# BerlinerLuft.

# Fresh air and exhaust air systems



# **Overview – fresh air and exhaust air systems**

#### **RECTANGULAR ROOF COWLS**





#### **RECTANGULAR AND ROUND ROOF COLLARS (DUCTING)**





Special versions available on request









- 1 | Non-load-bearing collar for flat roof
- 2 | Load-bearing collar for flat roof
- 3 | Insulated load-bearing collar for flat roof
- 4 | Non-load-bearing collar for pitched roof
- 5 | Load-bearing collar for pitched roof
- Insulated load-bearing collar 6 | for pitched roof

#### **RECTANGULAR AND ROUND ROOF BOOTS**





- 1 | Load-bearing roof boot for flat roof
- 2 | Insulated load-bearing roof boot for flat roof
- 3 | Load-bearing roof boot for pitched roof
- 4 | Insulated load-bearing roof boot for pitched roof

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# Fresh air and exhaust air systems

#### **GENERAL INFORMATION**

Along with the façade and the outdoor area, the roofs of buildings are where fresh air enters and exhaust air exits HVAC systems. Depending on the application, various types of roof cowl are available.

Various factors must be taken into account when selecting roof cowls:

pplication	
ir flow	
ntake and discharge velocity	
ressure drop	
enerated noise	
esthetic aspects	
Veight	

Roof cowls protect buildings and equipment from rainwater ingress. This requirement is met by means of structural design, careful selection and appropriate use. To prevent secondary causes of water ingress, precautions must be taken during the planning stage.

#### Note

Not all roof cowls are explosion-proof!

The following sections on specific products contain information on uses, designs, nominal diameters, dimensions and weight.

#### **TYPES**

Roof ventilation cowls are normally made of a sturdy sheet metal structure. The basic designs are usually made from folded or spot-welded sheet metal. A UV-resistant, silicone-free sealant is applied to the necessary positions on the folded joints or overlaps.

For more stringent requirements, welded roof cowls can be manufactured. This should be decided at the planning stage. The cowls are normally fastened onto roof collars or boots. Information can be found in one of the following sections of the catalogue.

#### MATERIALS

Material type	Grade	Standard
Galvanised sheet steel	DX51D + Z275 MA-C	DIN EN 10346/10143
Stainless sheet steel (surface 2B)	1.4301 (V2A)	DIN EN 10088
Aluminium	AIMg3 (3.3535; EN AW-5754)	DIN EN 485-2

Other metallic materials and special paint are available on request



### **Roof vent cover DLA**

#### **APPLICATION**

Roof vent covers act in the same way as weather protection grilles. When selecting the air passage, in order to ensure relatively good protection from rainwater penetration, the average intake velocity in the free cross section should not be more than 2 m/s.

The roof vent cover DLA is a roof attachment that can be used universally for air intake and discharge in HVAC systems.

ts main uses are:
Exhaust air discharge
Fresh air intake
Natural ventilation (e.g. underground car parks, hot working areas)
Ventilation of lift shafts
Combined covers for multiple small HVAC systems, with sone

Combined covers for multiple small HVAC systems, with separate intake and exhaust.

#### Note

At high air humidity and temperatures below 0 °C, there is a risk of the grilles icing up. Roof vent covers are not explosion-proof.

#### **DESIGN DETAILS**

Depending on the size, the roof vent cover has a sturdy housing structure made of profile sheet or box sections. This housing structure is fitted with the detachable weather protection grilles and bird mesh, depending on the type. The attached roof with drip edge is slightly inclined so that rainwater can safely run off. For special applications, the roof can be removable or hinged.

The base of the roof vent cover is designed according to the requirements at the site. The basic version has a perforated L profile all the way around so that the roof vent cover can be securely fastened to the roof attachment (see the section on roof collars/boots)

#### MATERIALS

Material type	Grade	Standard
Galvanised sheet steel	DX51D + Z275 MA-C	DIN EN 10346/10143
Stainless sheet steel (surface 2B)	1.4301 (V2A)	DIN EN 10088
Aluminium	AIMg3 (3.3535; EN AW-5754)	DIN EN 485-2

Special paint available on request



## **Roof vent cover DLA**

#### DIAGRAM



\* Standard size – other dimensions available

#### DESIGNS





#### PRESSURE DROP/FLOW NOISE [diagram 1]

Flow rate [m<sup>3</sup>/h]

Pressure drop and flow noise of the DLA/WSG with square connection cross section. Diagram refers to fresh air. For exhaust air, a 20% lower pressure drop and 3 dB(A) lower sound power level should be assumed.

### **Roof vent cover DLA**

#### **PRESSURE DROP**

Conversion from square to rectangular [diagram 2]



#### CONVERSION TO NON-SQUARE ROOF VENT COVERS (APPROXIMATION)

#### Conversion

 $\Delta \mathbf{p}_{\square} = \Delta \mathbf{p}_{\square} \times \mathbf{fp1}$ 

#### Example

∀=	10,000 m <sup>3</sup> /h	
Size 🗌	800 × 800 mm	
Δp _ =	90 Pa (diagram 1)	
Size	800 × 1,000 mm (side ratio 0.8)	
Factor fp1 =	0.65 (diagram 2)	

Δp<sub>Π</sub> = 90 Pa × 0.65 = 59 Pa

#### CONVERSION of sound power level, square to rectangular [diagram 3]



L<sub>wa []</sub>= L<sub>wa□</sub> + k1

#### Example

V =	10,000 m³/h
Size □	800 × 800 mm
$L_{wA\square} =$	70 dB(A) (from top diagram)
Size	800 × 1,000 mm (side ratio 0.8)
Correction k1 =	- 5 dB(A) (diagram 3)
L <sub>wa</sub> =	70  dB(A) - 5  dB(A) = 65  dB(A)





#### Conversion

 $\Delta \mathbf{p}_{\square} = \Delta \mathbf{p}_{\square} \times \mathbf{fp1} \times \mathbf{fp2}$ 

#### Example

Ϋ=	10,000 m³/h
Size 🗌	800 × 800 mm
Δp _ =	90 Pa (diagram 1)
Size	800 × 1.000 mm (side ratio 0.8)
Factor fp1 =	0.65 (diagram 2)
Factor fp2 =	2 (opening ratio 0.72, diagram 4)
Δp _ =	90 Pa × 0.65 × 2 = 117 Pa

Estimation of pressure drop for other designs with partially closed sides (see diagrams 4 and 5)

#### Example

 $800 \times 1{,}000\,\text{mm},$  one 100 side closed

Opening ratio: open side [m]/all sides [m]

 $(2 \times 0.8 \text{ m}) + (1 \times 1 \text{ m})/(2 \times 0.8 \text{ m}) + (2 \times 1 \text{ m})$ = 2.6 m/3.6 m = 0.72

#### OTHER DESIGNS Conversion factor K2 [diagram 5]



 $L_{wa} = L_{wa} + k1 \times k2$ 

#### Example

₩ =	10,000 m <sup>3</sup> /h
Size 🗌	800 × 800 mm
$L_{wA \square} =$	70 dB(A) (from top diagram)
Size	800 × 1,000 mm (side ratio 0.8)
Correction k1 =	- 5 dB(A) (diagram 3)
Correction k2 =	+8 dB(A) (diagram 5)
L <sub>wan</sub> =	70  dB(A) - 5  dB(A) + 8  dB(A) = 73  dB(A)

# **Roof vent cover DLA**

#### DIMENSIONS AND WEIGHTS [1]

Width B		Length L [mm]								
[mm]		600	700	800	900	1000	1100	1200	1300	1400
600	Height [mm] Free cross section [m²] Steel weight [kg] Aluminium weight [kg]	450 0.11 36 14	450 0.13 40 15	450 0.14 43 17	450 0.16 46 18	750 0.51 70 28	750 0.55 74 30	750 0.59 79 32	750 0.63 83 34	750 0.67 88 36
700	Height [mm] Free cross section [m²] Steel weight [kg] Aluminium weight [kg]		450 0.14 43 17	450 0.16 46 18	750 0.51 70 28	750 0.55 75 30	750 0.59 79 32	750 0.63 84 34	750 0.67 89 36	750 0.71 93 38
800	Height [mm] Free cross section [m²] Steel weight [kg] Aluminium weight [kg]			750 0.51 70 28	750 0.55 75 30	750 0.59 80 32	750 0.63 84 34	750 0.67 89 36	750 0.71 94 38	750 0.75 99 40
900	Height [mm] Free cross section [m²] Steel weight [kg] Aluminium weight [kg]				750 0.59 80 32	750 0.63 84 34	750 0.67 89 36	750 0.71 94 38	750 0.75 99 40	750 0.79 104 42
1000	Height [mm] Free cross section [m <sup>2</sup> ] Steel weight [kg] Aluminium weight [kg]					750 0.77 89 36	750 0.71 94 38	750 0.75 99 40	750 0.79 104 42	950 0.83 130 54
1100	Height [mm] Free cross section [m <sup>2</sup> ] Steel weight [kg] Aluminium weight [kg]						750 0.75 99 40	750 0.79 105 42	950 1.25 130 53	950 1.31 136 56
1200	Height [mm] Free cross section [m <sup>2</sup> ] Steel weight [kg] Aluminium weight [kg]							950 1.25 130 53	950 1.31 136 56	950 1.37 142 58
1300	Height [mm] Free cross section [m <sup>2</sup> ] Steel weight [kg] Aluminium weight [kg]								950 1.37 142 58	950 1.43 148 61
1400	Height [mm] Free cross section [m²] Steel weight [kg] Aluminium weight [kg]									950 1.49 154 63

**B** × L connection cross section

B short side

L long side

Depending on the design, the smallest sizes begin with a nominal edge length of 600 mm. For reasons of structural strength and transport, the largest nominal dimensions of a unit are 2,000 × 2,400 mm.

#### DIMENSIONS AND WEIGHTS [2]

Width B		Length L [mm]									
[mm]		1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
600	Height [mm] Free cross section [m²] Steel weight [kg] Aluminium weight [kg]	750 0.71 93 37	750 0.75 97 39	750 0.79 102 41	950 1.25 127 52						
700	Height [mm] Free cross section [m²] Steel weight [kg] Aluminium weight [kg]	750 0.75 98 40	750 0.79 103 42	950 1.25 128 58	950 1.31 133 55	950 1.37 139 57					
800	Height [mm] Free cross section [m²] Steel weight [kg] Aluminium weight [kg]	750 0.79 103 42	950 1.25 129 53	950 1.31 134 55	950 1.37 140 57	950 1.43 145 60	950 1.49 151 62				
900	Height [mm] Free cross section [m²] Steel weight [kg] Aluminium weight [kg]	950 1.25 129 53	950 1.31 135 55	950 1.37 141 58	950 1.43 146 60	950 1.49 152 62	950 1.55 158 65	950 1.62 164 67			
1000	Height [mm] Free cross section [m²] Steel weight [kg] Aluminium weight [kg]	950 1.31 135 55	950 1.37 141 58	950 1.43 147 60	950 1.49 153 63	950 1.55 159 65	950 1.62 165 67	950 1.68 170 70	1150 2.32 203 84		
1100	Height [mm] Free cross section [m²] Steel weight [kg] Aluminium weight [kg]	950 1.37 142 58	950 1.43 148 60	950 1.49 154 63	950 1.55 159 65	950 1.62 165 68	950 1.68 171 70	1150 2.32 204 84	1150 2.40 211 87	1150 2.48 218 90	
1200	Height [mm] Free cross section [m <sup>2</sup> ] Steel weight [kg] Aluminium weight [kg]	950 1.43 148 61	950 1.49 154 63	950 1.55 160 65	950 1.62 166 68	950 1.68 172 70	1150 2.32 205 85	1150 2.40 212 88	1150 2.48 219 90	1150 2.56 226 93	1150 2.64 233 96
1300	Height [mm] Free cross section [m <sup>2</sup> ] Steel weight [kg] Aluminium weight [kg]	950 1.49 154 63	950 1.55 160 66	950 1.62 166 68	950 1.68 173 71	1150 2.32 206 85	1150 2.40 213 88	1150 2.48 220 91	1150 2.56 227 94	1150 2.64 234 97	1150 2.73 241 99
1400	Height [mm] Free cross section [m²] Steel weight [kg] Aluminium weight [kg]	950 1.55 160 66	950 1.62 167 68	950 1.68 173 71	1150 2.32 206 85	1150 2.40 213 88	1150 2.48 220 91	1150 2.56 227 94	1150 2.64 234 97	1150 2.73 241 100	1550 4.21 313 131

**B × L** connection cross section

B short side

L long side

# **Roof vent cover DLA**

#### DIMENSIONS AND WEIGHTS [3]

Width B			Length L [mm]								
[mm]		1500	1600	1700	1800	1900	2000	2100	2200	2300	2400
1500	Height [mm] Free cross section [m <sup>2</sup> ] Steel weight [kg] Aluminium weight [kg]	950 1.62 167 68	950 1.68 173 71	1150 2.32 206 85	1150 2.40 214 88	1150 2.48 221 91	1150 2.56 228 94	1150 2.64 235 97	1150 2.73 242 100	1550 4.21 314 131	1550 4.33 323 135
1600	Height [mm] Free cross section [m <sup>2</sup> ] Steel weight [kg] Aluminium weight [kg]		1150 2.32 207 85	1150 2.40 214 88	1150 2.48 221 91	1150 2.56 228 94	1150 2.64 235 97	1150 2.73 243 100	1550 4.21 315 132	1550 4.33 324 135	1550 4.46 333 139
1700	Height [mm] Free cross section [m <sup>2</sup> ] Steel weight [kg] Aluminium weight [kg]			1150 2.48 221 91	1150 2.56 228 94	1150 2.64 236 97	1150 2.73 243 100	1550 4.21 315 132	1550 4.33 324 136	1550 4.46 333 139	1550 4.58 342 143
1800	Height [mm] Free cross section [m <sup>2</sup> ] Steel weight [kg] Aluminium weight [kg]				1150 2.64 235 97	1150 2.73 243 100	1550 4.21 315 132	1550 4.33 324 136	1550 4.46 334 140	1550 4.58 343 143	1550 4.70 352 147
1900	Height [mm] Free cross section [m²] Steel weight [kg] Aluminium weight [kg]					1550 4.21 315 132	1550 4.33 325 136	1550 4.46 334 140	1550 4.58 343 143	1550 4.70 352 147	1550 4.82 361 151
2000	Height [mm] Free cross section [m <sup>2</sup> ] Steel weight [kg] Aluminium weight [kg]						1550 4.46 334 140	1550 4.58 343 144	1550 4.70 353 147	1550 4.82 362 151	1550 4.49 371 155

**B × L** connection cross section

B short side

L long side

#### **TENDER SPECIFICATION TEXT**

#### **Additional requirement**

Rectangular roof cowl as roof vent cover (DLA) with integrat-
ed weather protection grilles made of

Galvanised steel

Stainless steel (1.4301)

Aluminium (3.3535)

Consisting of

Sturdy housing structure with profile sheet or box sections, overhanging housing roof, pitched with drip edge to safely allow rain water to run off

Base designed for secure connection to the roof attachment

Split rain collar supplied separately and attached after the roof vent cover is mounted

Weather protection grilles backed with bird mesh.

Eye bolts must be provided on request for safe on-site transport

Exterior of DLA completely painted in RAL				
Туре:	DLA			
Dimensions:				
Height:				
(Only specify when not standard height)				
Manufacturer: BerlinerLuft. Technik GmbH				

#### **TYPE CODE/EXAMPLE ORDER**



# Louvred cowl LH

#### **APPLICATION**

The louvred cowl LH is a square roof cowl for air intake and exhaust in HVAC systems.

Its main uses are:

Fresh air intake

Exhaust air discharge

Natural ventilation (e.g. underground car parks, hot working areas)

Ventilation of lift shafts

Combined covers for multiple small HVAC systems, with separate intake and exhaust.

To prevent moisture being sucked into the fresh air intake (exterior air intake), the average velocity in the free cross section should not exceed 2 m/s.

#### Note

Louvred cowls are not explosion-proof. At high air humidity and temperatures below 0 °C, there is a risk of the grilles icing up.

#### **DESIGN DETAILS**

The louvred cowl consists of a substructure, to which mitred louvres are fastened to the exterior on all sides using concealed attachments. The attached roof with drip edge is slightly inclined on all sides so that rainwater can safely run off. The louvres are backed with bird mesh.

The projection of the louvres equals the connection cross-section plus the extent of the louvres on all sides (LH). As standard, the base of the louvred cowl, depending on the cross section, has a duct connection flange for secure fastening to the roof attachment. Alternatively, the louvred cowl can be fastened with a shoe.

The connection cross-section is equal to the maximum outer dimensions of the louvred cowl. The louvred cowl with shoe should only be used if it can be mounted on a roof attachment to absorb wind force. Because of the connection cross section and the shoe, an additional rain collar is not required.

Louvred cowls are manufactured in the standard design as rectangular hoods with an edge length from 300 to 2,500 mm. Square cross sections within this range of sizes are available on request.

#### MATERIALS

Material type	Grade	Standard	
Galvanised sheet steel	DX51D + Z275 MA-C	DIN EN 10346/10143	
Stainless sheet steel (surface 2B)	1.4301 (V2A)	DIN EN 10088	
Aluminium	AIMg3 (3.3535; EN AW-5754)	DIN EN 485-2	

Special paint available on request



#### **DIAGRAMS AND DESIGNS**

Type LH-1



Type LH-2



#### Note

	Connection dimension	External cowl dimension
With LH-1	ВхА	B x A + 100
With LH-2	BxA	ВхА

# Louvred cowl LH

#### **DIMENSIONS AND WEIGHTS**

The following table contains standard dimensions for the square cowls with information on installed heights, free cross sections and weights. Other dimensions can be approximately interpolated or calculated using the formulas below.

#### **TYPE LH-1**

Connection	cross section	Number of louvres	Height	Free cross section	Weight
A mm	B mm	n pcs	mm	FA m²	kg
300	300	5	300	0.18	5.4
400	400	6	360	0.32	8.7
500	500	7	420	0.50	12.6
600	600	7	420	0.60	15.1
700	700	8	480	0.84	20.2
800	800	9	540	1.12	25.9
900	900	10	600	1.44	32.4
1000	1000	11	660	1.80	47.4
1100	1100	12	720	2.20	56.9
1200	1200	12	720	2.40	62.1
1300	1300	13	780	2.86	72.1
1400	1400	14	840	3.36	84.5
1500	1500	15	900	3.90	97.0

### CALCULATION OF THE FREE CROSS SECTION (FA) IN M<sup>2</sup> FOR DESIGN

- LH-1  $F_{A} = 2 \times (A + B) \times (n 2) \times 0.05$
- LH-2  $F_A = 2 \times (A + B 0.2) \times (n 2) \times 0.05$
- A/B Connection cross sections in mm
- n Number of louvres



LH1 galvanized sloped louvred cowl on insulatec roof boot for pitched roof, type DS



#### **EXHAUST AIR PRESSURE DROP/FLOW NOISE**



Diagram 1: Exhaust air pressure drop and flow noise of LH1 with square connection cross section.



#### FRESH AIR PRESSURE DROP/FLOW NOISE

Diagram 2: Fresh air pressure drop and flow noise of LH1 with square connection cross section.

### Louvred cowl LH

#### **PRESSURE DROP**

Conversion from square to rectangular [diagram 3]



#### **SOUND POWER** Conversion from square to rectangular [diagram 4]



#### **CONVERSION TO NON-SQUARE** LOUVRED COWLS (APPROXIMATION)

#### Conversion

 $\Delta \mathbf{p}_{\square} = \Delta \mathbf{p}_{\square} \times \mathbf{fp1}$ 

#### Example

-		-	
$\forall =$	7,000 m <sup>3</sup> /h	Ϋ=	7,000 m³/h
Size 🗌	500 × 500 mm	Size 🗌	500 × 500 mm
Δp _ =	80 Pa (diagram 1)	$L_{wA\square} =$	62 dB(A) (see diagram 1)
Size	500 × 800 mm (side ratio 0.625)	Size	500 × 800 mm (side ratio 0.625)
Factor fp1 =	0.4 (diagram 3)	Correction k1 =	-12 dB(A) (diagram 4)
$\Delta p_{\parallel} =$	80 Pa × 0.4 = 32 Pa	$L_{wA[]} =$	62 dB(A) - 12 dB(A) = 50 dB(A)

 $L_{wA} = L_{wA} + k1$ 

Example

On non-square louvred cowls, the number of louvres is based on the larger dimension.



#### **TENDER SPECIFICATION TEXT**

Rectangular roof cowl, as louvred cowl LH-1 made of

Galvanised steel

Black powder-coated galvanised steel

Consisting of a sturdy substructure, to which mitred louvres backed with bird mesh are fastened on all sides using concealed attachments. Base equipped with duct connection flange for the following cross section, alternatively type LH-2 base with shoe.

Connection dimensions A and B equal to maximum outer dimension of louvred cowl

#### **TYPE CODE/EXAMPLE ORDER**

DHE/LH - 1 - 800 × 800 - Sv - RAL 9008 - LP30



#### Manufacturer

BerlinerLuft. Technik GmbH

# Jet cap for optimised flow DFH-E-Eco

#### **PRODUCT DESCRIPTION**

The jet cap is the most commonly used roof cowl for discharging used air on roofs. The air is discharged vertically upwards with a large throw range. This keeps polluted or bad-smelling exhaust air away from the building and from the fresh air intake points. To achieve a sufficient throw range, flow velocities of 6 - 8 m/s are recommended, depending on the flow cross section.

The new DFH-E-Eco jet cap is attractive, and reduces operating costs and flow noise.

#### **DESIGN DETAILS**

Unlike conventional jet caps, the flow-optimised DFH-E-Eco does not deflect the air from the rainwater collector in four directions as lateral flow, but conducts it along the side through almost parallel shafts. Instead of a flat funnel, there is a V-shaped channel which reaches down to the inside of the housing. Inside the housing, the rainwater runs off through a gap on all sides. This means there is no need for a drainpipe, which might become dirty.

#### Note

No roof cowl can guarantee absolute protection from rainwater entering the air duct in extreme weather. To safely catch the rainwater, it is advisable to take precautions with the construction of the building. The DFH-E-Eco jet cap essentially consists of a housing in the form of two opposing frustums, the base and the rainwater collector. The rainwater collector completely covers the flow cross section and thus allows hardly any rainwater to enter.

The base is fitted with a connection frame for secure fastening to the roof attachment (see the section on roof collars and boots). The flange connection and optional thermal insulation jacket must be protected with a rain collar.

Eye bolts are optionally available for crane assembly. Structural engineering requirements (e.g. wind loads) can also be analysed on request.

#### MATERIALS

Material type	Grade	Standard	
Galvanised sheet steel	DX51D + Z275 MA-C	DIN EN 10346/10143	
Stainless sheet steel (surface 2B)	1.4301 (V2A)	DIN EN 10088	
Aluminium	AIMg3 (3.3535; EN AW-5754)	DIN EN 485-2	

RAL painting available on request - colour table on request



1 | Jet cap DFH-E-Eco, galvanised

2 | Jet cap DFH-E-Eco, stainless steel V2A

#### **AVAILABLE SIZES**

Standard square and rectangular jet caps are manufactured fully assembled up to a connection dimension of 1,450 x 1,450 mm. Any required square or rectangular cross section can be manufactured within this range of sizes. For connection dimensions larger than  $750 \times 750$  mm, the two frustums are split, with a flange connection.

Larger caps are special designs that require reinforcements and different section divisions. For reasons of transport, these are normally delivered as separate parts.



#### DIAGRAM









- B = Large connection dimension
- N = 150 mm (standard base height optionally other heights available)

 $C = 2 \times A$ 

- D = A + B
- $H = 2 \times A$



Jet cap type DFH-E-Eco, galvanised, on insulated roof boot, type DS slightly sloped for pitched roofs

# Jet cap for optimised flow DFH-E-Eco

### PRESSURE DROP/FLOW NOISE

[diagram 1]



Note: Acoustic design with AKUSWIN® software version 4.0 or higher

Flow rate [m3/h]



#### SOUND POWER LEVEL [diagram 3]





## CONVERSION TO NON-SQUARE JET CAPS

#### **Pressure drop**

 $\Delta \mathbf{p}_{\square} = \Delta \mathbf{p}_{\square} \times \mathbf{fp1}$ 

#### Sound power level

 $L_{WAD} = L_{WAD} + k$ 

#### Example conversion

V =	10,000 m³/h
Size □ :	<u>600</u> × 600 mm
Δp <sub>□</sub> =	85 Pa (see diagram 1)
Size:	600 × 800 mm (side ratio 1 : 1.5 = 0.75)
Factor fp1 =	0.58 (see diagram 2)
Δp <sub>0</sub> =	85 Pa × 0.58 = 49 Pa

#### Example conversion

10,000 m <sup>3</sup> /h
<u>600</u> × 600 mm
64 dB(A) (see diagram 1)
600 × 800 mm (side ratio 1 : 1.5 = 0.75)
-8 dB(A) (see diagram 3)
64  dB(A) - 8  dB(A) = 56  dB(A)

#### DESIGNS



# Jet cap for optimised flow DFH-E-Eco

#### **DIMENSIONS AND WEIGHTS**

Width	s [mm]		Length [mm]					
Α	С	В	500	600	700	800	900	1000
500	1000	D [mm]	1000	1100	1200	1300	1400	1500
		Total height [mm] Steel weight [kg] Aluminium weight [kg]	1000 53 20	1000 59 22	1000 68 25	1000 75 28	1000 84 31	1000 93 34
600	1200	D [mm]		1200	1300	1400	1500	1600
		Total height [mm] Steel weight [kg] Aluminium weight [kg]		1200 69 26	1200 79 29	1200 89 33	1200 100 37	1200 112 41
700	1400	D [mm]			1400	1500	1600	1700
		Total height [mm] Steel weight [kg] Aluminium weight [kg]			1400 91 33	1400 104 38	1400 118 43	1400 132 49
800	1600	D [mm]				1600	1700	1800
		Total height [mm] Steel weight [kg] Aluminium weight [kg]				1600 120 44	1600 137 50	1600 154 56
900	1800	D [mm]					1800	1900
		Total height [mm] Steel weight [kg] Aluminium weight [kg]					1800 155 57	1800 174 64
1000	2000	D [mm]						2000
		Total height [mm] Steel weight [kg] Aluminium weight [kg]						2000 193 71
1100	2200	D [mm]						
		Total height [mm] Steel weight [kg] Aluminium weight [kg]						
1200	2400	D [mm]						
		Total height [mm] Steel weight [kg] Aluminium weight [kg]						
1300	2600	D [mm]						
		Total height [mm] Steel weight [kg] Aluminium weight [kg]						
1400	2800	D [mm]						
		Total height [mm] Steel weight [kg] Aluminium weight [kg]						
1500	2800	D [mm]						
		Total height [mm] Steel weight [kg] Aluminium weight [kg]						

A × B Connection cross section

C × D Largest dimension

Length [mm]									
1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
1600	1700	1800	1900	2000					
1000	1000	1000	1000	1000					
102 38	41	45	49	143 52					
1700	1800	1900	2000	2100	2200				
1200	1200	1200	200	1200	1200				
46	50	149 55	60	64	68				
1800	1900	2000	2100	2200	2300	2400			
1400	1400	1400	1400	1400	1400	1400			
147 54	161 59	176 64	189 69	202	213 78	224 82			
1900	2000	2100	2200	2300	2400	2500	2600		
1600	1600	1600	1600	1600	1600	1600	1600		
170 62	185 68	200	213	225 82	235 86	244	251 92		
2000	2100	2200	2300	2400	2500	2600	2700	2800	
1800	1800	1800	1800	1800	1800	1800	1800	1800	
191 70	270	221 81	233	243 89	251 92	258	264	313 115	
2100	2200	2300	2400	2500	2600	2700	2800	2900	3000
2000	2000	2000	2000	2000	2000	2000	2000	2000	2000
210 77	224 82	237	248 91	256 94	263 96	269	328 120	346 126	365 132
2200	2300	2400	2500	2600	2700	2800	2900	3000	
2200	2200	2200	2200	2200	2200	2200	2200	2200	
226 83	240 88	250 92	259 95	265 98	270 100	341 124	360 131	381 139	
	2400	2500	2600	2700	2800	2900	3000		
	2400	2400	2400	2400	2400	2400	2400		
	252 92	260 95	267 99	312 100	350 127	372 135	393 143		
		2600	2700	2800	2900	3000			
		2600	2600	2600	2600	2600			
		267 98	274 100	355 130	379 139	403 146			
			2800	2900	3000				
			2800	2800	2800				
			358 130	383 140	408 149				
				3000					
				3000 383 140					

# Jet cap for optimised flow DFH-E-Eco

welded

#### **TENDER SPECIFICATION TEXT**

Square/rectangular jet cap made of

Galvanised steel	folded

Stainless steel (1.4301)

Aluminium (AIMg3)

#### **Additional requirement**

Exterior completely painted in RAL colour .....

Manufacturer: BerlinerLuft. Technik GmbH

Housing consisting of:

Two opposing frustums

Steeply angled rain channel inside, with outer sides forming flow ducts roughly parallel with the housing wall, water run-off via a gap on all sides

Bird mesh on the air outlet

Base with fastening flange for secure mounting of the jet cap to the roof attachment

Rain collar supplied separately for subsequent assembly at the site

#### **TYPE CODE/EXAMPLE ORDER**

DHE/DFH-E-Eco - E2 - 1000 × 1200 - Sv - RAL 9006 - W40

	Connection/accessories
	 RAL colour
	 Material
	 Nominal dimensions/connection size
	 Eco jet cap type
	E1 - square
	E2 - rectangular
	E3 - rectangular, inclined on two sides
	 Component designation



# Rectangular roof cowls Horizontal rain grille DHE-HRA

#### **PRODUCT DESCRIPTION**

The horizontal rain grille is designed as a rectangular roof cowl primarily for exhaust air but can also be used for fresh air. The DHE-HRA supplements the portfolio of fresh and exhaust air technology between the pitched roof weather protection grilles and jet cap. The air is discharged vertically upwards. The design is suitable for horizontal installation as a duct or shaft closure and, due to its low installed height, it blends harmoniously into the building silhouette. Its upper opening is fitted with a flow-optimised protective grille to prevent the ingress of impurities. Precipitation is collected by internal louvres and drained laterally. In order to ensure optimum operation, inflow velocities of 5-8 m/s are recommended in relation to the connection cross-section.

The louvres inside the cowl are arranged to reduce flow noise and lower operating costs due to a low degree of pressure drop.

#### **INSTALLATION INFORMATION**

The rectangular roof cowl HRA has a minimum water separation efficiency of 94%. No roof cowl can absolutely guarantee that precipitation will not penetrate the ducting system in extreme weather situations.

According to VDI 6022 and DIN 18379, the connected ducting system must be equipped with appropriate devices for the drainage of rain, snow and condensation.

Precipitation is collected by internal louvres and gutters, and directed laterally though the casing wall to the outside. The expelled rainwater can run onto the roof cladding (surface installation) or, optionally, the connection can be extended via a system, installed on site, in which rainwater is fed into the building drainage system (insert installation).

DIN EN 13779 must be observed regarding the arrangement and spacing of the HRA. Paint finishes according to RAL colour chart on request.



# Horizontal rain grille DHE-HRA

#### **DESIGN DETAILS**

The horizontal rain grille essentially consists of a rectangular housing with internal louvres and channels for water drainage. The base is fitted with a connection frame so that it can be fastened securely to the ducting or to the roof collar/boot. In the case of push-through installation or surface installation, the connection frame must be protected by a circumferential rain collar and sealed with a suitable sealant/gasket. The upper connection frame can be individually adapted so that the HRA ends flush with the roof boot. Eye bolts are optionally available for crane assembly. In order to ensure the stability of the louvres, they are manufactured with a width of up to 1,000 mm.

#### **CORROSION PROTECTION CLASS**

In the galvanised design, the corrosion protection class C1 according to DIN EN ISO 12499 is achieved.

#### MATERIALS

Material type	Grade	Standard
Galvanised sheet steel	DX51D + Z275 MA-C	DIN EN 10346/10143
Stainless sheet steel (surface 2B)	1.4301 (V2A)	DIN EN 10088
Aluminium	AIMg3	DIN EN 485-2





#### **AVAILABLE SIZES**

Square and rectangular horizontal rain separators are manufactured fully assembled up to a connection dimension of  $2,500 \times 1,000$  mm. Installed heights of 500 mm and 680 mm are available. If the connection is  $500 \times 500$  mm or greater, any required rectangular or square cross-section can be produced, as long as the measurements fall into the range defined by the maximum and minimum dimensions.

Several rainwater separators can be screwed together backto-back along their width and length and installed on a common frame or base. This allows larger connection cross-sections to be achieved.

#### DIAGRAM





#### DESIGNS

#### **Insert installation**



#### Surface and push-through installation



#### PRESSURE DROP/FLOW NOISE DHE-HRA-500-FL

#### **EXHAUST AIR [DIAGRAM 1]**



#### PRESSURE DROP/FLOW NOISE DHE-HRA-500-AL

#### FRESH AIR [DIAGRAM 2]





#### PRESSURE DROP/FLOW NOISE DHE-HRA-680-FL

#### **EXHAUST AIR [DIAGRAM 3]**



PRESSURE DROP/FLOW NOISE DHE-HRA-680-AL



#### FRESH AIR [DIAGRAM 4]

# Horizontal rain grille DHE-HRA

#### **PRESSURE DROP**

Conversion to non-square cross sections

#### [DIAGRAM 5]



#### CONVERSION TO NON-SQUARE CROSS-SECTIONS USING THE EXAMPLE OF DHE-HRA-680-FL

#### **Pressure drop**

 $\Delta \mathbf{p}_{\Pi} = \Delta \mathbf{p}_{\Pi} \times \mathbf{fp1}$ 

#### Example

₩ =	20,000 m <sup>3</sup> /h
Size 🗌 :	1,000 × 1,000 mm
∆p _ =	85 Pa (diagram 3)
Size:	1,000 × 1,500 mm (side ratio 2 : 3 = 0.66)
Factor fp =	0.46 (see diagram 5)
$\Delta p_{\parallel} =$	85 Pa × 0.46 = 39 Pa

#### SOUND POWER Conversion to non-square cross sections

#### [DIAGRAM 6]



#### Sound power level

L<sub>wa □</sub>= L<sub>wa□</sub> x k

#### Example

V =	20,000 m <sup>3</sup> /h
Size 🗌 :	1,000 × 1,000 mm
Δp _ =	63 dB(A) (see diagram 3)
Size:	1,000 × 1,500 mm (side ratio 2 : 3 = 0.66)
Factor k =	0.8 dB(A) (see diagram 6)
L <sub>wa []</sub> =	63 dB(A) x 0.8 = 50 dB(A)

# **Roof cowl DH**

#### **APPLICATION**

The roof cowl (DH) is a simple rooftop structure for fresh air intake and exhaust air discharge. Because of its simple design, the roof cowl can only be used for fairly straightforward requirements. The air intake or outlet vents are relatively unprotected from rainwater ingress. The cowl roof which protrudes over the intake cross section can deflect rainwater falling at an angle of around 35° when the winds are not extreme. The air intake velocity in the free cross section should not exceed 5.0 m/s.

#### Note:

Roof cowls are not explosion-proof.

At high air humidity and temperatures below 0 °C, there is a risk of the grilles icing up.

#### **DESIGN DETAILS**

The roof cowl essentially consists of a sheet metal housing without any additional substructure. The top section of this housing has open sections on each side, backed with bird mesh. The attached roof with drip edge is slightly inclined on all sides to allow water to run off. The base of the roof cowl depends on the fastening options available at the site (roof boot). In order to cover the attachment point, a rain collar is supplied separately, which can be installed after assembly.

#### MATERIALS

Material type	Grade	Standard			
Galvanised sheet steel	DX51D + Z275 MA-C	DIN EN 10346/10143			
Stainless sheet steel (surface 2B)	1.4301 (V2A)	DIN EN 10088			
Aluminium	AIMg3 (3.3535; EN AW-5754)	DIN EN 485-2			

Other metallic materials and special paint are available on request

#### **AVAILABLE SIZES**

Standard rectangular roof cowls are available from a nominal dimension (connection cross section) between 200 × 200 mm and 1,200 × 1,200 mm. All square and rectangular dimensions are available within this range of sizes. Larger sizes can be specially manufactured to fulfil specific requirements according to a detailed description.



# **Roof cowl DH**

#### DIAGRAM



\* Standard size – other dimensions available

#### DESIGNS

The standard version has an air passage section on all four sides. Other versions are available with an air passage section on three sides, on two sides or on one.



DIMENSIONS	AND	<b>WEIGHTS</b>	11

Wic [m	iths m]			Length [mm]										
Α	С	В	200	300	400	500	600	700	800	900	1000	1100	1200	
200	400	D [mm]	400	500	600	700	800	900	1000	1100	1200	1300	1400	
		Free cross section [m²]* Total height [mm] Steel weight [kg] Aluminium weight [kg]	0.072 400 4 2	0.096 400 5 3	0.12 400 6 3.5	0.144 400 7 4	0.168 400 8 4.5	0.192 400 9 5	0.216 400 10 5.5	0.24 400 11 6	0.264 400 12 6.5	0.288 400 12.5 7	0.312 400 13 8	
300	600	D [mm]		600	700	800	900	1000	1100	1200	1300	1400	1500	
		Free cross section [m <sup>2</sup> ]* Total height [mm] Steel weight [kg] Aluminium weight [kg]		0.14 450 7 4	0.17 450 8 5	0.20 450 10 5.5	0.24 450 11 6	0.27 450 12 7	0.3 450 13 7.5	0.33 450 14 8	0.36 450 16 9	0.4 450 17 9.5	0.43 450 18 10	
400	800	D [mm]			800	900	1000	1100	1200	1300	1400	1500	1600	
		Free cross section [m <sup>2</sup> ]* Total height [mm] Steel weight [kg] Aluminium weight [kg]			0.24 500 12 6	0.28 500 13 7	0.32 500 14 8	0.36 500 16 9	0.4 500 17 10	0.44 500 19 11	0.48 500 20 11.5	0.52 500 22 12	0.56 500 23 13	
500	1000	D [mm]				1000	1100	1200	1300	1400	1500	1600	1700	
		Free cross section [m <sup>2</sup> ]* Total height [mm] Steel weight [kg] Aluminium weight [kg]				0.38 550 17 9	0.43 550 18 10	0.48 550 20 11	0.53 550 22 12	0.58 550 24 13	0.62 550 25 14	0.67 550 27 15	0.72 550 29 16	
600	1200	D [mm]					1200	1300	1400	1500	1600	1700	1800	
		Free cross section [m²]* Total height [mm] Steel weight [kg] Aluminium weight [kg]					0.56 600 23 13	0.62 600 25 14	0.67 600 27 15	0.73 600 29 16	0.78 600 31 17	0.84 600 33 18	0.9 600 35 19	
700	1400	D [mm]						1400	1500	1600	1700	1800	1900	
		Free cross section [m <sup>2</sup> ]* Total height [mm] Steel weight [kg] Aluminium weight [kg]						0.77 650 30 17	0.83 650 32 18	0.9 650 35 19	0.96 650 37 21	1.02 650 39 22	1.09 650 41 23	

A × B Connection cross section

C × D Largest dimension of roof cowl

 $^{\ast}$  Free cross section with air intake on 4 sides

# **Roof cowl DH**

#### **DIMENSIONS AND WEIGHTS [2]**

Widths [mm]			Length [mm]										
A	С	В	200	300	400	500	600	700	800	900	1000	1100	1200
800	1600	D [mm]							1600	1700	1800	1900	2000
		Free cross section [m²]* Total height [mm] Steel weight [kg] Aluminium weight [kg]							1.01 700 38 22	1.08 700 41 23	1.15 700 43 24	1.22 700 46 26	1.3 700 48 27
900	1800	D [mm]								1800	1900	2000	2100
		Free cross section [m²]* Total height [mm] Steel weight [kg] Aluminium weight [kg]								1.28 750 48 27	1.36 750 50 28	1.44 750 53 30	1.52 750 55 31
1000	2000	D [mm]									2000	2100	2200
		Free cross section [m²]* Total height [mm] Steel weight [kg] Aluminium weight [kg]									1.58 800 58 32	1.67 800 60 34	1.76 800 63 36
1100	2200	D [mm]										2200	2300
		Free cross section [m²]* Total height [mm] Steel weight [kg] Aluminium weight [kg]										1.92 850 69 39	2.02 850 72 40
1200	2400	D [mm]											2400
		Free cross section [m²]* Total height [mm] Steel weight [kg] Aluminium weight [kg]											2.29 900 81 45

A × B Connection cross section

C × D Largest dimension of roof cowl

\* Free cross section with air intake on 4 sides

#### **TENDER SPECIFICATION TEXT**

Rectangular roof cowl (DH) consisting of a sheet metal housing made of

Galvanised steel

Stainless steel (1.4301)

Aluminium (AIMg3 - 3.3535)

With open sections on 4 (3, 2, 1) the sides, backed with fixed bird mesh

Roof with drip edge directly and permanently fastened to the housing

Base designed for secure fastening to roof attachment

Fastening between base and roof attachment covered by rain collar

#### **Additional requirements:**

Exterior of DH completely painted in RAL								
Туре:	Roof cowls (DH)							
Nominal size:								



#### **TYPE CODE/EXAMPLE ORDER**



# Fresh air cowl ALH

#### **APPLICATION**

The fresh air cowl (ALH) is a special type of roof cowl designed solely for fresh air intake. This roof cowl is mainly used for drawing large quantities of fresh air into industrial ventilation systems. The cowl is specially designed to provide excellent protection from driving rain.

The fresh air cowl should be positioned far enough from the roof surface to prevent snow being sucked in during winter.

#### **DESIGN DETAILS**

Because of its shape and its function as a rooftop air intake, the fresh air cowl requires a sturdy substructure, whose design depends on the nominal dimension. Its weight and the wind forces acting on the relatively large cowl surface area must be safely absorbed by the substructure. The connector has a sturdy fastening flange for installation on the roof attachment. Air is taken in along the roof cowl's horizontal projection. The protective grille elements are located below the roof cowl in the ducting. The cowl can be specially designed so that the elements of the protective grille are attached along the horizontal plane of the cowl's roof.

#### MATERIALS

Material type	Grade	Standard
Galvanised sheet steel	DX51D + Z275 MA-C	DIN EN 10346/10143
Stainless sheet steel (surface 2B)	1.4301 (V2A)	DIN EN 10088
Aluminium	AIMg3 (3.3535; EN AW-5754)	DIN EN 485-2

Other metallic materials and special paint are available on request



#### **AVAILABLE SIZES**

Standard rectangular fresh air cowls are available in nominal dimensions (connection dimension) from  $500 \times 500$  mm to 2,000 × 2,000 mm. Within these dimensions, all square and rectangular cross sections are possible in 100 mm steps.

Larger sizes up to  $2,000 \times 4,000$  mm are available as special solutions after consultation with the manufacturer. The design, assembly and transport requirements must be included in the specifications.

#### DIAGRAM



\* Standard base height – other heights available

#### DESIGNS



# Fresh air cowl ALH

#### **DIMENSIONS AND WEIGHTS [1]**

Wid [m	ths m]			Length [mm]														
Α	С	В	500	600	700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
500		D [mm]	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900					
		Free cross section [m <sup>2</sup> ] Total height [mm] Steel weight [kg] Aluminium weight [kg]	0.32 880 74 59	0.35 880 81 64	0.38 880 87 69	0.42 980 95 73	0.45 980 101 78	0.48 980 108 83	0.51 980 114 88	0.54 1080 131 101	0.58 1080 138 107	0.61 1080 145 112	0.64 1080 151 117					
600		D [mm]		1080	1180	1280	1380	1480	1580	1680	1780	1880	1980	2080				
		Free cross section [m <sup>2</sup> ] Total height [mm] Steel weight [kg] Aluminium weight [kg]		0.46 880 94 74	0.50 980 102 79	0.54 980 109 84	0.58 980 116 89	0.61 980 122 95	0.65 1080 141 109	0.69 1080 148 114	0.73 1080 155 120	0.77 1080 162 125	0.81 1230 198 155	0.84 1230 206 161				
700		D [mm]			1260	1360	1460	1560	1660	1760	1860	1960	2060	2160	2260			
		Free cross section [m <sup>2</sup> ] Total height [mm] Steel weight [kg] Aluminium weight [kg]			0.63 980 116 90	0.67 980 124 95	0.72 980 131 101	0.76 1080 150 116	0.81 1080 158 122	0.85 1080 165 128	0.90 1080 173 133	0.94 1230 211 165	0.99 1230 219 172	1.03 1230 228 178	1.08 1230 236 185			
800		D [mm]				1440	1540	1640	1740	1840	1940	2040	2140	2240	2340	2440		
		Free cross section [m <sup>2</sup> ] Total height [mm] Steel weight [kg] Aluminium weight [kg]				0.82 980 139 107	0.87 1080 159 123	0.92 1080 167 129	0.97 1080 175 135	1.02 1080 183 142	1.08 1230 223 175	1.13 1230 232 182	1.18 1230 241 189	1.23 1230 250 196	1.28 1230 259 203	1.33 1230 268 210		
900		D [mm]					1620	1720	1820	1920	2020	2120	2220	2320	2420	2520	2620	
		Free cross section [m <sup>2</sup> ] Total height [mm] Steel weight [kg] Aluminium weight [kg]					1.04 1080 177 137	1.09 1080 185 143	1.15 1080 193 150	1.21 1230 235 184	1.27 1230 245 192	1.32 1230 254 199	1.38 1230 264 206	1.44 1230 273 214	1.50 1230 282 221	1.56 1330 311 243	1.61 1330 321 251	
1000		D [mm]						1800	1900	2000	2100	2200	2300	2400	2500	2600	2700	2800
		Free cross section [m <sup>2</sup> ] Total height [mm] Steel weight [kg] Aluminium weight [kg]						1.28 1080 204 157	1.34 1230 248 194	1.41 1230 257 201	1.47 1230 267 209	1.54 1230 277 217	1.60 1230 287 224	1.66 1230 297 232	1.73 1330 326 255	1.79 1330 336 263	1.86 1330 347 271	1.92 1330 357 279
1100		D [mm]							1980	2080	2180	2280	2380	2480	2580	2680	2780	2880
		Free cross section [m <sup>2</sup> ] Total height [mm] Steel weight [kg] Aluminium weight [kg]							1.55 1230 270 211	1.62 1230 280 219	1.69 1230 290 227	1.76 1230 300 235	1.83 1230 311 243	1.9 1330 341 267	1.97 1330 352 275	2.04 1330 363 284	2.11 1330 373 292	2.18 1480 436 345
1200		D [mm]								2160	2260	2360	2460	2560	2660	2760	2860	2960
		Free cross section [m <sup>2</sup> ] Total height [mm] Steel weight [kg] Aluminium weight [kg]								1.84 1230 303 237	1.92 1230 314 246	2.00 1230 324 254	2.07 1330 356 279	2.15 1330 367 288	2.23 1330 378 296	2.30 1330 390 305	2.38 1480 454 360	2.46 1480 466 369

A × B Connection cross section

C × D Largest dimension of ALH – head

#### DIMENSIONS AND WEIGHTS [2]

Wid [m	lths m]					Len [m	igth im]			
A	С	В	1300	1400	1500	1600	1700	1800	1900	2000
1300		D [mm]	2340	2440	2540	2640	2740	2840	2940	3040
		Free cross section [m <sup>2</sup> ] Total height [mm] Steel weight [kg] Aluminium weight [kg]	2.16 1230 338 265	2.25 1330 371 290	2.33 1330 383 299	2.41 1330 394 308	2.50 1330 406 317	2.58 1480 473 374	2.66 1480 485 384	2.75 1480 489 394
1400		D [mm]		2520	2620	2720	2820	2920	3020	3120
		Free cross section [m²] Total height [mm] Steel weight [kg] Aluminium weight [kg]		2.51 1330 398 311	2.60 1330 410 321	2.69 1330 422 330	2.78 1480 491 389	2.87 1480 504 399	2.96 1480 517 409	3.05 1480 530 409
1500		D [mm]			2700	2800	2900	3000	3100	3200
		Free cross section [m²] Total height [mm] Steel weight [kg] Aluminium weight [kg]			2.88 1330 437 342	2.98 1480 509 403	3.07 1480 522 414	3.17 1480 536 424	3.26 1480 550 435	3.36 1480 563 446
1600		D [mm]				2880	2980	3080	3180	3280
		Free cross section [m <sup>2</sup> ] Total height [mm] Steel weight [kg] Aluminium weight [kg]				3.28 1480 541 428	3.38 1480 555 439	3.48 1480 569 450	3.58 1480 583 461	3.69 1480 597 472
1700		D [mm]					3060	3160	3260	3360
		Free cross section [m²] Total height [mm] Steel weight [kg] Aluminium weight [kg]					3.70 1480 588 465	3.81 1480 602 477	3.92 1480 617 488	4.03 1730 708 561
1800		D [mm]						3240	3340	3440
		Free cross section [m²] Total height [mm] Steel weight [kg] Aluminium weight [kg]						4.15 1480 636 504	4.26 1730 730 578	4.38 1730 746 591
1900		D [mm]							3420	3520
		Free cross section [m²] Total height [mm] Steel weight [kg] Aluminium weight [kg]							4.62 1730 768 608	4.74 1730 785 621
2000		D [mm]								3600
		Free cross section [m²] Total height [mm] Steel weight [kg] Aluminium weight [kg]								5.12 1730 824 653

A × B Connection cross section

C × D Largest dimension of ALH – head

# Fresh air cowl ALH

#### **TENDER SPECIFICATION TEXT**

Sturdy, self-supporting fresh air cowl (ALH). Substructure spot welded or welded according to structural engineering requirements.

Galvanised st	eel
---------------	-----

Stainless steel (1.4301)

Aluminium (AIMg3 - 3.3535)

Watertight design. Required sealing provided by silicone-free, UV resistant sealant.

Fixed bird mesh on intake openings.

Base of fresh air cowl with sturdy flange to fit the roof attachment. Split rain collar supplied separately for subsequent fitting to the fresh air cowl. Comes equipped for transport with a number of eye bolts appropriate for the nominal size.

#### **TYPE CODE/EXAMPLE ORDER**

#### DHE/ALH - E1 - 1000 × 1200 - Sv - RAL 9006 - W 40



#### **Additional requirement**

Design with protective grill that can be folded up and down via hinges

Fresh air cowl completely painted in RAL .....

Type: Fresh air cowl (ALH)

Nominal size:

Manufacturer:

: ...../...../

BerlinerLuft. Technik GmbH

# Weather hood, intake/discharge duct section WH

#### **APPLICATION**

#### **DESIGN DETAILS**

Weather hoods or intake/discharge sections are a simple alternative for the purpose of fresh air intake or exhaust air discharge in horizontal ducting. Generally, they are used when penetrating the outer masonry. In addition, they can also be used as duct ends on the inside or outside of buildings.

The air intake velocity in the free cross section should not exceed 5.0 m/s.

#### Note

Weather hoods are not fully explosion-proof. At high air humidity and temperatures below 0 °C, there is a risk of the grilles icing up. Weather hoods essentially consist of a sturdy, folded sheet metal housing which, depending on the size, has additional reinforcements, according to the manufacturer's design specifications. To prevent the direct entry of precipitation, the weather hood can be adjusted to an angle of 30°, 45° or 60°. To prevent contamination, all weather hoods have a detachable bird mesh. The production of the weather hood is limited by the minimum construction length  $L_{min}$ . The maximum construction length is 1,450 mm.

#### MATERIALS

Material type	Grade	Standard
Galvanised sheet steel	DX51D + Z275 MA-C	DIN EN 10346/10143
Stainless sheet steel (surface 2B)	1.4301 (V2A)	DIN EN 10088
Aluminium	AIMg3 (3.3535; EN AW-5754)	DIN EN 485-2

Additional painting on request

#### **AVAILABLE SIZES**

Standard weather hoods are available in nominal dimensions (connection cross section) between 200 x 200 mm and 2,000 x 2,000 mm. All square and rectangular dimensions are available within this range of sizes. Larger sizes can be specially manufactured to fulfil specific requirements according to a detailed description.



# Weather hood, intake/discharge duct section WH

DIAGRAM





Angle 30°, 45°, 60° Connection dimension Component length

#### **TENDER SPECIFICATION TEXT**

Square weather hood consisting of a sturdy sheet metal housing.	
Angle 30°, 45°, 60	LP frame joint leading to duct connection on one side
Galvanised steel	Fold with UV-resistant seal
Stainless steel 1.4301	Nominal size B x A
Aluminium AIMg3 - 3.3535	Total length L
Bird mesh fixed to the duct casing	Angle w°
Intake with rain drip edge directly fastened to the housing	— Manufacturer: BerlinerLuft. Technik GmbH

#### **TYPE CODE/EXAMPLE ORDER**

DHE/WH - 60 - 500 × 1200 - Sv - RAL 9006 - LP 30



DIMENSIONS AND	WEIGHTS [1]
----------------	-------------

А	Design 60°						B [mm]					
[mm]	Ex.	200	300	400	500	600	700	800	900	1000	1100	1200
200	Length [mm] Free cross section [m²] Weight [kg]	500 0.03 5										
400	Length [mm] Free cross section [m²] Weight [kg]	600 0.07 7	600 0.1 9	600 0.13 10								
500	Length [mm] Free cross section [m²] Weight [kg]	700 0.08 9	700 0.12 11	700 0.17 12	700 0.21 13							
600	Length [mm] Free cross section [m²] Weight [kg]	800 0.1 13	800 0.15 15	800 0.2 17	800 0.25 18	800 0.3 20						
800	Length [mm] Free cross section [m²] Weight [kg]	900 0.13 18	900 0.2 20	900 0.26 22	900 0.33 23	900 0.4 25	900 0.46 27	900 0.53 29				
1000	Length [mm] Free cross section [m²] Weight [kg]	1000 0.17 23	1000 0.25 25	1000 0.33 27	1000 0.41 30	1000 0.5 32	1000 0.58 34	1000 0.66 36	1000 0.74 38	1000 0.83 40		
1100	Length [mm] Free cross section [m²] Weight [kg]	1000 0.18 31	1000 0.27 34	1000 0.36 36	1000 0.45 39	1000 0.55 41	1000 0.64 44	1000 0.73 46	1000 0.82 49	1000 0.91 50	1000 1 54	
1200	Length [mm] Free cross section [m²] Weight [kg]	1000 0.2 33	1000 0.3 36	1000 0.4 38	1000 0.5 41	1000 0.6 44	1000 0.69 46	1000 0.79 49	1000 0.89 51	1000 0.99 54	1000 1.09 57	1000 1.19 59
1300	Length [mm] Free cross section [m²] Weight [kg]	1200 0.21 41	1200 0.32 44	1200 0.43 47	1200 0.54 50	1200 0.64 53	1200 0.75 56	1200 0.86 59	1200 0.97 63	1200 1.07 66	1200 1.18 69	1200 1.29 72
1400	Length [mm] Free cross section [m²] Weight [kg]	1200 0.23 44	1200 0.35 47	1200 0.46 50	1200 0.58 53	1200 0.69 56	1200 0.81 59	1200 0.93 62	1200 1.04 66	1200 1.16 69	1200 1.27 72	1200 1.39 75
1500	Length [mm] Free cross section [m²] Weight [kg]	1200 0.2 47	1200 0.37 50	1200 0.5 53	1200 0.62 56	1200 0.74 59	1200 0.87 62	1200 0.99 66	1200 1.12 69	1200 1.24 72	1200 1.36 76	1200 1.149 79
1600	Length [mm] Free cross section [m²] Weight [kg]	1450 0.26 58	1450 0.4 61	1450 0.53 65	1450 0.66 69	1450 0.79 72	1450 0.93 76	1450 1.06 80	1450 1.19 84	1450 1.32 87	1450 1.45 91	1450 1.59 95
1800	Length [mm] Free cross section [m²] Weight [kg]	1450 0.3 64	1450 0.45 68	1450 0.6 71	1450 0.74 75	1450 0.89 79	1450 1.04 82	1450 1.19 87	1450 1.34 90	1450 1.49 94	1450 1.64 98	1450 1.79 101
2000	Length [mm] Free cross section [m²] Weight [kg]	1450 0.33 78	1450 0.5 81	1450 0.66 85	1450 0.83 89	1450 0.99 93	1450 1.16 97	1450 1.32 102	1450 1.49 106	1450 1.65 110	1450 1.82 114	1450 1.98 118

WH 60°, further details according to configurator

## Intake and discharge bend AB 135°/90°

#### **APPLICATION**

Intake or discharge bends (ASB or ABB) are a simple alternative to roof cowls for fresh air intake or exhaust air discharge. Depending on the application, single or double-sided bends are used. 135° bends are mainly used for fresh air intake, and 90° bends for exhaust air discharge. The air intake velocity in the free cross section should not exceed 5.0 m/s.

#### Note

Discharge bends are not fully explosion-proof. At high air humidity and temperatures below 0 °C, there is a risk of the grilles icing up.

#### **DESIGN DETAILS**

Intake or discharge bends essentially consist of a sturdy, folded sheet metal housing which, depending on the size, has additional reinforcements according to the manufacturer's design specifications. To prevent the direct entry of precipitation, the ABB 90° has an additional 30° forward arch. To prevent contamination, all discharge bends have a detachable bird mesh. Discharge bends have turning vanes, as described in DIN EN 1505.

The inside radius is 100 mm; the connection side is extended by 200 mm on the standard version. The design of the base of the ABB/ASB depends on the attachment options available at the site (roof boot). In order to cover the attachment point, a separate rain collar is available, which can be installed after assembly. All folds have UV-resistant seals. Depending on the site and requirements, the intake and discharge bends have reinforced load attachment points with eye bolts.

#### MATERIALS

Material type	Grade	Standard
Galvanised sheet steel	DX51D + Z275 MA-C	DIN EN 10346/10143
Stainless sheet steel (surface 2B)	1.4301 (V2A)	DIN EN 10088
Aluminium	AIMg3 (3.3535; EN AW-5754)	DIN EN 485-2

Other metallic materials and special paint are available on request

#### **AVAILABLE SIZES**

Standard rectangular discharge bends are available in nominal dimensions (connection cross section) between  $200 \times 200$  mm and  $2,000 \times 2,000$  mm. All square and rectangular dimensions are available within this range of sizes. Larger sizes can be specially manufactured to fulfil specific requirements according to a detailed description.





#### DIAGRAM



#### DESIGNS

1







\* Standard base height – other heights available



- 1 | Discharge bend AB-90°
- 2 | Intake bend AB-135°
- 3 | Double discharge bend AB-D 90°
- 4 | Double intake bend AB-D 135°

# Intake and discharge bend AB 135°/90°

#### **DIMENSIONS AND WEIGHTS [1]**

А	B [mm]											
[mm]		200	300	400	500	600	700	800	900	1000	1100	1200
200	Height [mm] Free cross section [m²] Weight 90° [kg] Weight 135° [kg]	500 0.008 11 12	500 0.018 14 17	700 0.028 19 23								
300	Height [mm] Free cross section [m²] Weight 90° [kg] Weight 135° [kg]	500 0.018 13 15	600 0.036 17 20	700 0.054 22 26	800 0.072 27 33							
400	Height [mm] Free cross section [m²] Weight 90° [kg] Weight 135° [kg]	500 0.028 16 18	600 0.054 20 24	700 0.08 25 30	800 0.106 31 38	900 0.132 37 46						
500	Height [mm] Free cross section [m²] Weight 90° [kg] Weight 135° [kg]	500 0.038 19 21	600 0.072 23 27	700 0.106 28 34	800 0.14 34 42	900 0.174 40 50	1000 0.208 47 59					
600	Height [mm] Free cross section [m²] Weight 90° [kg] Weight 135° [kg]	500 0.048 21 24	600 0.09 26 31	700 0.132 32 38	800 0.174 38 46	900 0.216 44 55	1000 0.258 51 64	1100 0.3 59 74				
700	Height [mm] Free cross section [m <sup>2</sup> ] Weight 90° [kg] Weight 135° [kg]		600 0.108 29 34	700 0.158 35 42	800 0.208 41 50	900 0.258 48 59	1000 0.308 55 69	1100 0.358 63 80	1200 0.408 71 91			
800	Height [mm] Free cross section [m²] Weight 90° [kg] Weight 135° [kg]			700 0.184 38 46	800 0.242 45 54	900 0.3 52 64	1000 0.358 59 73	1100 0.416 67 85	1200 0.474 76 97	1300 0.532 85 110		
900	Height [mm] Free cross section [m²] Weight 90°   [kg] Weight 135° [kg]				800 0.276 48 59	900 0.342 55 69	1000 0.408 63 79	1100 0.474 71 91	1200 0.54 80 103	1300 0.606 90 116	1400 0.672 99 129	
1000	Height [mm] Free cross section [m²] Weight 90° [kg] Weight 135° [kg]					900 0.384 54 73	1000 0.458 67 84	1100 0.532 76 96	1200 0.606 85 109	1300 0.68 94 122	1400 0.754 104 136	1500 0.828 115 151

Dimensions and weights for galvanised folded steel cowls

Types: One-sided symmetrical AB 90° and ASB 135°  $\,$ 

Double-sided versions must be calculated individually due to the wide variety of designs

А	B [mm]															
[mm]			700	800	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000
1100	Height [mm] Free cross section [m²] Weight 90° [kg] Weight 135° [kg]	1000 0.508 71 89	1100 0.59 80 101	1200 0.672 89 114	1300 0.754 99 128	1400 0.836 109 143	1500 0.918 120 158	1600 1.00 132 174								
1200	Height [mm] Free cross section [m <sup>2</sup> ] Weight 90° [kg] Weight 135° [kg]		1100 0.648 84 107	1200 0.738 94 120	1300 0.828 104 134	1400 0.918 115 149	1500 1.008 126 165	1600 1.098 137 181	1700 1.188 149 198							
1300	Height [mm] Free cross section [m <sup>2</sup> ] Weight 90° [kg] Weight 135° [kg]			1200 0.804 98 126	1300 0.902 109 141	1400 1.00 120 156	1500 1.098 131 172	1600 1.196 143 189	1700 1.294 155 206	1800 1.392 168 224						
1400	Height [mm] Free cross section [m <sup>2</sup> ] Weight 90° [kg] Weight 135° [kg]				1300 0.976 114 147	1400 1.082 125 162	1500 1.188 136 179	1600 1.294 148 196	1700 1.40 161 214	1800 1.506 174 233	1900 1.612 188 252					
1500	Height [mm] Free cross section [m <sup>2</sup> ] Weight 90° [kg] Weight 135° [kg]					1400 1.164 130 169	1500 1.278 142 186	1600 1.392 154 203	1700 1.506 167 222	1800 1.62 180 241	1900 1.734 194 261	2000 1.848 209 281				
1600	Height [mm] Free cross section [m <sup>2</sup> ] Weight 90° [kg] Weight 135° [kg]						1500 1.368 147 193	1600 1.49 160 211	1700 1.612 173 229	1800 1.734 187 249	1900 1.856 201 269	2000 1.978 215 290	2100 2.10 231 312			
1700	Height [mm] Free cross section [m <sup>2</sup> ] Weight 90° [kg] Weight 135° [kg]							1600 1.588 165 218	1700 1.718 179 237	1800 1.848 193 257	1900 1.978 207 278	2000 2.108 222 299	2100 2.238 238 321	2200 2.368 253 344		
1800	Height [mm] Free cross section [m²] Weight 90° I [kg] Weight 135° [kg]								1700 1.824 185 245	1800 1.962 199 265	1900 2.10 214 286	2000 2.238 229 308	2100 2.376 244 330	2200 2.514 261 354	2300 2.652 277 378	
1900	Height [mm] Free cross section [m²] Weight 135° [kg] Weight 90° [kg]									1800 2.076 205 273	1900 2.222 220 295	2000 2.368 235 317	2100 2.514 251 340	2200 2.66 268 363	2300 2.806 285 388	
2000	Height [mm] Free cross section [m <sup>2</sup> ] Weight 90° [kg] Weight 135° [kg]										1900 2.344 226 303	2000 2.498 242 326	2100 2.652 258 349	2200 2.806 275 373	2300 2.96 292 398	

## Intake and discharge bend AB 135°/90°

#### **TENDER SPECIFICATION TEXT**

#### **Additional requirement**

AB 90°

AB 135°

AB -D 90°

Type:

Nominal size:

Manufacturer:

Bend completely painted in RAL .....

AB -D 135° Double-sided 135°

BerlinerLuft. Technik GmbH

Symmetrical single-sided 90°

Symmetrical single-sided 135°

Double-sided 90°

According to drawing

According to drawing

Rectangular roof cowl as 135° intake bend consisting of
a sturdy sheet metal housing made of

(90° discharge bend, consisting of a sturdy sheet metal housing with 30° overhang) made of

Stainless steel 1.4301

Aluminium AIMg3 - 3.3535

Detachable bird mesh fastened to housing.

Intake with rain drip edge directly and permanently fastened to the housing.

Base designed for secure fastening to roof attachment.

Fastening between base and roof attachment covered by rain collar

Fold with UV-resistant seal.

#### **TYPE CODE/EXAMPLE ORDER**

DHE/AB - 90 - 1000 × 1200 - Sv - RAL 9006 - LP 30



# **Custom units**

#### **APPLICATION**

A wide range of rectangular and round rooftop intake and discharge units are available as custom solutions for special requirements.

Special solutions for:

High air flows

Restricted heights

Flat air inlets and outlets integrated in the roof

Special aesthetic requirements

Combined air inlets and outlets

High safety requirements as regards water ingress

Increased security requirements (break-ins)

#### **DESIGN DETAILS**

Custom air intake or discharge components are usually sturdy, welded structures. If necessary, a support substructure is used, with sheet metal and special air passage elements. Depending on the design, some solutions require that rainwater be disposed of inside the building.

Galvanised sheet steel is used to ensure protection from corrosion.

All welds are suitably treated to prevent corrosion. On request, each assembly can be completely painted. Alternative materials are stainless steel or aluminium.

#### MATERIALS

Material type	Grade	Standard
Galvanised sheet steel	DX51D + Z275 MA-C	DIN EN 10346/10143
Stainless sheet steel (surface 2B)	1.4301 (V2A)	DIN EN 10088
Aluminium	AIMg3 (3.3535; EN AW-5754)	DIN EN 485-2

Additional painting on request

# **Custom units**

#### **INTAKE UNIT DESIGNS**

#### Intake unit with multi-leaf dampers

The intake unit with multi-leaf dampers is a sturdy housing structure with electrically controlled multi-leaf dampers to prevent cold air entering, with multiple weather protection grilles in front.

Possible additional requirements:

Walk-on access

Insulated roof zone

Multi-chamber system

Lightning protection clamp

Lifting eye bolts

#### Intake unit with droplet separator

The intake unit with droplet separator has a sturdy housing and provides increased protection from moisture with its integrated droplet separator and 30° overhanging intake connector.

Possible additional requirements:

Multi-chamber system

Lightning protection clamp

Lifting eye bolts

#### Intake or discharge unit with rainwater cascade

The intake unit is a welded housing structure with a horizontal, multi-step rainwater cascade that drains water in the building. Especially suitable for flat roofs where an inconspicuous air intake is required.

Possible additional requirements:

Lightning protection clamp

Lifting eye bolts

- 1 | Intake units with multi-leaf dampers
- 2 | Intake unit with droplet separator
- 3 | Intake or discharge unit with rainwater cascade



#### **Berliner Luft**.

#### **DISCHARGE UNIT DESIGNS**

#### Multiple-port discharge unit

The combined exhaust air discharge unit has a sturdy housing with an all-round support frame, round or square connectors on the side, and a symmetrical or asymmetrical rainwater funnel that drains water in the building. Grilles as cover.

Possible additional requirements:

Inspection panel
Lightning protection clamp
Lifting eye bolts

#### **Discharge diffuser**

The discharge diffuser works in a similar way to a jet cap. However, instead of the exhaust air emerging as a compact upwards jet, it is ejected in a ring shape. The advantage of this design is that it has a lower installed height compared to the jet cap, but has the same effect, directing a jet of air upwards. By avoiding an opening angle greater than 8° lower drag coefficients in the diffuser are achieved.

In unfavourable wind conditions, rainwater may enter the connected ducting. The annular opening is protected by a grille.

#### **AVAILABLE SIZES**

The units described above are all custom products. The dimensions can be specified individually during planning.

Recommended intake velocity for intake units: 2-3 m/s onto the planned intake area.





1 | Multiple-port discharge unit

2 | Discharge diffuser

# **Custom units**

#### **TENDER SPECIFICATION TEXTS**

#### Intake unit with multi-leaf dampers

Sturdy galvanised sheet steel housing with electrically operated multi-leaf dampers to prevent cold air entering, with multiple weather protection grilles in front. Inclined roof with drip edge for rainwater to run off. Base designed for secure connection to the roof attachment. Separate split rain collar supplied. Eye bolts must be provided for secure transport on site.

#### Intake unit with droplet separator

Sturdy galvanised sheet steel housing with built-in droplet separator and intake port with 30° overhang for extra protection from moisture. Inclined roof with drip edge for rainwater to run off. Base designed for secure connection to the roof attachment. Separate split rain collar supplied. Eye bolts must be provided for secure transport on site.

#### Intake or discharge unit with rainwater cascade

Sturdy galvanised sheet steel housing with a horizontal, multi-step rainwater cascade that drains water in the building.

Vertical duct connection

Dimensions .....mm / .....mm

Walk-on grilles as cover. All-round support frame for secure fastening to the roof structure. Eye bolts must be provided for secure transport on site.

Connection cross section:	mm /mm
Height:	mm
Air flow:	m³/h

Additional requirements such as walk-on access, multiple chambers, insulated zones and lighting protection clamp must be individually specified.

Manufacturer: BerlinerLuft. Technik GmbH

Connection cross section:	mm /mm
Height:	mm
Air flow:	m³/h
Manufaaturari Darlinari	144

Manufacturer: BerlinerLuft. Technik GmbH

Connection cross section:	mm /mm
Height:	mm
Air flow:	m³/h

Manufacturer: BerlinerLuft. Technik GmbH

#### **TENDER SPECIFICATION TEXTS**

#### Multiple-port discharge unit

Sturdy galvanised sheet steel housing for connecting multiple horizontal square or round ducts (position and dimensions according to sketch supplied). Symmetrical (asymmetrical) rainwater funnel with drainage outlet. Walk-on grilles as cover. All-round support frame for secure fastening to the roof structure. Eye bolts must be provided for secure transport on site.

#### **Discharge diffuser**

Round galvanised sheet steel discharge element that functions in a similar way to a jet cap, consisting of a sturdy cylindrical tube with the connection/nominal cross section and with a diffuser attached to it. The diffuser contains a rainwater funnel that covers the connection cross section. The air exits through the annular gap between the funnel and diffuser, which must be protected with a grille. The base of the discharge element must provide a secure connection to the roof boot. There most be sufficient eyelets for transport.

Discharge cross	section:mm/mm
Height:	mm
Air flow:	m³/h
Manufacturer:	BerlinerLuft. Technik GmbH

Nominal diamete Air flow:	er DN:	mm / m³/h	mm
Manufacturer:	Berlin Techn	erLuft. ik GmbH	

# **Roof collar and boot**

Roof collar	Roof boot
Non-load-bearing for flat roof	Load-bearing for flat roof
Load-bearing for flat roof	Load-bearing for flat roof, insulated
Load-bearing for flat roof, insulated	Load-bearing for pitched roof
Non-load-bearing for pitched roof	Load-bearing for pitched roof, insulated
Load-bearing for pitched roof	Custom design
Load-bearing for pitched roof, insulated	

Custom design

1 | Roof collar

2 | Roof boot



128 | Air Conduction

Berliner Luft.

#### **PRODUCT DESCRIPTION**

#### STANDARDS AND REGULATIONS

Roof collars and boots are used for securely fastening roof cowls of HVAC systems to the building structure. They are designed for attachment on flat roofs or pitched roofs up to 45°. Local snowfall levels and wind conditions must be taken into account when dimensioning and specifying the components.

DIN 1055-4	Wind loads
(DIN EN 1991-1-4)	Actions on structures
DIN 1055-5	Snow loads
(DIN EN 1991-1-3)	Actions on structures
DIN 18234-3	Fire safety of large roofs for buildings Requirements for roof penetrations
DIN 18234-4	Fire safety of large roofs for buildings List of roof penetrations



**OVERVIEW** 

## **Roof collar and boot**

#### LOAD-BEARING ROOF COLLARS

This type of roof collar is designed to safely absorb vibrations and wind loads. It is securely fastened to the roof structure by means of a flashing on all sides. The roof cowl and ducting can be directly connected to the roof collar.

Material and design: Load-bearing roof collars are always made from sturdy welded steel. The roof sealing strips can be directly adhered to the roof collar walls.

#### NON-LOAD-BEARING ROOF COLLARS

This type of roof collar requires the roof cowl to be supported by the ducting. This means that wind loads and its own weight are kept separate from the structure of the roof and instead are absorbed by a sturdy air duct in the building.

The sole purpose of non-load bearing roof collars is to ensure that air duct passes through the roof in that it allows the seal to be formed between the roof and the roof collar.

The roof collar may not be subjected to loads or vibrations. The space between the roof collar and the air duct must be filled with insulating material on site after the individual elements have been installed.

Material and design: Edge length greater than 1,200 mm, welded for structural reasons.

#### LOAD-BEARING ROOF BOOT

Roof boots are generally welded so that they can absorb wind loads and the weight of the cowl and and divert them into the structure of the roof. The roof boot is fastened to the structure of the roof by an all-round support collar. The welded structure also ensures that the roof boot can be properly sealed. The penetration through the structure of the roof must be made in such a way that a smooth interior air flow surface is formed.

#### **ADAPTATION TO THE ROOF TYPE**

Roof collars and boots can be used for the following types of roof:

Flat roof

Pitched roof (shallow and steep roofs)

The exact pitch of the roof must be specified. The roof pitch is defined as follows:

The roof pitch is the angle between the roof and the horizontal line of the building. It is given as an angle (alpha) in degrees (°).

The customer must convert pitches given as percentages to the roof pitch alpha ° using the arctan function.

#### **ROOF PITCH**

#### Note on the load-bearing capacity of roof collars and boots

Due to the wide range of possible conditions on site (weights, wind loads, snow depths, roof structure), the load-bearing capacity of roof collars and boots must always be calculated by the customer. All relevant information must be given to the manufacturer on placing the order.



#### **INSTALLED HEIGHTS**

The installed heights for the standard versions of BerlinerLuft. roof collars and boots are provided without further explanation in the following illustrated measurements (height measurements). For H1 the standard height is 400 mm. Other requirements must be specified. In addition, the heights must be adapted to the typical local snow depth. The height of the components above the roof must be specified to ensure that no snow can be sucked into the system. This information must always be provided at the planning stage.

#### **AVAILABLE SIZES**

Standard versions of the roof boots with square and rectangular cross sections are manufactured with an angle of 0° to 45° and in the dimensions 200 mm to 2,500 mm. Special designs and larger dimensions are available on request. The connection of the support collar is to be specified by the customer.

#### MATERIALS

Material type	Grade	Standard
Galvanised sheet steel	DX51D + Z275 MA-C	DIN EN 10346/10143
Stainless sheet steel (surface 2B)	1.4301 (V2A)	DIN EN 10088
Aluminium	AIMg3 (3.3535; EN AW-5754)	DIN EN 485-2

2

#### STANDARD VERSIONS FOR FLAT ROOF







1 | Non-load-bearing collar for flat roof

2 | Load-bearing collar for flat roof

3 | Load-bearing roof boot for flat roof

## **Roof collar and boot**

#### STANDARD VERSIONS FOR PITCHED ROOF

1







- 1 | Non-load-bearing collar for pitched roof
- 2 | Load-bearing collar for pitched roof
- 3 | Load-bearing roof boot for pitched roof

#### INSULATION

The roof collars and boots from BerlinerLuft. can also be manufactured ex works with thermal insulation. Based on the structural design, the insulation is always on the inside. The standard insulation thickness is 50 mm and consists of mineral wool fibre. The insulation is covered by an internal sheet metal duct with profile sections covering each end (joint). The reduction in diameter must be considered when determining the air flow velocity.

#### **INSULATED LOAD-BEARING VERSION**



The roof collars and boots can also be supplied with silencers for special applications. The installed height depends on the technical conditions for the required soundproofing. Static calculations for the structure of the roof must take into account the dead load of the roof collar or boot and the installed silencer and roof cowl.

## **Roof collar and boot**

#### **TENDER SPECIFICATION TEXT**

#### **Roof collar**

Roof collar with all-round support collar 200 mm	Complete as appropriate:	
	Non-load-bearing	
	Load-bearing – welded version	
Material	Complete as appropriate:	
	Galvanised steel	
	Stainless steel 1.4301	
	Aluminium	
Size	Complete as appropriate:	
	DNmm	
	A × Bmm	
Height above roof	Complete as appropriate:	
	Standard H1 = 400 mm	
	H1 =mm	
Total height	H <sub>tot</sub> =mm	
Roof type	Complete as appropriate:	
	Flat roof	
	Pitched roof – pitch°	
Connection frame	Complete as appropriate:	
	Тор	
	Bottom	
Insulated	Insulation thicknessmm	
Manufacturer	BerlinerLuft. Technik GmbH	

#### **TENDER SPECIFICATION TEXT**

#### Roof boot

Roof boot with all-round support collar welded version 200 mm	
Material	Complete as appropriate:
	Galvanised steel
	Stainless steel 1.4301
	Aluminium
Size	Complete as appropriate:
	DNmm
	A × B/mm
Height above roof	Complete as appropriate:
	Standard H1 = 400 mm
	H1 =mm
Total height	H <sub>tot</sub> =mm
Roof type	Complete as appropriate:
	Flat roof
	Pitched roof – pitch°
Connection frame	Complete as appropriate:
	Тор
	Bottom
Insulated	Insulation thicknessmm
Manufacturer	BerlinerLuft. Technik GmbH