KOOLAIR

series DVP

Variable geometry diffusers

ISO 9001
BUREAU VERITAS
Certification
Sistema de Gestión

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CONTENTS

Adjustable blade variable geometry diffuser DVP

Description

The adjustable blade variable geometry diffuser Model DVP provides an optimum discharge in cooling (horizontal discharge) and heating (vertical discharge) enabling the diffuser to meet the required comfort criteria .by moving its blades The diffuser is available in 9 sizes ranging from Ø160 mm to Ø 800 mm in manually version and 6 sizes from Ø250 mm to Ø630 mm for thermo-adjustable versions.

Operation

The adjustable blade variable geometry diffuser allows the air discharge horizontal, inclined and vertical by moving its blades. This movement can be carried out manually, by an electric motor or by a thermal element which positions the blades depending on the supply air temperature

Application

DVP diffusers should ideally be mounted at heights in excess of 3.5 m for supplying cooled, isothermal and heated air. This diffuser is an ideal choice for high ceilings applications in areas such as airports, factories and public buildings due to its high aesthetic appeal, ease of installation, regulation, and high air volume capacity

Dimensions

DVP is available in 9 sizes which are shows on page 63, both overall dimensions as the set of plenum plus diffuser.
There are three models, DVP, movement of blades manually, DVP-TR self-adjusting blade moving through the a thermal element, and movement by electric motor, DVP-M.

Finishes

The outer ring and the blades are made of steel sheet.
Standard finish - painted RAL 9010, other colours are available upon request. Plenum boxes to suit are also available.

DVP	*Round, variable-geometry diffuser series.*
P	*With plenum box plus manual f.*
-	*Without plenum box.*
-	*With manual operation.*
M-CM24	*Actuator P / N 24V optional 230V (160 to 400 mm)*
M-LM24	*Actuator P / N 24V optional 230V (500 to 800 mm)*
M-CM24-SX	*Proportional (0-10V) 24V (160 to 315 mm)*
M-LM24A-MF	*Proportional (0-10V) 24V (355 to 630 mm)*
TR	*Thermoadjustable.*
Size	*From 160 to 800, according to table.*

Identification

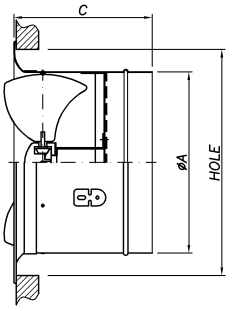
The code allows the various sizes and models of the DVP diffusers to be identified.
The thermo-adjustable versions are from Ø 250 mm to Ø630 mm sizes. The servo drive can be accessed through the duct.
The plenum boxes contain several suspension tabs. By special order, the plenum boxes can be supplied with internal insulation.

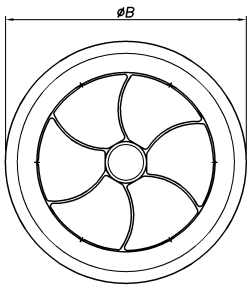
Dimesions

The **DVP**-type diffusers have a variable geometry and were designed to meet the air conditioning needs of areas which, depending on the thermal loads during the various seasons of the year, require cold or hot isothermal air. By changing the positioning of its blades, the direction of the outlet airflow is changed, thereby achieving a horizontal or vertical throw, as well as adjustment within several intermediate positions.

- The **DVP**-type diffuser was designed by the Research & Development Department of **KOOLAIR, S.L.**, and tested and calibrated in our own Distribution and Acoustic Laboratory, which is equipped with the most advanced control and measurement systems. The most advanced theories on air diffusion in rooms have been used in its application, based on experiments and studies performed at the **KOOLAIR** laboratory in Spain.

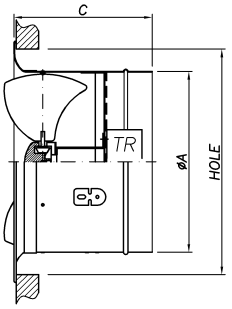
Here are three versions available of the diffuser, **DVP** (manual movement of blades), **DVP-M** (movement of the blades by electric motor) and **DVP-TR** (movement of the blades through the action of a thermal element).

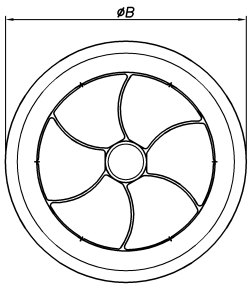




DIFFUSER	HOLE	Ø A	Ø B	C
160	215	159	253	155
200	255	199	303	174
250	305	249	353	200
315	370	314	418	240
355	410	354	458	250
400	455	399	503	265
500	555	499	600	320
630	685	629	730	380
800	855	799	900	555

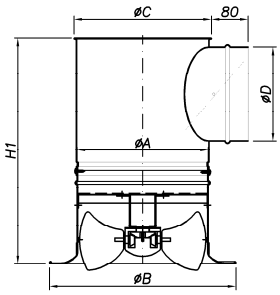
DVP



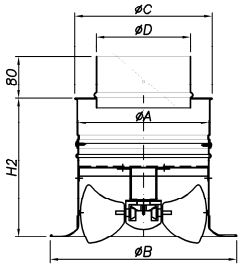


DIFFUSER	HOLE	Ø A	Ø B	C
250	305	249	353	200
315	370	314	418	240
355	410	354	458	250
400	455	399	503	265
500	555	499	600	320
630	685	629	730	380

DVP-TR



DVP-PCFL-RE



DVP-PCFS-RE

DIFFUSER	Ø A	Ø B	Ø C	ØD	H1	H2
160	159	253	163	159	364	285
200	199	303	203	199	423	325
250	249	353	253	249	499	375
315	314	418	318	314	604	450
355	354	458	358	354	654	475
400	399	503	403	399	714	515
500	499	600	503	449	819	595
630	629	730	633	549	979	705
800	799	900	803	649	1254	930

Quick selection table horizontal discharge

Blade position for horizontal air discharge at 30º.

Q m³/h	Q l/s	Size	160	200	250	315	355	400	500	630	800
150	41,7	V_c	2,1	1,3	0,9						
		X	1,2	1,0	1,0						
		ΔP_t	32	13	5						
		L_{WA}	31	19	<15						
200	55,6	V_c	2,8	1,8	1,1	0,7					
		X	1,6	1,4	1,3	1,0					
		ΔP_t	58	23	9	4					
		L_{WA}	39	27	16	<15					
250	69,4	V_c	3,5	2,2	1,4	0,9	0,7	0,6			
		X	2,1	1,7	1,6	1,3	1,2	1,2			
		ΔP_t	90	36	14	6	4	3			
		L_{WA}	46	34	22	<15	<15	<15			
300	83,3	V_c	4,2	2,7	1,7	1,1	0,8	0,7			
		X	2,5	2,1	1,9	1,5	1,4	1,4			
		ΔP_t	130	51	20	9	6	4			
		L_{WA}	51	39	28	<15	<15	<15			
400	111,1	V_c		3,6	2,3	1,4	1,1	0,9	0,6		
		X		2,8	2,5	2,0	1,9	1,9	1,5		
		ΔP_t		91	36	16	10	7	3		
		L_{WA}		48	36	19	15	<15	<15		
500	138,9	V_c		4,5	2,9	1,8	1,4	1,1	0,7		
		X		3,4	3,2	2,5	2,3	2,3	1,8		
		ΔP_t		143	56	25	16	11	4		
		L_{WA}		54	43	26	22	19	<15		
750	208,3	V_c			4,3	2,7	2,1	1,7	1,1	0,7	
		X			4,8	3,8	3,5	3,5	2,8	1,9	
		ΔP_t			127	56	36	24	9	4	
		L_{WA}			55	39	35	31	20	<15	
1.000	277,8	V_c				3,6	2,8	2,2	1,4	0,9	0,6
		X				5,0	4,7	4,6	3,7	2,6	1,9
		ΔP_t				99	65	42	16	6	3
		L_{WA}				48	44	40	29	18	<15
1.500	416,7	V_c					4,2	3,3	2,1	1,3	0,8
		X					7,0	6,9	5,5	3,9	2,8
		ΔP_t					146	95	36	15	6
		L_{WA}					57	53	42	31	22
2.000	555,6	V_c							2,8	1,8	1,1
		X							7,4	5,2	3,8
		ΔP_t							65	26	11
		L_{WA}							51	40	31
3.000	833,3	V_c								2,7	1,7
		X								7,8	5,6
		ΔP_t								58	25
		L_{WA}								53	43
4.000	1111,1	V_c									2,2
		X									7,5
		ΔP_t									44
		L_{WA}									52

Legend

-Q (m^3/h): Air flow.
-V_c (m/s): Neck velocity.
-X (m): Throw for a maximun velocity of 0,25 m/s at the occupied zone.
-ΔP_t (Pa): Pressure drop.
-L_{wA} [dB(A)]: Sound power level.

Quick selection table vertical discharge

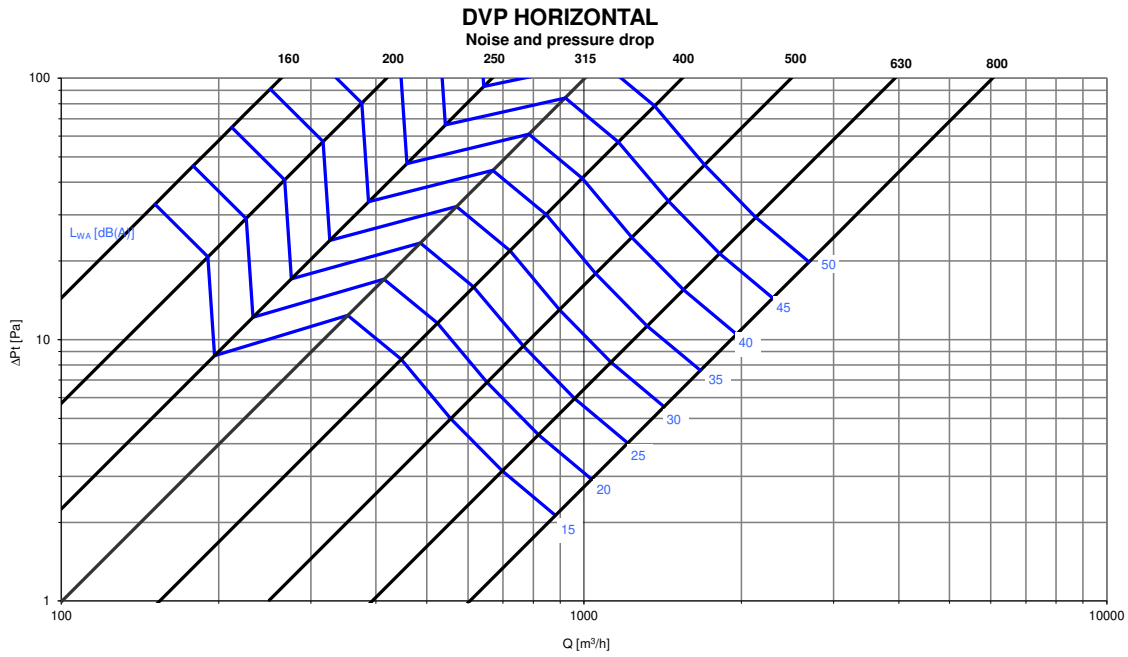
Blade position for vertical air discharge at 90º.

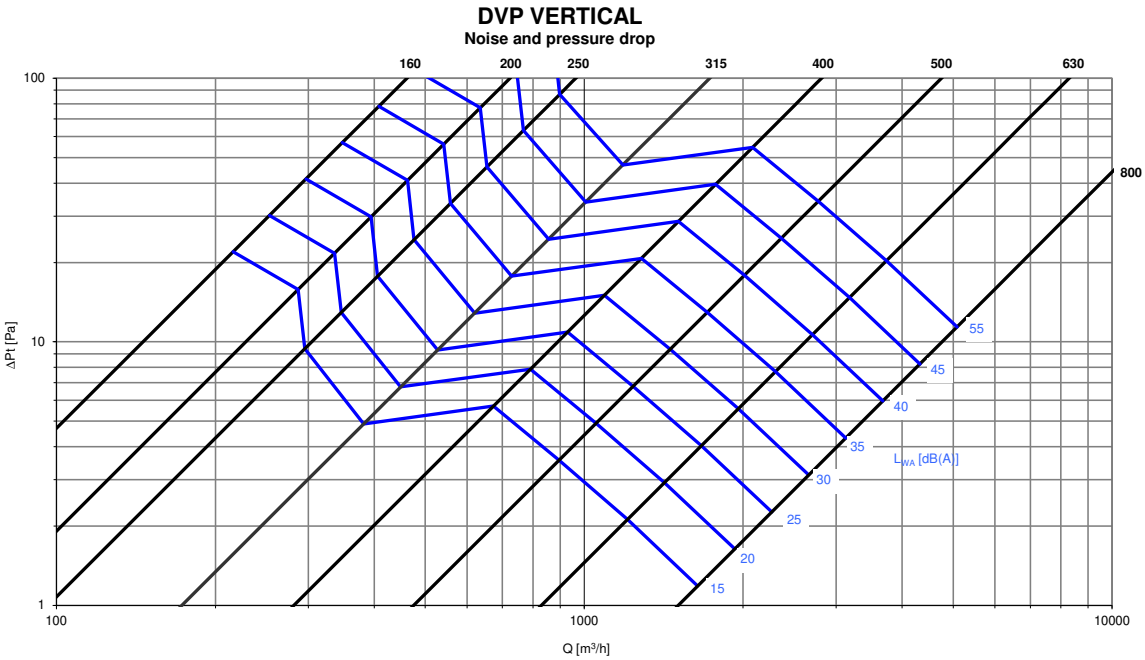
Q m³/h	Q l/s	Size		160	200	250	315	355	400	500	630	800
100	27,8	X	v_t = 0,3	1,5								
			v_t = 0,5	0,9								
			v_t = 1,0	0,5								
		ΔP_t		5								
		L_{WA}		<15								
200	55,6	X	v_t = 0,3	3,0	2,4							
			v_t = 0,5	1,8	1,4							
			v_t = 1,0	0,9	0,7							
		ΔP_t		19	8							
		L_{WA}		33	19							
300	83,3	X	v_t = 0,3	4,5	3,5	2,5	1,6	1,4				
			v_t = 0,5	2,7	2,1	1,5	1,0	0,9				
			v_t = 1,0	1,4	1,1	0,8	0,5	0,4				
		ΔP_t		42	17	10	3	2				
		L_{WA}		45	31	15	<15	<15				
400	111,1	X	v_t = 0,3	6,0	4,7	3,4	2,1	1,9				
			v_t = 0,5	3,6	2,8	2,0	1,3	1,1				
			v_t = 1,0	1,8	1,4	1,0	0,6	0,6				
		ΔP_t		75	31	17	5	3				
		L_{WA}		54	40	25	<15	<15				
500	138,9	X	v_t = 0,3		5,9	4,2	2,7	2,4	1,6	1,2		
			v_t = 0,5		3,5	2,5	1,6	1,4	1,0	0,7		
			v_t = 1,0		1,8	1,3	0,8	0,7	0,5	0,3		
		ΔP_t			48	27	8	5	3	1		
		L_{WA}			47	32	16	<15	<15	<15		
600	166,7	X	v_t = 0,3			5,0	3,2	2,8	2,0	1,4		
			v_t = 0,5			3,0	1,9	1,7	1,2	0,8		
			v_t = 1,0			1,5	1,0	0,9	0,6	0,4		
		ΔP_t				39	12	7	5	2		
		L_{WA}				37	22	17	<15	<15		
800	222,2	X	v_t = 0,3			6,7	4,3	3,8	2,6	1,8	1,3	
			v_t = 0,5			4,0	2,6	2,3	1,6	1,1	0,8	
			v_t = 1,0			2,0	1,3	1,1	0,8	0,6	0,4	
		ΔP_t				69	21	13	8	3	1	
		L_{WA}				46	31	26	20	<15	<15	
1.000	277,8	X	v_t = 0,3			8,4	5,3	4,7	3,3	2,3	1,7	
			v_t = 0,5			5,0	3,2	2,8	2,0	1,4	1,0	
			v_t = 1,0			2,5	1,6	1,4	1,0	0,7	0,5	
		ΔP_t				108	33	21	13	4	1	
		L_{WA}				53	38	33	27	<15	<15	
2.000	555,6	X	v_t = 0,3				10,6	9,4	6,5	4,6	3,3	2,4
			v_t = 0,5				6,4	5,7	3,9	2,8	2,0	1,4
			v_t = 1,0				3,2	2,8	2,0	1,4	1,0	0,7
		ΔP_t					134	83	50	18	6	2
		L_{WA}					59	54	49	35	21	<15
3.000	833,3	X	v_t = 0,3						9,8	6,9	5,0	3,5
			v_t = 0,5						5,9	4,1	3,0	2,1
			v_t = 1,0						2,9	2,1	1,5	1,1
		ΔP_t							113	40	13	4
		L_{WA}							61	47	33	19
4.000	1111,1	X	v_t = 0,3							9,2	6,6	4,7
			v_t = 0,5							5,5	4,0	2,8
			v_t = 1,0							2,8	2,0	1,4
		ΔP_t								71	23	7
		L_{WA}								56	42	28
5.000	1388,9	X	v_t = 0,3								8,3	5,9
			v_t = 0,5								5,0	3,5
			v_t = 1,0								2,5	1,8
		ΔP_t									36	11
		L_{WA}									49	34
6.000	1666,7	X	v_t = 0,3								10,0	7,1
			v_t = 0,5								6,0	4,2
			v_t = 1,0								3,0	2,1
		ΔP_t									52	16
		L_{WA}									55	40
8.000	2222,2	X	v_t = 0,3									9,4
			v_t = 0,5									5,6
			v_t = 1,0									2,8
		ΔP_t										28
		L_{WA}										49
10.000	2777,8	X	v_t = 0,3									11,8
			v_t = 0,5									7,1
			v_t = 1,0									3,5
		ΔP_t										44
		L_{WA}										56

Legend

-Q (m^3/h): Air flow.
-V_c (m/s): Neck velocity.
-X (m): Throw for a maximun velocity of 0,25 m/s at the occupied zone.
-ΔP_t (Pa): Pressure drop.
-L_{WA} [dB(A)]: Sound power level.

Noise level selection graphs





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