

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
Laender Governments



European Technical Assessment

ETA-19/0452
of 29 July 2019

English translation prepared by DIBt - Original version in German language

General Part

Technical Assessment Body issuing the
European Technical Assessment:

Deutsches Institut für Bautechnik

Trade name of the construction product

Rodeca LBE

Product family
to which the construction product belongs

Self-supporting translucent roof and wall kits

Manufacturer

Rodeca GmbH
Freiherr-vom-Stein-Straße 165
45473 Mülheim-Ruhr
DEUTSCHLAND

Manufacturing plant

Rodeca GmbH
Freiherr-vom-Stein-Straße 165
45473 Mülheim-Ruhr
DEUTSCHLAND

This European Technical Assessment
contains

75 pages including 67 annexes which form an integral
part of this assessment

This European Technical Assessment is
issued in accordance with Regulation (EU)
No 305/2011, on the basis of

EAD 220072-00-0401

European Technical Assessment

ETA-19/0452

English translation prepared by DIBt

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Specific Part

1 Technical description of the product

1.1 Kit description and setup

The "Rodeca LBE" roof and wall kit is made up of components which are factory-made and assembled on site as a self-supporting translucent roof or wall kit.

The kit 'Rodeca LBE' is available in the following types: PC 2540-4, PC 2540-4-MC, PC 2540-6, PC 2540-7, PC 2540-10, PC 2540-10DX, PC 2600-40-U, PC 2550-10 und PC 2560-12.

An essential part of the kit are translucent PC multi-wall sheets in accordance with EN 16153, which can be connected to an area of any size by means of a joint on the long sides. The PC sheets are housed in aluminium covering profiles, which are optionally thermally separated by plastic insulating bars. The kit can be constructed as one-span system or, with additional intermediate supports transverse to the main bearing direction, as multi-span system. To withstand wind suction on continuous systems, they are held on internal supports by lift anchors.

The following components are used for the manufacture of the "Rodeca LBE" self-supporting translucent roof and wall kit

- translucent polycarbonate (PC) multi-wall sheets of thickness 40 mm (PC 2540-4, PC 2540-4-MC, PC 2540-6, PC 2540-7, PC 2540-10, PC 2540-10DX, PC 2600-40-7-U)
- translucent polycarbonate (PC) multi-wall sheets of thickness 50 mm (PC 2550-10)
- translucent polycarbonate (PC) multi-wall sheets of thickness 60 mm (PC 2560-12)
- polycarbonate (PC) connection profile (for kit 2600-40-7-U only)
- aluminium covering profiles
- aluminium lift anchors
- sealing profiles

The components and the system setup of the product are given in Annexes A 1.1 to A 1.3 and A 2.1 to A 2.4.

The material values, dimensions and tolerances of the roof kit not indicated in the annexes shall correspond to the values laid down in the technical documentation¹ of this European Technical Assessment.

¹

The technical documentation comprises all information of the holder of this ETA necessary for the production, installation and maintenance of the roof and wall kit; these are in particular the structural analysis, design drawings and the manufacturer's installation instructions. The part to be treated confidentially is deposited with Deutsches Institut für Bautechnik.

1.1.1 Multi-wall sheets

The following multi-wall sheets made from polycarbonate (PC) in accordance with the harmonised European standard EN 16153² are used.

Table 1:

Manufacturer	Trade name	Sheet height [mm]	Annex
Rodeca GmbH	PC 2540-4	40	A 4.1
Rodeca GmbH	PC 2540-4-MC	40	A 4.2
Rodeca GmbH	PC 2540-6	40	A 4.3
Rodeca GmbH	PC 2540-7	40	A 4.4
Rodeca GmbH	PC 2540-10	40	A 4.5
Rodeca GmbH	PC 2540-10DX	40	A 4.6
Rodeca GmbH	PC 2600-40-7-U	40	A 4.9
Rodeca GmbH	PC 2550-10	50	A 4.7
Rodeca GmbH	PC 2560-12	60	A 4.8

The multi-wall sheets have unfilled hollow chambers and weatherproofing on the outer surfaces which are unmistakably identified.

1.1.2 Covering Profiles

The aluminium profiles are made from the aluminium alloy EN AW-6060, T66 in accordance with EN 755-2 and have the dimensions given in Annexes A 3.1.1 to A 3.3.4.

For aluminium covering profiles, which are thermally separated, the plastic insulating bars consist of polyamide PA66 with a glass fiber content of about 25 % and are produced by extrusion of the molding material ISO 1874-PA66, EC2L, 14-025, GF25. This corresponds to the deposit at the Deutsches Institut für Bautechnik.

1.1.3 Lift anchors

The aluminium profiles are made from EN AW-6060 T66 in accordance with EN 755-2³ and have the dimensions given in Annexes A 3.4.1 to A 3.4.5.

1.1.4 Sealing profile

The sealing profiles are made from ethylene-propylene terpolymer (EPDM) or thermoplastic elastomer (TPE) and has the dimensions and Shore hardness in accordance with EN ISO 868⁴ given in Annex A 3.5.

1.1.5 Connection profile

The polycarbonate connection profile "380062" has the dimensions given in Annexes A 4.10. This corresponds to the deposit at the Deutsches Institut für Bautechnik.

1.1.6 "Rodeca LBE" roof and wall kit

The "Rodeca LB" of the type PC 2540-4, PC 2540-4-MC, PC 2540-6, PC 2540-7, PC 2540-10, PC 2540-10DX, PC 2550-10 and PC 2560-12 are made up of the components described in Section 1.1.1 to 1.1.4.

² EN 16153:2015-05 Light transmitting flat multiwall polycarbonate (PC) sheets for internal and external use in roofs, walls and ceilings - Requirements and test methods

³ EN 755-2:2016-10 Aluminium and aluminium alloys - Extruded rod/bar, tube and profiles - Part 2: Mechanical properties

⁴ EN ISO 868: 2003-10 Plastics and ebonite - Determination of indentation hardness by means of a durometer

The following combinations in accordance with table 2a are possible:

Table 2a:

Variation	Multi-wall sheet Annex	Covering profile Annex	Lift Anchor Annex	Support system
PC 2540-4	A 4.1	A 3.1	-	one-span
PC 2540-4 AF 50			A 3.4.1 No.49404050	multi-span
PC 2540-4 AF 100			A 3.4.1 No.494040100	multi-span
PC 2540-4-MC	A 4.2	A 3.1	-	one-span
PC 2540-4-MC AF 50			A 3.4.1 No.49404050	multi-span
PC 2540-4-MC AF 100			A 3.4.1 No.494040100	multi-span
PC 2540-6	A 4.3	A 3.1	-	one-span
PC 2540-6 AF 50			A 3.4.1 No.49404050	multi-span
PC 2540-6 AF 100			A 3.4.1 No.494040100	multi-span
PC 2540-7	A 4.4	A 3.1	-	one-span
PC 2540-7 AF 50			A 3.4.1 No.49404050	multi-span
PC 2540-7 AF 100			A 3.4.1 No.494040100	multi-span
PC 2540-10	A 4.5	A 3.1	-	one-span
PC 2540-10 AF 50			A 3.4.1 No.49404050	multi-span
PC 2540-10 AF 100			A 3.4.1 No.494040100	multi-span
PC 2540-10DX	A 4.6	A 3.1	-	one-span
PC 2540-10DX AF 60			A 3.4.2 No.4940X60	multi-span
PC 2540-10DX AF 120			A 3.4.2 No.4940X120	multi-span
PC 2550-10	A 4.7	A 3.2	-	one-span
PC 2550-10 AF 60			A 3.4.3 No.49405060	multi-span
PC 2550-10 AF 120			A 3.4.3 No.494050120	multi-span
PC 2560-12	A 4.8	A 3.3	-	one-span
PC 2560-12 AF 60			A 3.4.4 No.49405060	multi-span
PC 2560-12 AF 120			A 3.4.4 No.494050120	multi-span

The "Rodeca LBE" type PC 2600-40-7-U is made up of the components described in Section 1.1.1 to 1.1.5.

The following combination is possible:

Table 2b:

Variation	Multi-wall sheet Annex	Covering profile Annex	Lift Anchor Annex	Connection profile Annex	Support system
PC 2600-40-7-U AF49404000	A 4.9	A 3.1	A 3.4.5	A 4.10 No.49404000	multi-span

Table 3: Reaction to fire of the components

Multi-wall sheets	class Bs1-d0 in accordance with EN 13501-1 ⁵
Sealing profile/ Plastic insulating bars of aluminium covering profiles	No contribution to fire spread in accordance with EOTA TR 021 (Version June 2005)
Covering profiles, Lift anchors	Class A1 as per EN 13501-1 (without further testing as per Commission Decision 96/603/EC, as amended by Commission Decisions 2000/605/EC and 2003/424/EC)

2 Specification of the intended use in accordance with the applicable European Assessment Document

The self-supporting translucent roof and wall kit may be used in the roof or wall area for open or closed structures. The multi-wall sheets may be combined to form continuous areas of any length over a rectangular ground plan.

The pitch of a roof's covering is at least 5°. The roof and wall kit is not a walk-on system; it may not be used for bracing of the support structure.

The performance data given in Section 3 is only valid if the roof kit is used in compliance with the specifications and the conditions given in Annexes A to D.

The verifications and assessment methods on which this European Technical Assessment (hereinafter referred to as "ETA") is based lead to the assumption of a working life of the roof and wall kit of at least ten years. The indications given on the working life cannot be interpreted as a guarantee given by the manufacturer, but are to be regarded only as a means for choosing the right products in relation to the expected economically reasonable working life of the structure.

3 Performance of the product

3.1 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Fire performance in case of external fire exposure	No performance assessed
Reaction to fire	Class Bs1-d0 in accordance with EN 13501-1

3.2 Hygiene, health and the environment (BWR 3)

Essential characteristic	Performance
Watertightness ^a	Class 8A in accordance with EN 12208 ⁶
^{a)} Considered solely the tightness of tongue and groove connection	

⁵ EN 13501-1:2010-01

Fire classification of construction products and building elements - Part 1: Classification using data from reaction to fire tests

⁶ EN 12208:2000-06

Windows and doors - Watertightness - Classification

3.3 Safety and accessibility (BWR 4)

Essential characteristic	Performance
Characteristic structural resistance resulting from downward loads and uplift loads [kN/m ²]	See Annex B 2.1
Moment and support reaction at intermediate supports for multi-span systems	See Annex B 2.2
Material-dependent influencing factor for the effect of load duration	See Annex B 1.2
Material-dependent influencing factor for ageing and environmental effects	See Annex B 1.3
Material-dependent influencing factor for thermal effects	See Annex B 1.3
Deformation behaviour	See Annex B 1.4
Transverse tensile strength capacity	See Annex B 1.5
Resistance to damage by impact loads with a soft object (50 kg)	SB 0 (no requirement)
Resistance to impact loads from a hard object (250 g)	Passed in accordance with EN 16153

3.4 Protection against noise (BWR 5)

No performance assessed

3.5 Energy economy and heat retention (BWR 6)

3.5.1 Thermal resistance

Essential characteristic	Performance
Thermal transmittance coefficient	See Annex C

3.5.2 Air permeability

Essential characteristic	Performance
Air permeability ^a	Class 4 in accordance with EN 12207 ⁷
^{a)} Considered solely the tightness of tongue and groove connection	

3.5.3 Spectral characteristics

No performance assessed

3.5.4 Total solar energy transmittance

No performance assessed

4 Assessment and verification of constancy of performance (AVCP) system applied, with reference to its legal base

According to the European Assessment Document (EAD) 220072-00-0401, the legal basis is as follows: 98/600/EC

The system to be applied is: 3

⁷

EN 12207:2017-03

Windows and doors - Air permeability - Classification

5 Technical details necessary for the implementation of the AVCP system, as provided for in the applicable EAD

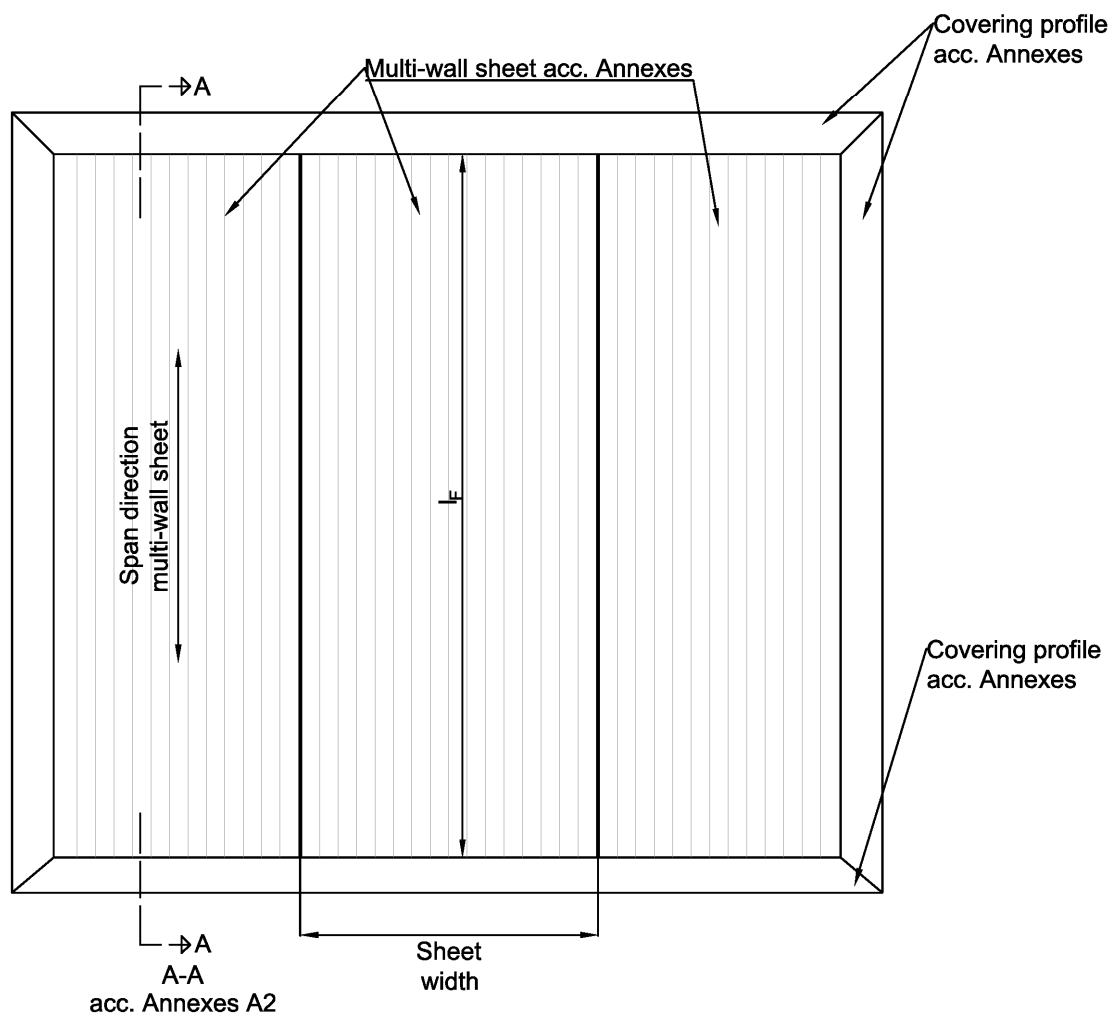
Technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with Deutsches Institut für Bautechnik.

Issued in Berlin on 29 July 2019 by Deutsches Institut für Bautechnik

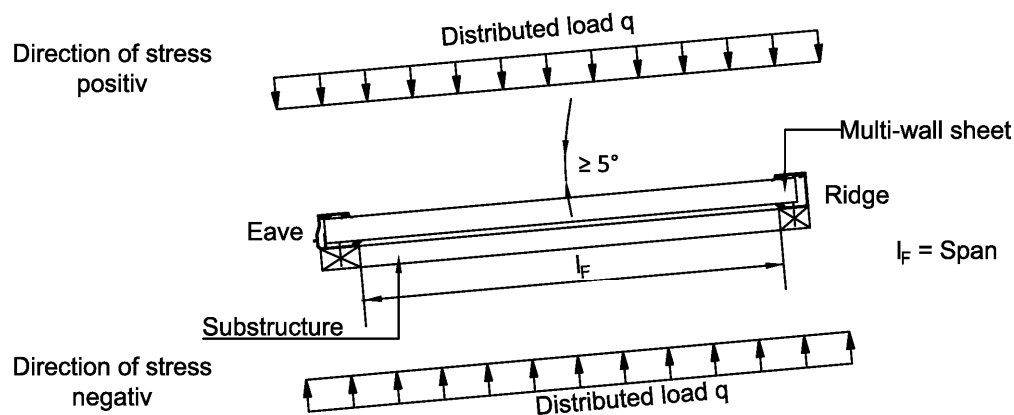
BD Dipl.-Ing. Andreas Kummerow
Head of Department

beglaubigt:
Wachner

Front view roof and wall -single-span-system-



Schematic figure longitudinal section roof

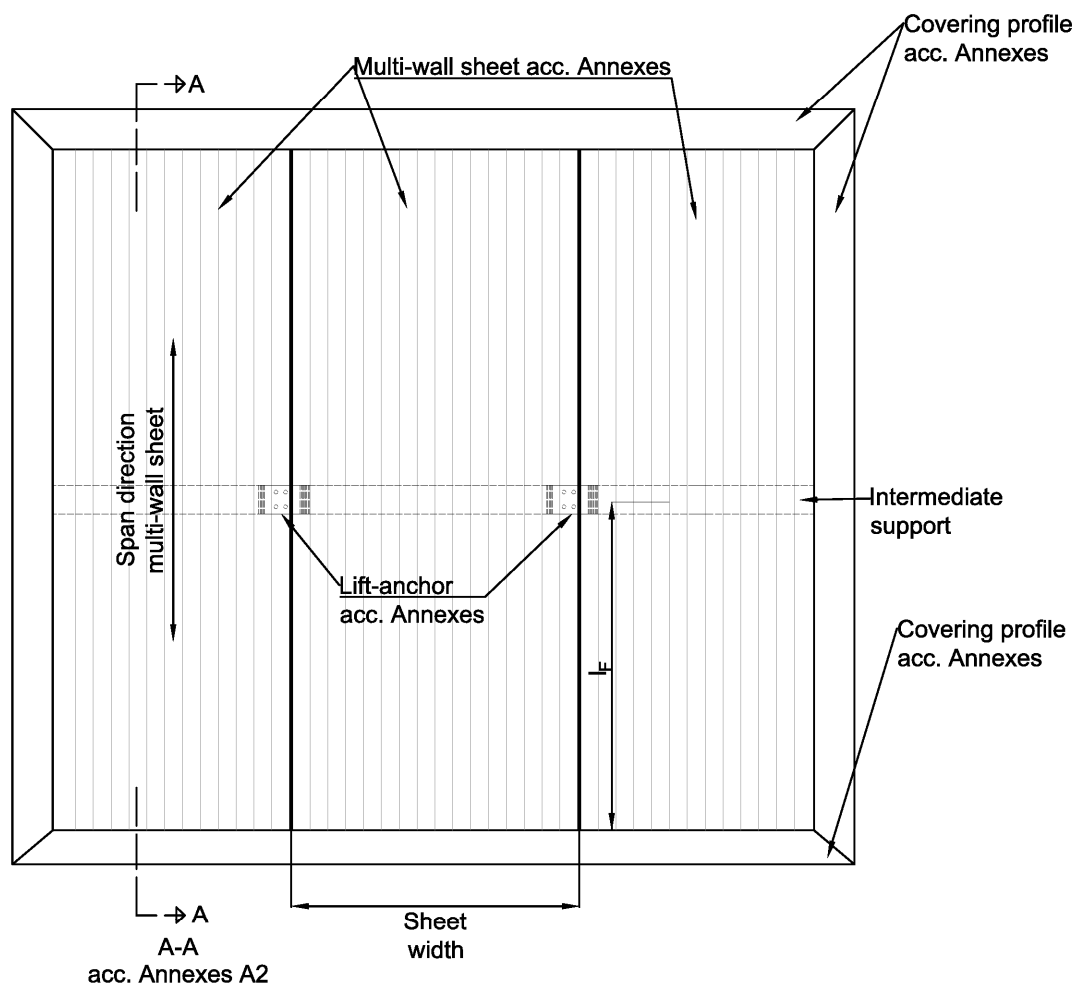


Rodeca LBE

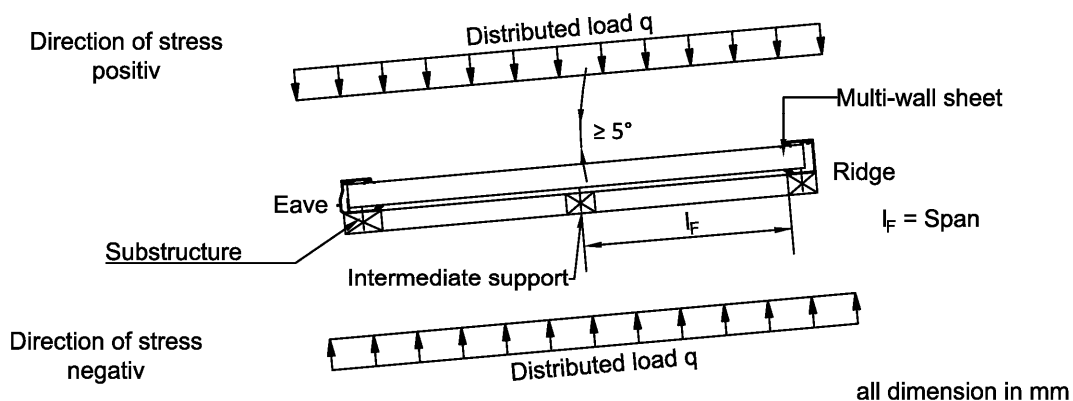
Assembly situation one-span-system

Annex A 1.1

Front view roof and wall -continuous-span-system-



Schematic figure longitudinal section roof

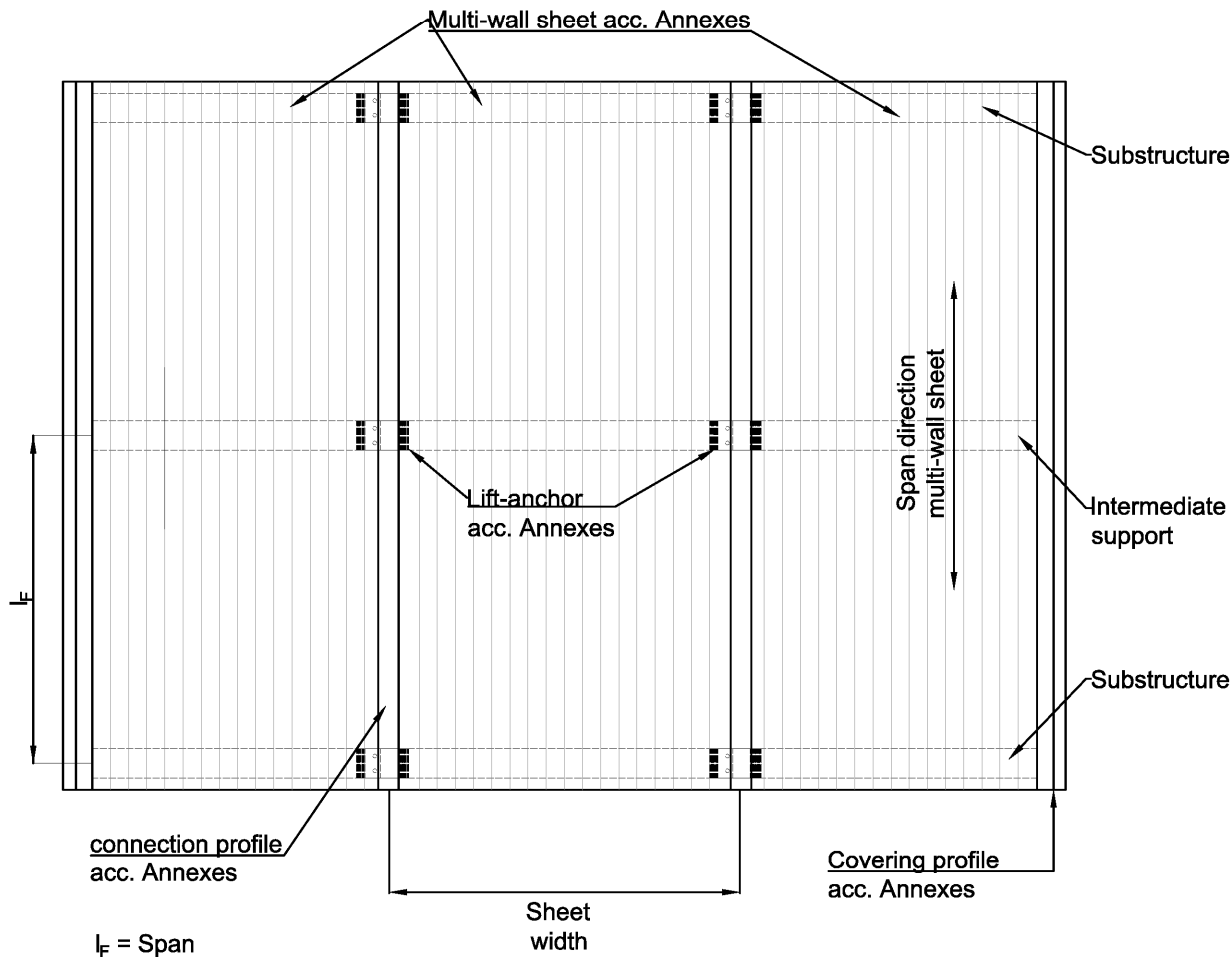


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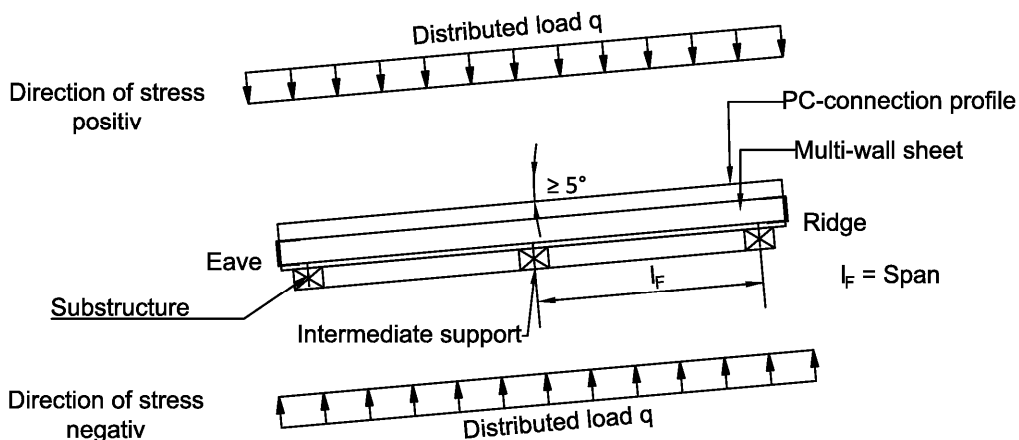
Assembly situation multi-span-system

Annex A 1.2

Front view roof and wall -continuous-span-system-



Schematic figure longitudinal section roof



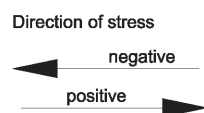
all dimension in mm

Rodeca LBE

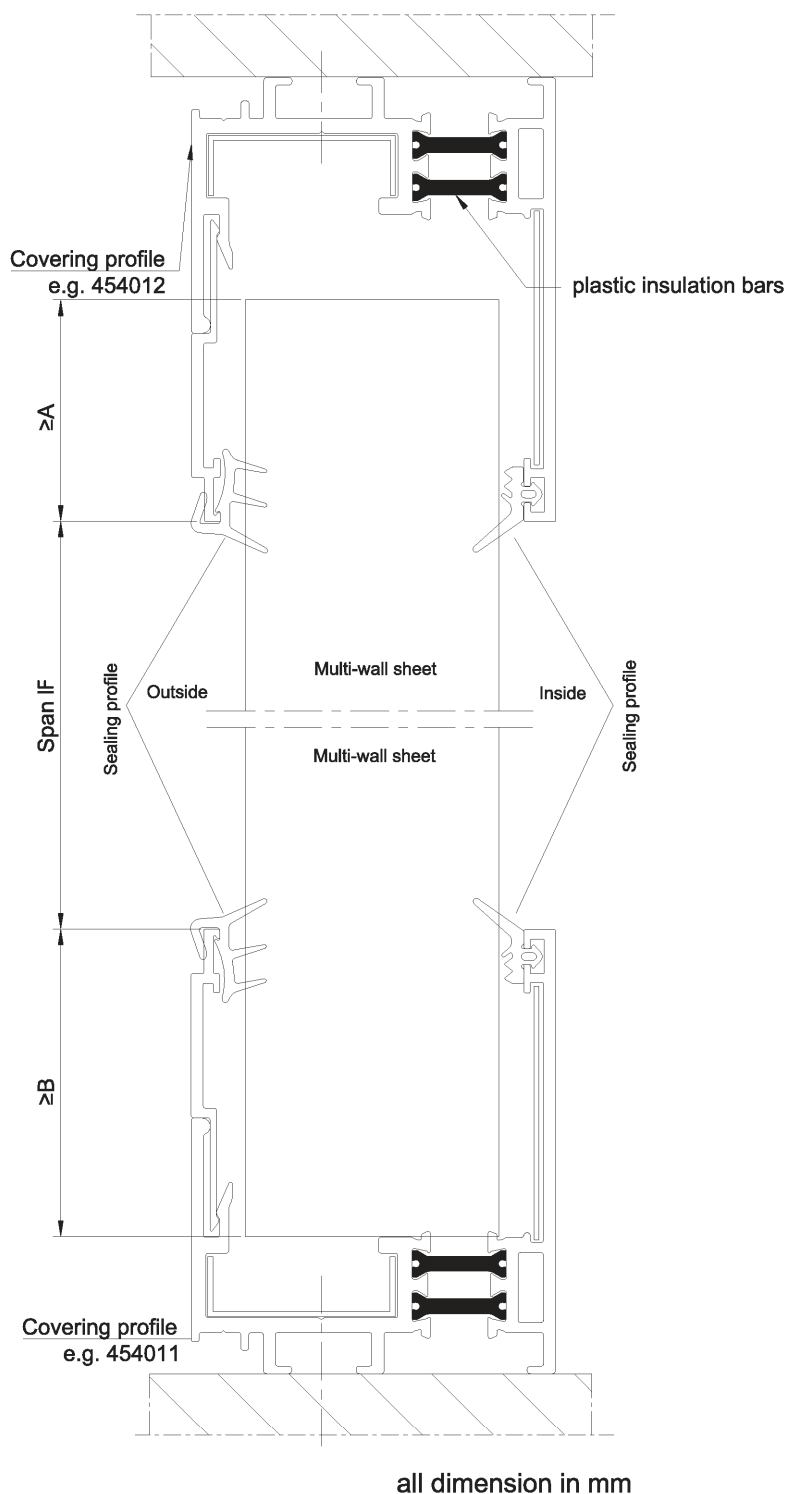
Assembly situation multi-span-system (with connection profile)

Annex A 1.3

Profile no.	Annex	Thickness of multi-wall sheet	Dimension "A"
414002	3.1.3	40 mm	≥35 mm
414012	3.1.4	40 mm	≥35 mm
420040	3.1.6	40 mm	≥35 mm
420080	3.1.7	40 mm	≥35 mm
454002	3.1.9	40 mm	≥35 mm
454012	3.1.10	40 mm	≥35 mm
415002	3.2.3	50 mm	≥40 mm
415012	3.2.2	50 mm	≥40 mm
455002	3.2.6	50 mm	≥40 mm
455012	3.2.5	50 mm	≥40 mm
456002	3.3.4	60 mm	≥40 mm
456012	3.3.3	60 mm	≥40 mm



Profile no.	Annex	Thickness of multi-wall sheet	Dimension "B"
414001	3.1.3	40 mm	≥20 mm
414011	3.1.4	40 mm	≥20 mm
420031	3.1.5	40 mm	≥20 mm
454001	3.1.9	40 mm	≥20 mm
454011	3.1.10	40 mm	≥20 mm
415001	3.2.3	50 mm	≥40 mm
415011	3.2.2	50 mm	≥40 mm
455001	3.2.6	50 mm	≥40 mm
455011	3.2.5	50 mm	≥40 mm
456001	3.3.4	60 mm	≥40 mm
456011	3.3.3	60 mm	≥40 mm



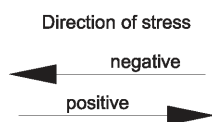
Rodeca LBE

Support condition wall installation
Example for assembly in reveal

Annex A 2.1

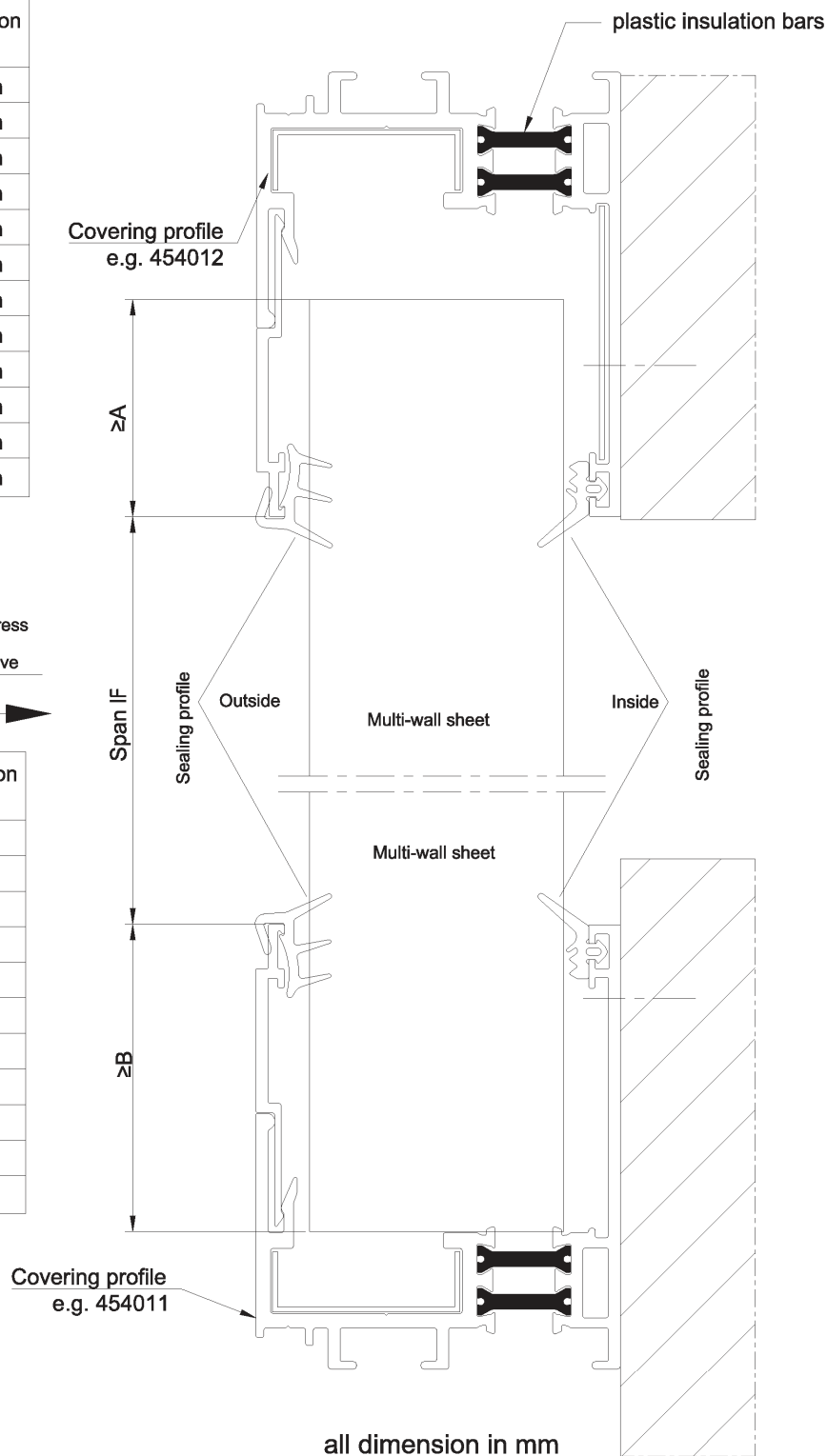
Profile no.	Annex	Thickness of multi-wall sheet	Dimension "A"
414002	3.1.3	40 mm	≥35 mm
414012	3.1.4	40 mm	≥35 mm
420040	3.1.6	40 mm	≥35 mm
420080	3.1.7	40 mm	≥35 mm
454002	3.1.9	40 mm	≥35 mm
454012	3.1.10	40 mm	≥35 mm
415002	3.2.3	50 mm	≥40 mm
415012	3.2.2	50 mm	≥40 mm
455002	3.2.6	50 mm	≥40 mm
455012	3.2.5	50 mm	≥40 mm
456002	3.3.4	60 mm	≥40 mm
456012	3.3.3	60 mm	≥40 mm

Optional support transomprofile Annex A 2.3



Profile no.	Annex	Thickness of multi-wall sheet	Dimension "B"
414001	3.1.3	40 mm	≥20 mm
414011	3.1.4	40 mm	≥20 mm
420031	3.1.5	40 mm	≥20 mm
454001	3.1.9	40 mm	≥20 mm
454011	3.1.10	40 mm	≥20 mm
415001	3.2.3	50 mm	≥40 mm
415011	3.2.2	50 mm	≥40 mm
455001	3.2.6	50 mm	≥40 mm
455011	3.2.5	50 mm	≥40 mm
456001	3.3.4	60 mm	≥40 mm
456011	3.3.3	60 mm	≥40 mm

Optional support transomprofile Annex A 2.3

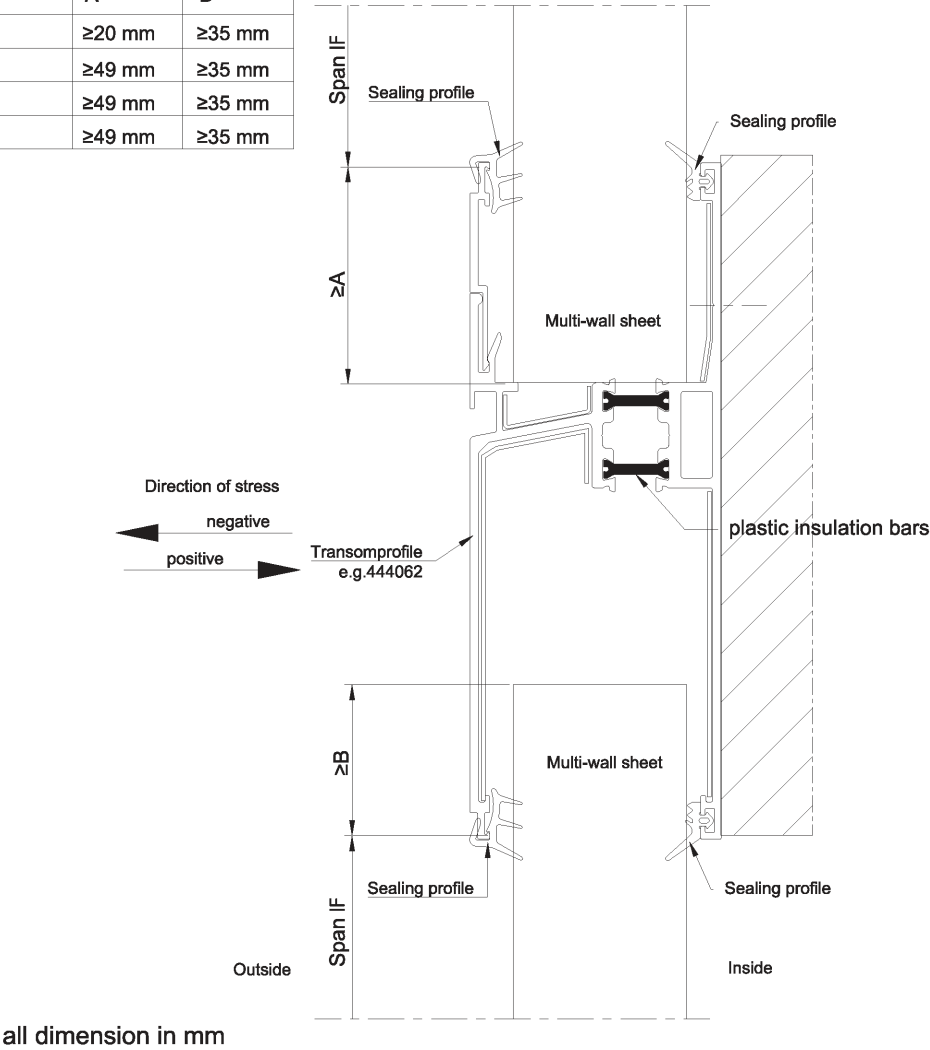


Rodeca LBE

Support condition wall and roof installation
Example curtain wall installation

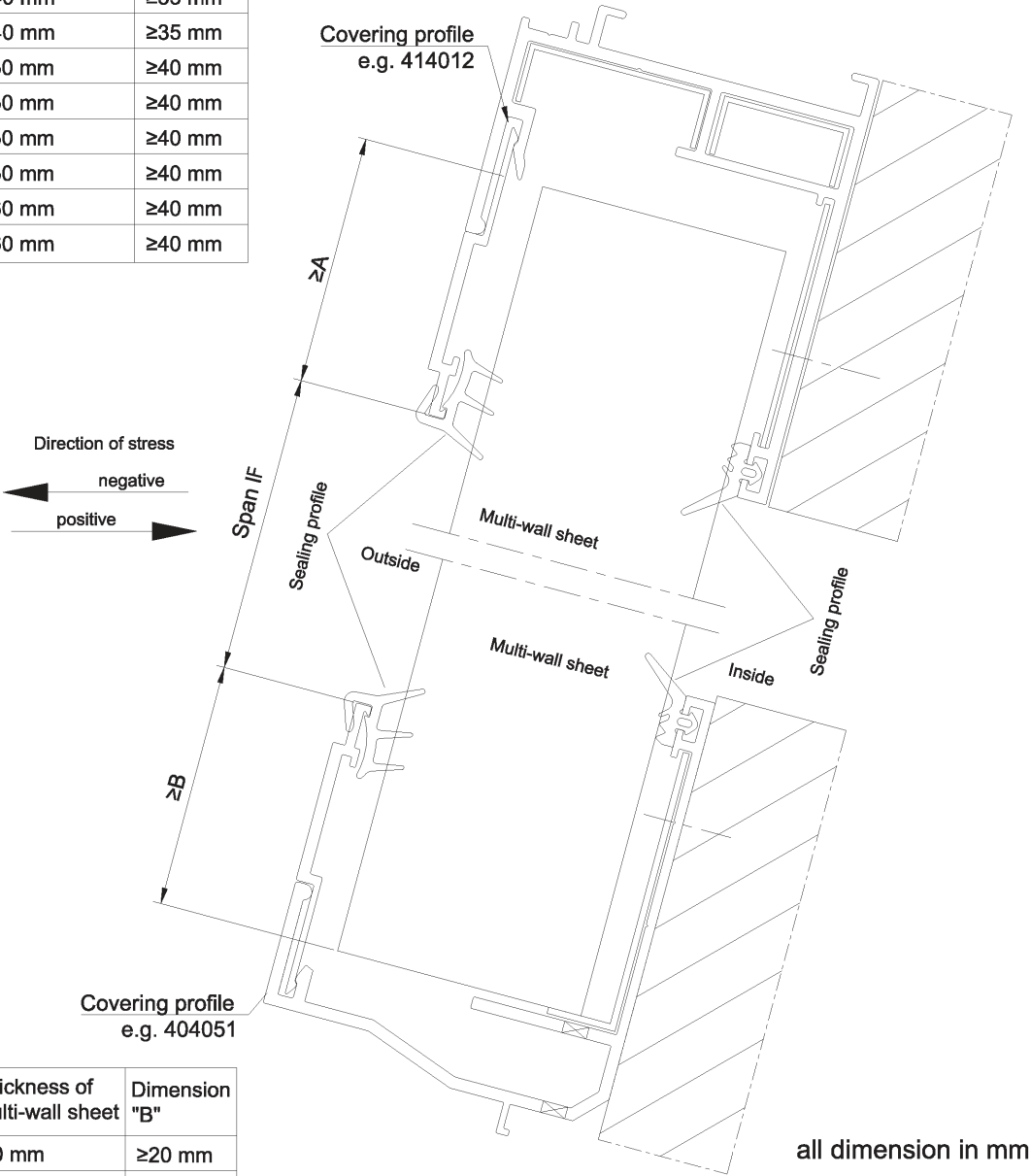
Annex A 2.2

Profile no.	Annex	Thickness of multi-wall sheet	Dimension "A"	Dimension "B"
404062	3.1.2	40 mm	≥20 mm	≥35 mm
444062	3.1.8	40 mm	≥49 mm	≥35 mm
445062	3.2.4	50 mm	≥49 mm	≥35 mm
446062	3.3.2	60 mm	≥49 mm	≥35 mm



Rodeca LBE	Annex A 2.3
Support condition wall installation Example installation transomprofile	

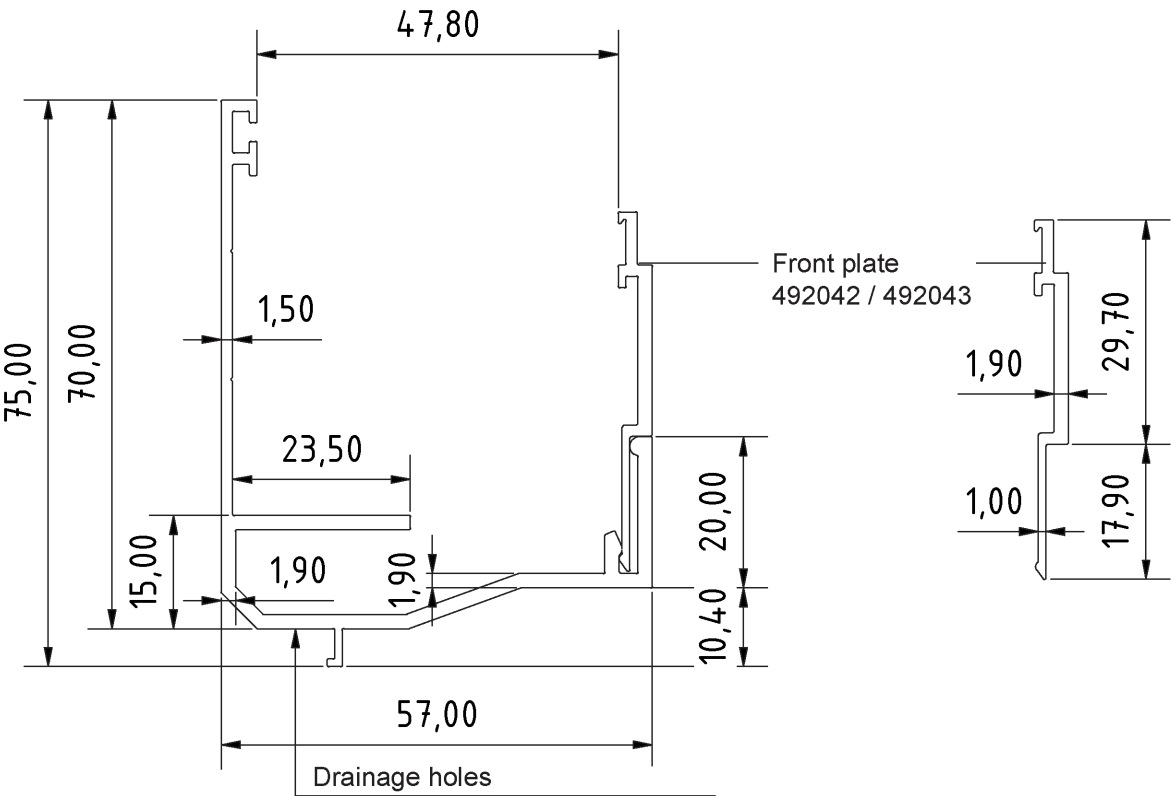
Profile no.	Annex	Thickness of multi-wall sheet	Dimension "A"
414002	3.1.3	40 mm	≥35 mm
414012	3.1.4	40 mm	≥35 mm
420040	3.1.6	40 mm	≥35 mm
420080	3.1.7	40 mm	≥35 mm
454002	3.1.9	40 mm	≥35 mm
454012	3.1.10	40 mm	≥35 mm
415002	3.2.3	50 mm	≥40 mm
415012	3.2.2	50 mm	≥40 mm
455002	3.2.6	50 mm	≥40 mm
455012	3.2.5	50 mm	≥40 mm
456002	3.3.4	60 mm	≥40 mm
456012	3.3.3	60 mm	≥40 mm



Profil no.	Annex	Thickness of multi-wall sheet	Dimension "B"
404051	3.1.1	40 mm	≥20 mm
405051	3.2.1	50 mm	≥40 mm
406051	3.3.1	60 mm	≥40 mm

Rodeca LBE	Annex A 2.4
Support condition wall and roof installation Example inclined wall / roof	

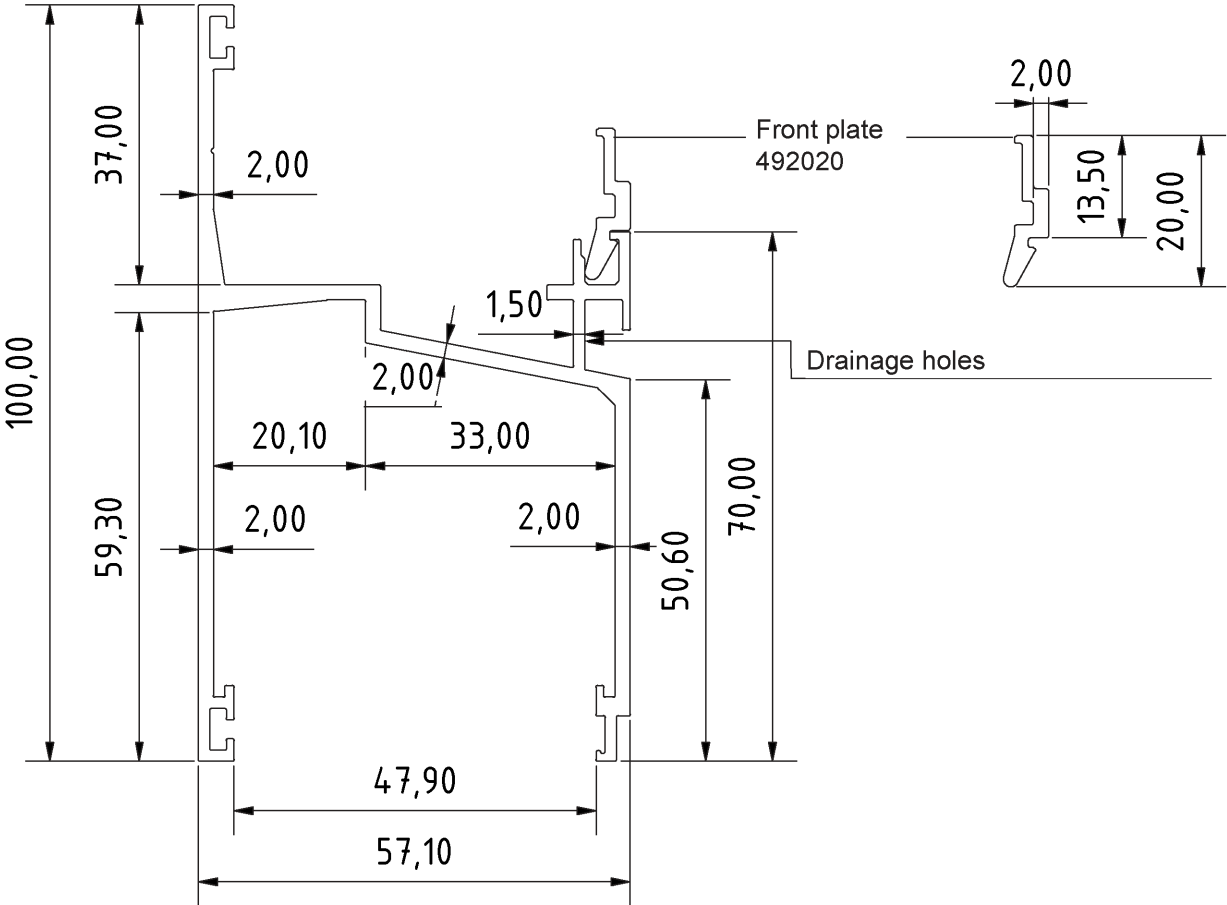
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All dimension in mm
Material Aluminium EN6060 T66
Tolerances acc. EN 755-9

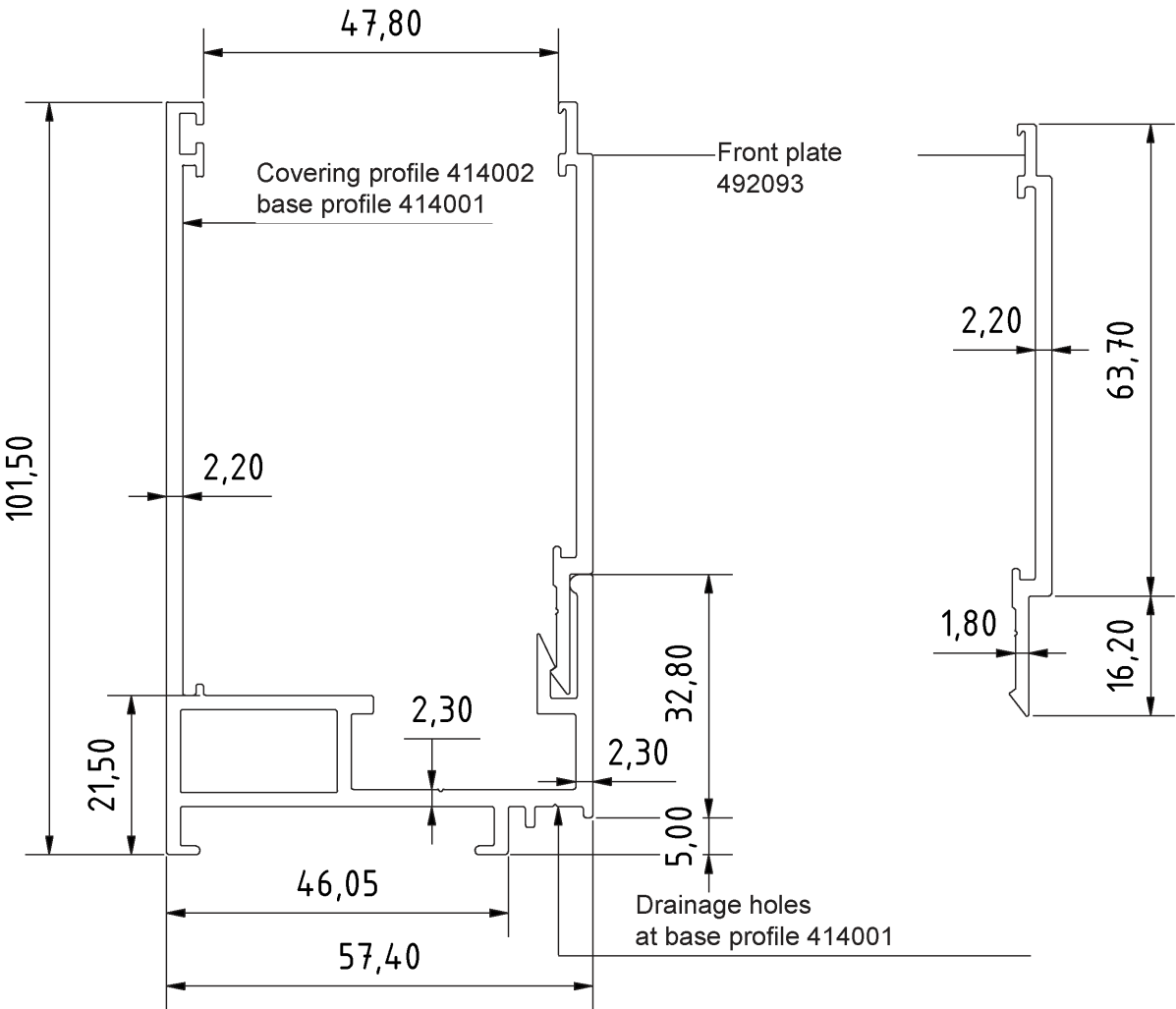
Rodeca LBE	Annex A 3.1.1
Covering base profile 404051 Front plate A492042 / 492043 For thickness of multi-wall sheet of 40 mm	

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All dimension in mm
Material Aluminium EN6060 T66
Tolerances acc. EN 755-9

Rodeca LBE	Annex A 3.1.2
Transom profile 404062 Front plate 492020 For thickness of multi-wall sheet of 40 mm	

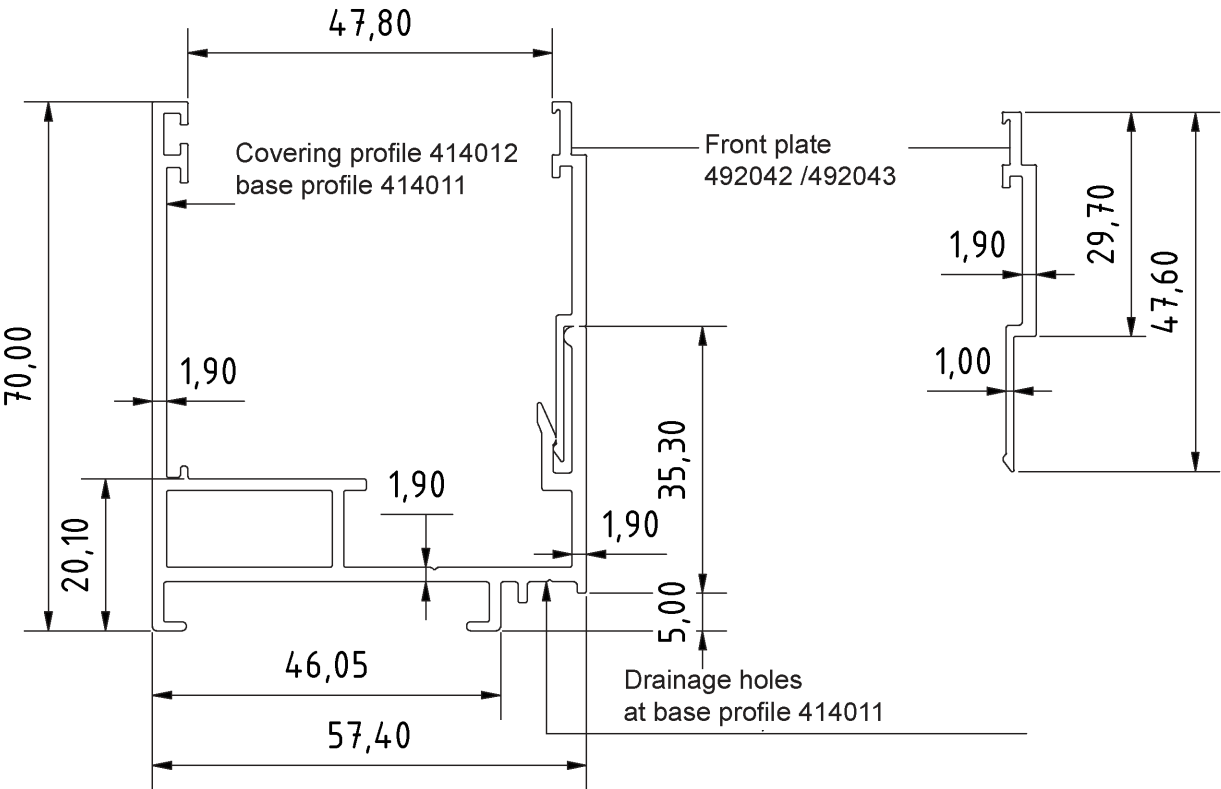


All dimension in mm
Material Aluminium EN6060 T66
Tolerances acc. EN 755-9

Rodeca LBE

Covering base profile 414001/ covering profile 414002
Front plate 492093
For thickness of multi-wall sheet of 40 mm

Annex A 3.1.3

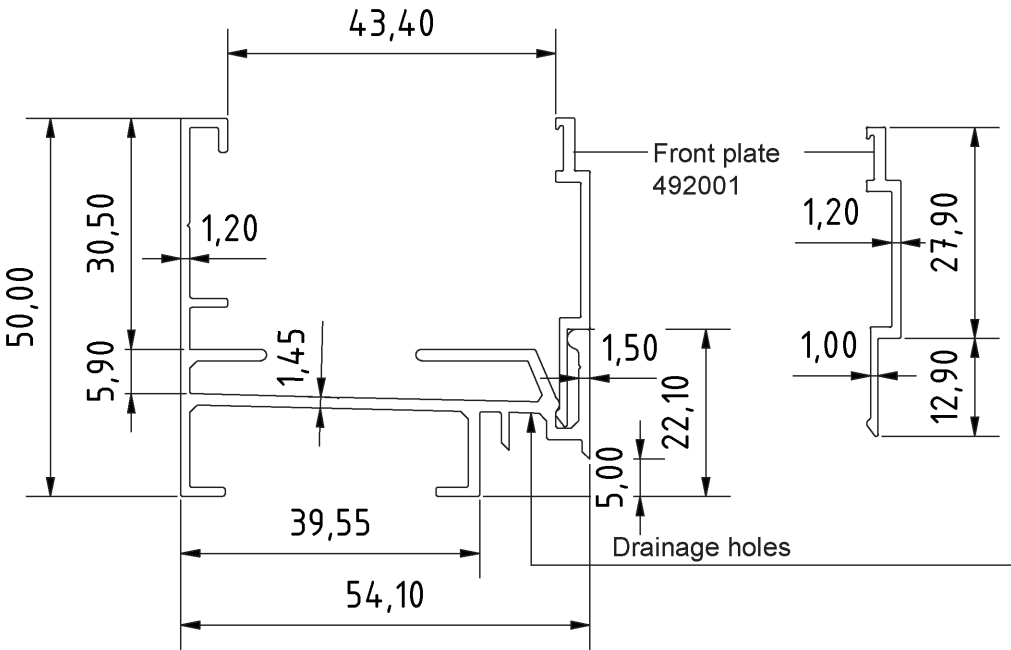


All dimension in mm
Material Aluminium EN6060 T66
Tolerances acc. EN 755-9

Rodeca LBE

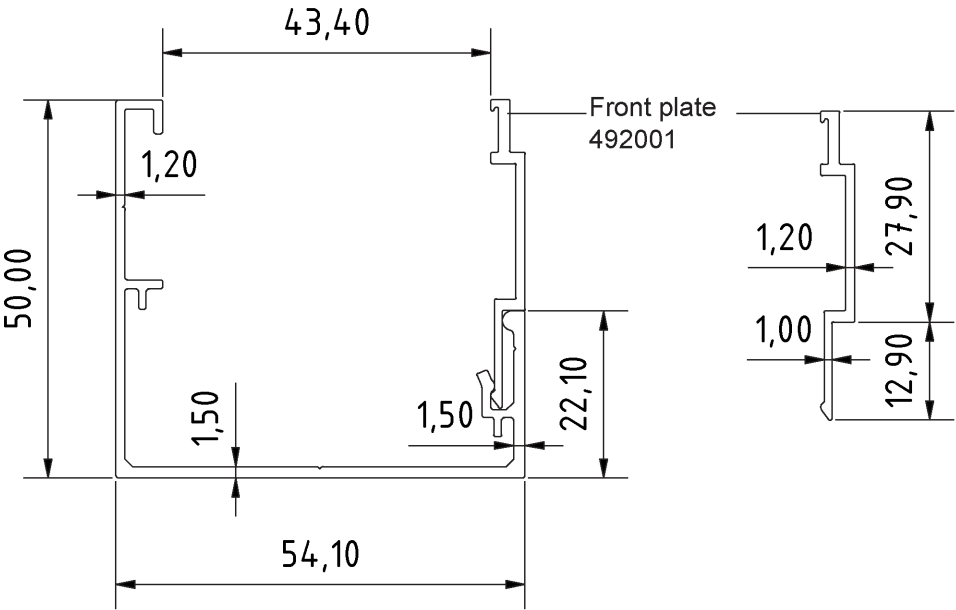
Coverling base profile 414011 / covering profile 414012
Front plate 492042 / 492043
For thickness of multi-wall sheet of 40 mm

Annex A 3.1.4



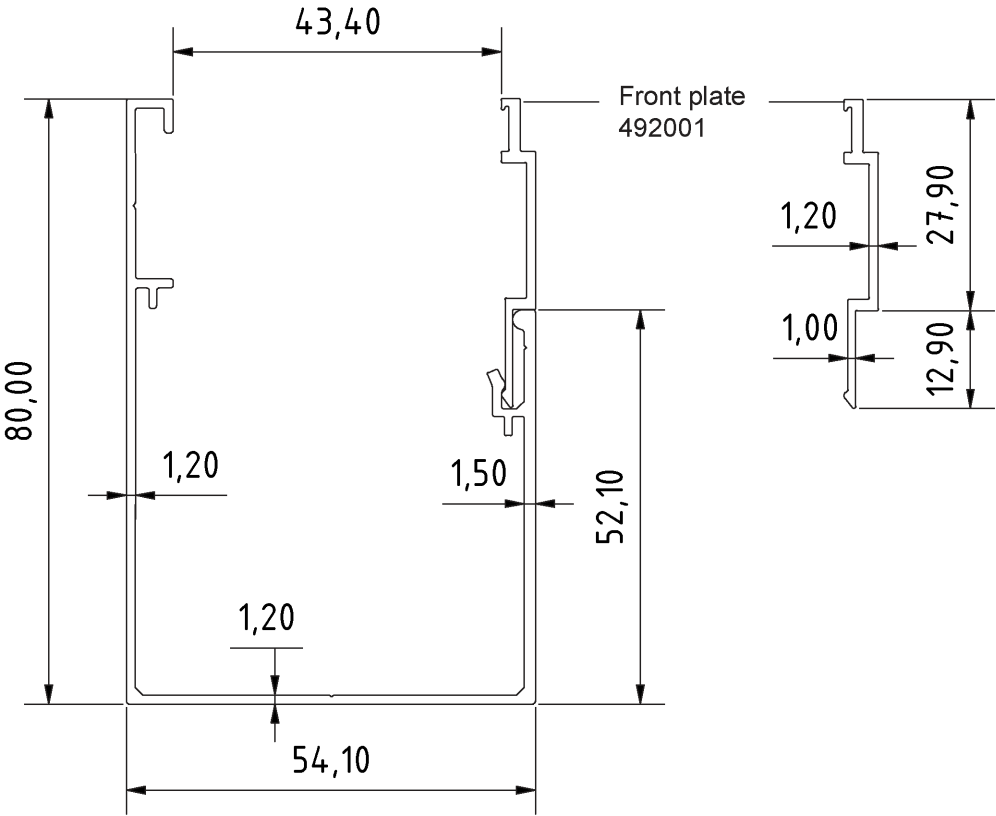
All dimension in mm
Material Aluminium EN6060 T66
Tolerances acc. EN 755-9

Rodeca LBE	Annex A 3.1.5
Covering base profile 420031 Front plate 492001 For thickness of multi-wall sheet of 40 mm	



All dimension in mm
Material Aluminium EN6060 T66
Tolerances acc. EN 755-9

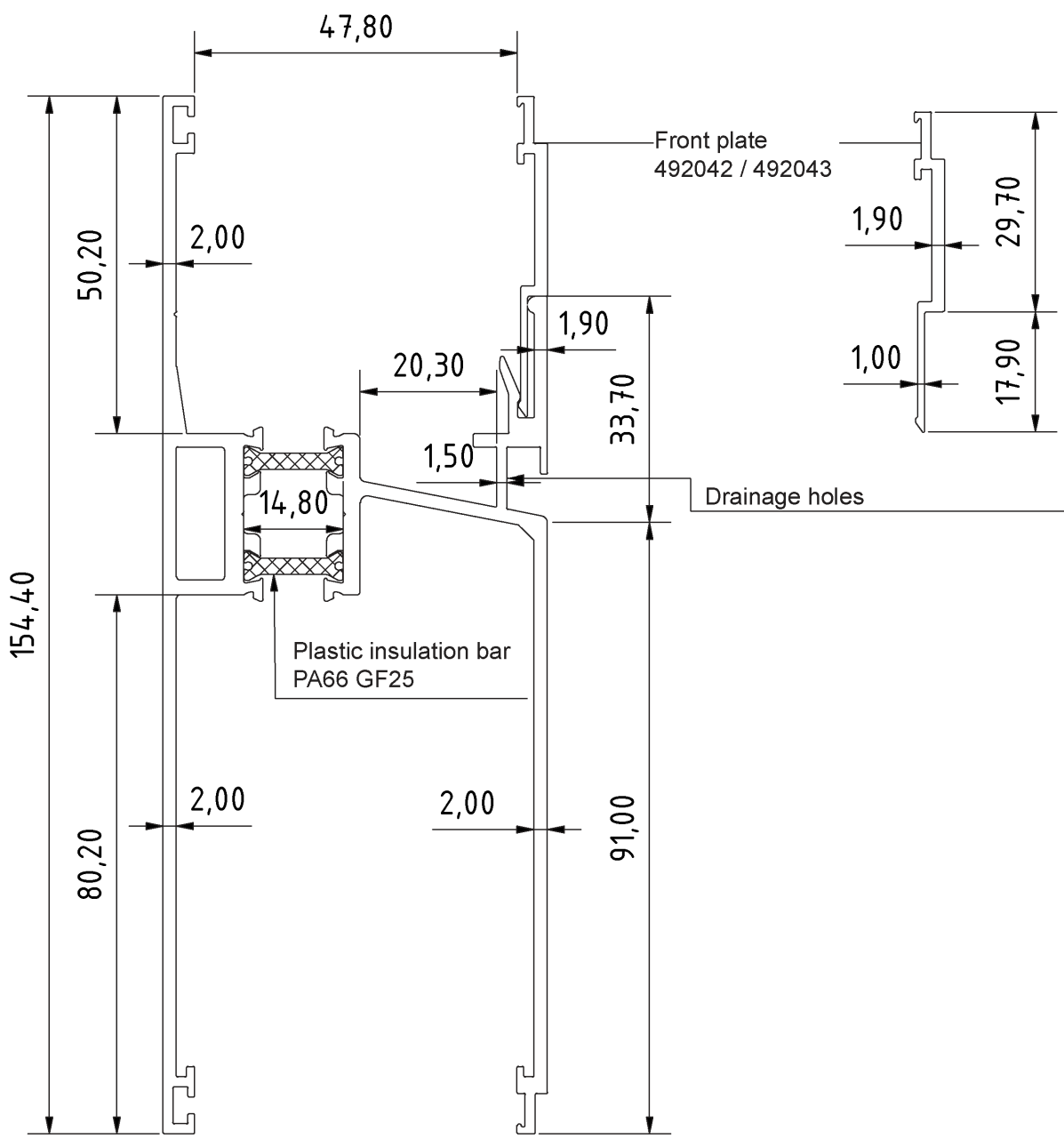
Rodeca LBE	Annex A 3.1.6
Covering profile 420040 Front plate 492001 For thickness of multi-wall sheet of 40 mm	



All dimension in mm
Material Aluminium EN6060 T66
Tolerances acc. EN 755-9

Rodeca LBE	Annex A 3.1.7
Covering profile 420080 Front plate 492001 For thickness of multi-wall sheet of 40 mm	

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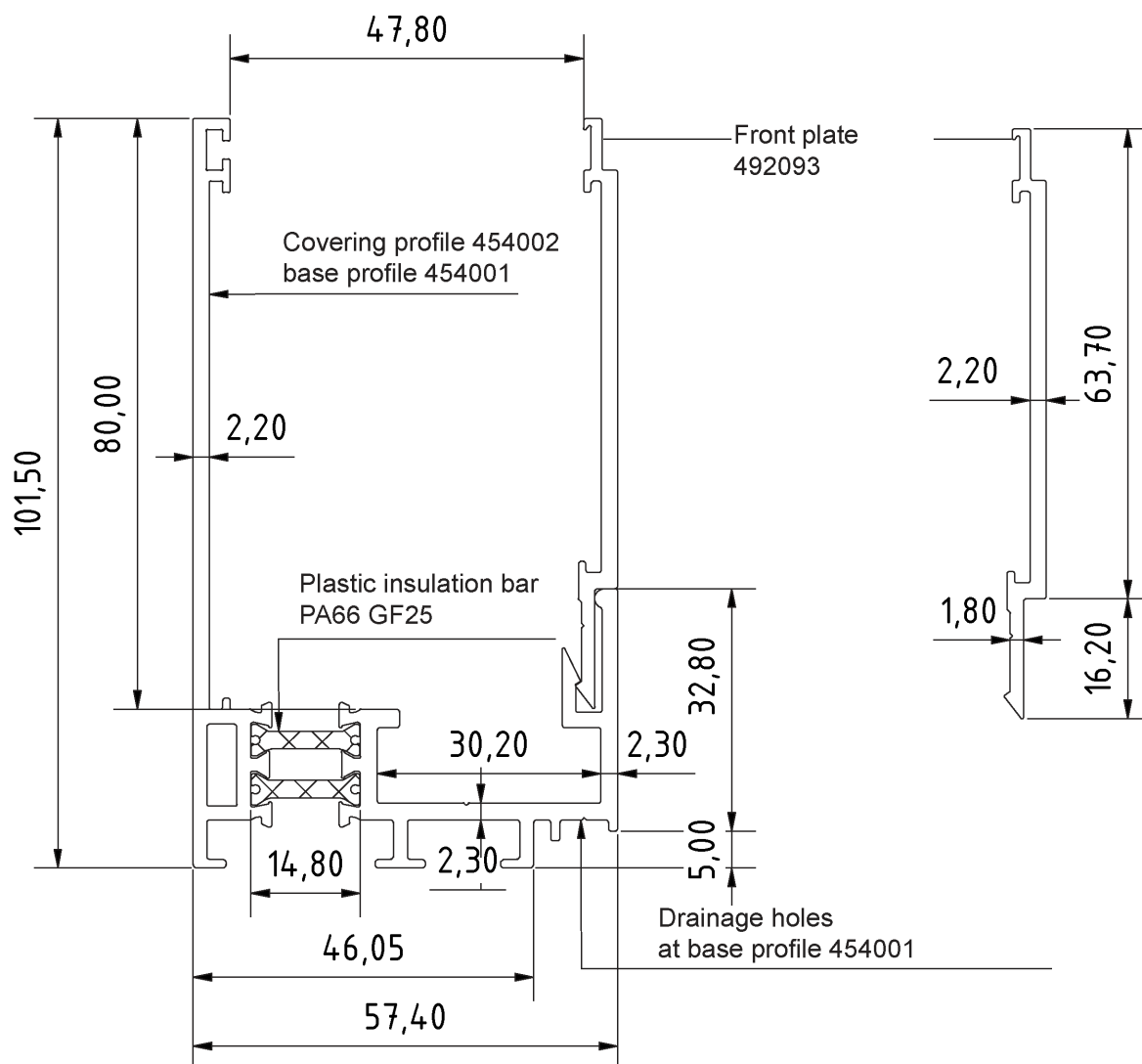


All dimension in mm
Material Aluminium EN6060 T66
Tolerances acc. EN 755-9

Rodeca LBE

Transom profile 444062
Front plate 492042 / 492043
For thickness of multi-wall sheet of 40 mm

Annex A 3.1.8

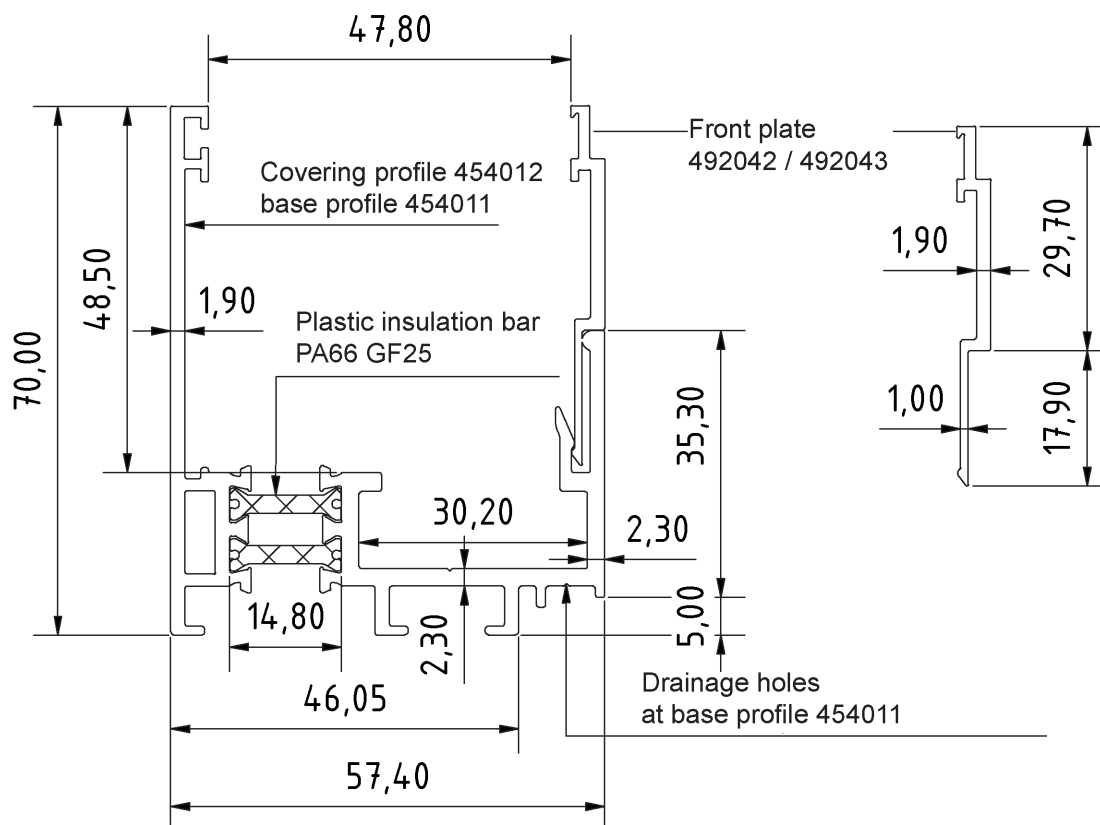


All dimension in mm
Material Aluminium EN6060 T66
Tolerances acc. EN 755-9

Rodeca LBE

Covering base profile 454001 / covering profile 454002
Front plate 492093
For thickness of multi-wall sheet of 40 mm

Annex A 3.1.9



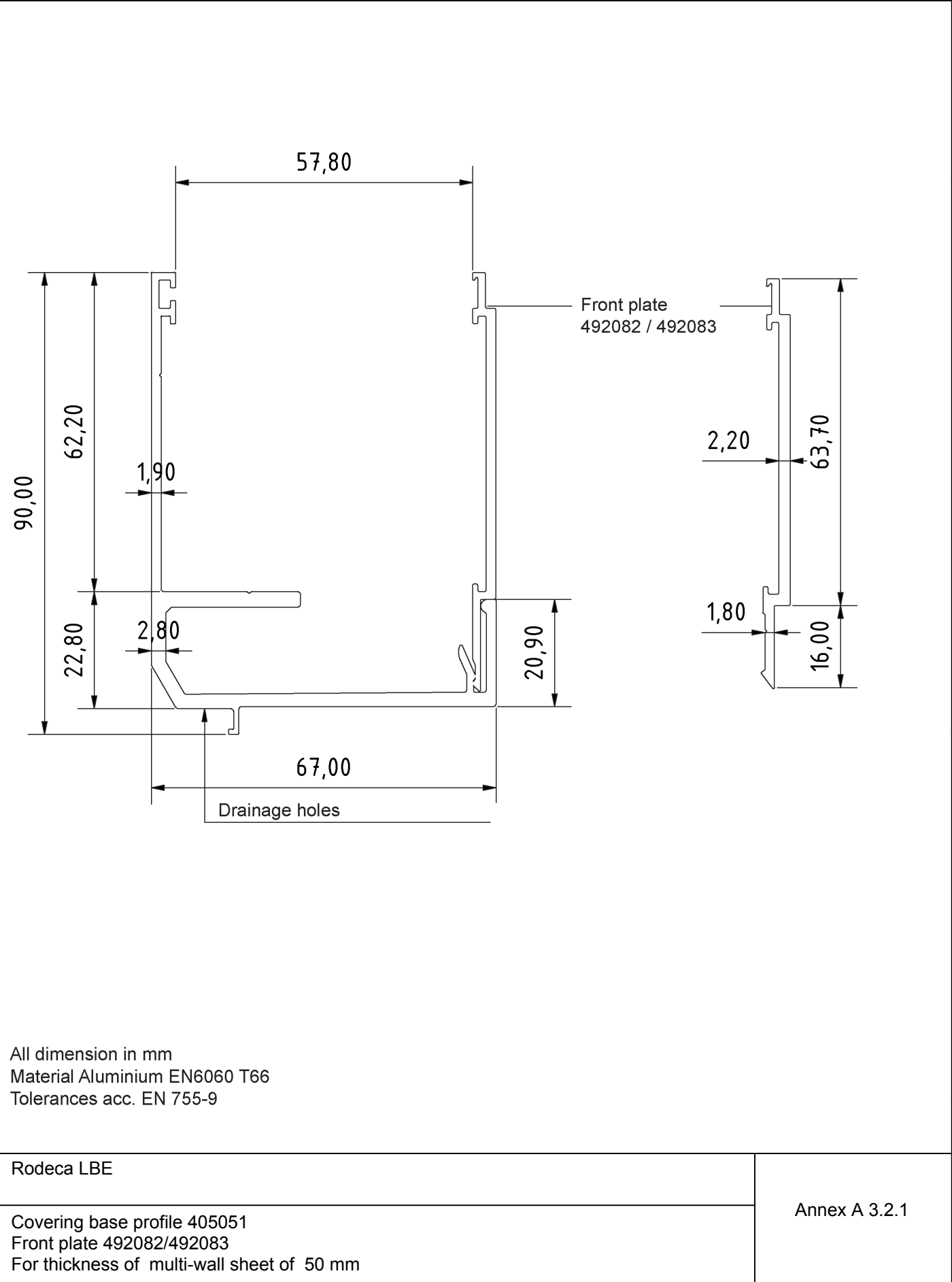
All dimension in mm
Material Aluminium EN6060 T66
Tolerances acc. EN 755-9

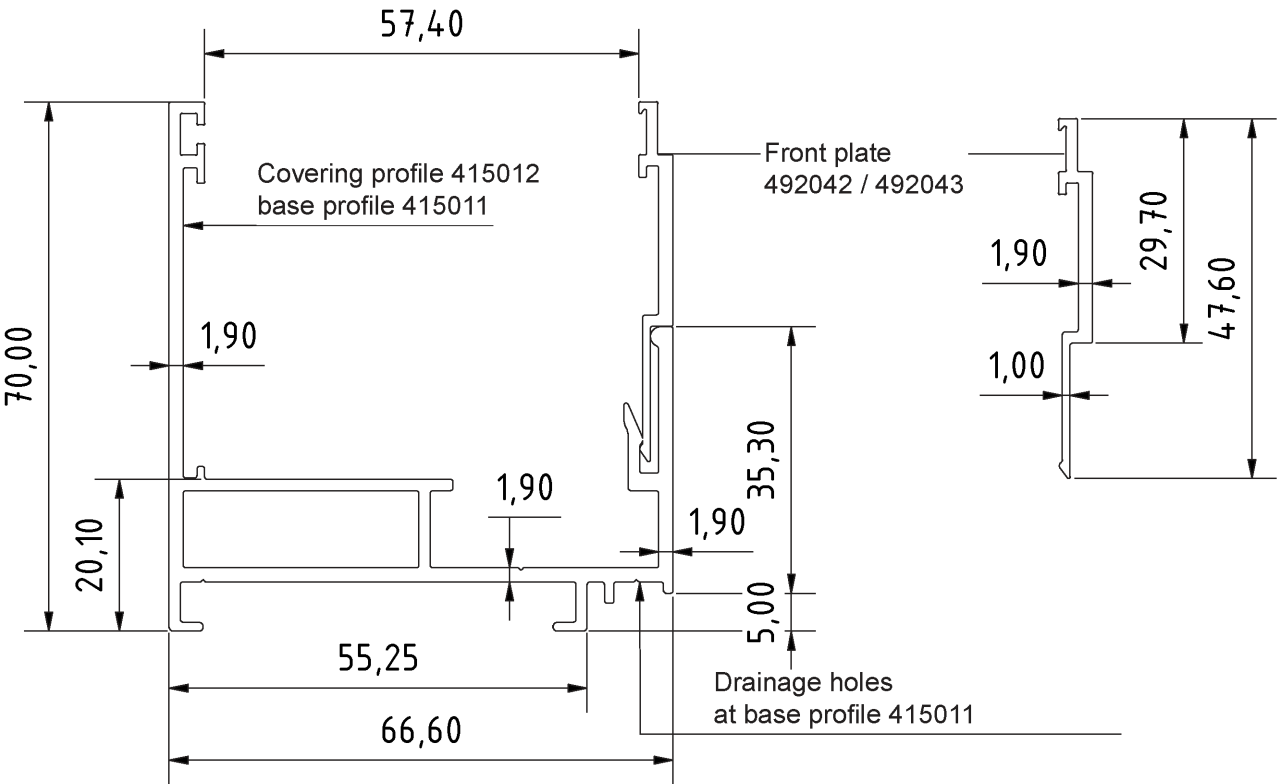
Rodeca LBE

Covering base profile 454011 / covering profile 454012
Front plate 492042 / 492043
For thickness of multi-wall sheet of 40 mm

Annex A 3.1.10

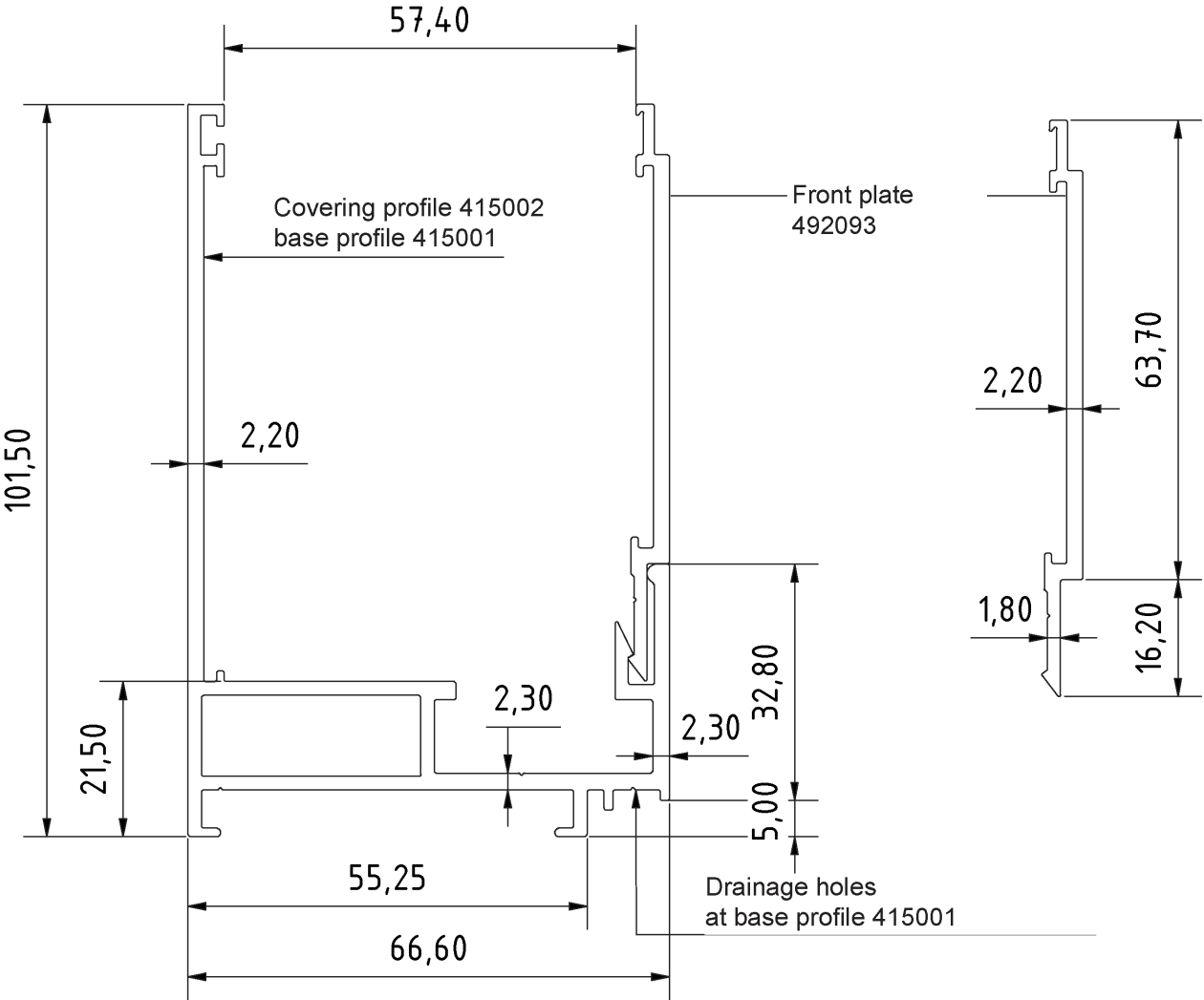
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All dimension in mm
Material Aluminium EN6060 T66
Tolerances acc. EN 755-9

Rodeca LBE	Annex A 3.2.2
Covering base profile 415011 / covering profile 415012 Front plate 492042 / 492043 For thickness of multi-wall sheet of 50 mm	

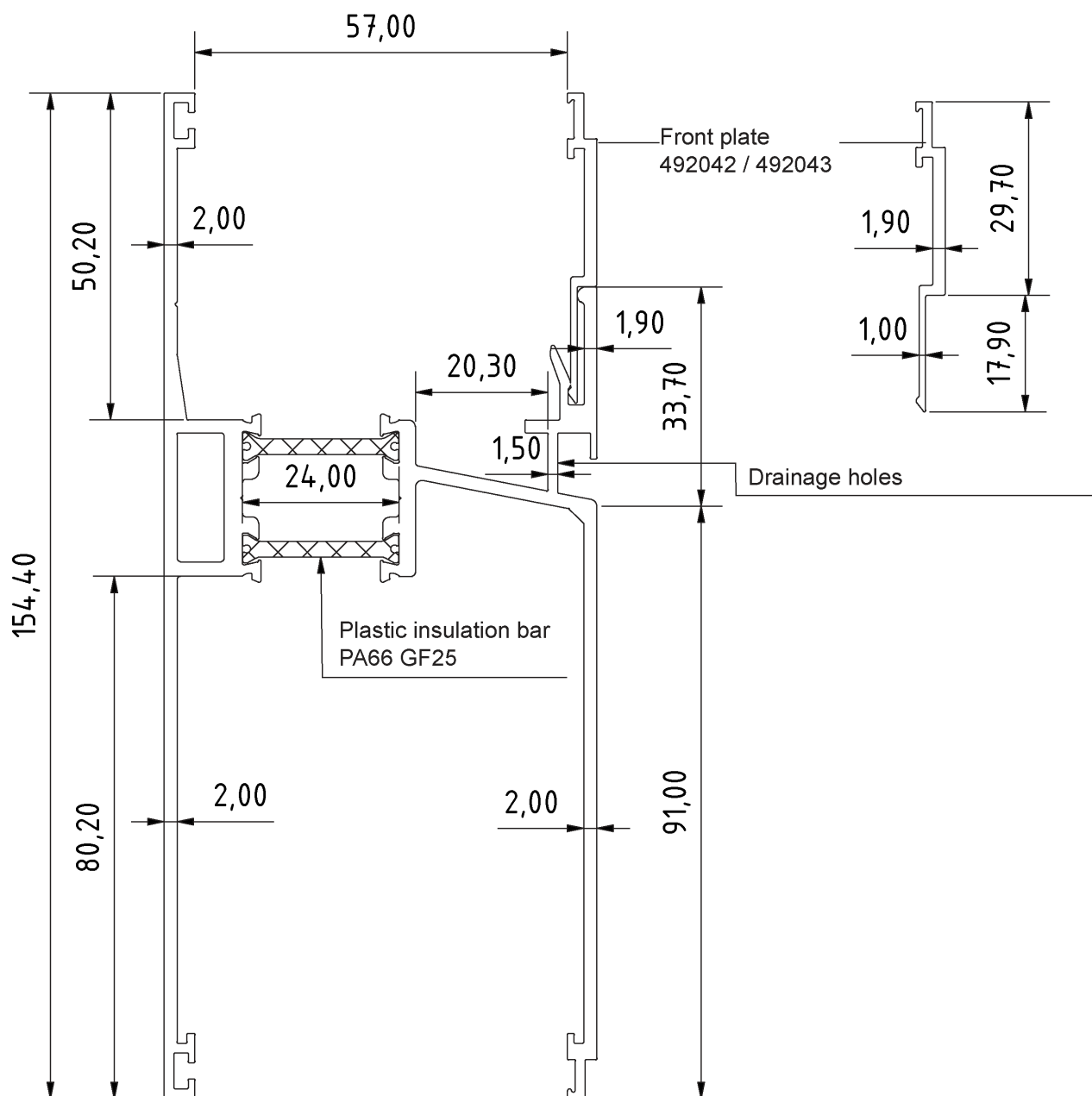


All dimension in mm
Material Aluminium EN6060 T66
Tolerances acc. EN 755-9

Rodeca LBE

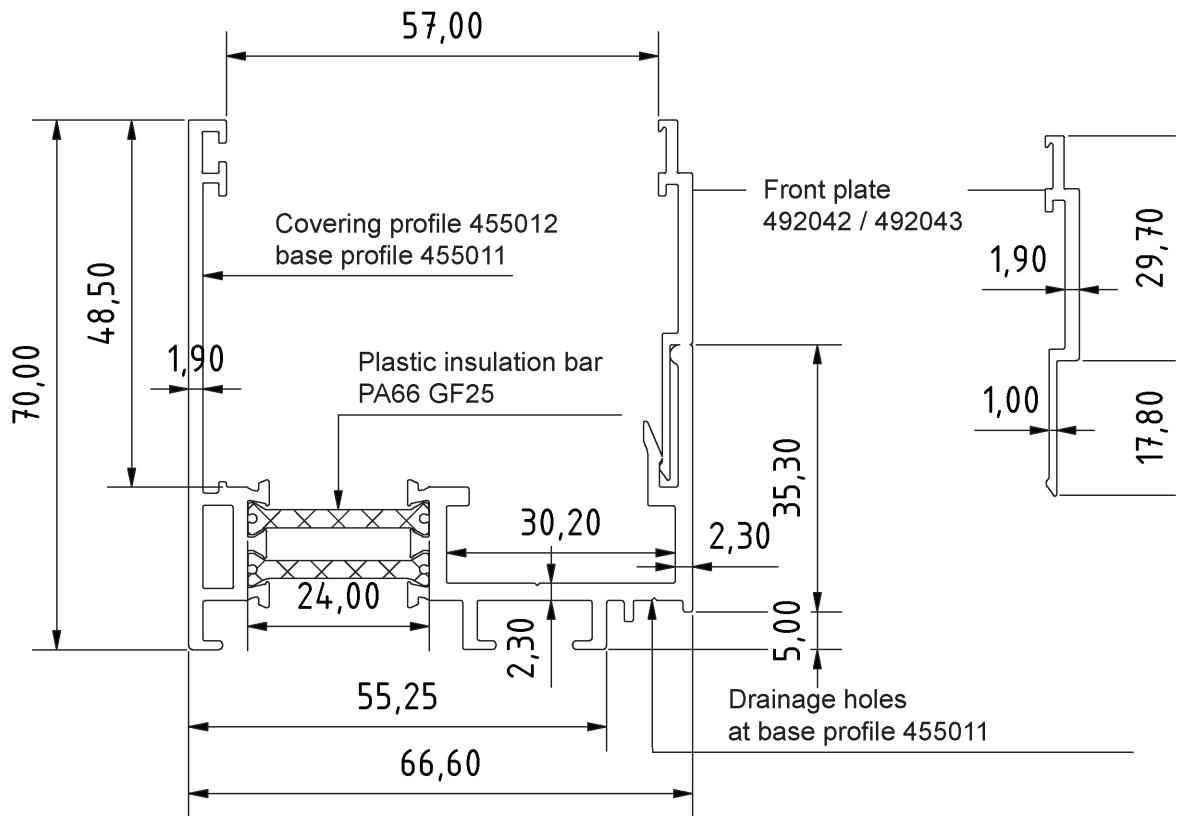
Covering base profile 415001 / covering profile 415002
Front plate 492093
For thickness of multi-wall sheet of 50 mm

Annex A 3.2.3



All dimension in mm
Material Aluminium EN6060 T66
Tolerances acc. EN 755-9

Rodeca LBE	Annex A 3.2.4
Transom profile 445062 Front plate 492042 / 492043 For thickness of multi-wall sheet of 50 mm	

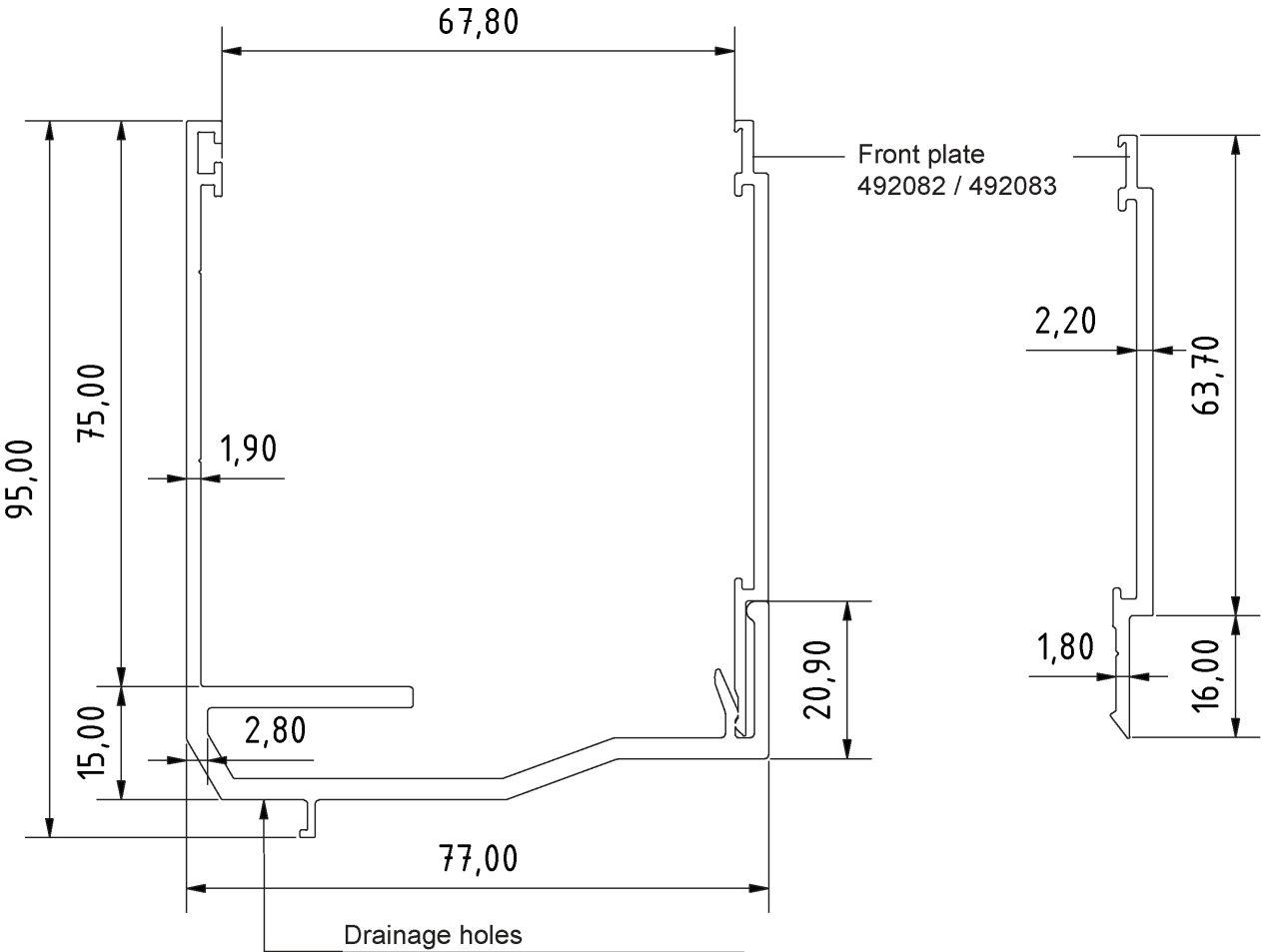


All dimension in mm
Material Aluminium EN6060 T66
Tolerances acc. EN 755-9

Rodeca LBE

Covering base profile 455011 / covering profile 455012
Front plate 492042 / 492043
For thickness of multi-wall sheet of 50 mm

Annex A 3.2.5



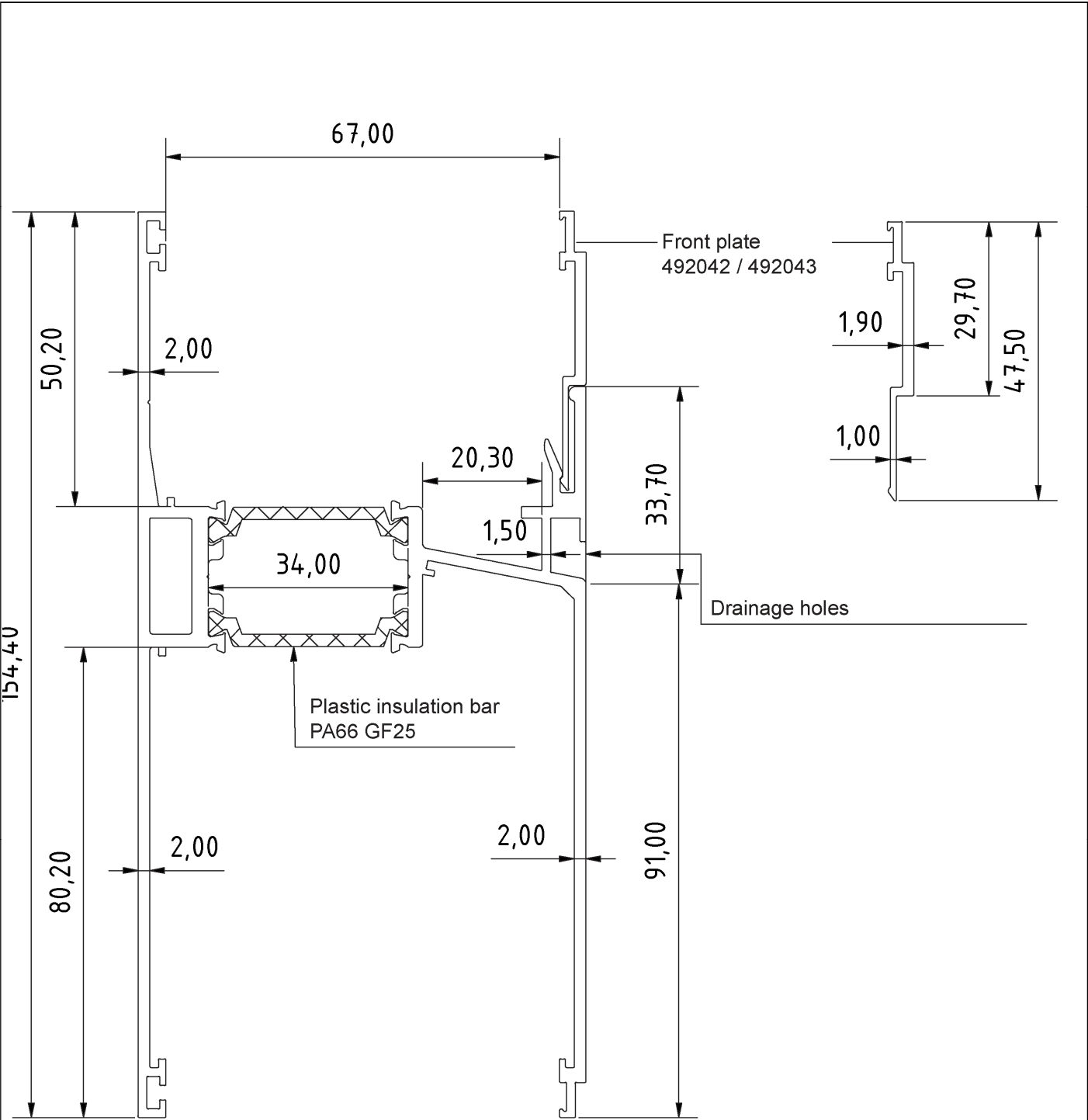
All dimension in mm
Material Aluminium EN6060 T66
Tolerances acc. EN 755-9

Rodeca LBE

Covering base profile 406051
Front plate 492082 / 492083
For thickness of multi-wall sheet of 60 mm

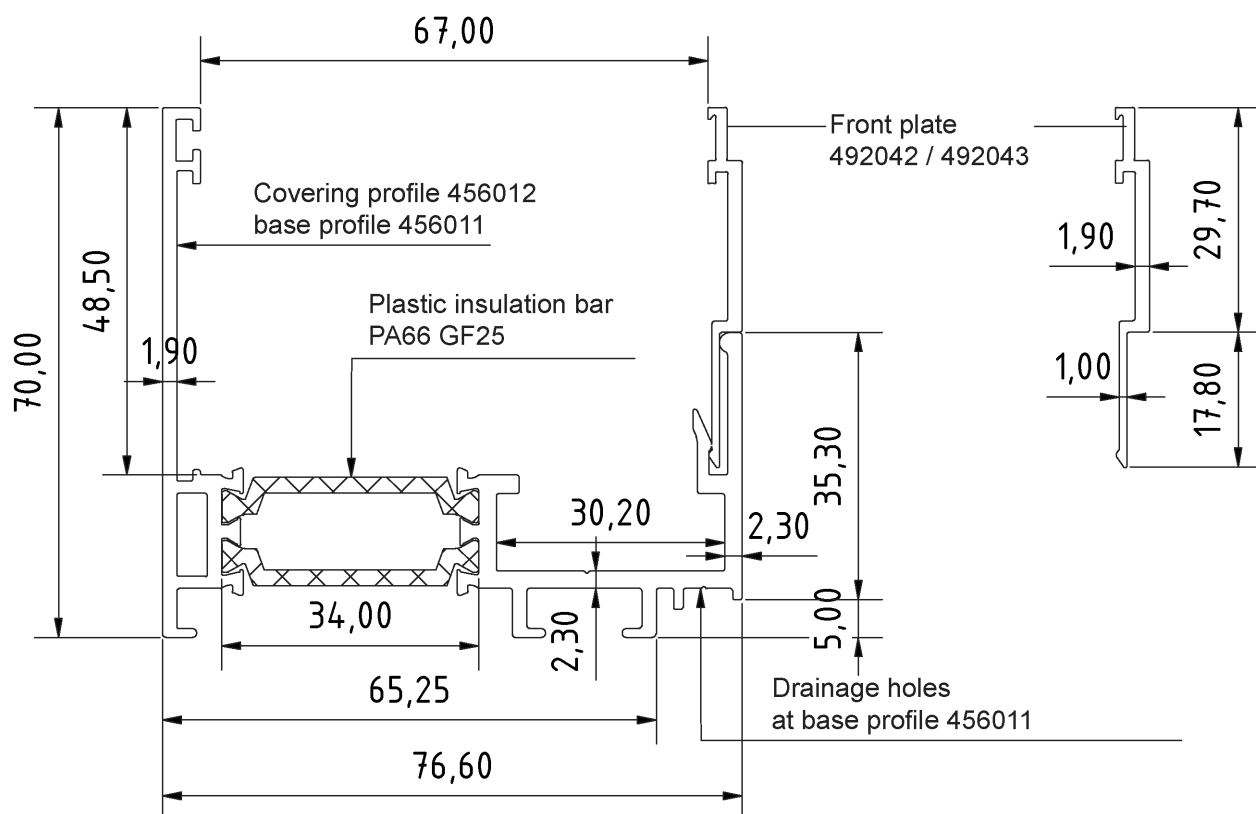
Annex A 3.3.1

electronic copy of the eta by dibt: eta-19/0452



All dimension in mm
Material Aluminium EN6060 T66
Tolerances acc. EN 755-9

Rodeca LBE	Annex A 3.3.2
Transom profile 446062 Front plate 492042 / 492043 For thickness of multi-wall sheet of 60 mm	

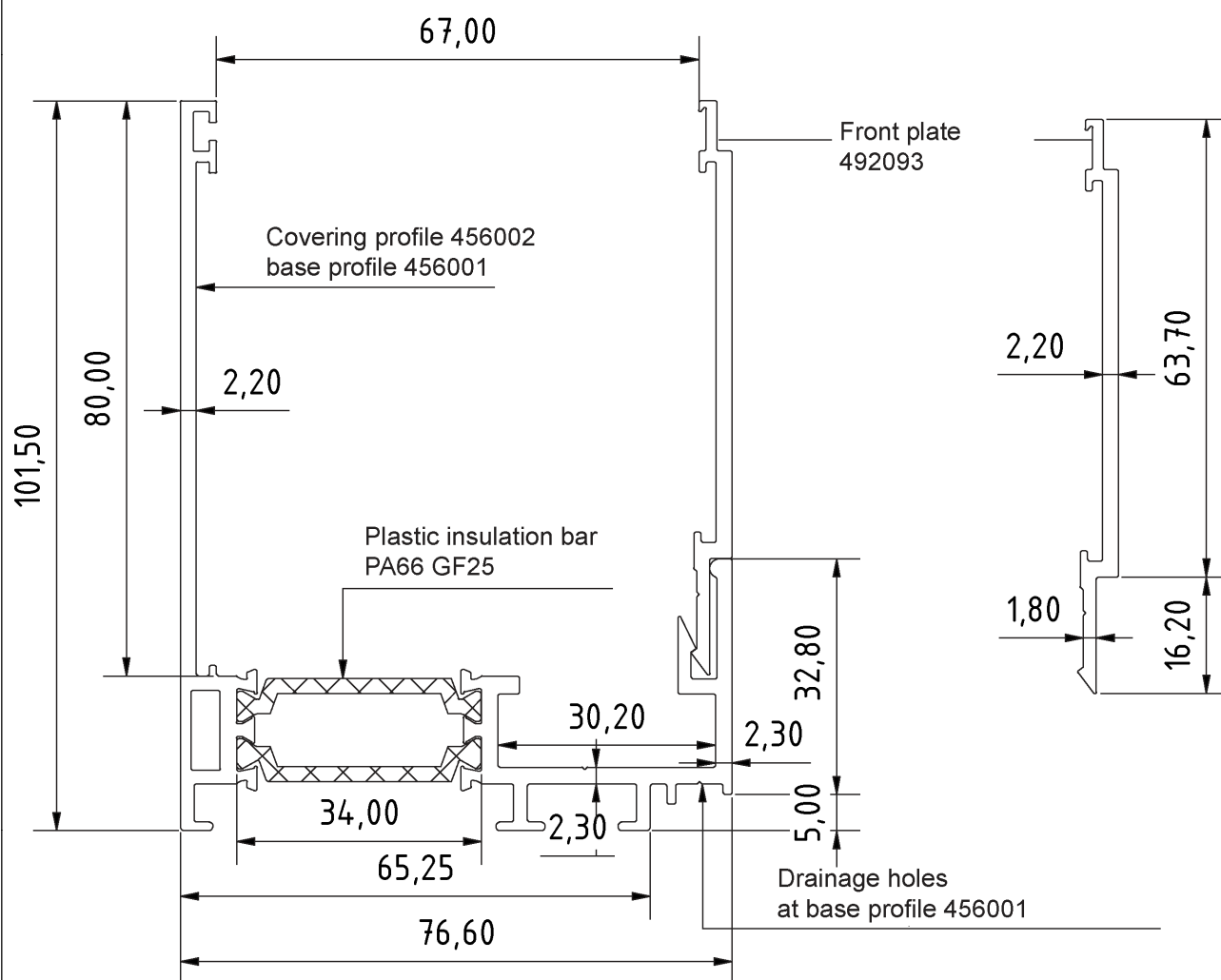


All dimension in mm
Material Aluminium EN6060 T66
Tolerances acc. EN 755-9

Rodeca LBE

Covering base profile 456011 / covering profile 456012
Front plate 492042 / 492043
For thickness of multi-wall sheet of 60 mm

Annex A 3.3.3

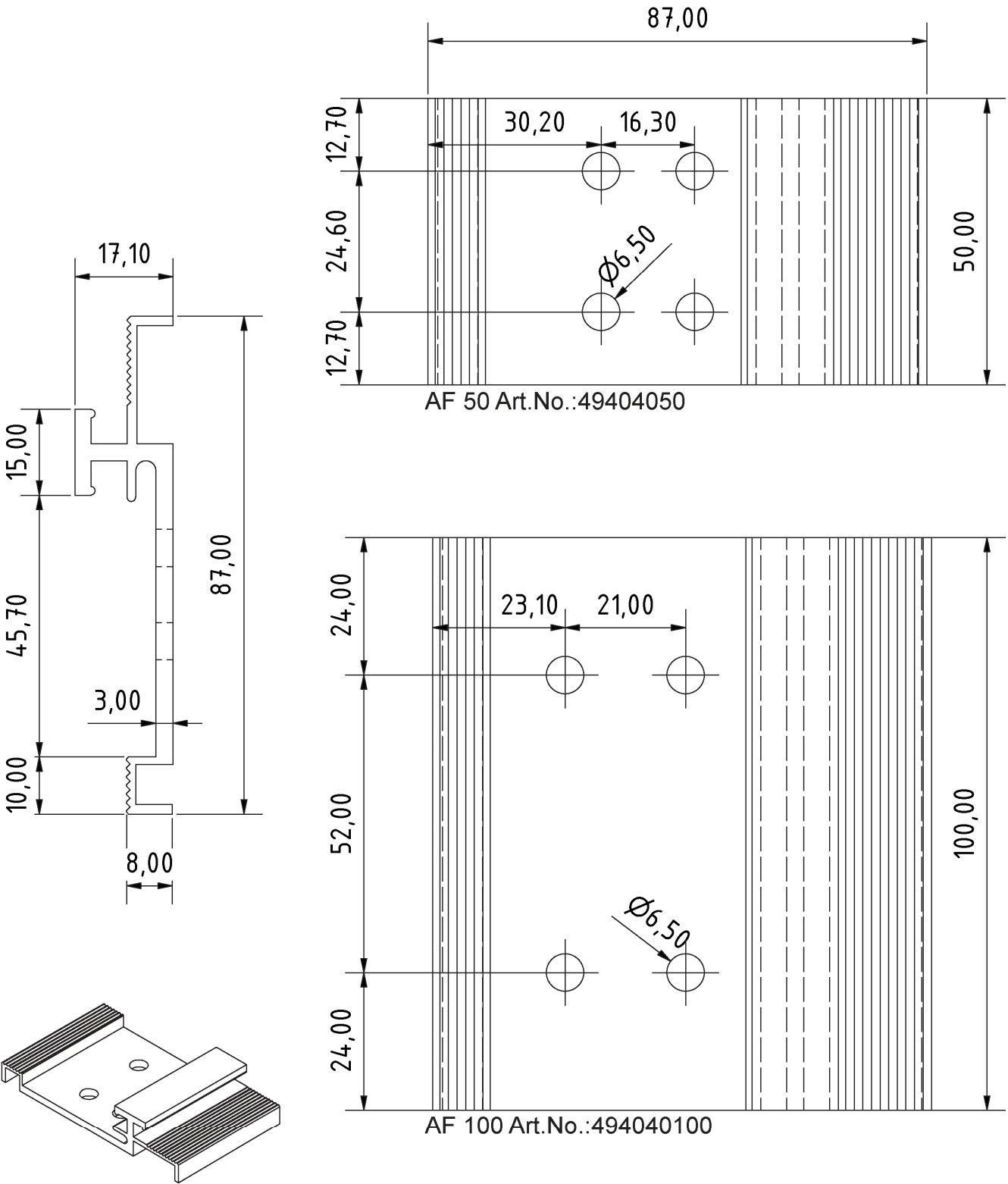


Tolerances acc. EN 755-9

Rodeca LBE

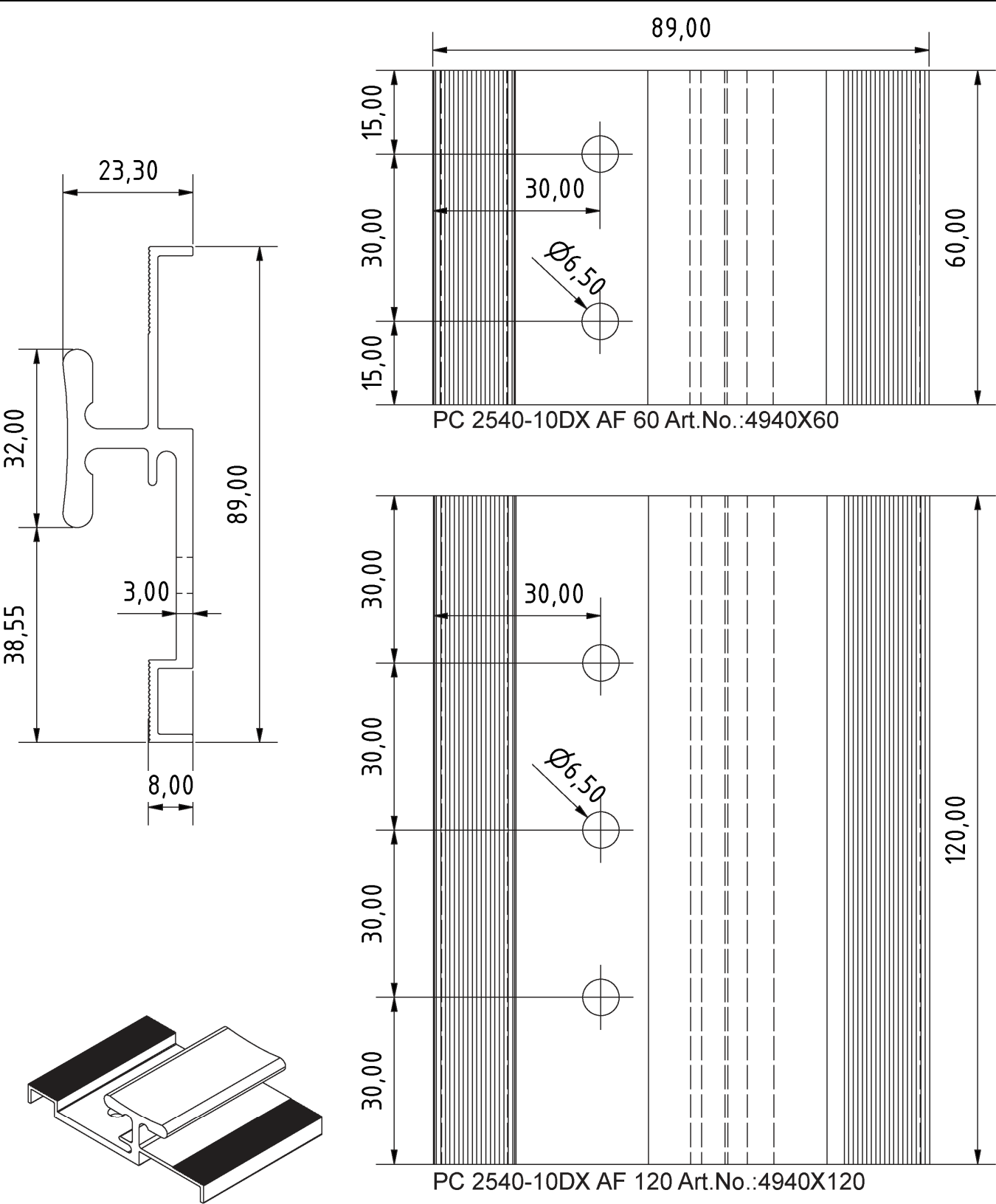
For thickness of multi-wall sheet of 60 mm

Annex A 3.3.4



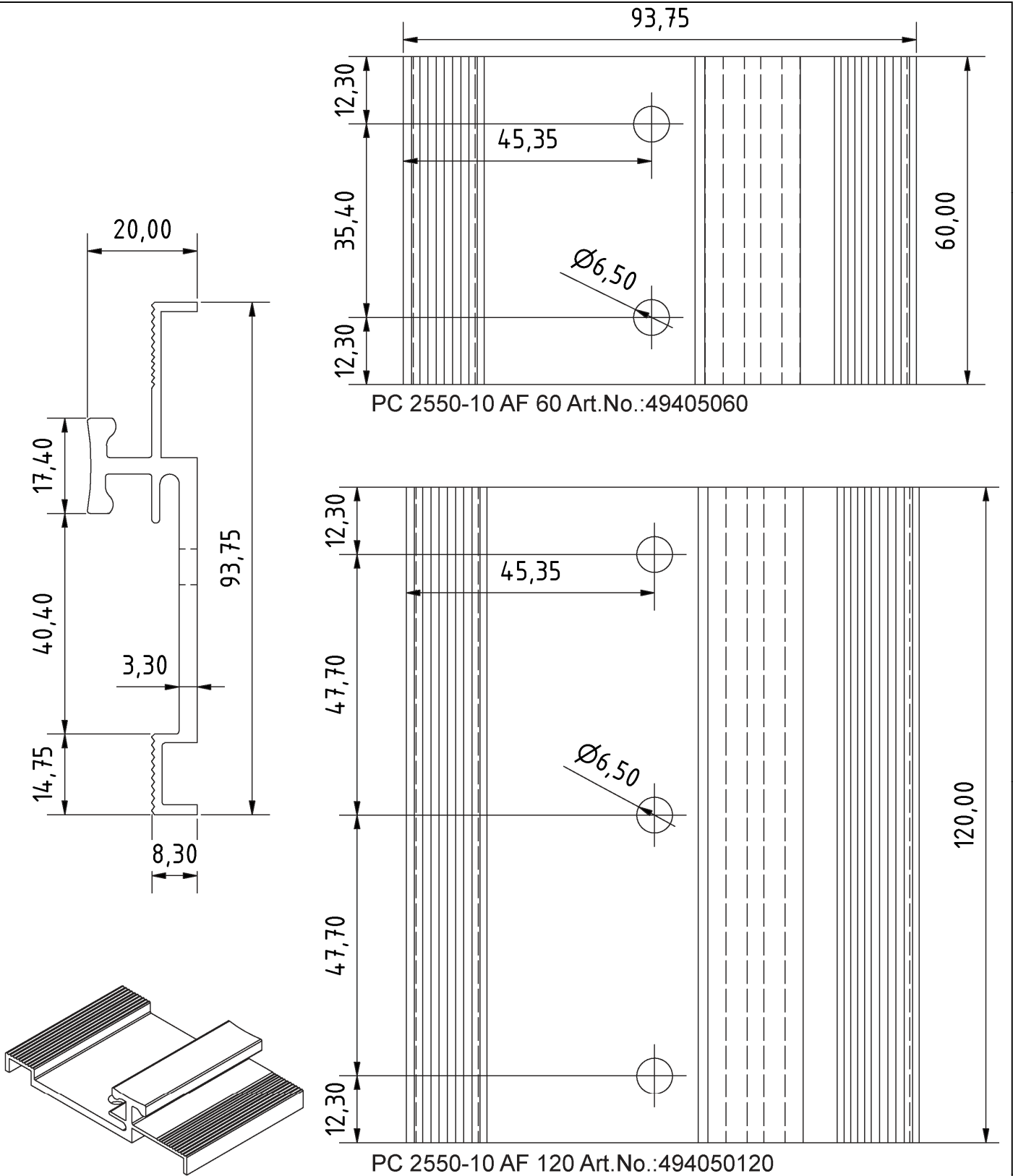
All dimension in mm / Material Aluminium EN6060 T66 / Tolerances acc. EN 755-9

Rodeca LBE	Annex A 3.4.1
Lift anchor AF 50/ AF 100 Art.No.:49404050/494040100 for PC 2540-4 / PC 2540-4-MC / PC 2540-6 / PC 2540-7 / PC 2540-10	



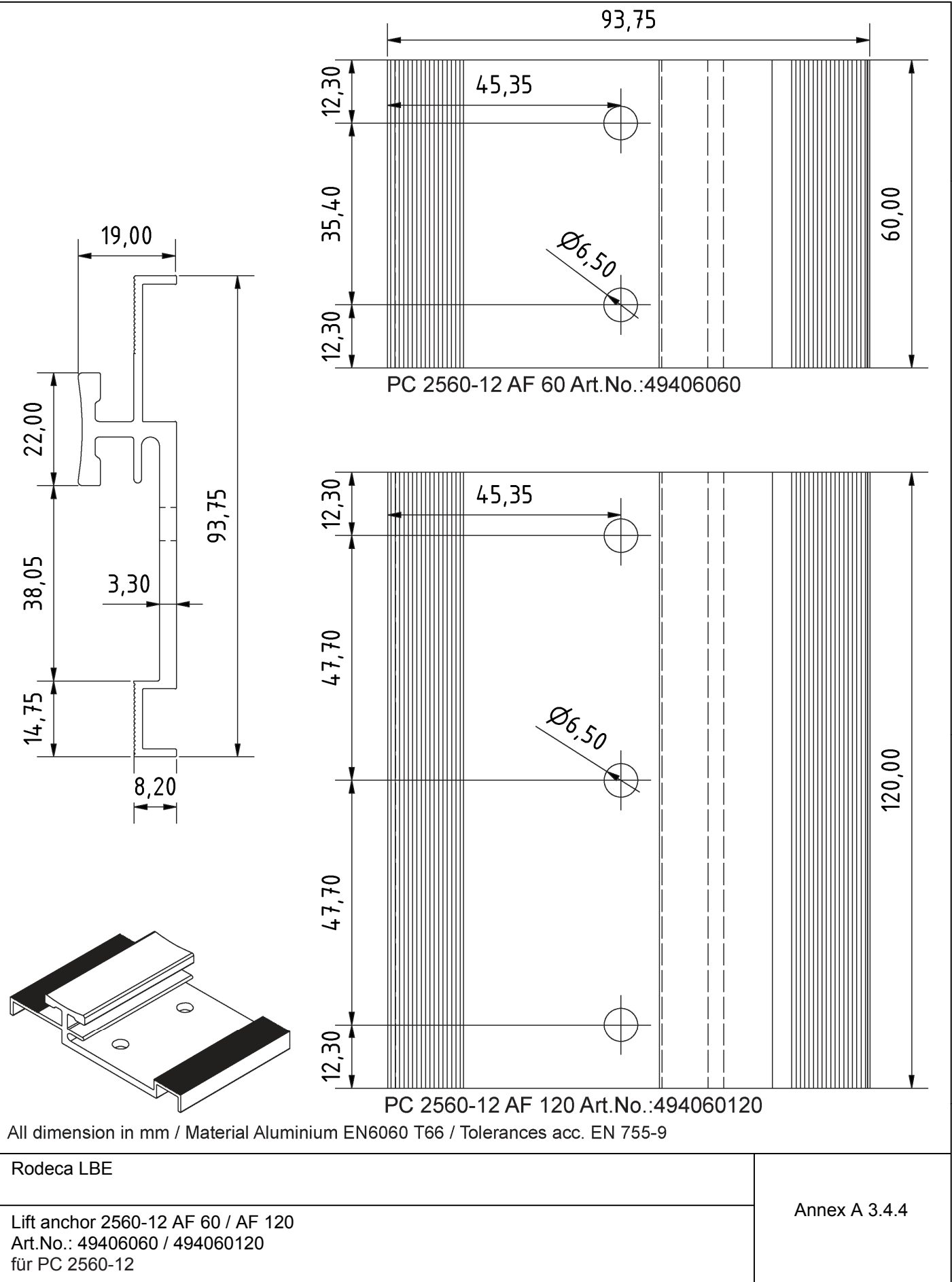
All dimension in mm / Material Aluminium EN6060 T66 / Tolerances acc. EN 755-9

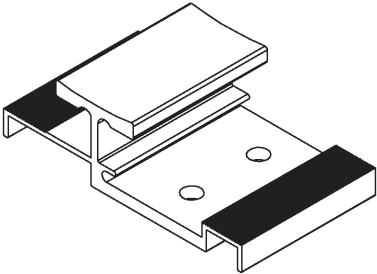
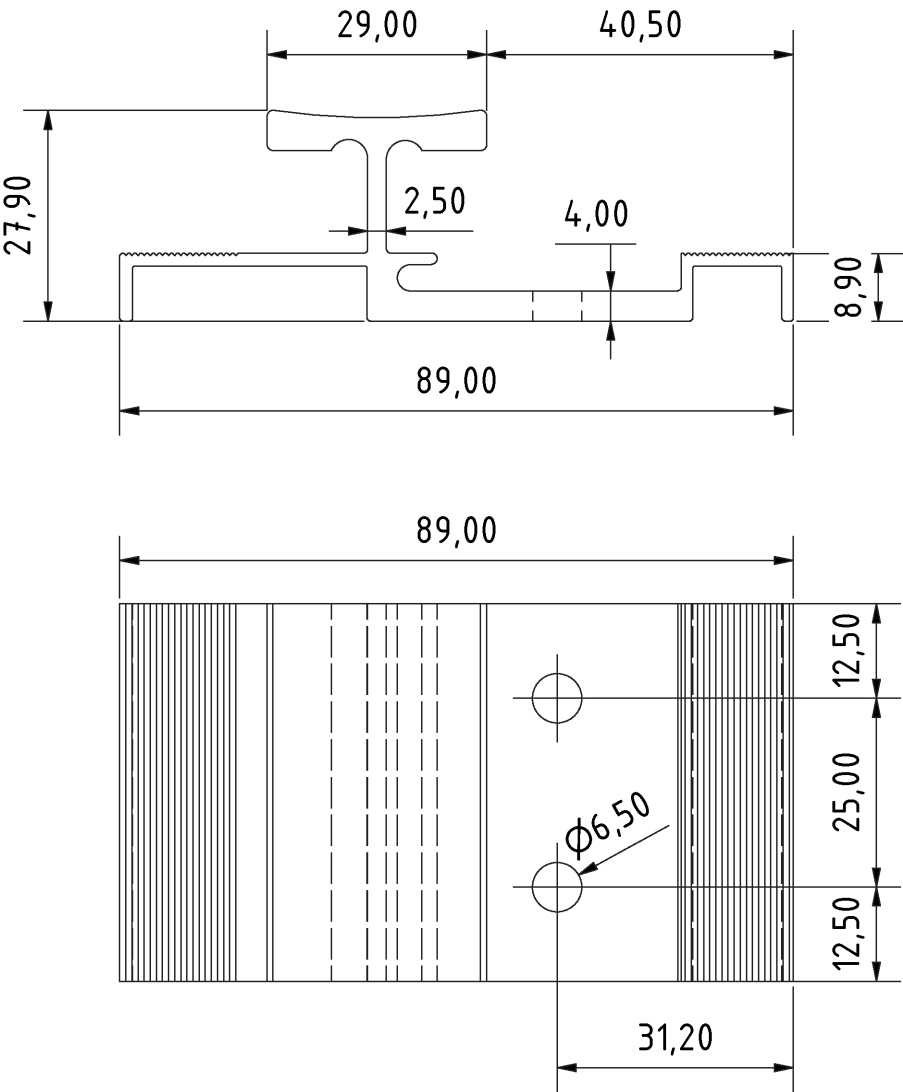
Rodeca LBE	Annex A 3.4.2
Lift anchor PC 2540-10DX AF 60 / AF 120 Art.No.:4940X60/4940X120 for PC 2540-10DX	



All dimension in mm / Material Aluminium EN6060 T66 / Tolerances acc. EN 755-9

Rodeca LBE	Annex A 3.4.3
Lift anchor PC 2550-10 AF 60 / AF 120 Art.No.: 49405060 / 494050120 for PC 2550-10	





All dimension in mm / Material Aluminium EN6060 T66 / Tolerances acc. EN 755-9

Rodeca LBE

Lift anchor PC 2600-40-7-U AF 50
Art.Nr.: 49404000
for PC 2600-40-7-U

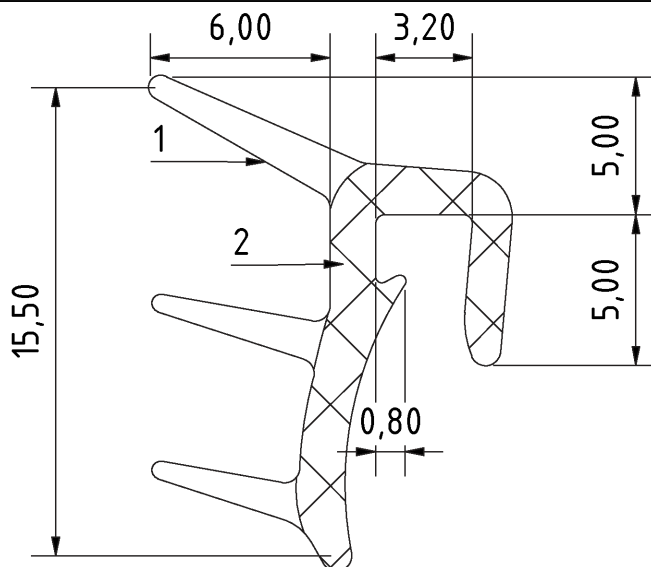
Annex A 3.4.5

Art.No.: 902801

Sealing profile, outside

1 - TPE / EPDM acc. DIN 7863
hardness 70 \pm 5 Shore A
acc. DIN En ISO 868

2 - TPE / EPDM acc. DIN 7863
hardness 95 \pm 5 Shore A
acc. DIN En ISO 868

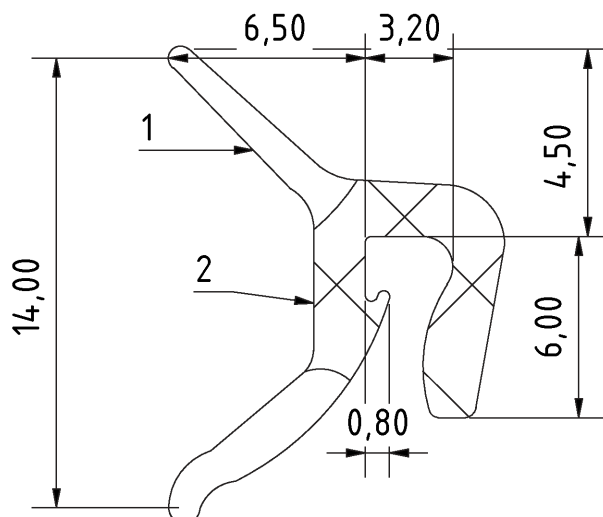


Art.Nr.: 902901

Sealing profile, outside

1 - TPE / EPDM acc. DIN 7863
hardness 70 \pm 5 Shore A
acc. DIN En ISO 868

2 - TPE / EPDM acc. DIN 7863
hardness 95 \pm 5 Shore A
acc. DIN En ISO 868

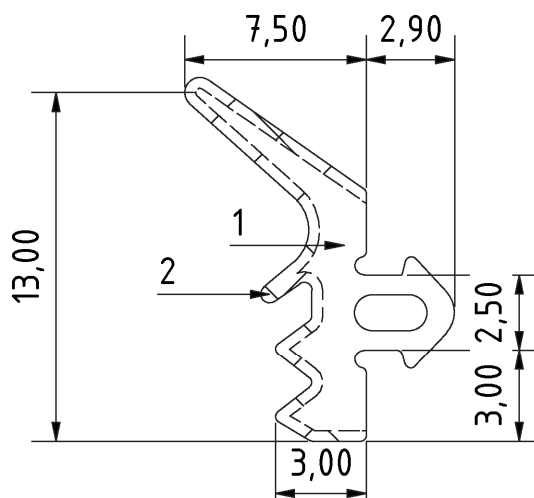


Art.Nr.: 902902

Sealing profile, inside

1 - TPE / EPDM acc. DIN 7863
hardness 70 \pm 5 Shore A
acc. DIN En ISO 868

2 - TPE / EPDM acc. DIN 7863
hardness 60 \pm 5 Shore A
acc. DIN En ISO 868

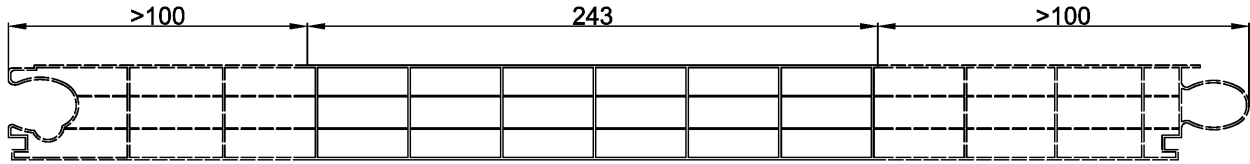


All dimension in mm

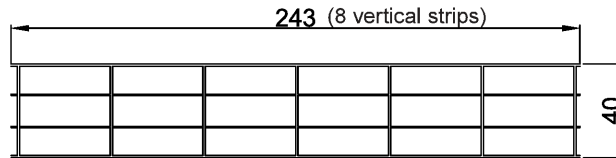
Rodeca LBE

Sealing profile
Art.No.:902801 / 902901 / 902902

Annex A 3.5



Cross section

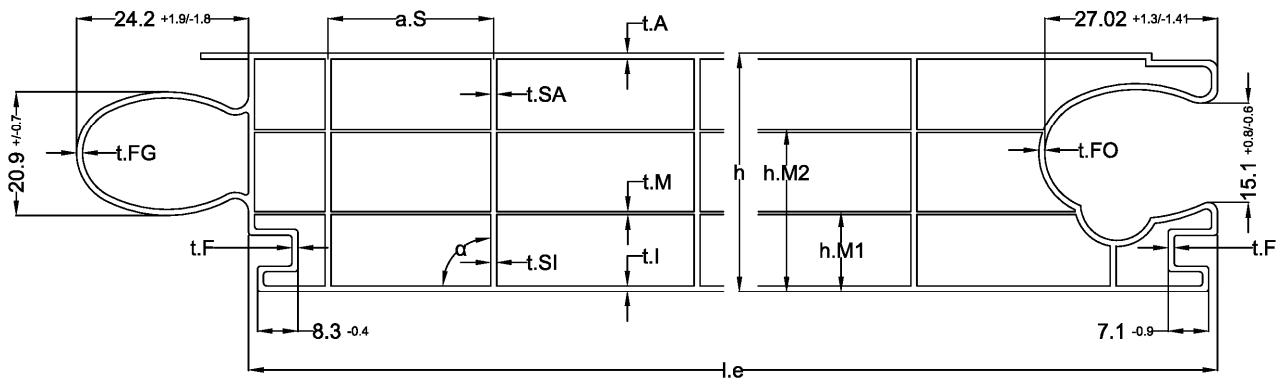


Minimum performance levels or classes for the sheets in accordance with EN 16153

B _x	U [W/m ² K]		Durability			
	Nm ² /m	Horizontal	Vertical	Variation of yellowness index	Variation of light transmittance	Variation of deformation flexural modulus
1916	1,5	1,4	1,4	≤ 10 (ΔA)*	≤ 5% (ΔA)*	Cu 1
						Ku 1

Polycarbonat (PC)

*coloured sheets from the same PC resin as uncoloured sheets shall be classified ΔD acc. Tab. 3 DIN EN 16153:2015-05

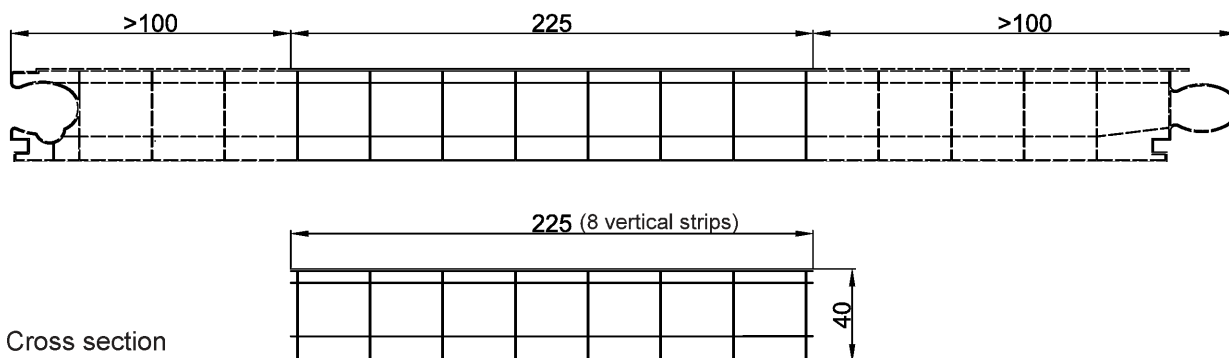


h.M1 mm	h.M2 mm	t.A mm	t.I mm	t.M mm	t.SA mm	t.SI mm	t.F mm	t.FG mm	t.FO mm	a.S mm	l.e mm	h mm	weight kg/m	difference Δα zu 90°
12,10	24,10	0,89	0,96	0,16	0,62	0,62	0,71	0,67	0,68	33,10	500	40	2,02	
+ 0,35 - 0,30	+ 0,35 - 0,35	-0,05	- 0,06	- 0,03	- 0,10	- 0,10	- 0,13	- 0,11	- 0,11	+1,10	Tolerances acc. EN 16153:2015-05/Tab.2			≤ 2°

Rodeca LBE

Geometry/ weight per area,
Minimum performance levels or classes for the sheets in accordance with EN 16153
PC 2540-4

Annex A 4.1



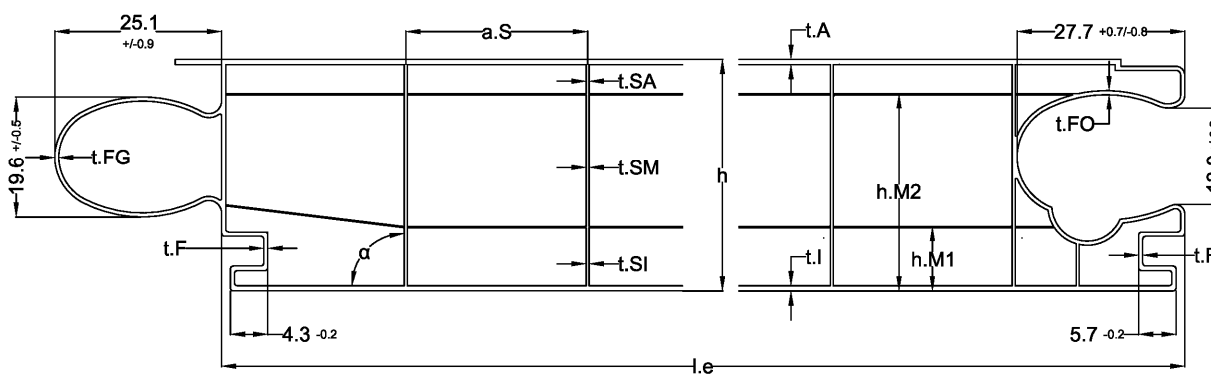
Cross section

Minimum performance levels or classes for the sheets in accordance with EN 16153

B _x	U [W/m ² K]		Durability			
Nm ² /m	Horizontal	Vertical	Variation of yellowness index	Variation of light transmittance	Variation of deformation flexural modulus	Variation of tensile strength
1786	1,6	1,5	≤ 10 (ΔA)*	≤ 5% (ΔA)*	Cu 1	Ku 1

Polycarbonat (PC)

*coloured sheets from the same PC resin as uncoloured sheets shall be classified ΔD acc. Tab. 3 DIN EN 16153:2015-05

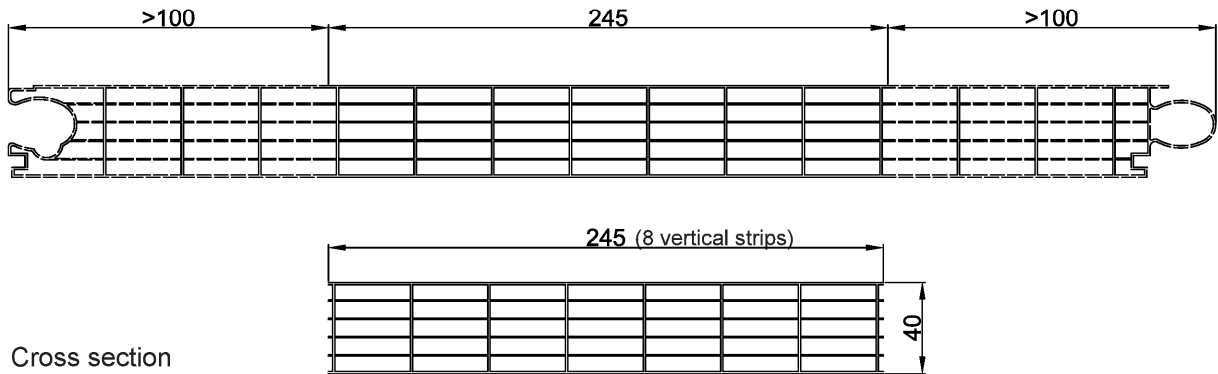


h.M1 mm	h.M2 mm	t.A mm	t.I mm	t.SA mm	t.SM mm	t.SI mm	t.M1 mm	t.M2 mm	t.F mm	t.FG mm	t.FO mm	a.S mm	l.e mm	h mm	weight kg/m	difference Δα zu 90°
10,15	32,80	1,17	0,90	0,50	0,36	0,51	0,13	0,15	0,64	0,66	0,53	30,85	500	40	1,80	
+ 0,30 - 0,25	+ 0,35 - 0,35	- 0,06	- 0,08	- 0,10	- 0,05	- 0,06	- 0,03	- 0,04	- 0,08	- 0,10	- 0,18	+ 0,65	Tolerances acc. EN 16153:2015-05/Tab.2			≤ 2°

Rodeca LBE

Geometry/ weight per area,
Minimum performance levels or classes for the sheets in accordance with EN 16153
PC 2540-4-MC

Annex A 4.2

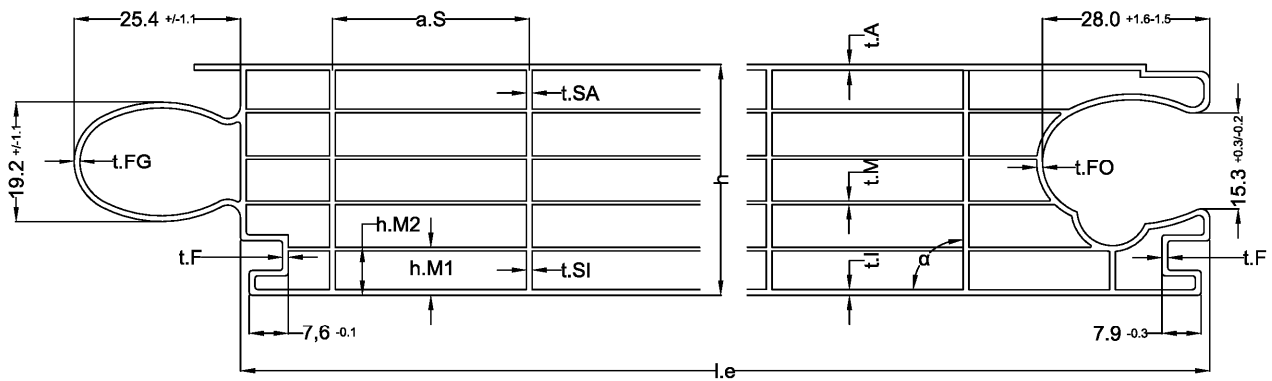


Minimum performance levels or classes for the sheets in accordance with EN 16153

B _x	U [W/m ² K]		Durability			
	Nm ² /m	Horizontal	Vertical	Variation of yellowness index	Variation of light transmittance	Variation of deformation flexural modulus
1838	1,2	1,2	1,2	≤ 10 (ΔA)*	≤ 5% (ΔA)*	Cu 1
						Ku 1

Polycarbonat (PC)

*coloured sheets from the same PC resin as uncoloured sheets shall be classified ΔD acc. Tab. 3 DIN EN 16153:2015-05

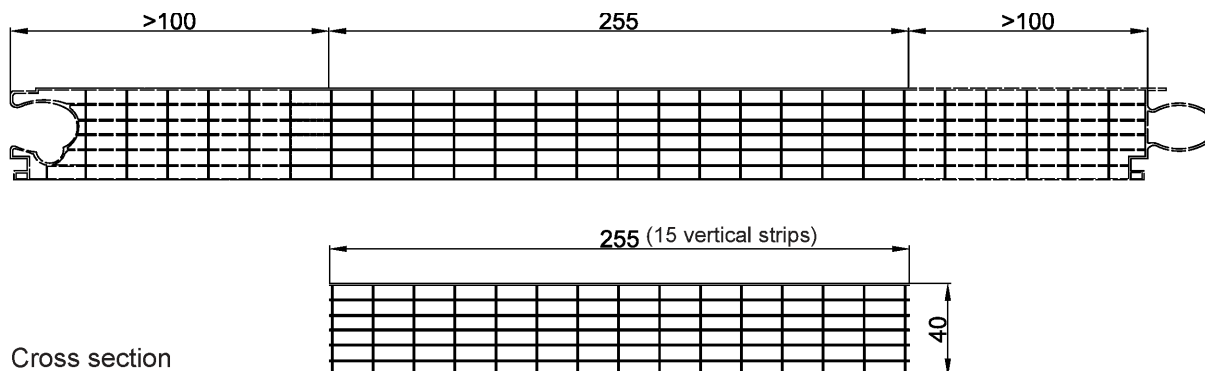


h.M1 mm	h.M2 mm	t.A mm	t.I mm	t.M mm	t.SA mm	t.SI mm	t.F mm	t.FG mm	t.FO mm	a.S mm	l.e mm	h mm	weight kg/m	difference Δα zu 90°
9,00	15,40	0,90	0,95	0,07	0,75	0,49	0,73	0,65	0,78	32,90	500	40	2,00	
+ 0,25 - 0,30	+ 0,35 - 0,35	-0,08	- 0,12	- 0,02	- 0,12	- 0,06	- 0,05	- 0,09	- 0,05	+1,20	Tolerances acc. EN 16153:2015-05/Tab.2			≤ 2°

Rodeca LBE

Geometry/ weight per area,
Minimum performance levels or classes for the sheets in accordance with EN 16153
PC 2540-6

Annex A 4.3

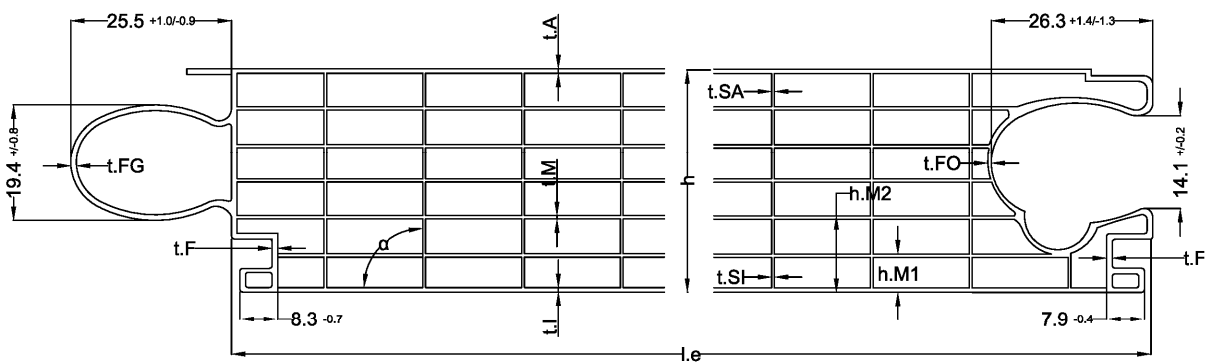


Minimum performance levels or classes for the sheets in accordance with EN 16153

B _x	U [W/m ² K]		Durability			
Nm ² /m	Horizontal	Vertical	Variation of yellowness index	Variation of light transmittance	Variation of deformation flexural modulus	Variation of tensile strength
1814	1,2	1,1	≤ 10 (ΔA)*	≤ 5% (ΔA)*	Cu 1	Ku 1

Polycarbonat (PC)

*coloured sheets from the same PC resin as uncoloured sheets shall be classified ΔD acc. Tab. 3 DIN EN 16153:2015-05

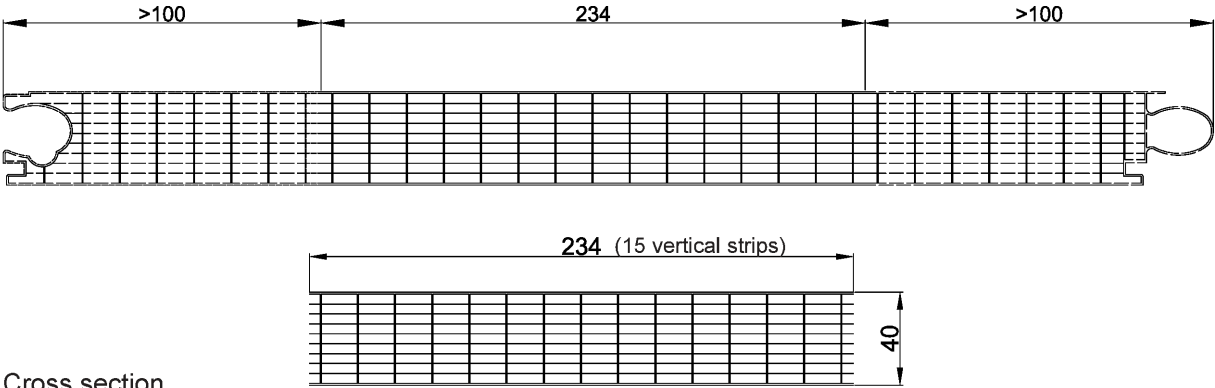


h.M1 mm	h.M2 mm	t.A mm	t.L mm	t.M mm	t.SA mm	t.SI mm	t.F mm	t.FG mm	t.FO mm	a.S mm	l.e mm	h mm	weight kg/m	difference Δα zu 90°
6,70	15,30	0,75	0,75	0,15	0,55	0,59	0,47	0,63	0,53	17,40	500	40	2,10	
+ 0,90 - 0,80	+ 1,40 - 1,20	- 0,06	- 0,11	- 0,03	- 0,05	- 0,09	- 0,09	- 0,05	- 0,06	+ 0,40 - 0,40	Tolerances acc. EN 16153:2015-05/Tab.2			≤ 3°

Rodeca LBE

Geometry/ weight per area,
Minimum performance levels or classes for the sheets in accordance with EN 16153
PC 2540-7

Annex A 4.4



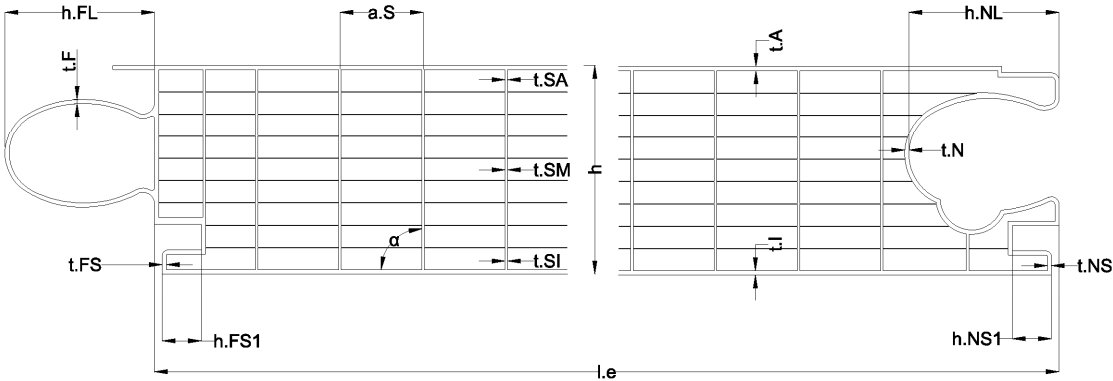
Cross section

Minimum performance levels or classes for the sheets in accordance with EN 16153

B _x	U [W/m ² K]		Durability			
	Nm ² /m	Horizontal	Vertical	Variation of yellowness index	Variation of light transmittance	Variation of deformation flexural modulus
1545	1,0	1,0	1,0	≤ 10 (ΔA)*	≤ 5% (ΔA)*	Cu 1

Polycarbonat (PC)

*coloured sheets from the same PC resin as uncoloured sheets shall be classified ΔD acc. Tab. 3 DIN EN 16153:2015-05

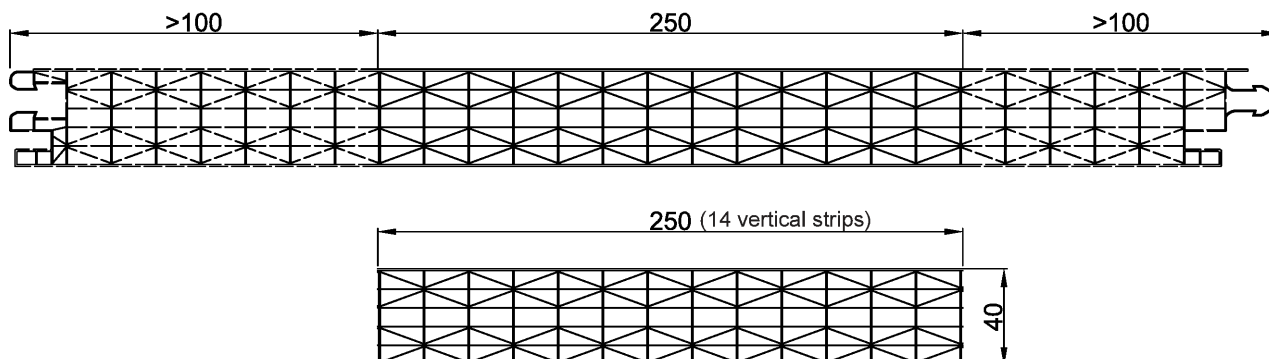


t.A	t.l	t.SA	t.SM	t.SI	a.S	t.F	h.FL	t.FS	h.FS1	t.N	h.NL	t.NS	h.NS1	l.e	h	weight	difference
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg/m	lΔαl zu 90°
0,60	0,64	0,41	0,43	0,53	15,90	0,49	25,77	0,86	6,56	0,72	27,67	0,84	6,75	500	40	2,00	
-0,10	-0,06	-0,12	-0,14	-0,15	-0,65	-0,17	-0,89	-0,50	-0,59	-0,29	-1,09	-0,27	-1,04	Tolerances acc. EN 16153:2015-05/Tab.2			≤ 5°

Rodeca LBE

Geometry/ weight per area,
Minimum performance levels or classes for the sheets in accordance with EN 16153
PC 2540-10

Annex A 4.5



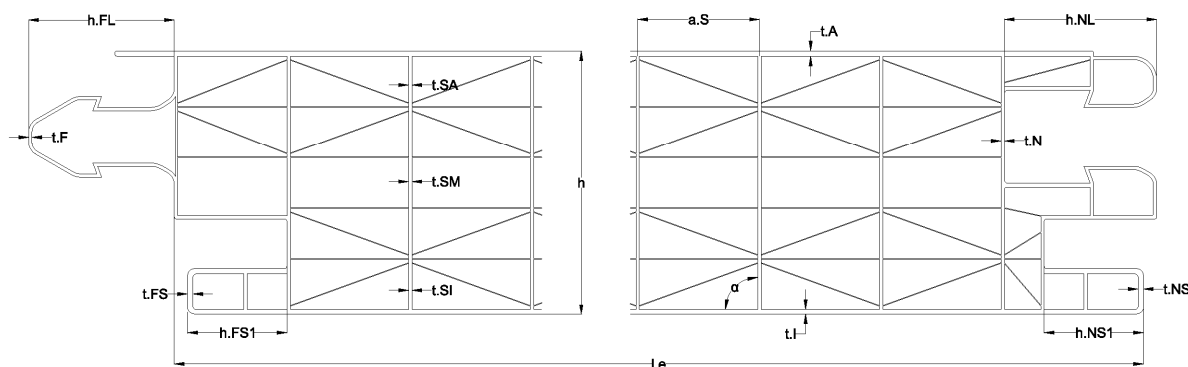
Cross section

Minimum performance levels or classes for the sheets in accordance with EN 16153

B_x	U [W/m ² K]		Durability			
	Nm ² /m	Horizontal	Vertical	Variation of yellowness index	Variation of light transmittance	Variation of deformation flexural modulus
1674	1,1	1,1	1,1	≤ 10 (ΔA)*	≤ 5% (ΔA)*	Cu 1
						Ku 1

Polycarbonat (PC)

*coloured sheets from the same PC resin as uncoloured sheets shall be classified ΔD acc. Tab. 3 DIN EN 16153:2015-05

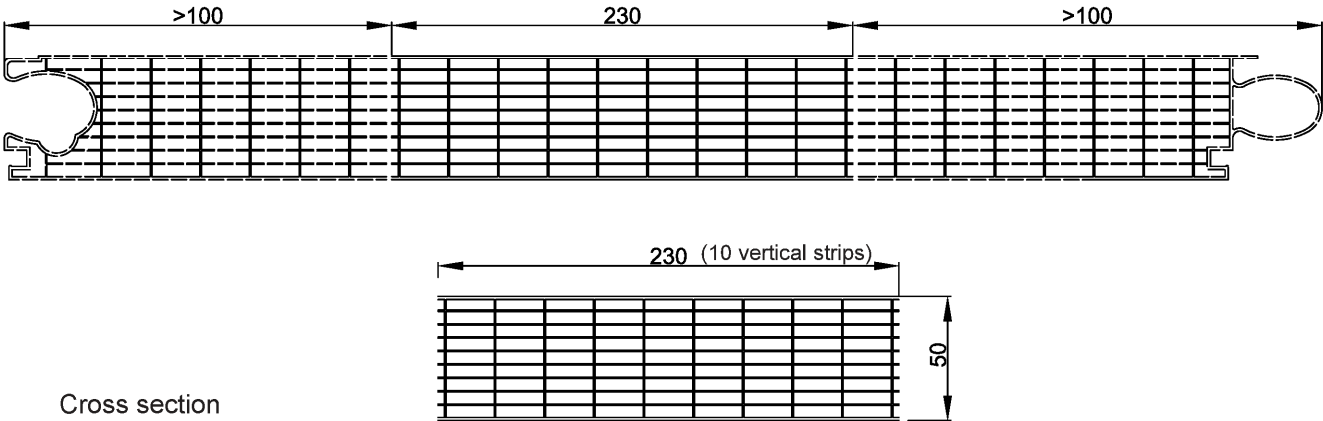


t.A	t.I	t.SA	t.SM	t.SI	a.S	t.F	h.FL	t.FS	h.FS1	t.N	h.NL	t.NS	h.NS1	l.e	h	weight	difference
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg/m	lΔαl zu 90°
0,67	0,64	0,33	0,41	0,43	17,85	0,96	21,50	0,88	14,87	0,62	22,39	0,75	14,85	495	40	2,25	
-0,17	-0,18	-0,07	-0,13	-0,07	-0,54	-0,41	-1,24	-0,36	-1,12	-0,31	-1,67	-0,35	-0,43	Tolerances acc. EN 16153:2015-05/Tab.2			≤ 5°

Rodeca LBE

Geometry/ weight per area,
Minimum performance levels or classes for the sheets in accordance with EN 16153
PC 2540-10DX

Annex A 4.6

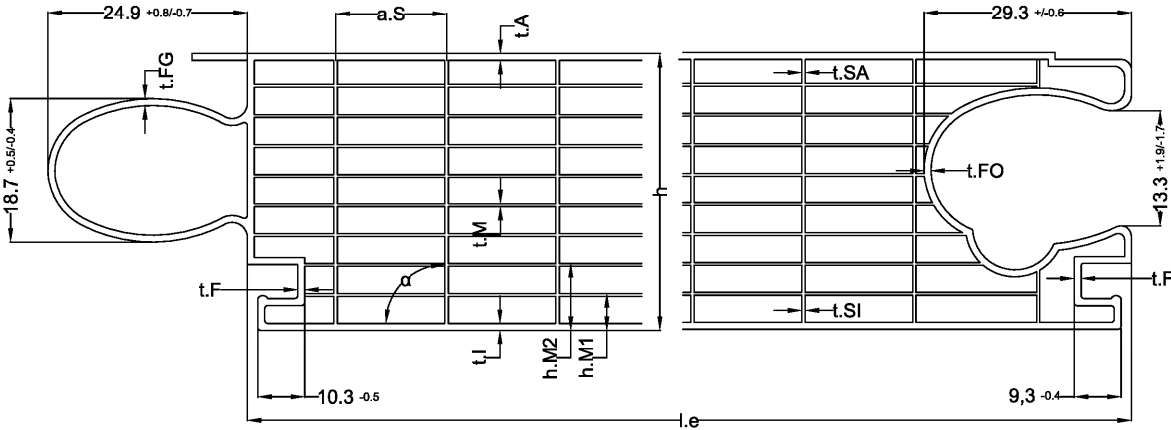


Minimum performance levels or classes for the sheets in accordance with EN 16153

B _x	U [W/m ² K]		Durability			
	Nm ² /m	Horizontal	Vertical	Variation of yellowness index	Variation of light transmittance	Variation of deformation flexural modulus
3309	0,92	0,90	0,90	≤ 10 (ΔA)*	≤ 5% (ΔA)*	Cu 1

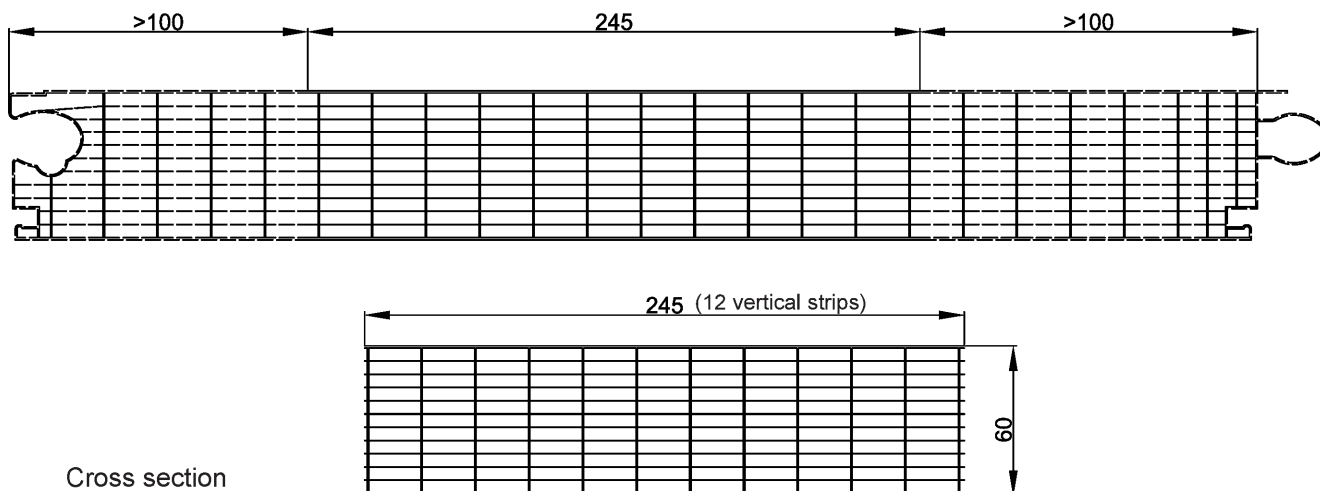
Polycarbonat (PC)

*coloured sheets from the same PC resin as uncoloured sheets shall be classified ΔD acc. Tab. 3 DIN EN 16153:2015-05



t.A	t.I	t.M	t.SA	t.SI	t.FG	t.FO	t.F	a.S	l.e	h	weight	difference
mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	mm	kg/m	lΔαl zu 90°
0,84	0,95	0,06	0,36	0,57	0,55	0,65	0,94	24,15	495	50	2,38	
- 0,09	- 0,10	-0,01	- 0,05	- 0,08	- 0,10	- 0,17	- 0,37	+0,25	Tolerances acc. EN 16153:2015-05/Tab.2			≤ 2°

Rodeca LBE	Annex A 4.7
Geometry/ weight per area, Minimum performance levels or classes for the sheets in accordance with EN 16153 PC 2550-10	

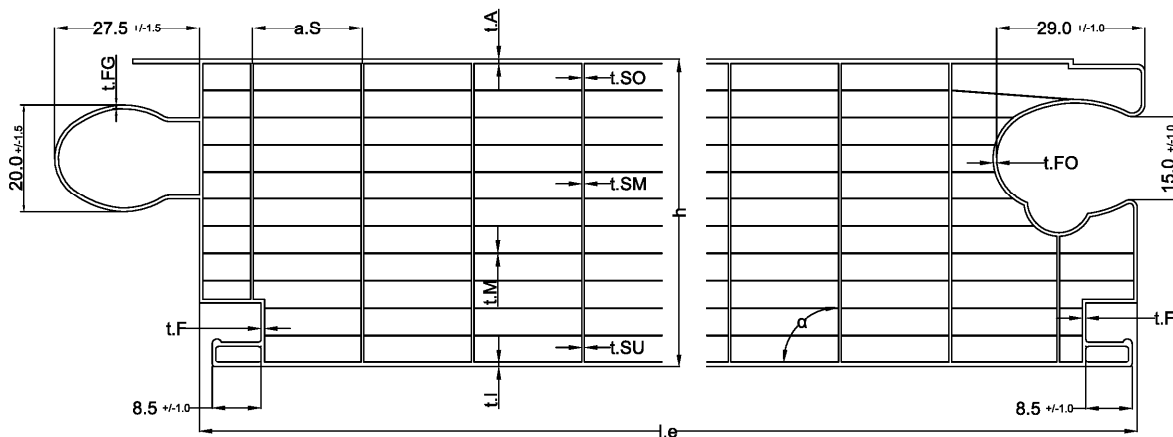


Minimum performance levels or classes for the sheets in accordance with EN 16153

B _x Nm ² /m	U [W/m ² K]		Durability			
	Horizontal	Vertical	Variation of yellowness index	Variation of light transmittance	Variation of deformation flexural modulus	Variation of tensile strength
4984	0,77	0,75	≤ 10 (ΔA)*	≤ 5% (ΔA)*	Cu 1	Ku 1

Polycarbonat (PC)

*coloured sheets from the same PC resin as uncoloured sheets shall be classified ΔD acc. Tab. 3 DIN EN 16153:2015-05

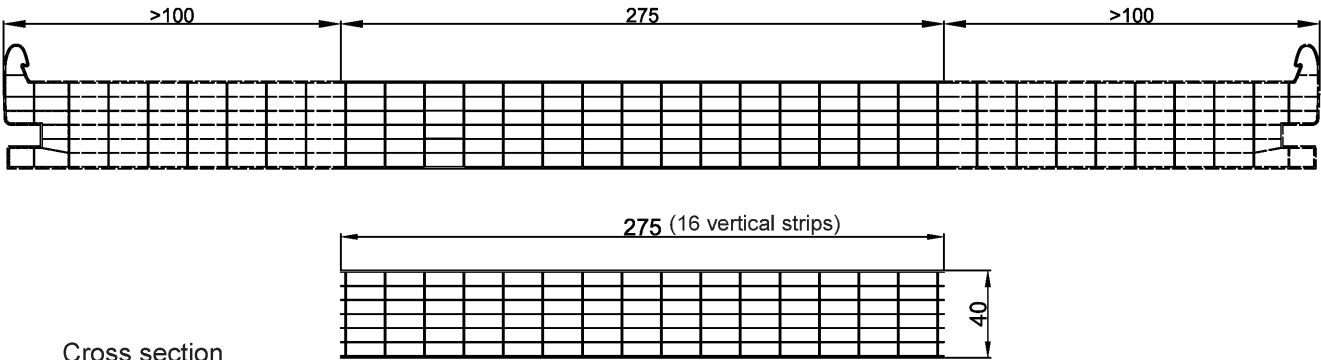


t.A mm	t.I mm	t.M mm	t.SU mm	t.SO mm	t.SM mm	t.FO mm	t.FG mm	t.F mm	a.S mm	l.e mm	h mm	weight kg/m	difference Δd zu 90°
0,79	0,96	0,04	0,86	0,45	0,56	0,39	0,54	1,66	20,7	500	60	2,77	
- 0,06	- 0,07	-0,01	- 0,29	- 0,12	- 0,15	- 0,17	- 0,18	-0,42	+1,0	Tolerances acc. EN 16153:2015-05/Tab.2			≤ 3°

Rodeca LBE

Geometry/ weight per area,
Minimum performance levels or classes for the sheets in accordance with EN 16153
PC 2560-12

Annex A 4.8

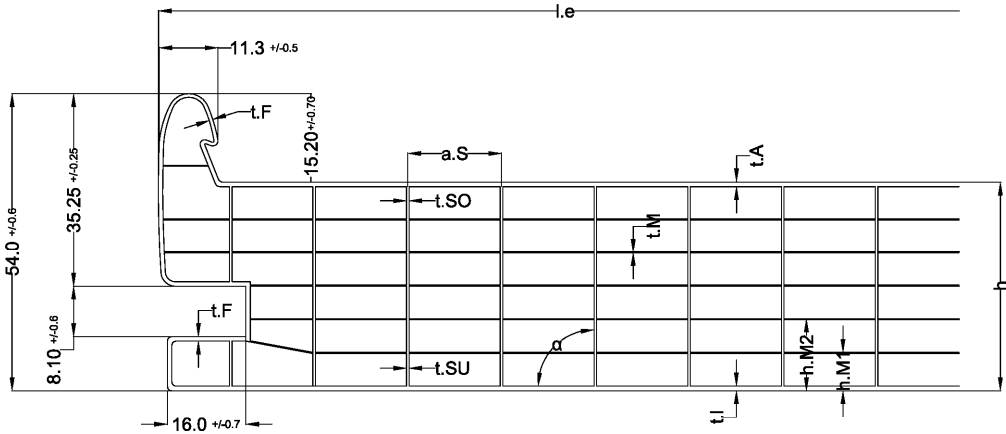


Minimum performance levels or classes for the sheets in accordance with EN 16153

B _x Nm ² /m	U [W/m ² K]		Durability			
	Horizontal	Vertical	Variation of yellowness index	Variation of light transmittance	Variation of deformation flexural modulus	Variation of tensile strength
1566	1,2	1,1	≤ 10 (ΔA)*	≤ 5% (ΔA)*	Cu 1	Ku 1

Polycarbonat (PC)

*coloured sheets from the same PC resin as uncoloured sheets shall be classified ΔD acc. Tab. 3 DIN EN 16153:2015-05



h.M1 mm	h.M2 mm	t.A mm	t.L mm	t.M mm	t.SO mm	t.SU mm	a.S mm	l.e mm	h mm	weight kg/m	difference Δa zu 90°
7,50	14,60	0,76	0,68	0,13	0,55	0,55	17,75	605	40	2,71	
+ 0,40 - 0,40	+ 0,40 - 0,40	-0,09	- 0,09	- 0,02	- 0,08	- 0,08	+0,30	Tolerances acc. EN 16153:2015-05/Tab.2			≤ 2°

Rodeca LBE	Annex A 4.9
Geometry/ weight per area, Minimum performance levels or classes for the sheets in accordance with EN 16153 PC 2600-40-7-U	

t.A1 mm	t.A2 mm	t.A3 mm	t.M1 mm	t.M2 mm	t.SO mm	t.l mm	t.FO mm	h.M1 mm	h.M2 mm	weight kg/m
0,89	0,82	0,87	0,35	0,43	0,70	0,80	0,65	10,90	17,6	0,17
- 0,02	- 0,14	-0,15	-0,06	- 0,07	- 0,11	- 0,36	- 0,06	- 0,20	-0,30	+0,02 -0,02

Rodeca LBE

Annex B

Provisions for design and dimensioning

Dimensioning, installation and execution of the kit shall be in compliance with the national technical specifications. These differ in terms of their content as well as their status within the legal frameworks of the member states.

If no national provisions exist, dimensioning can be carried out in accordance with Annexes B 1 and B 2. In case the roof system, in particular the multi-wall sheets are systematically in contact with chemicals, the resistance to these substances shall be checked. Thereby, high concentrations of chemicals in the surrounding air shall be also considered.

Installation, packaging, transport, storage as well as use, maintenance and repair shall be carried out in accordance with the manufacturer's instructions (extract see Annex D).

B 1 Load-bearing capacity and serviceability of the covering

B 1.1 General

The design and arrangement of the multi-wall sheets as described in Section 1.1.1 in the translucent roof and wall kit shall correspond to the specifications given in Annexes A 1 to A 4. The specifications given in Section 2 shall be complied with.

The stability shall be verified for the ultimate limit state (ULS)

$$E_d \leq R_d$$

and for the serviceability limit state (SLS)

$$E_d \leq C_d$$

E_d : design value of the action

R_d : design value of the structural resistance for verification of the ultimate limit state

C_d : design value of the structural resistance for verification of the serviceability limit state

The multi-wall sheets shall not be used for bracing the aluminium structure.

The multi-wall sheets shall not be walked on.

Assessment pertaining to fall-through protection is not included in this ETA.

The verification of aluminium covering profiles and lift anchors, their fixings as well as the verification of substructure is not included in this ETA.

B 1.2 Design values for actions, E_d

The design values for the actions shall be determined in accordance with EN 1991 + EN 1990.

The action resulting from the dead weight of the multi-wall sheets may be neglected for the structural design calculation in accordance with Section B.1.3 of the roof and wall kit. Live loads are not permitted.

The design value of the action results from the characteristic values of the actions taking into account the partial safety factors γ_F , the coefficients ψ and the factors for the effects of the duration of load action C_{t1} .

For the wind and temperature effects to be considered in the load case "summer" the Ψ coefficient defined in EN 1990 may be applied. In design situations where the wind is applied as the dominant variable action, the Ψ coefficient may be considered in the design value of the structural resistance.

The actions E_k shall be increased through multiplication by the factors C_t in consideration of the action duration and based on load.

Load action	Duration of load action	$K_t = C_t$
Wind	very short	1.00
Snow as an extraordinary snow load (e.g. in the low-lying plains of northern Germany)	short: up to one week	1.15
Snow	medium: up to three months	1.20
Dead Load	constantly	1.50

B 1.3 Design values for structural resistance R_d (ULS) and C_d (SLS)

The design values for structural resistance R_d and C_d result from the characteristic value of structural resistance R_k and C_d in consideration of the material safety factor γ_M , the factor taking into account the effects of media C_u and the temperature factor C_θ as follows:

$$R_d = \frac{R_k}{\gamma_{MR} \cdot C_u \cdot C_\theta} \quad C_d = \frac{R_k}{\gamma_{MC} \cdot C_u \cdot C_\theta}$$

The following factors shall be applied:

Factor taking into account the effects of media and ageing C_u		1,10
Temperature factor C_θ	summer	1,20
	winter	1,00

The following material safety factors shall be applied as a function of the consequence class (CC) in accordance with EN 1990:

Consequence class	Material safety factor γ_{MR}	Material safety factor γ_{MC}
CC 1	1,25	1,09
CC 2	1,30	1,13

In design situations where wind is considered to be the dominant variable action, the reduction in structural resistance due to temperature may be reduced by means of the ψ coefficient for the summer load case. For this design situation a reduction factor for temperature of $C_\theta = 1 + \psi \cdot (C_\theta - 1.0)$ may be applied.

The characteristic values for structural resistance R_k shall be taken from the tables in Annex B 2.1.1 to B 2.2.9 for the given multi-wall sheets and direction of loading.

- One-span system

The load direction "negative" and "positive" as well as the span l_F are defined in Annex A 2.1 to A 2.4. The characteristic values for structural resistance R_k and C_k related to the span l_F shall be taken from the tables in Annex B 2.1.1 to B 2.1.5 for the given multi-wall sheets and direction of loading.

- Multi-field system

The load direction "negative" and "positive" as well as the span l_F is given in Annex A 2.1 to A 2.4. The characteristic values for structural resistance R_k and C_k are given as interaction between support moment and force at the intermediate support and shall be taken from the tables in Annex B 2.2.1 to B 2.2.9 for the given multi-wall sheets and direction of loading.

The load at intermediate support is decisive.

For load direction "negative" the factor C_u can be set to 1,0. Therefore direct sunlight on the inside of the multi-wall sheets must be excluded.

Height of intermediate support for fixing the lift anchors must be at least 50mm for the roof and wall kit PC 2540-4, PC 2540-4-MC, PC 2540-6, PC 2540-7, PC 2540-10, PC 2540-10DX and 2600-40-7-U. Height of intermediate support for roof and wall kit PC 2550-10 and PC 2560-12 must be at least 60 mm. The minimum span l_F as given in Annex A 1.2 to A 1.3 shall be 0,50 m.

For the determination of the respective span, the centre of the lift anchor is decisive for the load direction "negative" and the centre of the intermediate support for the load direction "positive".

- Local buckling

When the characteristic values of Annexes B 2.2.1 to B 2.2.9 are fully utilised, reversible local buckling may occur in the pressed outer wall of the sheets without affecting the load-bearing capacity.

B 1.4 Limiting of deflection

The limiting of deflection shall be assess in particular case e.g. to avoid collection of water. The design value for structural resistance C_d for deflection is given by the design value of limiting of deflection $f_{R,d}^{GZG}$. The deflection is to be carried out for uniformly distributed loads assuming a linear-elastic material behavior as follows:

$$\frac{f_{E,d}^{GZG}}{f_{R,d}^{GZG}} \leq 1,0$$

$f_{E,d}^{GZG}$: design value of deflection as a result of E_d

$f_{R,d}^{GZG}$: design value of deflection limit

For calculation the design value of deflection as a result of E_d the thermal expansion coefficient is $\alpha_T = 65 \cdot 10^{-6} \text{ K}^{-1}$. The following flexural rigidity values (B) of the multi wall sheets shall be applied:

Multi wall sheet	B (Nm ² /m)
PC 2540-4	1850
PC 2540-4-MC	1800
PC 2540-6	1750
PC 2540-7	1800
PC 2540-10	1550
PC 2540-10DX	1800
PC 2600-40-7-U	2050
PC 2550-10	3050
PC 2560-12	4930

The characteristic values for own weight of multi wall sheets shall be taken from the Annex A.4. The design values for limiting of deflection results as follows:

$$f_{R,d}^{GZG} = \frac{f_{R,k}}{C_u \cdot C_\theta \cdot \gamma_{MC}}$$

The limit of deflection ($f_{R,k}$) is to be determined that a proper function is not impaired, for example, no water sacks form or water penetrates.

The factors given in Section B 2.1 shall be applied.

B 1.5 Load-bearing capacity of the aluminium covering profiles with plastic insulation bar

The fixing distance of the aluminium covering profiles with plastic insulation bar on the substructure is approx. 350 mm, shear stress from bending must be excluded.

The structural stability against transverse tensile failure is to prove:

$$\left(\frac{\frac{\sigma_{xd}}{Q_k}}{\gamma_M \cdot A} \right) \leq 1$$

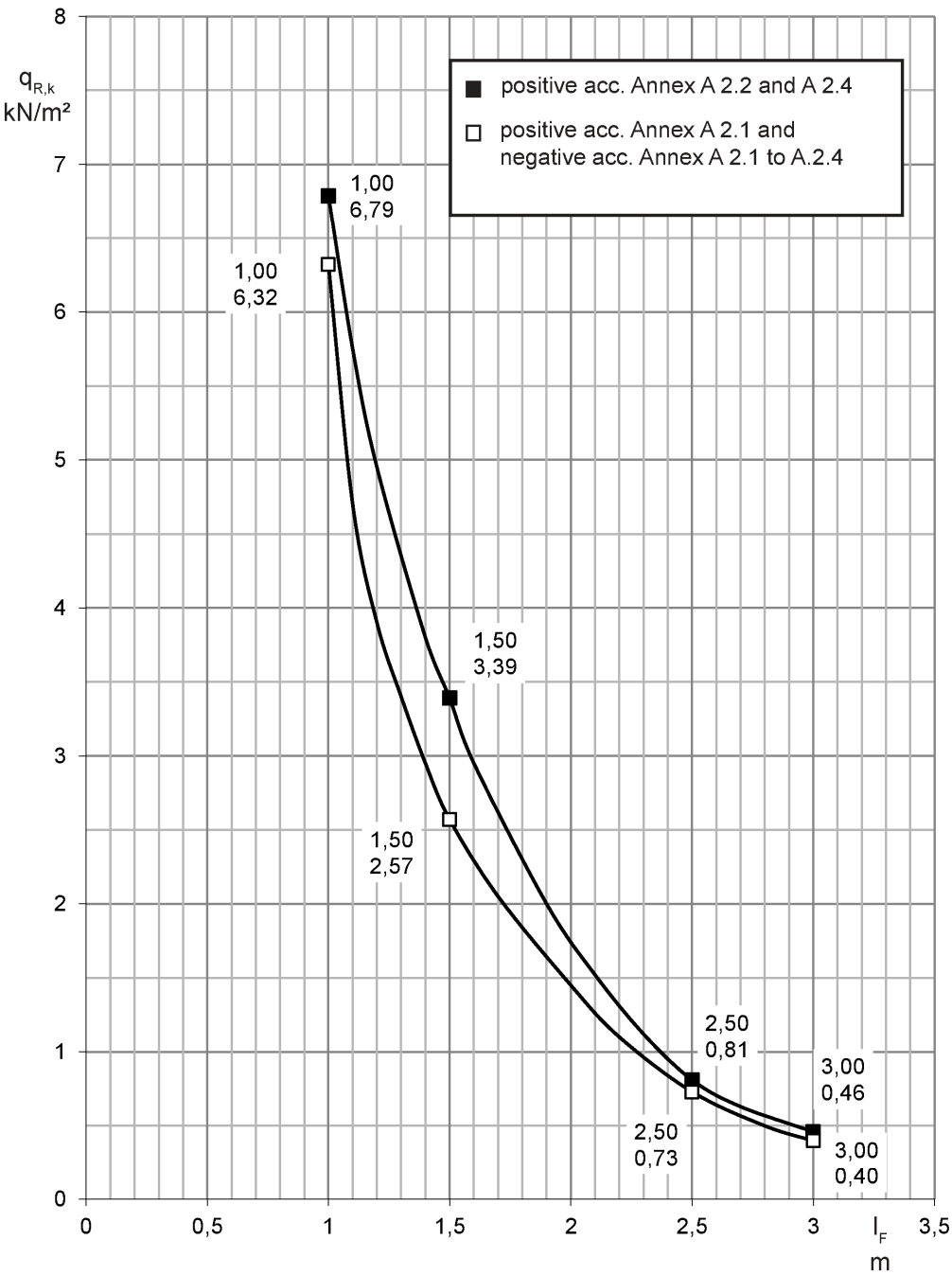
σ_{xd} : design value of normal stress as a result of wind load.

The eccentric load application of the multi-wall sheets regarding the position of the plastic insulating bars must be taken into account.

γ_M : 1,30 - material safety factor

A : 1,56 - factor taking into account the effects of temperature and ageing

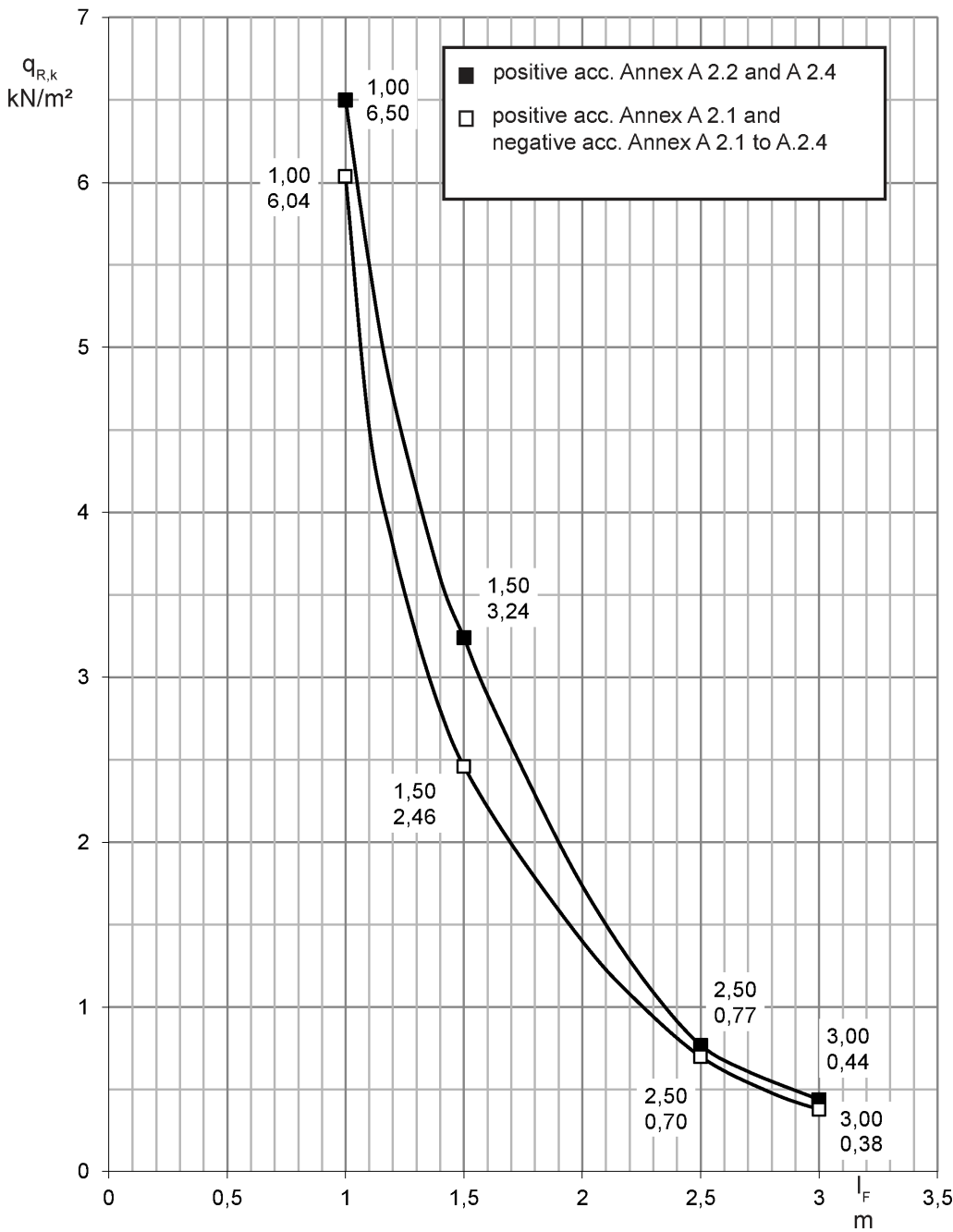
Q_k : 80 N/mm – characteristic value of tensile strength of the insulation bar's connection



Characteristic values for structural resistance R_k
Uniformly distributed load $q_{R,k}$ in relation to span l_F
direction positive wind- and snowload
direction negative windload

Rodeca LBE	Annex B 2.1.1
characteristic values for structural resistance one-span system PC 2540-4 / PC 2540-4-MC / PC 2540-10DX	

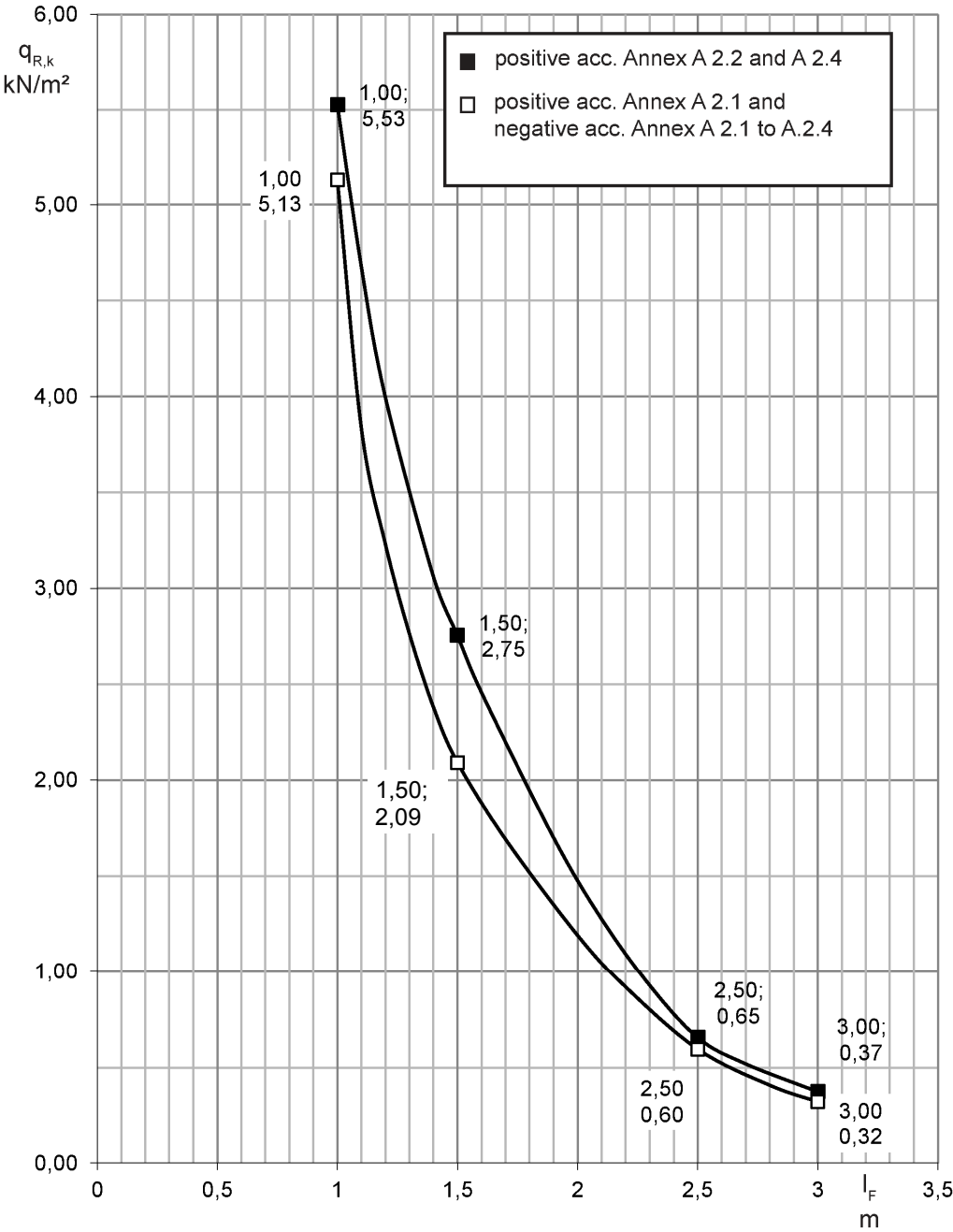
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Characteristic values for structural resistance R_k
Uniformly distributed load $q_{R,k}$ in relation to span l_F
direction positive wind- and snowload
direction negative windload

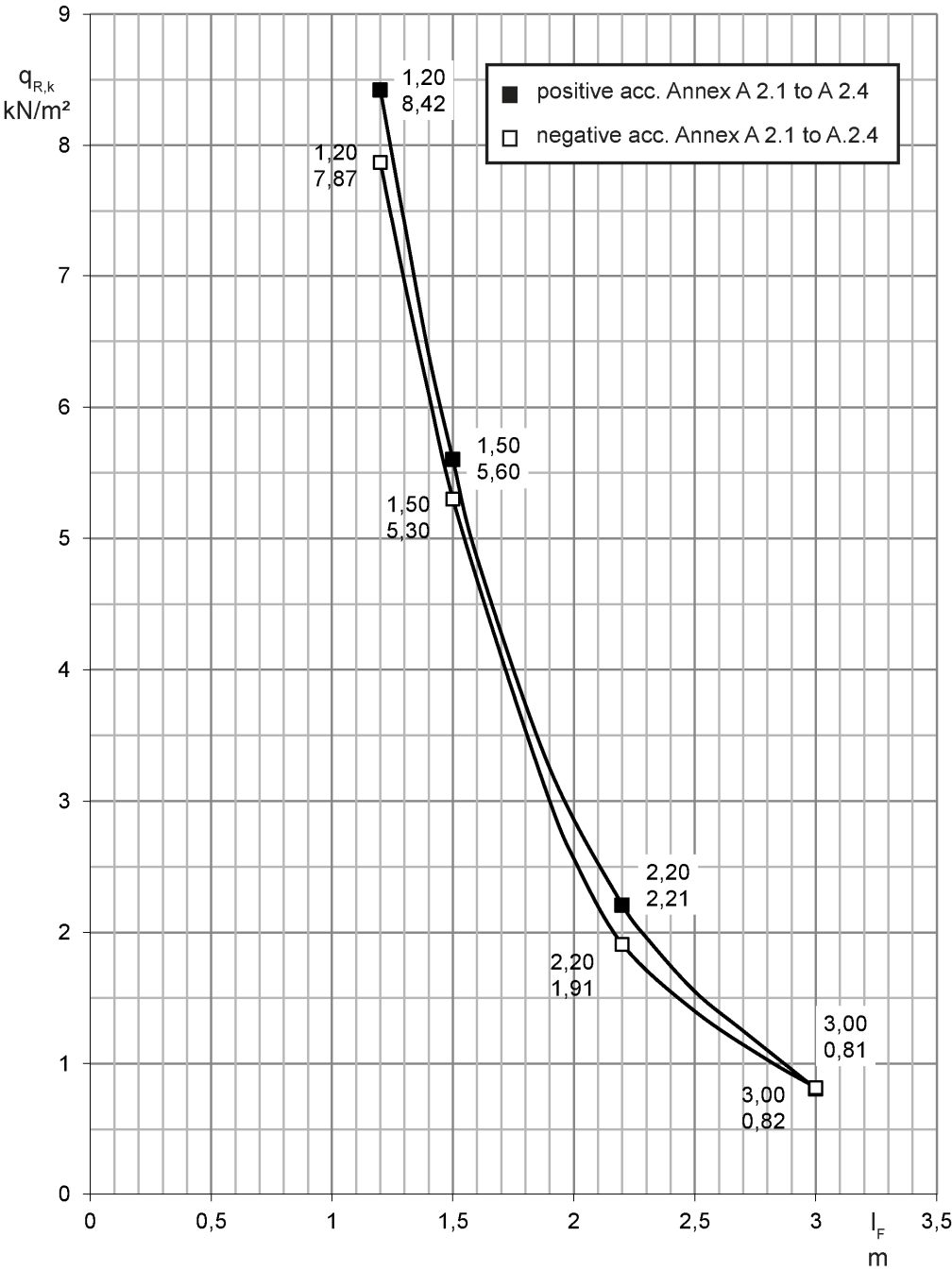
Rodeca LBE	Annex B 2.1.2
characteristic values for structural resistance one-span system PC 2540-6 / PC 2540-7	

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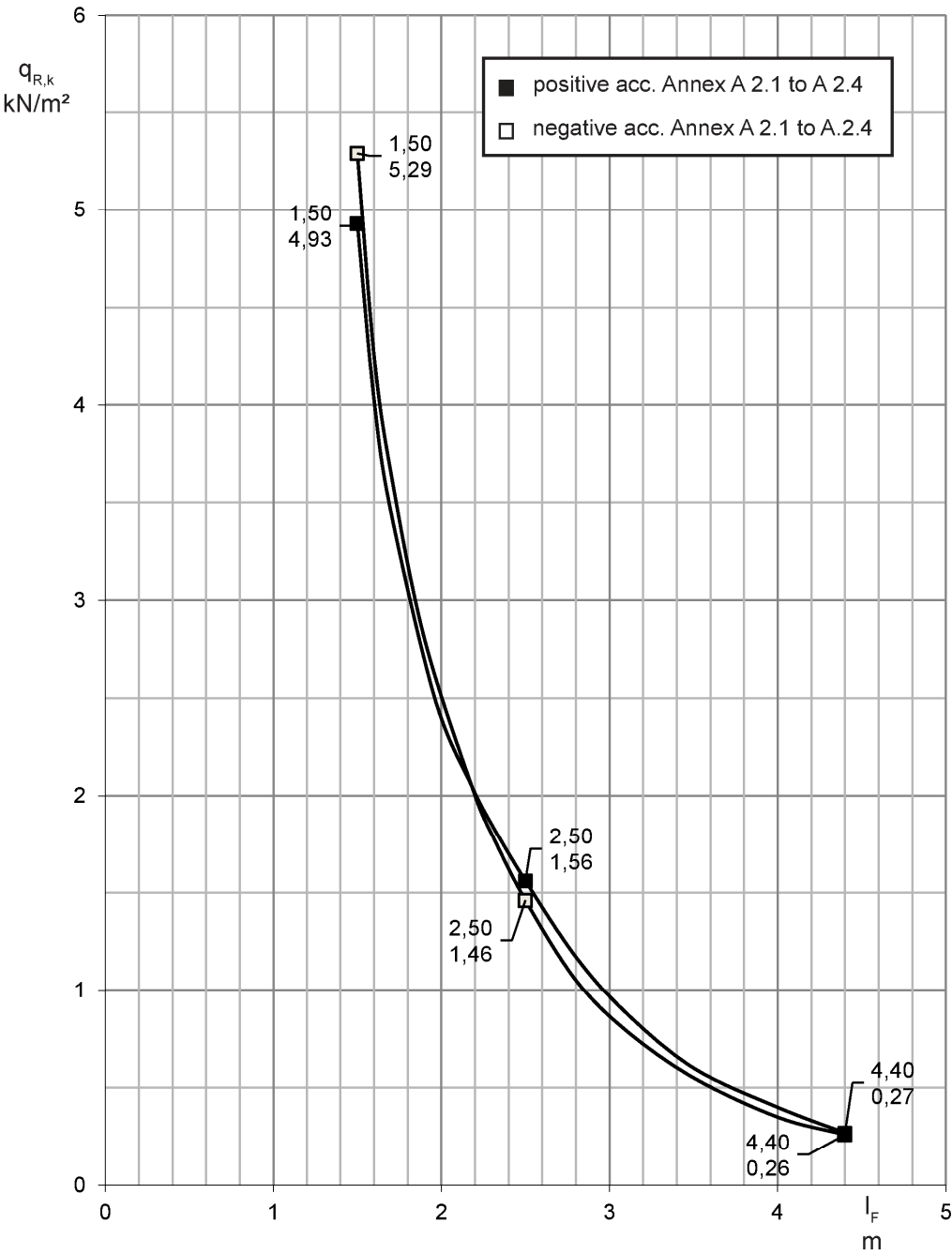
Characteristic values for structural resistance R_k
Uniformly distributed load $q_{R,k}$ in relation to span l_F
direction positive wind- and snowload
direction negative windload

Rodeca LBE	Annex B 2.1.3
characteristic values for structural resistance one-span system PC 2540-10	



Characteristic values for structural resistance R_k
Uniformly distributed load $q_{R,k}$ in relation to span l_F
direction positive wind- and snowload
direction negative windload

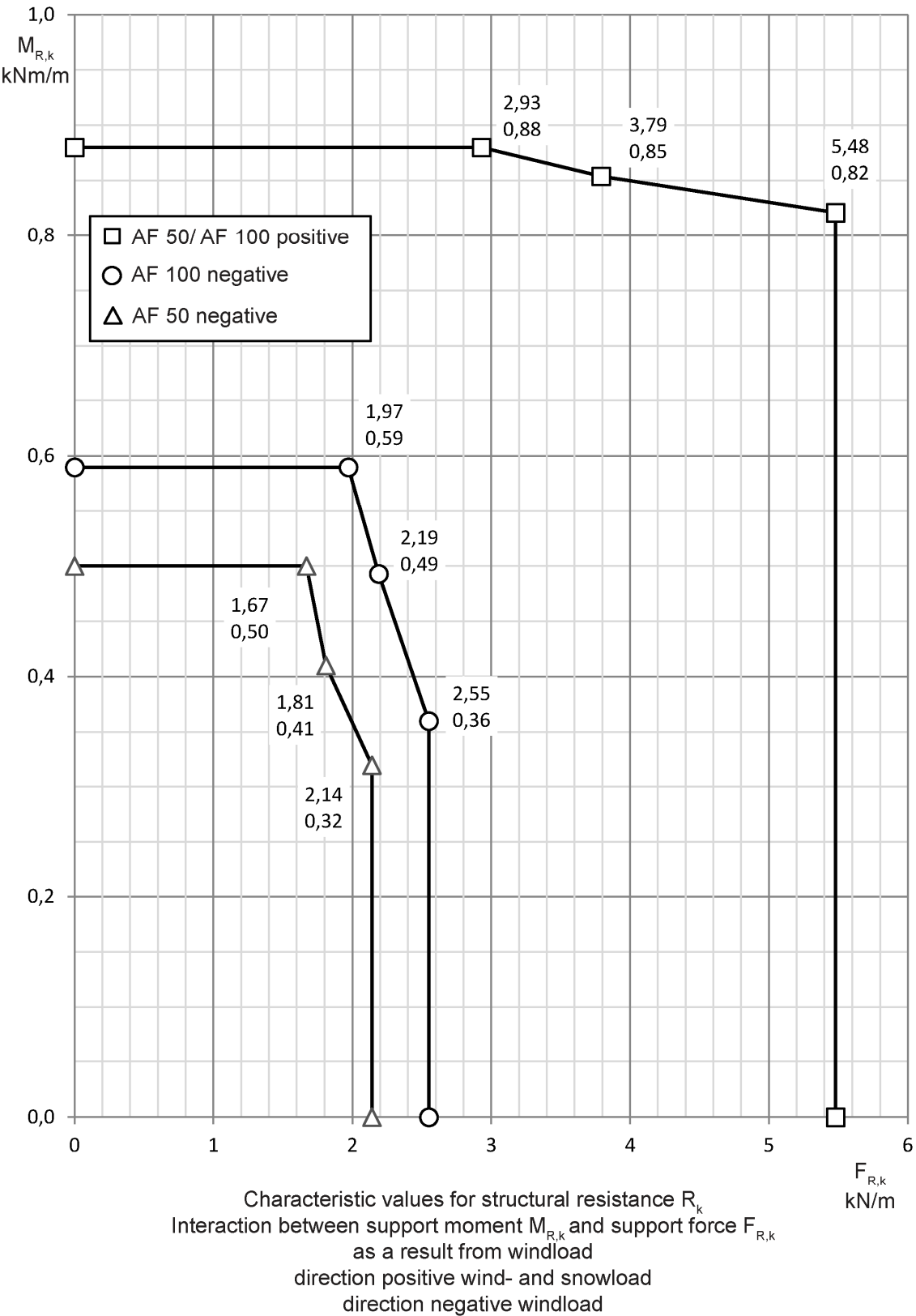
Rodeca LBE	Annex B 2.1.4
characteristic values for structural resistance one-span system PC 2550-10	



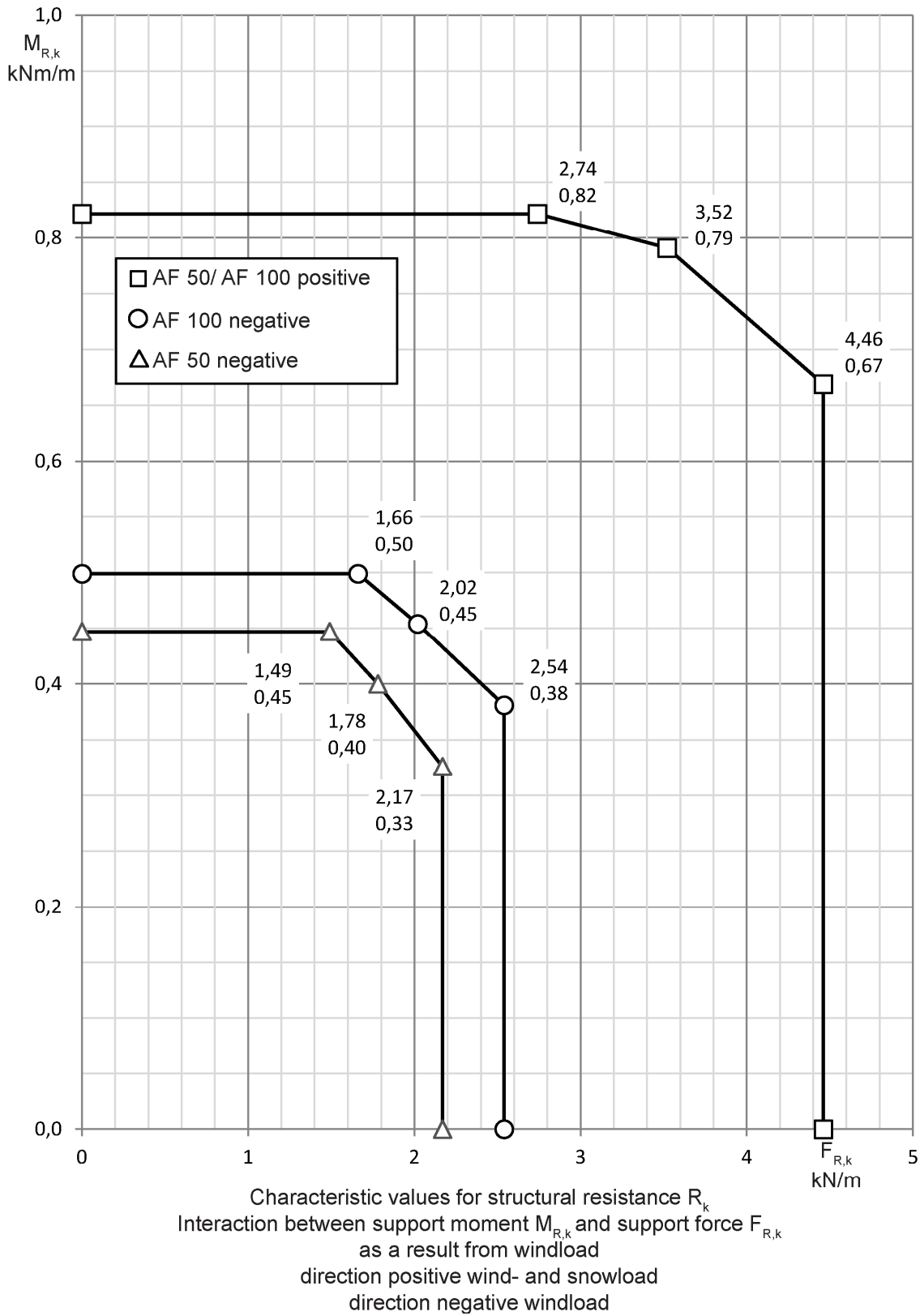
Characteristic values for structural resistance R_k
Uniformly distributed load $q_{R,k}$ in relation to span l_F
direction positive wind- and snowload
direction negative windload

Rodeca LBE	Annex B 2.1.5
characteristic values for structural resistance one-span system PC 2560-12	

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Rodeca LBE	Annex B 2.2.1
characteristic values for structural resistance multi-span system PC 2540-4	

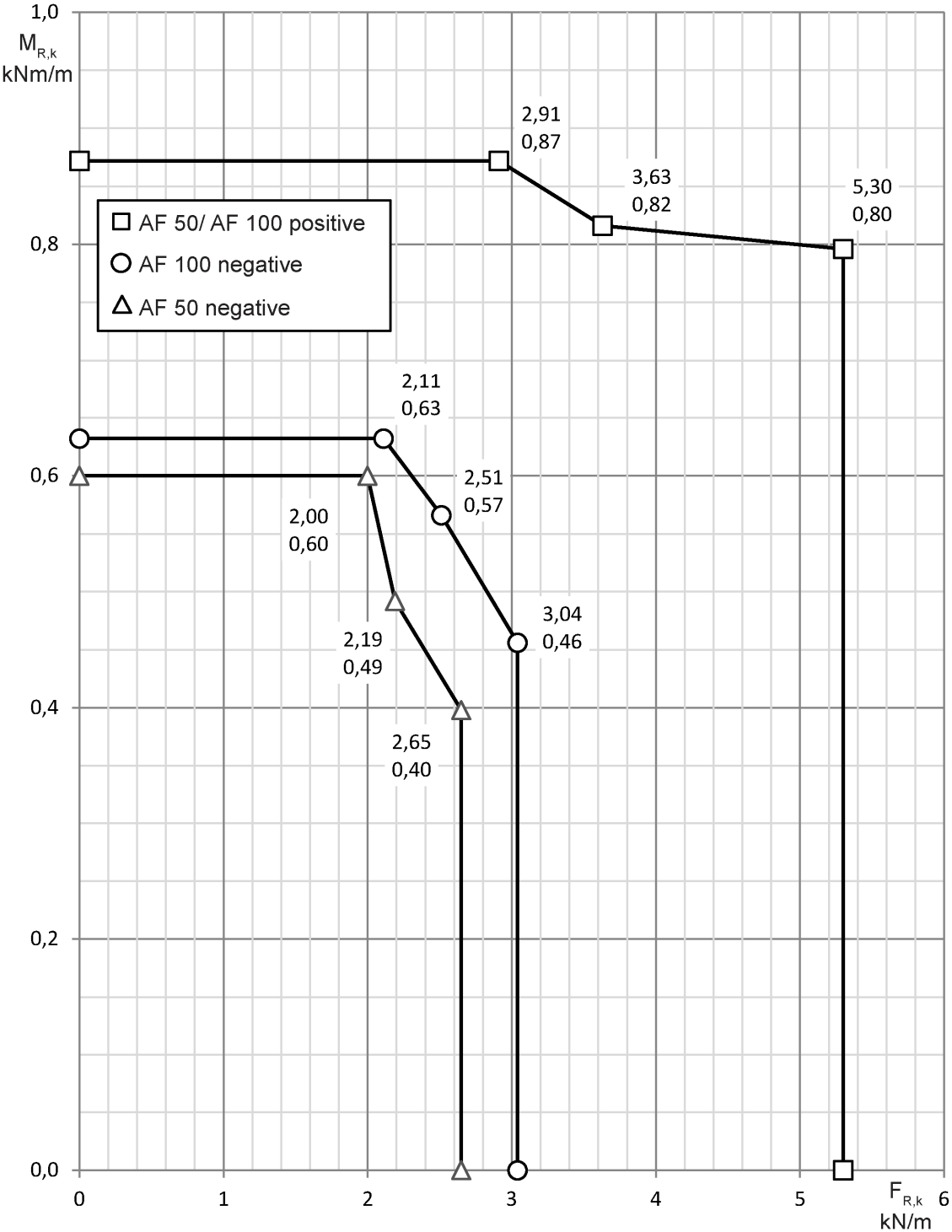


Rodeca LBE

Vcharacteristic values for structural resistance
multi-span system
PC 2540-4 MC

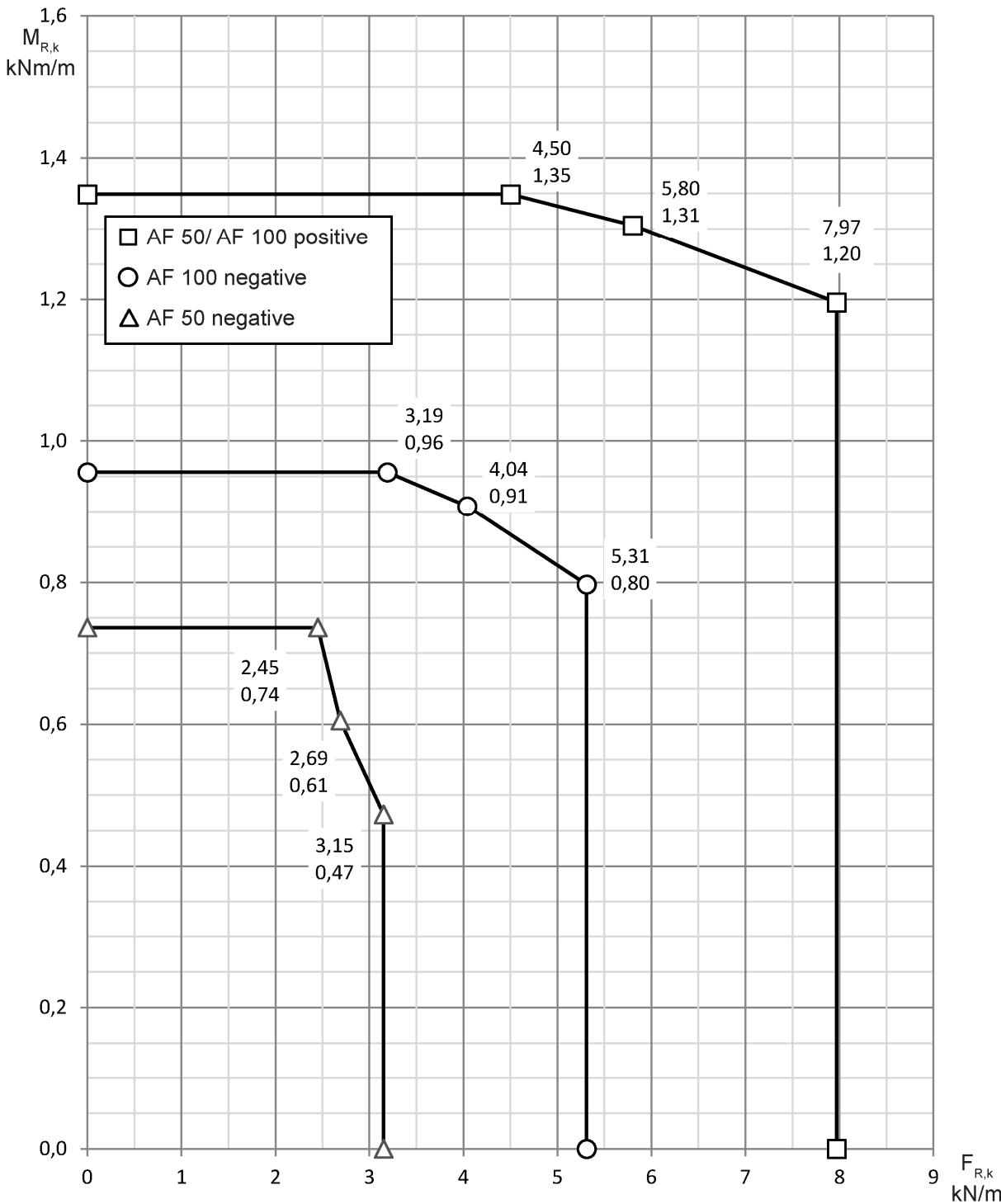
Annex B 2.2.2

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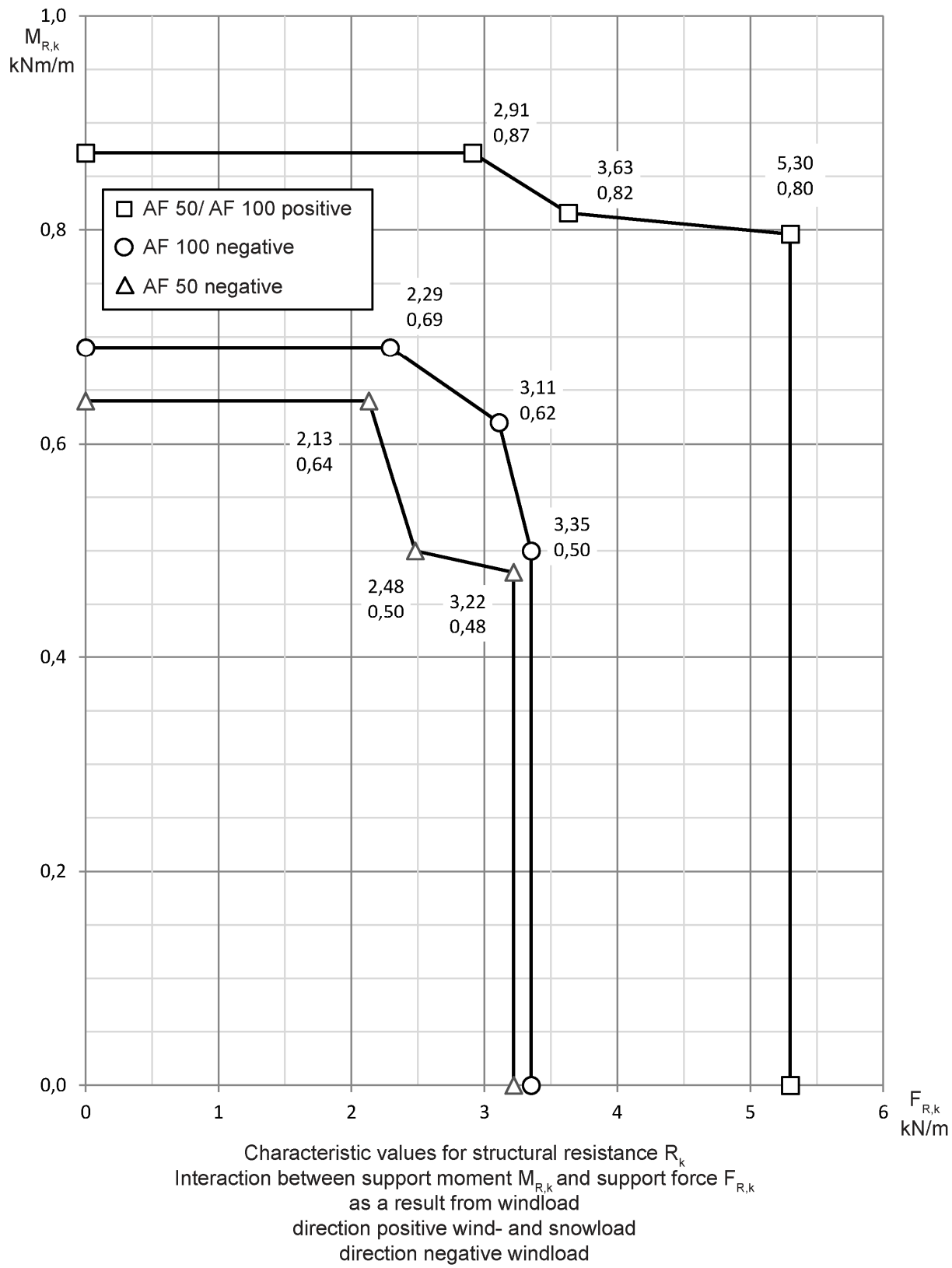
Characteristic values for structural resistance R_k
Interaction between support moment $M_{R,k}$ and support force $F_{R,k}$
as a result from windload
direction positive wind- and snowload
direction negative windload

Rodeca LBE	Annex B 2.2.3
characteristic values for structural resistance multi-span system PC 2540-6	

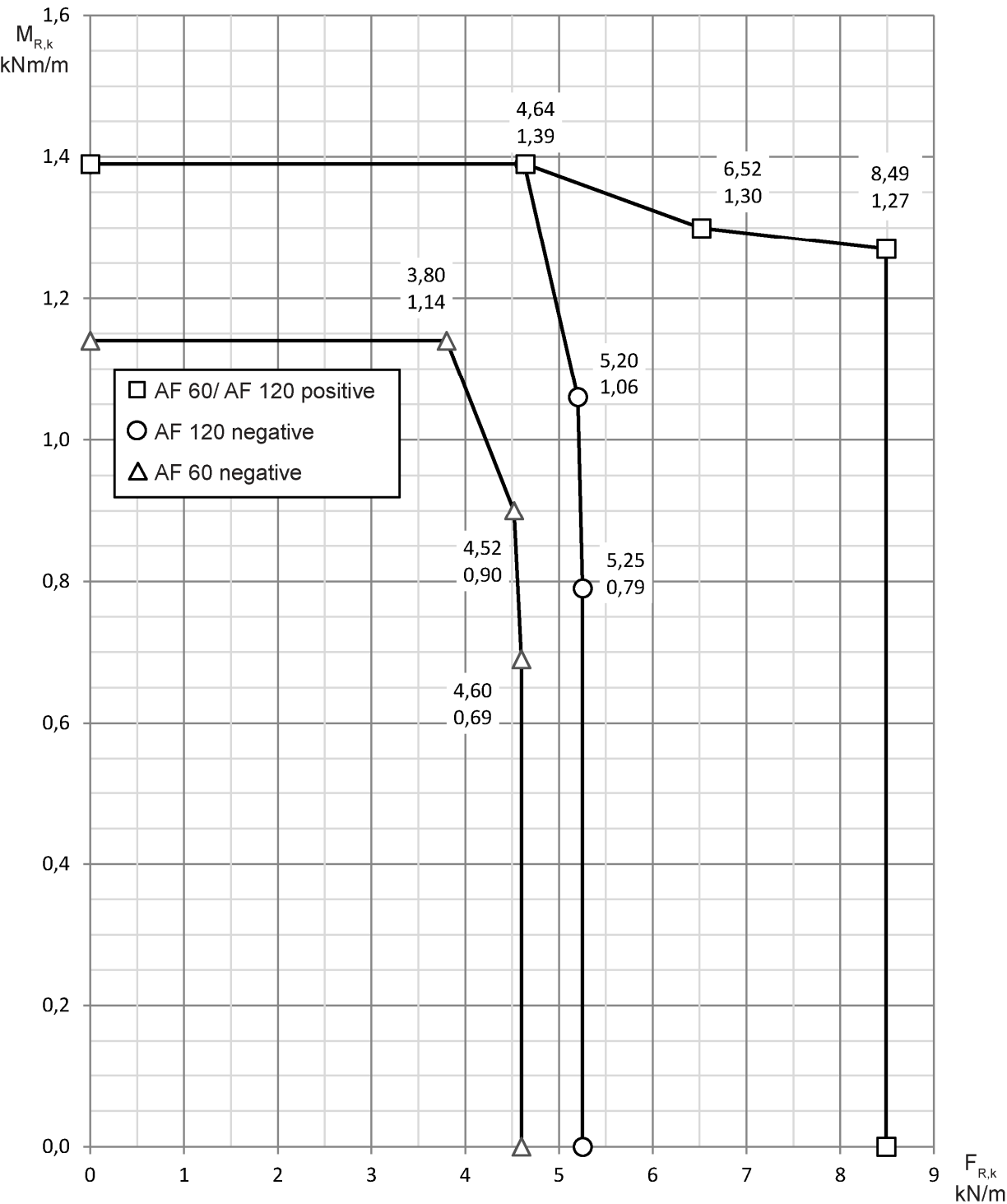


Characteristic values for structural resistance R_k
Interaction between support moment $M_{R,k}$ and support force $F_{R,k}$
as a result from windload
direction positive wind- and snowload
direction negative windload

Rodeca LBE	Annex B 2.2.4
characteristic values for structural resistance multi-span system PC 2540-7	

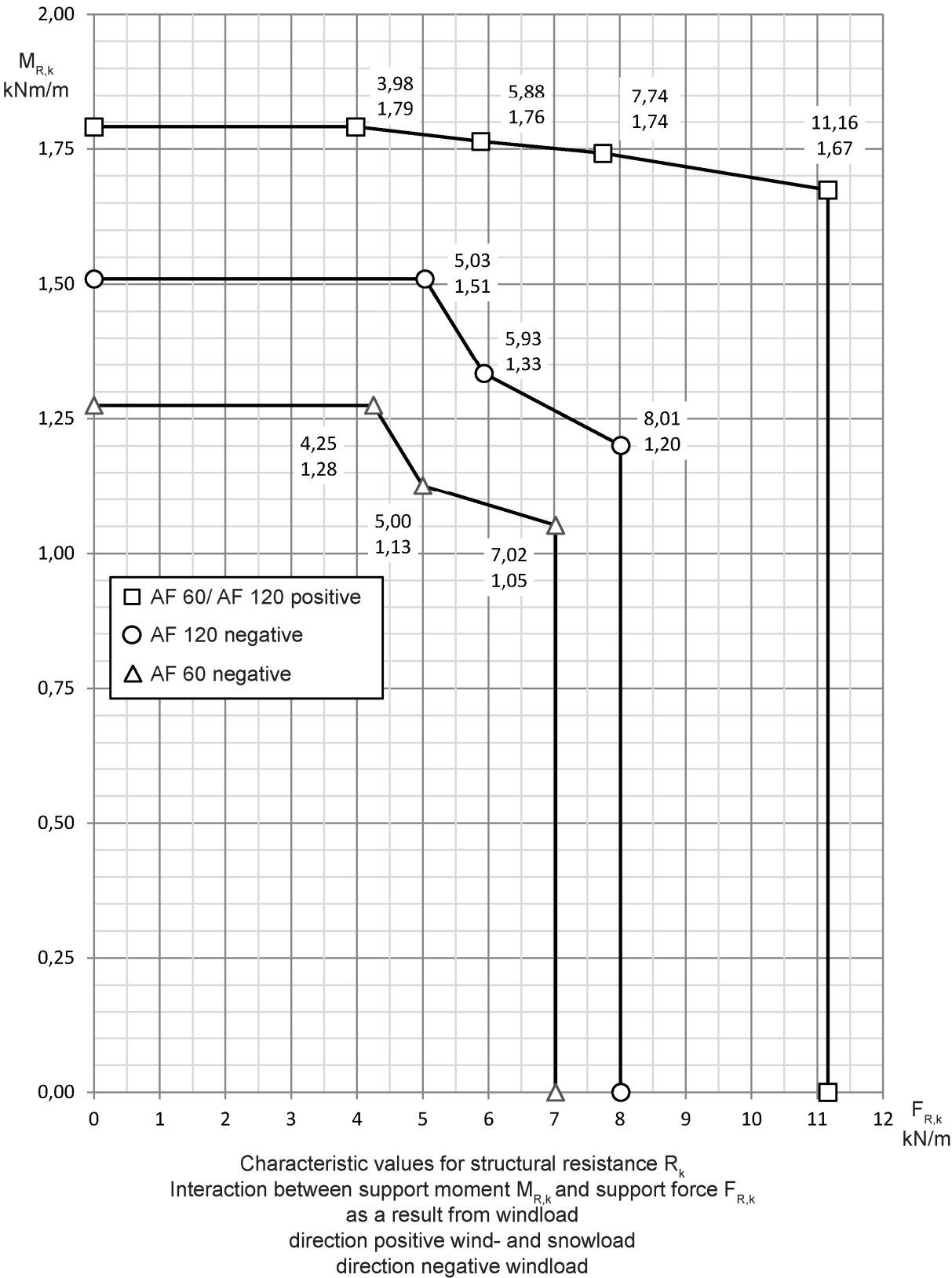


Rodeca LBE	Annex B 2.2.5
characteristic values for structural resistance multi-span system PC 2540-10	



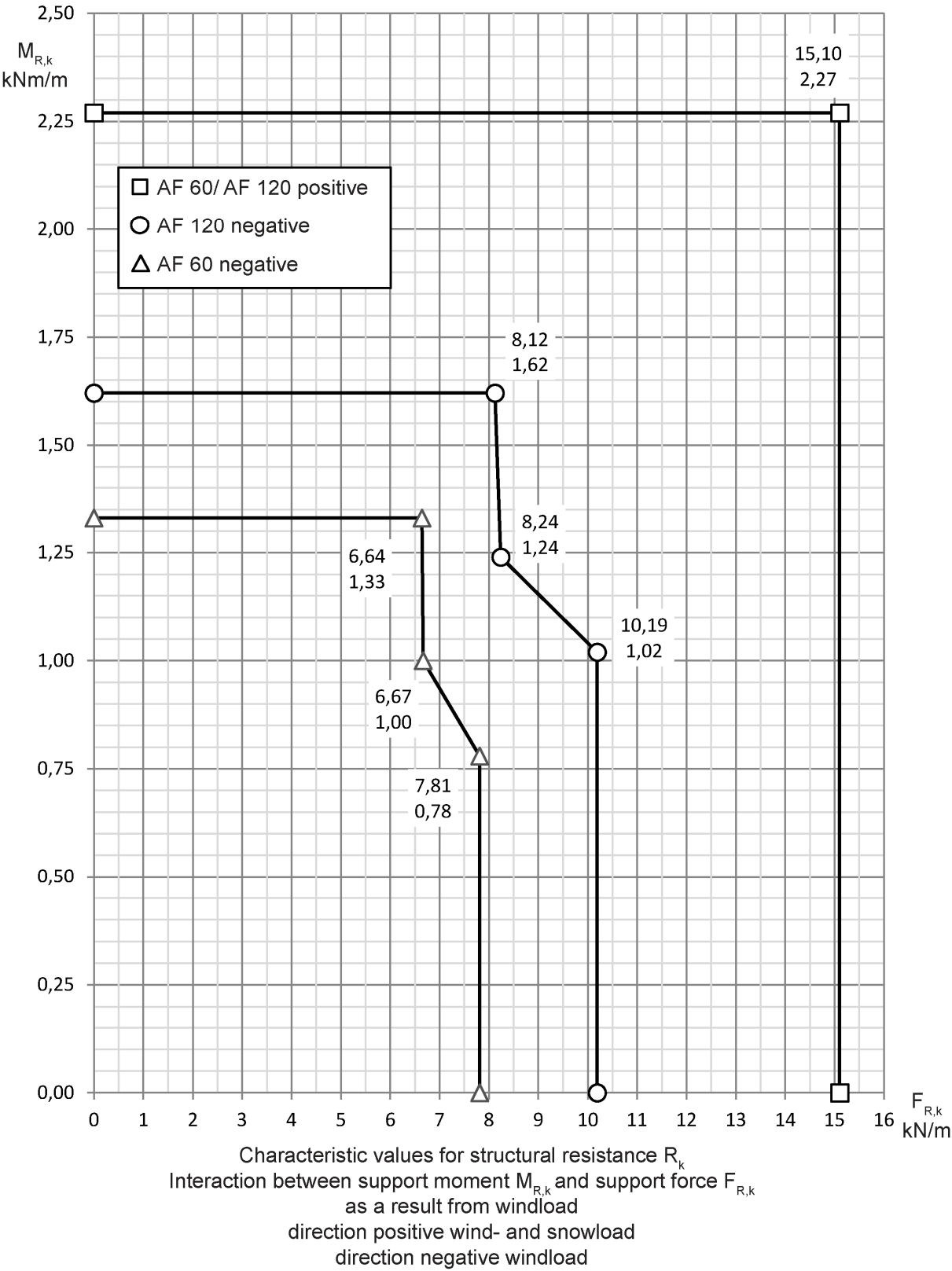
Characteristic values for structural resistance R_k
Interaction between support moment $M_{R,k}$ and support force $F_{R,k}$
as a result from windload
direction positive wind- and snowload
direction negative windload

Rodeca LBE	Annex B 2.2.6
characteristic values for structural resistance multi-span system PC 2540-10 DX	



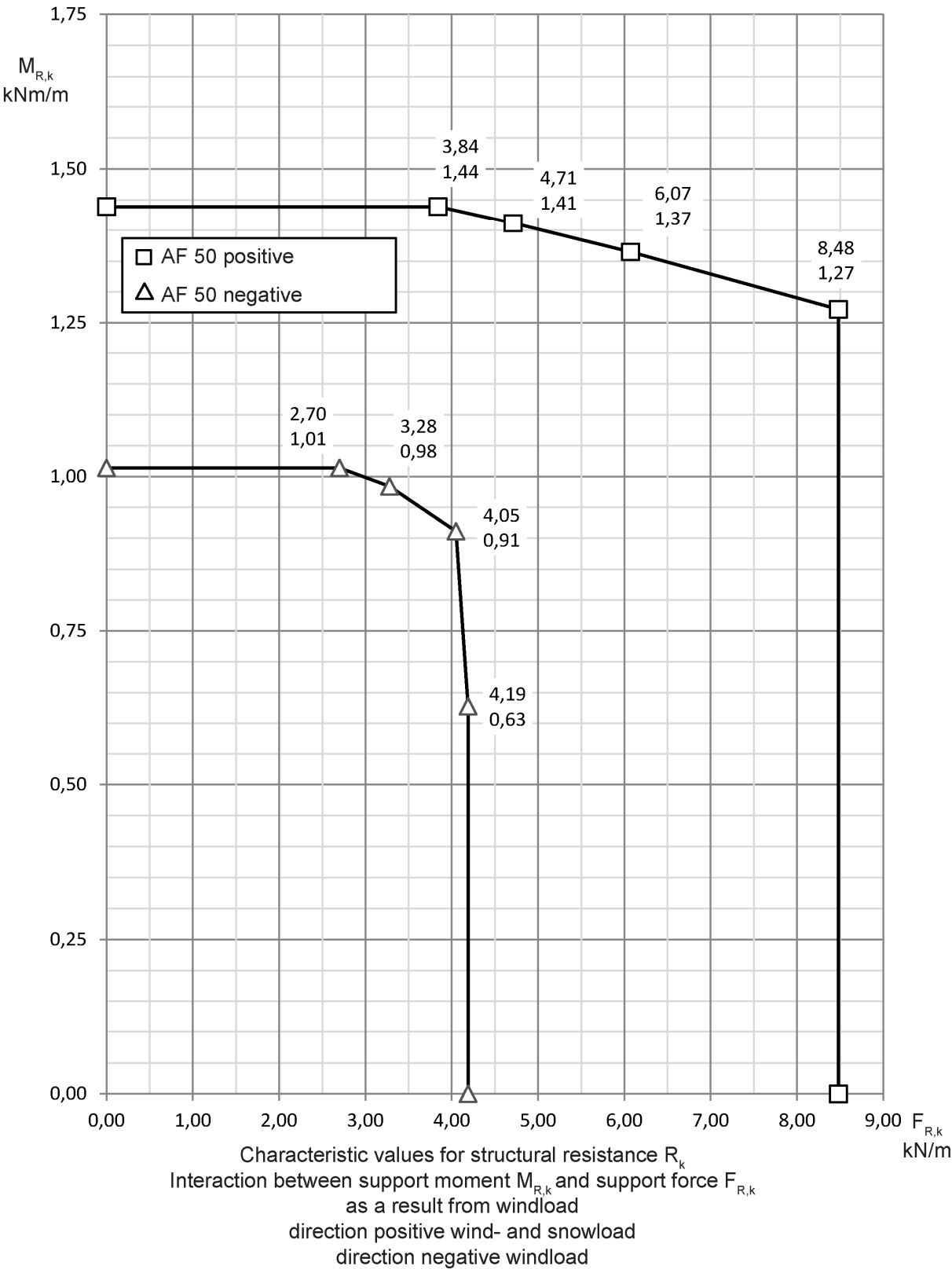
Rodeca LBE	Annex B 2.2.7
characteristic values for structural resistance multi-span system PC 2550-10	

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Rodeca LBE	Annex B 2.2.8
characteristic values for structural resistance multi-span system PC 2560-12	

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Rodeca LBE	Annex B 2.2.9
characteristic values for structural resistance multi-span system PC 2600-40-7-U	

Thermal resistance

Annex C

C 1 Thermal transmittance coefficient

The thermal transmittance U_{cw} shall be determined in accordance with EN ISO 10077-1 as the resultant of the thermal transmittance coefficients of the covering profiles and the multi-wall sheets, weighted on the basis of the area as well as the length-weighted values of linear thermal transmittance coefficients of the multi-wall sheets at the level of covering profiles.

The respective area fractions shall be calculated for the translucent roof and wall kit. For the calculation of the design value of the thermal transmittance coefficient U_{cw} of the translucent roof and wall kit, the following equation shall be used:

$$U_{cw} = \frac{\sum (U_f \cdot A_f) + \sum (U_p \cdot A_p) + \sum (\Psi_p \cdot l_p)}{A_{ges}} \text{ in W/(m}^2 \cdot \text{K)}$$

where:

- U_f : thermal transmittance coefficient of the covering profiles W/(m²K)
- A_f : area of the covering profiles
- U_p : thermal transmittance coefficient of the PC multi-wall sheets incl. tongue and groove connection in W/(m²K)
- A_p : visible surface of multi-wall sheets in m²
- Ψ_p : linear thermal transmittance coefficient of multi wall sheets at the level of covering profiles in W/(mK)
- l_p : covering profile length in m
- A_{ges} : total area of the roof and wall kit in m²

The values of thermal transmittance U_p of the multi wall sheets and U_f of the covering profiles shall be taken from Annex C 2.1 to C 2.4.

Linear thermal transmittance coefficient Ψ_p shall be assumed to $\Psi_p = 0$ (acc. EN ISO 10077-1). The punctiform thermal bridges of the lift anchors in continuous systems can be neglected. The roof and wall kit must be installed and connected to adjacent components so that thermal bridges are avoided whenever possible. These details are to be assessed by the designers in individual cases.

Thermal transmittance coefficients U_p of the multi-wall sheets 40mm

	Installation horizontal/vertical	
multi-wall sheet	installation horizontal	installation vertikal
PC 2540-4 acc. Annex A 4.1	$U_p = 1,5 \text{ (W/(m}^2\text{K))}$	$U_p = 1,4 \text{ (W/(m}^2\text{K))}$
PC 2540-4-MC acc. Annex A 4.2	$U_p = 1,6 \text{ (W/(m}^2\text{K))}$	$U_p = 1,5 \text{ (W/(m}^2\text{K))}$
PC 2540-6 acc. Annex A 4.3	$U_p = 1,2 \text{ (W/(m}^2\text{K))}$	$U_p = 1,2 \text{ (W/(m}^2\text{K))}$
PC 2540-7 acc. Annex A 4.4	$U_p = 1,2 \text{ (W/(m}^2\text{K))}$	$U_p = 1,1 \text{ (W/(m}^2\text{K))}$
PC 2540-10 acc. Annex A 4.5	$U_p = 1,0 \text{ (W/(m}^2\text{K))}$	$U_p = 1,0 \text{ (W/(m}^2\text{K))}$
PC 2540-10DX acc. Annex A 4.6	$U_p = 1,1 \text{ (W/(m}^2\text{K))}$	$U_p = 1,1 \text{ (W/(m}^2\text{K))}$
PC 2600-40-7-U acc. Annex A 4.9	$U_p = 1,2 \text{ (W/(m}^2\text{K))}$	$U_p = 1,1 \text{ (W/(m}^2\text{K))}$

Linear thermal transmittance coefficients Ψ_p of the connection joint of multi-wall sheets

	$\Psi_p \text{ (W/(mK))}$
PC 2540-4 acc. Annex A 4.1	0,0025 W/mK
PC 2540-4-MC acc. Annex A 4.2	0,0017 W/mK
PC 2540-6 acc. Annex A 4.3	0,011 W/mK
PC 2540-7 acc. Annex A 4.4	0,012 W/mK
PC 2540-10 acc. Annex A 4.5	0,014 W/mK
PC 2540-10 DX acc. Annex A 4.6	0,010 W/mK
PC 2600-40-7-U acc. Annex A 4.9	0,0085 W/mK

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Thermal transmittance coefficients of the multi-wall sheets U_p

Annex C 2.1

Thermal transmittance coefficients U_f of the aluminium covering profiles

Profile no.	variants of profile	width	U_f (W(m ² K))
414001 acc. Annex A 3.1.3	profile without plastic insulation bar	101,5mm	5,6 (W(m ² K))
414002 acc. Annex A 3.1.3	profile without plastic insulation bar	101,5mm	5,6 (W(m ² K))
414011 acc. Annex A 3.1.4	profile without plastic insulation bar	70mm	6,1 (W(m ² K))
414012 acc. Annex A 3.1.4	profile without plastic insulation bar	70mm	6,1 (W(m ² K))
404051 acc. Annex A 3.1.1	profile without plastic insulation bar	70mm	0,84*(W(m ² K))
420031 acc. Annex A 3.1.5	profile without plastic insulation bar	50mm	6,5 (W(m ² K))
420040 acc. Annex A 3.1.6	profile without plastic insulation bar	50mm	5,9 (W(m ² K))
420080 acc. Annex A 3.1.7	profile without plastic insulation bar	80mm	5,0 (W(m ² K))
404062 acc. Annex A 3.1.2	profile without plastic insulation bar	100mm	5,6 (W(m ² K))
454001 acc. Annex A 3.1.9	profile with plastic insulation bar	101,5mm	2,1 (W(m ² K))
454002 acc. Annex A 3.1.9	profile with plastic insulation bar	101,5mm	2,9 (W(m ² K))
454011 acc. Annex A 3.1.10	profile with plastic insulation bar	70mm	2,5 (W(m ² K))
454012 acc. Annex A 3.1.10	profile with plastic insulation bar	70mm	3,3 (W(m ² K))
444062 acc. Annex A 3.1.8	profile with plastic insulation bar	154mm	2,0 (W(m ² K))

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Thermal transmittance coefficients of the aluminium covering profiles U_f

Annex C 2.2

Thermal transmittance coefficients U_p of the multi-wall sheet PC 2550-10

	installation horizontal/vertical	
PC 2550-10 acc. Annex A 4.8	installation horizontal	installation vertikal
	$U_p = 0,92 \text{ (W/(m}^2\text{K))}$	$U_p = 0,90 \text{ (W/(m}^2\text{K))}$

Linear thermal transmittance coefficients Ψ_p of the connection joint of multi-wall sheet PC 2550-10

$\Psi_p \text{ (W/(mK))}$	$\Psi_p = 0,020 \text{ (W/(mK))}$
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Thermal transmittance coefficients U_f of the aluminium covering profiles

Profile no.	variants of profile	width	$U_f \text{ (W/(m}^2\text{K))}$
415001 acc. Annex A 3.2.3	profile without plastic insulation bar	101,5mm	5,6 (W/(m ² K))
415002 acc. Annex A 3.2.3	profile without plastic insulation bar	101,5mm	5,6 (W/(m ² K))
415011 acc. Annex A 3.2.2	profile without plastic insulation bar	70mm	6,1 (W/(m ² K))
415012 acc. Annex A 3.2.2	profile without plastic insulation bar	70mm	6,1 (W/(m ² K))
405051 acc. Annex A 3.2.1	profile without plastic insulation bar	85mm	0,75*(W/(m ² K))
455001 acc. Annex A 3.2.6	profile without plastic insulation bar	101,5mm	1,5 (W/(m ² K))
455002 acc. Annex A 3.2.6	profile with plastic insulation bar	101,5mm	2,3 (W/(m ² K))
455011 acc. Annex A 3.2.5	profile with plastic insulation bar	70mm	1,9 (W/(m ² K))
455012 acc. Annex A 3.2.5	profile with plastic insulation bar	70mm	2,8 (W/(m ² K))
445062 acc. Annex A 3.2.4	profile with plastic insulation bar	154,4mm	1,6 (W/(m ² K))

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Thermal transmittance coefficients of the multi-wall sheets U_p and
Thermal transmittance coefficients of the aluminium covering profiles U_f

Annex C 2.3

Thermal transmittance coefficients U_p of the multi-wall sheet PC 2560-12

	installation horizontal/vertical	
PC 2560-12 acc. Annex A 4.9	installation horizontal	installation vertical
	$U_p = 0,77 \text{ (W/(m}^2\text{K))}$	$U_p = 0,75 \text{ (W/(m}^2\text{K))}$

Linear thermal transmittance coefficients Ψ_p of the connection joint of multi-wall sheet PC 2560-12

$\Psi_p \text{ (W/(mK))}$	$\Psi_p = 0,0085 \text{ (W/(mK))}$
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Thermal transmittance coefficients U_f of the aluminium covering profiles

Profile no.	variants of profile	width	$U_f \text{ (W/(m}^2\text{K))}$
456001 acc. Annex A 3.3.4	profile with plastic insulation bar	101,5mm	1,2 (W/(m ² K))
456002 acc. Annex A 3.3.4	profile with plastic insulation bar	101,5mm	2,0 (W/(m ² K))
456011 acc. Annex A 3.3.3	profile with plastic insulation bar	70mm	1,6 (W/(m ² K))
456012 acc. Annex A 3.3.3	profile with plastic insulation bar	70mm	2,3 (W/(m ² K))
406051 acc. Annex A 3.3.1	profile without plastic insulation bar	90mm	0,73* (W/(m ² K))
446062 acc. Annex A 3.3.2	profile with plastic insulation bar	154,4mm	1,5 (W/(m ² K))

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Thermal transmittance coefficients of the multi-wall sheets U_p and
Thermal transmittance coefficients of the aluminium covering profiles U_f

Annex C 2.4

Rodeca LBE

Annex D

Provisions for installation, packaging, transport, storage, use, maintenance and repair

D 1 Installation

The verification of aluminium covering profiles and lift anchors, their fixings as well as the verification of substructure is not subject of this ETA.

The stability shall be verified for the respective substructure in accordance with the valid European specifications. Before the roof and wall kit is installed, the dimensional stability of the substructure shall be checked.

The compliance of the existing substructure with the substructure applied during the planning and verification of its load-bearing capacity shall be checked visually. The installation of the roof and wall kit may only be performed by specialists who are specially trained for this purpose. The installation guidelines of the manufacturer shall be respected. If the roof and wall kit is installed in roof a minimum inclination of 5° is necessary. The manufacturer of the roof and wall kit shall inform the specialists that they may only carry out assembly and installation of the roof and wall kit in accordance with his instructions and the provisions of the ETA. The hollow chambers of the multi-wall sheets may not be filled.

If the translucent roof and wall kit can systematically come into contact with chemical substances, the resistance to these substances of the multi-wall sheets in particular must be checked. Connection of the translucent roof and wall kit to the substructure shall be carried out in accordance with the structural analysis. The multi-wall sheets are to be connected to an area of any size by means of a joint on the long sides. The multi-wall sheets are to be framed on end supports by aluminum covering profiles given in Annex A 2.1 to A 2.4. Installed as multi-span system the multi-wall sheets are fastened by lift anchors. The translucent roof and wall kit shall be installed and connected to the adjacent structure in a manner ensuring that no moisture can penetrate into it and avoiding thermal bridges. These details shall be evaluated on a case-by-case basis.

D 2 Packaging, transport and storage

The components of the roof and wall kit shall be stored and transported in accordance with the manufacturer's specifications such that the components cannot be damaged. In particular, for multi-wall sheets made from polycarbonate it shall be ensured that only those surfaces with UV protective coatings are exposed to UV radiation. The packaging shall protect the material from moisture and weather effects whilst avoiding heat build-up inside the packaging. It is the responsibility of the manufacturer to ensure that this information is passed on to the people in charge.

D 3 Use, maintenance, repair

The roof and wall kit in installed condition is not a walk-on system. For installation purposes, the roof and wall kit may be walked on by a single person using boards laid across the substructure (at least two bearing profiles) for support.

To maintain the visual appearance the roof and wall kit is to clean in regular intervals to manufacturers instructions. Within the scope of maintenance, the installed roof and wall kit shall be visually inspected by the building's owner every two years. The manufacturer shall be consulted if the PC multi-wall sheets exhibit surface cracks or damage or if they are strongly discoloured. Repair shall be arranged where necessary.