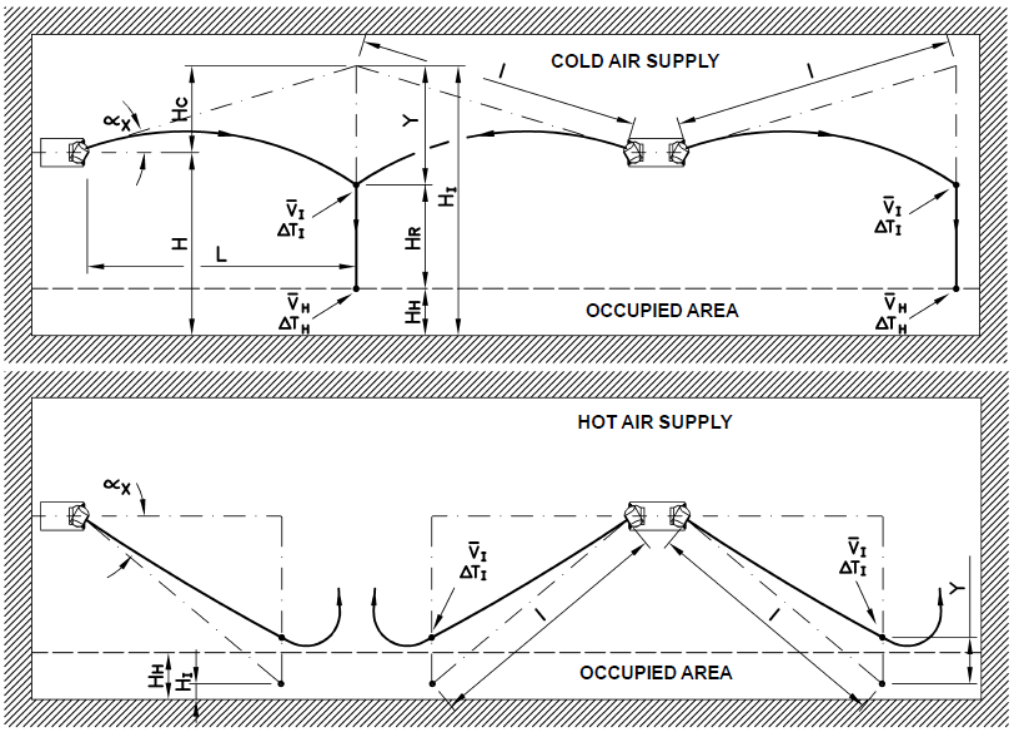
DF-47-7.- Pressure drop and sound power level



Symbols

Common symbols used in all tables and charts in the catalogue.

l(m):	Distance between the equipment to the impact point of the jets (with another jet or wall) under isothermal conditions.
α_x(°):	Supply angle.
L(m):	Horizontal distance from the equipment to the impact point of the jets (with another jet or wall).
X(m):	Throw of the air jet.
Y(m):	Deviation of the air jet caused by a temperature difference between the supply and ambient air.
H(m):	Installation height of the equipment.
H_H(m):	Height of occupied area.
H_C(m):	Height from the impact point of the jets (with another jet or wall) under isothermal conditions with respect to the equipment location.
H_I(m):	Height from the impact point of the jets (with another jet or wall) under isothermal conditions.
H_R(m):	Height from impact point of the jets (with another jet or wall) with respect to the point where the air velocity and temperature are to be determined (generally the occupied area).
Q(m^3/h ó l/s):	Supply air flow.
A_K(m^2):	Effective area.
V_X(m/s):	Velocity of the jets at throw X.
V_H(m/s):	Velocity of the jets in the occupied area.
V_K(m/s):	Effective supply velocity.
V_{HR}(m/s):	Velocity of the jets at a distance, HR, below the impact point of the jets (with another jet or wall).
ΔT_O(°C):	Temperature difference between the supply jets and room air.
ΔT_X(°C):	Temperature difference between the jets (for throw X) and room air.
ΔT_h(°C):	Temperature difference between the jets (in occupied area) and room air.
q_x/q_o:	Induction rate. Quotient between the air flow for a throw X and the air flow supplied in the zone.
Y_{max}(m):	Maximum throw with vertical supply of hot air (Vx=0 m/s).
ΔP_t(Pa):	Total pressure drop.
L_{wA}[dB(A)]:	Sound power level.



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