ADJUSTABLE SINGLE CONE CIRCULAR DIFFUSERS

KU9
SERIES

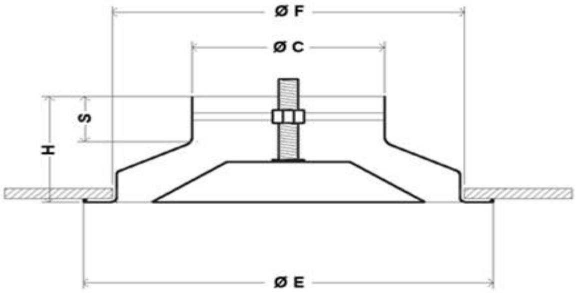
OVERVIEW

KU9: Series of ceiling cone diffusers, with diameter from 100 to 315mm, composed by an external cone and by a central adjustable single cone that may be adjusted for horizontal or vertical throw.

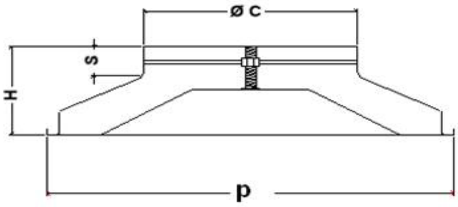
CHARACTERISTICS:
External cone in aluminum for standard versions, in carbon steel for the versions with panel, central cone in steel sheet, regulation screw in carbon steel.
Standard finish painted white RAL 9010 or RAL 9003, different paints on request.

The KU9 series diffusers are normally fixed to the plenum by means of lateral screws.
A flexible duct can be attached to the diffuser neck.

FIELD OF USE AND REGULATION
KU9 diffusers are suitable for false ceiling installation in rooms with a height between 2.5 and 5 meters such as offices, shops, meeting rooms, corridors, surgeries and similar.
They are suitable for both supply and extract air.
Lowering the central cone it is possible to have the air outlet along the ceiling with horizontal throw.
This regulation is indicated above all for use in cooling, but guarantees good conditions also for use in heating when there is more than one diffuser in the room.
Raising the central cone is possible to throw the air downwards. This setting is therefore suitable for use in heating only or in extraction.



Standard



with panel

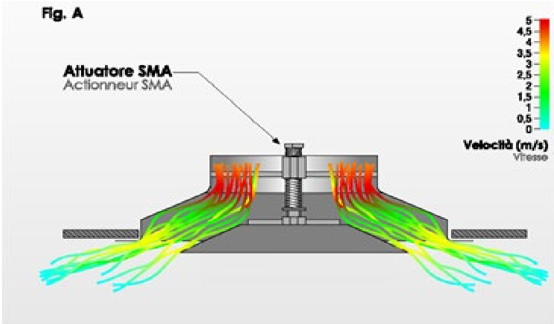
nominal size mm	C mm	E mm	H mm	S mm	F mm	P mm	Ak horizontal throw m²	Ak vertical throw m²
100	98	230	75	70	198	596	0,0080	0,00752
150	148	335	105	100	288	596	0,0130	0,01310
160	158	335	105	100	288	596	0,0160	0,01630
200	198	423	118	110	370	596	0,0223	0,02360
250	248	517	130	120	461	596	0,0363	0,03990
300	298	640	146	126	576	596	0,0600	0,06804
315	313	640	146	126	576	596	0,0710	0,08119

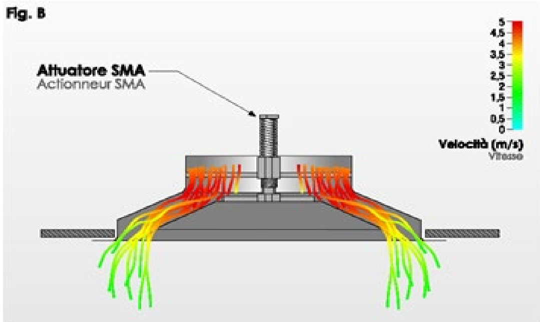
ADJUSTABLE SINGLE CONE CIRCULAR DIFFUSERS

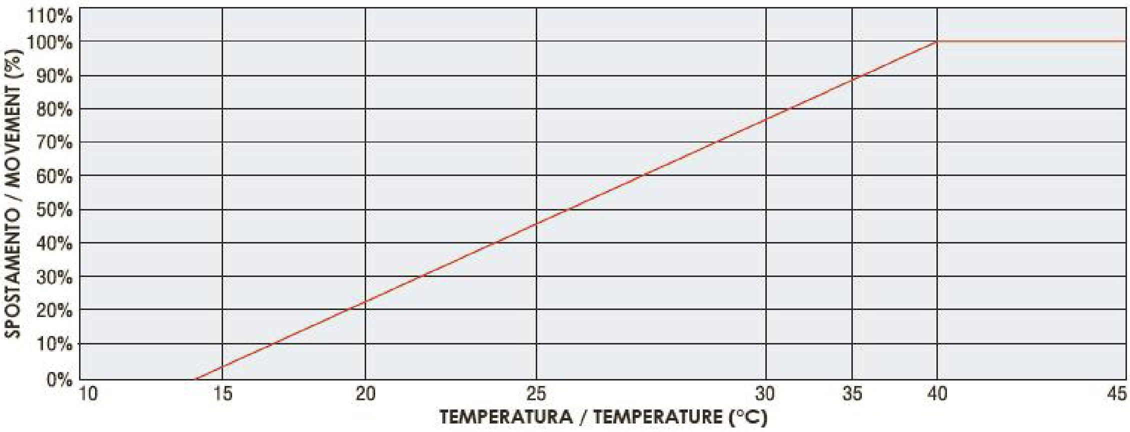
VERSION WITH AUTOMATIC REGULATION WITH THERMOSTATIC SPRING

KU9 CT SERIES

The KU9 CT diffusers allow to automatically regulate the cone in the summer or winter position without the need of a technician. The work without any auxiliary power (e.g.. electrical power supply) and do not require any maintenance.
The movement of the intermediate cones is controlled by means of a special shape remembering spring who's cycle of use determines the position of the central cone in relations to the temperature.
In this way the flow of air is controlled in relation to the temperature, enabling the intermediate cones to be always in the optimal position, both when in the cooling and heating faze.
The memory spring varies its extension within a temperature range of 14°C and 40°C.
The minimum lasting time of the spring is 100,000 cycles. A cycle is given from an extension followed by a compression of the spring.
If, for example, we consider to be in the position to start the system in the morning and to turn it off in the evening, the spring will last o average about 270 years.
The drawings shows the two positions at full extension and full compression of the spring, the 0% position in cooling conditions and 100% position in heating conditions.







ADJUSTABLE SINGLE CONE CIRCULAR DIFFUSERS

QUICK SELECTION

KU9 SERIES

Model			Air flow rate																	
Model		m^3/h	75	100	125	150	200	250	300	350	400	500	600	800	1000	1200	1400	1600	1800	2000
A_k [m^2]		l/s	(21)	(28)	(35)	(42)	(56)	(69)	(83)	(97)	(111)	(139)	(167)	(222)	(278)	(333)	(389)	(444)	(500)	(556)
	L_{WA}	[dB(A)]	<20	26	32	36	44	49												
KU9	V_k	[m/s]	2,6	3,5	4,4	5,3	7	8,6												
100	Δp_t	[Pa]	6	10	16	23	41	63												
(0,008)	L 0,2	[m]	1,7	2,2	2,7	3,2	4,1	5												
	L_{WA}	[dB(A)]		<20	20	25	32	37	42	46	49									
KU9	V_k	[m/s]		2,2	2,7	3,2	4,3	5,3	6,4	7,5	8,5									
150	Δp_t	[Pa]		3	4	6	10	15	22	30	40									
(0,013)	L 0,2	[m]		1,7	2,1	2,5	3,1	3,7	4,4	5	5,6									
	L_{WA}	[dB(A)]		<20	<20	20	27	32	37	41	44	50								
KU9	V_k	[m/s]		1,8	2,2	2,6	3,5	4,3	5,2	6,1	6,9	8,7								
160	Δp_t	[Pa]		2	3	5	8	12	18	24	32	50								
(0,016)	L 0,2	[m]		1,6	1,9	2,2	2,8	3,4	3,9	4,5	5	6								
	L_{WA}	[dB(A)]				<20	21	25	30	34	37	42	46							
KU9	V_k	[m/s]				1,9	2,5	3,1	3,7	4,3	5	6,2	7,5							
200	Δp_t	[Pa]				2	4	5	8	11	14	22	32							
(0,022)	L 0,2	[m]				1,9	2,4	2,9	3,3	3,8	4,2	5	5,9							
	L_{WA}	[dB(A)]					<20	<20	22	25	28	33	37	43	48					
KU9	V_k	[m/s]					1,5	1,9	2,3	2,7	3,1	3,8	4,6	6,1	7,7					
250	Δp_t	[Pa]					2	3	4	6	7	12	17	30	47					
(0,036)	L 0,2	[m]					2	2,3	2,7	3	3,4	4	4,7	5,8	6,9					
	L_{WA}	[dB(A)]					<20	<20	<20	21	24	28	31	36	40	43	46	48		
KU9	V_k	[m/s]					0,9	1,2	1,4	1,6	1,9	2,3	2,8	3,7	4,6	5,6	6,5	7,4		
300	Δp_t	[Pa]					1	1	2	3	4	6	8	14	22	32	44	57		
(0,06)	L 0,2	[m]					1,7	2	2,3	2,5	2,8	3,3	3,8	4,7	5,6	6,4	7,2	7,9		
	L_{WA}	[dB(A)]					<20	<20	<20	22	24	28	30	35	39	42	44	46	48	50
KU9	V_k	[m/s]					0,8	1	1,2	1,4	1,6	2	2,4	3,1	3,9	4,7	5,5	6,3	7	7,8
315	Δp_t	[Pa]					1	1	2	2	3	4	6	11	18	26	35	46	58	71
(0,071)	L 0,2	[m]					1,6	1,9	2,1	2,4	2,6	3,1	3,6	4,4	5,2	6	6,7	7,4	8,1	8,7

10 ≤ LwA < 30 **30 ≤ LwA < 40** **40 ≤ LwA < 50**

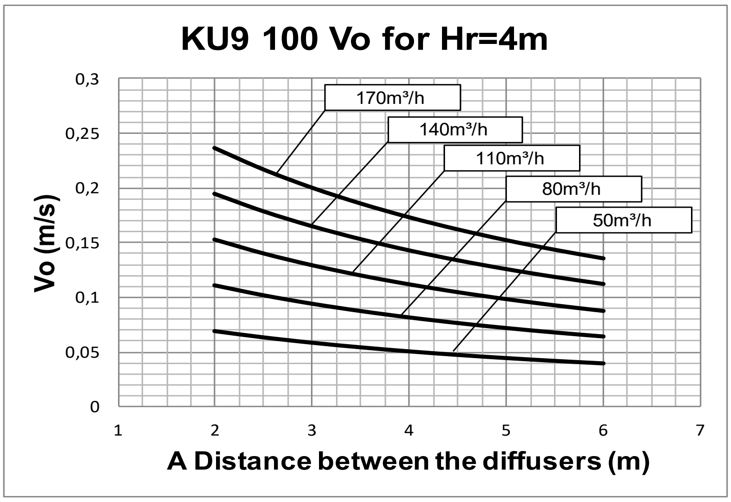
Data valid for:
- Supply air
- Isotherm conditions
- Throw with ceiling effect

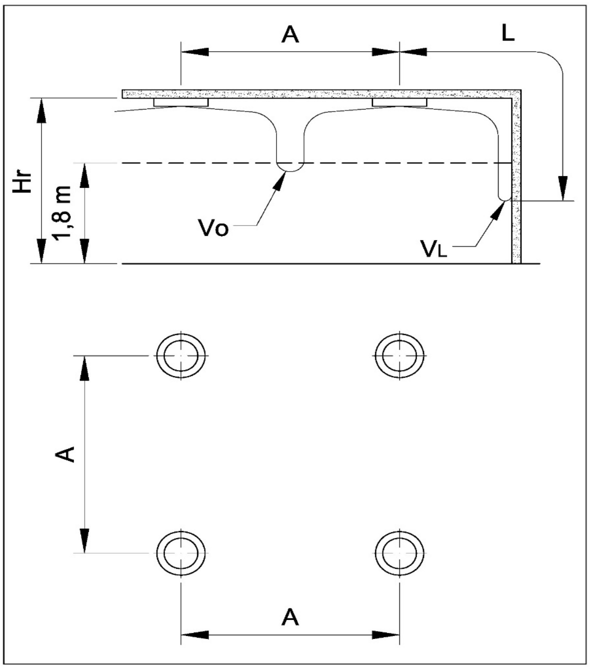
Terminology:
- A_k = effective free area
- V_k = effective face velocity
- Δpt = total pressure loss
- L_{WA} = sound power level
- $L_{0,2}$ = throw to terminal velocity at 0,2 m/s

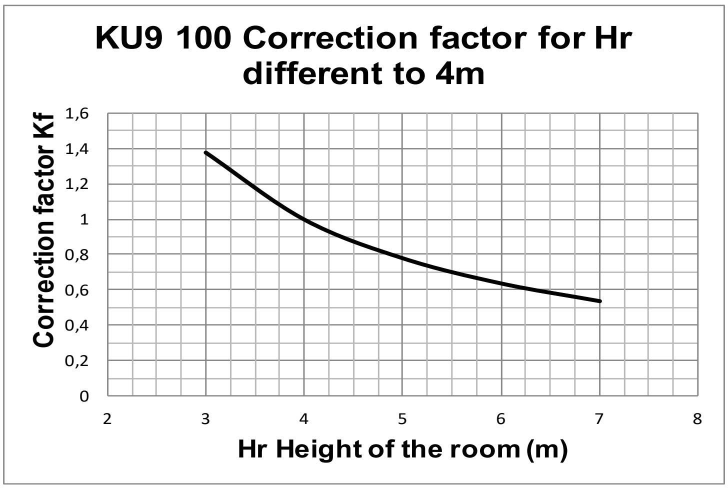
ADJUSTABLE SINGLE CONE CIRCULAR DIFFUSERS

KU9 SERIES

PERFORMANCE KU9 100







Data obtained from CFD mathematical model in virtual test room operating in isothermal conditions in accordance with the international standard:
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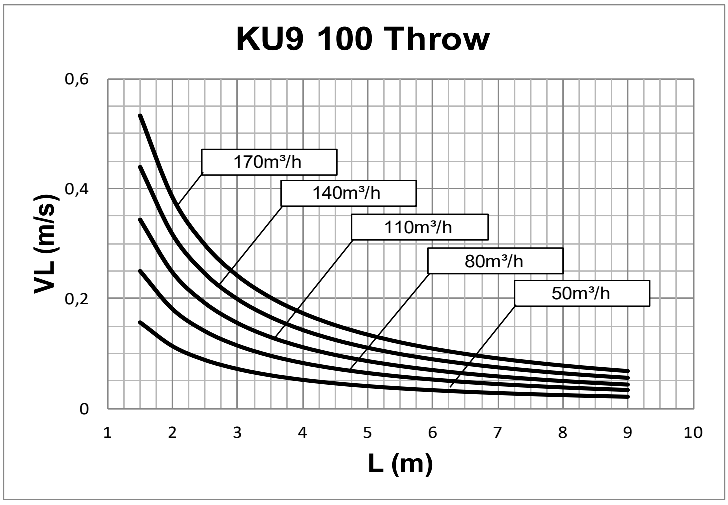
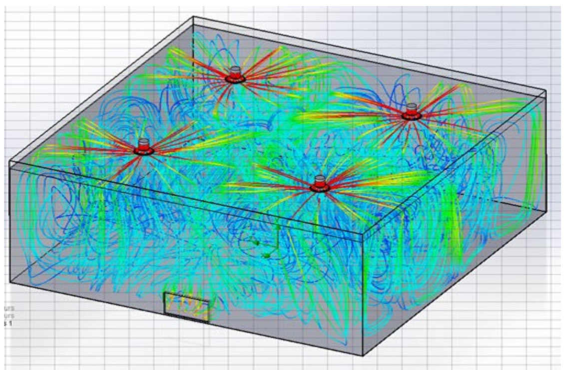
A (m) distance between the diffusers
Vo (m/s) speed at the limit of the occupied zone
L (m) horizontal distance in metres from the centre of the diffuser
VL (m/s) maximum speed in the air stream



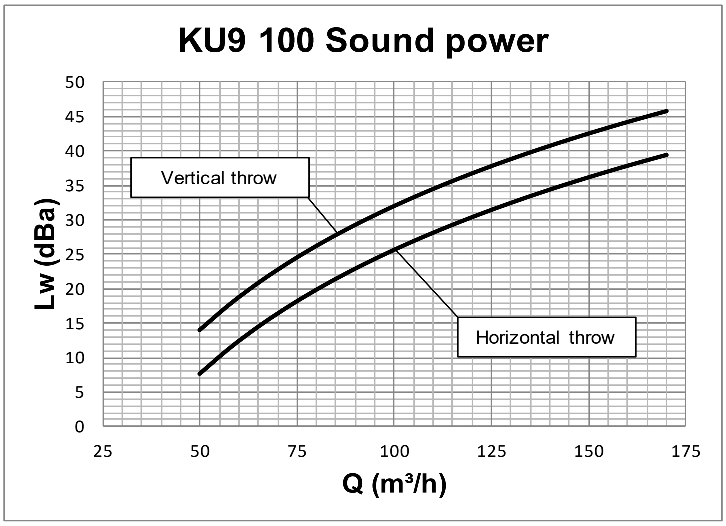
For Hr different from 4m:
Vo (h) = Vo x Kf



ADJUSTABLE SINGLE CONE CIRCULAR DIFFUSERS

PERFORMANCE KU9 100

KU9 SERIES



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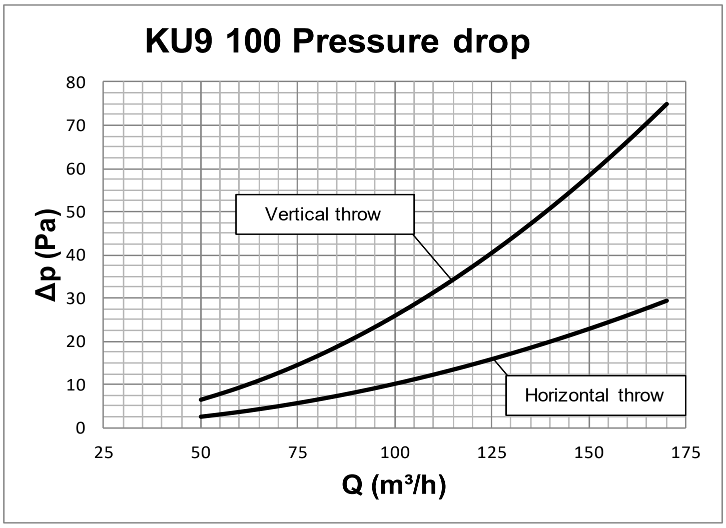

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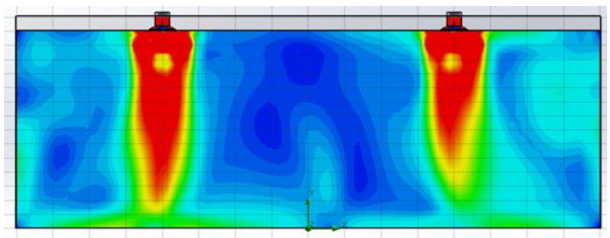

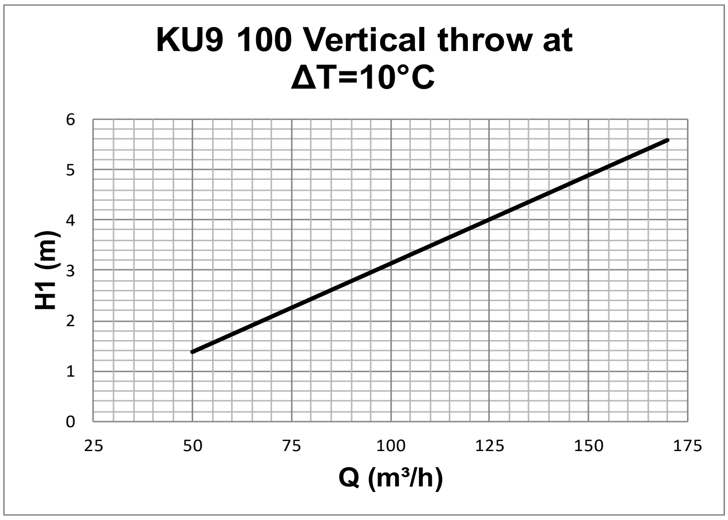

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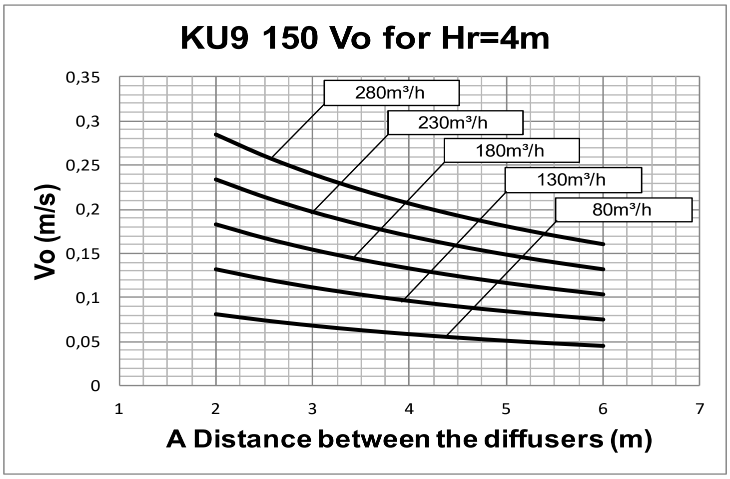
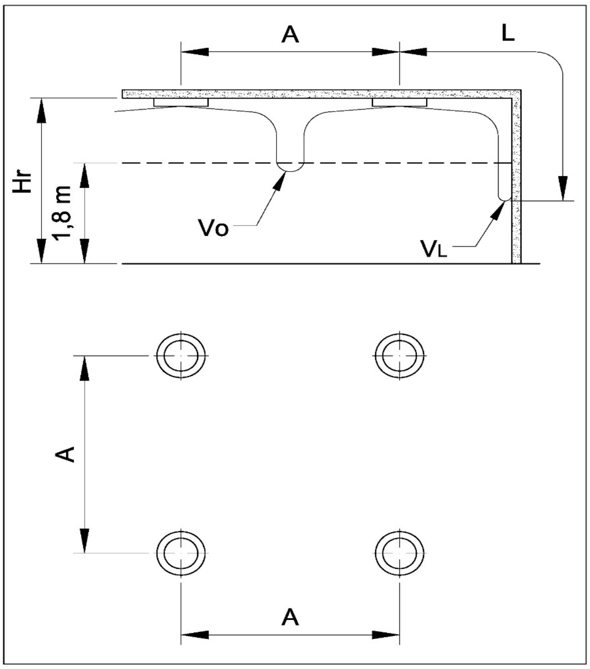
H1 (m) vertical distance in metres from the centre of the diffuser at which there is the inversion of the direction of air

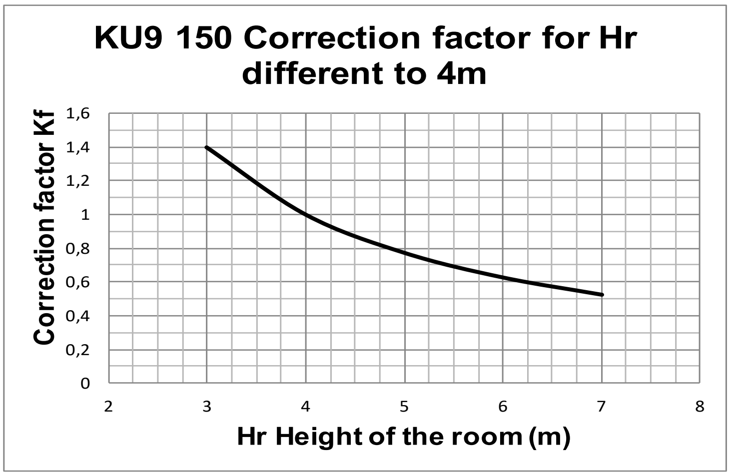
ADJUSTABLE SINGLE CONE CIRCULAR DIFFUSERS

KU9 SERIES

PERFORMANCE KU9 150







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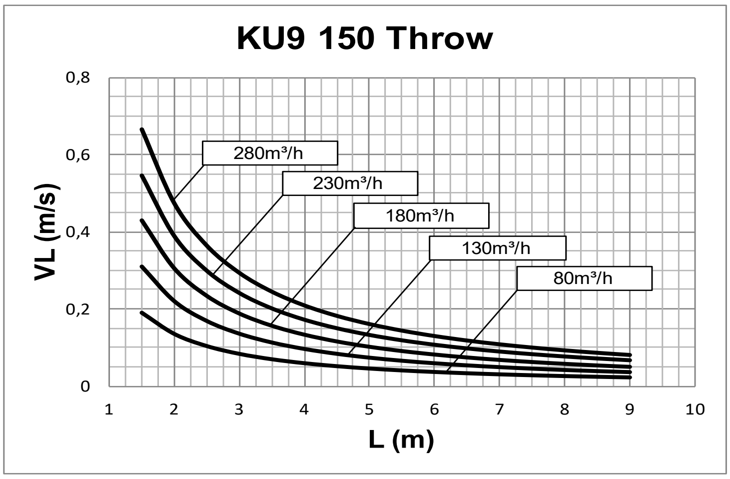
VL (m/s) maximum speed in the air stream



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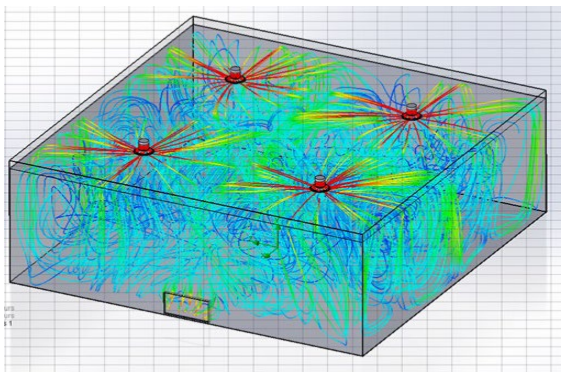
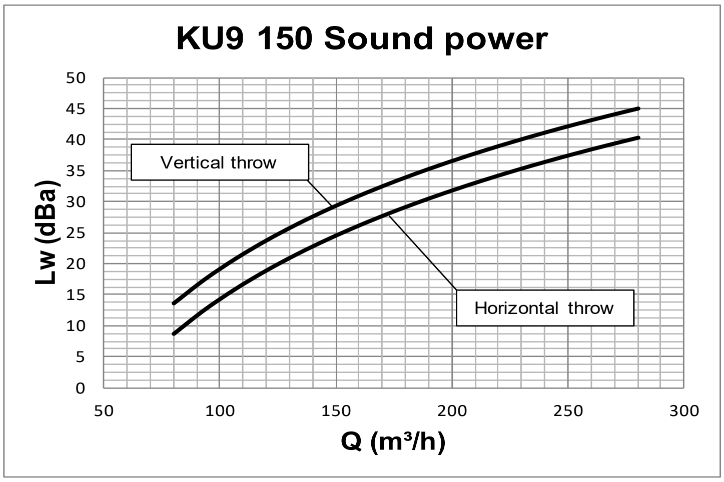


ADJUSTABLE SINGLE CONE CIRCULAR DIFFUSERS

PERFORMANCE KU9 150

KU9 SERIES



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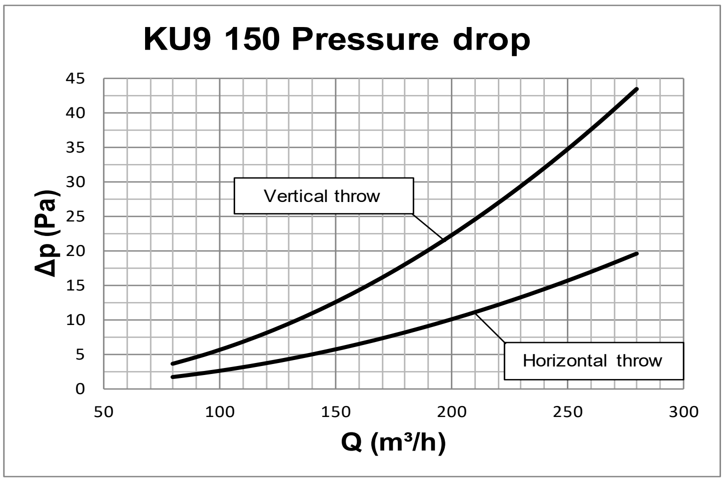

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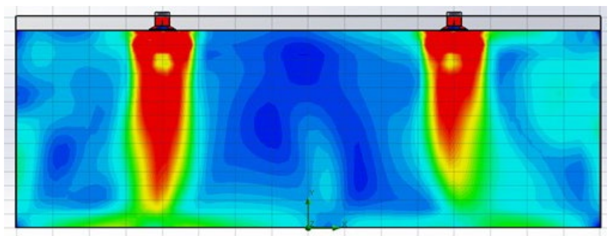

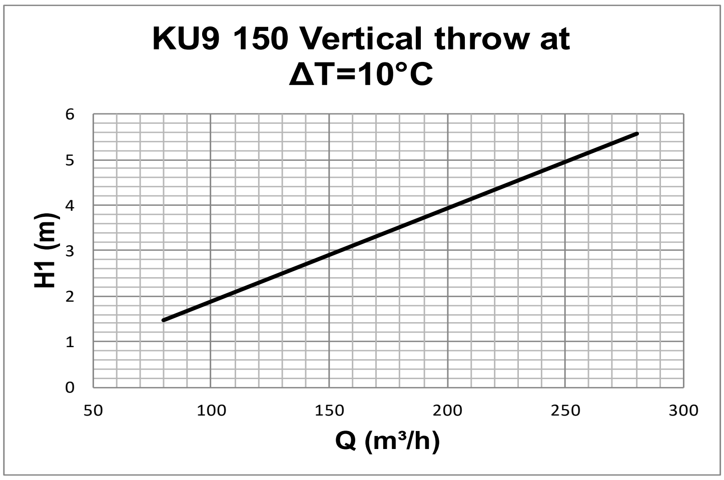

Data obtained from CFD mathematical model in virtual test room operating in heating conditions with ΔT = 10 ° C in accordance with the international standard:
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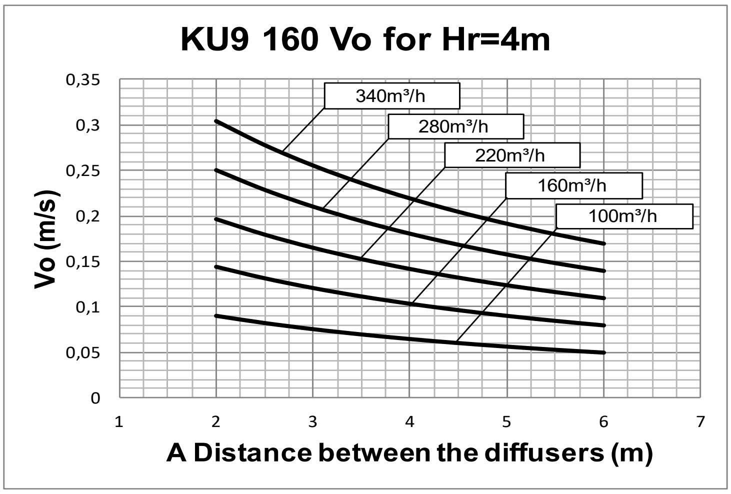
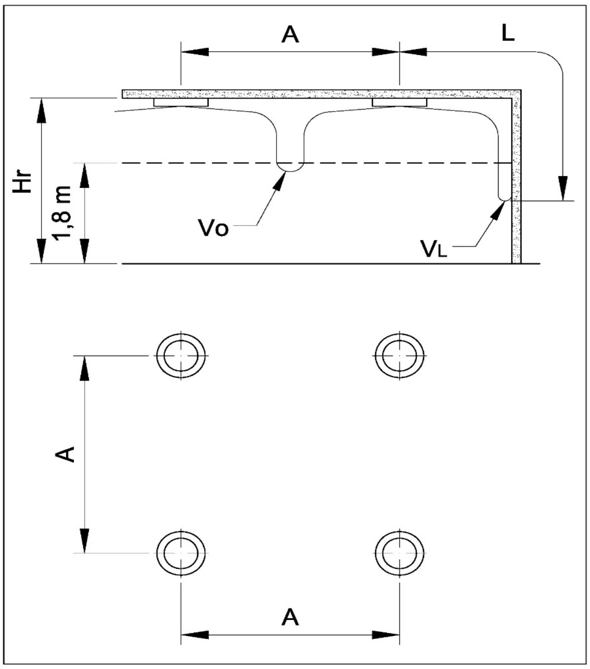
H1 (m) vertical distance in metres from the centre of the diffuser at which there is the inversion of the direction of air

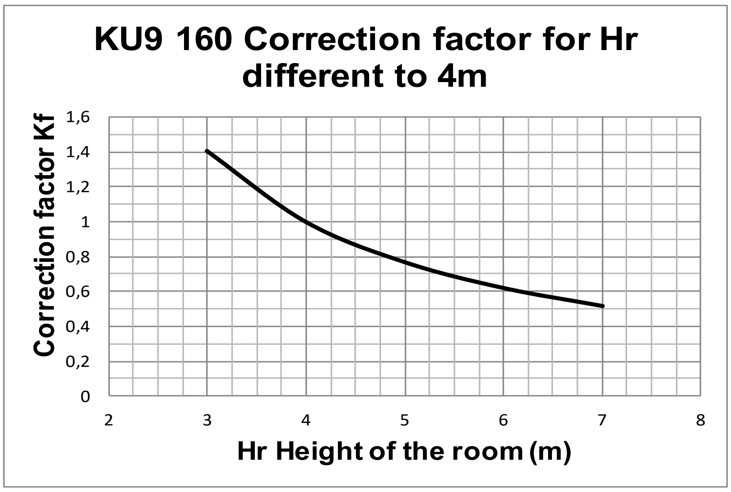
ADJUSTABLE SINGLE CONE CIRCULAR DIFFUSERS

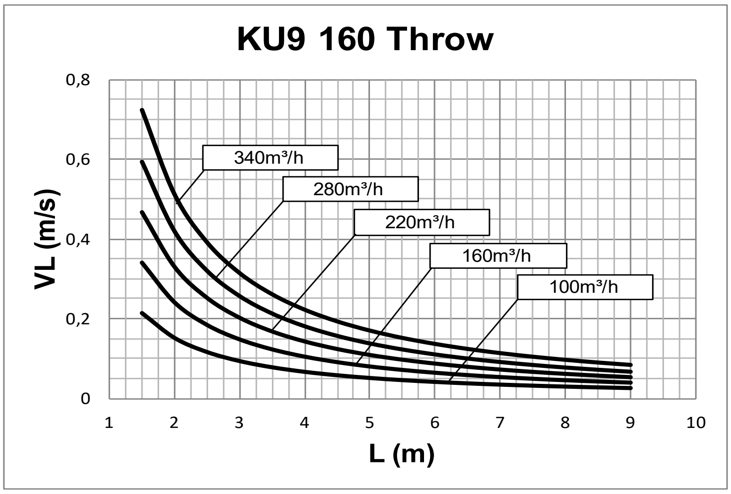
PERFORMANCE KU9 160

KU9 SERIES









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L (m) horizontal distance in metres from the centre of the diffuser
VL (m/s) maximum speed in the air stream

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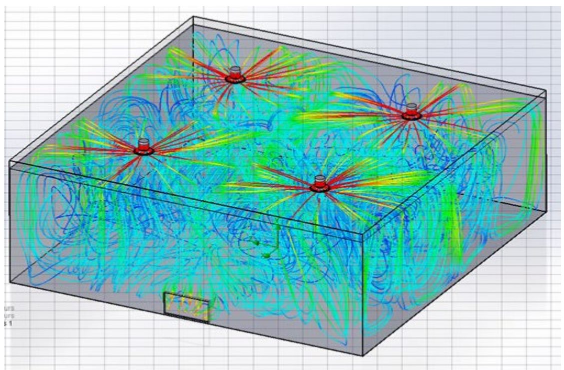
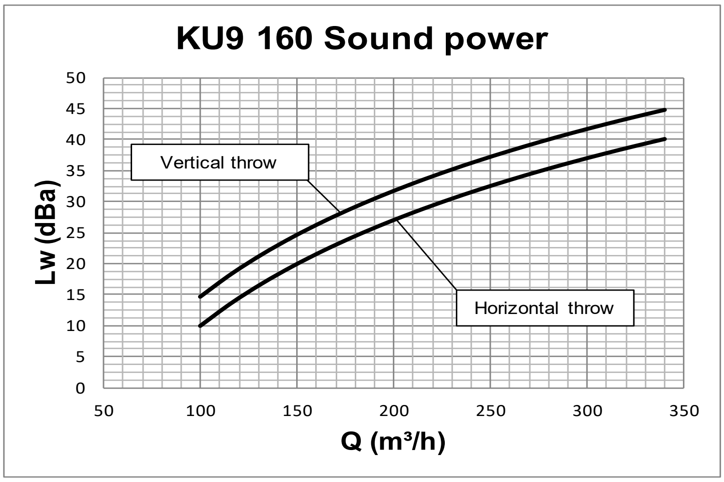


ADJUSTABLE SINGLE CONE CIRCULAR DIFFUSERS

PERFORMANCE KU9 160

KU9 SERIES



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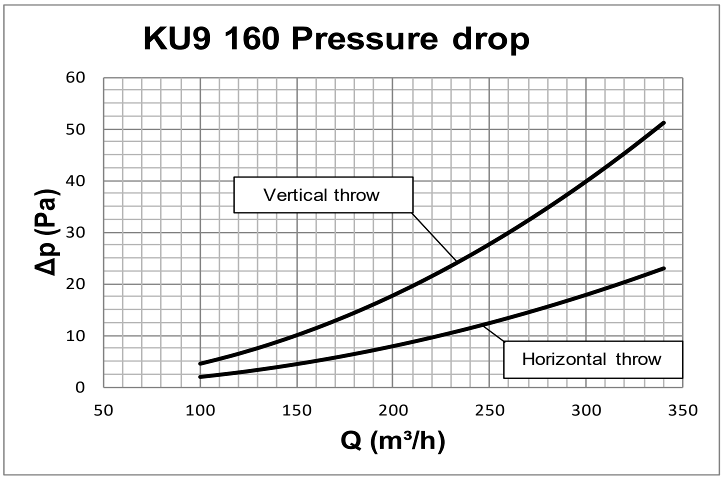

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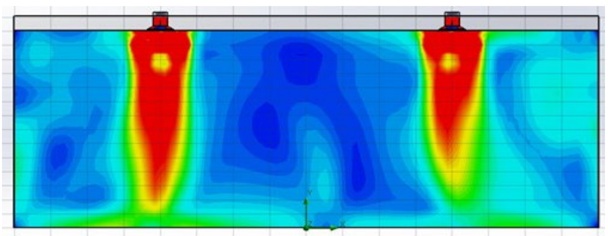

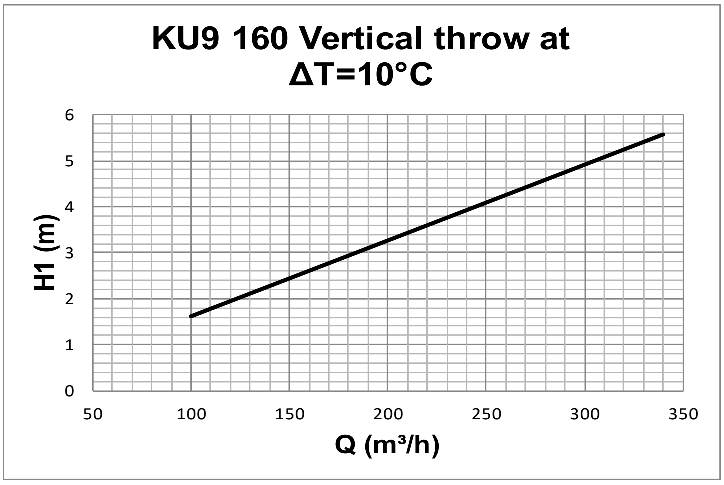

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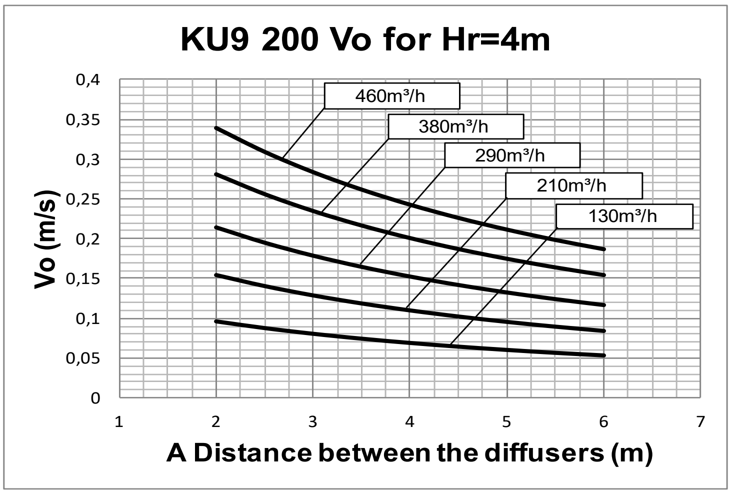
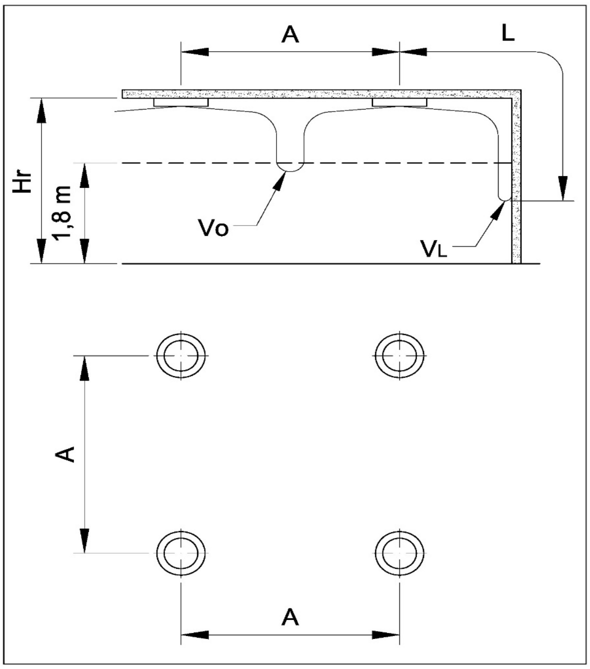
H1 (m) vertical distance in metres from the centre of the diffuser at which there is the inversion of the direction of air

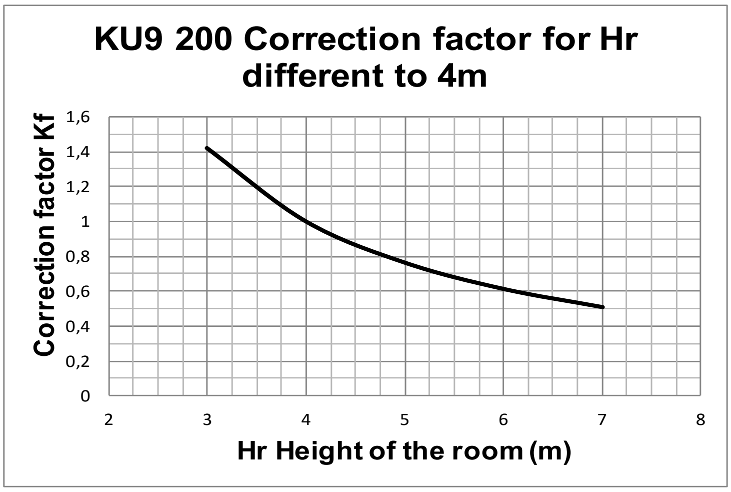
ADJUSTABLE SINGLE CONE CIRCULAR DIFFUSERS

PERFORMANCE KU9 200

KU9 SERIES







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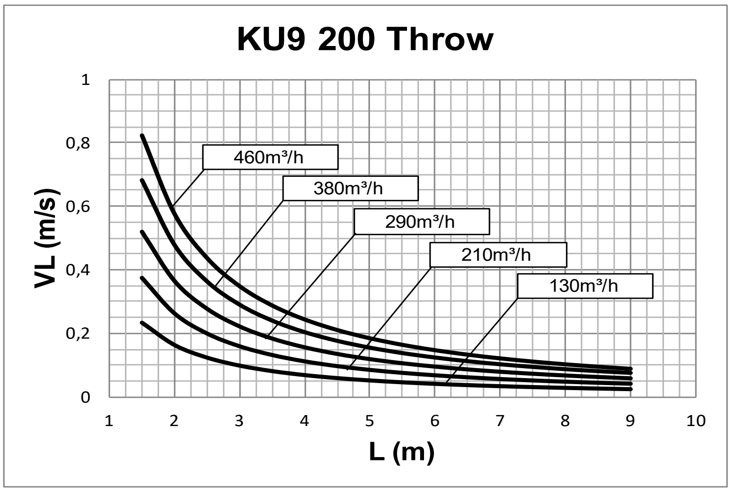
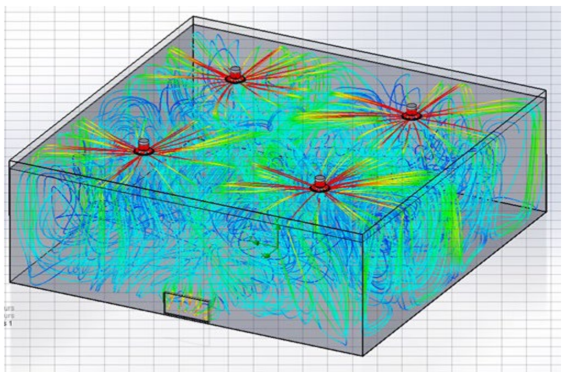
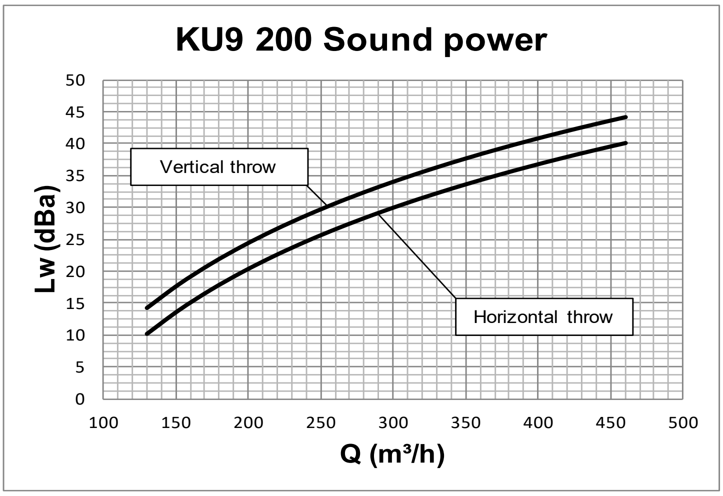




ADJUSTABLE SINGLE CONE
CIRCULAR DIFFUSERS

PERFORMANCE KU9 200

KU9
SERIES



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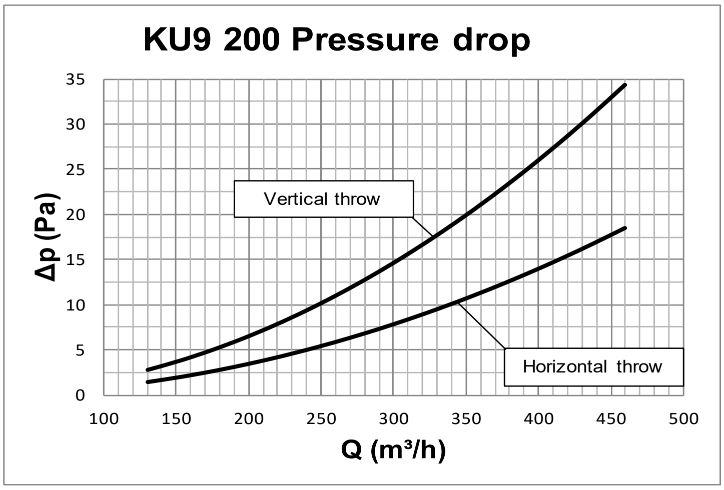

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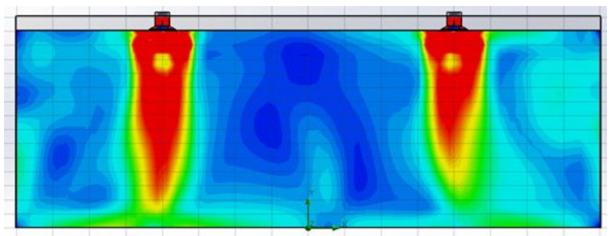
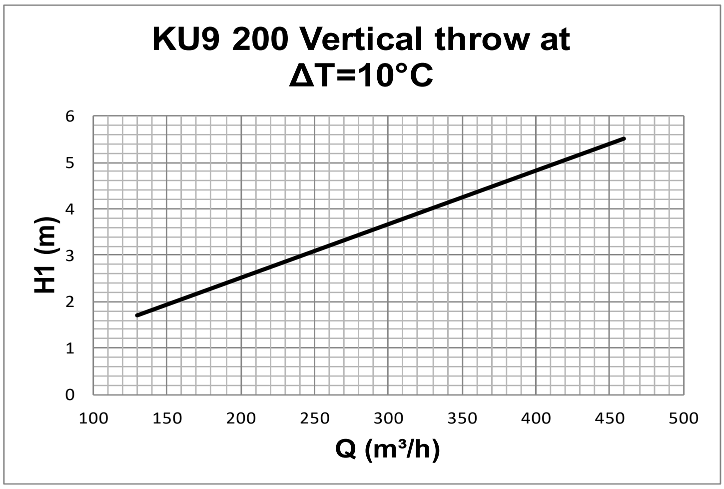


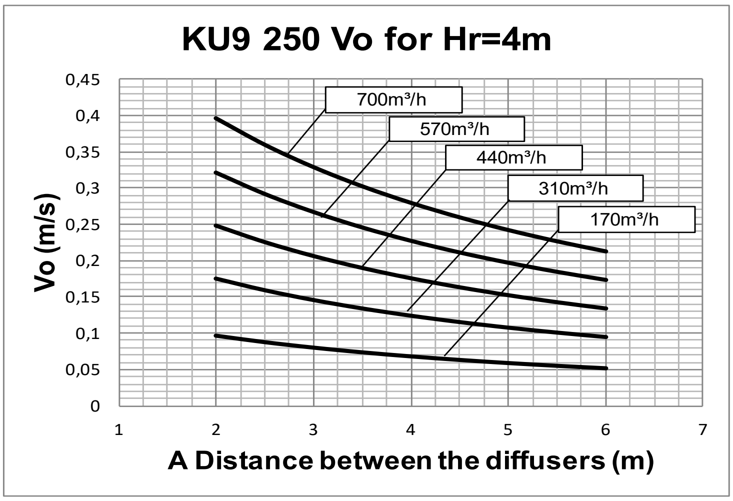


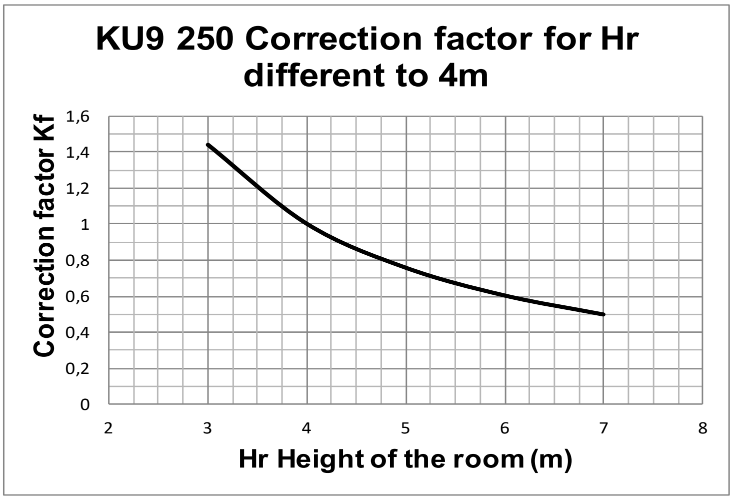
Data obtained from CFD mathematical model in virtual test room operating in heating conditions with ΔT = 10 ° C in accordance with the international standard:
ISO 5219 1984: *Air distribution and air diffusion - Laboratory. Aerodynamic testing and rating of air terminal devices.*
H1 (m) vertical distance in metres from the centre of the diffuser at which there is the inversion of the direction of air

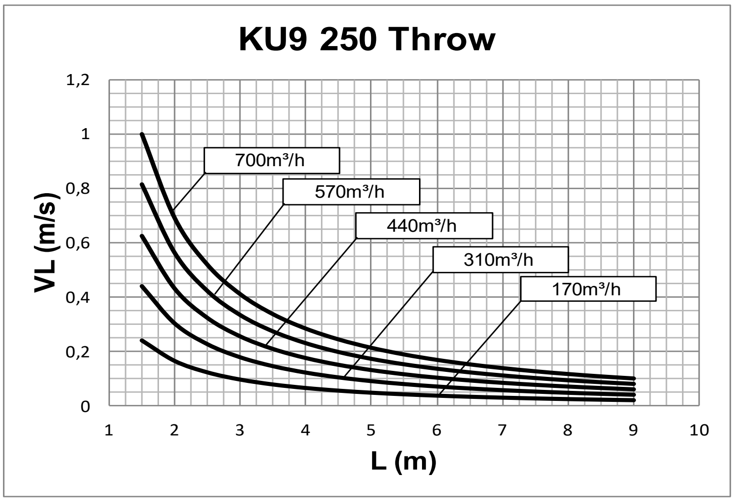
ADJUSTABLE SINGLE CONE CIRCULAR DIFFUSERS

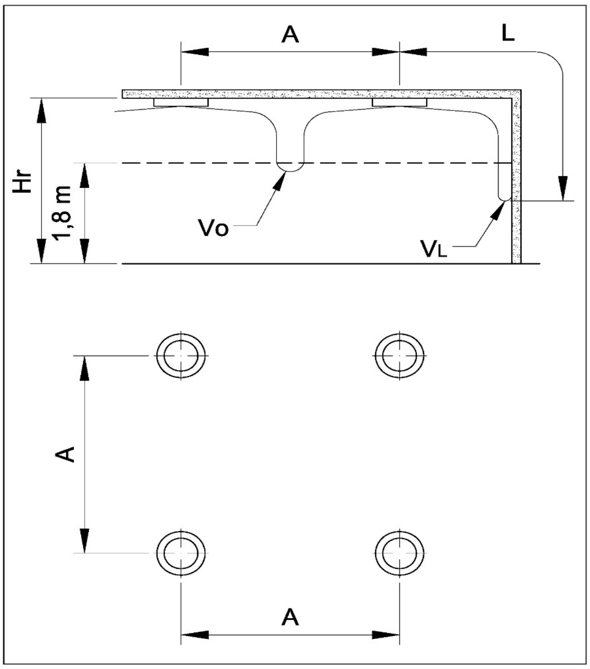
KU9 SERIES

PERFORMANCE KU9 250





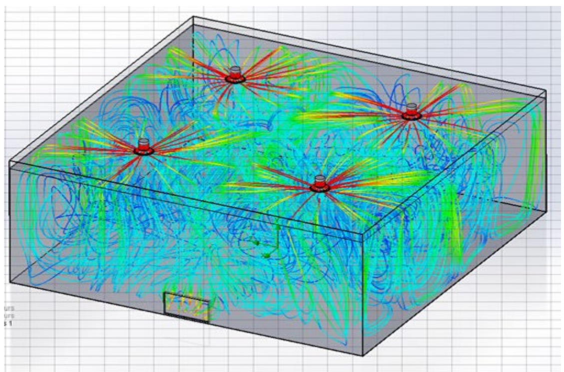




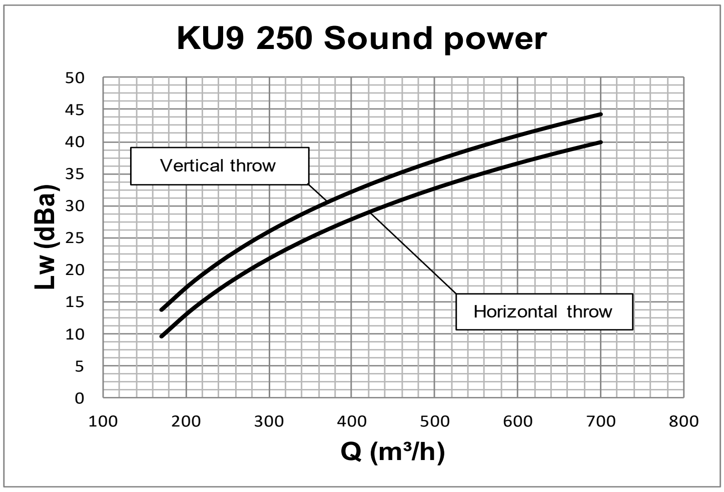
Data obtained from CFD mathematical model in virtual test room operating in isothermal conditions in accordance with the international standard:
ISO 5219 1984: *Air distribution and air diffusion - Laboratory. Aerodynamic testing and rating of air terminal devices.*

A (m) distance between the diffusers
Vo (m/s) speed at the limit of the occupied zone
L (m) horizontal distance in metres from the centre of the diffuser
VL (m/s) maximum speed in the air stream

For Hr different from 4m:
Vo (h) = Vo x Kf



PERFORMANCE KU9 250



Data measured in reverberation room in accordance with international standards:
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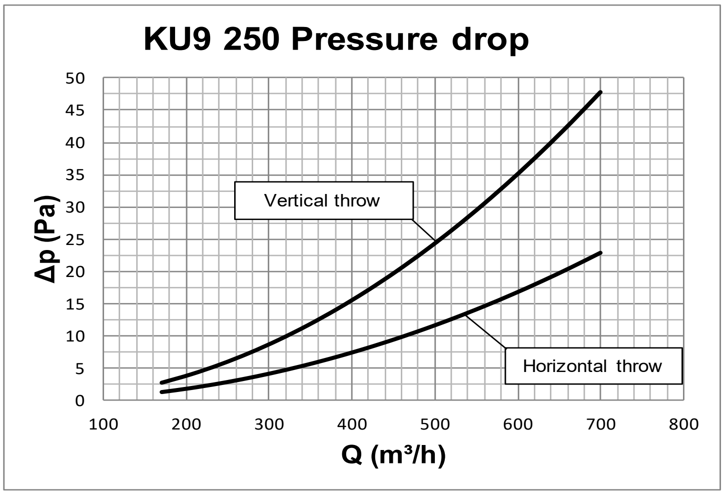

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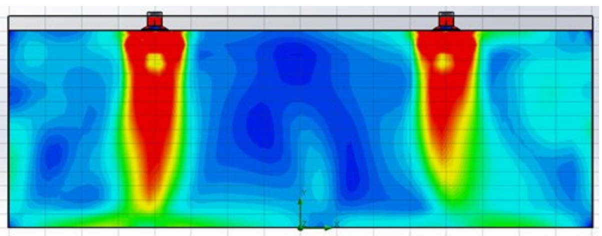

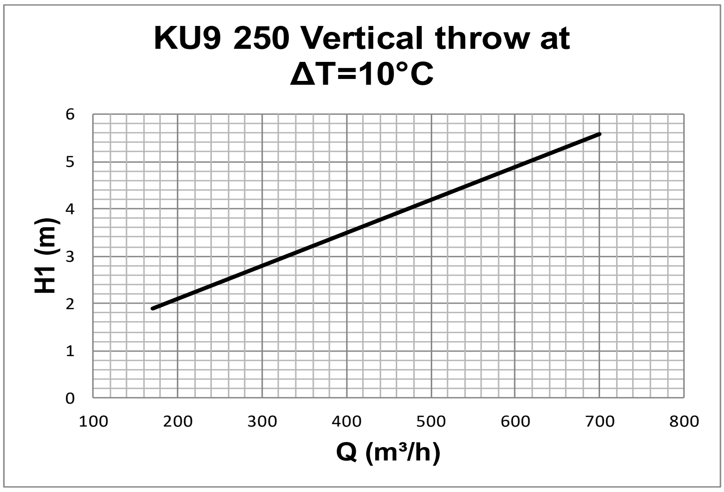

Data obtained from CFD mathematical model in virtual test room operating in heating conditions with ΔT = 10 ° C in accordance with the international standard:
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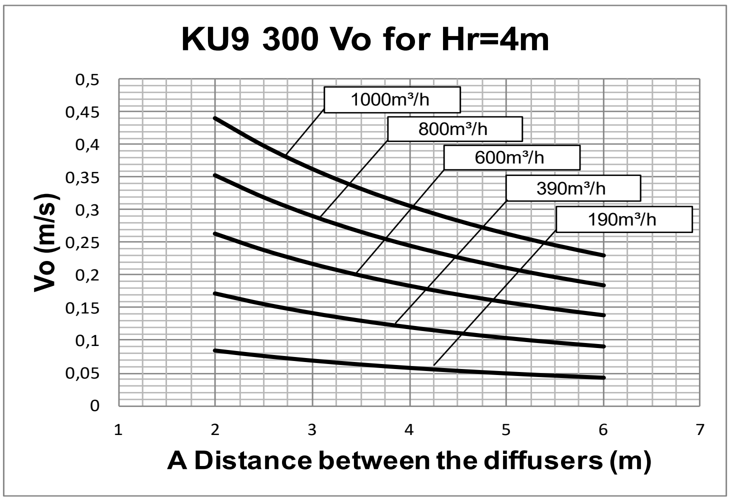
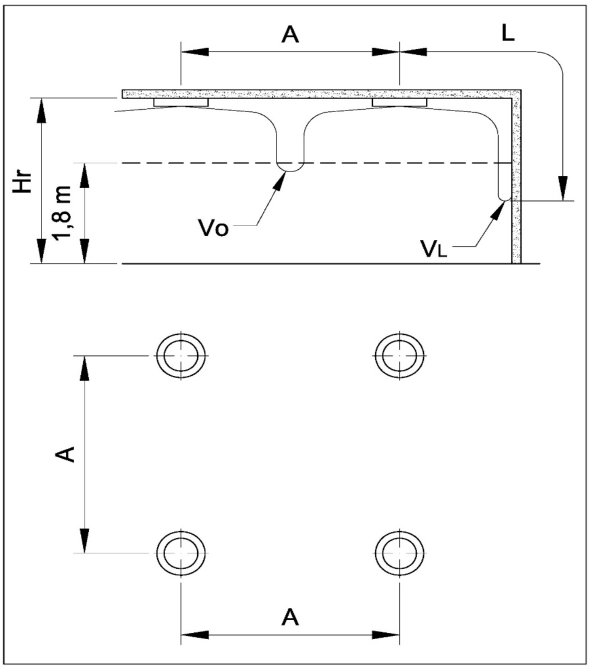
H1 (m) vertical distance in metres from the centre of the diffuser at which there is the inversion of the direction of air

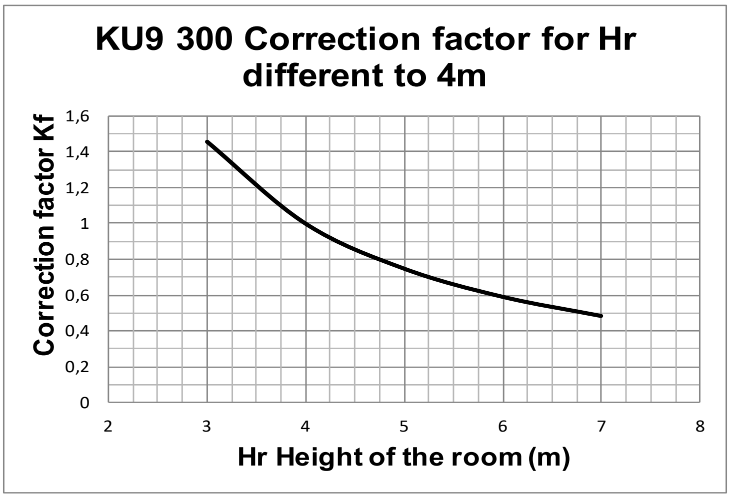
ADJUSTABLE SINGLE CONE CIRCULAR DIFFUSERS

PERFORMANCE KU9 300

KU9 SERIES







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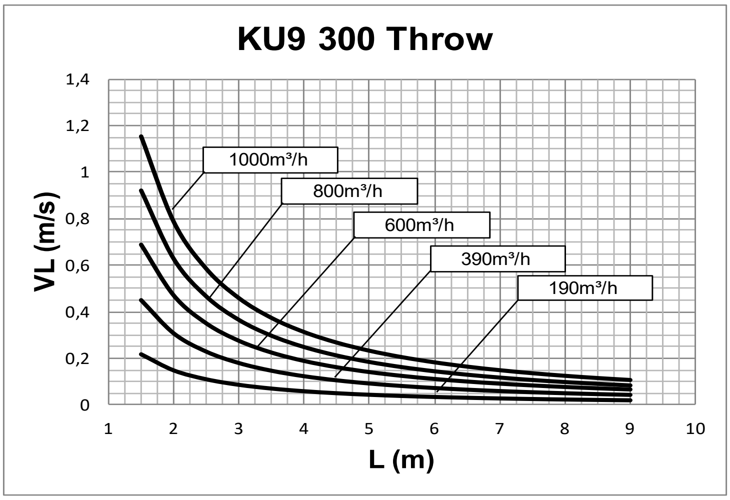
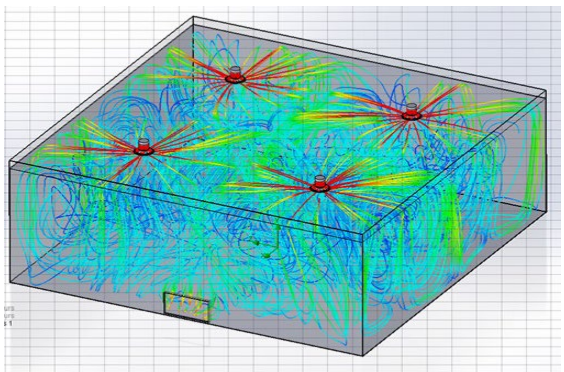
VL (m/s) maximum speed in the air stream



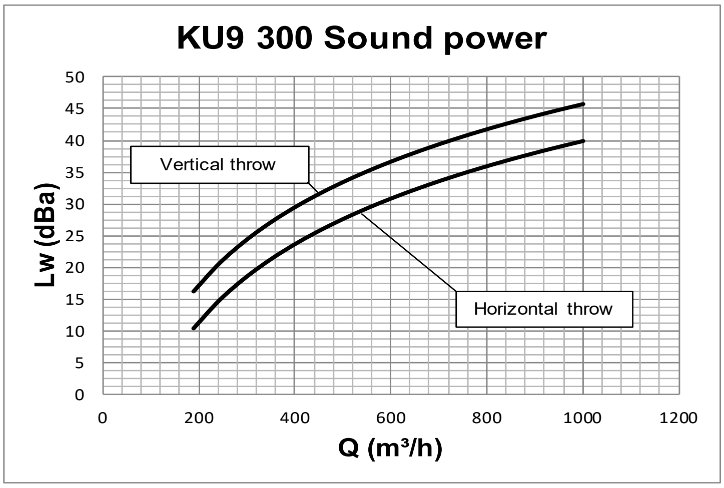
For Hr different from 4m:
Vo (h) = Vo x Kf



ADJUSTABLE SINGLE CONE CIRCULAR DIFFUSERS

PERFORMANCE KU9 300

KU9 SERIES



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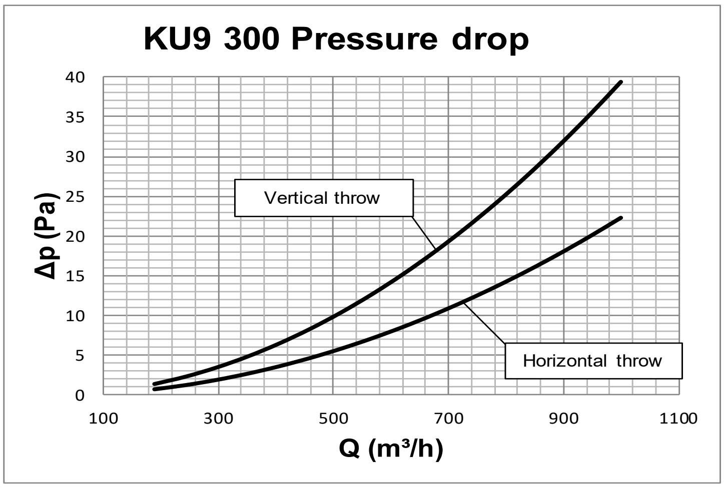

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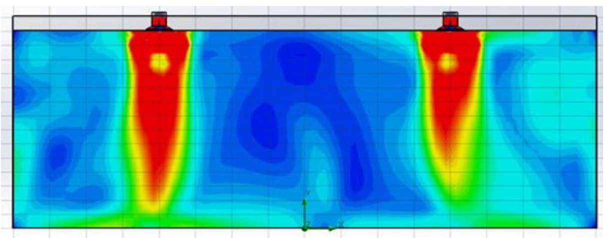

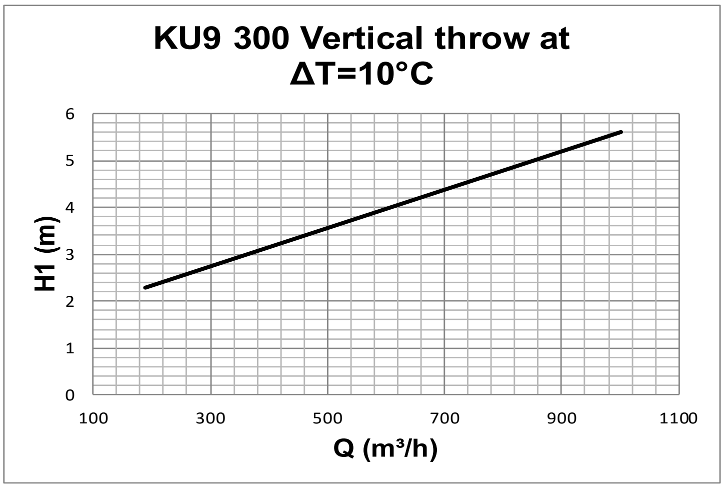

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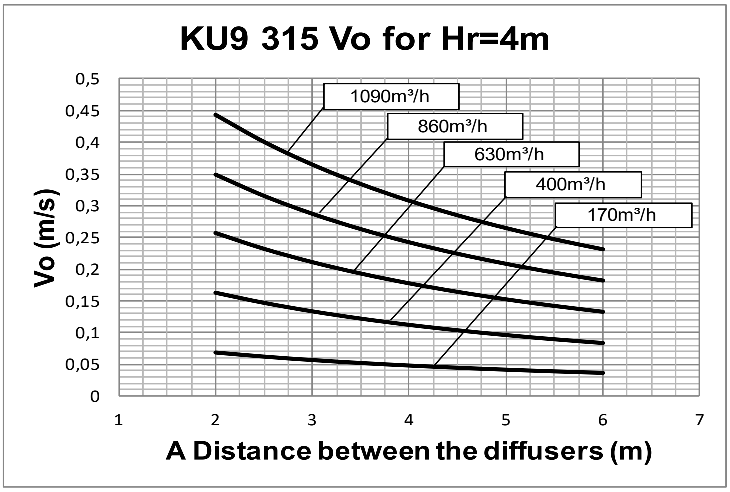
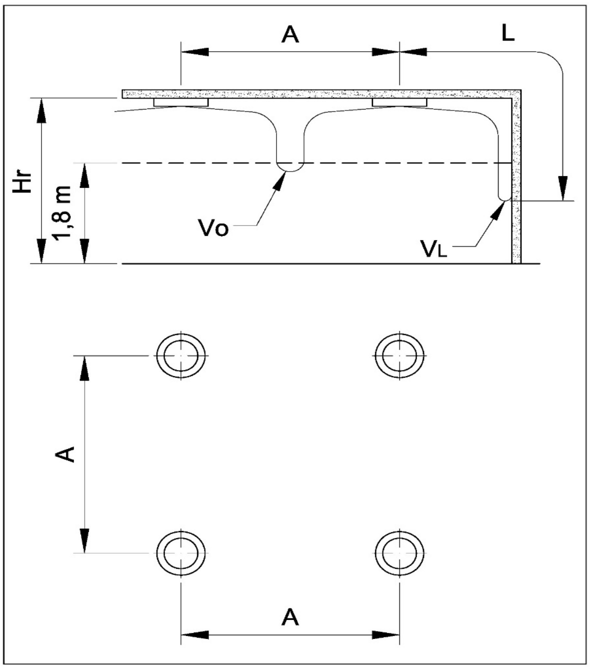
H1 (m) vertical distance in metres from the centre of the diffuser at which there is the inversion of the direction of air

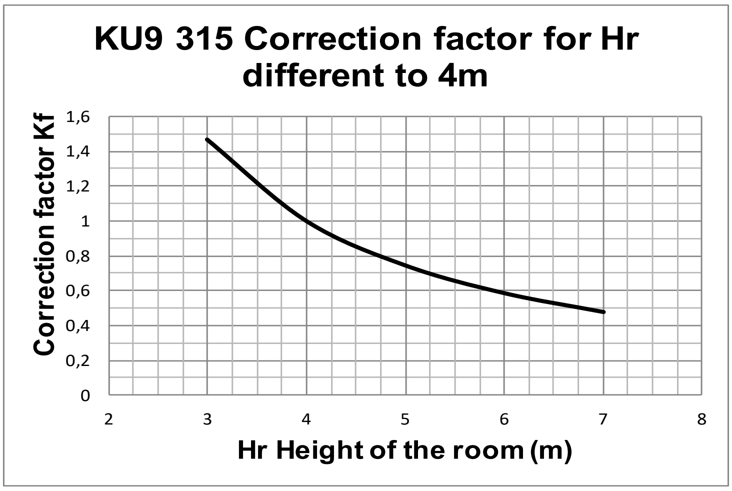
ADJUSTABLE SINGLE CONE CIRCULAR DIFFUSERS

KU9 SERIES

PERFORMANCE KU9 315







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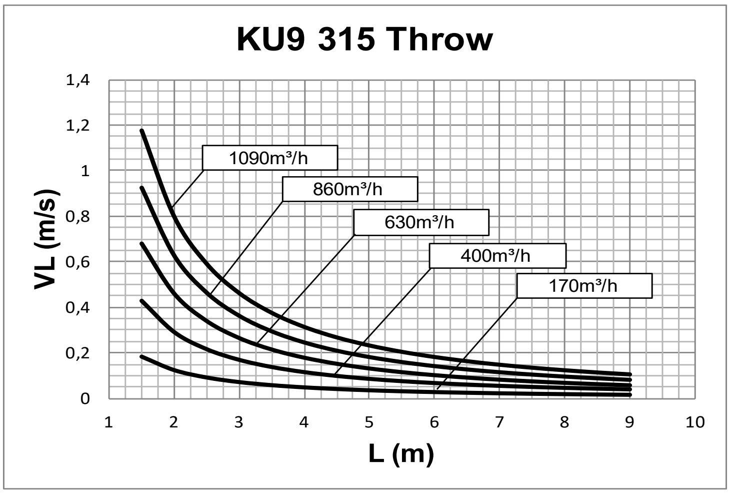
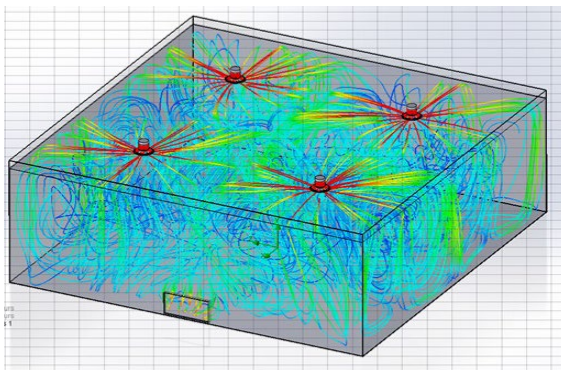
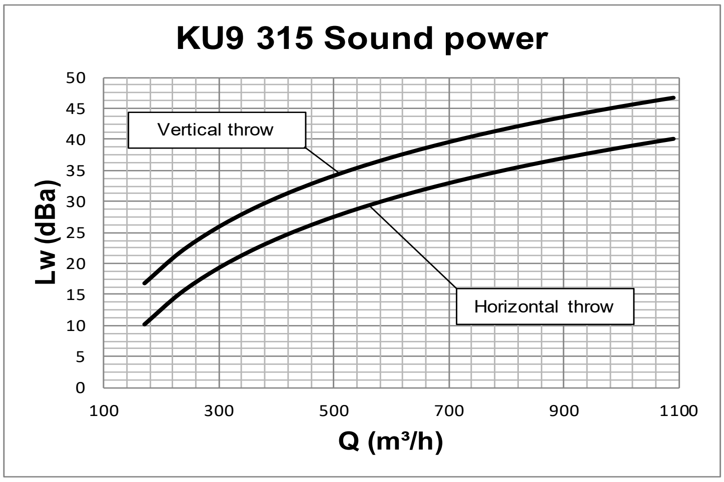




ADJUSTABLE SINGLE CONE CIRCULAR DIFFUSERS

PERFORMANCE KU9 315

KU9 SERIES



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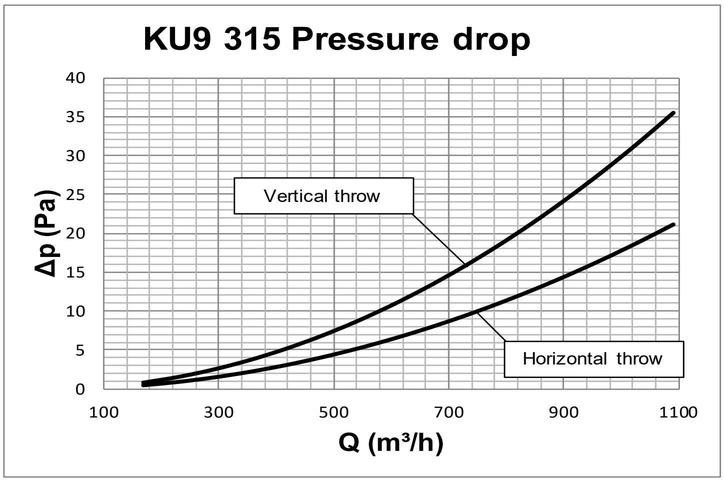

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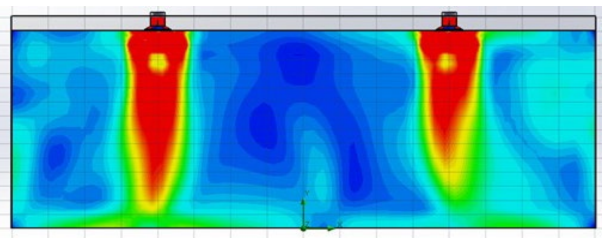

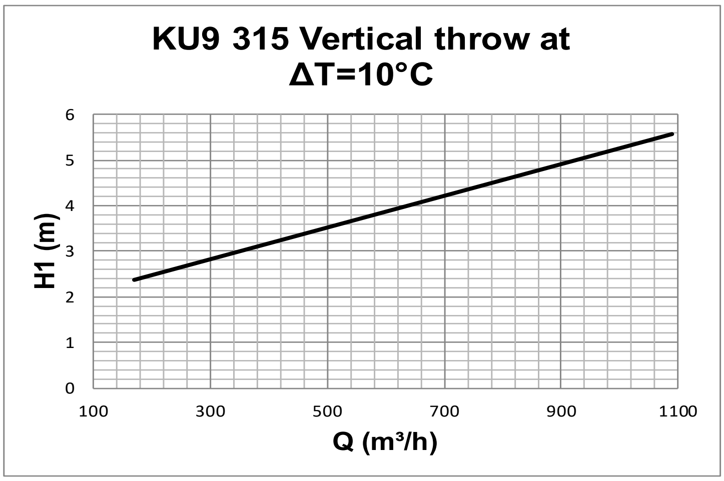

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ADJUSTABLE SINGLE CONE CIRCULAR DIFFUSERS

HOW TO ORDER

KU9
SERIES

KU9 Single cone circular diffuser

-- standard
CT with thermostatic spring

-- RAL 9010 Gloss 80%
L RAL 9003 Gloss 30%

size

KU9 CT L 200

KUT9 Single cone circular diffuser with 595x595 panel

-- standard
CT with thermostatic spring

-- RAL 9010 Gloss 80%
L RAL 9003 Gloss 30%

size

KUT9 CT L 200

Avaiable diameters with thermostatic spring
160
200
250
315

PLENUM FOR
CIRCULAR DIFFUSER

OVERVIEW

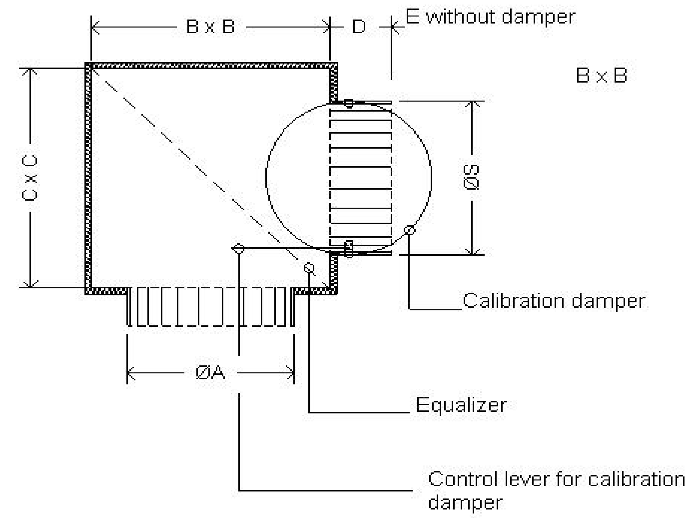
PP 60
SERIES

PLENUM :
The PP60 plenums, also named "calm cases", allow the correct entry of air in the neck of the diffuser thus ensuring that the throw of air in the room is homogenous along all the circumference of the diffuser.

Materials :
PP 60 standard plenum : galvanized steel sheet.
Insulation: expanded polyethylene certified for the reaction to fire according to european class B-s2 d0.

Versions :
Made from insulated steel sheet with expanded polyethylene, ideal for the supply of air, and in simple sheet steel normally used for air extraction.

Accessories:
Regulation damper and equalizing net in the connection of the plenum.



nominal deck diameter mm	A mm	B mm	C mm	D mm	E mm	N° of connections	S [mm] mm	connection and damper material
100	102	200	200	65	65	1	96	steel
150	152	250	250	70	70	1	146	steel
160	162	250	250	90	60	1	156	ABS (*)
200	202	300	300	90	60	1	196	ABS (*)
250	252	350	350	90	60	1	246	ABS (*)
300	302	400	400	90	60	1	296	steel
315	317	400	400	90	60	1	311	steel

(*) steel on request

PLENUM FOR CIRCULAR DIFFUSER

HOW TO ORDER

PP 60
SERIES

PP60 Plenum for circular diffuser

Z without mounting bridge (for diffusers KU and KZ series)

-- Base
E equalizer
S damper
I external insulation
IN internal insulation

-- steel connection without gasket
A ABS connection (only diameters 160 200 250)

size

PP60 Z ESI A 200