# HIGH INDUCTION DIFFUSERS WITH VARIABLE GEOMETRY

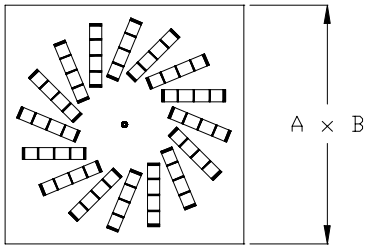
KQ - 2
KQ - 2 R
SERIES

TECHNICAL DRAWINGS
CONSTRUCTION DIMENSIONS

CONSTRUCTION DIMENSIONS :

**Figure no. 3**
Standard square and circular construction with vertical or horizontal throw

**KQ2** 300x300 400x400 500x500




**KQ2 R** Ø 300 Ø 400 Ø 500

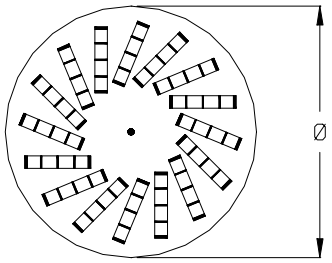
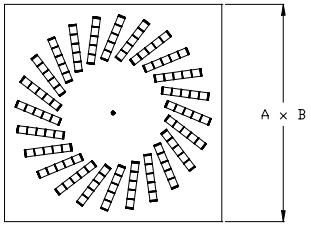
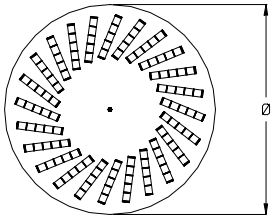



**Figure no. 4**
Standard square and circular construction with vertical or horizontal throw

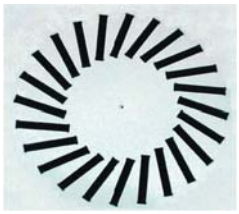
**KQ2** 600x600 625x625




**KQ2 R** Ø 600 Ø 625




| Nominal diameter | A [mm] | B [mm] | Ø |
|---|---|---|---|
| **300** | 296 | 296 | 296 |
| **400** | 396 | 396 | 396 |
| **500** | 496 | 496 | 496 |
| **600** | 596 | 596 | 596 |
| **625** | 621 | 621 | |

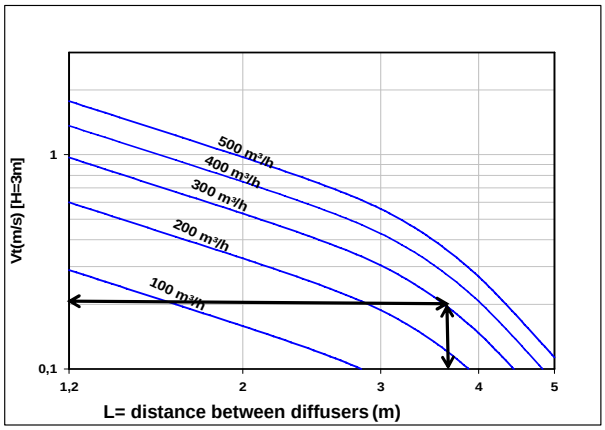


# HIGH INDUCTION DIFFUSERS WITH VARIABLE GEOMETRY

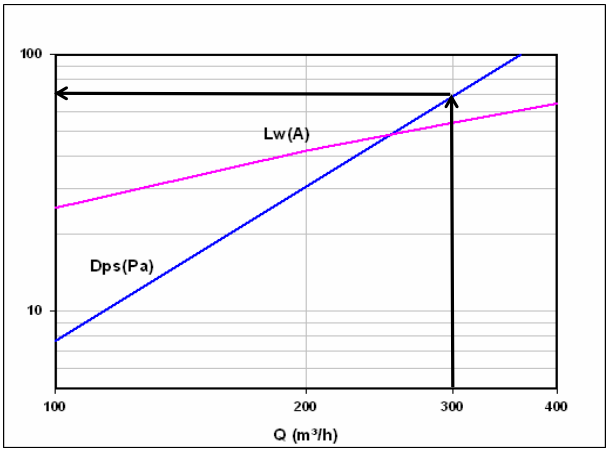
HOW TO USE THE GRAPHS

KQ - 2
KQ - 2 R
SERIES

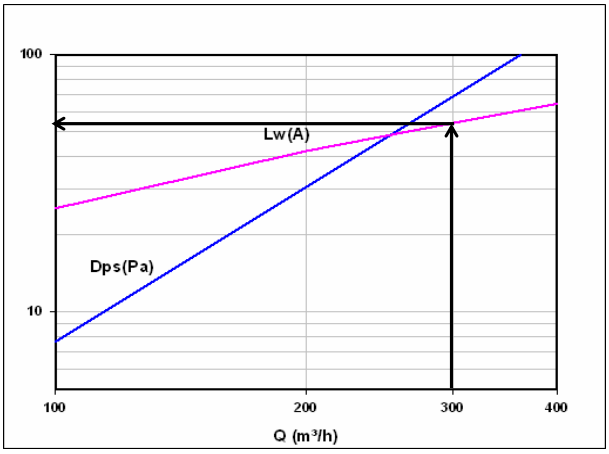
## CORRECT METHOD FOR USING THE KQ2 SERIES GRAPHS



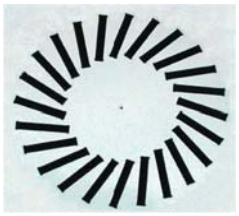

**INSTRUCTION 1**
Calculation of the proposed distance between the diffusers in relation of the air flow and the speed required at the limit of the occupied zone, equal to 1,8m from floor level.
As an alternative, calculate the speed at the limit of the occupied zone in relation to the air flow and the distance between the diffusers.
The values obtained are valid for ceilings of 3m.
For different heights, it will be necessary to apply the correction factor calculated from the table shown in the selection page




**INSTRUCTION 2**
Calculation of the loss of the static pressure loss ΔPs in relation of the air flow rate.
Pressure loss indicated in Pa.



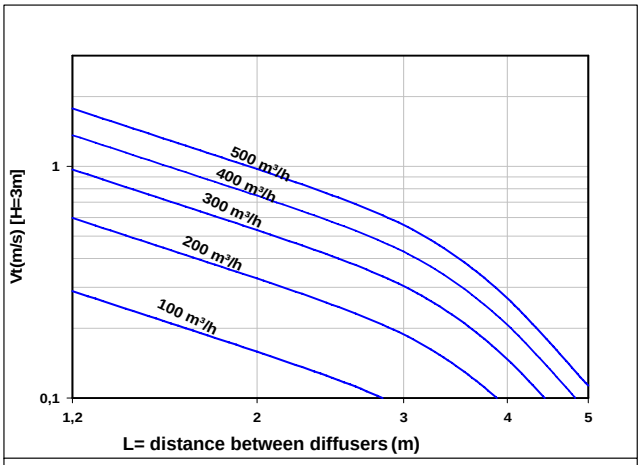

**INSTRUCTION 3**
Calculation of the noise power level Lw in relation of the air flow rate.
Noise power level indicated in dBa.

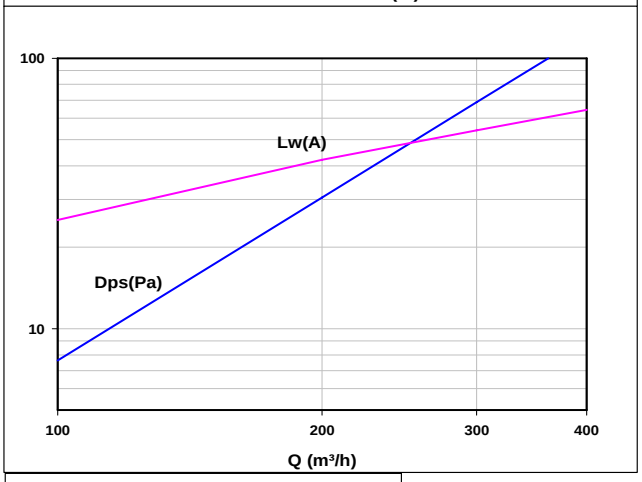


# HIGH INDUCTION DIFFUSERS WITH VARIABLE GEOMETRY

KQ - 2
SERIES

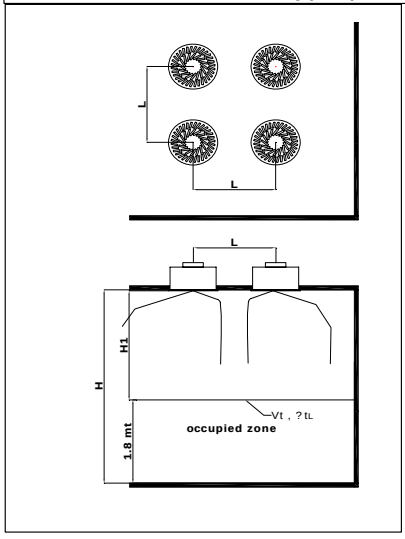
PERFORMANCE KQ2-300




Dps= Static pressure loss (Pa)
measure with steel sheet plenum,

Lw(A)= Acoustic power level
pondered in "A" dB(A)

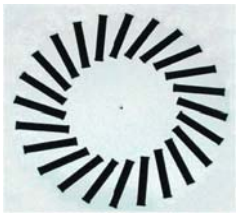



Legend:
H height of installation
1,8m height of occupied zone
Values are expressed in isotermic conditions ΔT=0 K
ΔT=Temperature difference between injected air and room temperature.
Conversion table for different installation heights.

| H(m) | K |
|---|---|
| 2,70 | 1,33 |
| 3,00 | 1,00 |
| 3,40 | 0,75 |
| 3,80 | 0,60 |

example:
H=3,4 m
Vt(H=3,4)=Vt(H=3) x K=Vt(H=3) x 0,75

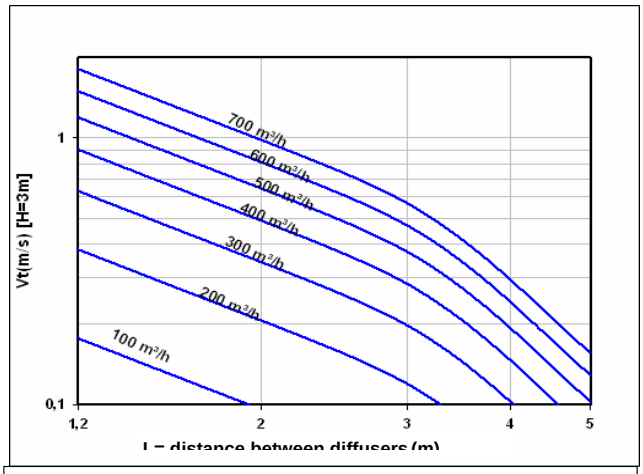
For installation in a open space Vt=Vt x 0,7

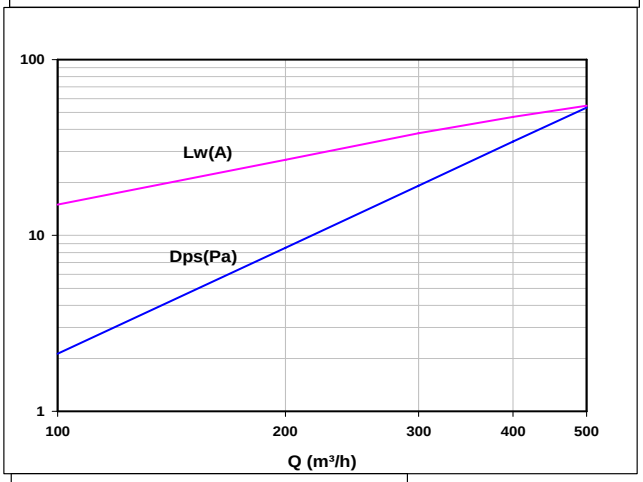


# HIGH INDUCTION DIFFUSERS WITH VARIABLE GEOMETRY

KQ - 2
SERIES

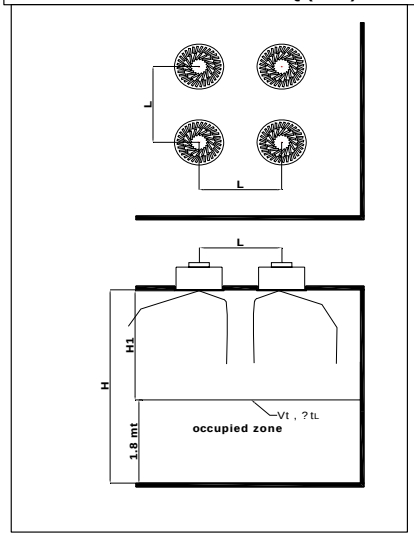
PERFORMANCE KQ2-400




Dps= Static pressure loss (Pa)
measure with steel sheet plenum,

Lw(A)= Acoustic power level
pondered in "A" dB(A)




Legend:
H height of installation
1,8m height of occupied zone
Values are expressed in isotermic conditions ΔT=0 K
ΔT=Temperature difference between injected air and room temperature.
Conversion table for different installation heights.

| H(m) | K |
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| 2,70 | 1,33 |
| 3,00 | 1,00 |
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| 3,80 | 0,60 |

example:
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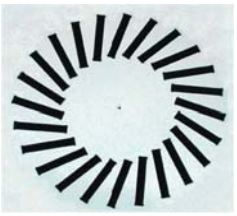
Vt(H=3,4)=Vt(H=3) x K=Vt(H=3) x 0,75

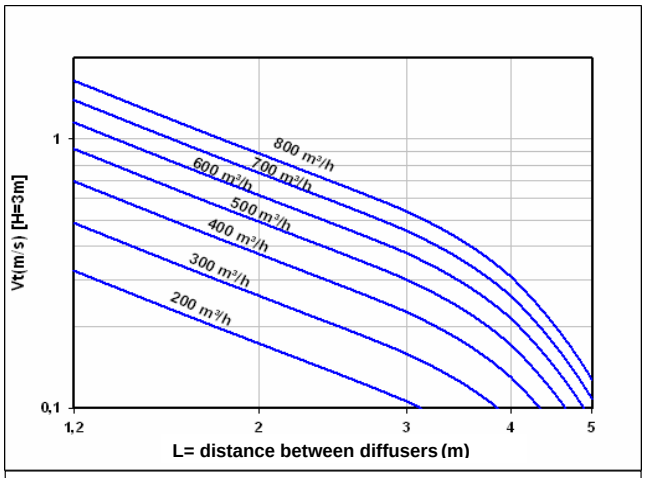
For installation in a open space Vt=Vt x 0,7

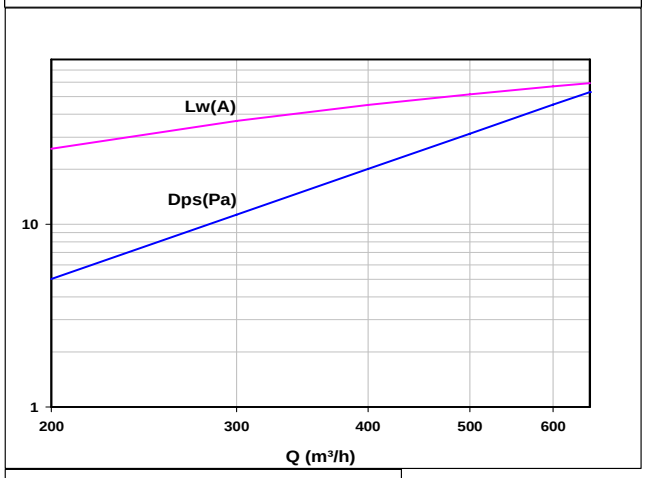


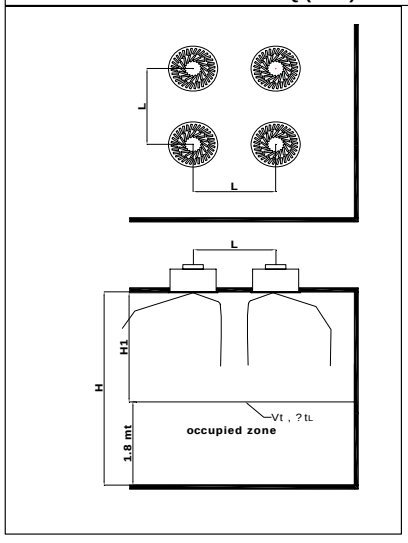
# HIGH INDUCTION DIFFUSERS WITH VARIABLE GEOMETRY

KQ - 2
SERIES

PERFORMANCE KQ2-500




Dps= Static pressure loss (Pa)
measure with steel sheet plenum,

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pondered in "A" dB(A)

Legend:
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1,8m height of occupied zone
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Conversion table for different installation heights.

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| 3,00 | 1,00 |
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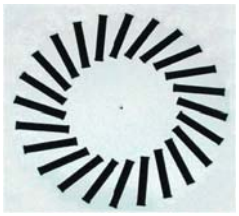
| 3,80 | 0,60 |

example:
H=3,4 m
Vt(H=3,4)=Vt(H=3) x K=Vt(H=3) x 0,75

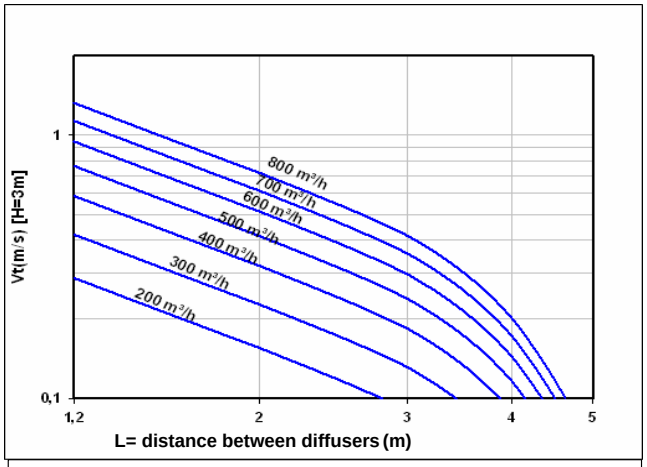
For installation in a open space Vt=Vt x 0,7

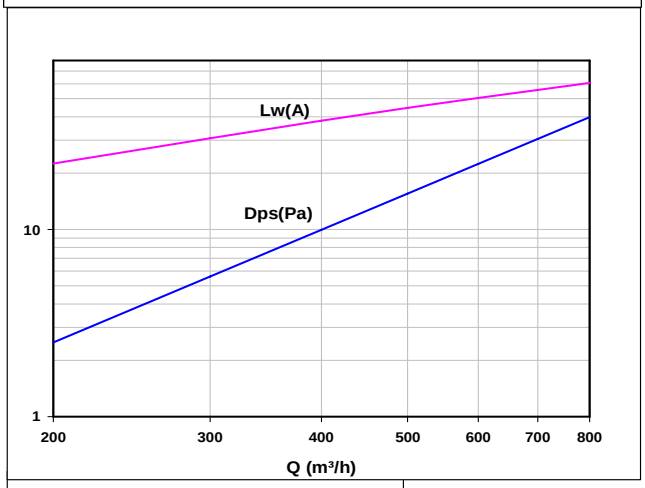


# HIGH INDUCTION DIFFUSERS WITH VARIABLE GEOMETRY

KQ - 2
SERIES

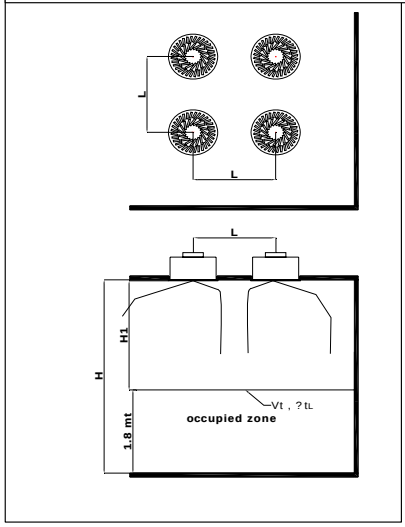
PERFORMANCE KQ2-600/625




Dps= Static pressure loss (Pa)
measure with steel sheet plenum,

Lw(A)= Acoustic power level
pondered in "A" dB(A)




Legend:
H height of installation
1,8m height of occupied zone
Values are expressed in isotermic conditions ΔT=0 K
ΔT=Temperature difference between injected air and room temperature.
Conversion table for different installation heights.

| H(m) | K |
|---|---|
| 2,70 | 1,33 |
| 3,00 | 1,00 |
| 3,40 | 0,75 |
| 3,80 | 0,60 |

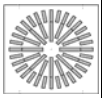
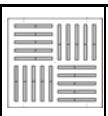
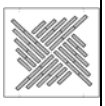
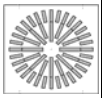
example:
H=3,4 m
Vt(H=3,4)=Vt(H=3) x K=Vt(H=3) x 0,75

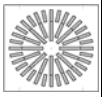
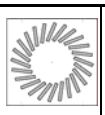
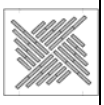
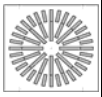
For installation in a open space Vt=Vt x 0,7

# HIGH INDUCTION DIFFUSERS WITH VARIABLE GEOMETRY

Ak in m²

VALUES FOR THE EFFECTIVE AIR PASSAGE SURFACE Ak FOR THE VARIOUS MODELS AVAILABLE FOR KW SERIES DIFFUSERS, MEASURES IN m²

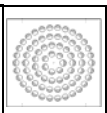
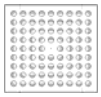
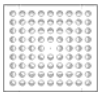
| NOMINAL DIMENSIONS | |  | | |  |  |  |
|---|---|---|---|---|---|---|---|
| DIMENSIONS | n° deflectors | KQ 1 | KQ 2 | KQ 3 | KQ 5 | KQ 6 | KQ 8 |
| 200 x 200 | 4 | 0,0026 | | | | | |
| 300 x 300 | 8 | 0,0071 | | | | 0,0104 | |
| 300 x 300 | 11 | | 0,0103 | | | | |
| 400 x 400 | 16 | 0,0189 | 0,0195 | | | | 0,0189 |
| 400 x 400 | 24 | | | | | 0,0265 | |
| 400 x 400 | 32 | | | | 0,0365 | | |
| 500 x 500 | 16 | | 0,0243 | | | | |
| 500 x 500 | 24 | | | | | | 0,0253 |
| 500 x 500 | 28 | | | | | 0,0365 | |
| 500 x 500 | 32 | 0,0337 | | | | | |
| 500 x 500 | 40 | 0,0495 | | | 0,0526 | | |
| 600 x 600 | 24 | | 0,0361 | | | | |
| 600 x 600 | 36 | | | 0,0465 | | | |
| 600 x 600 | 40 | | | | 0,0671 | 0,0539 | |
| 600 x 600 | 48 | 0,0595 | | 0,0499 | | | 0,0595 |
| 625 x 625 | 24 | | 0,0361 | | | | |
| 625 x 625 | 36 | | | 0,0465 | | | |
| 625 x 625 | 40 | | | | 0,0671 | 0,0539 | |
| 625 x 625 | 48 | 0,0595 | | 0,0499 | | | 0,0595 |
| 800 x 800 | 72 | 0,1053 | | | | | |
| 800 x 800 | 88 | | | 0,0913 | | | |
| 825 x 825 | 72 | 0,1053 | | | 0,0890 | 0,1002 | |
| 825 x 825 | 88 | | | 0,0913 | | | |

| NOMINAL DIMENSIONS | |  |  | | |  |  |
|---|---|---|---|---|---|---|---|
| DIMENSIONS | n° deflectors | KQ 1 T | KQ 2 T | | KQ 5 T | KQ 6 T | KQ 8 T |
| 200 | 4 | 0,0026 | | | | | |
| 300 | 8 | 0,0071 | | | | 0,0104 | |
| 300 | 11 | | 0,0103 | | | | |
| 400 | 16 | 0,0189 | 0,0195 | | | | 0,0189 |
| 400 | 24 | | | | | 0,0265 | |
| 400 | 32 | | | | 0,0365 | | |
| 500 | 16 | | 0,0243 | | | | |
| 500 | 32 | 0,0337 | | | 0,0526 | | |
| 500 | 40 | 0,0495 | | | | 0,0364 | 0,0495 |

# HIGH INDUCTION DIFFUSERS WITH VARIABLE GEOMETRY

Ak in m²

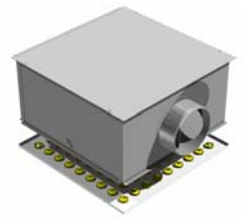
| NOMINAL DIMENSIONS | | | | |
|---|---|---|---|---|
| DIMENSIONS | n° deflectors | KQ 1 R | KQ 2 R | KQ 3 R |
| 300 | 8 | 0,0071 | | |
| 300 | 11 | | 0,0103 | |
| 400 | 16 | 0,0189 | 0,0195 | |
| 500 | 16 | | 0,0243 | |
| 500 | 32 | 0,0337 | | |
| 500 | 40 | 0,0495 | | |
| 600 | 24 | | 0,0361 | |
| 600 | 36 | | | 0,0465 |
| 600 | 48 | 0,0595 | | 0,0499 |
| 625 | 24 | | 0,0361 | |
| 625 | 36 | | | 0,0465 |
| 625 | 48 | 0,0595 | | 0,0499 |
| 800 | 72 | 0,1053 | | |
| 800 | 88 | | | 0,0913 |
| 825 | 72 | 0,1053 | | |
| 825 | 88 | | | 0,0913 |

| NOMINAL DIMENSIONS | |  | | |  |  |
|---|---|---|---|---|---|---|
| DIMENSIONS | n° nozzles | KQ 40 | KQ 40 T | KQ 40 R | KQ 42 | KQ 42 T |
| 400 x 400 | 22 | 0,0057 | 0,0057 | 0,0057 | | |
| 400 x 400 | 24 | | | | 0,0062 | 0,0062 |
| 500 x 500 | 44 | 0,0114 | 0,0114 | 0,0114 | | |
| 500 x 500 | 48 | | | | 0,0124 | 0,0124 |
| 600 x 600 | 74 | 0,0191 | | 0,0191 | | |
| 600 x 600 | 80 | | | | 0,0206 | |
| 625 x 625 | 74 | 0,0191 | | 0,0191 | | |
| 625 x 625 | 80 | | | | 0,0206 | |

CODES

| | |
|---|---|
| KQ | circular motion diffuser |
| 1 / 2 / 3 / 5 / 6 / 7 / 8 | with veriable geometry with combined throuws |
| 40 / 42 | with directional nozzles |
| R | circcular |
| T | on 595x595 panel |

Example : KQ1 T 400 - Diffuser with variable geometry with a 400 mm diameter on 595x595 panel.



# HIGH INDUCTION DIFFUSERS WITH VARIABLE GEOMETRY

KQ
SERIES

INSTALLATION EXAMPLE

**INSTALLATION INSTRUCTIONS:**
The diffuser is installed directly on the plenum, as illustrated below.
The diffuser is secured directly onto the plenum bridge with a M5 screw through the centre, or directly onto the plenum itself with screws at the sides. The 595x595 integrated panel is installed just as a standard false ceiling panel would be.

**Figure no. 7**
Fastening to plenum (diffuser with 595x595 panel)

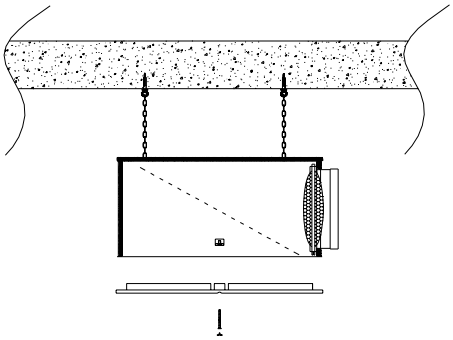


**Figure no. 8**
Fastening to plenum (300x300 400x400 500x500 625x625 mm diffusers)

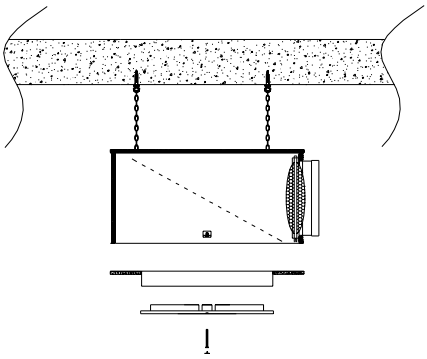


**Figure no. 9**
Fastening to plenum with diffuser and plenum mounted on false ceiling

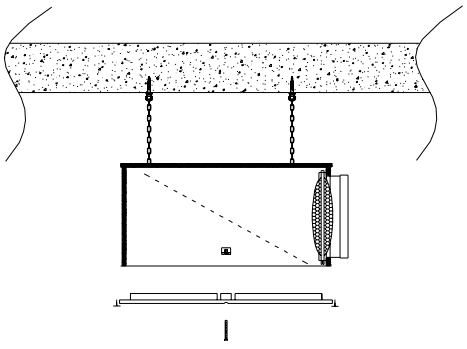


**Figure no. 10**
Diffuser without plenum mounted on false ceiling

**PLENUM :**
The diffuser can be supplied with a plenum as for your requirements.

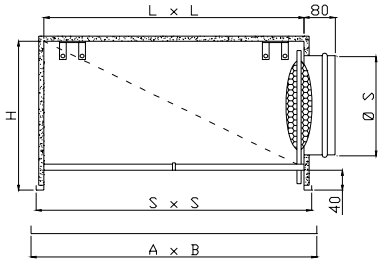
**Construction :**
Constructions can also come with a side or a top coupling in the diameters shown. They can also be supplied with a regulation damper and external heat insulation in accordance with the purchaser's specifications. The control damper must be enabled from inside and can be easily reached by removing the false ceiling panel.

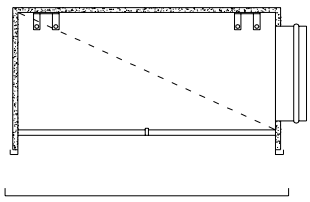
# PLENUM FOR HIGH INDUCTION DIFFUSERS
# KQ SERIES

PP 80
SERIES

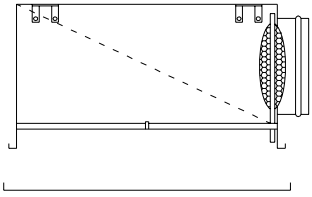
TECHNICAL CHARACTERISTICS

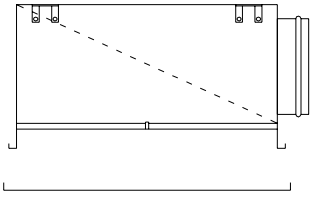
| PP80 ESIP KQ<br>Plenum + equalizer + damper + insulation + assembly bar | PP80 EIP KQ<br>Plenum + insulation + damper + assembly bar |
|---|---|



| PP80 ESP KQ<br>Plenum + equalizer + damper + assembly bar | PP80 EP KQ<br>Plenum + equalizer + assembly bar |
|---|---|





TECHNICAL DATA : PP 80 series plenum box can be supplied with lateral coupling.

MATERIALS : The plenum is manufactured from galvanized sheet steel, equalizer with perforated sheet, damper with perforated sheet, external insulation has fire reaction class 1.

ADJUSTMENT : The calibration damper is regulated by a control inside the plenum, taking off the diffuser unscrewing the central bolt.

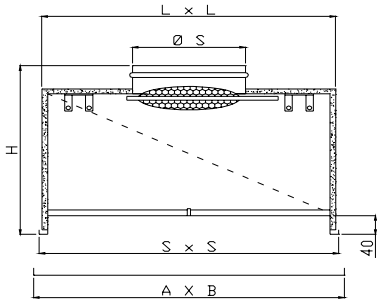
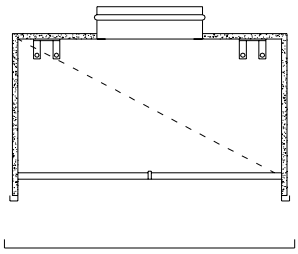
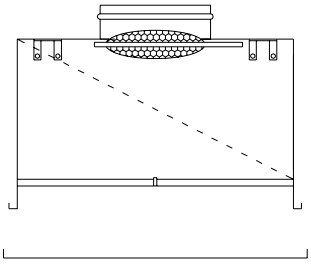
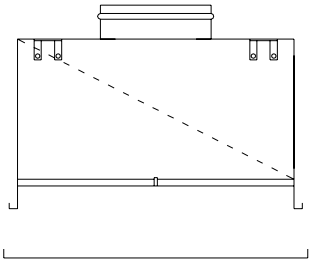
MOUNTING : The plenums are fixed and adjusted to the ceiling by threaded bars, putted into suitable supports.

| Diffuser nominal sizes A x B | | | Real panel sizes | L x L | S x S | H | No. Couplings | S |
|---|---|---|---|---|---|---|---|---|
| **200** | x | **200** | 196 | 160 | 190 | 200 | 1 | 96 |
| **300** | x | **300** | 296 | 260 | 290 | 200 | 1 | 123 |
| **400** | x | **400** | 396 | 360 | 390 | 300 | 1 | 199 |
| **500** | x | **500** | 496 | 460 | 490 | 300 | 1 | 199 |
| **600** | x | **600** | 596 | 560 | 590 | 350 | 1 | 250 |
| **625** | x | **625** | 621 | 585 | 615 | 350 | 1 | 250 |
| **800** | x | **800** | 796 | 760 | 790 | 400 | 1 | 301 |
| **825** | x | **825** | 821 | 785 | 815 | 400 | 1 | 301 |

# PLENUM FOR HIGH INDUCTION DIFFUSERS
## KQ SERIES

PP 81
SERIES

TECHNICAL CHARACTERISTICS

| PP81 ESIP KQ<br>Plenum + equalizer + damper + insulation + assembly bar | PP81 EIP KQ<br>Plenum + equalizer + insulation + assembly bar |
|---|---|
|  |  |
| **PP81 ESP KQ**<br>Plenum + equalizer + damper + assembly bar | **PP81 EP KQ**<br>Plenum + equalizer + assembly bar |
|  |  |

TECHNICAL DATA : PP 81 series plenum box can be supplied with upper coupling.

MATERIALS : The plenum is manufactured from galvanized sheet steel, equalizer with perforated sheet, damper with perforated sheet, external insulation has fire reaction class 1.

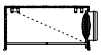
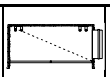
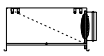
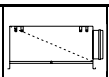
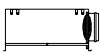
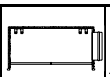
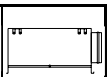
ADJUSTMENT : The calibration damper is regulated by a control inside the plenum, taking off the diffuser unscrewing the central bolt.

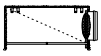
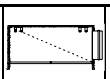
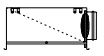
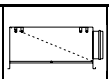
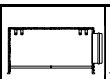
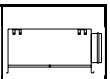
MOUNTING : The plenums are fixed and adjusted to the ceiling by threaded bars, putted into suitable supports.

| Diffuser nominal sizes A x B | | | Real panel sizes | L x L | S x S | H | No. Couplings | S |
|---|---|---|---|---|---|---|---|---|
| **200** | x | **200** | 196 | 160 | 190 | 200 | 1 | 96 |
| **300** | x | **300** | 296 | 260 | 290 | 240 | 1 | 123 |
| **400** | x | **400** | 396 | 360 | 390 | 290 | 1 | 199 |
| **500** | x | **500** | 496 | 460 | 490 | 290 | 1 | 199 |
| **600** | x | **600** | 596 | 560 | 590 | 290 | 1 | 250 |
| **625** | x | **625** | 621 | 585 | 615 | 290 | 1 | 250 |
| **800** | x | **900** | 796 | 760 | 790 | 400 | 1 | 301 |
| **825** | x | **825** | 821 | 785 | 815 | 340 | 1 | 301 |

# PLENUM FOR HIGH INDUCTION DIFFUSERS
# KQ SERIES

CODES

| Nominal sizes |  Plenum for square diffuser + equalizer + damper + insulation + assembly bar |  Plenum for square diffuser + equalizer+ insulation + assembly bar |  Plenum for square diffuser + equalizer + damper + assembly bar | Plenum for square diffuser + damper + insulation + assembly bar |  Plenum for square diffuser + equalizer + assembly bar |  Plenum for square diffuser + damper+ assembly bar |  Plenum for square diffuser + insulation + assembly bar |  Plenum for square diffuser + assembly bar |
|---|---|---|---|---|---|---|---|---|
| DIMENSIONS | PP80ESIP KQ | PP 80 EIP KQ | PP 80 ESP KQ | PP80SIP KQ | PP 80 EP KQ | PP 80 SP KQ | PP 80 IP KQ | PP 80 P KQ |
| | PP81ESIP KQ | PP 81 EIP KQ | PP 81 ESP KQ | PP81SIP KQ | PP 81 EP KQ | PP 81 SP KQ | PP 81 IP KQ | PP 81 P KQ |
| 200 x 200 | X | X | X | X | X | X | X | X |
| 300 x 300 | X | X | X | X | X | X | X | X |
| 400 x 400 | X | X | X | X | X | X | X | X |
| 500 x 500 | X | X | X | X | X | X | X | X |
| 600 x 600 | X | X | X | X | X | X | X | X |
| 625 x 625 | X | X | X | X | X | X | X | X |
| 800 x 800 | X | X | X | X | X | X | X | X |
| 825 x 825 | X | X | X | X | X | X | X | X |

| Nominal sizes |  Plenum for circular diffuser + equalizer + damper+ insulation + assembly bar |  Plenum for circular diffuser + equalizer + isolamento + assembly bar |  Plenum for circular diffuser+ equalizer + damper+ assembly bar | Plenum for circular diffuser+equalizer+ insulation + assembly bar |  Plenum for circular diffuser + equalizer + assembly bar | Plenum for circular diffuser + damper+ assembly bar |  Plenum for circular diffuser + insulation + assembly bar |  Plenum for circular diffuser + assembly bar |
|---|---|---|---|---|---|---|---|---|
| DIAMETER | PP80ESIP KQR | PP 80 EIP KQR | PP 80 ESP KQR | PP80SIP KQR | PP 80 EP KQR | PP 80 SP KQR | PP 80 IP KQR | PP 80P KQR |
| 300 | X | X | X | X | X | X | X | X |
| 400 | X | X | X | X | X | X | X | X |
| 500 | X | X | X | X | X | X | X | X |
| 600 | X | X | X | X | X | X | X | X |
| 625 | X | X | X | X | X | X | X | X |
| 800 | X | X | X | X | X | X | X | X |
| 825 | X | X | X | X | X | X | X | X |

| | |
|---|---|
| PP | Plenum |
| 80 | Side coupling |
| 81 | Upper coupling |
| E | Equalizer |
| S | Calibration damper |
| I | Insulation |
| P | Assembly bar |
| V | Central bolt with cap |

Example : PP 80 I 600x600 - Plenum with lateral coupling and insulation, dimensions 600x600

# PS PLENUM

PPS
SERIES

## OVERVIEW

### OVERVIEW :

The PPS series of polystyrene assemblable plenum boxes have a density of 45 kg/m3, with a Fire class 1 quality, eternally crystallised.

The transformation process and the special properties of the material, make the PPS a very compact and lightweight plenum.

These special features combined to the trapezoidal shape that distinguish it, allows the fixing of the unit in completed countersealing structure. This facilitates both the realisation and maintenance of the system. Given the light weight, the plenum is positioned on the structure of the counter ceiling, eliminating therefore the necessity of using hanging clips for fixing to the ceiling.
This has the advantage of reducing considerably the fitting time and a saving of the space used of over 50%, compared to a traditional plenum box.

The PPS has an excellent thermal acoustic insulation characteristic. It does not therefore require additional insulating material.

The PPS plenums can be supplied already assembled with a square 600x60mm diffuser panel , model KQ1, complete with regulation damper in ABS and equalizer, ready for installation.

As an alternative, there is also a version assembled but without the diffuser fitted.

Lastly a kit is also available, comprising the plenum, the connection "C", bar "A" and assembly diagram.

Installation: once the diffuser has been fitted to the plenum using the screw "V" (PPS-V680T) to bar "A, the plenum is positioned on the counter ceiling structure.

### TECHNICAL CHARACTERISTICS:

fire reaction:
Class 1 - Test report CSI DC01/378F05.
Euroclass E - Test report CSI DC01/656F07

Mechanic resistance:
10% deformation with 226kPa pressure - Test report CSI 0936/FPM/MATs/07.

Water absorption:
Increase average volume 3,26% in full immersion, tested according to UNI EN 12087 method 2A - Test report CSI 0936/FPM/MATs/07_2.

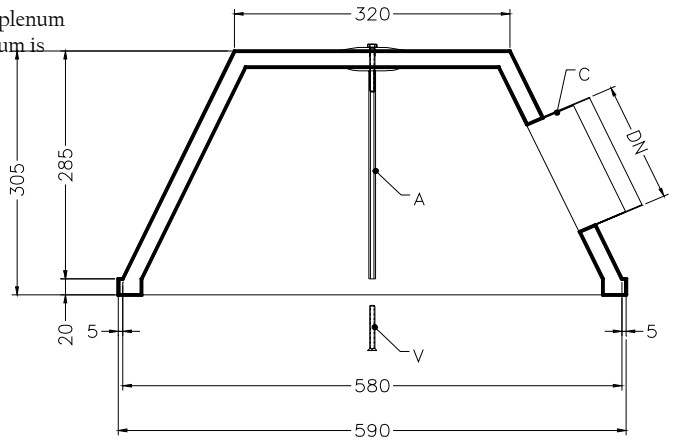
Thermal conductivity:
Δ (average) 0,0320 W/mK - Test report CSI 0037/DC/TTS/07.

Thermal resistance:
R (average) 0.637 m²K/W - Test report CSI 0037/DC/TTS/07.

Test certificate type:
Certificate CSI DE/1831/07 issued in conformity to directive 89/106/CEE on the bais of UNI EN 13163/2003 and UNI EN 13172/2003.

The documentation indicated above can viewed in electronic form in Italian with prior agreement from the Technical Department.

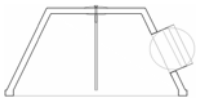
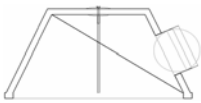
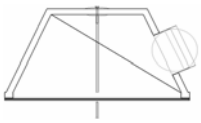
### ASSEMBLED PPS



# PS PLENUM

CODES

PPS
SERIES

| Image | Description | Connector diameter | Code |
|---|---|---|---|
|  | Plenum in PS already assembled with connector in ABS with damper and without equalizer. | 160 | PPS-PS160 |
| | | 200 | PPS-PS200 |
| | | 250 | PPS-PS250 |
|  | Plenum in PS already assembled, complete with connector in ABS with damper and equalizer. | 160 | PPS-PES160 |
| | | 200 | PPS-PES200 |
| | | 250 | PPS-PES250 |
|  | Plenum in PS already assembled, complete with connector in ABS with damper, equalizer and diffuser KQ1 600. | 160 | PPS-KQ1PES160 |
| | | 200 | PPS-KQ1PES200 |
| | | 250 | PPS-KQ1PES250 |

ACCESSORIES

| | | | |
|---|---|---|---|
| | Only PS bell shape body with fixing bar (withour connector) | | PPS-KIT |
| | Equalizor for plenum | | PPS-E |
| | Fixing screw for fixing diffuser to plenum. | | PPS-V680T |
| | Connector in ABS | 160 | RR10-160 |
| | | 200 | RR10-200 |
| | | 250 | RR10-250 |
| | Damper for connectors in ABS | 160 | RRS10-160 |
| | | 200 | RRS10-200 |
| | | 250 | RRS10-250 |