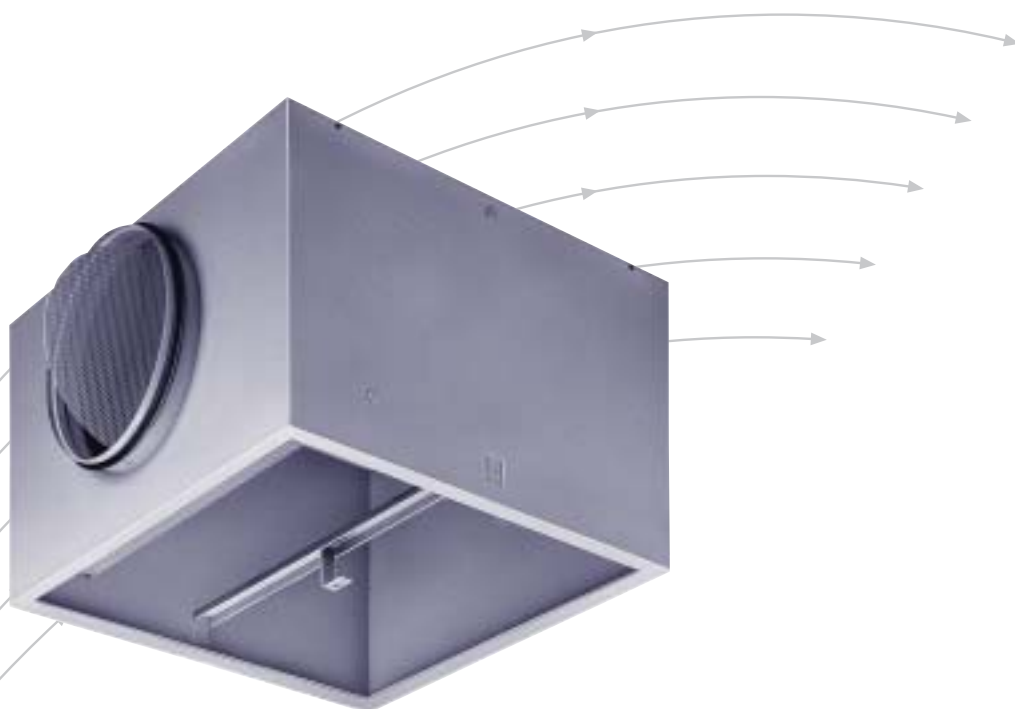


Universal Plenum Boxes

Type AK

- for ceiling mounted diffusers
- Types RFD, FD, VDW, TDF, TDV, DLQ, ADLQ, ADD, ADLR



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Universal Plenum box with standard connection diameter (Ø D) relating to individual leaflets in KLIMA-catalogue 1

| Type | Leaflet no. |
|---------------|---------------|
| RFD | 2/ 4/EN/... |
| ADD | 2/ 4.2/EN/... |
| FD | 2/ 6/EN/... |
| TDF-SilentAIR | 2/ 6.2/EN/... |
| VDW | 2/ 7/EN/... |
| TDV-SilentAIR | 2/ 7.1/EN/... |
| DLQ/ADLQ | 2/ 11/EN/... |
| ADLR | 2/ 16/EN/... |

Description

Universal Plenum Boxes Type AK can be supplied for diffusers Type RFD, FD, VDW, TDF, TDV, DLQ, ADLQ, ADD and ADLR.

Subject to performance requirements they can be used with various ceiling diffusers. The plenum boxes with standard spigot diameters (ØD) are marked in the table on Page 3. Only by using these diameters can the maximum volume flows be achieved and the sound power values maintained as stated in the individual leaflets.

The plenum boxes not marked have different spigot diameters. The volume flow here should be considered in relation to the acoustic requirements.

Construction

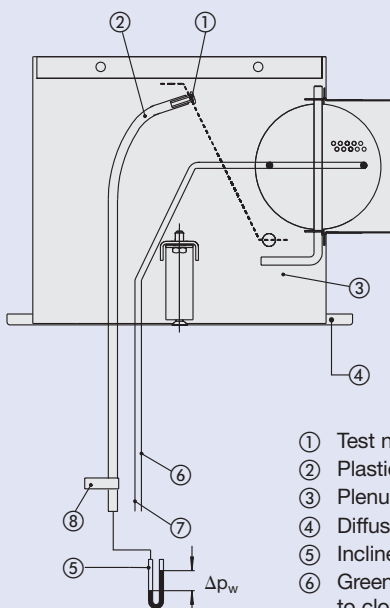
The Universal Plenum Box type AK comprises a casing with horizontal circular spigot for duct connection, with or without volume flow measurement and/or lip seal.

At the bottom of the plenum there is a built in spigot for connecting diffusers Type FD, VDW, TDF, TDV and ADLR.

Plenum boxes Type RFD and ADD are supplied as standard with a bottom spigot for connection to square and circular face diffusers.

Materials

Galvanized sheet steel plenum box with rubber lip seal.



- ① Test nipple
- ② Plastic tube
- ③ Plenum box
- ④ Diffuser face
- ⑤ Inclined manometer
- ⑥ Green sheathed cable to close butterfly damper
- ⑦ White sheathed cable to open butterfly damper
- ⑧ Plenum box code

Determining the volume flow by Δp_w

With the option "MN" (volume flow setting with control cable and test nipple) – see order code – the setting of required flow rates simplified.

The reference pressure Δp_w is measured using a plastic tube to a standard manometer.

The relevant volume flow is determined from the characteristic $\dot{V} = f(\Delta p_w)$ enclosed with every plenum box.

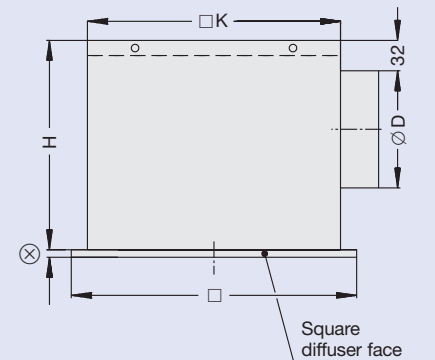
The diffuser constant C can be read on Page 4 (supply) and Page 5 (extract) of this leaflet.

The volume flow can be calculated using the reference pressure and the constant C (for formula see Page 4).

If necessary cables ⑥ and ⑦ can be used to adjust the butterfly damper in order to obtain the required volume flow. When the measurement and the adjustment have been completed the tube and the cables are pushed behind the diffuser face.

For square face diffusers Type DLQ/ADLQ, VDW, FD, TDV/TDF-SilentAIR

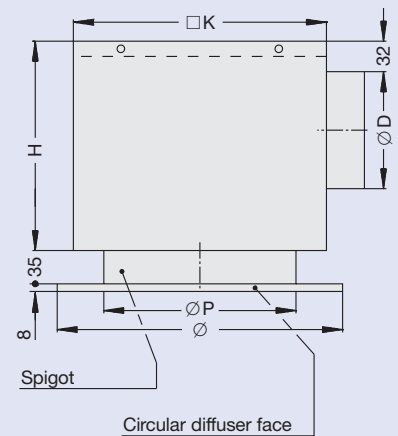
| Size | | | | Ø D | H | □ K | PB Code |
|----------|------------|-------|-------------------|-----|-----|-----|---------|
| DLQ/ADLQ | VDW | FD | TDV/TDF SilentAIR | | | | |
| * 250 | - | - | - | 158 | 250 | 216 | AK 008 |
| * 300 | - | - | - | 158 | 250 | 266 | AK 009 |
| - | * 300 x 8 | * 300 | * 300 | 158 | 250 | 290 | AK 001 |
| * 400 | * 400 x 16 | * 400 | * 400 | 198 | 295 | 372 | AK 002 |
| - | * 500 x 24 | * 500 | * 500 | 198 | 295 | 476 | AK 003 |
| * 500 | 500 x 24 | 500 | - | 248 | 345 | 476 | AK 010 |
| 600 | * 600 x 24 | * 600 | * 600 | 248 | 345 | 567 | AK 004 |
| 625 | * 625 x 24 | * 625 | * 625 | | | | |
| 600 | 600 x 24 | 600 | - | 248 | 345 | 590 | AK 005 |
| 625 | 625 x 24 | 625 | - | | | | |
| | * 600 x 48 | | | | | | |
| 625 | 625 x 24 | | - | 248 | 345 | 615 | AK 006 |
| | * 625 x 54 | 625 | - | | | | |
| * 600 | 600 x 24 | 600 | - | 313 | 410 | 567 | AK 011 |
| * 625 | 625 x 24 | 625 | - | | | | |
| 600 | 600 x 24 | 600 | - | 313 | 410 | 590 | AK 012 |
| 625 | 625 x 24 | 625 | - | | | | |
| | 600 x 48 | | | | | | |
| 625 | 625 x 24 | 625 | - | 313 | 410 | 615 | AK 027 |
| | 625 x 54 | | | | | | |
| - | * 825 x 72 | - | - | 313 | 410 | 806 | AK 007 |



⊗ FD/VDW = 8 mm
DLQ/ADLQ = 12.5 mm

For circular face diffusers Type ADLR, VDW, FD, TDV/TDF-SilentAIR, ADD

| Size | | | | | Ø D | H | □ D | Ø P | PB Code |
|------|------------|-------|-------------------|---------------------|-----|-----|-----|-----|---------|
| ADLR | VDW | FD | TDV/TDF SilentAIR | ADD ¹⁾ | | | | | |
| * 1 | - | - | - | * 250 | 123 | 220 | 266 | 202 | AK 019 |
| * 2 | - | - | - | * 300 | 158 | 250 | 290 | 258 | AK 020 |
| 2 | * 300 x 8 | * 300 | * 300 | - | 158 | 250 | 290 | 278 | AK 013 |
| * 3 | - | - | - | * 400 | 198 | 295 | 372 | 314 | AK 021 |
| 4 | * 400 x 16 | * 400 | * 400 | - | 198 | 295 | 372 | 362 | AK 014 |
| - | * 500 x 24 | * 500 | * 500 | - | 198 | 295 | 476 | 460 | AK 015 |
| * 4 | 400 x 16 | 400 | - | * 450 | 248 | 345 | 476 | 362 | AK 022 |
| * 5 | - | - | - | * 500 | 248 | 345 | 476 | 426 | AK 023 |
| 7 | * 600 x 24 | * 600 | * 600 | - | 248 | 345 | 567 | 557 | AK 016 |
| | * 625 x 24 | * 625 | * 625 | - | | | | | |
| 7 | 600 x 24 | 600 | - | - | 248 | 345 | 590 | 578 | AK 017 |
| | 625 x 24 | 625 | - | - | | | | | |
| | * 600 x 48 | | | | | | | | |
| 8 | 625 x 24 | 625 | - | - | 248 | 345 | 615 | 590 | AK 018 |
| * 6 | 500 x 24 | 500 | - | - | 313 | 410 | 567 | 482 | AK 024 |
| * 7 | 600 x 24 | 600 | - | * 600 | 313 | 410 | 590 | 578 | AK 025 |
| | 625 x 24 | 625 | - | * 625 ²⁾ | | | | | |
| | 600 x 48 | | | | | | | | |
| * 8 | 625 x 24 | 625 | - | - | 313 | 410 | 615 | 590 | AK 026 |



Without nozzle

For square and circular face diffusers Type RFD

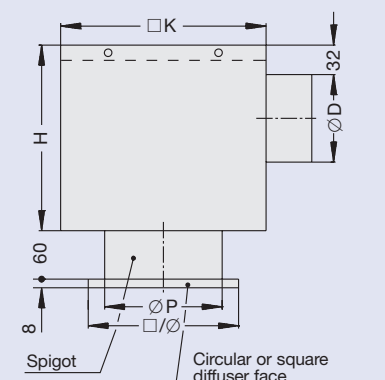
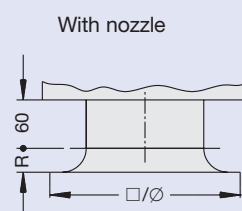
| Size | Ø D | H | □ D | Ø P | R | PB Code |
|-------|-----|-----|-----|-------|----|---------|
| * 125 | 98 | 195 | 216 | 123.5 | 25 | AK 028 |
| * 160 | 123 | 220 | 266 | 158.5 | 25 | AK 029 |
| * 200 | 158 | 250 | 290 | 198.5 | 25 | AK 030 |
| * 250 | 198 | 295 | 476 | 248.5 | 25 | AK 031 |
| * 315 | 248 | 345 | 567 | 313.5 | 35 | AK 032 |
| * 400 | 313 | 410 | 615 | 398.5 | 35 | AK 033 |

☐ = Plenum box with standard spigot diameter Ø D

* = Standard plenum box

1) = for circular and square diffusers

2) = Types ADD/size 625 not for circular face diffusers



Nomenclature

\dot{V} in m³/h: Volume flow
 Δp_w in Pa: Reference pressure
 C : Constant

Example

Data given:
 Diffuser: VDW 600 x 48 square construction
 Plenum box: AK 005
 Volume flow required: $\dot{V} = 700$ m³/h
 Constant C from table: C = 154.81

Calculation of reference pressure to be set:

$$\Delta p_w = \left(\frac{\dot{V}}{C} \right)^2 = \left(\frac{700}{154.81} \right)^2$$

$$\Delta p_w = 20.45 \text{ Pa}$$

$$\dot{V} = C \cdot \sqrt{\Delta p_w} \quad \Delta p_w = \left(\frac{\dot{V}}{C} \right)^2$$

C-value for reference pressure Plenum box for square face diffusers

| Type | Size | AK Code | C Value |
|---------------|--------------|------------------------|---------|
| DLQ/ ADLQ | 250 | AK 008 | 36.21 |
| | 300 | AK 009 | 53.41 |
| | 400 | AK 002 | 108.22 |
| VDW | 500 | AK 010 | 173.70 |
| | 600/625 | AK 004. AK 005. AK 006 | 182.35 |
| | 600/625 | AK 011. AK 012. AK 027 | 260.00 |
| VDW | 300 x 8 | AK 001 | 36.92 |
| | 400 x 16 | AK 002 | 70.71 |
| | 500 x 24 | AK 003 | 87.07 |
| | 500 x 24 | AK 010 | 104.09 |
| | 600/625 x 24 | AK 004. AK 005. AK 006 | 125.80 |
| | 600/625 x 24 | AK 011. AK 012. AK 027 | 141.91 |
| | 600 x 48 | AK 005 | 154.81 |
| FD | 300 | AK 001 | 36.45 |
| | 400 | AK 002 | 70.71 |
| | 500 | AK 003 | 92.72 |
| TDF-SilentAir | 300 | AK 001 | 47.66 |
| | 400 | AK 002 | 82.08 |
| | 500 | AK 003 | 100.54 |
| TDF-SilentAir | 300 | AK 001 | 47.66 |
| | 400 | AK 002 | 82.08 |
| | 500 | AK 003 | 100.54 |

C-value for reference pressure Plenum box for square and circular face diffusers

| Type | Size | AK Code | C Value without nozzle | C Value with nozzle |
|------|------|---------|------------------------|---------------------|
| RFD | 125 | AK 028 | 12.42 | 17.85 |
| | 160 | AK 029 | 18.70 | 26.29 |
| | 200 | AK 030 | 25.45 | 43.87 |
| RFD | 250 | AK 031 | 46.38 | 68.44 |
| | 315 | AK 032 | 82.00 | 103.00 |
| | 400 | AK 033 | 124.34 | 134.39 |

| Type | Size | AK Code | C Value |
|------|-------------------|---------|---------|
| ADD | 250 | AK 019 | 27.44 |
| | 300 | AK 020 | 52.20 |
| ADD | 400 | AK 021 | 79.88 |
| | 450 | AK 022 | 128.66 |
| ADD | 500 | AK 023 | 143.39 |
| | 600 | AK 025 | 245.68 |
| | 625 ¹⁾ | AK 025 | 245.68 |

C-value for reference pressure Plenum box for circular face diffusers

| Type | Size | AK Code | C Value | |
|---------------|----------|----------------|---------|-------|
| ADLR | 1 | AK 019 | 29.77 | |
| | 2 | AK 013, AK 020 | 53.34 | |
| | 3 | AK 021 | 86.22 | |
| | 4 | AK 014 | 112.62 | |
| | 4 | AK 022 | 128.67 | |
| | 5 | AK 015 | 114.93 | |
| | 5 | AK 023 | 150.58 | |
| ADLR | 6 | AK 024 | 206.76 | |
| | 7 | AK 016, AK 017 | 184.05 | |
| | 7 | AK 025 | 231.93 | |
| | 8 | AK 018 | 183.91 | |
| | 8 | AK 026 | 254.66 | |
| | VDW | 300 x 8 | AK 013 | 33.81 |
| | | 400 x 16 | AK 014 | 70.71 |
| | | 400 x 16 | AK 022 | 67.08 |
| 500 x 24 | | AK 015 | 82.97 | |
| 500 x 24 | | AK 024 | 101.31 | |
| 600/625 x 24 | | AK 016, AK 017 | 124.27 | |
| 600/625 x 24 | | AK 025 | 131.39 | |
| FD | 600 x 48 | AK 017 | 158.25 | |
| | 600 x 48 | AK 025 | 186.03 | |
| | 625 x 24 | AK 018 | 122.49 | |
| | 625 x 24 | AK 026 | 129.87 | |
| | 300 | AK 013 | 36.45 | |
| | 400 | AK 014 | 70.71 | |
| | 400 | AK 022 | 67.08 | |
| TDF-SilentAIR | 500 | AK 015 | 94.35 | |
| | 500 | AK 024 | 111.80 | |
| | 600/625 | AK 016, AK 017 | 124.27 | |
| TDF-SilentAIR | 600/625 | AK 025 | 131.39 | |
| | 625 | AK 018 | 122.49 | |
| | 625 | AK 026 | 129.87 | |
| TDF-SilentAIR | 300 | AK 013 | 47.66 | |
| | 400 | AK 014 | 82.08 | |
| TDF-SilentAIR | 500 | AK 015 | 100.54 | |
| | 600/625 | AK 016 | 145.54 | |
| TDF-SilentAIR | 300 | AK 013 | 47.66 | |
| | 400 | AK 014 | 82.08 | |
| TDF-SilentAIR | 500 | AK 015 | 100.54 | |
| | 600/625 | AK 016 | 145.54 | |

1) = Type ADD/size 625 not for circular face diffusers.

| C-value for reference pressure Plenum box for square face diffusers | | | |
|---|----------------|------------------|--|
| Type | Size | AK Code | C Value |
| DLQ/ ADLQ | 250 | AK 008 | 35.33 |
| | 300 | AK 009 | 66.90 |
| | 400 | AK 002 | 130.84 |
| | 500 | AK 010 | 247.22 |
| | 600/625 | AK 004 | 500.60 |
| | 600/625 | AK 005 | 400.26 |
| | 625 | AK 006 | 496.41 |
| | 600/625 | AK 011 | 412.60 |
| | 600/625 | AK 012 | 411.60 |
| 625 | AK 027 | 428.03 | |
| VDW | 300 x 8 | AK 001 | 32.08 |
| | 400 x 16 | AK 002 | 56.00 ¹⁾ 63.51 123.91 ¹⁾ |
| | 500 x 24 | AK 003 | 92.57 189.56 ¹⁾ |
| | 600/625 x 24 | AK 004 | 150.56 |
| | 600/625 x 24 | AK 005 | 151.67 |
| | 600/625 x 24 | AK 006 | 145.16 |
| | 600/625 x 24 | AK 011 | 162.31 |
| | 600/625 x 24 | AK 012 | 154.12 |
| | 600/625 x 24 | AK 027 | 154.35 |
| | 600 x 48 | AK 005 | 197.01 |
| | 600 x 48 | AK 012 | 210.18 |
| | 625 x 54 | AK 006 | 214.73 |
| | 625 x 54 | AK 027 | 230.26 |
| 872 x 72 | AK 007 | 348.68 | |
| FD | 300 | AK 001 | 41.67 |
| | 400 | AK 002 | 85.51 |
| | 500 | AK 003 | 137.86 |
| | 500 | AK 010 | 143.25 |
| | 600/625 | AK 004 | 200.50 |
| | 600/625 | AK 005 | 196.67 |
| | 600/625 | AK 006 | 182.11 |
| | 600/625 | AK 011 | 217.08 |
| | 600/625 | AK 012 | 216.11 |
| | 625 | AK 027 | 211.84 |
| TDV- SilentAIR | 300 | AK 001 | 58.97 |
| | 400 | AK 002 | 104.20 |
| | 500 600/625 | AK 003 AK 004 | 138.73 188.23 |
| TDF- SilentAIR | 300 | AK 001 | 58.97 |
| | 400 | AK 002 | 104.20 |
| | 500 600/625 | AK 003 AK 004 | 138.73 188.23 |

| C-value for reference pressure Plenum box for circular face diffusers | | | | |
|---|----------------|------------------|--------------------------------|-------|
| Type | Size | AK Code | C Value | |
| ADLR | 1 | AK 019 | 27.75 | |
| | 2 | AK 020 | 53.16 | |
| | 2 | AK 013 | 52.08 | |
| | 3 | AK 021 | 74.40 | |
| | 4 | AK 014 | 109.86 | |
| | 4 | AK 022 | 108.19 | |
| | 5 | AK 023 | 162.44 | |
| | 6 | AK 024 | 202.99 | |
| | 7 | AK 016 | 276.18 | |
| | 7 | AK 017 | 255.65 | |
| | 7 | AK 025 | 262.14 | |
| | 8 | AK 018 | 363.98 | |
| | 8 | AK 026 | 351.07 | |
| VDW | 300 x 8 | AK 013 | 33.57 58.14 ¹⁾ | |
| | 400 x 16 | AK 014 | 64.33 127.37 ¹⁾ | |
| | 400 x 16 | AK 022 | 64.88 113.29 ¹⁾ | |
| | 500 x 24 | AK 015 | 90.93 183.19 ¹⁾ | |
| | 500 x 24 | AK 024 | 103.03 161.91 ¹⁾ | |
| | 600/625 x 24 | AK 016 | 151.94 | |
| | 600/625 x 24 | AK 017 | 144.96 | |
| | 600/625 x 24 | AK 025 | 158.22 | |
| | 600 x 48 | AK 017 | 209.14 | |
| | 600 x 48 | AK 025 | 212.25 | |
| | 625 x 54 | AK 026 | 159.73 | |
| | FD | 300 | AK 013 | 46.71 |
| | | 400 | AK 014 | 90.85 |
| 400 | | AK 022 | 89.99 | |
| 500 | | AK 015 | 138.08 | |
| 500 | | AK 024 | 144.63 | |
| 600/625 | | AK 016 | 207.72 | |
| 600/625 | | AK 017 | 208.98 | |
| 600/625 | | AK 025 | 213.61 | |
| 625 | | AK 018 | 182.11 | |
| 625 | | AK 026 | 219.44 | |
| TDV- SilentAIR | 300 | AK 013 | 58.97 | |
| | 400 | AK 014 | 104.20 | |
| | 500 600/625 | AK 015 AK 016 | 138.73 188.23 | |
| TDF- SilentAIR | 300 | AK 013 | 58.97 | |
| | 400 | AK 014 | 104.20 | |
| | 500 600/625 | AK 015 AK 016 | 138.73 188.23 | |

| C-value for reference pressure Plenum box for square and circular face diffusers | | | |
|---|-------------------|---------|---------|
| Type | Size | AK Code | C Value |
| ADD | 250 | AK 019 | 31.41 |
| | 300 | AK 020 | 74.01 |
| | 400 | AK 021 | 96.96 |
| | 450 | AK 022 | 141.48 |
| | 500 | AK 023 | 194.88 |
| | 600 | AK 025 | 256.00 |
| | 625 ²⁾ | AK 025 | 256.00 |

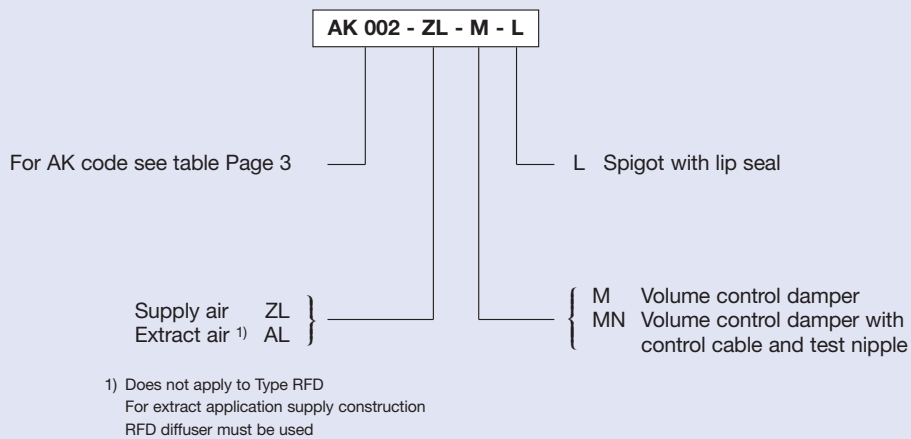
1) = Face diffusers **without** air control blades!

2) = Type ADD/size 625 not for circular face diffusers.

Order Details



Order code



Specification text

The Universal Plenum box comprises a casing with a circular, horizontal spigot for duct connection, with or without volume flow measurement and/or lip seal.

To measure the reference pressure the Universal Plenum box is equipped on request with a cable and test nipple to measure and set the required volume flow.

The plenum box can be suspended using wires or slotted strips using the fixing holes provided. Subject to performance requirements the Universal Plenum box can be used with various ceiling diffusers.

Materials:

Galvanized sheet steel Universal Plenum box with rubber lip seal.

Order Example:

Make: TROX
Type: AK 002 - ZL - M - L