

Approval body for construction products
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and
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European Technical Assessment

ETA-20/0123
of 26 February 2020

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

Supporting brackets "TRA-WIK-ALU-RF"
and "TRA-WIK-ALU-RL"

Product family
to which the construction product belongs

Supporting brackets "TRA-WIK-ALU-RF"
and "TRA-WIK-ALU-RL" for the low thermal bridging
fixation of attachment parts in external thermal insulation
composite systems (ETICS)

Manufacturer

Dosteba GmbH
Julius-Kemmler-Straße 45
72770 Reutlingen
DEUTSCHLAND

Manufacturing plant

Plant 1

This European Technical Assessment
contains

14 pages including 9 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 040868-00-0404

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Specific Part

1 Technical description of the product

The supporting brackets "TRA-WIK-ALU-RF" and "TRA-WIK-ALU-RL" correspond to product family b) of EAD 040868-00-0404¹. The supporting brackets consist of

- a sheet steel insert,
- a pressure distribution plate made of HPL,
- an aluminium extrusion profile for fixation of the attachment parts,
- two polypropylene pocket holders for the sheet steel insert and the pressure distribution plate,
- an EPS insert as a render base,
- a polypropylene spring clip for the "TRA-WIK-ALU-RF" supporting bracket

The components are joined at the factory and foamed to form a bracket using black rigid polyurethane foam. The supporting brackets have a height of 125 mm with a 280 mm long and 60 mm thick arm which is flush with/attached to the substrate and a cantilever arm of 100 mm to 300 mm, in increments of 20 mm with a thickness of 80 mm.

With the "TRA-WIK-ALU-RF" supporting bracket, the sheet steel insert and the pressure distribution plate (mounting area) for fastening attachment parts are positioned at the face side of the cantilever arm.

With the "TRA-WIK-ALU-RL" supporting bracket, the sheet steel insert and the pressure distribution plate (mounting area) for fastening attachment parts are positioned at the longitudinal side of the cantilever arm.

Detailed information and data for all the components are provided in the annexes to this ETA and in the associated test reports and control plan.

The components and the system setup of the product are provided in Annex A 1.

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

The supporting brackets "TRA-WIK-ALU-RF" and "TRA-WIK-ALU-RL" are intended for use as a low thermal bridging fixation of primarily static loads from attachment parts such as awnings, canopies, stairways, railings, window blinds and sun protection elements on external walls with external thermal insulation composite systems (ETICS) or other facade systems.

The supporting brackets are fixed with their entire surface to the level, solid, load-bearing external wall (substrate) using three anchor elements.

The performances given in Section 3 are only valid if the supporting brackets are used in compliance with the specifications and conditions given in Annex B.

The verifications and assessment methods on which this ETA is based lead to the assumption of a working life of the supporting brackets of at least 25 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 works.

¹ EAD 0040868-00-0404, edition June 2019 - RIGID POLYURETHANE FOAM (PUR) ELEMENTS FOR FASTENING ATTACHMENT PARTS IN EXTERNAL THERMAL INSULATION COMPOSITE SYSTEMS

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	E in accordance with DIN EN 13501

3.2 Safety and accessibility in use (BWR 4)

Essential characteristic	Performance	
Swelling in thickness after immersion in water	Length/width/thickness [%] 0.07 / 0.37 / 0.21	
Apparent density of PU foam	0.33 g/cm ³ with EN 1602	
Mechanical resistance	Tensile strength	See Annex C 2 – C 3
	Compressive strength	See Annex C 2 – C 3
	Shear strength	See Annex C 2 – C 3
	Lateral tensile strength	No performance assessed
	Flexural strength	No performance assessed
	Pull-through resistance of anchor elements	See Annex C 1
	Embedment strength (local bearing strength) of the anchorage area	See Annex C 1
Influencing factors	See Annex C 1	

3.3 Energy economy and heat retention (BWR 6)

Essential characteristic	Performance
Thermal conductivity	$\lambda < 0.0651 \text{ W/(mK)}^1$ with EN 12677
Thermal resistance	No performance assessed
Thermal transmittance	No performance assessed
¹ As a measured value which was not exceeded.	

4 Assessment and verification of constancy of performance system applied, with reference to its legal basis

In accordance with European Assessment Document (EAD) no. 040868-00-0404, the following legal basis shall apply: 2003/640/EC.

The following system for the assessment and verification of constancy of performance (AVCP) shall be used for the supporting brackets: 2+ for all intended uses except for uses subject to reaction-to-fire requirements.

For intended uses subject to reaction-to-fire requirements, AVCP system 1, 3 or 4 shall be used for the reaction to fire, depending on the boundary conditions listed in the above-mentioned Decision.

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

The technical details necessary for the implementation of the AVCP system are laid down in the control plan deposited with DIBt.

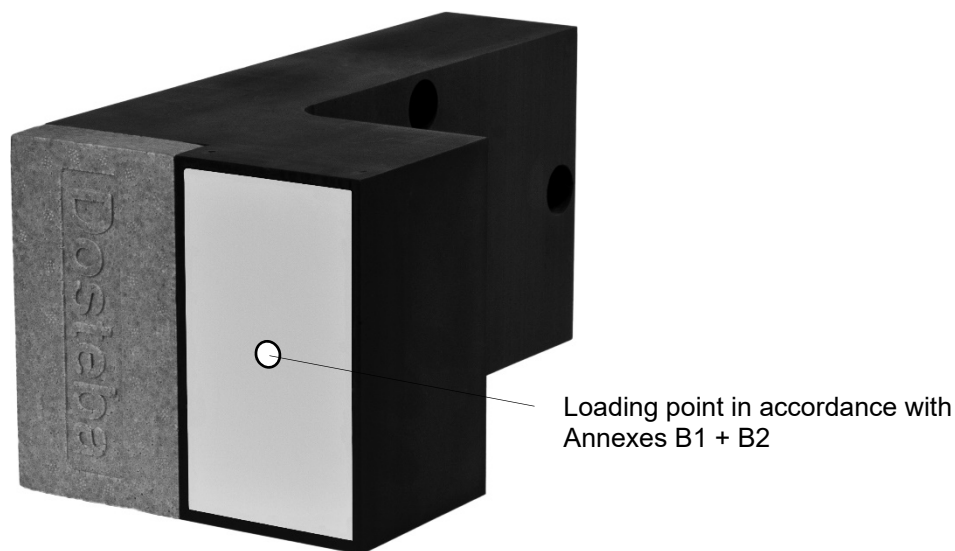
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BD Dipl.-Ing. Andreas Kummerow
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beglaubigt:
Beckmann

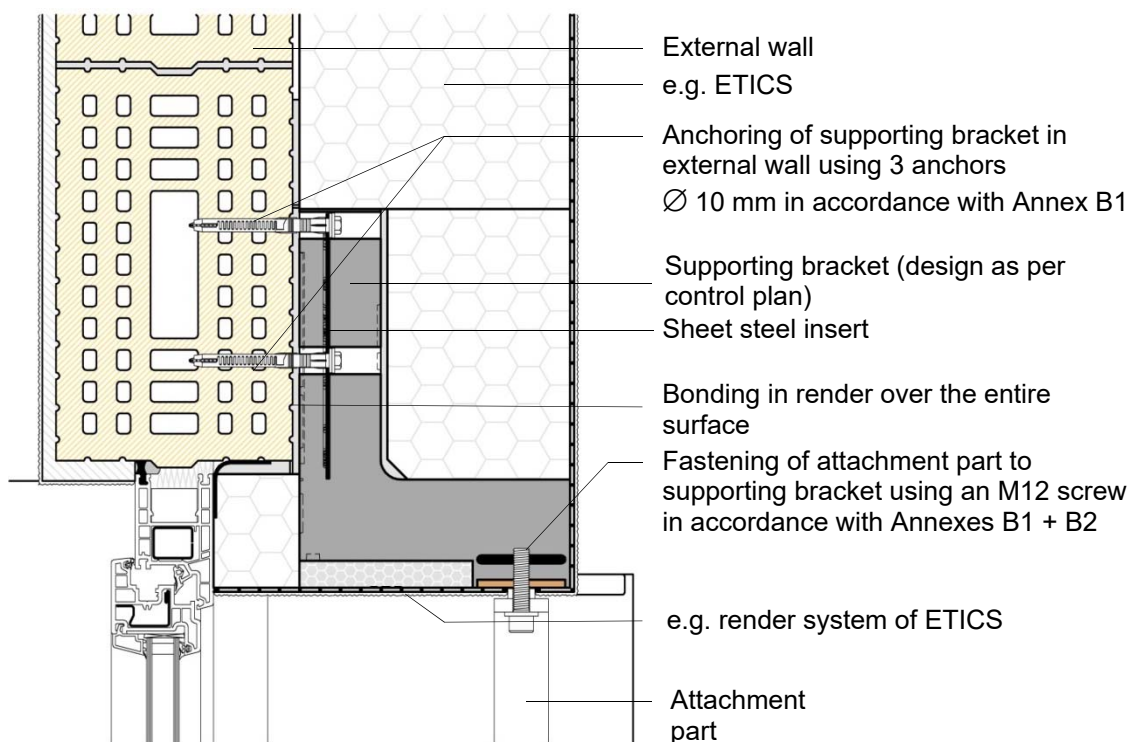
Supporting bracket TRA-WIK-ALU-RL

(in accordance with the specifications deposited as part of the control plan)



TRA-WIK-ALU-RL supporting
bracket

Installation situation using the example of a railing between window openings



Supporting brackets "TRA-WIK-ALU-RF" and "TRA-WIK-ALU-RL"

Product description

Product and installed condition of TRA-WIK-ALU-RL

Annex A 1

Supporting bracket TRA-WIK-ALU-RF

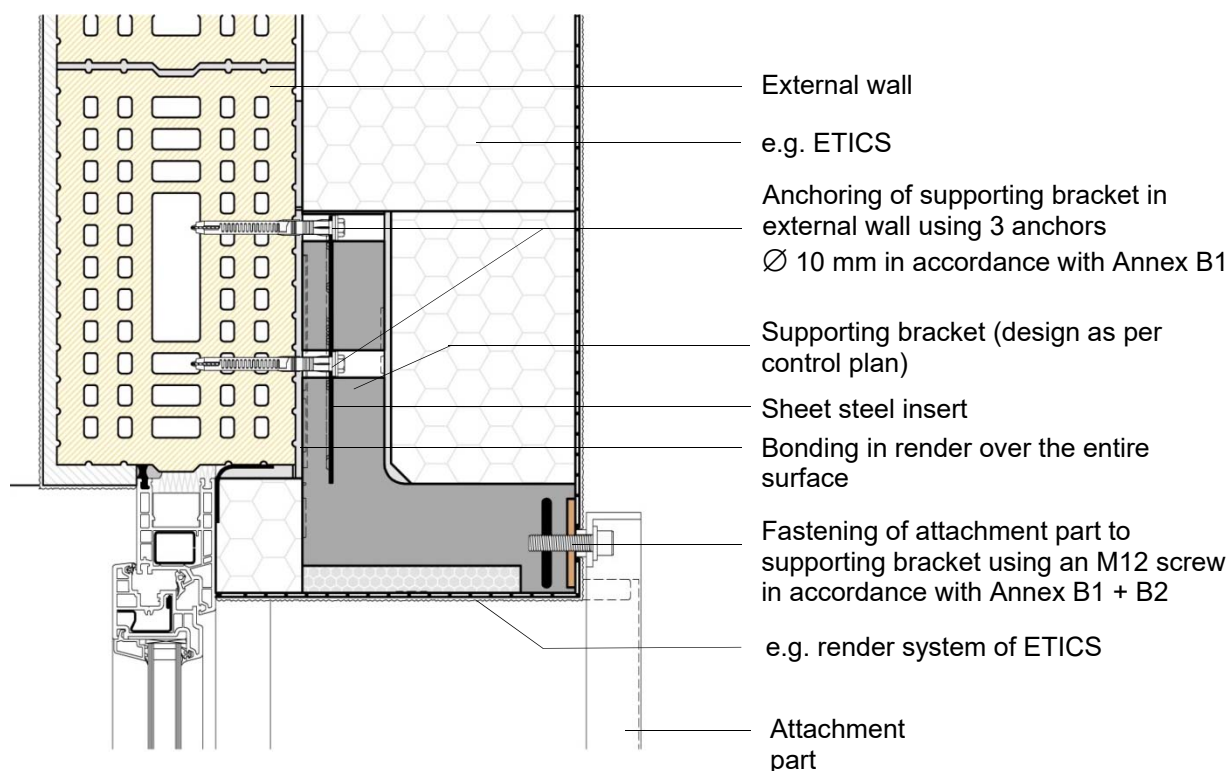
(in accordance with the information deposited in the control plan)



Loading point in accordance with Annexes B1 + B2

TRA-WIK-ALU-RF supporting bracket

Installation situation using the example of a railing on the facade



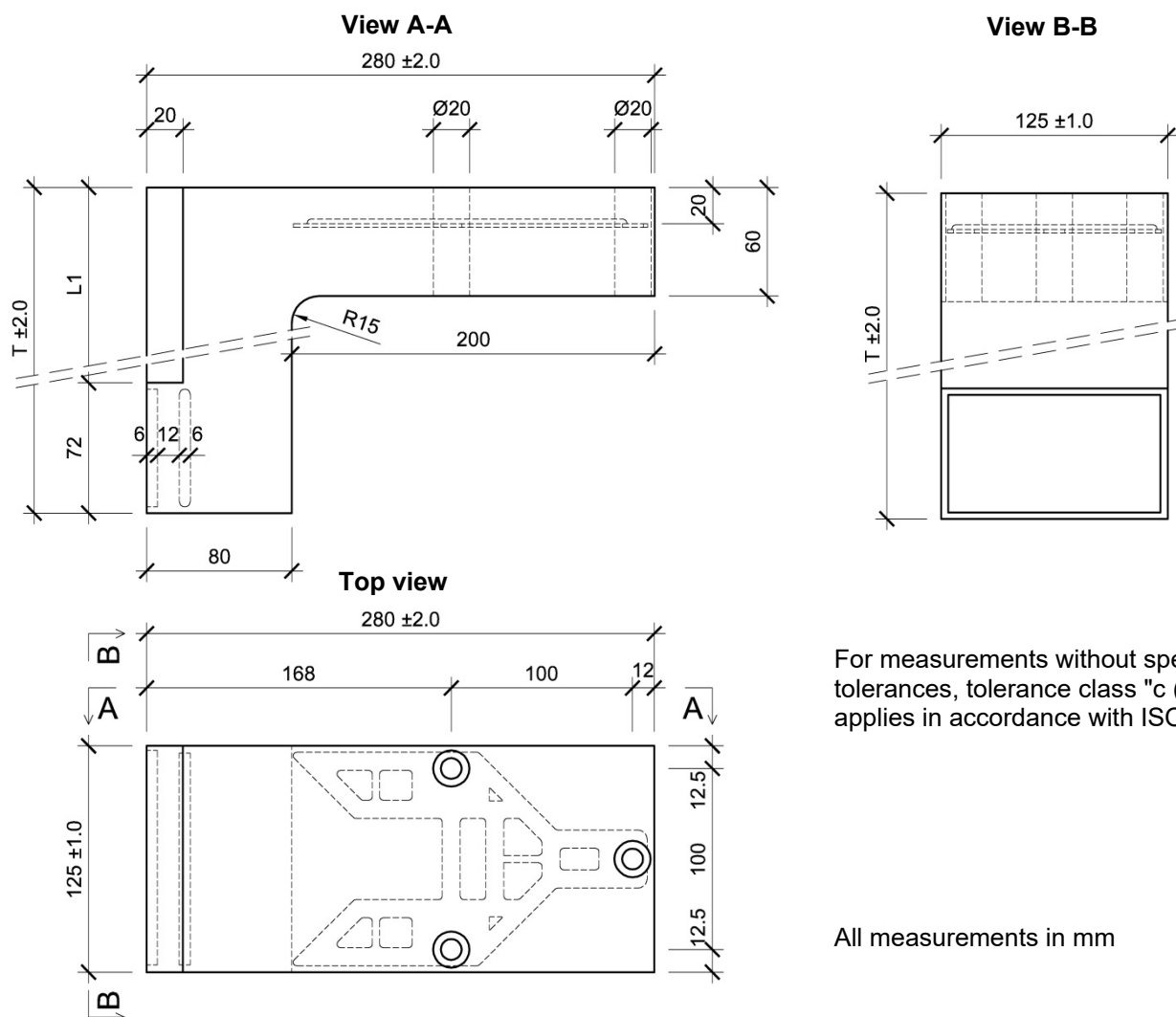
Supporting brackets "TRA-WIK-ALU-RF" and "TRA-WIK-ALU-RL"

Product description

Product and installed condition of TRA-WIK-ALU-RF

Annex A 2

TRA-WIK-ALU-RL supporting bracket



For measurements without specified tolerances, tolerance class "c (coarse)" applies in accordance with ISO 2768

All measurements in mm

Description	T (mm)	L1 (mm)	Weight (g)		
			-3%	Nominal value	+3%
TRA-WIK@-ALU-RL 100	100	28	1114	1149	1183
TRA-WIK@-ALU-RL 120	120	48	1167	1203	1239
TRA-WIK@-ALU-RL 140	140	68	1219	1257	1294
TRA-WIK@-ALU-RL 160	160	88	1271	1311	1350
TRA-WIK@-ALU-RL 180	180	108	1324	1365	1406
TRA-WIK@-ALU-RL 200	200	128	1376	1419	1461
TRA-WIK@-ALU-RL 220	220	148	1429	1473	1517
TRA-WIK@-ALU-RL 240	240	168	1481	1527	1573
TRA-WIK@-ALU-RL 260	260	188	1533	1581	1628
TRA-WIK@-ALU-RL 280	280	208	1586	1635	1684
TRA-WIK@-ALU-RL 300	300	228	1638	1689	1739

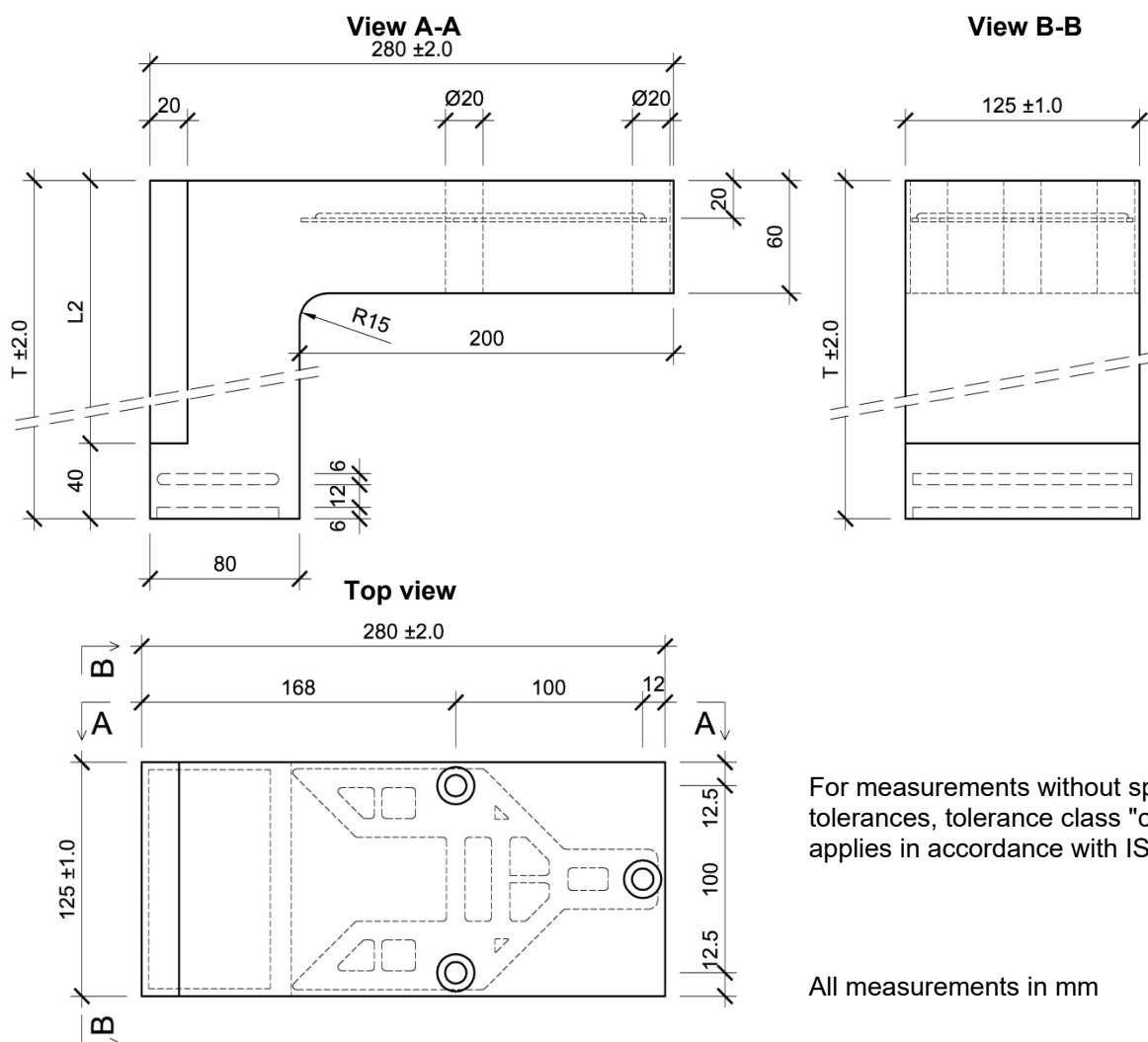
Details in control plan

Supporting brackets "TRA-WIK-ALU-RF" and "TRA-WIK-ALU-RL"

Product description
Outside dimensions and weight of TRA-WIK-ALU-RL

Annex A 3

TRA-WIK-ALU-RF supporting bracket



For measurements without specified tolerances, tolerance class "c (coarse)" applies in accordance with ISO 2768

All measurements in mm

Description	T (mm)	L2 (mm)	Weight (g)		
			-3%	Nominal value	+3%
TRA-WIK®-ALU-RF 100	100	60	1083	1117	1150
TRA-WIK®-ALU-RF 120	120	80	1136	1171	1239
TRA-WIK®-ALU-RF 140	140	100	1188	1225	1294
TRA-WIK®-ALU-RF 160	160	120	1240	1279	1350
TRA-WIK®-ALU-RF 180	180	140	1293	1333	1406
TRA-WIK®-ALU-RF 200	200	160	1345	1387	1461
TRA-WIK®-ALU-RF 220	220	180	1397	1441	1517
TRA-WIK®-ALU-RF 240	240	200	1450	1495	1573
TRA-WIK®-ALU-RF 260	260	220	1502	1549	1628
TRA-WIK®-ALU-RF 280	280	240	1555	1603	1684
TRA-WIK®-ALU-RF 300	300	260	1607	1657	1739

Details in control plan

Supporting brackets "TRA-WIK-ALU-RF" and "TRA-WIK-ALU-RL"

Product description
Outside dimensions and weight of TRA-WIK-ALU-RF

Annex A 4

Field of application

Product family b) Supporting bracket elements in accordance with EAD 090868-00-0404, June 2019

Loading of the supporting brackets

Static and quasi-static loads (primarily static loads) from attachment parts

structural analysis

The verification of the supporting brackets as well as the anchoring and fastening shall take into account all loads which occur. For each application case, a structural analysis shall be carried out for the ultimate limit state (ULS) and for the serviceability limit state (SLS). Relevant national regulations shall be observed.

For table C1 in Annex C 1:

The following loading durations shall be used:

- Self-weight (attachment parts, items such as flower boxes may also have to be considered here): permanent
- Imposed loads (traffic loads):

The actions of Clauses 6.3.1, 6.3.4 and 6.4 of EN 1991-1-1:2010-12 shall be considered as imposed loads. The actions listed in Clauses 6.3.2 and 6.3.3 of the standard shall be excluded.

Unless other values exist, the following loading durations shall be assumed:

- Loads in accordance with Clause 6.3.1: 25 % permanent; 75 % short
- Loads in accordance with Clause 6.3.4: short
- Loads in accordance with Clauses 6.4 (1) and 6.4 (2): medium
- Loads in accordance with Clauses 6.4 (NA.3) * to 6.4 (NA.6): permanent
- Wind loads: very short
- Snow loads: medium
- Extraordinary snow loads: short

The actions E_k shall be increased through multiplication by the influencing factors depending on the load scenario.

* acc. DIN EN 1991-1/NA:2010-12

Installation

The supporting brackets are fixed with their entire surface to the level, solid, load-bearing external wall (substrate) using three anchor elements. The anchor elements shall be inserted so they are perpendicular to the surface of the building. Where applicable, the adhesive mortar of the ETICS used shall be placed between the supporting bracket and the external wall over the entire mounting area. For anchoring the supporting brackets in the external wall, the loading point shall be 20 mm from the rear edge of the supporting bracket, only fit-for-use anchor elements with the following properties shall be used:

- strength class of at least 8.8 in accordance with EN ISO 898-1
- three anchor elements with a diameter of 10 mm

The load-bearing capacity of the anchoring elements in the substrate must be verified for each individual case.

The attachment parts are always fastened to the supporting bracket in the centre of the mounting area (fastening area of attachment part) using an M12 screw. The screw is connected to the pressure distribution plate and the aluminium extrusion profile.

Supporting brackets "TRA-WIK-ALU-RF" and "TRA-WIK-ALU-RL"

Intended use

Technical data - application and installation

Annex B 1

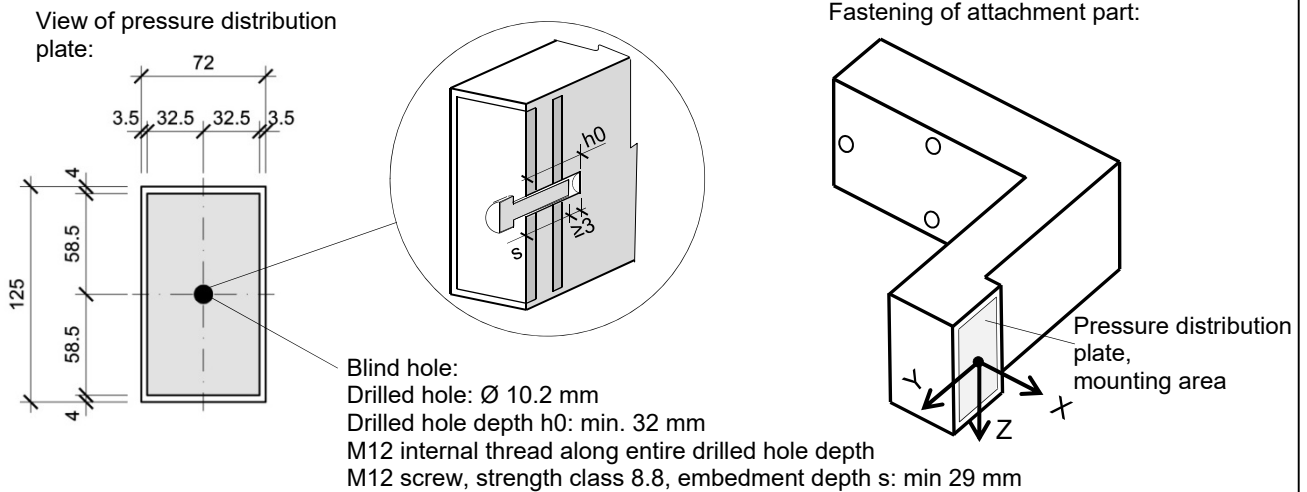
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A blind hole connection with an embedment depth of at least 29 mm is provided for this purpose. To fasten the attachment part to the supporting brackets, an M12 screw with a minimum strength class of 8.8 in accordance with EN ISO 898-1 shall be used. The embedment depth is at least 29 mm from the top edge of the pressure distribution plate. The screw shall not be loosened. The attachment parts shall be directly supported by the pressure distribution plate of the supporting brackets. The specifications given in Annex B 2 regarding the fixation of the attachment parts shall be adhered to. Impact drivers shall not be used.

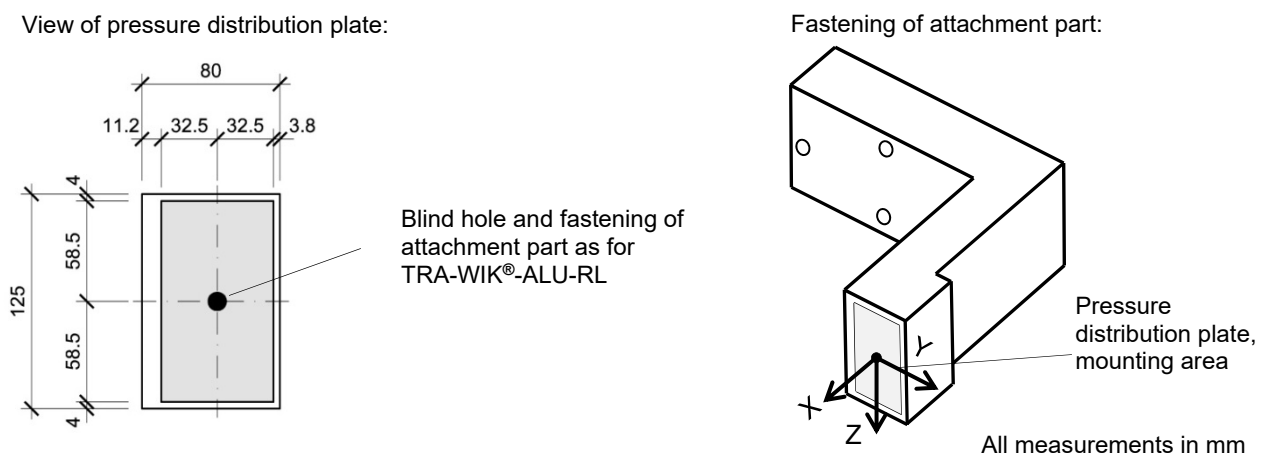
The following shall be observed when fastening the attachment parts:

- The attachment part shall be fastened at the centre of the mounting area.
- An M12 screw in accordance with Annex B 1 shall be used for fastening.
- The installation depth from the upper edge of the pressure distribution plate shall be at least 29 mm.
- The loads shall be applied at the surface of the pressure distribution plate.
- The blind hole shall be positioned perpendicular to the pressure distribution plate and can be created on-site or at the factory.
- The screw shall not be loosened.

Fastening of the attachment parts to the TRA-WIK-ALU-RL supporting bracket:



Fastening of the attachment parts to the TRA-WIK-ALU-RF supporting bracket:



Supporting brackets "TRA-WIK-ALU-RF" and "TRA-WIK-ALU-RL"

Intended use
Technical data - application and installation

Annex B 2

Tab. C1: Influencing factors of duration of action

Duration of load action	A_1^f	A_1^E
very short	1.00	
short up to one week	1.30	1.05
medium up to three months	1.30	1.65
long to permanent	1.35	3.50

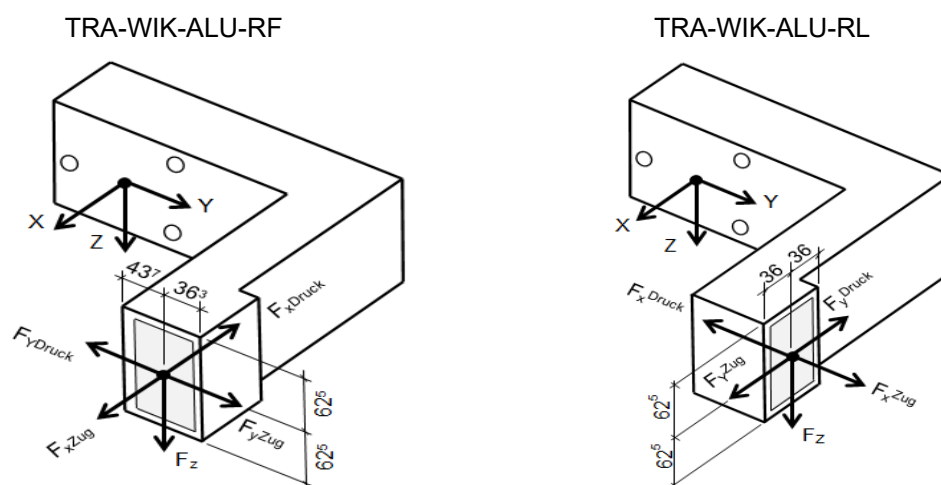
Tab. C2: Influencing factors for media, temperature and cyclic loading

	ULS Breakage	SLS Deflection
Influencing factor for media effects A_2	1.05	1.25
Influencing factor for temperature effects A_3		
- in summer, 80 °C	1.25	1.30
- in winter, -20 °C	1.05	
Influencing factor for cyclic loading A_4	1.10	

Tab. C3: Characteristic structural resistances R_k of local bearing stress and pull-through resistance per anchor element (see Annex B 1) for the ultimate limit state (ULS)

Characteristic structural resistances R_k in kN		
Supporting bracket type	Local bearing strength of anchorage $F_{y,R,k}; F_{z,R,k}$	Pull-through resistance $F_{x,R,k}$
TRA-WIK-ALU-RF TRA-WIK-ALU-RL		
100 - 300	5.50	4.77

Fig. C1: Stress resultants for structural resistances F_x, F_y, F_z , at the pressure distribution plate of the supporting brackets



Supporting brackets "TRA-WIK-ALU-RF" and "TRA-WIK-ALU-RL"

Performance
Influencing factors and stress resultant directions (structural resistances)

Annex C 1

Tab. C4: Characteristic structural resistances R_k for the ultimate limit state (ULS) of the TRA-WIK-ALU-RL supporting brackets

Characteristic structural resistances R_k in [kN]					
Supporting bracket type TRA-WIK-ALU-RL	$F_{x,R,k}^{ZUG}$	$F_{x,R,k}^{DRUCK}$	$F_{y,R,k}^{ZUG}$	$F_{y,R,k}^{DRUCK}$	$F_{z,R,k}$
100	12.9	8.4	3.2	6.8	7.3
120	10.1	7.1	3.3	6.8	6.1
140	7.3	5.9	3.4	6.8	5.1
160	6.3	4.8	3.5	6.8	4.3
180	5.3	4.0	3.6	6.8	3.5
200	4.3	3.2	3.7	6.7	2.9
220	3.4	2.7	3.7	6.6	2.4
240	2.8	2.3	3.7	6.4	2.1
260	2.4	2.0	3.7	6.2	1.9
280	2.3	1.9	3.6	5.9	1.8
300	2.5	2.0	3.6	5.6	1.8

Tab. C5: Characteristic structural resistances C_k for the serviceability limit state (SLS) of the TRA-WIK-ALU-RL supporting brackets

Characteristic structural resistances C_k in [kN]					
Supporting bracket type TRA-WIK-ALU-RL	$F_{x,R,k}^{ZUG}$	$F_{x,R,k}^{DRUCK}$	$F_{y,R,k}^{ZUG}$	$F_{y,R,k}^{DRUCK}$	$F_{z,R,k}$
100	12.9	8.0	2.1	6.8	6.0
120	10.6	6.4	2.2	6.8	4.9
140	8.6	5.0	2.4	6.8	4.0
160	6.9	3.9	2.6	6.8	3.3
180	5.5	3.2	2.7	6.8	2.7
200	4.3	2.5	2.9	6.7	2.3
220	3.4	2.1	3.0	6.6	1.9
240	2.8	1.8	3.0	6.4	1.6
260	2.4	1.5	3.1	6.2	1.5
280	2.3	1.4	3.1	5.9	1.4
300	2.5	1.5	3.1	5.6	1.4

Supporting brackets "TRA-WIK-ALU-RF" and "TRA-WIK-ALU-RL"

Performance
Characteristic structural resistances of TRA-WIK-ALU-RL

Annex C 2

Tab. C6: Characteristic structural resistances R_k for the ultimate limit state (ULS) of the TRA-WIK-ALU-RF supporting brackets

Characteristic structural resistances R_k in [kN]					
Supporting bracket type TRA-WIK-ALU-RF	$F_{x,R,k}^{ZUG}$	$F_{x,R,k}^{DRUCK}$	$F_{y,R,k}^{ZUG}$	$F_{y,R,k}^{DRUCK}$	$F_{z,R,k}$
100	4.4	11.1	7.7	6.5	4.8
120	4.4	10.7	6.1	5.5	4.2
140	4.5	10.3	4.5	4.6	3.7
160	4.6	9.9	4.1	3.8	3.3
180	4.6	9.4	3.8	3.1	2.9
200	4.8	9.0	3.4	2.6	2.5
220	4.9	8.6	2.9	2.2	2.2
240	5.0	8.2	2.5	2.0	2.0
260	5.2	7.7	2.2	1.9	1.8
280	5.3	7.3	2.0	1.9	1.6
300	5.5	6.8	1.9	2.0	1.6

Tab. C7: Characteristic structural resistances C_k for the serviceability limit state (SLS) of the TRA-WIK-ALU-RF supporting brackets

Characteristic structural resistances C_k in kN					
Supporting bracket type TRA-WIK-ALU-RF	$F_{x,R,k}^{ZUG}$	$F_{x,R,k}^{DRUCK}$	$F_{y,R,k}^{ZUG}$	$F_{y,R,k}^{DRUCK}$	$F_{z,R,k}$
100	3.5	11.1	7.7	4.9	4.0
120	3.5	10.7	6.6	4.2	3.5
140	3.6	10.3	5.7	3.6	3.0
160	3.7	9.9	4.8	3.0	2.7
180	3.7	9.4	4.1	2.6	2.3
200	3.8	9.0	3.4	2.2	2.0
220	3.9	8.3	2.9	1.9	1.7
240	4.0	7.7	2.5	1.7	1.6
260	4.1	7.1	2.2	1.6	1.4
280	4.2	6.5	2.0	1.6	1.2
300	4.4	6.0	1.9	1.7	1.2

Supporting brackets "TRA-WIK-ALU-RF" and "TRA-WIK-ALU-RL"

Performance
Characteristic structural resistances of TRA-WIK-ALU-RL

Annex C 3