



Determination of the effectiveness for removal of simulated rain. BERGENRISTEN BHU-S 943 x 1050.

Requested by: BVP Bergen Ventilasjonsprodukter A/S

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Task **Determination of the effectiveness for removal of simulated rain. BERGENRISTEN BHU-S 943 x 1050.**

Sample The customer delivered one air terminal device of type BERGENRISTEN BHU-S 943 x 1050. The overall dimensions were 1023 mm x 1130 mm x 625 mm and the core area dimensions were 943 mm x 1050 mm.

The sample was received 5.10.2005.
The measurements were made 1. – 2.12.2005.

Measurement method The effectiveness for removal of simulated rain and the pressure loss were determined according to EN 13030:2001 /1/. The air terminal device was subject to a wind speed of 13 m/s as demanded in the standard. The nominal rain water loading specified in the standard is 75 (l/h)/m². The measurements were made in the core velocity range 0 – 3.6 m/s (air flow range 0 – 3.5 m³/s).

Air flow rates were measured according to ISO 5221:1984 /2/ using orifice plates with corner tappings.

The Centre for Metrology and Accreditation (MIKES) has accredited our laboratory (T018, FINAS-accreditation) to perform tests according to ISO 5221:1984. All other measurements and tests mentioned in this report do not belong to the field of accreditation.

Results The effectiveness for removal of simulated rain and the effectiveness classification are presented in Appendix 1. The pressure loss curve and the entry loss coefficient classification are presented in Appendix 2.

The results relate only to the tested device.

References /1/ EN 13030:2001. Ventilation for buildings - Terminals - Performance testing of louvres subjected to simulated rain.

/2/ ISO 5221:1984. Air distribution and diffusion - Rules to methods of measuring air flow rate in an air handling duct.

Espoo, 9.12.2005



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APPENDICES 2

DISTRIBUTION Customer Original (2 pcs)
VTT Original

Air terminal device: BERGENRISTEN BHU-S 943 x 1050

Manufacturer: BVP Bergen Ventilasjonsprodukter A/S

Effectiveness for removal of simulated rain

EN 13030:2001

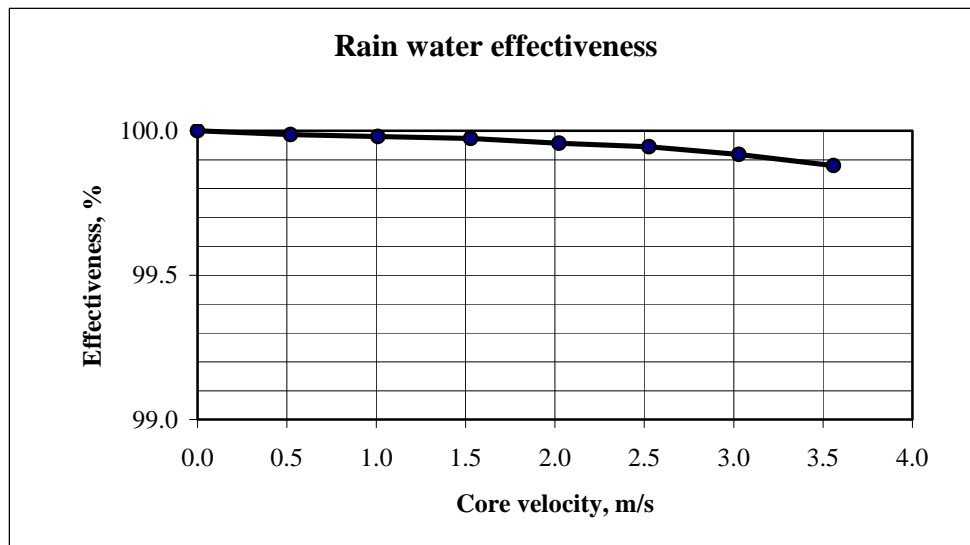
Rainfall rate: 75 (l/h)/m², (75 mm/h)

Core area:

width: 943 mm

height: 1050 mm

area: 0.990 m²



Air flow rate		Rain water flow rates				Performance	
q _v	v	q _r	q _d	q _{ro}	q _{do}	E	Class
m ³ /s	m/s	l/h	l/h	(l/h)/m ²	(l/h)/m ²	%	
0.00	0.00	74.26	0.000	75.00	0.000	100.00	A
0.52	0.52	74.26	0.010	75.00	0.010	99.99	A
1.00	1.01	74.26	0.015	75.00	0.015	99.98	A
1.51	1.53	74.26	0.020	75.00	0.020	99.97	A
2.00	2.02	74.26	0.032	75.00	0.032	99.96	A
2.50	2.53	74.26	0.041	75.00	0.042	99.94	A
3.00	3.03	74.26	0.060	75.00	0.061	99.92	A
3.52	3.56	74.26	0.089	76.00	0.090	99.88	A

Symbols and units

q_v Air flow rate, m³/s

v Core velocity, m/s

q_r Rain water flow loading the device, l/h

q_d Rain water flow penetrating the device, l/h

q_{ro} Rain water flow loading the device per core area, (l/h)/m²

q_{do} Rain water flow penetrating the device per core area, (l/h)/m²

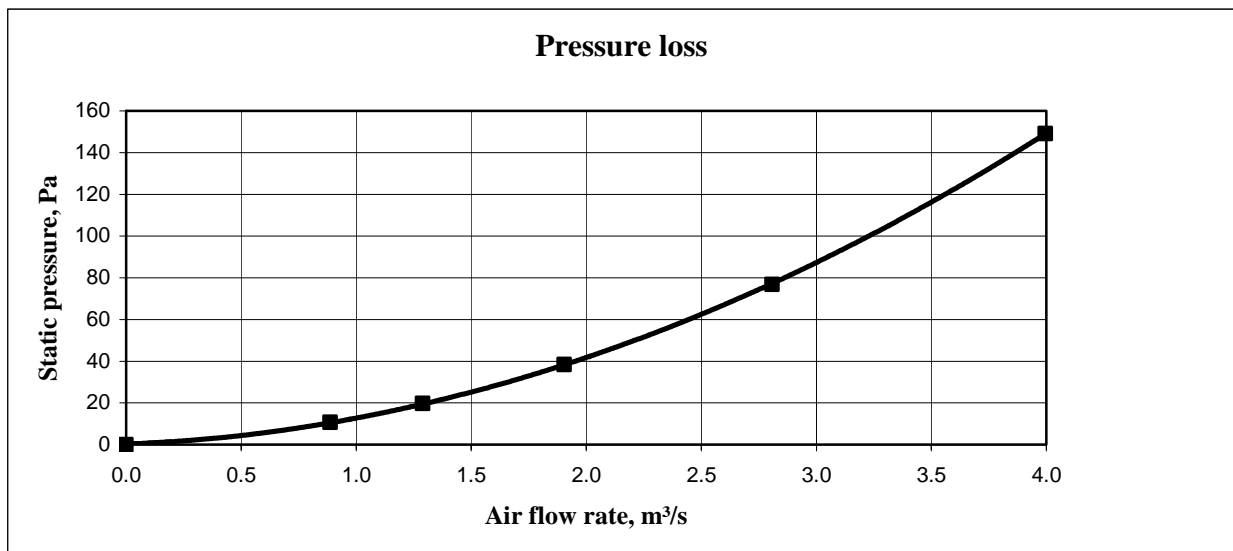
E Effectiveness, %

Air terminal device: BERGENRISTEN BHU-S 943 x 1050
 Manufacturer: BVP Bergen Ventilasjonsprodukter A/S
Aerodynamic performance of air terminal device
 EN 13030:2001

Corea area:

width: 943 mm
 height: 1050 mm
 area: 0.990 m²

Air density 1.20 kg/m³



q _v m ³ /s	v m/s	p _{s1} Pa	Performance	
			C _E -	Class
0.887	0.9	10.7	0.213	3
1.289	1.3	19.7	0.227	3
1.905	1.9	38.4	0.240	3
2.808	2.8	76.7	0.251	3
3.995	4.0	149.2	0.256	3
Average			0.237	

Symbols and units

q_v Air flow rate, m³/s
 v Core velocity, m/s
 p_{s1} Static pressure of device, Pa
 C_E Entry loss coefficient, -