

Approval body for construction products  
and types of construction

Bautechnisches Prüfamt

An institution established by the Federal and  
Laender Governments



## European Technical Assessment

**ETA-20/0159**  
**of 28 April 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 "EJOT ISO-Corner"

Product family  
to which the construction product belongs

Supporting brackets "EJOT ISO-Corner" made of PUR to  
fasten attachment parts to facades

Manufacturer

EJOT Baubefestigungen GmbH  
In der Stockwiese 35  
57334 Bad Laasphe  
DEUTSCHLAND

Manufacturing plant

Plant 1

This European Technical Assessment  
contains

24 pages including 19 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 "EJOT Iso-Corner" correspond to product family b) of EAD 040868-00-0404<sup>1</sup>. The supporting brackets are foamed to form a bracket at the factory, using grey rigid polyurethane foam.

The supporting brackets have a height of 140 mm with a 270 mm long and 40 mm thick arm which is flush with/attached to the substrate and a cantilever arm with a length of 80 mm to 300 mm and a thickness of 50 mm.

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

The supporting brackets and the system setup of the product are given in Annex A1 to A3.

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

The "EJOT Iso-Corner" supporting brackets are intended to be used as low thermal bridging brackets to fasten attachment parts under static and quasi-static loads, such as awnings, canopies, stairways, railings, window blinds and sun protection elements, to 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 ETICS/facade system and the anchors for the supporting brackets as well as the fastening screws EJOT Delta PT 100 are not covered by this ETA.

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.

<sup>1</sup> 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 [%] 0.03 / 0.08 / 0.37	
Apparent density of PU foam	0.60 g/cm <sup>3</sup> with EN 1602	
Mechanical resistance	Tensile strength	See Annexes C 3 – C 6
	Compressive strength	See Annexes C 3 – C 6
	Shear strength	See Annexes C 3 – C 6
	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	$\lambda < 0.13 \text{ W/(mK)}^1$ with EN 12677
Thermal resistance	No performance assessed
Thermal transmittance	No performance assessed
<sup>1</sup> As a measured value which was not exceeded. Influences from fastening elements have not been taken into account.	

### 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.

English translation prepared by DIBt

**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 Deutsches Institut für Bautechnik (DIBt).

Issued in Berlin on 28 April 2020 by Deutsches Institut für Bautechnik

BD Dipl.-Ing. Andreas Kummerow  
Head of Department

*beglaubigt:*  
Beckmann

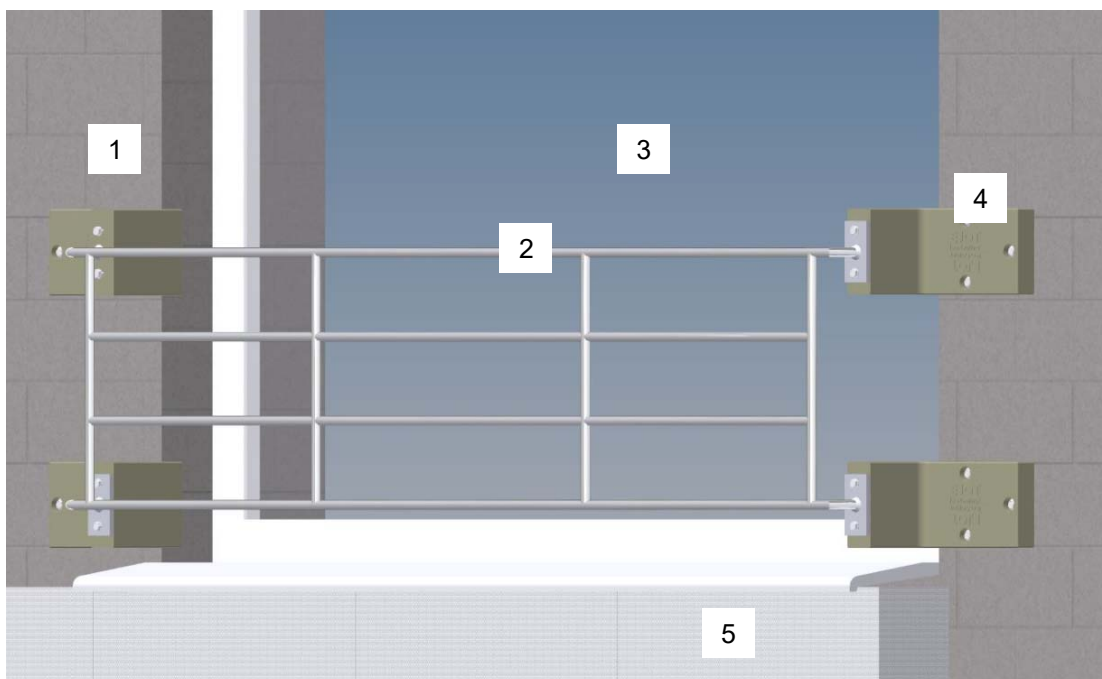


Illustration 1: Example of installed railings – installed at face side

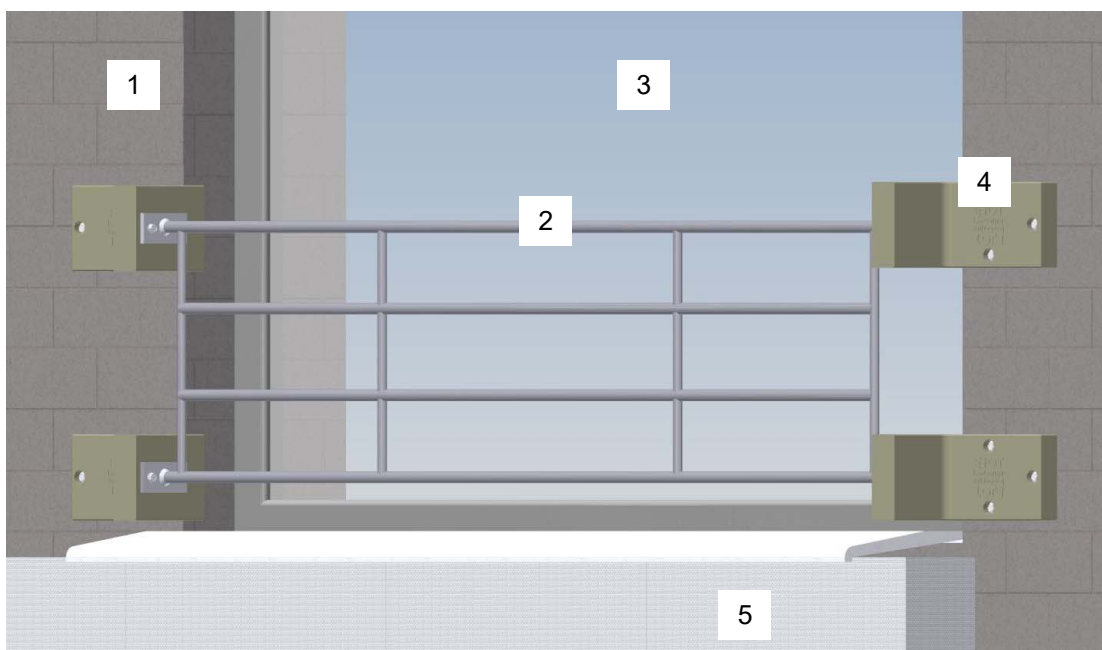


Illustration 2: Example of installed railings – installation along cantilever arm

**Key:**

1. External wall prior to installation of external thermal insulation composite system
2. Attachment part
3. Window
4. EJOT Iso-Corner
5. External wall section after installation of insulation boards

Supporting brackets "EJOT ISO-Corner"

**Product description**  
Product and installed condition of "EJOT Iso-Corner"

Annex A 1



Illustration 1: Example of installed sliding shutters - assembly at face side

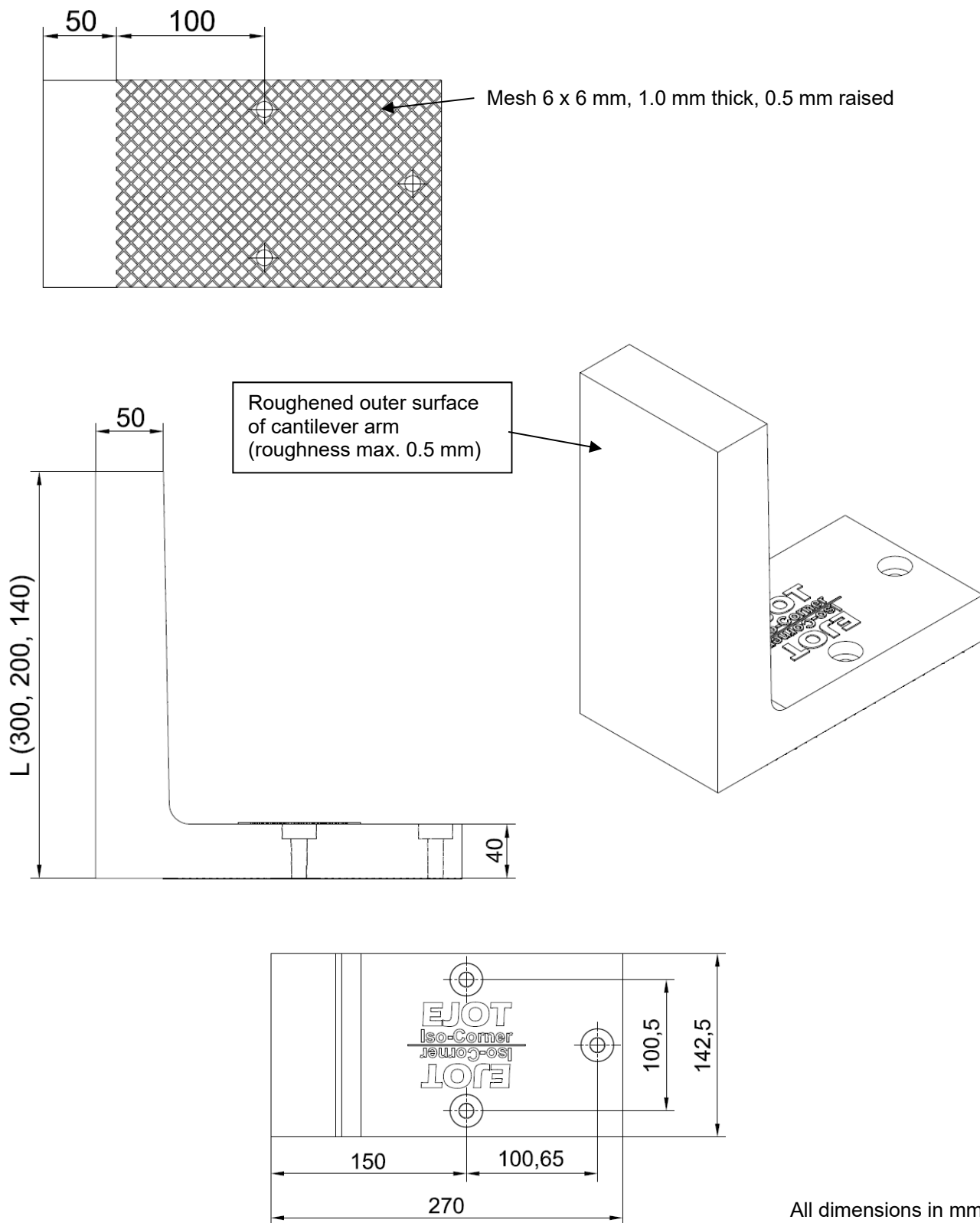
**Key:**

1. External wall prior to installation of external thermal insulation composite system
2. Attachment part
3. Window
4. EJOT Iso-Corner
5. External wall section after installation of insulation boards

Supporting brackets "EJOT ISO-Corner"

**Product description**  
Product and installed condition of "EJOT Iso-Corner"

Annex A 2



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Supporting brackets "EJOT ISO-Corner"

**Product description**  
Dimensions of "EJOT Iso-Corner"

Annex A 3



## 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 "EJOT Iso-Corner" supporting brackets, the anchors and fastenings 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 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 more precise 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 (see Annex B 4 with projektion), 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. The sides of the supporting bracket consisting of PUR rigid foam shall be protected against UV radiation, for example by a covering render layer or lateral insulation boards. The supporting brackets shall not come into contact with substances and materials which can lead to their deterioration.

Supporting brackets "EJOT ISO-Corner"

## Intended use

Technical data – application and installation

Annex B 1

**Anchoring**

Only the following anchoring devices shall be used for anchoring (see Annex B 4 and B 5):

Type A

Three anchor elements with a shaft diameter of 10 mm, a nominal head diameter  $\geq 18$  mm and at least the following strengths: galvanised steel: tensile strength  $f_{ub} = 600$  N/mm<sup>2</sup>, yield strength  $f_{yo} = 480$  N/mm<sup>2</sup>; stainless steel: tensile strength  $f_{ub} = 700$  N/mm<sup>2</sup>, yield strength  $f_{yo} = 450$  N/mm<sup>2</sup>; e.g. EJOT screw anchor in accordance with ETA-10/0305

Type B

Three anchoring elements of type EJOT T-FAST JW woodscrews JW2-ST5 8xL/Lt in accordance with ETA-18/0812

**Fastening**

The following fasteners shall be used for fastening the attachment parts to the supporting bracket: one or two fastening screws of type EJOT Delta PT 100x60/37 (Annex B 3) – materials: stainless steel (material no. 1.4401 or 1.4404) in accordance with EN 10088-3, tensile strength  $\geq 640$  N/mm<sup>2</sup> – with an embedment depth between 30 mm (min) and 45 mm (max) from the top edge of the mounting area.

The fastening screws shall not be loosened.

Depending on the design, the stress resultant acting on the fastener shall be applied as follows:

a) Variant with direct screw connection

If the attachment part is screwed on directly, the thickness of the attachment part shall be limited to  $\leq 10$  mm (in direct contact) and the resultant forces shall be applied at the top edge of the supporting bracket (see Annex B 4). The load point is directly at the fastening screw.

b) Variant with stand-off installation and load distribution plate.

The stand-off installation shall be limited to  $\leq 20$  mm and the resultant forces shall be applied at the centre of the load distribution plate (see Annex B 5). The thickness of the load distribution plate shall be  $\leq 5$  mm. The loads shall be introduced at the centre on the load distribution plate.

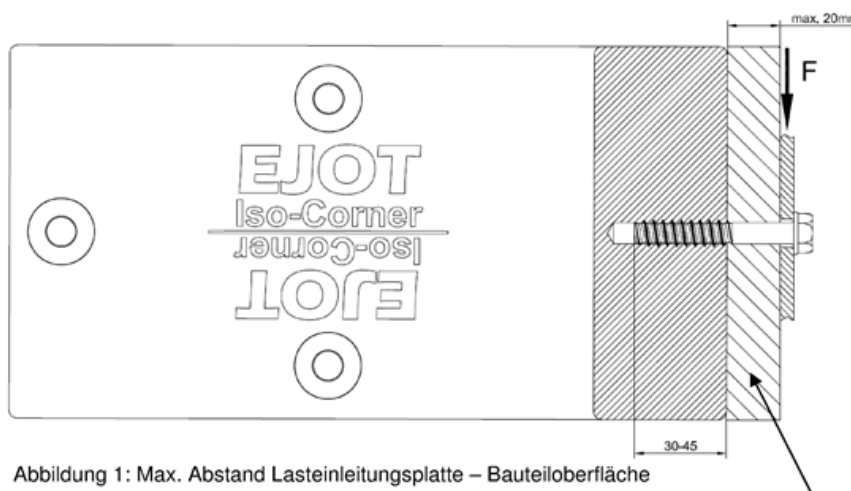
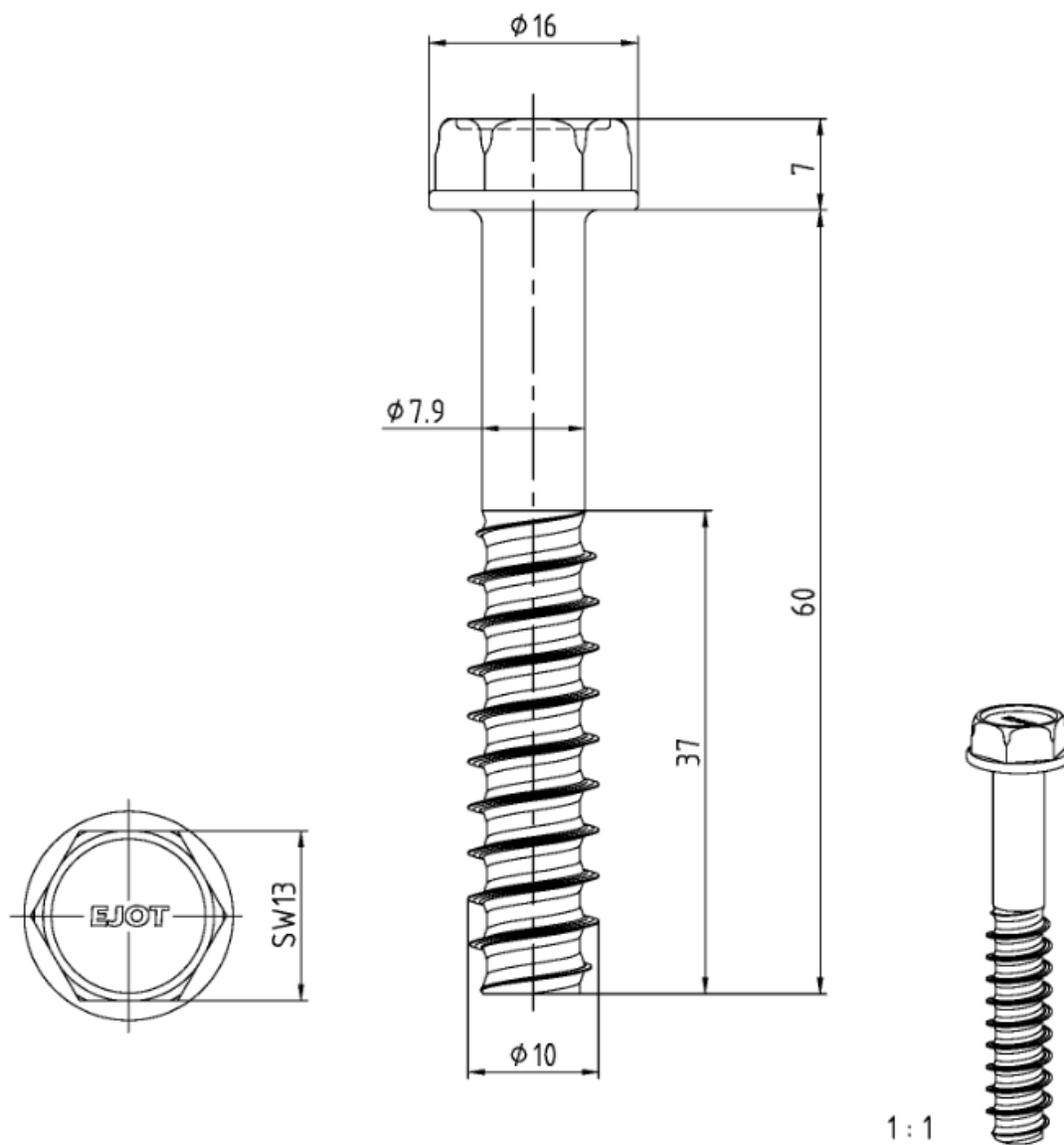


Abbildung 1: Max. Abstand Lasteinleitungsplatte – Bauteiloberfläche

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Supporting brackets "EJOT ISO-Corner"	Annex B 2
<b>Intended use</b> Technical data – anchoring and fastening	

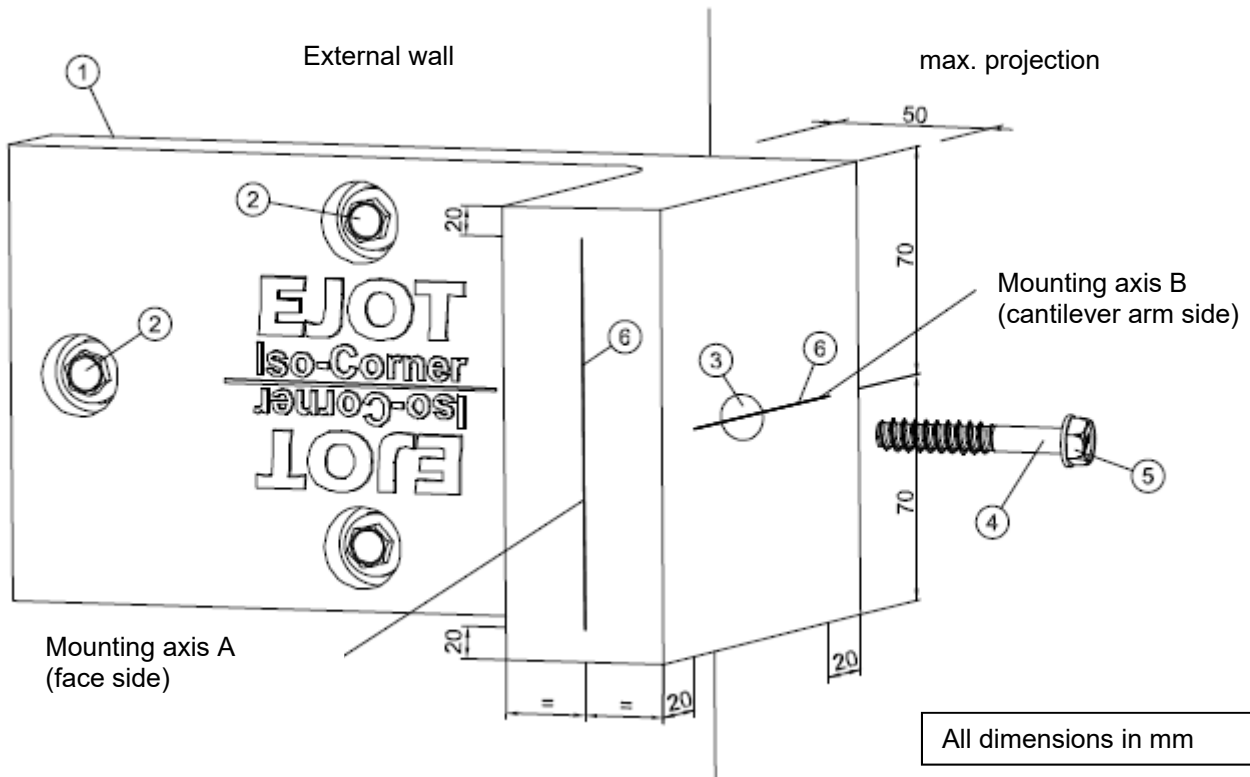


Fastening screws of type EJOT Delta PT 100x60/37

Supporting brackets "EJOT ISO-Corner"

**Intended use**  
Technical data – fastening screw

Annex B 3



**Key:**

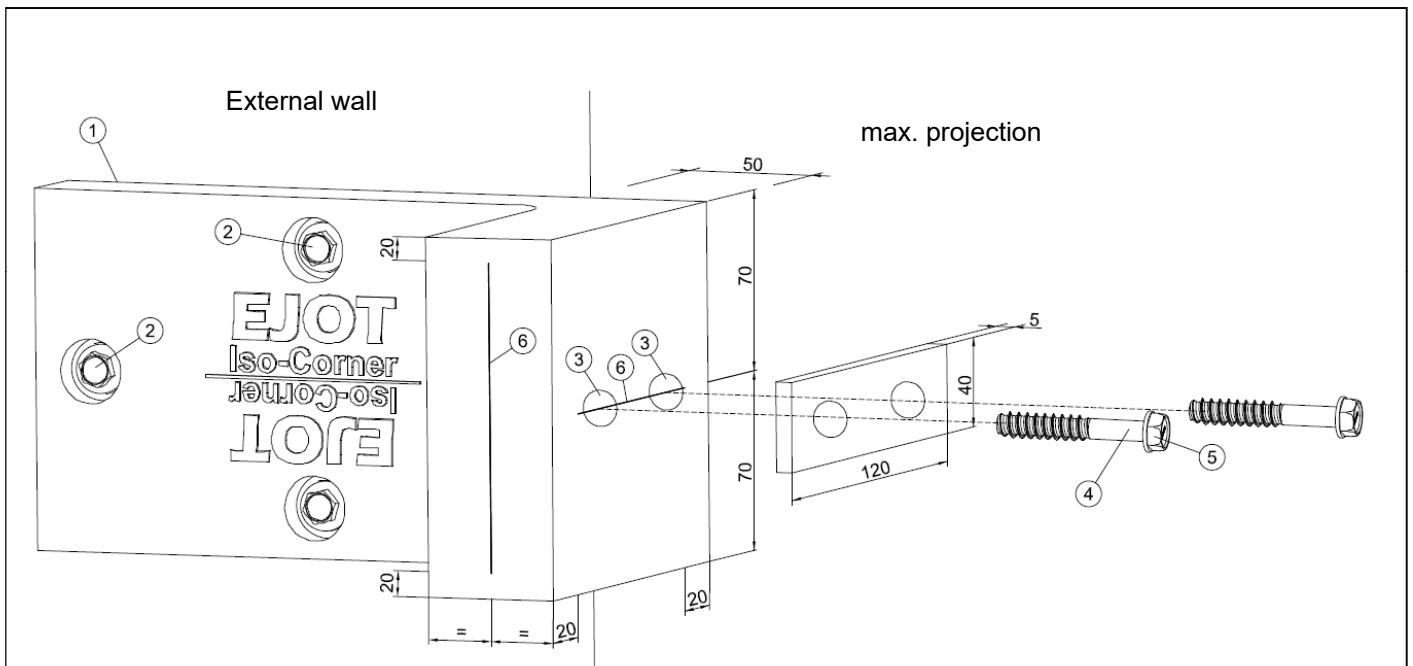
- 1 If required, layer of adhesive render for smoothing any irregularities in the wall
- 2 Elements for anchoring to substrate
- 3 Core hole for screwed connection - created with HSS drill with a nominal diameter of 8.0 mm (rotary drilling process); depth of drilled hole:  $t_{min} = 40\text{mm}$ ,  $t_{max} = 45\text{ mm}$
- 4 Fastening screw for attachment part "EJOT Delta PT 100x60/37" in accordance with Annex B 3  
Embedment depth  $30 \leq t \leq 45\text{ mm}$ ; installation torque  $t_{inst} \leq 28\text{ Nm}$
- 5 Screw driver: hexagon head wrench size = 13 mm
- 6 Mounting axes for positioning of fastening screw

The attachment part can either be fastened with one or two screws along the mounting axes illustrated above (observing an edge distance of 20 mm). The loading point can either be directly at the mounting area or at a distance of up to 10 mm.

Supporting brackets "EJOT ISO-Corner"

**Intended use**  
Technical data – Fastening variant with direct screw connection

Annex B 4



All dimensions in mm

**Key:**

- 1 If required, layer of adhesive render for smoothing any irregularities in the wall
- 2 Elements for anchoring to substrate
- 3 Core hole for screwed connection – created with HSS drill with a nominal diameter of 8.0 mm (rotary drilling process); depth of drilled hole:  $t_{min} = 40\text{mm}$ ,  $t_{max} = 45\text{ mm}$
- 4 Fastening screw for attachment part "EJOT Delta PT 100x60/37" in accordance with Annex B 3  
Embedment depth  $30 \leq t \leq 45\text{ mm}$ ; installation torque  $t_{inst} \leq 28\text{ Nm}$
- 5 Screw driver: hexagon head wrench size = 13 mm
- 6 Mounting axes for positioning of fastening screw

The attachment part can either be fastened with one or two screws along the mounting axes illustrated above (observing an edge distance of 20 mm). Load is applied via load distribution plates (header plates); the loading point can be at the mounting area or at a distance of up to 20 mm.

Supporting brackets "EJOT ISO-Corner"

**Intended use**  
Technical data - Fastening variant with distribution plate

Annex B 5

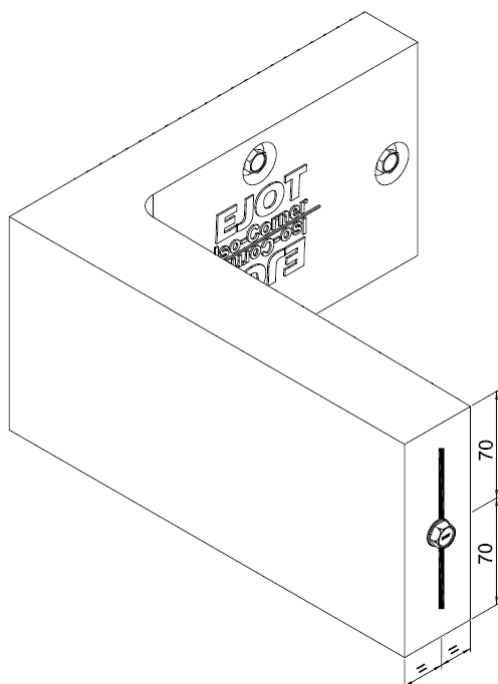


Figure B-1: Central installation at face side

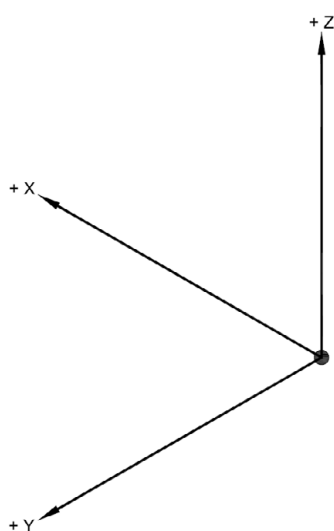
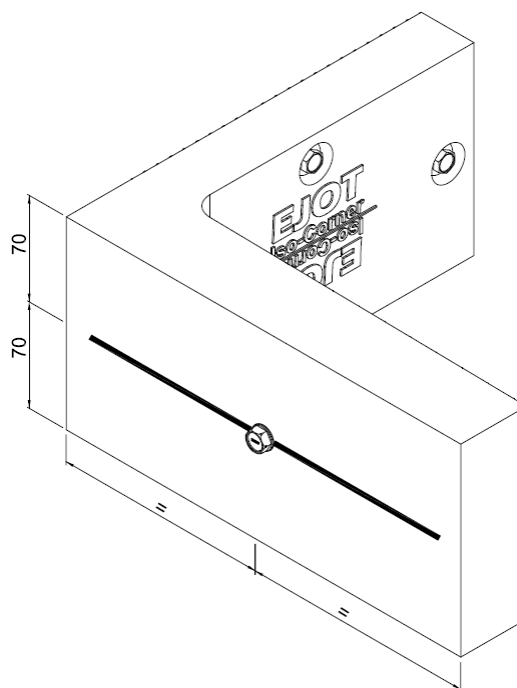


Figure B-2: Central installation along cantilever arm



Supporting brackets "EJOT ISO-Corner"

**Intended use**  
Technical data – Fastening variants B-1 and B-2

Annex B 6

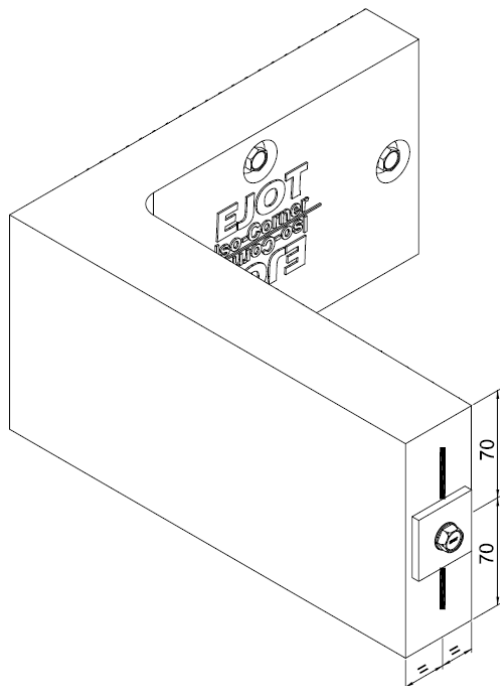


Figure B-3.1

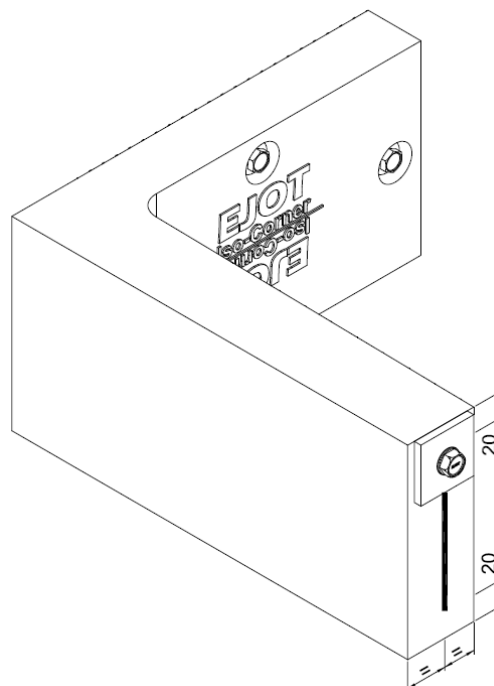


Figure B-3.2

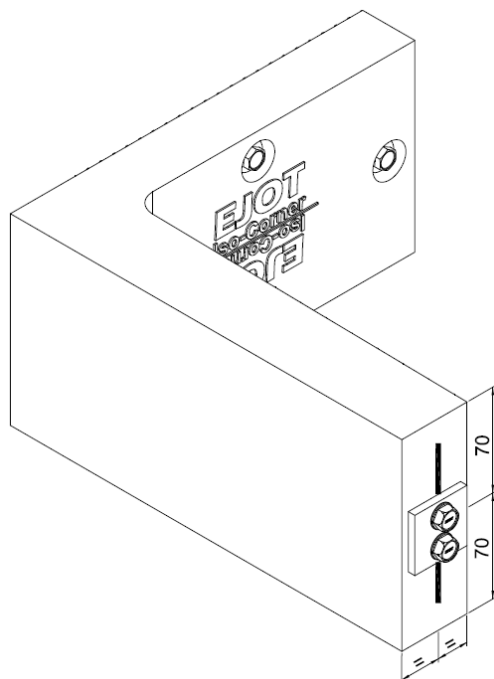
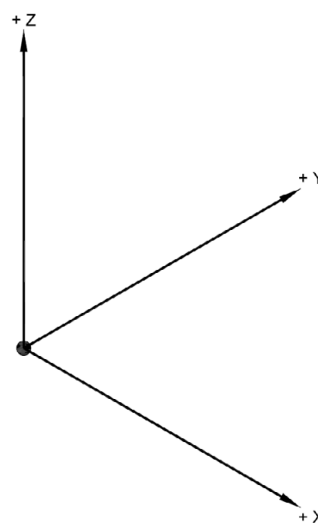


Figure B-4.1

Stand-off installation in accordance with Annex B 2



All dimensions in mm

Supporting brackets "EJOT ISO-Corner"

**Intended use**  
Technical data – Fastening variants B-3.1; B-3.2 and B-4.1

Annex B 7

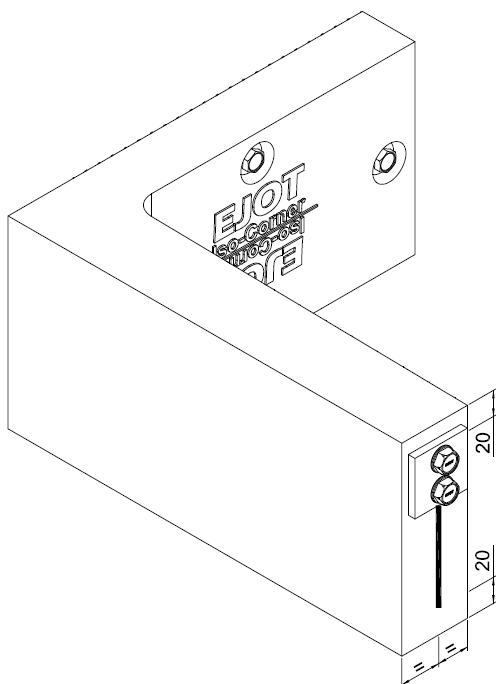


Figure B-4.2

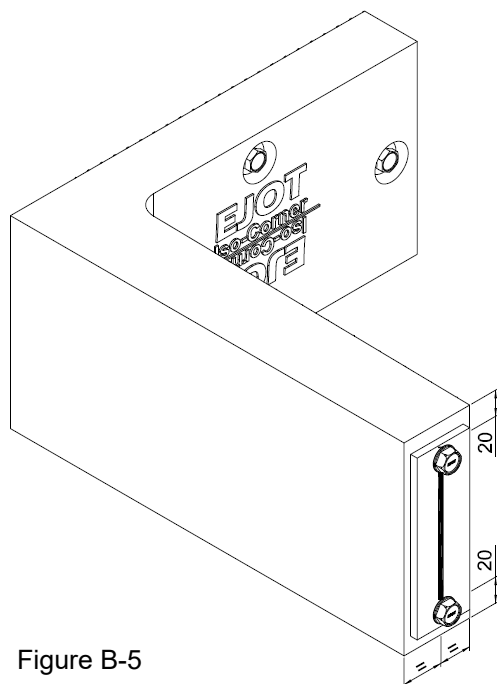
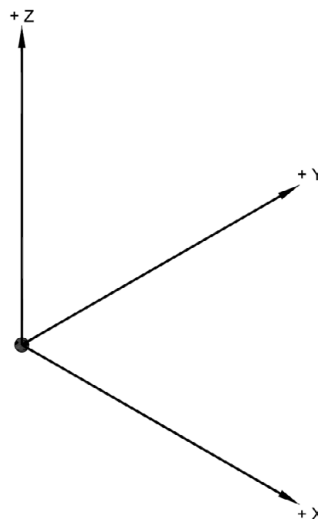


Figure B-5

Stand-off installation in accordance with Annex B 2

All dimensions in mm

Supporting brackets "EJOT ISO-Corner"

**Intended use**  
Technical data – Fastening variants B-4.2 and B-5

Annex B 8



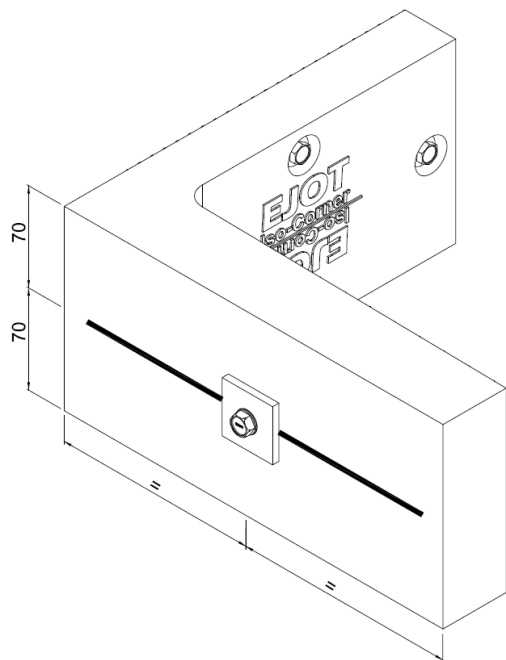


Figure B-6.1

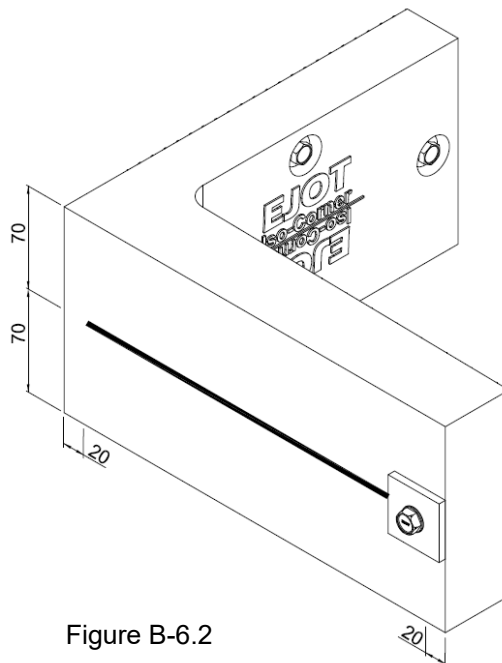
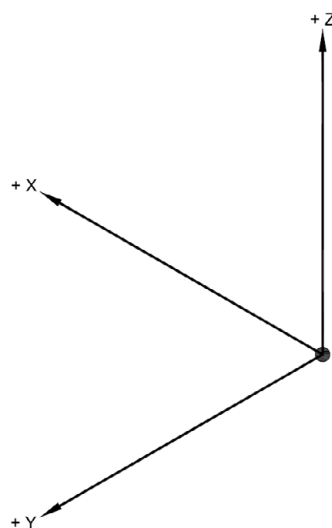
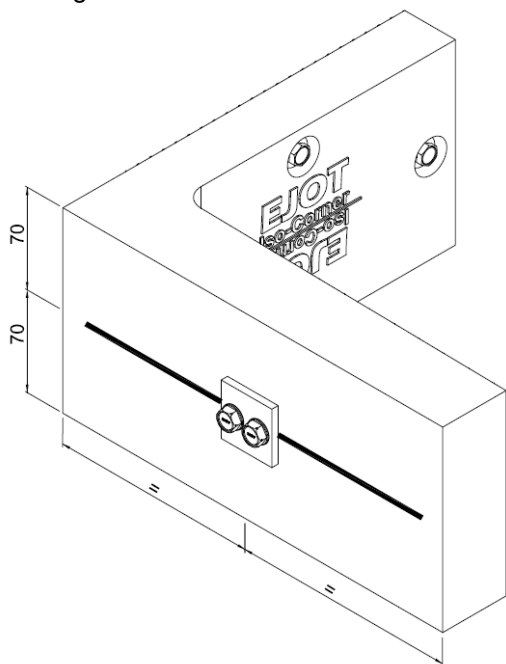


Figure B-6.2



Stand-off installation in accordance with Annex B 2

All dimensions in mm

Supporting brackets "EJOT ISO-Corner"

**Intended use**  
Technical data – Fastening variants B-6.1; B-6.2 and B-7.1

Annex B 9

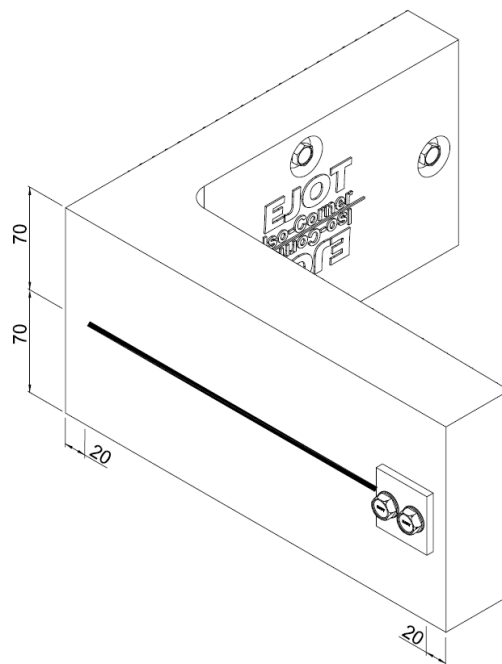


Figure B-7.2

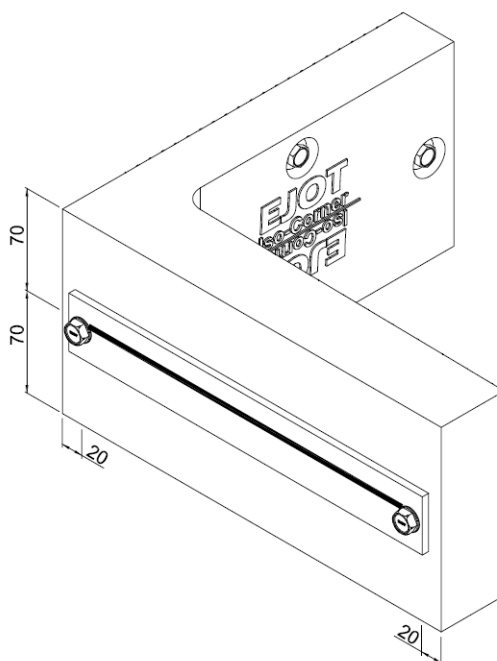
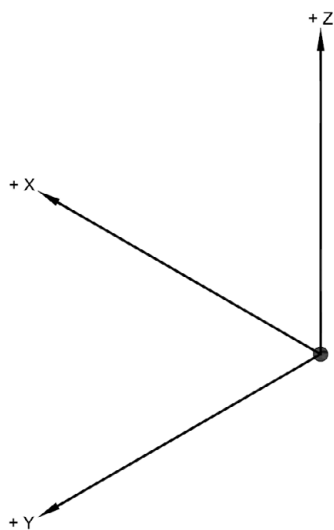


Figure B-8

Stand-off installation in accordance with

dimensions in mm

Supporting brackets "EJOT ISO-Corner"

**Intended use**  
Technical data – Fastening variants B-7.2 and B-8

Annex B 10

Table 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	1.25	1.20
medium up to three months	1.40	1.90
long to permanent	1.86	4.26
$A_1^f$ = Ultimate limit state (ULS) $A_1^E$ = Serviceability limit state (SLS)		

Table C2: Influencing factors for media, temperature and cyclic loading

	ULS Breakage	SLS Deflection
Influencing factor for media effects $A_2$	1.25	1.62
Influencing factor for temperature effects $A_3$		
- in summer, 80 °C	1.49	1.15
- in winter, -20 °C	1.08	1.20
Influencing factor for cyclic loading $A_4$	1.32	1.51

Table C3: Characteristic structural resistances  $F_{Rk}$  of local bearing strength and pull-through resistance per anchor element for the ultimate limit state of type A and type B

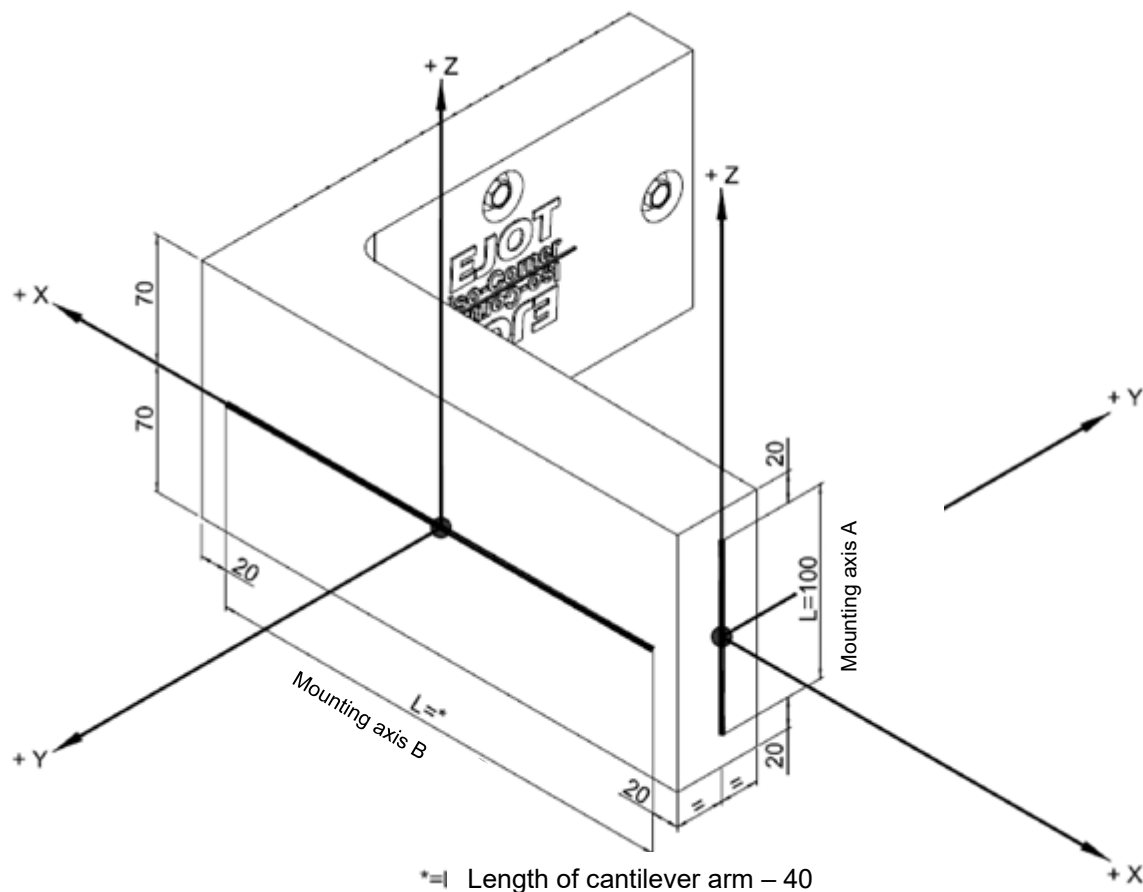
Characteristic structural resistances $F_{Rk}$ in kN		
EJOT Iso–Corner 80 - 300	Local bearing strength of anchorage	Pull-through resistance
Type A*	8.41	10.0
Type B*	4.90	10.0
* Type A/B in accordance with Annex B 2		

Supporting brackets "EJOT ISO-Corner"

**Performance**  
Influencing factors and structural resistances for the anchoring devices

Annex C 1

Fig. C1: Stress resultants for structural resistances at supporting bracket



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Supporting brackets "EJOT ISO-Corner"

**Performance**  
Stress resultant directions (structural resistances)

Annex C 2

Table C4: Characteristic structural resistances  $R_k$  for ULS and SLS for mounting area A (face side) und B (cantilever arm side) of the EJOT Iso-Corner  $80 < L \leq 300$  mm using one screw, centred (without load distribution plate, without stand-off)

Load introduction via one screw, centred				
Mounting area	$F_{x,R,k}$	$F_{y,R,k}$	$F_{z,R,k}$	Annex B 6 Fig. no.
<b><math>80 \text{ mm} \leq L \leq 200 \text{ mm}</math></b>				
A (face)	2.43	2.72	4.59	1
B (cantilever arm)	4.91	6.00	4.27	2
<b><math>200 \text{ mm} \leq L \leq 300 \text{ mm}</math></b>				
A (face)	2.43	2.72	2.90	1
B (cantilever arm)	5.58	3.33	3.26	2

Table C5: Characteristic structural resistances  $R_k$  for ULS and SLS for mounting area A (face side) of the EJOT Iso-Corner  $80 \leq L \leq 200$  mm

Mounting area A EJOT Iso-Corner $80 \leq L \leq 200$ mm	$F_{x,R,k}$	$F_{y,R,k}$	$F_{z,R,k}$	Annex B Fig. no.
<b>Load distribution plate (40 x 40 mm) in direct contact – one fastening screw</b>				
centred	2.43	2.72	4.59	3.1
eccentric	1.00	2.47	1.87	3.2
<b>Load distribution plate (40 x 40 mm) in direct contact – two fastening screws</b>				
centred	2.27	2.72	3.16	4.1
eccentric	2.43	2.47	2.87	4.2
<b>Load distribution plate (40 x 40 mm) stand-off installation <math>\leq 20</math> mm – one fastening screw</b>				
centred	2.66	2.89	2.61	3.1
eccentric	1.09	2.23	1.06	3.2
<b>Load distribution plate (40 x 40 mm) stand-off installation <math>\leq 20</math> mm – two fastening screws</b>				
centred	2.66	2.72	2.61	4.1
eccentric	2.86	2.23	1.47	4.2
<b>Load distribution plate (120 x 40 mm) in direct contact – two fastening screws</b>				
centred	2.33	2.72	2.88	5
<b>Load distribution plate (120 x 40 mm) stand-off installation <math>\leq 20</math> mm – two fastening screws</b>				
centred	2.73	2.72	2.38	5

Supporting brackets "EJOT ISO-Corner"

**Performance**  
Characteristic structural resistances

Annex C 3

Table C6: Characteristic structural resistances  $R_k$  for ULS and SLS for mounting area A (face side) of the EJOT Iso–Corner  $200 \leq L \leq 300$  mm

Mounting area A EJOT Iso–Corner $200 \leq L \leq 300$ mm	$F_{x,R,k}$	$F_{y,R,k}$	$F_{z,R,k}$	Annex B Fig. no.
<b>Load distribution plate (40 x 40 mm) in direct contact – one fastening screw</b>				
centred	3.23	2.85	2.90	3.1
eccentric	2.08	1.84	1.87	3.2
<b>Load distribution plate (40 x 40 mm) in direct contact – two fastening screws</b>				
centred	3.23	2.85	3.16	4.1
eccentric	2.08	2.59	2.88	4.2
<b>Load distribution plate (40 x 40 mm) stand-off installation <math>\leq 20</math> mm – one fastening screw</b>				
centred	2.66	2.89	2.61	3.1
eccentric	1.71	1.87	1.68	3.2
<b>Load distribution plate (40 x 40 mm) stand-off installation <math>\leq 20</math> mm – two fastening screws</b>				
centred	2.66	2.89	2.61	4.1
eccentric	1.71	2.63	2.38	4.2
<b>Load distribution plate (120 x 40 mm) in direct contact – two fastening screws</b>				
centred	3.23	2.85	2.88	5
<b>Load distribution plate (120 x 40 mm) stand-off installation <math>\leq 20</math> mm – two fastening screws</b>				
centred	2.58	2.89	2.38	5

Supporting brackets "EJOT ISO-Corner"

**Performance**  
Characteristic structural resistances

Annex C 4

Table C7: Characteristic structural resistances  $R_k$  for ULS and SLS for mounting area B (cantilever arm side) of the EJOT Iso-Corner  $80 \leq L \leq 200$  mm

Mounting area B EJOT Iso-Corner $80 \leq L \leq 200$ mm	$F_{x,R,k}$	$F_{y,R,k}$	$F_{z,R,k}$	Annex B Fig. no.
<b>Load distribution plate (40 x 40 mm) in direct contact – one fastening screw</b>				
centred	4.91	6.00	4.27	6.1
eccentric	2.59	3.17	2.26	6.2
<b>Load distribution plate (40 x 40 mm) in direct contact – two fastening screws</b>				
centred	4.91	6.00	4.27	7.1
eccentric	2.59	3.17	2.26	7.2
<b>Load distribution plate (40 x 40 mm) stand-off installation <math>\leq 20</math> mm – one fastening screw</b>				
centred	3.70	3.38	2.41	6.1
eccentric	1.96	1.79	1.28	6.2
<b>Load distribution plate ((L-20) x 40 mm) in direct contact – two fastening screws</b>				
centred	4.32	6.00	5.22	8
<b>Load distribution plate ((L-20) x 40 mm) with spacing <math>\leq 20</math> mm – two fastening screws</b>				
centred	3.26	3.38	2.94	8

Supporting brackets "EJOT ISO-Corner"

**Performance**  
Characteristic structural resistances

Annex C 5

Table C8: Characteristic structural resistances  $R_k$  for ULS and SLS for mounting area B (flank side) of the EJOT Iso–Corner  $200 < L \leq 300$  mm

Mounting area B EJOT Iso–Corner $200 \leq L \leq 300$ mm	$F_{x,R,k}$	$F_{y,R,k}$	$F_{z,R,k}$	Annex B Fig. no.
<b>Load distribution plate (40 x 40 mm) in direct contact – one fastening screw</b>				
centred	5.58	3.33	3.26	6.1
eccentric	4.58	2.77	2.26	6.2
<b>Load distribution plate (40 x 40 mm) in direct contact – two fastening screws</b>				
centred	5.58	3.33	3.26	7.1
eccentric	4.58	2.31	2.26	7.2
<b>Load distribution plate (40 x 40 mm) stand-off installation <math>\leq 20</math> mm – one fastening screw</b>				
centred	3.70	2.21	2.41	6.1
eccentric	3.04	1.53	1.67	6.2
<b>Load distribution plate ((L-20) x 40 mm) in direct contact – two fastening screws</b>				
centred	4.32	3.33	5.22	8
<b>Load distribution plate ((L-20) x 40 mm) with spacing <math>\leq 20</math> mm – two fastening screws</b>				
centred	2.86	2.21	3.86	8

Supporting brackets "EJOT ISO-Corner"

**Performance**  
Characteristic structural resistances

Annex C 6