KOOLAIR

series

DF-48

Long-throw spherical diffusers

ISO 9001
BUREAU VERITAS
Certification
Sistema de Gestión

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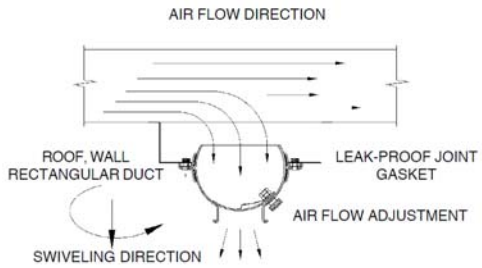
CONTENTS

DF-48 spherical diffuser

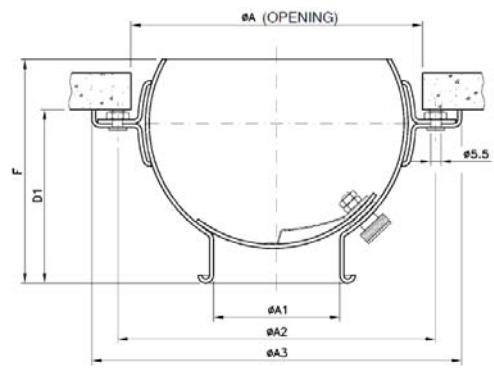
Description

The DF-48 long-throw, spherical diffuser in its standard version is manufactured entirely of anodised aluminium with a natural finish. By special order, the diffuser can be painted in any RAL colour. The diffuser has a volume control damper at the outlet.



Application

The DF-48 diffusers allow long throws with an acceptable noise level. The diffuser releases an occasional air jet with a throw of over 30 metres. They
can be used for spot cooling and are especially appropriate for sport centres, industrial warehouses, clean rooms, recording studios, discotheques and large premises, as well as any area requiring precisely targeted air jets. The configuration allows the diffuser to be swiveled in any direction up to a maximum of ±35° in the horizontal or vertical direction.



Dimensions and mounting

The diffusers must attached by screws. The units can be supplied with plenum boxes or a plate fitted in an assembly of up to six units. See dimensions on page 3.

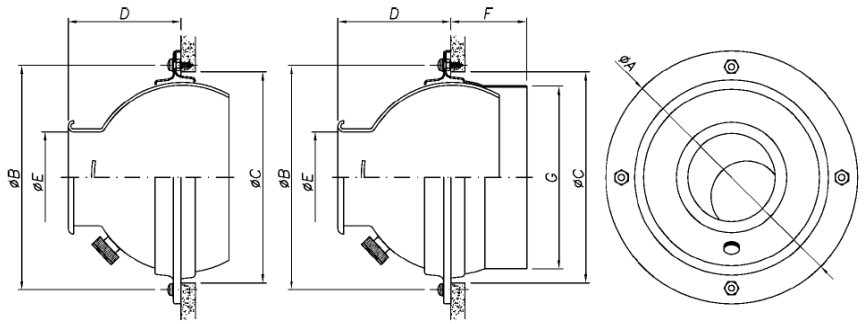
DF-48	*Spherical long-throw diffuser, manual operation.*
DF-48-C	*Spherical long-throw diffuser, manual operation with direct coupling collar to flexible duct.*
3, 5, 8, 10, 12, 16 y 20	*Seven sizes (see page 3)*
AC	*Plenum or flan plate.*
PAC	*Plenum box with connection to round duct.*
PCL	*Integrated in plate to be adapted in round face duct.*
INJ	*With "boot" to be installed in a round face duct.*

Identification

Seven sizes.

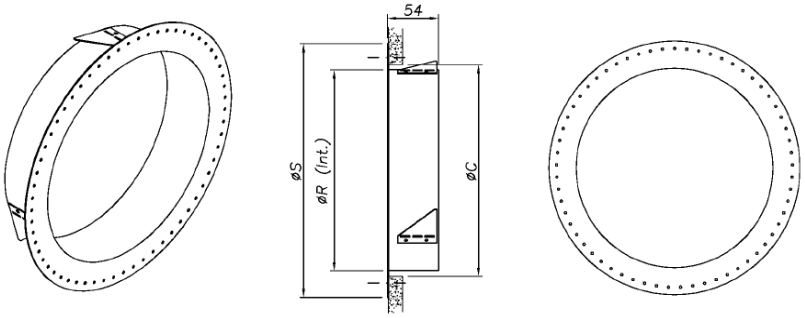
DF-48 dimensions

Dimensions DF-48 and DF-48-B



SIZE	Ø A	Ø B	Ø C	D	Ø E	F	Ø G
3	132	107	80	44	40	26	61
5	205	182	143	91	65	48	123
8	276	254	215	129	100	50	198
10	324	301	265	150	136	79	248
12	380	356	322	201	165	74	313
16	495	470	425	249	230	113	398
20	553	533	500	296	300	135	498

øC = HOLE (Opening)



DIFFUSER	Ø C	Ø R	Ø S
5	145	138	200
8	219	212	270
10	269	262	319
12	325	318	374
16	432	425	490
20	508	496	547

øC = HOLE (Opening)

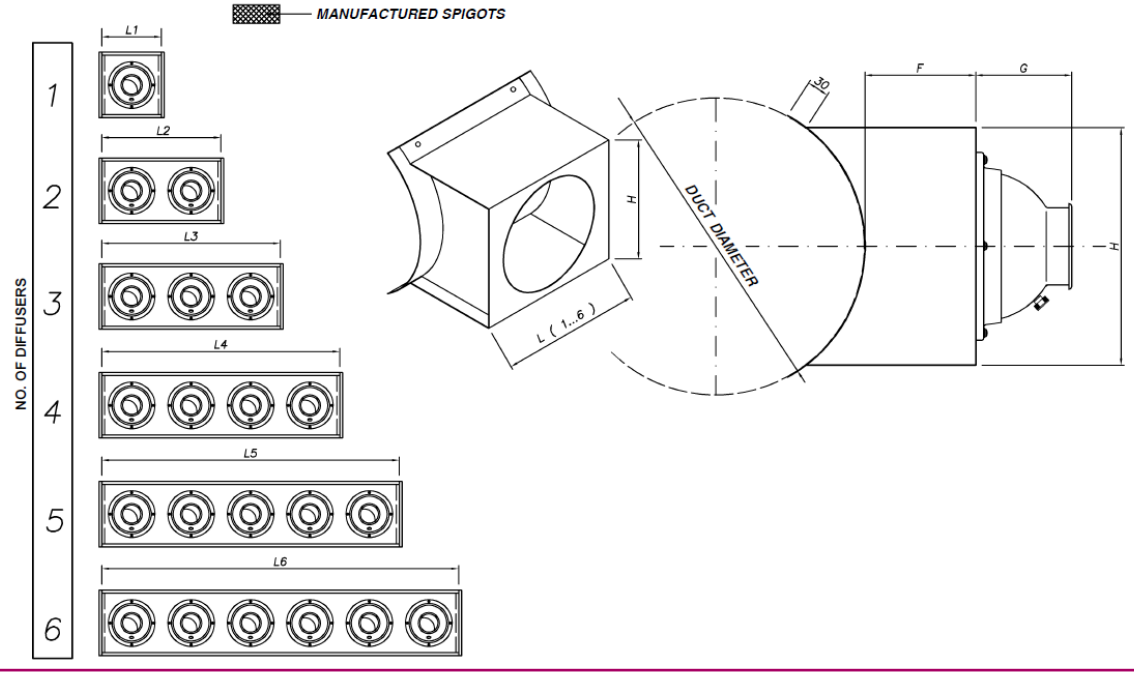
DF-48 accessories

Dimensions of plenum boxes for connection to round duct

Dimensions of plates with diffuser assemblies

MODEL	DUCT DIAMETER													OVERALL DIMENSIONS								
	250	315	355	400	450	500	560	630	710	800	900	1000	1200	1500	L1	L2	L3	L4	L5	L6	F	G	H
3"															200	400	600	800	1000	1200	100	44	200
5"															250	500	750	1000	1250	1500	120	91	250
8"															360	720	1080	1440	1800	2160	150	129	360
10"															410	820	1230	1640	2050	2460	170	150	410
12"															470	940	1410	1880	2350	-	180	201	470
16"															630	1260	1890	-	-	-	220	249	630
20"															700	1400	2100	-	-	-	250	296	700

MANUFACTURED SPIGOTS



DF-48 selection table

Q		Size	3			5			8			12			16			20		
(m^3/h)	(l/s)	A_k (m^2)	0,0013			0,0033			0,0079			0,0214			0,0415			0,0707		
25	6,9	V_k (m/s)		5,3			2,1													
		$X_{0,3}$ $X_{0,5}$ $X_{1,0}$ (m)	3,3	2,0	1,0	2,1	1,3	0,6												
		ΔP_t (Pa)		17			3													
		L_{wA} - dB(A)		<15			<15													
50	13,9	V_k (m/s)		10,7			4,2													
		$X_{0,3}$ $X_{0,5}$ $X_{1,0}$ (m)	6,7	4,0	2,0	4,2	2,5	1,3												
		ΔP_t (Pa)		68			11													
		L_{wA} - dB(A)		25			<15													
100	27,8	V_k (m/s)		21,4			8,4			3,5										
		$X_{0,3}$ $X_{0,5}$ $X_{1,0}$ (m)	13,4	8,0	4,0	8,4	5,0	2,5	5,4	3,3	1,6									
		ΔP_t (Pa)		274			43			7										
		L_{wA} - dB(A)		46			22			<15										
250	69,4	V_k (m/s)					21,0			8,8			3,2							
		$X_{0,3}$ $X_{0,5}$ $X_{1,0}$ (m)				21,0	12,6	6,3	13,5	8,1	4,1	8,2	4,9	2,5						
		ΔP_t (Pa)					266			46			6							
		L_{wA} - dB(A)					50			27			<15							
500	138,9	V_k (m/s)								17,6			6,5			3,3				
		$X_{0,3}$ $X_{0,5}$ $X_{1,0}$ (m)							27,1	16,3	8,1	16,5	9,9	4,9	11,8	7,1	3,5			
		ΔP_t (Pa)								185			25			7				
		L_{wA} - dB(A)								48			22			<15				
750	208,3	V_k (m/s)											9,7			5,0			2,9	
		$X_{0,3}$ $X_{0,5}$ $X_{1,0}$ (m)										24,7	14,8	7,4	17,7	10,6	5,3	13,6	8,1	4,1
		ΔP_t (Pa)											57			15			5	
		L_{wA} - dB(A)											34			17			<15	
1250	347,2	V_k (m/s)											16,2			8,4			4,9	
		$X_{0,3}$ $X_{0,5}$ $X_{1,0}$ (m)										>30	24,7	12,3	29,5	17,7	8,9	22,6	13,6	6,8
		ΔP_t (Pa)											158			42			14	
		L_{wA} - dB(A)											50			33			19	
2000	555,6	V_k (m/s)														13,4			7,9	
		$X_{0,3}$ $X_{0,5}$ $X_{1,0}$ (m)													>30	28,4	14,2	>30	21,7	10,9
		ΔP_t (Pa)														108			37	
		L_{wA} - dB(A)														47			33	
2750	763,9	V_k (m/s)																	10,8	
		$X_{0,3}$ $X_{0,5}$ $X_{1,0}$ (m)																>30	29,9	14,9
		ΔP_t (Pa)																	70	
		L_{wA} - dB(A)																	43	
3500	972,2	V_k (m/s)																	13,8	
		$X_{0,3}$ $X_{0,5}$ $X_{1,0}$ (m)																>30	>30	19,0
		ΔP_t (Pa)																	113	
		L_{wA} - dB(A)																	50	

Notes

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

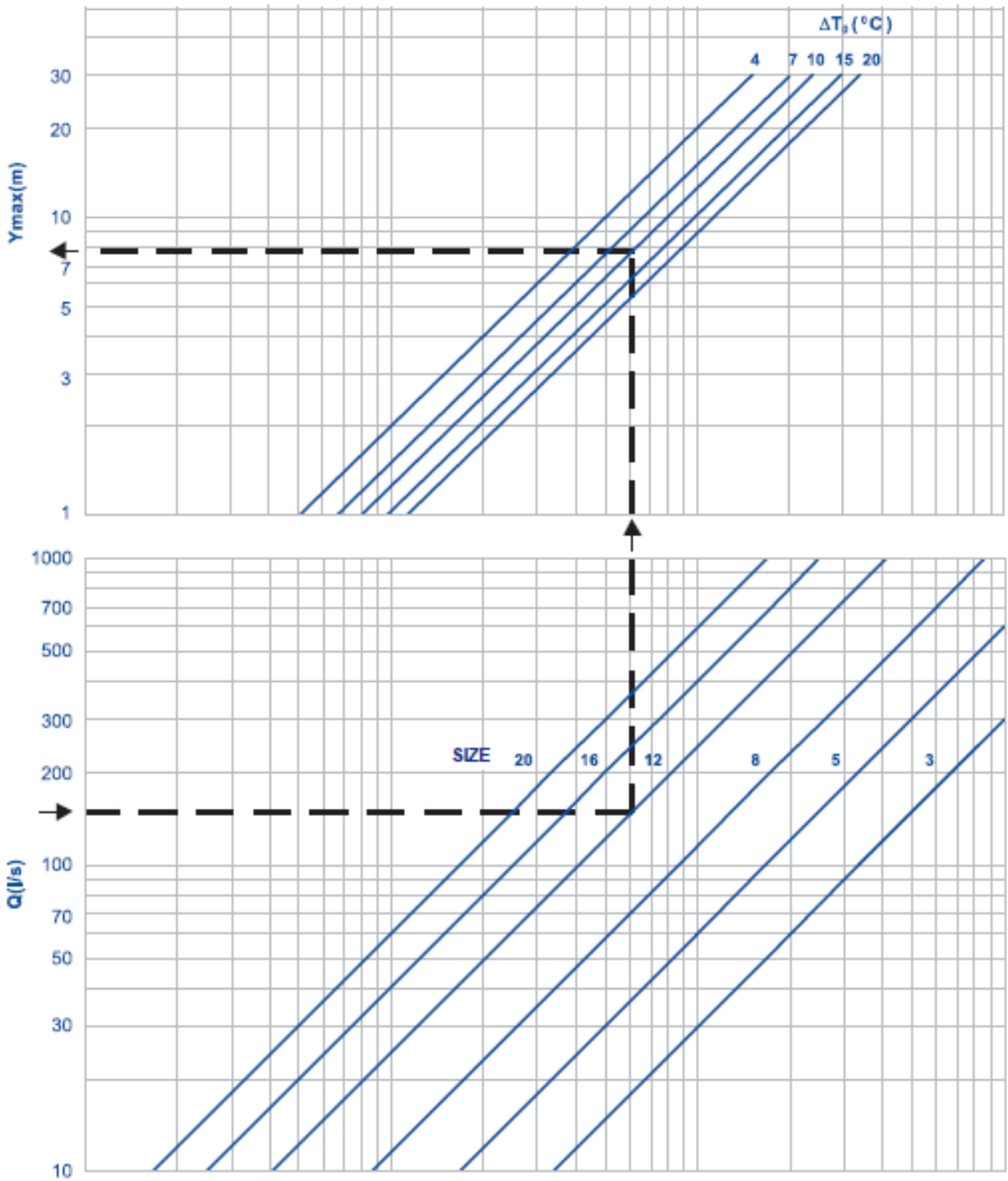
Symbols

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-48 model

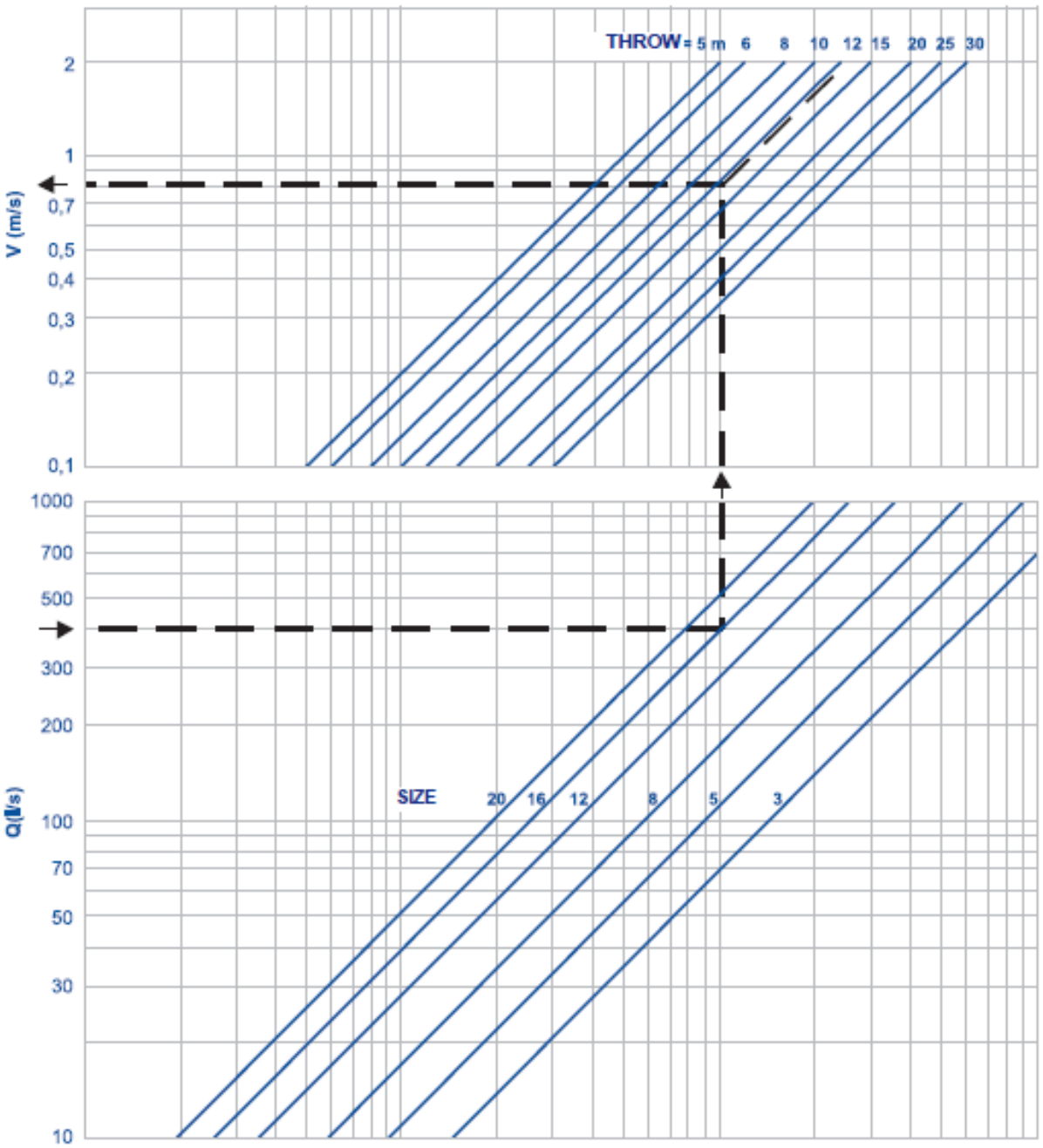
Selection charts

DF-48-1.- Maximum vertical penetration.



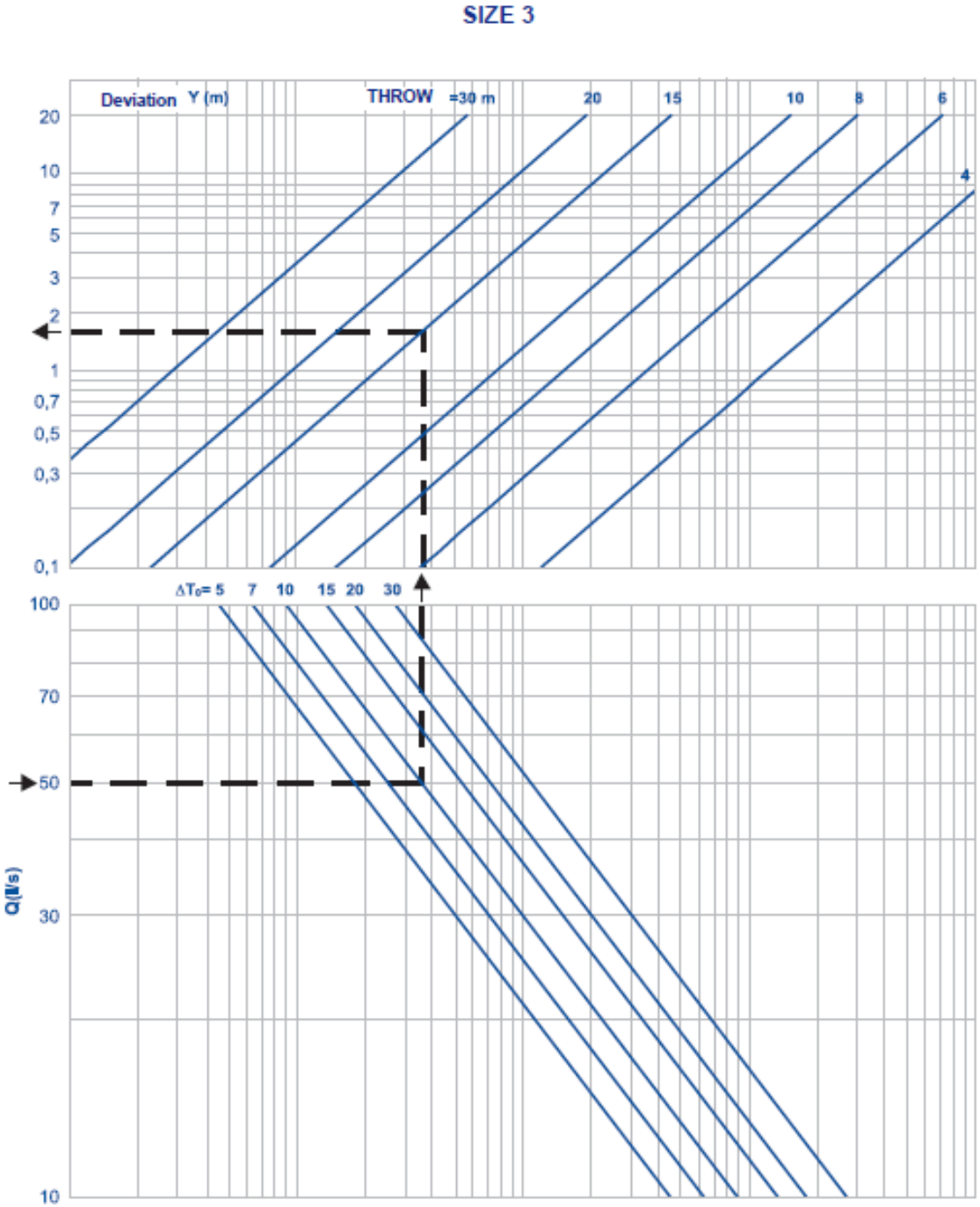
DF-48 model

DF-48-2.- Velocity of the air jet for the throw.



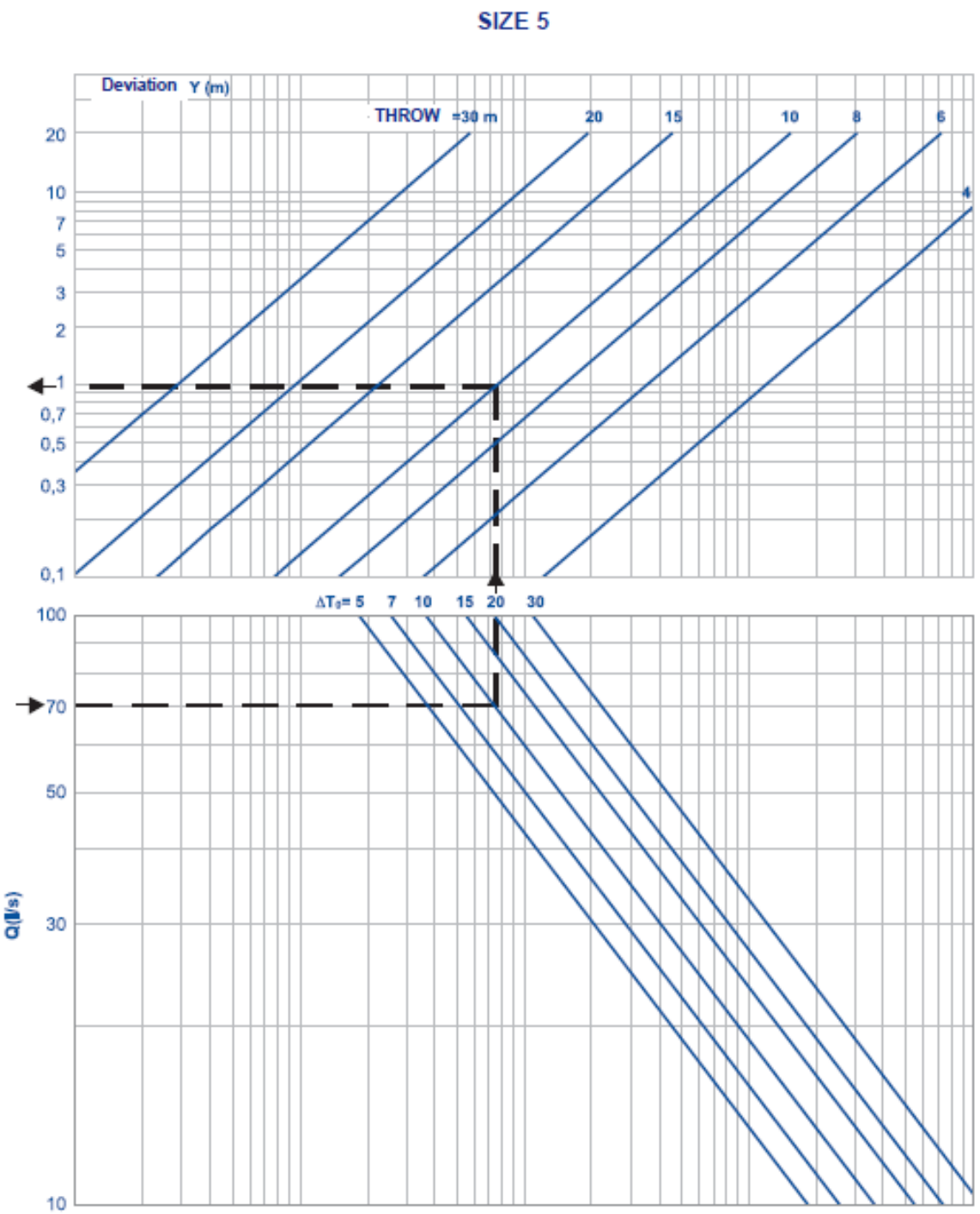
DF-48 model

DF-48-3.1.- Vertical deviation of the air jet (non-isothermal jets).



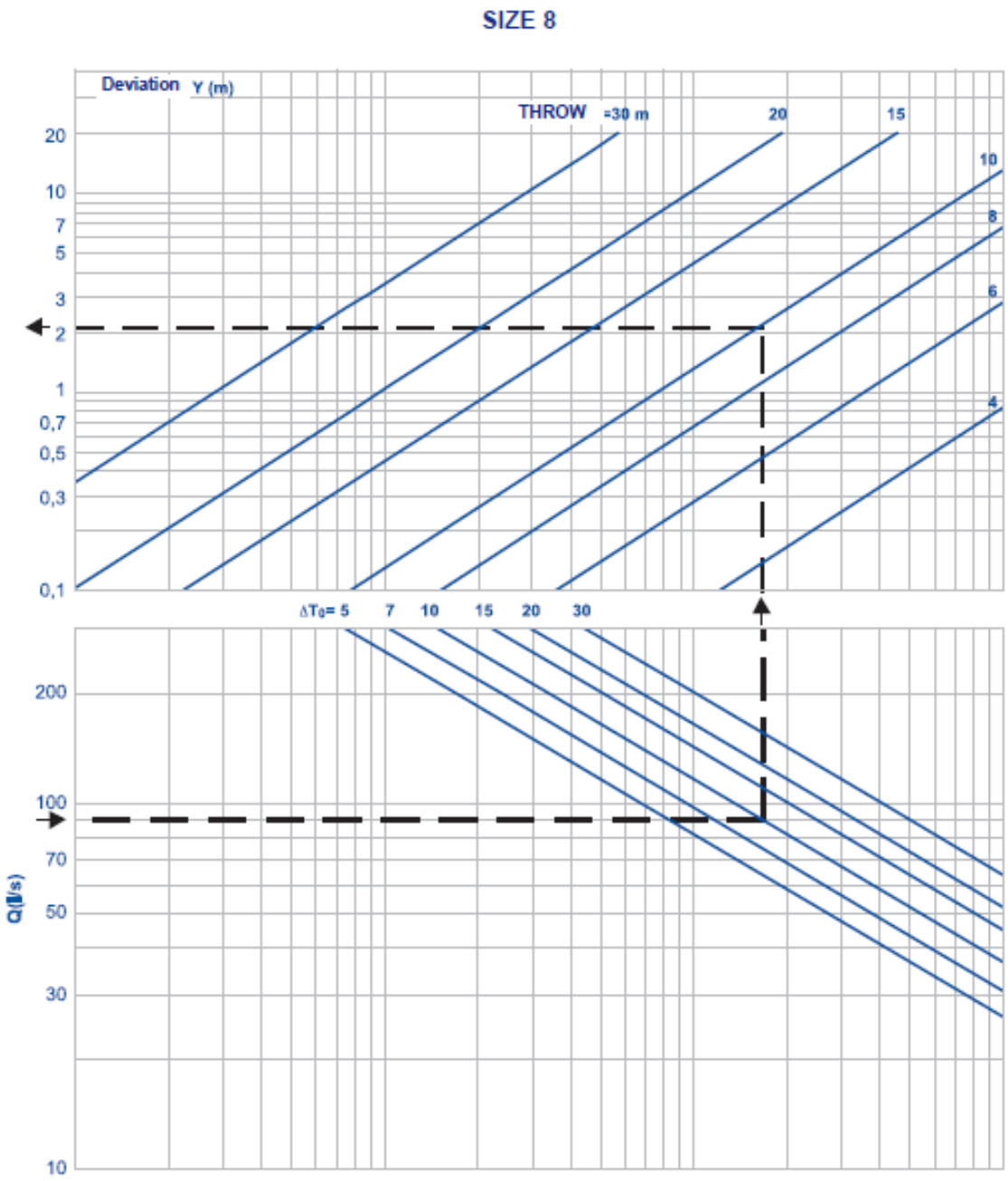
DF-48 model

DF-48-3.2.- Vertical deviation of the air jet (non-isothermal jets).



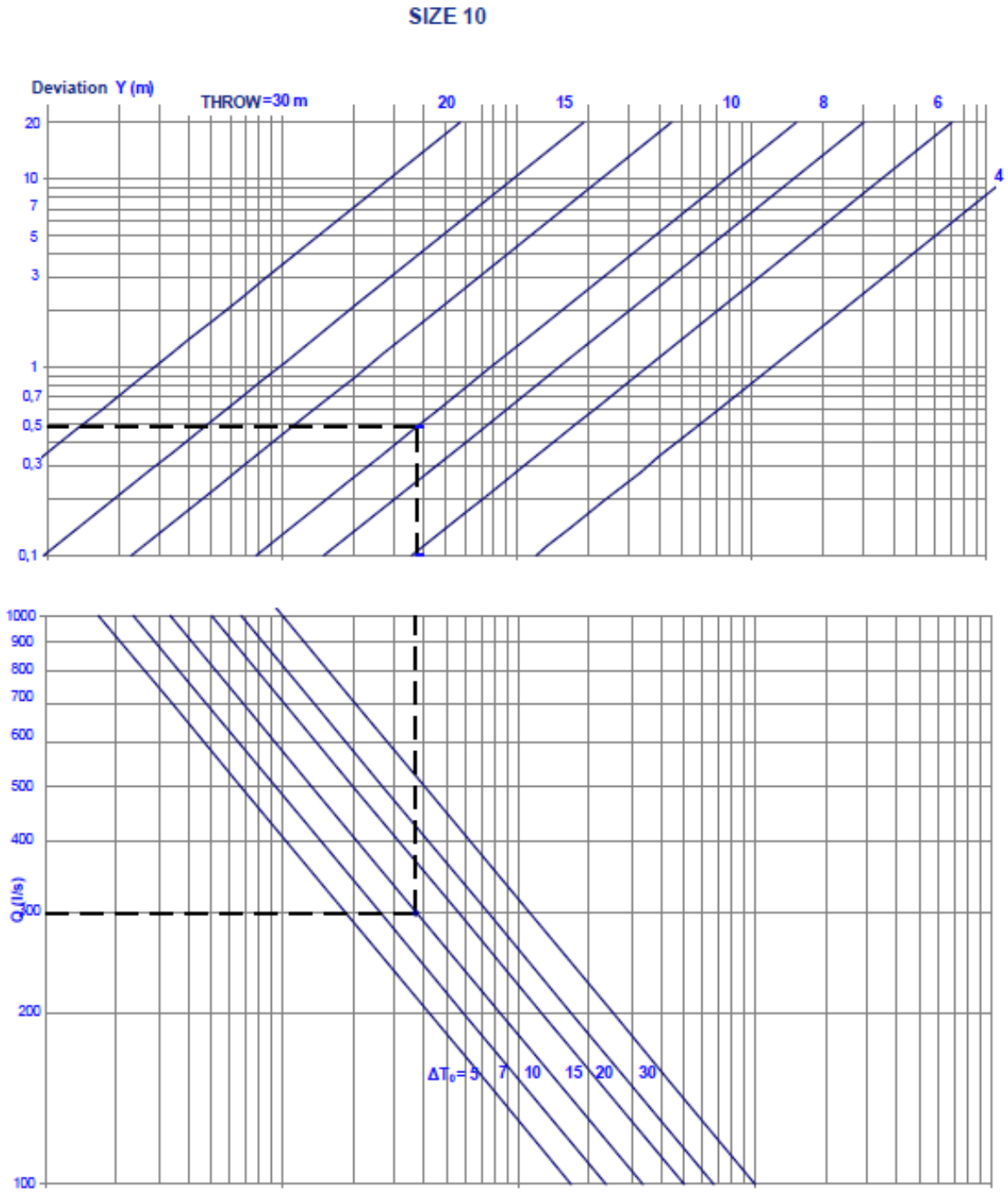
DF-48 model

DF-48-3.3.- Vertical deviation of the air jet (non-isothermal jets).



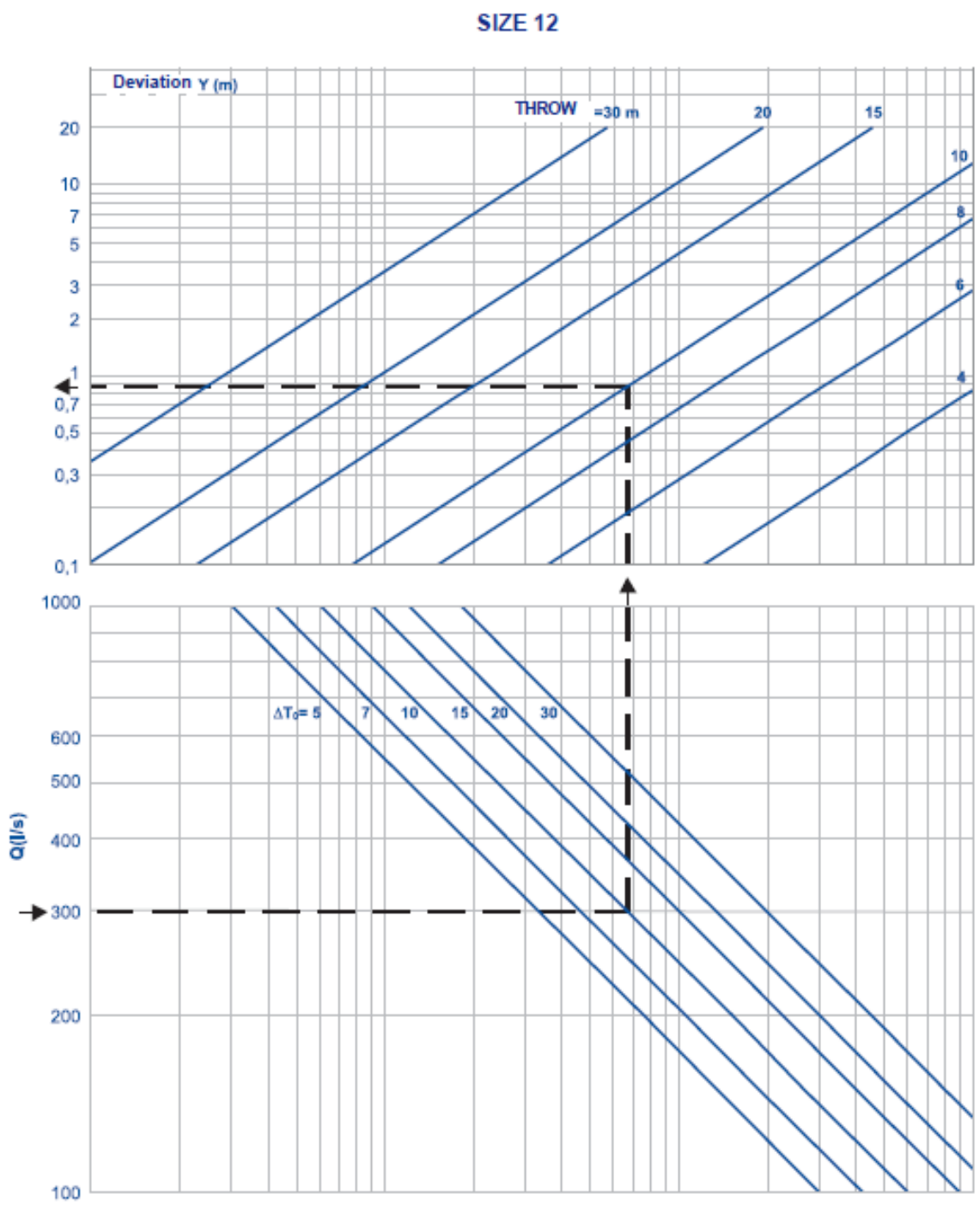
DF-48 model

DF-48-3.4.- Vertical deviation of the air jet (non-isothermal jets).



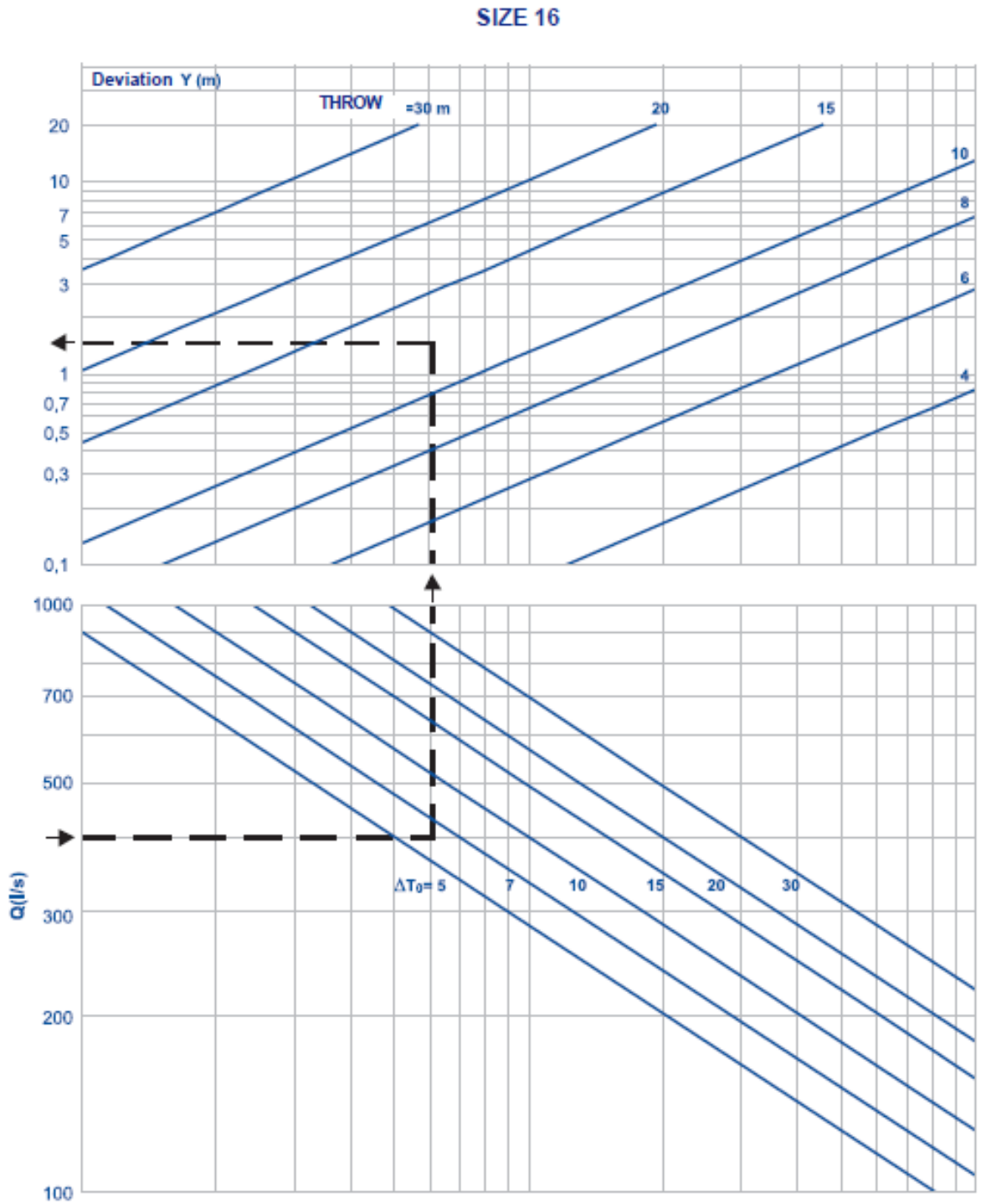
DF-48 model

DF-48-3.4.- Vertical deviation of the air jet (non-isothermal jets).



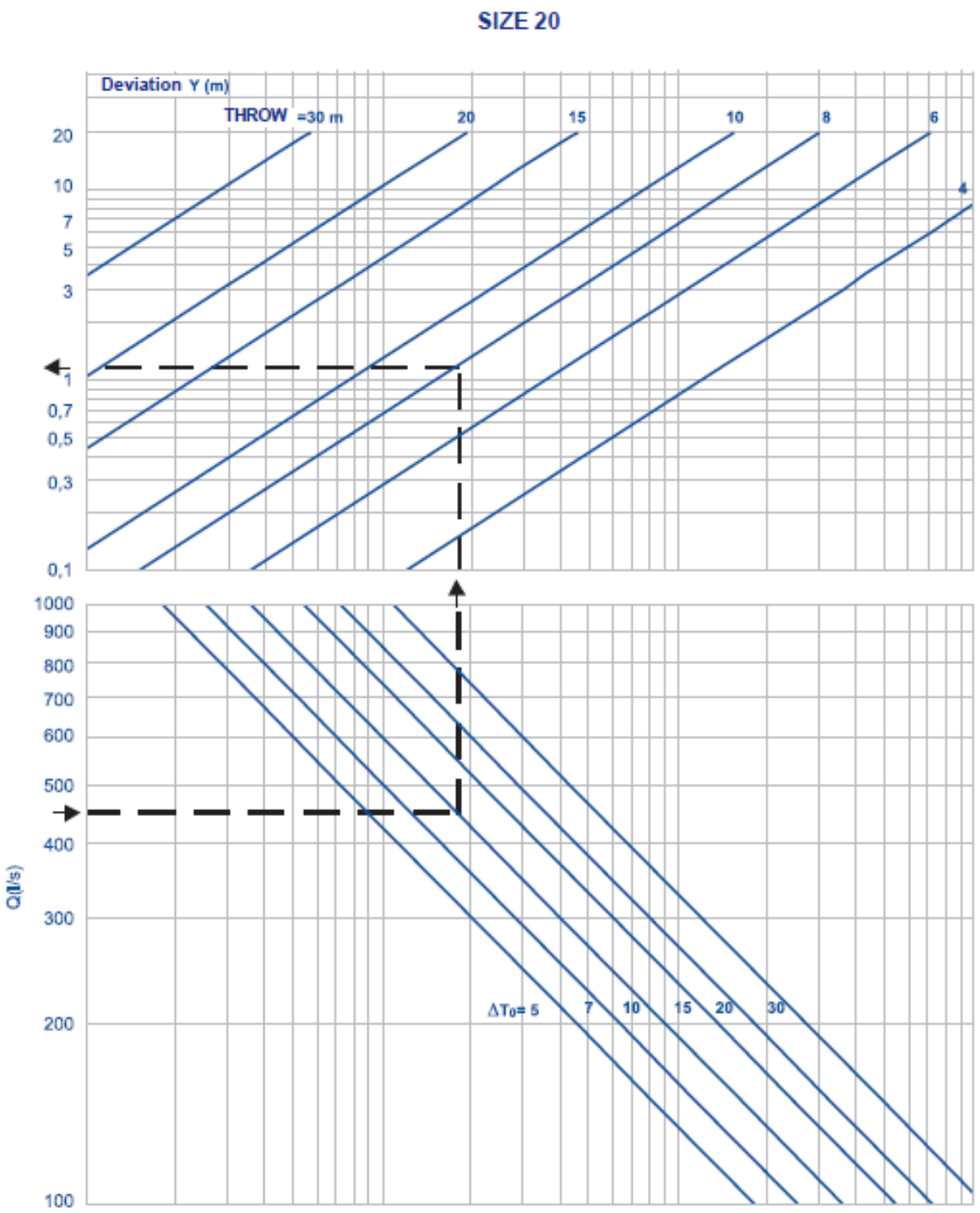
DF-48 model

DF-48-3.5.- Vertical deviation of air jet (non-isothermal jets).



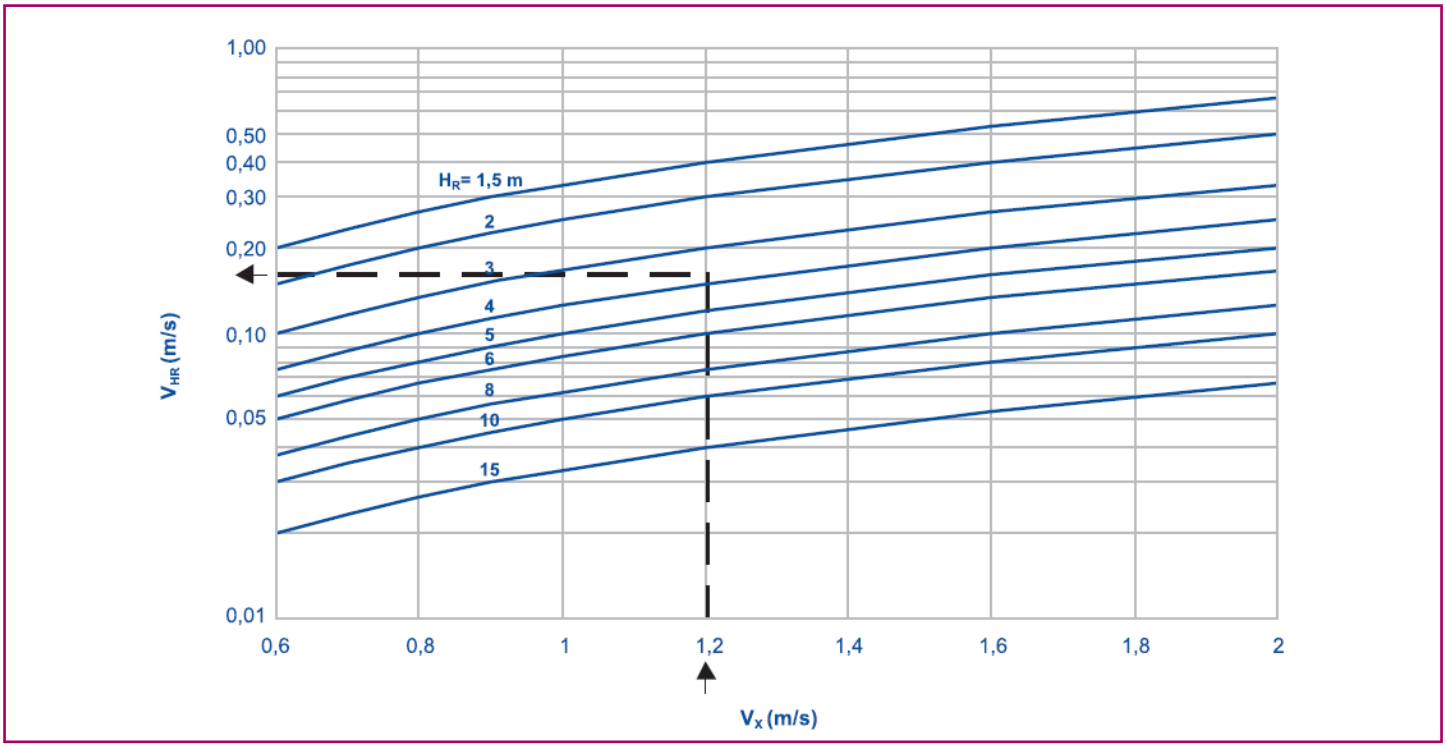
DF-48 model

DF-48-3.6.- Vertical deviation of the air jet (non-isothermal jets).

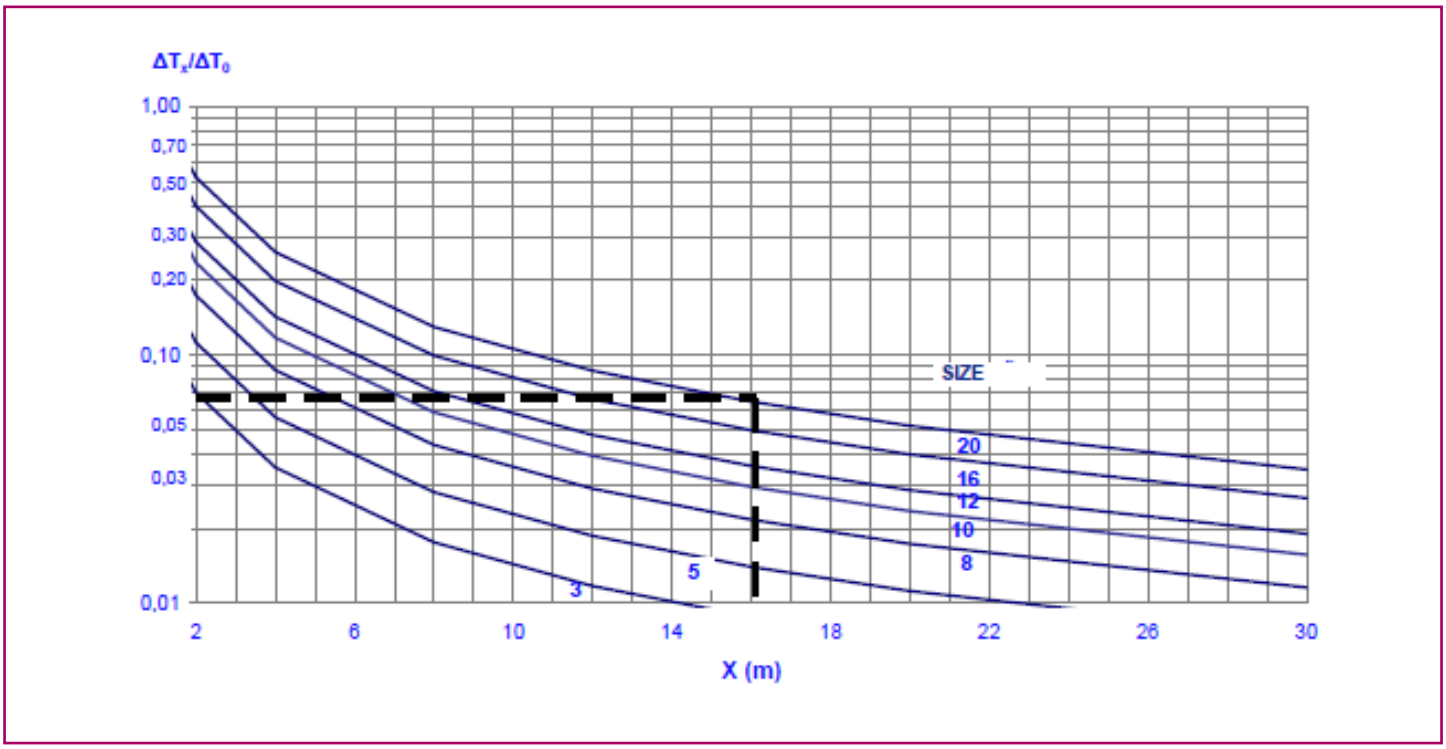


DF-48 model

DF-48-4.- Ratio between air flow velocities.

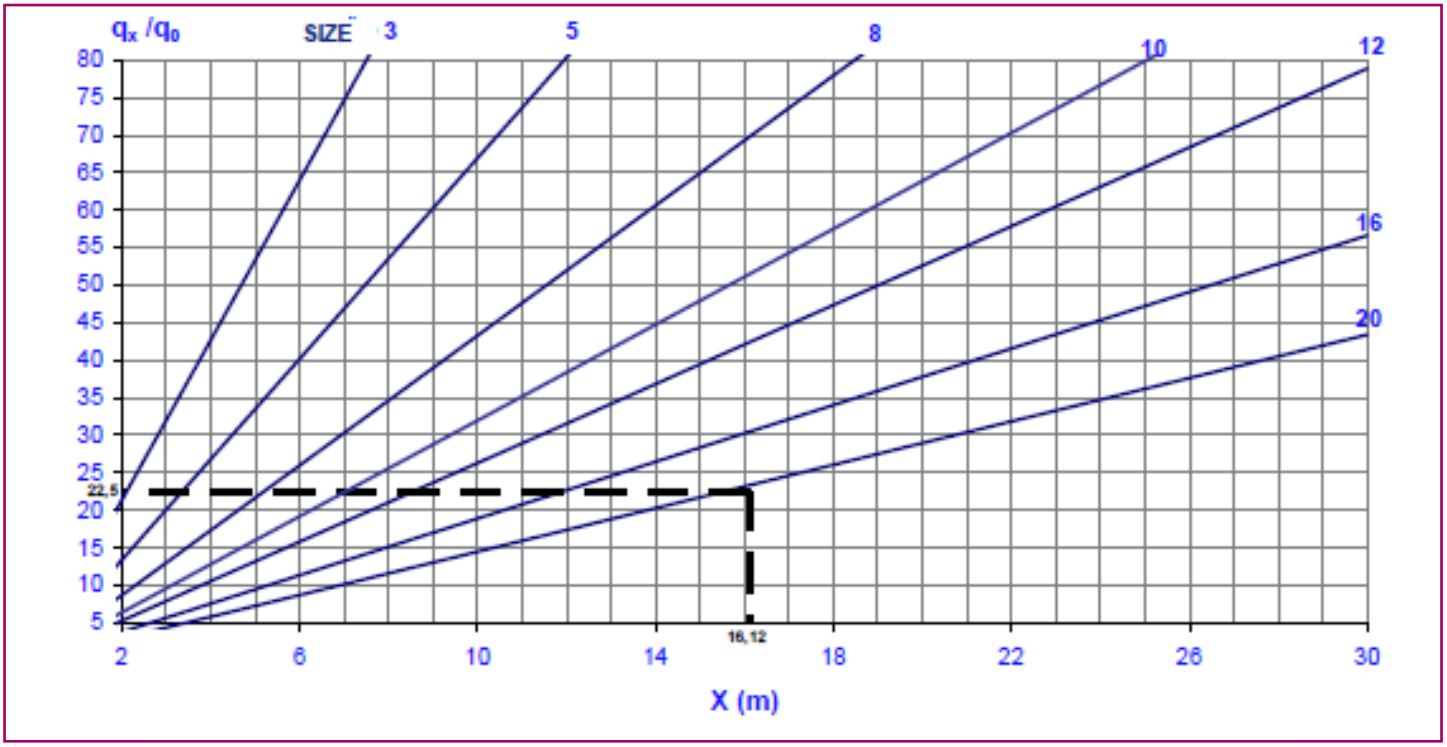


DF-48-5.- Ratio between temperature differences.

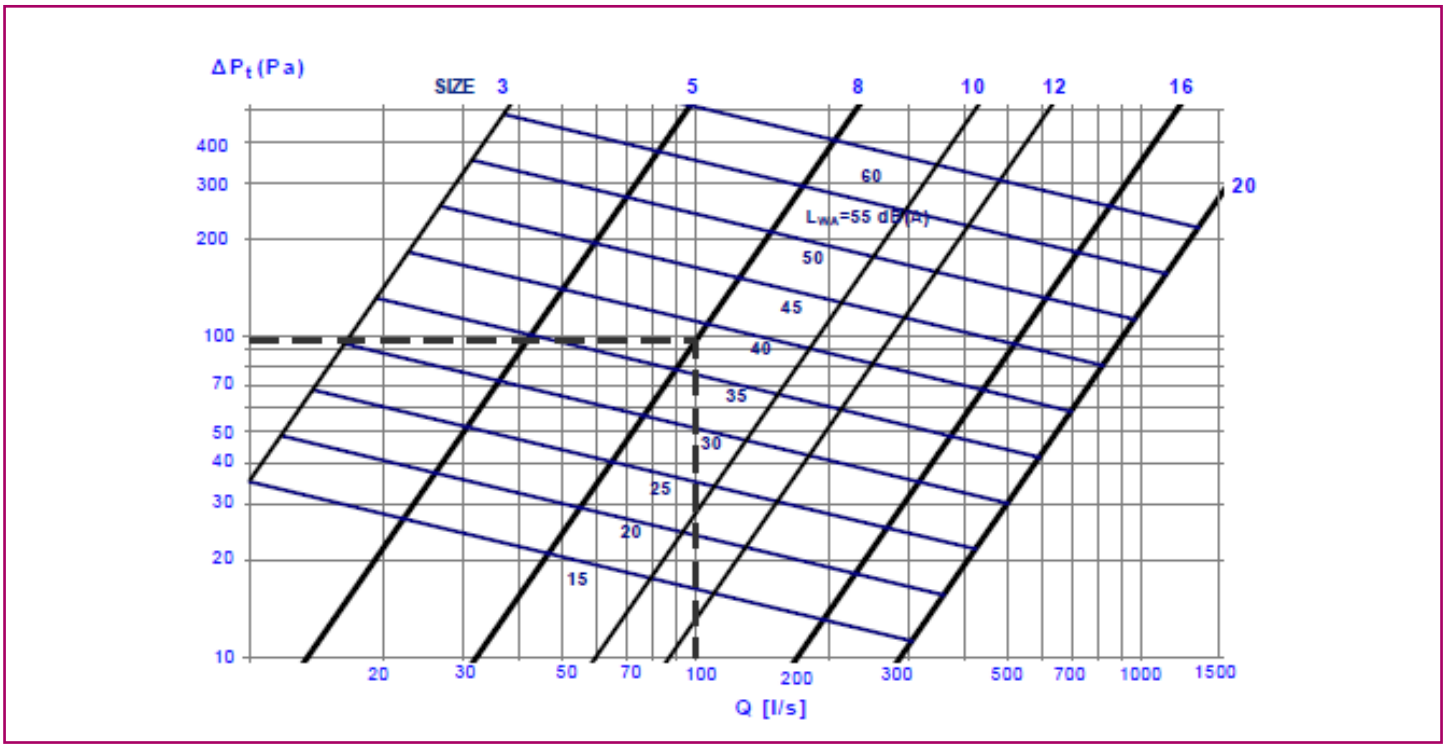


DF-48 model

DF-48-6.- Induction rate.



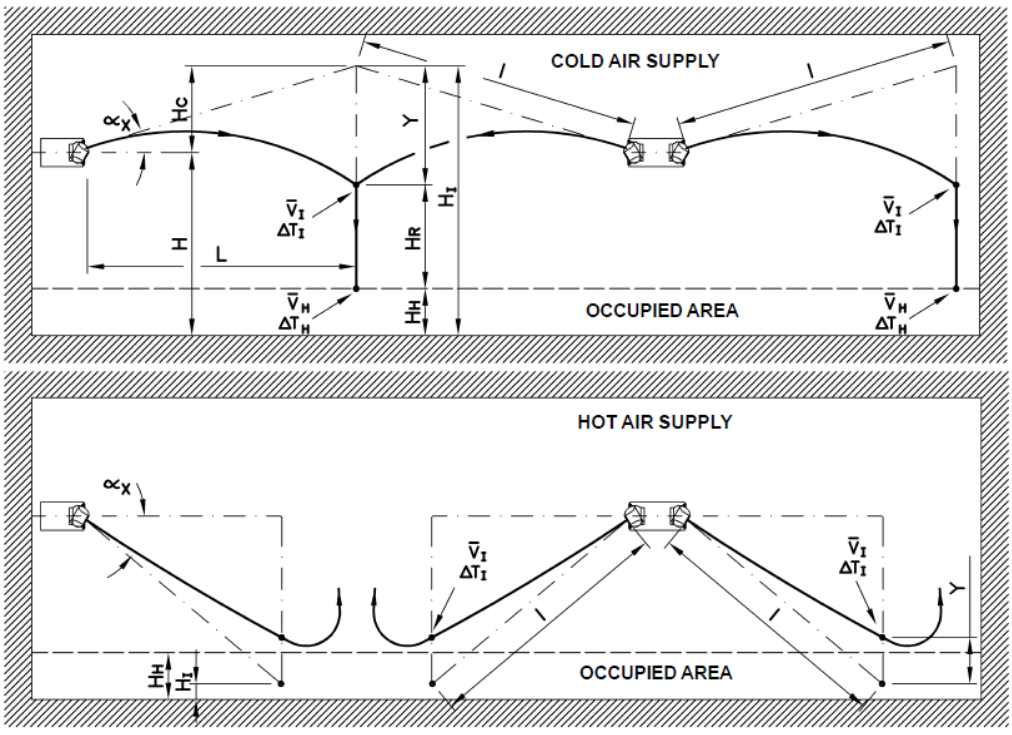
DF-48-7.- Pressure drop and sound power level.



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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