

In compliance with Regulation (EU) No 305/2011 of the European Parliament and of the Council of 9 March 2011 (the Construction Products Regulation or CPR), this certificate applies to the construction products

Natural smoke and heat exhaust ventilator

for fire safety use in natural smoke and heat exhaust systems, with specification and performance as specified on page 2-16 in this certificate.

Product name: Pyrodome Evolution Electrique

placed on the market under the name or trademark of

Skydôme

Entre deux villes
02270 Sons et Ronchères, France

and produced in the manufacturing plant

same as above

This certificate attests that all provisions concerning the assessment and verification of constancy of performance described in annex ZA of the standard

EN 12101-2:2003

under system 1 for the performance set out in this certificate are applied and that the factory production control conducted by the manufacturer is assessed to ensure the

constancy of performance of the construction product.

This certificate was first issued on 2020-09-13 and will remain valid as long as neither the harmonised standard, the construction product, the AVCP methods nor the manufacturing conditions in the plant are modified significantly, unless suspended or withdrawn by the notified product certification body.

Issued by notified body 0402.

The validity of this certificate can be verified at RISE homepage.



Martin Tillander
Director Product Certification

Specification

Dual purpose natural smoke and heat exhaust ventilator (NSHEV), intended for comfort ventilation as well as smoke and heat exhaust ventilation under fire conditions. The opening of the NSHEV is type B.

The NSHEV consists of an upstand and a single flap operated by an electrical actuator system. The upstand is made from galvanized steel and aluminium profiles with insulation made of expanded perlite. The frame of the flap is made from aluminium profiles and sheets. The fillings can be a flat sheet of polycarbonate glass or dome shaped polycarbonate up to 3 layers with or without a flat inside sheet of polycarbonate. The fillings can also be made of aluminium with insulation of polystyrene and with or without an inside sheet made of polycarbonate. See drawing 6 for details. The NSHEV also exists in special configuration with the actuator offset. The actuator is 250 mm from the edge.

The NSHEV is for roof mounting, and is tested with and without side wind.

Length (outer):	1175-2675 mm
Width (outer):	1375-2163 mm
Length (throat):	1000-2500 mm, 1000, 1100 and 1200 mm (offset configuration)
Width (throat):	1000-2000 mm 1000, 1100 and 1200 mm (offset configuration)
Height vertical upstand:	See drawing 1-6
Installation angle:	Up to 25° inclination if hinge parallel to slope and $A_a < 2 \text{ m}^2$ Up to 20° inclination if hinge parallel to slope and $A_a > 2 \text{ m}^2$ Up to 3° inclination if hinge perpendicular to slope
Opening angle (fire opening):	155°
Opening angle (comfort opening):	20°
Opening mechanism:	Electrical actuator
Opening mechanism, supplier and type:	Actulux A/S, SA Power, for voltage see table 1

Performance

Actuator	1 x SA Power	2 x SA Power
Aerodynamic free area	See annex 1-6	
Reliability	Re 1000	
Snow load	See table 1 for all sizes SL 250 (offset configuration)	
Low ambient temperature	T(-15)	
Wind load	WL 1500	WL 3000
Resistance to heat	B 300	

Material	Reaction to fire classification
Galvanized steel	A1
Aluminium	A1
Multiwalled polycarbonate (transparent)	B - s1, d0
Multiwalled polycarbonate (coloured)	B - s2, d0
Polystyrene	F
Expanded perlite	A1

Table 1: Snow load

Inner dimensions [mm]		SL125	SL250	SL 500	SL 800	SL 1000	SL 1500
Length	Width						
1000	1000	1	1	1	1	1	1
1000	1100	1	1	1	1	1	1
1000	1200	1	1	1	1	1	1
1000	1300	1	1	1	1	1	1
1000	1400	1	1	1	1	1	1
1000	1500	1	1	1	1	1	1
1000	1600	1	1	1	1	1	1
1000	1700	1	1	1	1	1	1
1000	1800	1	1	1	1	1	1
1000	1900	1	1	1	1	1	2
1000	2000	1	1	1	1	1	2
1100	1100	1	1	1	1	1	1
1200	1200	1	1	1	1	1	1
1200	1300	1	1	1	1	1	2
1200	1400	1	1	1	1	1	2
1200	1500	1	1	1	1	1	2
1200	1600	1	1	1	1	1	2
1200	1700	1	1	1	1	1	2
1200	1800	1	1	1	1	1	2
1200	1900	1	1	1	1	1	2
1200	2000	1	1	1	1	2	2
1200	2100	1	1	1	1	2	2
1200	2200	1	1	1	1	2	2
1200	2300	1	1	1	2	2	2
1200	2400	1	1	1	2	2	2
1200	2500	1	1	1	2	2	2
1400	1400	1	1	1	1	1	2
1400	1500	1	1	1	1	2	2
1400	1600	1	1	1	1	2	2
1400	1700	1	1	1	2	2	2
1400	1800	1	1	1	2	2	2
1400	1900	1	1	1	2	2	2
1400	2000	1	1	1	2	2	2
1500	1500	1	1	1	2	2	2
1600	1600	1	1	1	2	2	2
1700	1700	1	1	1	2	2	
1800	1800	1	1	2	2		
2000	1950	1	1	2	2		

- ① 1X SA power single 2A/1A (24V/48V)
- ① 1X SA power single 4A/2A (24V/48V)
- ① 1X SA power single 6A/3A (24V/48V)
- ② 2X SA power single 4A/2A (24V/48V)
- ② 2X SA power single 6A/3A (24V/48V)

Annex 1: Aerodynamic performance with upstand according to drawing 1

Length (m)	Width (m)	C _{v0} [-]	C _{vw} [-]	C _v [-]	A _a [m ²]
1.00	1.00	0.68	0.55	0.55	0.55
1.10	1.00	0.68	0.57	0.57	0.63
1.20	1.00	0.68	0.57	0.57	0.68
1.30	1.00	0.67	0.56	0.56	0.72
1.40	1.00	0.67	0.55	0.55	0.77
1.50	1.00	0.67	0.54	0.54	0.81
1.60	1.00	0.67	0.53	0.53	0.85
1.70	1.00	0.67	0.52	0.52	0.89
1.80	1.00	0.67	0.51	0.51	0.93
1.90	1.00	0.67	0.51	0.51	0.96
2.00	1.00	0.67	0.50	0.50	1.00
1.10	1.10	0.67	0.54	0.54	0.66
1.20	1.10	0.67	0.54	0.54	0.71
1.30	1.10	0.67	0.53	0.53	0.76
1.40	1.10	0.67	0.55	0.55	0.84
1.50	1.10	0.67	0.54	0.54	0.89
1.60	1.10	0.67	0.53	0.53	0.94
1.70	1.10	0.67	0.53	0.53	0.98
1.80	1.10	0.67	0.52	0.52	1.02
1.90	1.10	0.66	0.51	0.51	1.07
2.00	1.10	0.66	0.50	0.50	1.10
1.20	1.20	0.67	0.54	0.54	0.78
1.30	1.20	0.67	0.53	0.53	0.83
1.40	1.20	0.67	0.53	0.53	0.89
1.50	1.20	0.67	0.54	0.54	0.97
1.60	1.20	0.67	0.53	0.53	1.02
1.70	1.20	0.66	0.53	0.53	1.07
1.80	1.20	0.66	0.52	0.52	1.12
1.90	1.20	0.66	0.51	0.51	1.17
2.00	1.20	0.66	0.51	0.51	1.21
2.10	1.20	0.66	0.50	0.50	1.26
2.20	1.20	0.66	0.49	0.49	1.30
2.30	1.20	0.66	0.48	0.48	1.34
2.40	1.20	0.66	0.48	0.48	1.37
2.50	1.20	0.66	0.47	0.47	1.41
1.30	1.30	0.67	0.53	0.53	0.90
1.40	1.30	0.67	0.53	0.53	0.96
1.50	1.30	0.66	0.52	0.52	1.02
1.60	1.30	0.66	0.52	0.52	1.08
1.70	1.30	0.66	0.53	0.53	1.16
1.80	1.30	0.66	0.52	0.52	1.22
1.90	1.30	0.66	0.51	0.51	1.27
2.00	1.30	0.66	0.51	0.51	1.32
2.10	1.30	0.66	0.50	0.50	1.37
2.20	1.30	0.66	0.49	0.49	1.41
2.30	1.30	0.66	0.49	0.49	1.46
2.40	1.30	0.66	0.48	0.48	1.50
2.50	1.30	0.66	0.47	0.47	1.54
1.40	1.40	0.66	0.53	0.53	1.04
1.50	1.40	0.66	0.52	0.52	1.10
1.60	1.40	0.66	0.52	0.52	1.17
1.70	1.40	0.66	0.52	0.52	1.23
1.80	1.40	0.66	0.52	0.52	1.31
1.90	1.40	0.66	0.51	0.51	1.37
2.00	1.40	0.66	0.51	0.51	1.42
1.50	1.50	0.66	0.53	0.53	1.18
1.60	1.60	0.66	0.52	0.52	1.34
1.70	1.70	0.66	0.52	0.52	1.50
1.80	1.80	0.65	0.52	0.52	1.67
1.90	1.90	0.65	0.51	0.51	1.85
2.00	2.00	0.65	0.51	0.51	2.04

Annex 2: Aerodynamic performance with skewed upstand according to drawing 2

Length (m)	Width (m)	C _{v0} [-]	C _{vsw} [-]	C _v [-]	A _a [m ²]
1.13	1.13	0.68	0.55	0.55	0.70
1.23	1.13	0.68	0.55	0.55	0.76
1.33	1.13	0.68	0.55	0.55	0.83
1.43	1.13	0.68	0.55	0.55	0.89
1.53	1.13	0.68	0.55	0.55	0.95
1.63	1.13	0.68	0.55	0.55	1.01
1.73	1.13	0.68	0.55	0.55	1.08
1.83	1.13	0.68	0.55	0.55	1.14
1.93	1.13	0.68	0.55	0.55	1.20
2.03	1.13	0.68	0.55	0.55	1.26
2.13	1.13	0.68	0.55	0.55	1.32
1.13	1.23	0.68	0.55	0.55	0.76
1.23	1.23	0.68	0.55	0.55	0.83
1.33	1.23	0.68	0.55	0.55	0.90
1.43	1.23	0.68	0.55	0.55	0.96
1.53	1.23	0.68	0.55	0.55	1.03
1.63	1.23	0.68	0.55	0.55	1.10
1.73	1.23	0.68	0.55	0.55	1.17
1.83	1.23	0.68	0.55	0.55	1.23
1.93	1.23	0.68	0.55	0.55	1.30
2.03	1.23	0.69	0.55	0.55	1.37
2.13	1.23	0.69	0.55	0.55	1.44
1.33	1.33	0.68	0.55	0.55	0.97
1.43	1.33	0.68	0.55	0.55	1.04
1.53	1.33	0.68	0.55	0.55	1.11
1.63	1.33	0.68	0.55	0.55	1.18
1.73	1.33	0.69	0.55	0.55	1.26
1.83	1.33	0.69	0.55	0.55	1.33
1.93	1.33	0.69	0.55	0.55	1.40
2.03	1.33	0.69	0.55	0.55	1.47
2.13	1.33	0.69	0.51	0.51	1.45
2.23	1.33	0.69	0.51	0.51	1.50
2.33	1.33	0.69	0.50	0.50	1.56
2.43	1.33	0.69	0.50	0.50	1.61
2.53	1.33	0.69	0.49	0.49	1.66
2.63	1.33	0.69	0.49	0.49	1.71
1.43	1.43	0.68	0.54	0.54	1.11
1.53	1.43	0.68	0.54	0.54	1.19
1.63	1.43	0.69	0.54	0.54	1.27
1.73	1.43	0.69	0.54	0.54	1.35
1.83	1.43	0.69	0.54	0.54	1.42
1.93	1.43	0.69	0.54	0.54	1.50
2.03	1.43	0.69	0.54	0.54	1.58
2.13	1.43	0.69	0.51	0.51	1.57
2.23	1.43	0.69	0.51	0.51	1.62
2.33	1.43	0.69	0.51	0.51	1.68
2.43	1.43	0.69	0.50	0.50	1.74
2.53	1.43	0.69	0.50	0.50	1.80
2.63	1.43	0.69	0.49	0.49	1.85
1.53	1.53	0.69	0.54	0.54	1.27
1.63	1.53	0.69	0.54	0.54	1.35
1.73	1.53	0.69	0.54	0.54	1.43
1.83	1.53	0.69	0.54	0.54	1.52
1.93	1.53	0.69	0.54	0.54	1.60
2.03	1.53	0.69	0.54	0.54	1.68
2.13	1.53	0.69	0.52	0.52	1.68
1.63	1.63	0.69	0.54	0.54	1.43
1.73	1.73	0.69	0.54	0.54	1.61
1.83	1.83	0.69	0.54	0.54	1.80
1.93	1.93	0.69	0.53	0.53	1.99
2.03	2.03	0.69	0.53	0.53	2.19
2.13	2.13	0.69	0.53	0.53	2.40

Annex 3: Aerodynamic performance with skewed upstand according to drawing 3

Length (m)	Width (m)	C_{v0} [-]	C_{vw} [-]	C_v [-]	A_a [m ²]
1.20	1.20	0.55	0.44	0.44	0.63
1.30	1.20	0.56	0.44	0.44	0.69
1.40	1.20	0.56	0.45	0.45	0.75
1.50	1.20	0.56	0.45	0.45	0.81
1.60	1.20	0.57	0.46	0.46	0.88
1.70	1.20	0.57	0.46	0.46	0.94
1.80	1.20	0.57	0.46	0.46	1.00
1.90	1.20	0.58	0.47	0.47	1.07
2.00	1.20	0.58	0.47	0.47	1.13
2.10	1.20	0.58	0.48	0.48	1.20
2.20	1.20	0.58	0.48	0.48	1.27
1.20	1.30	0.56	0.44	0.44	0.69
1.30	1.30	0.56	0.44	0.44	0.75
1.40	1.30	0.57	0.45	0.45	0.82
1.50	1.30	0.57	0.45	0.45	0.88
1.60	1.30	0.57	0.46	0.46	0.95
1.70	1.30	0.58	0.46	0.46	1.02
1.80	1.30	0.58	0.46	0.46	1.09
1.90	1.30	0.58	0.47	0.47	1.16
2.00	1.30	0.58	0.47	0.47	1.23
2.10	1.30	0.59	0.48	0.48	1.30
2.20	1.30	0.59	0.48	0.48	1.37
1.40	1.40	0.57	0.45	0.45	0.88
1.50	1.40	0.57	0.45	0.45	0.95
1.60	1.40	0.58	0.46	0.46	1.02
1.70	1.40	0.58	0.46	0.46	1.09
1.80	1.40	0.58	0.46	0.46	1.17
1.90	1.40	0.59	0.47	0.47	1.24
2.00	1.40	0.59	0.47	0.47	1.32
2.10	1.40	0.59	0.48	0.48	1.40
2.20	1.40	0.59	0.44	0.44	1.35
2.30	1.40	0.59	0.44	0.44	1.40
2.40	1.40	0.60	0.43	0.43	1.46
2.50	1.40	0.60	0.43	0.43	1.51
2.60	1.40	0.60	0.43	0.43	1.57
2.70	1.40	0.60	0.43	0.43	1.63
1.50	1.50	0.58	0.45	0.45	1.02
1.60	1.50	0.58	0.46	0.46	1.09
1.70	1.50	0.59	0.46	0.46	1.17
1.80	1.50	0.59	0.46	0.46	1.25
1.90	1.50	0.59	0.47	0.47	1.33
2.00	1.50	0.59	0.47	0.47	1.42
2.10	1.50	0.60	0.48	0.48	1.50
2.20	1.50	0.60	0.44	0.44	1.46
2.30	1.50	0.60	0.44	0.44	1.52
2.40	1.50	0.60	0.44	0.44	1.58
2.50	1.50	0.60	0.44	0.44	1.64
2.60	1.50	0.60	0.44	0.44	1.70
2.70	1.50	0.61	0.44	0.44	1.76
1.60	1.60	0.59	0.46	0.46	1.17
1.70	1.60	0.59	0.46	0.46	1.25
1.80	1.60	0.59	0.46	0.46	1.34
1.90	1.60	0.59	0.47	0.47	1.42
2.00	1.60	0.60	0.47	0.47	1.51
2.10	1.60	0.60	0.48	0.48	1.60
2.20	1.60	0.60	0.45	0.45	1.58
1.70	1.70	0.59	0.46	0.46	1.33
1.80	1.80	0.60	0.46	0.46	1.50
1.90	1.90	0.60	0.47	0.47	1.69
2.00	2.00	0.61	0.47	0.47	1.89
2.10	2.10	0.62	0.48	0.48	2.10
2.20	2.20	0.62	0.48	0.48	2.32

Annex 4: Aerodynamic performance with skewed upstand according to drawing 4

Length (m)	Width (m)	C_{v0} [-]	C_{vw} [-]	C_v [-]	A_a [m ²]
1.04	1.04	0.63	0.53	0.53	0.57
1.14	1.04	0.63	0.53	0.53	0.63
1.24	1.04	0.63	0.53	0.53	0.68
1.34	1.04	0.63	0.53	0.53	0.74
1.44	1.04	0.63	0.53	0.53	0.79
1.54	1.04	0.63	0.53	0.53	0.85
1.64	1.04	0.63	0.53	0.53	0.90
1.74	1.04	0.63	0.53	0.53	0.96
1.84	1.04	0.63	0.54	0.54	1.03
1.94	1.04	0.63	0.54	0.54	1.09
2.04	1.04	0.63	0.54	0.54	1.15
1.04	1.14	0.63	0.52	0.52	0.61
1.14	1.14	0.63	0.52	0.52	0.67
1.24	1.14	0.63	0.51	0.51	0.72
1.34	1.14	0.63	0.51	0.51	0.78
1.44	1.14	0.63	0.51	0.51	0.84
1.54	1.14	0.63	0.51	0.51	0.90
1.64	1.14	0.63	0.52	0.52	0.96
1.74	1.14	0.63	0.52	0.52	1.03
1.84	1.14	0.63	0.52	0.52	1.09
1.94	1.14	0.62	0.52	0.52	1.16
2.04	1.14	0.62	0.53	0.53	1.22
1.24	1.24	0.63	0.50	0.50	0.77
1.34	1.24	0.63	0.49	0.49	0.82
1.44	1.24	0.63	0.50	0.50	0.88
1.54	1.24	0.63	0.50	0.50	0.95
1.64	1.24	0.63	0.50	0.50	1.02
1.74	1.24	0.62	0.50	0.50	1.08
1.84	1.24	0.62	0.50	0.50	1.15
1.94	1.24	0.62	0.51	0.51	1.22
2.04	1.24	0.62	0.51	0.51	1.29
2.14	1.24	0.62	0.51	0.51	1.36
2.24	1.24	0.62	0.51	0.51	1.43
2.34	1.24	0.62	0.52	0.52	1.50
2.44	1.24	0.62	0.52	0.52	1.57
2.54	1.24	0.62	0.52	0.52	1.64
1.34	1.34	0.63	0.49	0.49	0.87
1.44	1.34	0.63	0.48	0.48	0.93
1.54	1.34	0.62	0.48	0.48	0.99
1.64	1.34	0.62	0.48	0.48	1.06
1.74	1.34	0.62	0.49	0.49	1.13
1.84	1.34	0.62	0.49	0.49	1.20
1.94	1.34	0.62	0.49	0.49	1.28
2.04	1.34	0.62	0.49	0.49	1.35
2.14	1.34	0.62	0.50	0.50	1.42
2.24	1.34	0.62	0.50	0.50	1.49
2.34	1.34	0.62	0.50	0.50	1.57
2.44	1.34	0.62	0.50	0.50	1.64
2.54	1.34	0.63	0.50	0.50	1.72
1.44	1.44	0.62	0.47	0.47	0.97
1.54	1.44	0.62	0.47	0.47	1.03
1.64	1.44	0.62	0.47	0.47	1.10
1.74	1.44	0.62	0.47	0.47	1.18
1.84	1.44	0.62	0.47	0.47	1.25
1.94	1.44	0.62	0.47	0.47	1.33
2.04	1.44	0.62	0.48	0.48	1.40
1.54	1.54	0.62	0.46	0.46	1.08
1.64	1.64	0.62	0.44	0.44	1.18
1.74	1.74	0.62	0.42	0.42	1.28
1.84	1.84	0.63	0.41	0.41	1.38
1.94	1.94	0.64	0.39	0.39	1.48
2.04	2.04	0.64	0.38	0.38	1.58

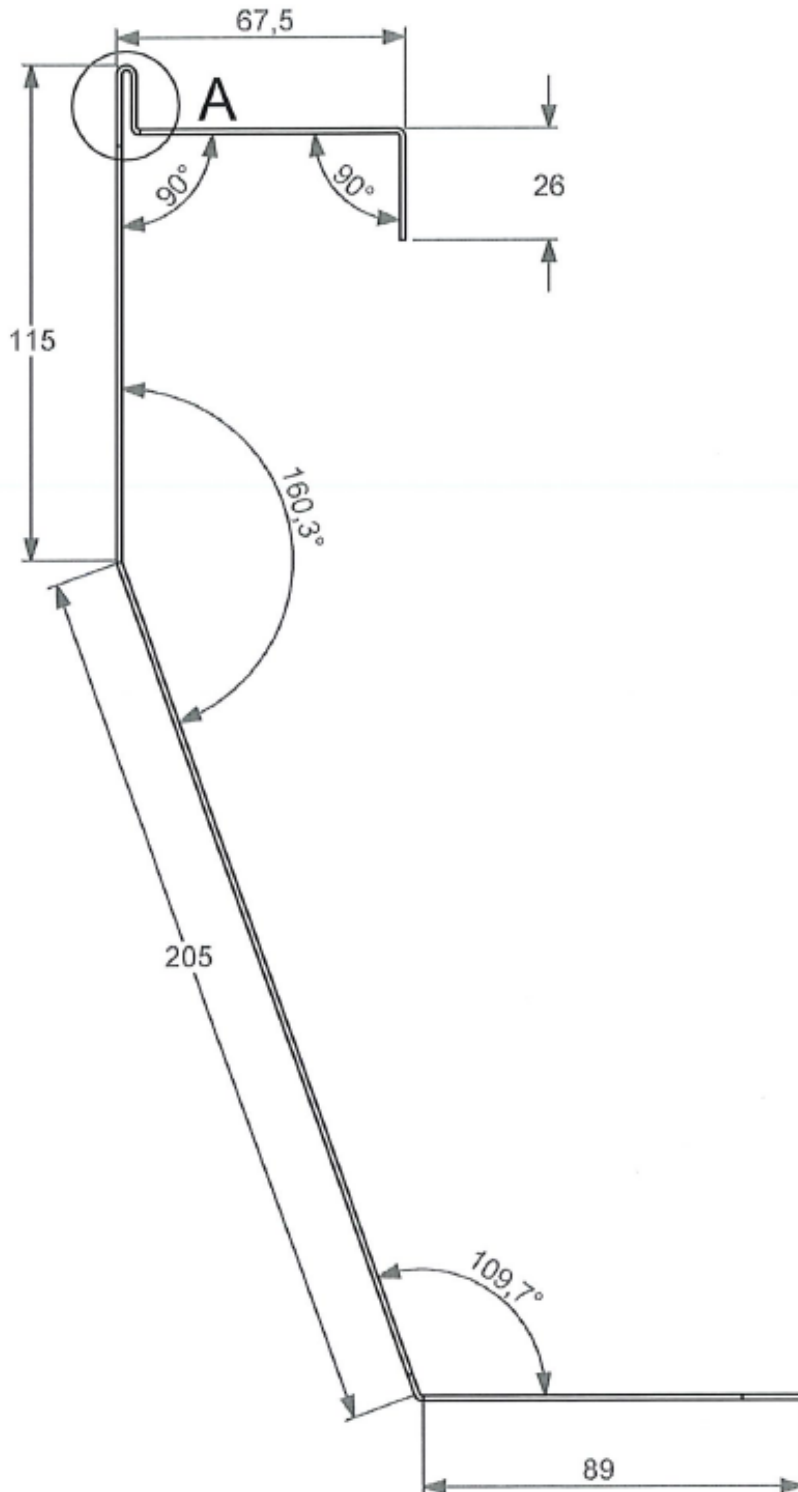
Annex 5: Aerodynamic performance with straight upstand according to drawing 5

Length (m)	Width (m)	C_{v0} [-]	C_{vw} [-]	C_v [-]	A_a [m ²]
1.00	1.00	0.63	0.53	0.53	0.53
1.10	1.00	0.63	0.53	0.53	0.58
1.20	1.00	0.63	0.53	0.53	0.64
1.30	1.00	0.63	0.53	0.53	0.69
1.40	1.00	0.63	0.53	0.53	0.74
1.50	1.00	0.63	0.53	0.53	0.8
1.60	1.00	0.63	0.53	0.53	0.85
1.70	1.00	0.63	0.53	0.53	0.90
1.80	1.00	0.63	0.54	0.54	0.97
1.90	1.00	0.63	0.54	0.54	1.03
2.00	1.00	0.63	0.54	0.54	1.08
1.00	1.10	0.63	0.51	0.51	0.57
1.10	1.10	0.63	0.51	0.51	0.62
1.20	1.10	0.63	0.51	0.51	0.67
1.30	1.10	0.63	0.51	0.51	0.73
1.40	1.10	0.63	0.51	0.51	0.79
1.50	1.10	0.63	0.51	0.51	0.85
1.60	1.10	0.63	0.52	0.52	0.91
1.70	1.10	0.63	0.52	0.52	0.97
1.80	1.10	0.63	0.52	0.52	1.03
1.90	1.10	0.62	0.52	0.52	1.09
2.00	1.10	0.62	0.53	0.53	1.16
1.20	1.20	0.63	0.50	0.50	0.72
1.30	1.20	0.63	0.49	0.49	0.77
1.40	1.20	0.63	0.49	0.49	0.83
1.50	1.20	0.63	0.50	0.50	0.89
1.60	1.20	0.63	0.50	0.50	0.96
1.70	1.20	0.62	0.50	0.50	1.02
1.80	1.20	0.62	0.50	0.50	1.09
1.90	1.20	0.62	0.51	0.51	1.15
2.00	1.20	0.62	0.51	0.51	1.22
2.10	1.20	0.62	0.51	0.51	1.29
2.20	1.20	0.62	0.51	0.51	1.35
2.30	1.20	0.62	0.52	0.52	1.42
2.40	1.20	0.62	0.52	0.52	1.49
2.50	1.20	0.62	0.52	0.52	1.56
1.30	1.30	0.63	0.48	0.48	0.81
1.40	1.30	0.63	0.48	0.48	0.87
1.50	1.30	0.62	0.48	0.48	0.93
1.60	1.30	0.62	0.48	0.48	1.00
1.70	1.30	0.62	0.48	0.48	1.07
1.80	1.30	0.62	0.49	0.49	1.14
1.90	1.30	0.62	0.49	0.49	1.21
2.00	1.30	0.62	0.49	0.49	1.28
2.10	1.30	0.62	0.49	0.49	1.35
2.20	1.30	0.62	0.50	0.50	1.42
2.30	1.30	0.62	0.50	0.50	1.49
2.40	1.30	0.62	0.50	0.50	1.56
2.50	1.30	0.62	0.50	0.50	1.63
1.40	1.40	0.62	0.47	0.47	0.91
1.50	1.40	0.62	0.46	0.46	0.97
1.60	1.40	0.62	0.46	0.46	1.04
1.70	1.40	0.62	0.47	0.47	1.11
1.80	1.40	0.62	0.47	0.47	1.18
1.90	1.40	0.62	0.47	0.47	1.25
2.00	1.40	0.62	0.47	0.47	1.33
1.50	1.50	0.62	0.45	0.45	1.01
1.60	1.60	0.62	0.43	0.43	1.11
1.70	1.70	0.62	0.41	0.41	1.20
1.80	1.80	0.62	0.40	0.40	1.29
1.90	1.90	0.62	0.38	0.38	1.39
2.00	2.00	0.62	0.37	0.37	1.48

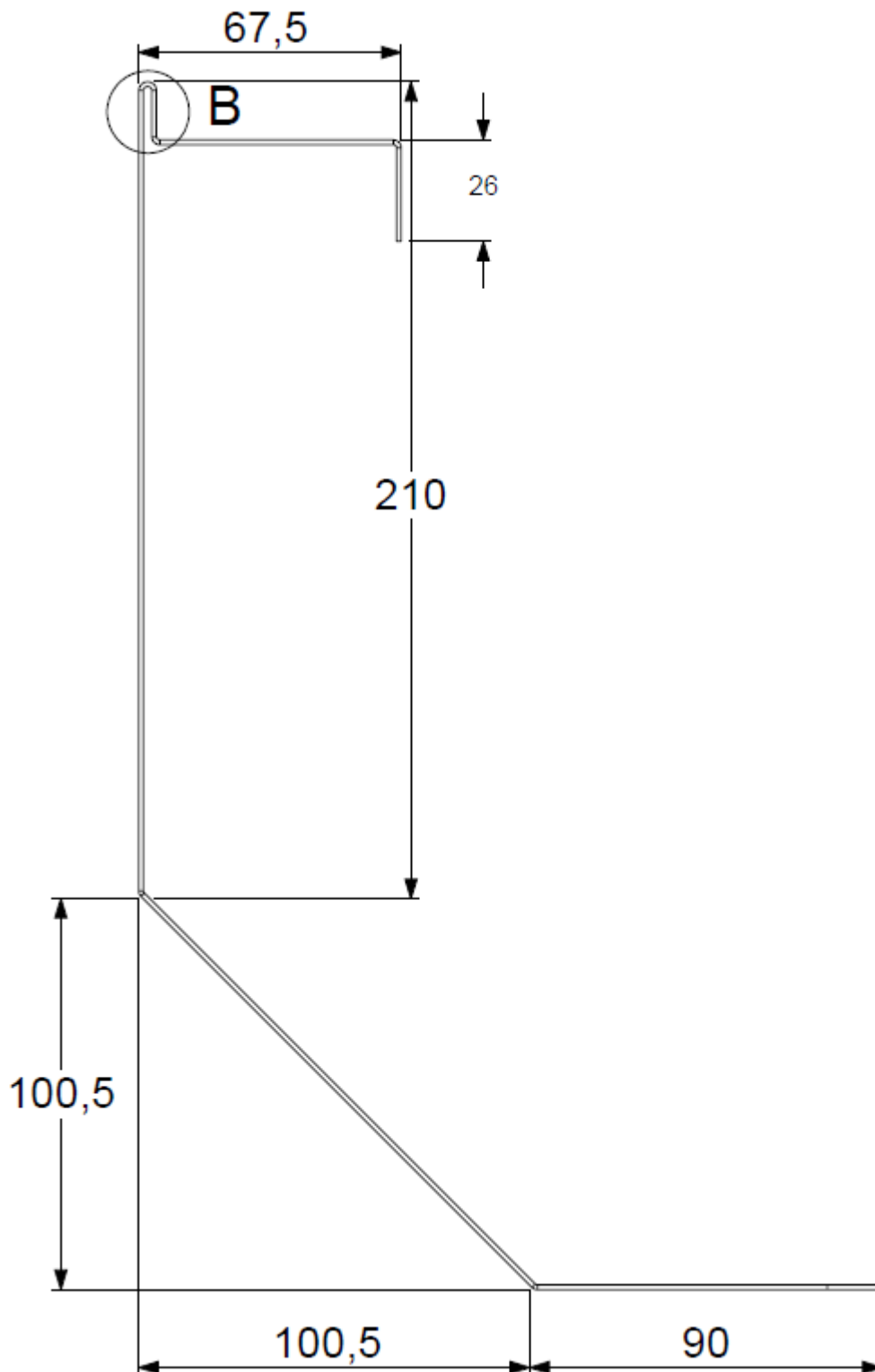
Drawing 1



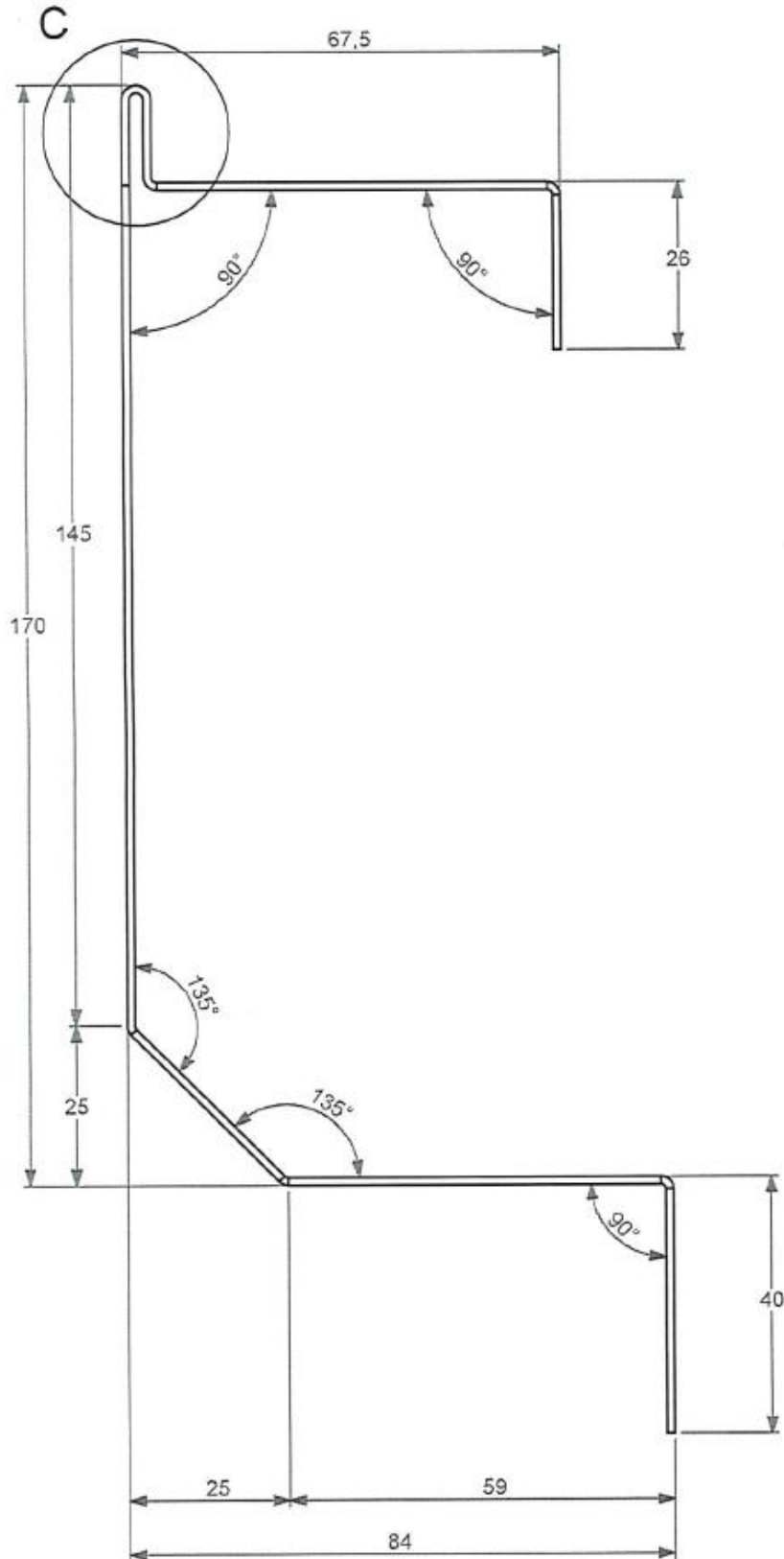
Drawing 2



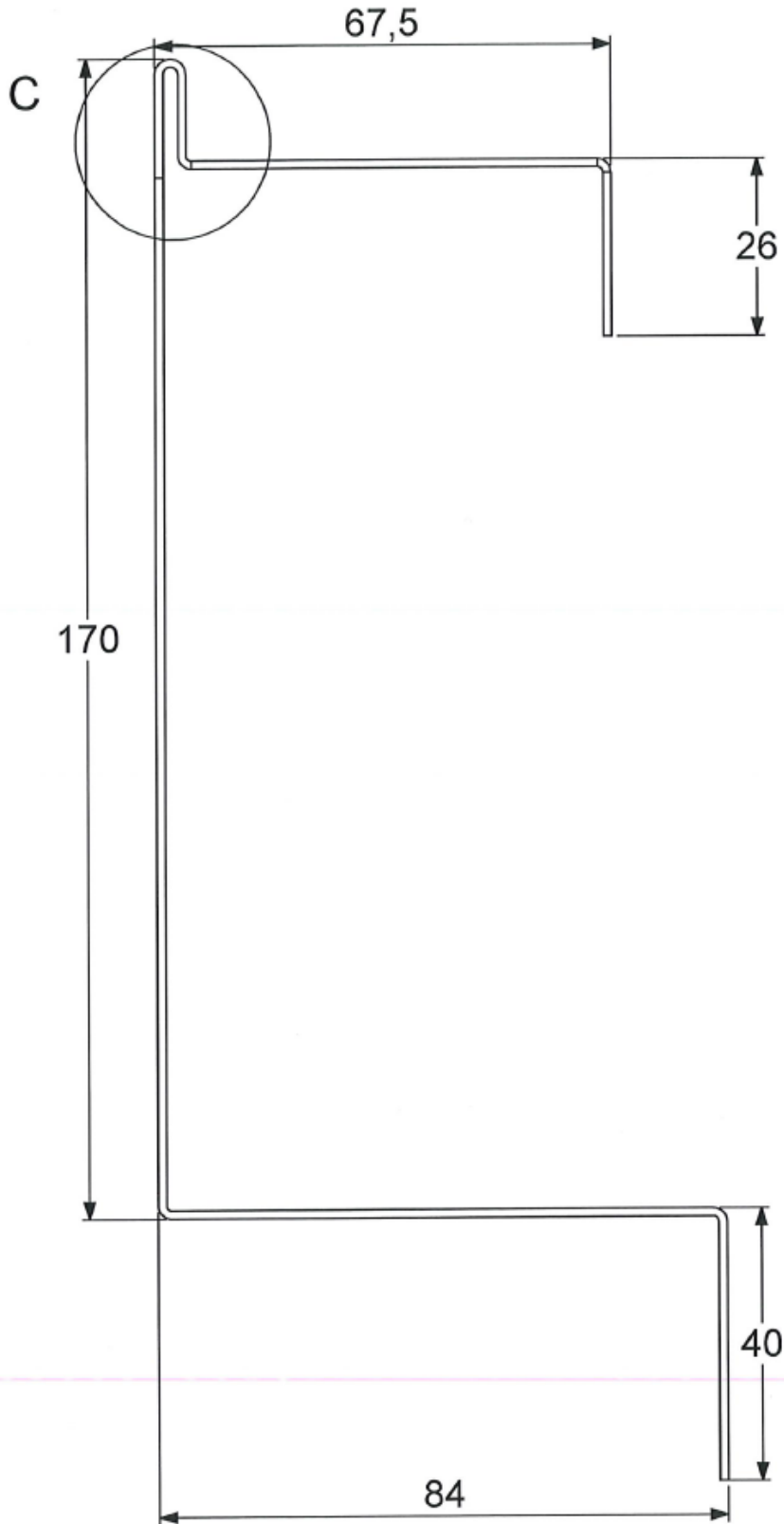
Drawing 3



Drawing 4



Drawing 5



Drawing 6

