

KOOLAIR

series

DVP

Variable geometry
diffusers

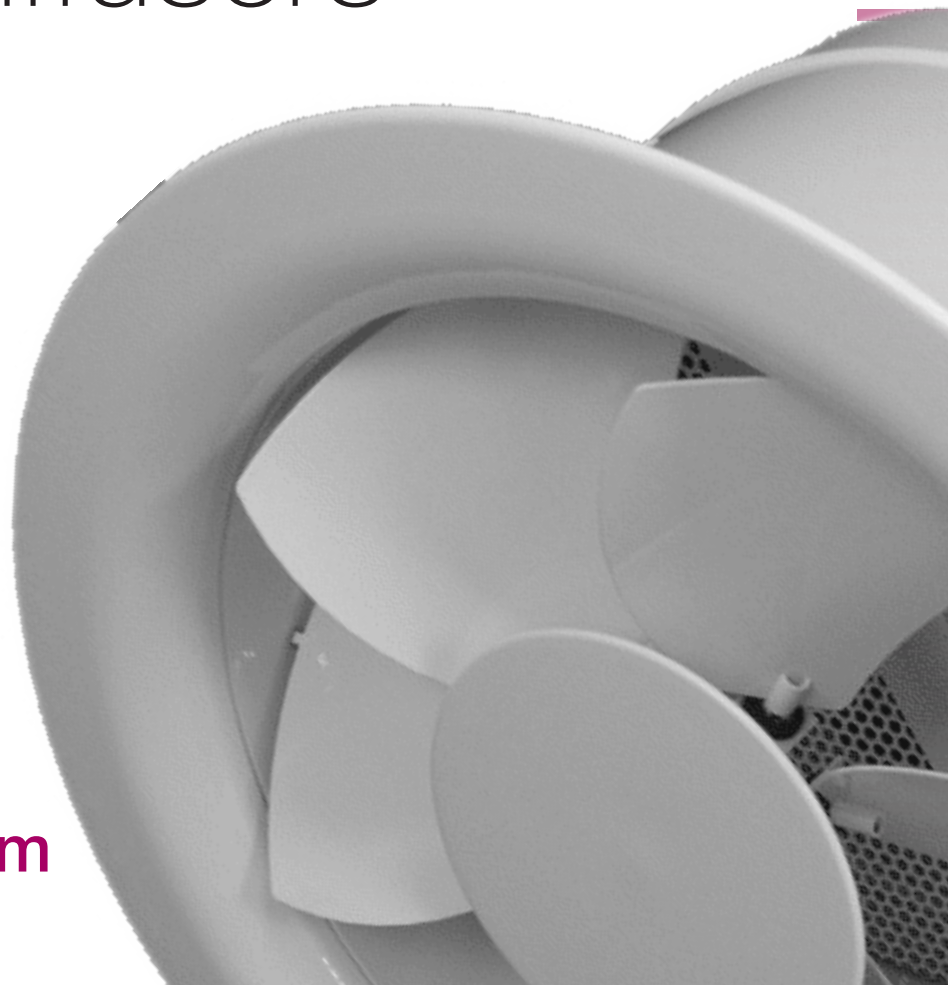
ISO 9001

BUREAU VERITAS
Certification

Sistema de Gestión



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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 Ø125 mm to Ø 800 mm in manually version and 7 sizes from Ø 250 mm to Ø800 mm either motorised or 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.

Identification

The code allows the various sizes and models of the DVP diffusers to be identified.

The thermo-adjustable and motorised versions are from Ø 250 mm to Ø800 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.



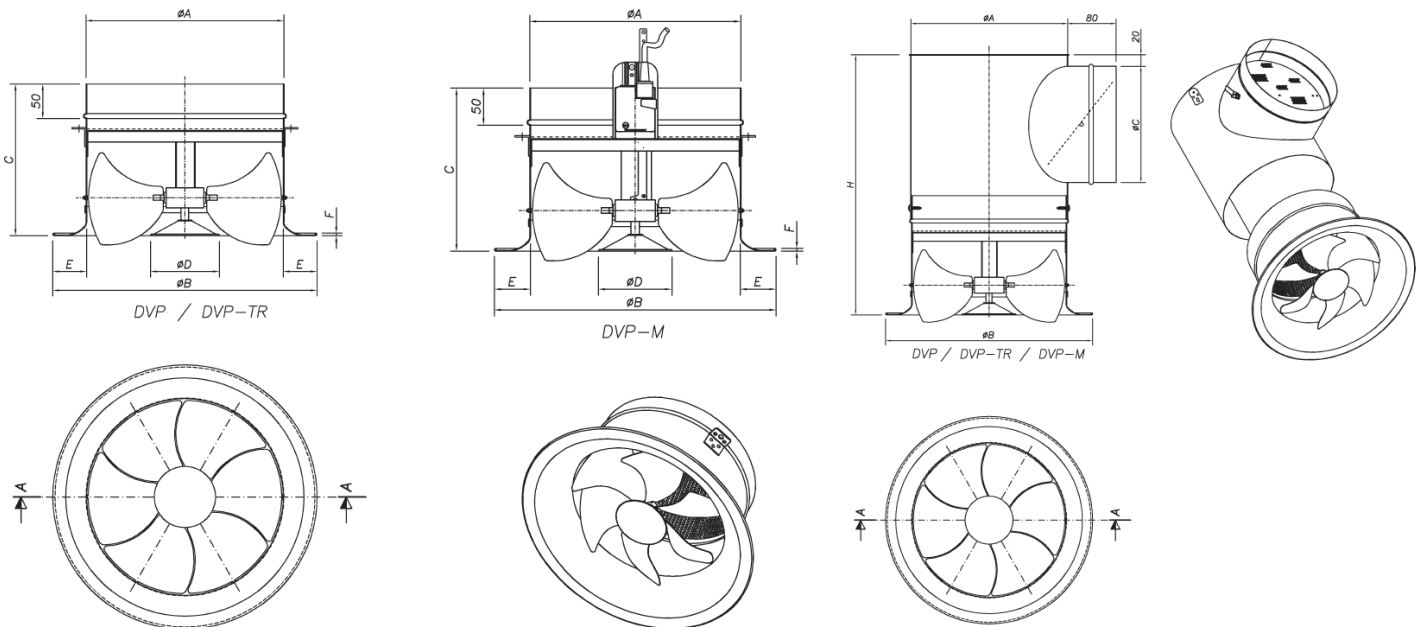
| | |
|-----------------|--|
| DVP | Round, variable-geometry diffuser series. |
| P | With plenum box plus manual f. |
| - | Without plenum box. |
| - | With manual operation. |
| M-CM24 | Actuator P / N 24V optional 230V (160 to 400 mm) |
| M-LM24 | Actuator P / N 24V optional 230V (500 to 800 mm) |
| M-CM24-S | Proportional 24V optional 230V (160 to 400 mm) |
| TR | Thermodadjustable. |
| Size | From 125 to 800, according to table. |

Dimensions

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.A.**, 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).



| MANUAL DIFFUSER DVP AND MOTORISED DVP-M | | | | | | | THERMOADJUSTABLE DVP-TR | | | | | | | PLENUM DVP | | | | |
|---|-----|-----|-----|-----|------|----|-------------------------|-----|-----|-----|------|------|----|------------|-----|-----|-----|-----|
| NOMINAL | Ø A | Ø B | C | Ø D | E | F | NOMINAL | Ø A | Ø B | C | Ø D | E | F | NOMINAL | Ø A | Ø B | Ø C | H |
| 160 | 159 | 253 | 155 | 90 | 48,5 | 5 | 250 | 249 | 353 | 200 | 105 | 53,5 | 5 | 160 | 164 | 253 | 159 | 360 |
| 200 | 199 | 303 | 174 | | | | 315 | 314 | 418 | 240 | | | | 200 | 204 | 303 | 199 | 419 |
| 250 | 249 | 353 | 200 | 105 | 53,5 | 5 | 355 | 354 | 458 | 250 | 125 | 50 | 10 | 250 | 254 | 353 | 249 | 495 |
| 315 | 314 | 418 | 240 | | | | 400 | 399 | 503 | 265 | | | | 315 | 319 | 418 | 314 | 600 |
| 355 | 354 | 458 | 250 | | | | 500 | 499 | 600 | 320 | | | | 355 | 359 | 458 | 354 | 655 |
| 400 | 399 | 503 | 265 | | | | 630 | 629 | 730 | 380 | | | | 400 | 404 | 503 | 399 | 710 |
| 500 | 499 | 600 | 320 | 125 | 50 | 10 | | | | | | | | 500 | 504 | 600 | 449 | 865 |
| 630 | 629 | 730 | 380 | | | | 630 | 634 | 730 | 549 | 1055 | | | | | | | |
| 800 | 799 | 900 | 555 | | | | 800 | 804 | 900 | 649 | 1400 | | | | | | | |

Quick selection table horizontal discharge

Blade position for horizontal air discharge at 30°.

| Q | | Size | 125 | 160 | 200 | 250 | 315 | 355 | 400 | 500 | 630 | 800 | |
|-------------------|--------|-----------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|----|
| m ³ /h | l/s | | | | | | | | | | | | |
| 100 | 27,8 | V _c | 2,4 | | | | | | | | | | |
| | | X | 1,1 | | | | | | | | | | |
| | | ΔP _t | 37 | | | | | | | | | | |
| | | L _{WA} | 37 | | | | | | | | | | |
| 150 | 41,7 | V _c | 3,6 | 2,1 | 1,3 | 0,9 | | | | | | | |
| | | X | 1,6 | 1,2 | 1,0 | 1,0 | | | | | | | |
| | | ΔP _t | 83 | 32 | 13 | 5 | | | | | | | |
| | | L _{WA} | 49 | 31 | 19 | <15 | | | | | | | |
| 200 | 55,6 | V _c | 4,8 | 2,8 | 1,8 | 1,1 | 0,7 | | | | | | |
| | | X | 2,2 | 1,6 | 1,4 | 1,3 | 1,0 | | | | | | |
| | | ΔP _t | 148 | 58 | 23 | 9 | 4 | | | | | | |
| | | L _{WA} | 58 | 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 | |
| | | X | | | | | | | | | | 7,8 | |
| | | ΔP _t | | | | | | | | | | 58 | |
| | | L _{WA} | | | | | | | | | | 53 | |
| 4.000 | 1111,1 | V _c | | | | | | | | | | | |
| | | X | | | | | | | | | | | |
| | | ΔP _t | | | | | | | | | | | |
| | | L _{WA} | | | | | | | | | | | |

Legend

- Q (m³/h): Air flow.
- V_c (m/s): Neck velocity.
- X (m): Throw for a maximum 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

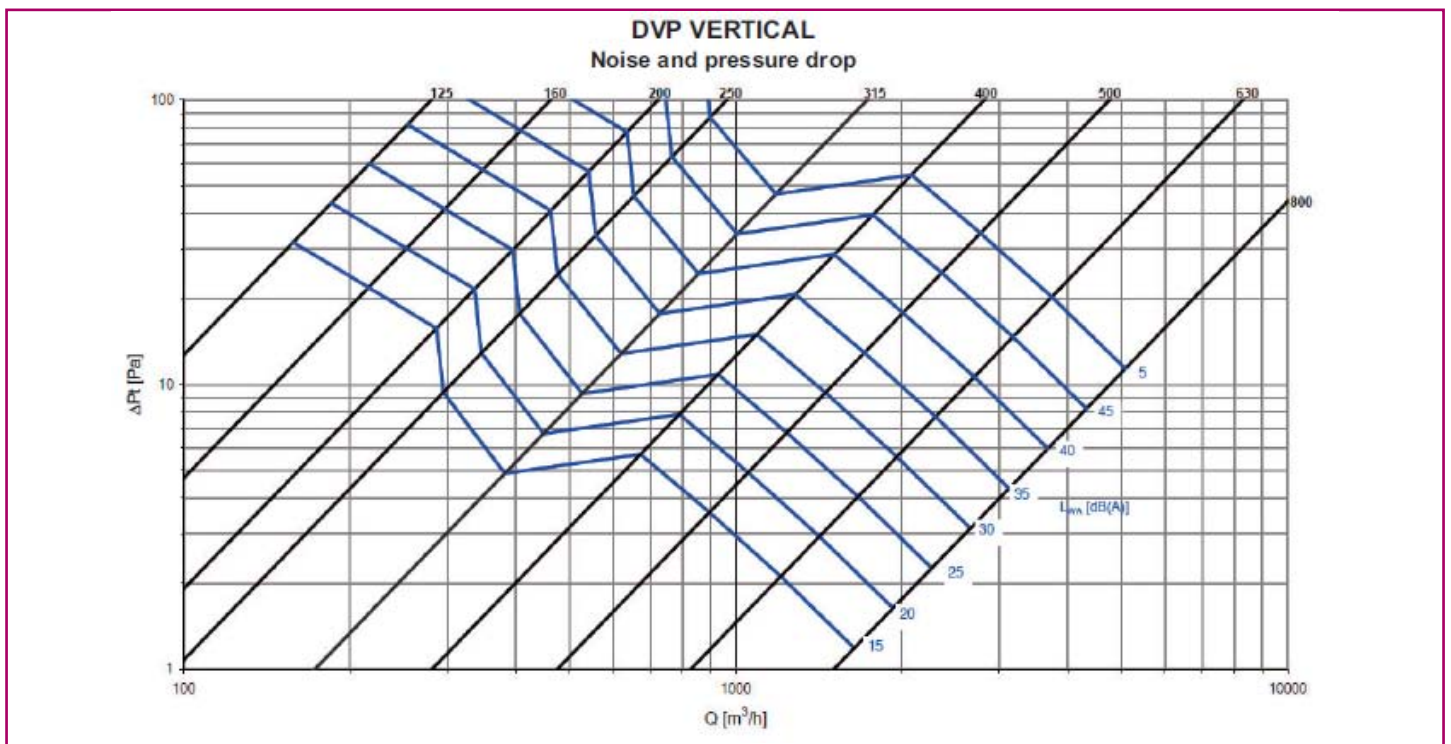
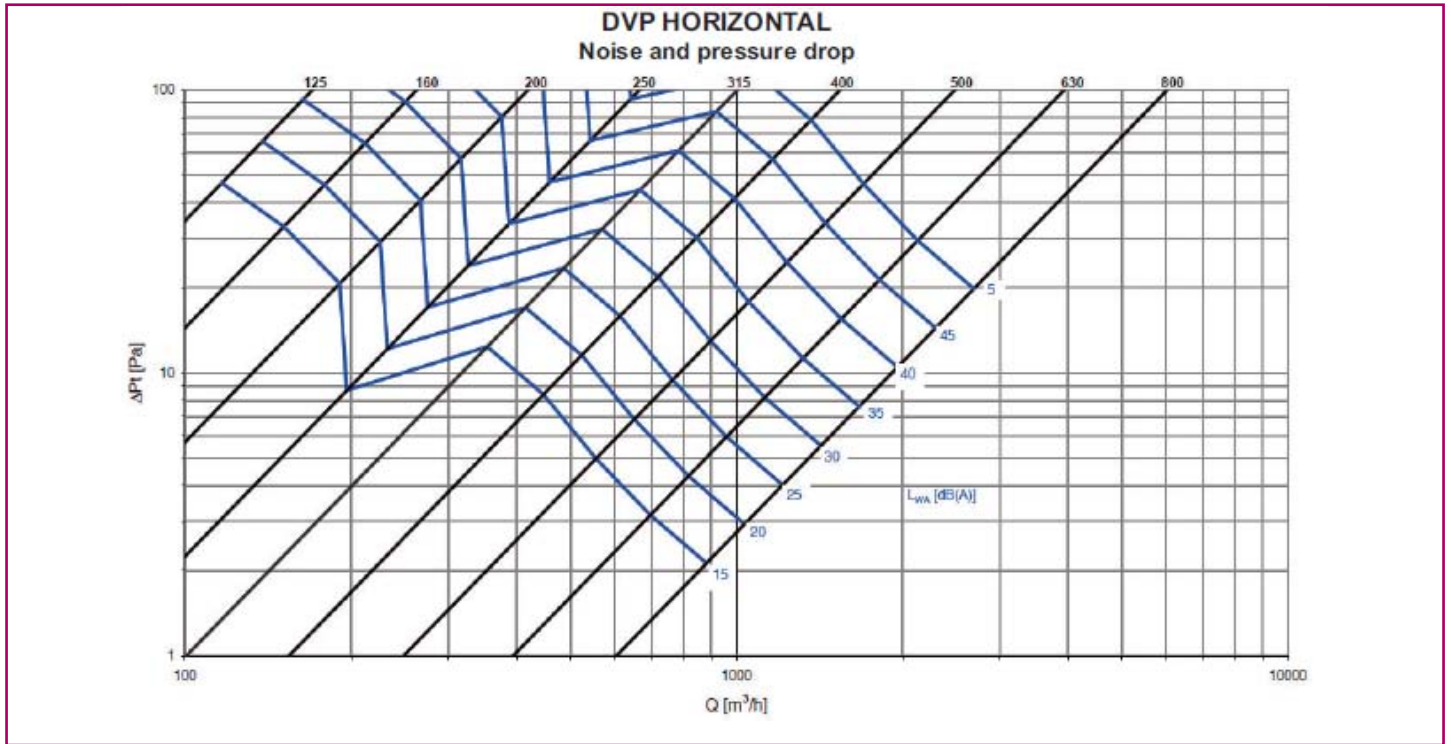
Blade position for vertical air discharge at 90°.

| Q | | Size | 125 | 160 | 200 | 250 | 315 | 355 | 400 | 500 | 630 | 800 |
|--------|--------|--------------|-------------|------|-----|-----|-----|-----|-----|-----|-----|-----|
| m³/h | l/s | | | | | | | | | | | |
| 100 | 27,8 | X | $V_t = 0,3$ | 2,1 | 15 | | | | | | | |
| | | | $V_t = 0,5$ | 13 | 0,9 | | | | | | | |
| | | | $V_t = 1,0$ | 0,6 | 0,5 | | | | | | | |
| | | ΔP_t | 3 | 5 | | | | | | | | |
| | | L_{WA} | 24 | <15 | | | | | | | | |
| 200 | 55,6 | X | $V_t = 0,3$ | 4,3 | 3,0 | 2,4 | | | | | | |
| | | | $V_t = 0,5$ | 2,6 | 18 | 14 | | | | | | |
| | | | $V_t = 1,0$ | 13 | 0,9 | 0,7 | | | | | | |
| | | ΔP_t | 54 | 19 | 8 | | | | | | | |
| | | L_{WA} | 46 | 33 | 19 | | | | | | | |
| 300 | 83,3 | X | $V_t = 0,3$ | 4,5 | 3,5 | 2,5 | 16 | 14 | | | | |
| | | | $V_t = 0,5$ | 2,7 | 2,1 | 15 | 10 | 0,9 | | | | |
| | | | $V_t = 1,0$ | 14 | 11 | 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 | | | | |
| | | | $V_t = 1,0$ | 18 | 14 | 10 | 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 | 16 | 12 | | | |
| | | | $V_t = 0,5$ | 3,5 | 2,5 | 16 | 14 | 10 | 0,7 | | | |
| | | | $V_t = 1,0$ | 18 | 13 | 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 | 14 | | | | |
| | | | $V_t = 0,5$ | 3,0 | 19 | 17 | 12 | 0,8 | | | | |
| | | | $V_t = 1,0$ | 15 | 10 | 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 | 18 | 13 | | | |
| | | | $V_t = 0,5$ | 4,0 | 2,6 | 2,3 | 16 | 1,1 | 0,8 | | | |
| | | | $V_t = 1,0$ | 2,0 | 13 | 11 | 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 | 14 | 10 | | | |
| | | | $V_t = 1,0$ | 2,5 | 16 | 14 | 10 | 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 | 14 | 10 | 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 (m³/h): Air flow.
- V_c (m/s): Neck velocity.
- X (m): Throw for a maximum 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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