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European Technical Assessment Body
for construction products



European Technical Assessment

ETA-24/0020
of 9 July 2024

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

Anchor Devices LUX-top® AP and RVT for trapezoidal sheeting substructures

Product family to which the construction product belongs

Anchor Devices for fastening personal fall protection systems to Steel or aluminium trapezoidal sheeting substructures

Manufacturer

ST QUADRAT Fall Protection S.A.
45, rue Fuert
L-5410 BEYREN
LUXEMBURG

Manufacturing plant

ST QUADRAT Fall Protection S.A.
45, rue Fuert
L-5410 BEYREN
LUXEMBURG

This European Technical Assessment contains

16 pages including 12 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 334812-00-0602

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Specific part

1 Technical description of the product

The fall protection systems are made of stainless steel. They are fastened to steel trapezoidal sheeting substructures according to EN 10346¹, marked with CE according to EN 1090-1². The fastening to the sheeting substructures is done with toggle fasteners / rivets according to the annexes. This ETA includes the products listed in the following Table 1:

Table 1: Products of this ETA

Annex No.	Trade Name (Product of this ETA)	Fastener	substructures
3	LUX-top® AP 9 II	LUX-top® toggle fastener	Steel trapezoidal sheeting ≥ S320GD ³ Positive Position
4	LUX-top® AP 9 III	LUX-top® toggle fastener	Steel trapezoidal sheeting ≥ S320GD ³ Positive Position
5	LUX-top® AP 9	LUX-top® toggle fastener	Steel trapezoidal sheeting ≥ S320GD ³ Positive Position
6	LUX-top® AP 9 III-420	LUX-top® toggle fastener	Steel trapezoidal sheeting ≥ S320GD ³ Positive Position
7	LUX-top® RVT-EU	BULB-TITE® rivet 7,7x27,7	Steel trapezoidal sheeting ≥ S320GD ³ Negative Position

The components and the system setup of the product are given in Annex (2-7).

2 Specification of the intended use in accordance with the applicable EAD 334812-00-0602 – Anchor Devices for Fastening Personal Fall Protection Systems to Steel or aluminium trapezoidal sheeting substructures

The fall protection system is used to protect operators working at height, by arresting them in a fall. The operators attach themselves to the eye using e.g. ropes and karabiners. In the case of a fall the fall protection system prevents the fall and resulting physical damage assuming the correct usage by the operator. The fall protection system is designed for use in all areas of industry, construction and maintenance.

The fall protection system is intended to be used, fastened or inserted on flat roofs or other flat planes made of trapezoidal sheeting substructures only. The direction of force therefore shall be perpendicular (90° ± 5 %) to the fastening element. Thus use at a wall is intended only when the direction of force still applies at a 90° angle to the fastening axis.

The performances given in Section 3 are only valid if the products listed in the Table 1 is used in compliance with the specifications and conditions given in Annexes (1-7).

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of the fall protection system of at least 25 years.

1	EN 10346:2015	Continuously hot-dip coated steel flat products for cold forming - Technical delivery conditions
2	EN 1090-1:2009	Execution of steel structures and aluminium structures - Part 1: Requirements for conformity assessment of structural components
3	DIN EN 10346:2015-10	Continuously hot-dip coated steel flat products for cold forming - Technical delivery conditions

The indications given on the working life cannot be interpreted as a guarantee given by the producer, 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 works.

3 Performance of the product and references to the methods used for its assessment

3.1 Safety in case of fire (BWR 2)

Essential characteristic	Performance
Reaction to fire	Class A1

3.2 Hygiene, health and the environment (BWR 3)

Essential characteristic	Performance
Watertightness	No performance assessed

3.3 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance
Static loading for Anchor devices LUX-top®	Level (kN); see respective product in annexes
Static loading for toggle fastener	≥ 23 kN
Dynamic loading	Level (No. of users); see respective product in annexes
Check of deformation capacity in case of constraining forces	see respective product in annexes
Aspects of durability	
Durability	No performance assessed

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

In accordance with EAD No. 334812-00-0602, the applicable European legal act is: Decision (EU) 2018/771

The system to be applied is: 1+

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 9 July 2024 by Deutsches Institut für Bautechnik

Dr.-Ing. Ronald Schwuchow
Head of Section

beglaubigt:
Hahn

This ETA includes the products listed in Table 1:

Table 1: Product variants included in this ETA

Annex	Tradename (products in this ETA)	Fastener	Substructure
3	LUX-top® AP 9 II	LUX-top® toggle fastener	Steel trapezoidal sheeting ≥ S320GD ^a Positive Position
4	LUX-top® AP 9 III	LUX-top® toggle fastener	Steel trapezoidal sheeting ≥ S320GD ^a Positive Position
5	LUX-top® AP 9	LUX-top® toggle fastener	Steel trapezoidal sheeting ≥ S320GD ^a Positive Position
6	LUX-top® AP 9 III - 420	LUX-top® toggle fastener	Steel trapezoidal sheeting ≥ S320GD ^a Positive Position
7	LUX-top® RVT - EU	BULB-TITE® rivet 7,7x27,7	Steel trapezoidal sheeting ≥ S320GD ^a Negative Position

Annexes 2 to 7 show the components and the system setup of the products.

Design values of actions

$$F_{ED} = F_{EK} \cdot \gamma_F$$

The recommended partial factor γ_F is 1,5.

The recommended partial factor is used in order to determine the corresponding design actions, provided no partial factor is given in national regulations or national Annexes to EN 1990. That leads to the following values:

Example:

For one User: $F_{ED} = F_{EK} \cdot \gamma_F = 6 \text{ kN} \cdot 1,5 = 9,0 \text{ kN}$

For two Users: $F_{ED} = F_{EK} \cdot \gamma_F = (6 + 1) \text{ kN} \cdot 1,5 = 10,5 \text{ kN}$

For three Users: $F_{ED} = F_{EK} \cdot \gamma_F = (6 + 2) \text{ kN} \cdot 1,5 = 12,0 \text{ kN}$

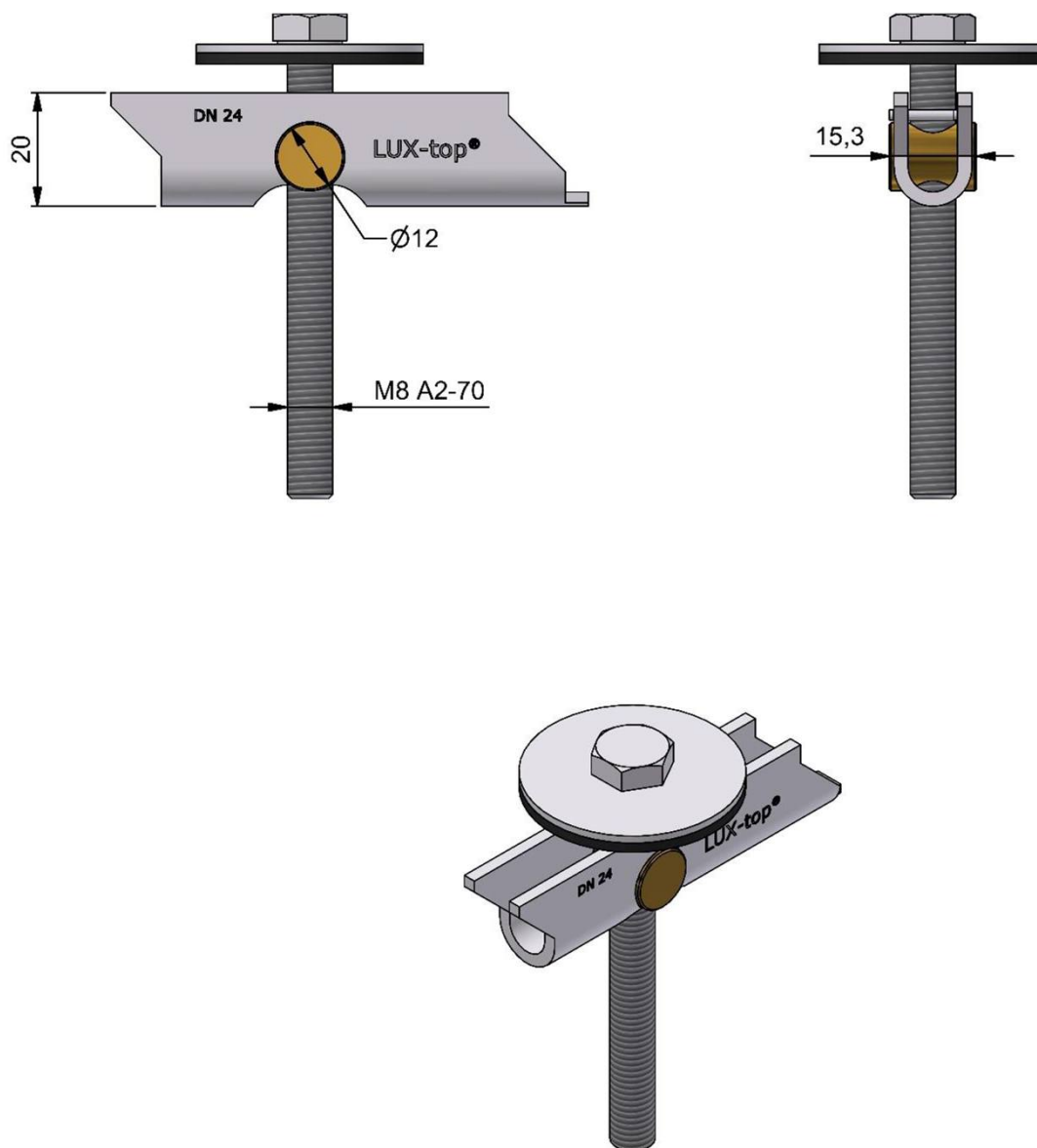
For four Users: $F_{ED} = F_{EK} \cdot \gamma_F = (6 + 3) \text{ kN} \cdot 1,5 = 13,5 \text{ kN}$

a DIN EN 10346:2015-10 Continuously hot-dip coated steel flat products for cold forming -
Technical delivery conditions

Fall Protection System LUX-top® for trapezoidal sheeting substructures

Overview and design values

Annex 1



All dimensions in [mm]

Fall Protection System LUX-top® for trapezoidal sheeting substructures

LUX-top® toggle fastener

Annex 2

Table 2: Substructure steel trapezoidal sheeting

Anchor device	Construction height [mm]	Fastener	Material		
			Position	Steel grade	Thickness t_{nom} [mm]
LUX-top® AP 9 II	300 - 800	LUX-top® toggle fastener	Positive	≥ S320GD ^a	≥ 0,75

The anchor device and all components can be used in weathered outdoor areas.

Regulations for LUX-top® AP 9 II

Regarding the installation conditions of the trapezoidal steel profiles, any national regulations or necessary static verifications must be observed.

Trapezoidal steel profiles are also permissible as perforated sheeting provided that the main dimensions, the minimum sheet thickness and the minimum tensile strengths of the steel grades used for the acoustic profiles correspond to the requirements formulated here for conventional trapezoidal steel profiles. Perforations (round holes up to Ø 5 mm) may only be located in the profile webs and not in the lower or upper flanges of the acoustic profiles.

Static loading / design resistance

$$F_{R,d} = \frac{F_{R,k}}{\gamma_M} = \frac{17,1 \text{ kN}}{1,33} = 12,9 \text{ kN}$$

The recommended partial factor γ_M is 1,33, provided no partial factor is given in national regulations or national Annexes to EN 1993.

Dynamic loading

Three users

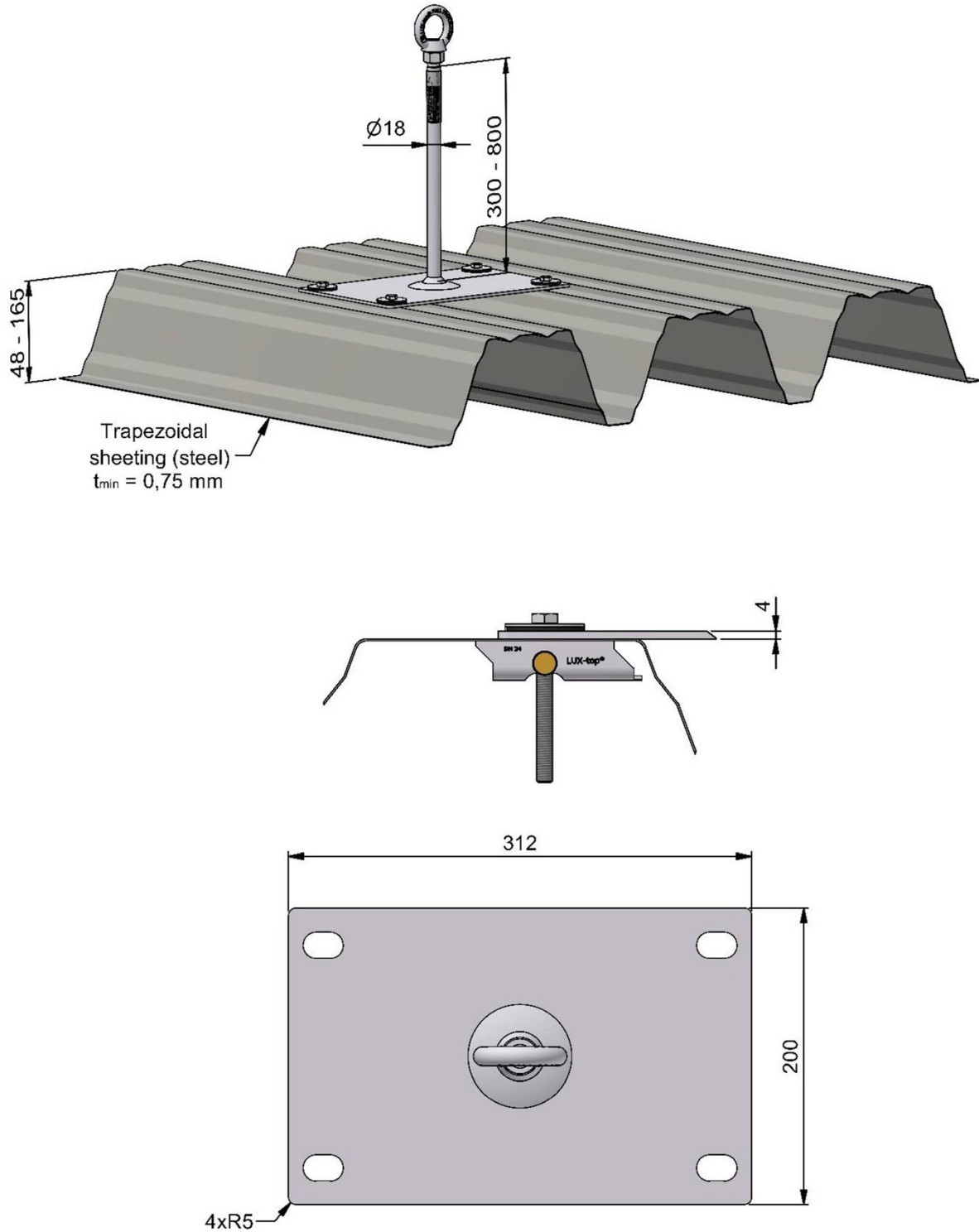
Deformation capacity

≤ 10,2 mm at 0,7 kN, maximum length above roof membrane 800 mm

Fall Protection System LUX-top® for trapezoidal sheeting substructures

LUX-top® AP 9 II for trapezoidal sheeting up to 165 mm height in positive position

Annex 3.1



All dimensions in [mm]

Fall Protection System LUX-top® for trapezoidal sheeting substructures

LUX-top® AP 9 II for trapezoidal sheeting up to 165 mm height in positive position

Annex 3.2

Table 3: Substructure steel trapezoidal sheeting

Anchor device	Construction height [mm]	Fastener	Material		
			Position	Steel grade	Thickness t_{nom} [mm]
LUX-top® AP 9 III	300 - 600	LUX-top® toggle fastener	Positive	≥ S320GD ^a	≥ 0,75

The anchor device and all components can be used in weathered outdoor areas.

Regulations for LUX-top® AP 9 III

Regarding the installation conditions of the trapezoidal steel profiles, any national regulations or necessary static verifications must be observed.

Trapezoidal steel profiles are also permissible as perforated sheeting provided that the main dimensions, the minimum sheet thickness and the minimum tensile strengths of the steel grades used for the acoustic profiles correspond to the requirements formulated here for conventional trapezoidal steel profiles. Perforations (round holes up to Ø 5 mm) may only be located in the profile webs and not in the lower or upper flanges of the acoustic profiles.

Static loading / design resistance

$$F_{R,d} = \frac{F_{R,k}}{\gamma_M} = \frac{16,9 \text{ kN}}{1,33} = 12,6 \text{ kN}$$

The recommended partial factor γ_M is 1,33, provided no partial factor is given in national regulations or national Annexes to EN 1993.

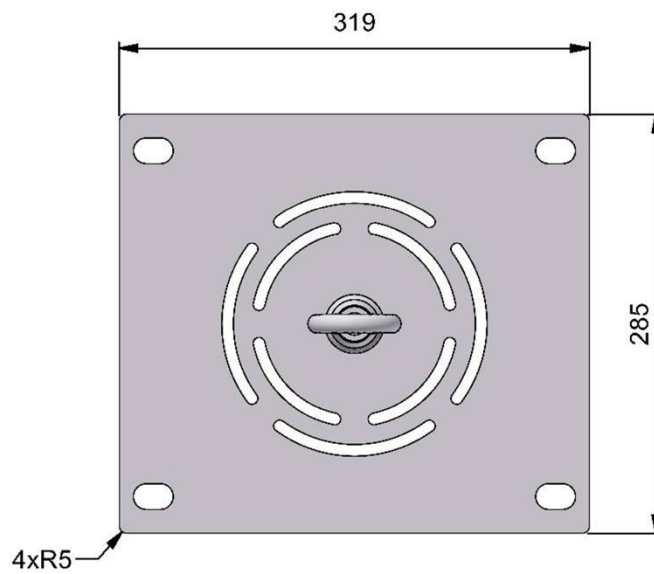
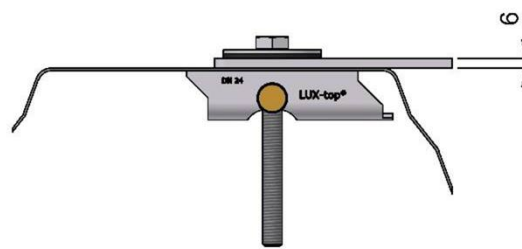
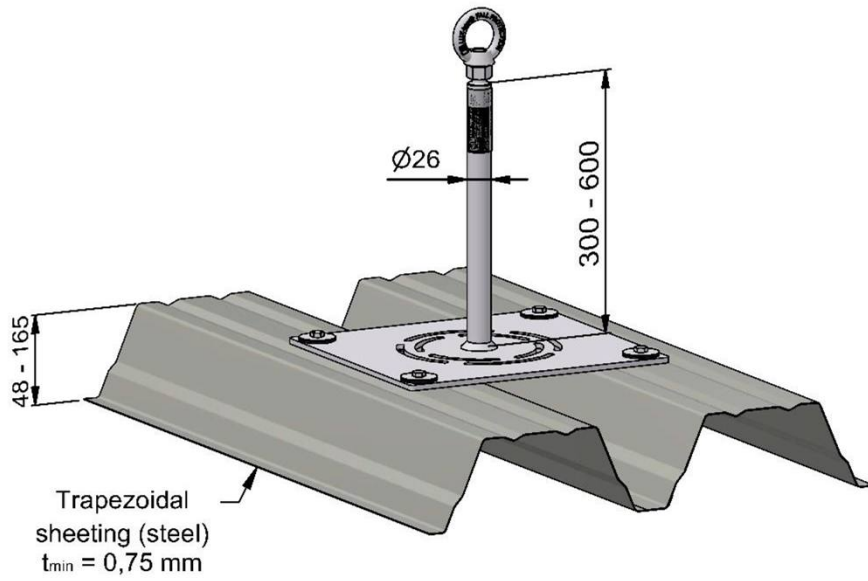
Dynamic loading

Three users

Deformation capacity

≤ 3,2 mm at 0,7 kN, maximum length above roof membrane 600 mm

Fall Protection System LUX-top® for trapezoidal sheeting substructures	Annex 4.1
LUX-top® AP 9 III for trapezoidal sheeting up to 165 mm height in positive position	



All dimensions in [mm]

Fall Protection System LUX-top® for trapezoidal sheeting substructures

LUX-top® AP 9 III for trapezoidal sheeting up to 165 mm height in positive position

Annex 4.2

Table 4: Substructure steel trapezoidal sheeting

Anchor device	Construction height [mm]	Fastener	Material		
			Position	Steel grade	Thickness t_{nom} [mm]
LUX-top® AP 9	300 - 800	LUX-top® toggle fastener	Positive	≥ S320GD ^a	≥ 0,75

The anchor device and all components can be used in weathered outdoor areas.

Regulations for LUX-top® AP 9

Regarding the installation conditions of the trapezoidal steel profiles, any national regulations or necessary static verifications must be observed.

Trapezoidal steel profiles are also permissible as perforated sheeting provided that the main dimensions, the minimum sheet thickness and the minimum tensile strengths of the steel grades used for the acoustic profiles correspond to the requirements formulated here for conventional trapezoidal steel profiles. Perforations (round holes up to Ø 5 mm) may only be located in the profile webs and not in the lower or upper flanges of the acoustic profiles.

Static loading / design resistance

$$F_{R,d} = \frac{F_{R,k}}{\gamma_M} = \frac{19,2 \text{ kN}}{1,33} = 14,4 \text{ kN}$$

The recommended partial factor γ_M is 1,33, provided no partial factor is given in national regulations or national Annexes to EN 1993.

Dynamic loading

Three users

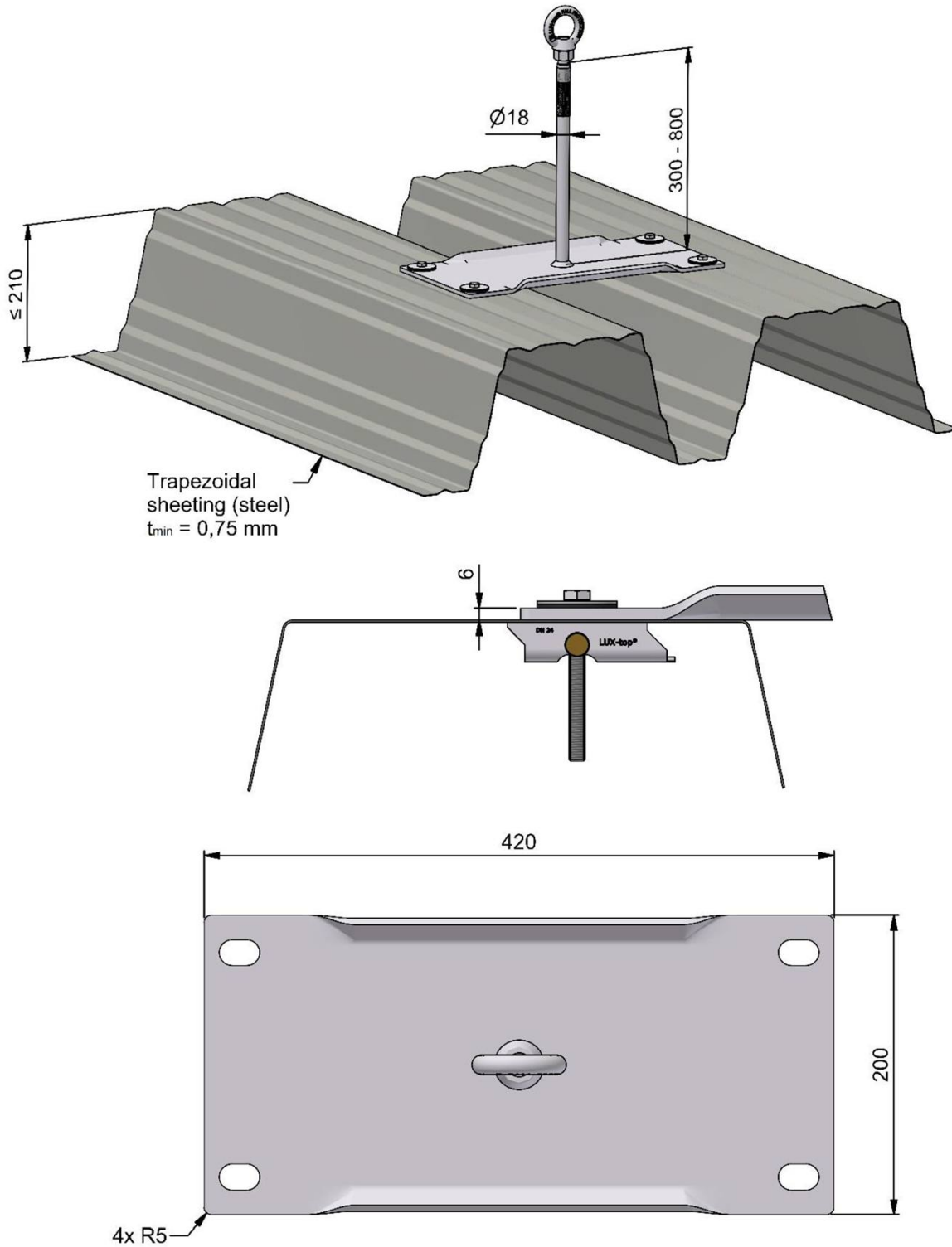
Deformation capacity

≤ 10,2 mm at 0,7 kN, maximum length above roof membrane 800 mm

Fall Protection System LUX-top® for trapezoidal sheeting substructures

LUX-top® AP 9 for trapezoidal sheeting up to 210 mm height in positive position

Annex 5.1



All dimensions in [mm]

Fall Protection System LUX-top® for trapezoidal sheeting substructures

LUX-top® AP 9 for trapezoidal sheeting up to 210 mm height in positive position

Annex 5.2

Table 5: Substructure steel trapezoidal sheeting

Anchor device	Construction height [mm]	Fastener	Material		
			Position	Steel grade	Thickness t_{nom} [mm]
LUX-top® AP 9 III - 420	300 - 600	LUX-top® toggle fastener	Positive	≥ S320GD ^a	≥ 0,75

The anchor device and all components can be used in weathered outdoor areas.

Regulations for LUX-top® AP 9 III - 420

Regarding the installation conditions of the trapezoidal steel profiles, any national regulations or necessary static verifications must be observed.

Trapezoidal steel profiles are also permissible as perforated sheeting provided that the main dimensions, the minimum sheet thickness and the minimum tensile strengths of the steel grades used for the acoustic profiles correspond to the requirements formulated here for conventional trapezoidal steel profiles. Perforations (round holes up to Ø 5 mm) may only be located in the profile webs and not in the lower or upper flanges of the acoustic profiles.

Static loading / design resistance

$$F_{R,d} = \frac{F_{R,k}}{\gamma_M} = \frac{15,1 \text{ kN}}{1,33} = 11,4 \text{ kN}$$

The recommended partial factor γ_M is 1,33, provided no partial factor is given in national regulations or national Annexes to EN 1993.

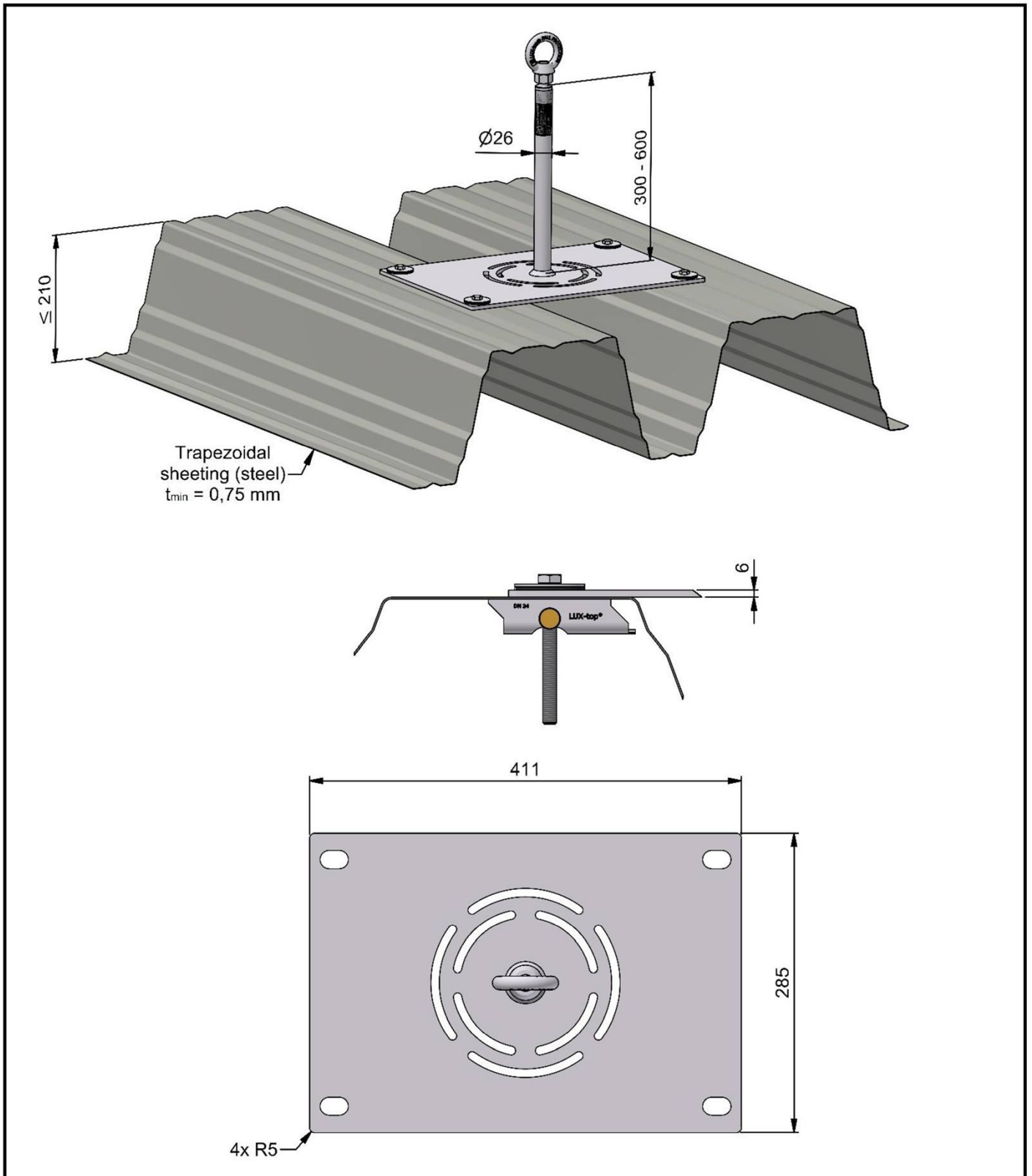
Dynamic loading

Three users

Deformation capacity

≤ 3,2 mm at 0,7 kN, maximum length above roof membrane 600 mm

Fall Protection System LUX-top® for trapezoidal sheeting substructures	Annex 6.1
LUX-top® AP 9 III - 420 for trapezoidal sheeting up to 210 mm height in positive position	



All dimensions in [mm]

Fall Protection System LUX-top® for trapezoidal sheeting substructures		Annex 6.2
LUX-top® AP 9 III - 420 for trapezoidal sheeting up to 210 mm height in positive position		

Table 6: Substructure steel trapezoidal sheeting

Anchor device	Construction height [mm]	Fastener	Material		
			Position	Steel grade	Thickness t_{nom} [mm]
LUX-top® RVT - EU	110	8x BULB-TITE® rivet 7,7x27,7	Negative	≥ S320GD ^a	≥ 0,63

The anchor device and all components can be used in weathered outdoor areas.

Regulations for LUX-top® RVT - EU

Regarding the installation conditions of the trapezoidal steel profiles, any national regulations or necessary static verifications must be observed.

Static loading / design resistance

$$F_{R,d} = \frac{F_{R,k}}{\gamma_M} = \frac{15,1 \text{ kN}}{1,33} = 11,5 \text{ kN}$$

The recommended partial factor γ_M is 1,33, provided no partial factor is given in national regulations or national Annexes to EN 1993.

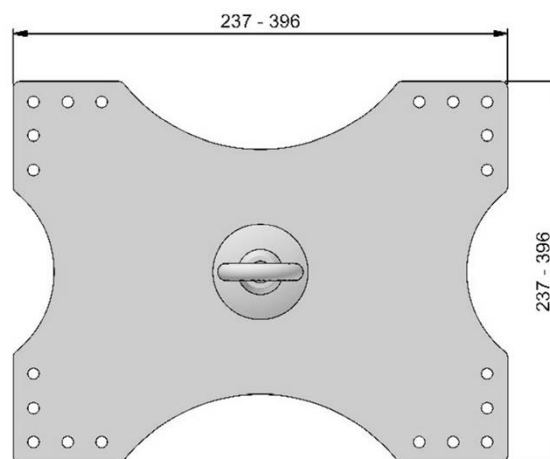
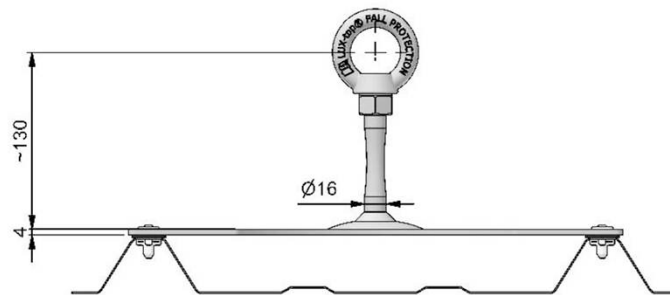
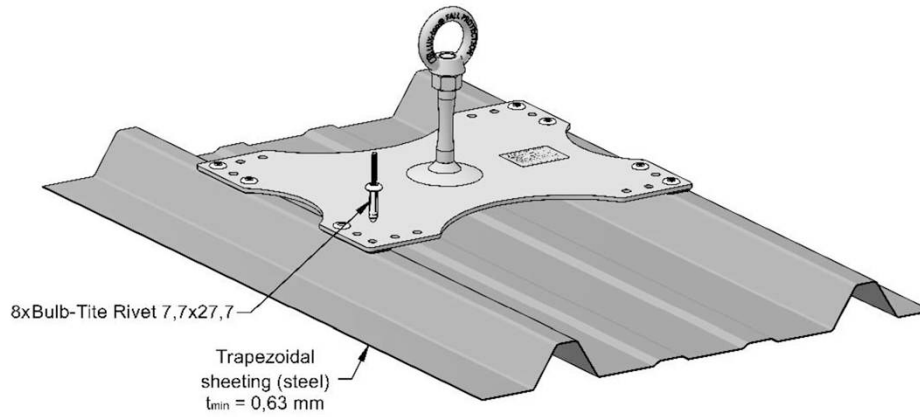
Dynamic loading

Three users

Deformation capacity

≈ 0,0 mm at 0,7 kN, maximum length above roof membrane 110 mm

Fall Protection System LUX-top® for trapezoidal sheeting substructures	Annex 7.1
LUX-top® RVT - EU for trapezoidal sheeting in negative position	



All dimensions in [mm]

Fall Protection System LUX-top® for trapezoidal sheeting substructures

LUX-top® RVT - EU for trapezoidal sheeting in negative position

Annex 7.2