Deutsches Institut für Bautechnik

Member of EOTA
www.eota.eu

**Approval body for construction products and types of construction**

**Bautechnisches Prüfamt**

An institution established by the Federal and Laender Governments

Designated according to Article 29 of Regulation (EU) No 305/2011 and member of EOTA (European Organisation for Technical Assessment)

# European Technical Assessment

# ETA-13/0015 of 24 January 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 | VISS SG |
| Product family to which the construction product belongs | Façade VISS SG - Structural Glazing |
| Manufacturer | Jansen AG<br>Stahlröhrenwerk, Kunststoffwerk<br>Industriestraße 34<br>9463 Oberriet SG<br>SCHWEIZ |
| Manufacturing plant | Jansen AG<br>Stahlröhrenwerk, Kunststoffwerk<br>Industriestraße 34<br>9463 Oberriet SG<br>SCHWEIZ |
| This European Technical Assessment contains | 33 pages including 28 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 090035-00-0404 |
| This version replaces | ETA-13/0015 issued on 20 February 2013 |

electronic copy of the eta by dibt: eta-13/0015

**Deutsches Institut für Bautechnik**
Kolonnenstraße 30 B | 10829 Berlin | GERMANY | Phone: +49 30 78730-0 | Fax: +49 30 78730-320 | Email: dibt@dibt.de | www.dibt.de

The European Technical Assessment is issued by the Technical Assessment Body in its official language. Translations of this European Technical Assessment in other languages shall fully correspond to the original issued document and shall be identified as such.

Communication of this European Technical Assessment, including transmission by electronic means, shall be in full. However, partial reproduction may only be made with the written consent of the issuing Technical Assessment Body. Any partial reproduction shall be identified as such.

This European Technical Assessment may be withdrawn by the issuing Technical Assessment Body, in particular pursuant to information by the Commission in accordance with Article 25(3) of Regulation (EU) No 305/2011.

electronic copy of the eta by dibt: eta-13/0015

## Specific part

### 1 Technical description of the product

This European Technical Assessment applies to glass façades with the trade name "VISS SG" of the company Jansen AG, Oberriet, Switzerland. The insulating glass units are fastened punctually to a mullion-transom system. For that purpose retaining devices (toggles), which are fixed to the supporting construction, grip into a U-profile which is glued into the insulating glass edge. The insulating glass units may consist of two or three glass panes. The U-profile is inserted in the insulating glass edge next to the outer pane. For the façade "VISS SG" the insulating glass units VARIO regulated by ETA-10/0362 are installed.
For the self-weight of the insulating glass units mechanical self-weight supports are fixed to the supporting construction and for the case of bond failure there are wind protection devices (emergency retainers) optionally.
The materials of the components not indicated in Annexes shall correspond to the respective values and information laid down in the technical documentation to this European Technical Assessment.
The dimensions of the insulating glass units amount to at least 400 mm x 800 mm (width x height and height x width respectively) and at most 2500 mm x 5000 mm (width x height and height x width respectively).

The different fastening systems for the mechanical devices are given in Annex C 1.

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

The performances given in Section 3 are only valid if the components for "VISS SG" are used in compliance with the specifications and conditions given in the Annexes A and B.

The performance of the insulating glass unit "VARIO" are according to ETA-10/0362.

The elements are used in overhead and vertical areas.

The angle of inclination to the vertical of the insulating glass units shall not exceed 10° with a slope to the inside. As overhead glazing a slope to the horizontal of 7° to 80° is possible, where in such a case laminated safety glass shall be used as lower pane, the provisions of the Member State shall be considered respectively.

The structural bond shall not be permanently subject to tension.

The use of the insulating glass units for the stiffening of other building elements or as safety barrier to prevent from falling to a lower level is not covered by this ETA.

For the use in structures the following types are differentiated in accordance with ETAG 002-1:

Type I: Mechanical transfer of the self-weight of the facade element to the sealant-support frame and thence to the structure. The structural sealant transfers all other actions. Devices are used to reduce danger in the event of- bond failure.

Type II: Mechanical transfer of the self-weight of the facade element to the sealant-support frames and thence to the structure. The structural sealant transfers all other actions and no devices are used to reduce danger in the event of bond failure.

electronic copy of the eta by dibt: eta-13/0015

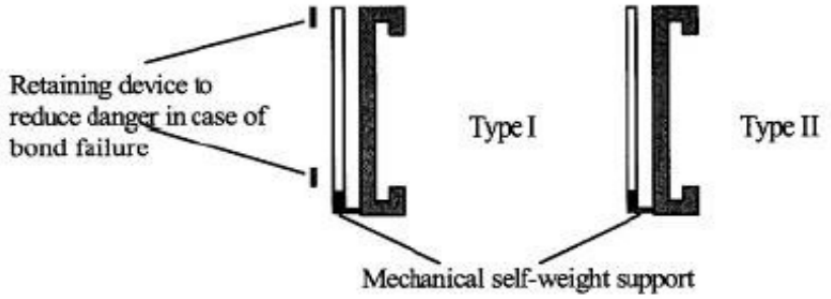



Figure 1: Schematic examples of types I and II

The verifications and assessment methods on which this European Technical Assessment is based lead to the assumption of a working life of "VISS SG" of at least 25 years. 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 Mechanical resistance and stability (BWR 1)

| Essential characteristic | Performance |
|---|---|
| Mechanical glazing support, retaining devices, wind protection devices (emergency retainers)<br>- Load-bearing capacities | See Annex A |

### 3.2 Safety in case of fire (BWR 2)

| Essential characteristic | Performance |
|---|---|
| Reaction to fire of the metal components in accordance with the provisions of EC Decision 1996/582/EC | A 1 |

### 3.3 Safety and accessibility in use (BWR 4)

| Essential characteristic | Performance |
|---|---|
| Air permeability | AE as per EN 12152[1] |
| Watertightness | RE 1200 as per EN 12154[2] |

electronic copy of the eta by dibt: eta-13/0015

[1] EN 12152 Curtain walling - Air permeability - Performance requirements and classification
[2] EN 12154 Curtain walling - Watertightness - Performance requirements and classification

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

In accordance with EAD No. 090035-00-0404 the applicable European legal act is: 1996/582/EC[3].

The systems to be applied are:

- System 1 for Type II
- System 2+ for Type I

In addition, with regard to e.g. reaction to fire for products covered by this EAD the applicable European legal act is: 2003/656/EC[4]

The systems to be applied are:

- System 1, 3, 4

## 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 24 January 2019 by Deutsches Institut für Bautechnik

BD Dipl.-Ing. Andreas Kummerow
Head of Department

*beglaubigt:*
Herr

electronic copy of the eta by dibt: eta-13/0015

[3] Official Journal of the European Communities no L 254/62 of 8.10.1996
[4] Official Journal of the European Communities no L 231/15 of 17.9.2003

Deutsches Institut für Bautechnik DIBt

**Annex A**

**Characteristics and load-bearing capacities of the glass supports, retaining devices (toggles), wind protection devices (emergency retainers)**

### Glazing supports

For bearing the self-weight of the insulating glass unit VARIO different glazing supports are available. They were distinguished according to the type of fastening to the frame profile. Annex C 21 shows the components of the different glazing support systems.

- System 1: Glazing support for dovetail joints according to Annex C 14 (drawing at the top). Those supports are named VISS SG supporting bolt. The bolts are installed in pairs.
- System 2: Glazing support for welded joints according to Annex C 15 (drawing at the top). Up to 3 bolts are installed side by side.
- System 3: Glazing support for screwed fastening according to Annex C 16 (drawing at the top). Up to 3 bolts are installed side by side.
- System 4: Glazing support for screwed and riveted joint according to Annex C 16 (drawing at the bottom). Up to 3 bolts are installed side by side.
- System 5: Glazing support made of flat steel welded into a dovetailed profile Annex C 14 (drawing at the bottom).
- System 6: Glazing support made of flat steel welded directly to the frame profiles of the façade according to Annex C 15 (drawing at the bottom) and Annex 20. The bearing capacity can be determined by calculation and is not part of this ETA.

In the following table 1 the bearing capacity of the glazing supports are listed. As a failure criterion Jansen AG requires a limitation of deformation. This means that the glazing support may have an inclination up to 13.7 % under load. The glazing supports are tested in combination with the frame profile according to table 1. In table 1 the decisive characteristic value and criterion are listed. Due to different scenarios of failure different safety factors are recommended for design.

The size of the glazing support depends on the total thickness of the insulating glass unit. It shall be ensured that the outer pane of the insulating glass unit is supported to at least two thirds of the pane thickness. It shall not be padded in the area of a U-profile (Annex C 17).

Table 1: Load bearing capacity of glazing supports

| System | Glazing support and related frame profile | Number of glazing supports | Characteristic value (5 %-fractile) [kN] | Criterion of failure | Recommended safety factor |
|---|---|---|---|---|---|
| 1 | VISS SG<br>Profile: 50x50x2 | 1 pair | 1.76 | Fracture | 1.33 |
| 1 | VISS SG<br>Profile: 150x60x2.75 | 1 pair | 1.20 | Deformation limit | 1.10 |
| 2 | Welded joints<br>Profile: 50x50x3 | 3 bolts | 3.41 | Fracture | 1.33 |
| 3 | Screwed fastening<br>Profile: 50x50x3 | 3 bolts | 2.65 | Deformation limit | 1.10 |
| 4 | Screwed and riveted joints<br>Frame: 50x50x2 | 3 bolts | 1.48 | Deformation limit | 1.10 |

electronic copy of the eta by dibt: eta-13/0015

| | | | | | |
|---|---|---|---|---|---|
| 5 | Flat steel welded into a dovetailed profile<br>Profile: 50x50x2 | – | 10.28 | Fracture | 1.33 |
| 5 | Flat steel welded into a dovetailed profile<br>Profile: 150x60x2.75 | – | 18.22 | Deformation limit | 1.10 |

As contact material polypropylene setting blocks are used for which compatibility with the load-bearing silicone sealant has to be verified, see ETA-10/0362, Annex C. For instance the standard block GLSV of polypropylene by Gluske BKV GmbH, Wuppertal, can be used as contact material.

**Retaining devices (toggles) and fixing to the substructure**

Wind suction loads are transferred by retaining devices which grip into the U-profiles of the insulating glass units VARIO. There are two different types of the retaining devices (Annex C 23). One is called T retaining device (Art. No. 452.165) and the other is called L retaining device (Art. No. 452.166). The minimum thickness of the retaining device T is 3.90 mm and for the retaining device L 3.65 mm. The anchoring depth of 9 mm into the U-profile of the insulating glass unit VARIO shall be met.

Segmented glazing with an angle of +/-5° according to Annexes C 18 and C 19 is permissible.

For fixing the retaining devices to the frame profiles of the façade there are four options:

- Dovetail joint with the anchor bolt VISS SG according to Annexes C 2-4
- Welded joint according to Annexes C 5-7
- Screwed fastening with stud bolt VISS Basic according to Annexes C 8-10
- Screwed and riveted joint according to Annexes C 11-13

In the following table 2 the bearing capacity of the retaining devices are listed. The influence of the type of fixing is not decisive for the design.

Table 2: Load bearing capacity of the retaining devices (toggles)

| **Type of retaining device** | **Load** | **Characteristic value (5 %-fractile) [kN]** | **Recommended safety factor** |
|---|---|---|---|
| Retaining device T | Centrical load<br>Double sided | 3.64 | 1.10 |
| Retaining device L | Eccentric load<br>One-sided | 1.35 | 1.10 |

The anchor bolt VISS SG of the dovetail joint is inserted into the groove of the VISS-profile and is distorted clockwise.

The welded stud of the welded joint is fixed to the substructure by welding with drawn arc according to EN ISO 14555[1].

The screwed fastening is used for profiles with a sheet thickness of at least 3 mm. The stud bolt VISS Basic is screwed directly into the tapped thread of the frame profile of the façade.

electronic copy of the eta by dibt: eta-13/0015

1 EN ISO 14555:2006 Welding - Arc stud welding of metallic materials

The screwed and riveted joint is used for profiles with a sheet thickness between 2 and 3 mm. In this case the stud bolt VISS Basic is screwed into a blind rivet nut M6 made of zinc coated steel, which was set in place before.

The effects of actions shall be calculated for retaining devices and for the U-profiles of the insulating glass units VARIO according to ETA-10/0362. For the load bearing capacity of the U-profiles a limitation is given in ETA-10/0362.

**Wind protection devices (emergency retainers)**

For the loading case of bond failure the horizontal wind forces are absorbed and passed on by emergency retainers. As emergency retainers there are upstands of 40 mm at the U-profile according ETA-10/0362, which bite into the lateral slot of the external insulating glass pane.
The necessity to use such emergency retainers is regulated by the respective Member States.

electronic copy of the eta by dibt: eta-13/0015

Deutsches Institut für Bautechnik DIBt

**Annex B**

## Details for structural design calculation

For the structural design calculation the design codes of the Member State, in which the insulating glass units will be used, shall be respected.

It shall be verified that the structural bond under the actions is not exposed to any stress exceeding the specifications of ETA-10/0362.

Bond failure shall be regarded as an exceptional load case.

The punctual load transfer shall be regarded.

The self-weight of the glazing and the wind loads shall be carried by the sub-structure.

## Details for installation

The infill elements shall be fixed to the supporting structure according to the processing guidelines of the company Jansen AG in such a manner that no restraints may occur in the elements. The installation shall be performed by experts only, who have been trained for these works by the company Jansen AG.

The widths of the joints shall be determined in such a way to avoid glass to glass or glass to metal contact.

Adjacent materials to the structural bond shall be compatible – see Annexes C 22 and C 24 and Annex C of ETA-10/0362.

The insulating units VARIO shall not be installed in an environment with high chloride content (e.g. indoor pools).

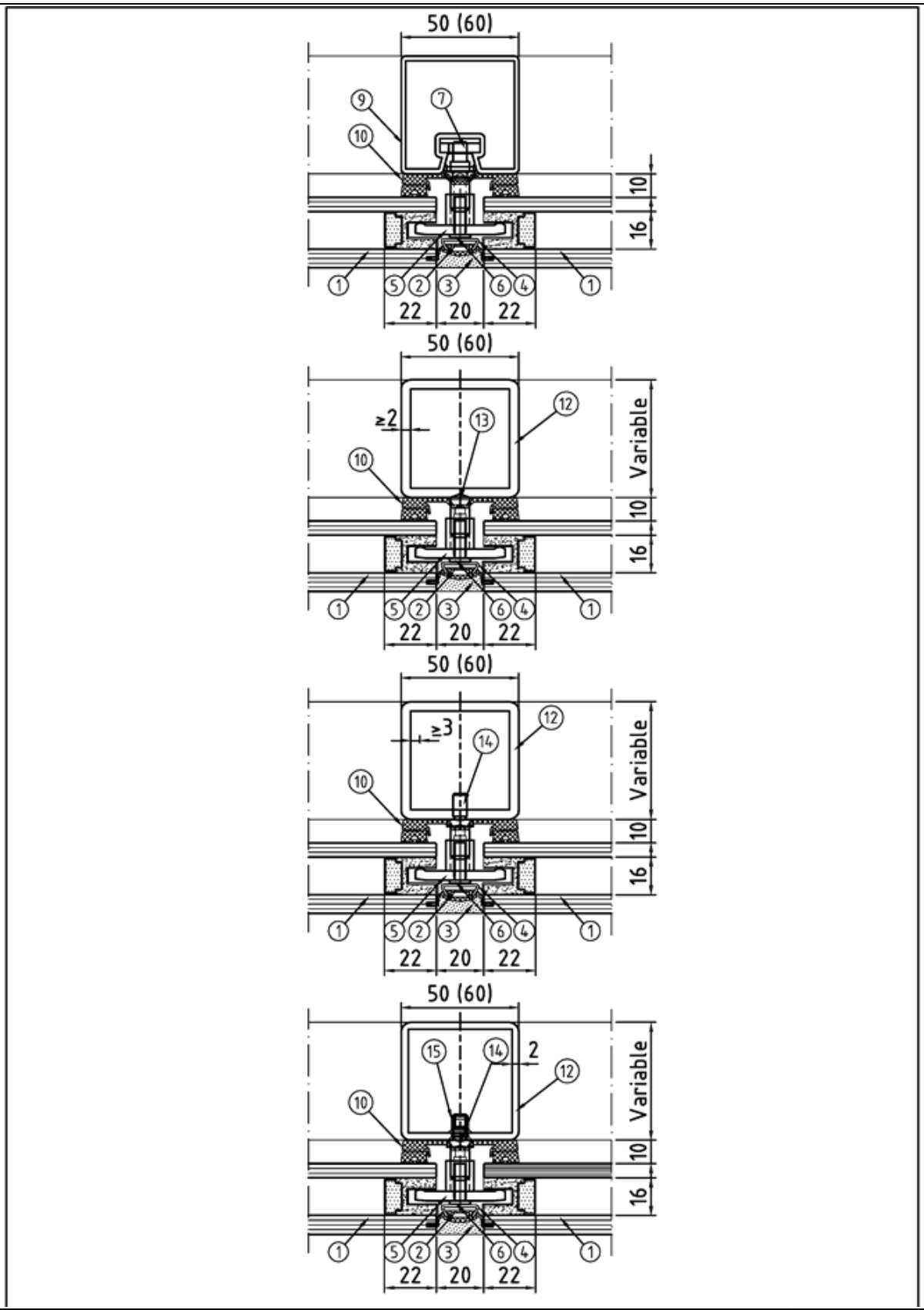
The manufacturer shall take suitable precautions for packaging, transport and storage to ensure that glass elements are protected against damage by, e.g. breakage, scratching, splitting or contamination.

Suitable arrangements have to be made to prevent the application of unacceptable loads to the structural bonding, for example the provision of suitable racks. To prevent the structural bonding from exposure to water, solar radiation or significant changes of temperature protecting with covers shall be provided.

The cleaning of the façade may only be performed by using water with the addition of not more than 1 % surface-active agents without any other chemical additives and/or any aggressive cleaning methods (e.g. blast-cleaning with steam pressure).

electronic copy of the eta by dibt: eta-13/0015

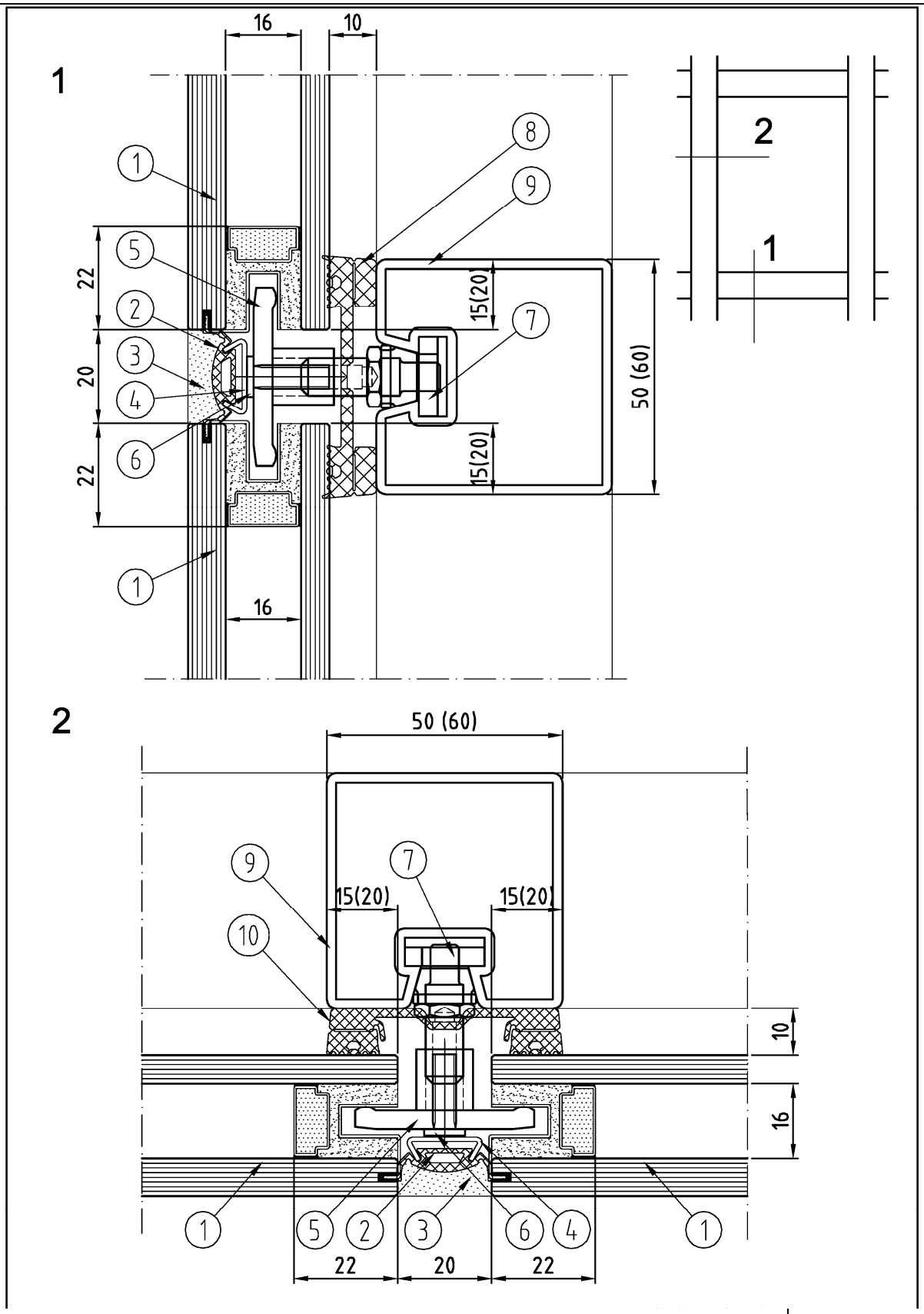
Deutsches Institut für Bautechnik DIBt




| | |
|---|---|
| VISS SG | Annex C 1 |
| Fastenings | |

electronic copy of the eta by dibt: eta-13/0015

Deutsches Institut für Bautechnik DIBt



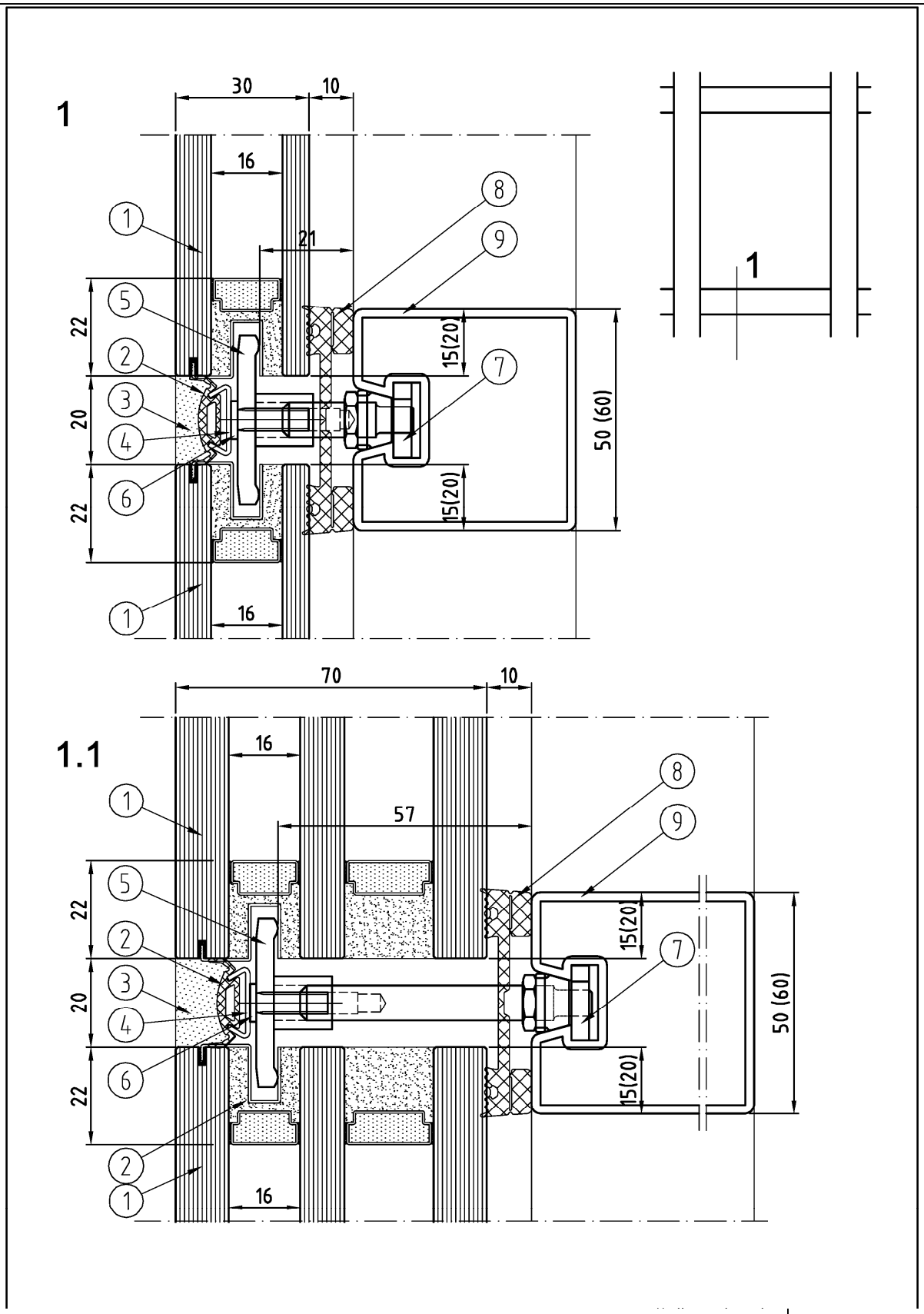

VISS SG

Sectional drawing 50 (60) mm
Dovetail fastening

Annex C 2

electronic copy of the eta by dibt: eta-13/0015

Deutsches Institut für Bautechnik DIBt



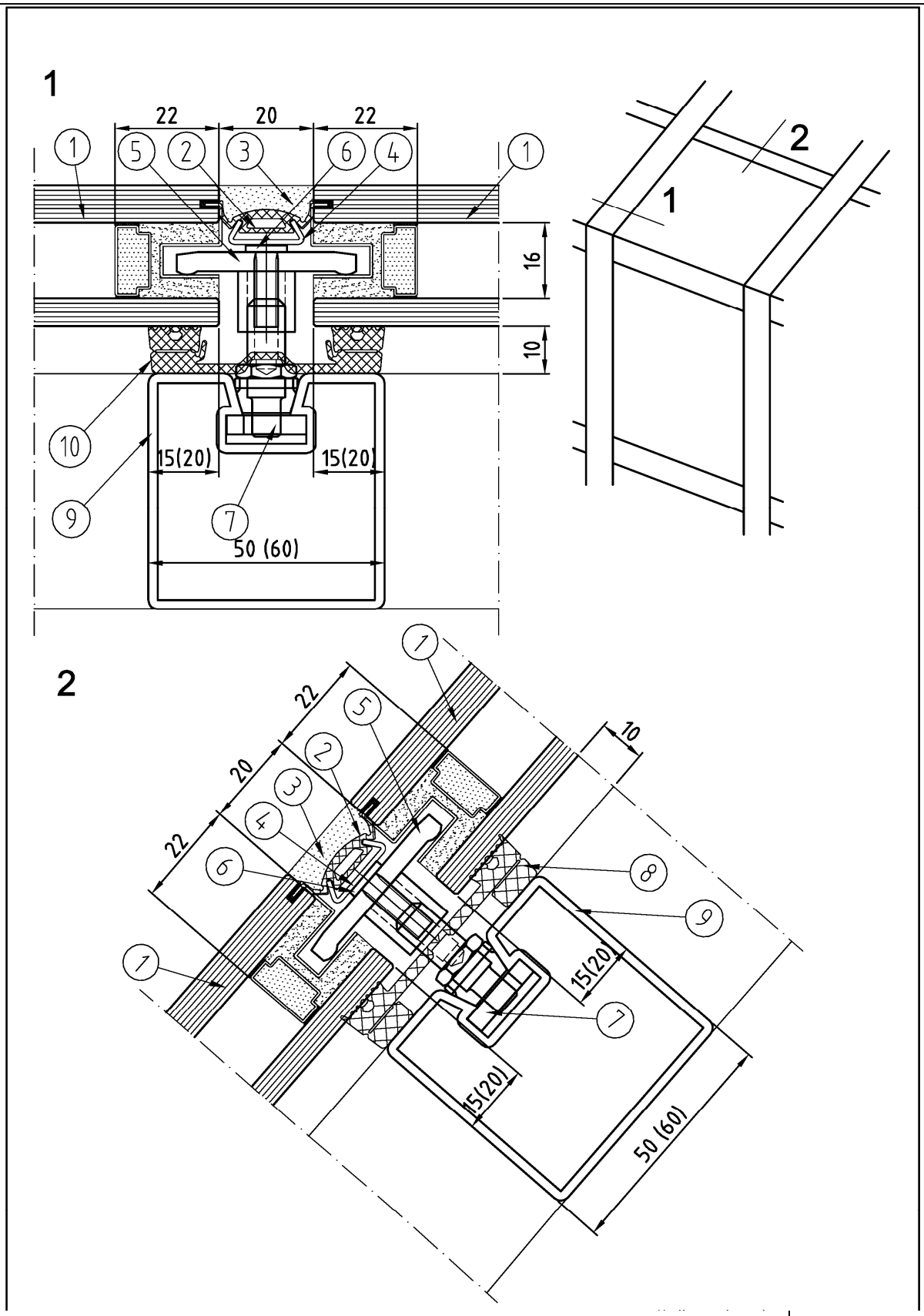

VISS SG

Sectional drawing 50 (60) mm
Glass thickness 30 (21) mm – 70 (57) mm

Annex C 3

electronic copy of the eta by dibt: eta-13/0015

Deutsches Institut für Bautechnik DIBt



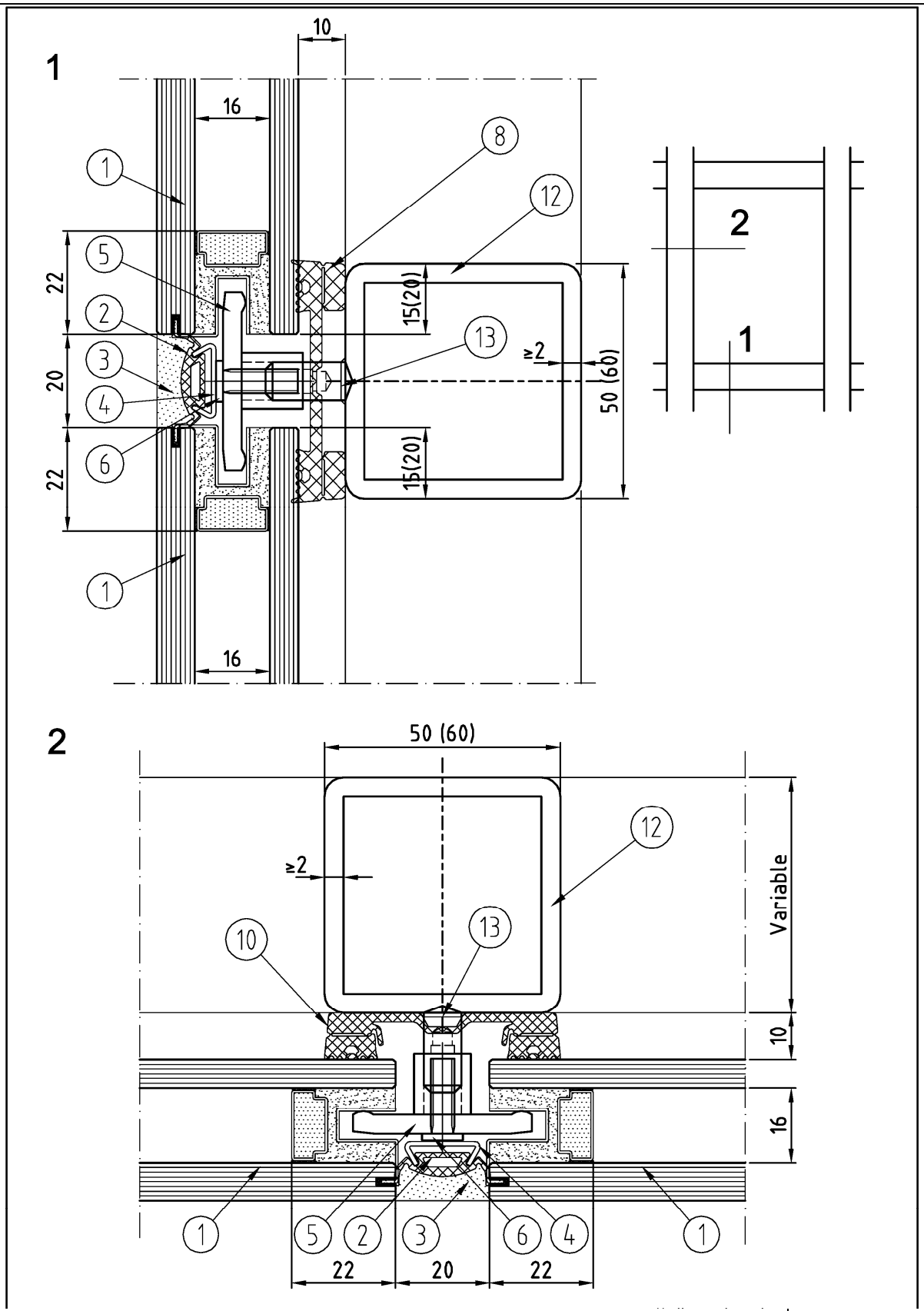

VISS SG

Sectional drawing 50 (60) mm

Annex C 4

electronic copy of the eta by dibt: eta-13/0015

Deutsches Institut für Bautechnik DIBt



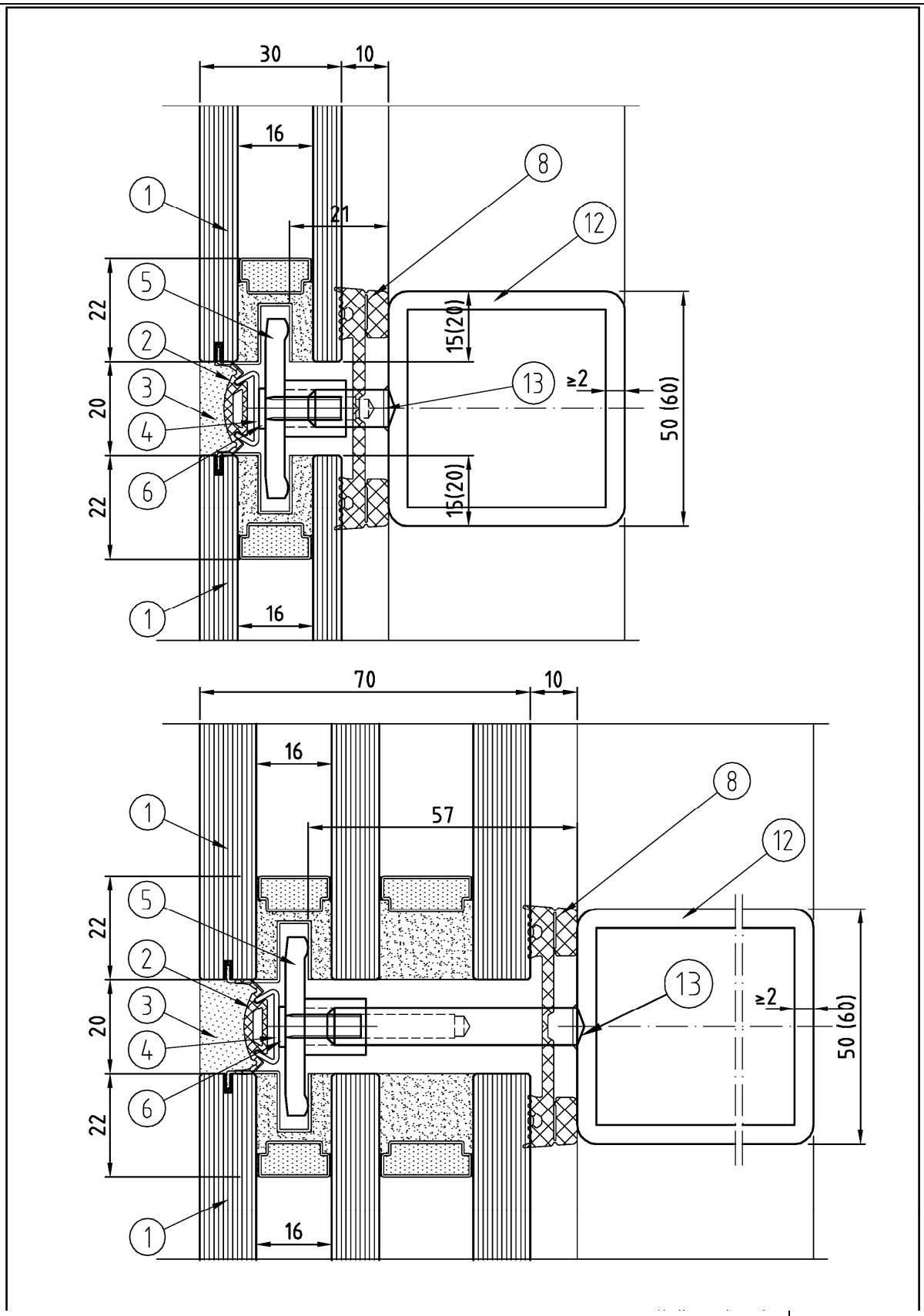

VISS SG

Welding stud

Annex C 5

electronic copy of the eta by dibt: eta-13/0015

Deutsches Institut für Bautechnik DIBt



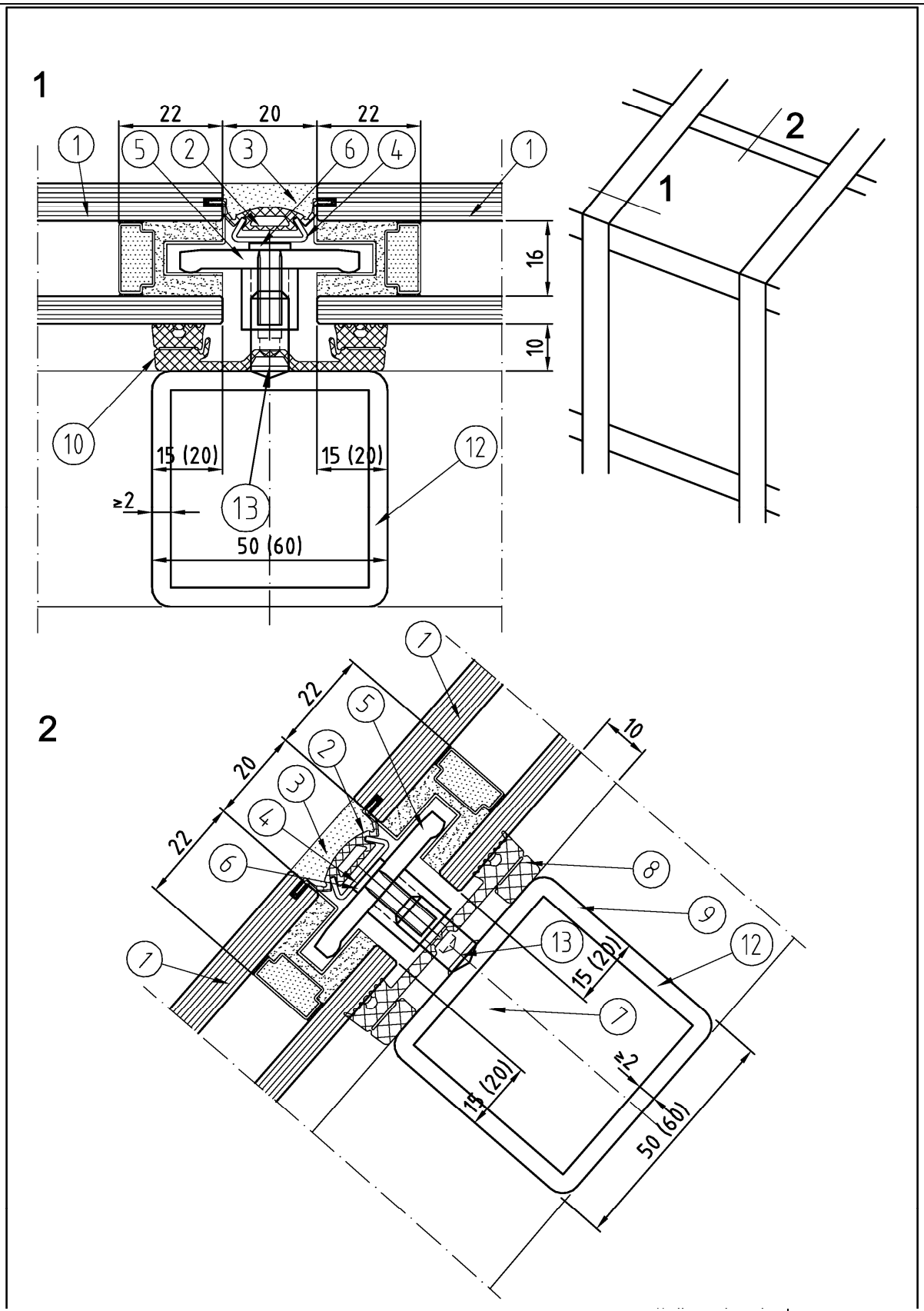

VISS SG

Welding stud
Glass thickness 30 (21) mm – 70 (57) mm

Annex C 6

electronic copy of the eta by dibt: eta-13/0015

Deutsches Institut für Bautechnik DIBt



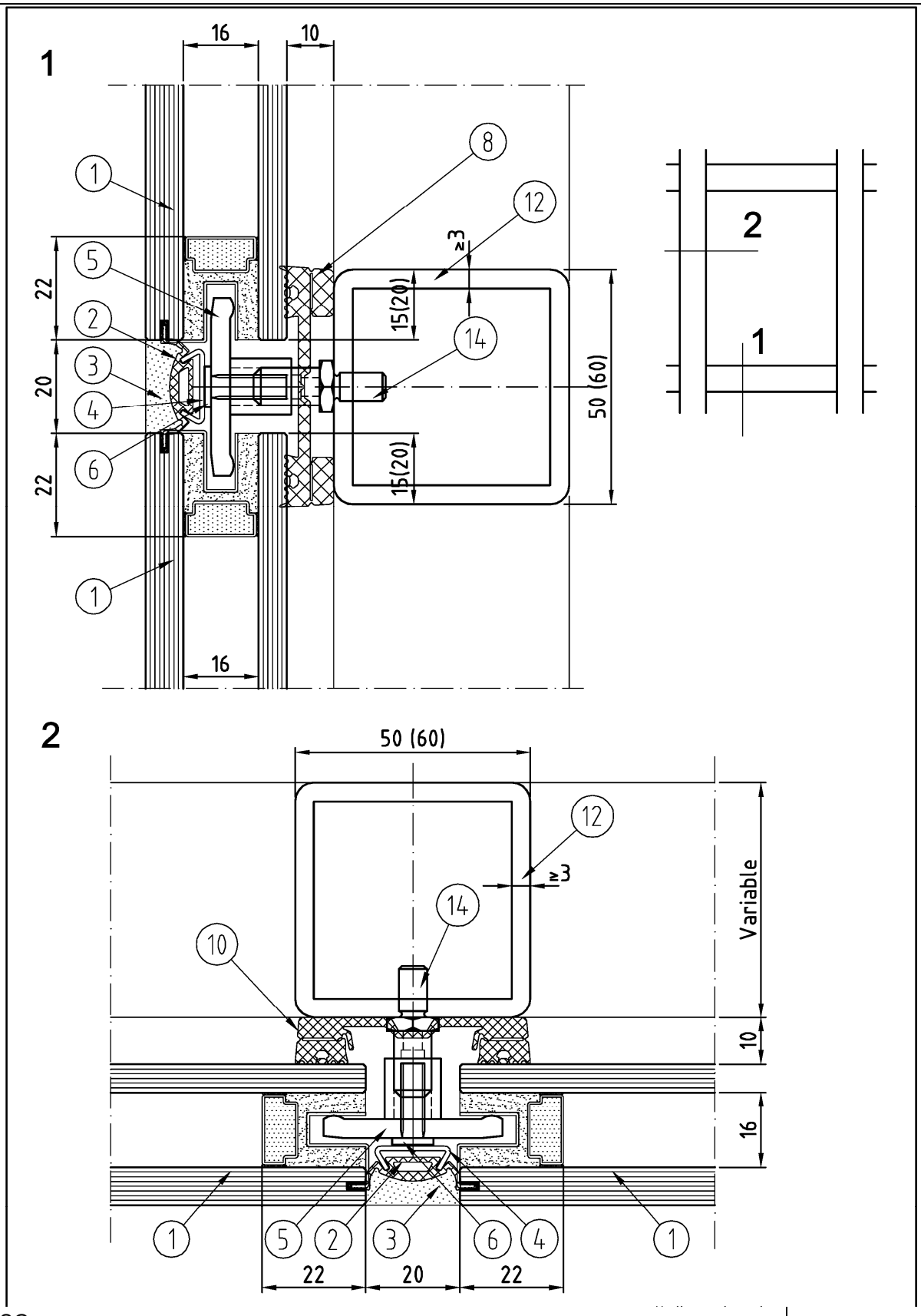

VISS SG

Welding stud

Annex C 7

electronic copy of the eta by dibt: eta-13/0015

Deutsches Institut für Bautechnik DIBt



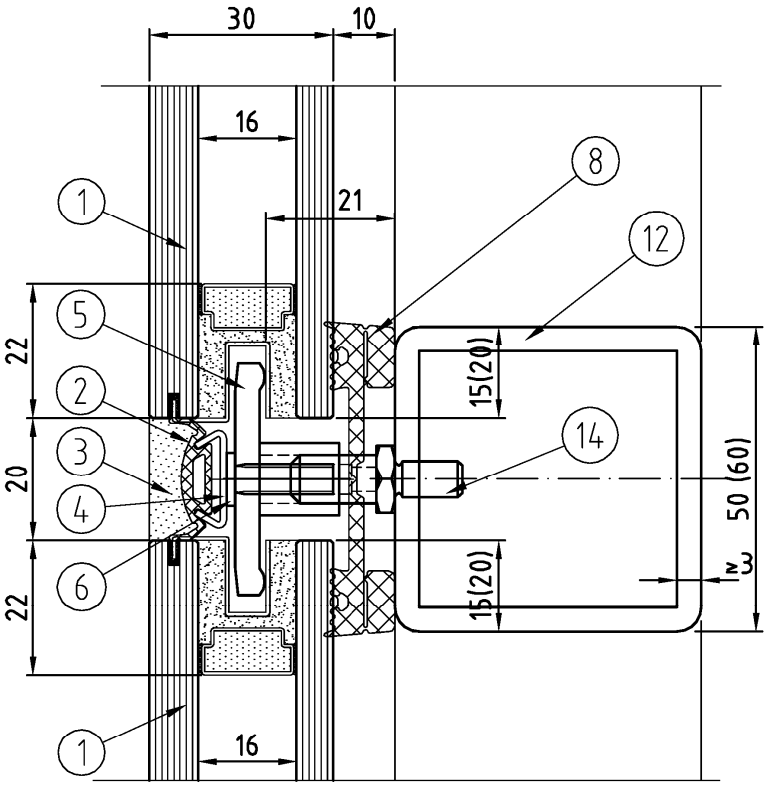

VISS SG

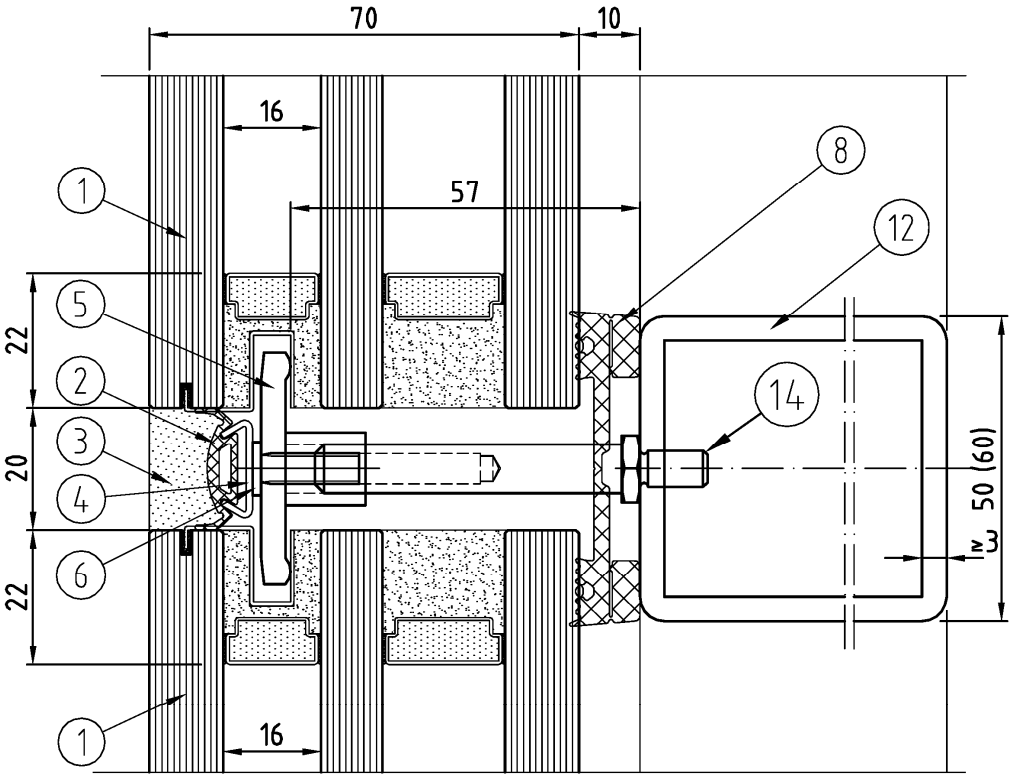
Screw bolt

Annex C 8

electronic copy of the eta by dibt: eta-13/0015

Deutsches Institut für Bautechnik DIBt



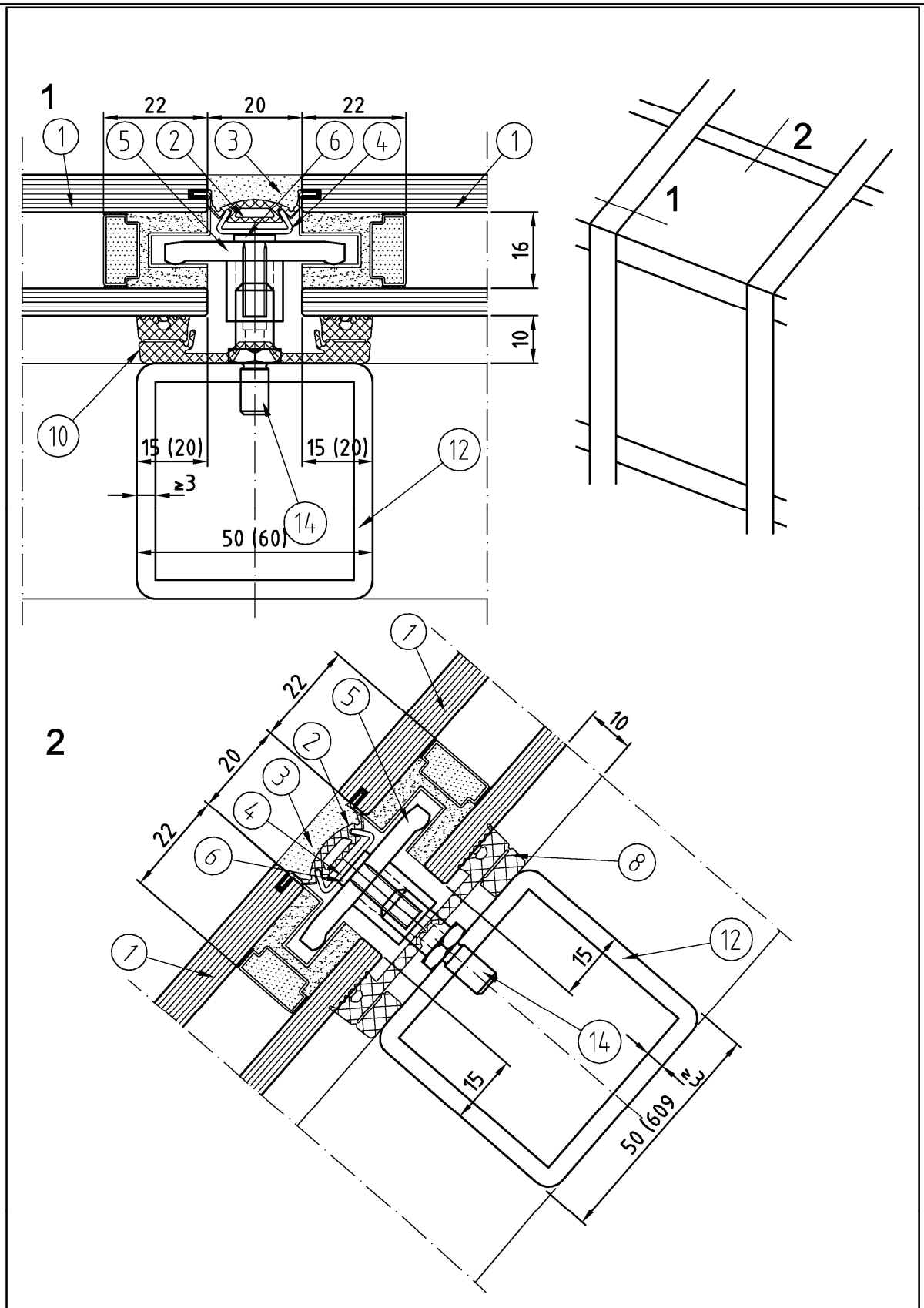

VISS SG

Screw bolt
Glass thickness 30 (21) mm – 70 (57) mm

Annex C 9

electronic copy of the eta by dibt: eta-13/0015

Deutsches Institut für Bautechnik DIBt




VISS SG

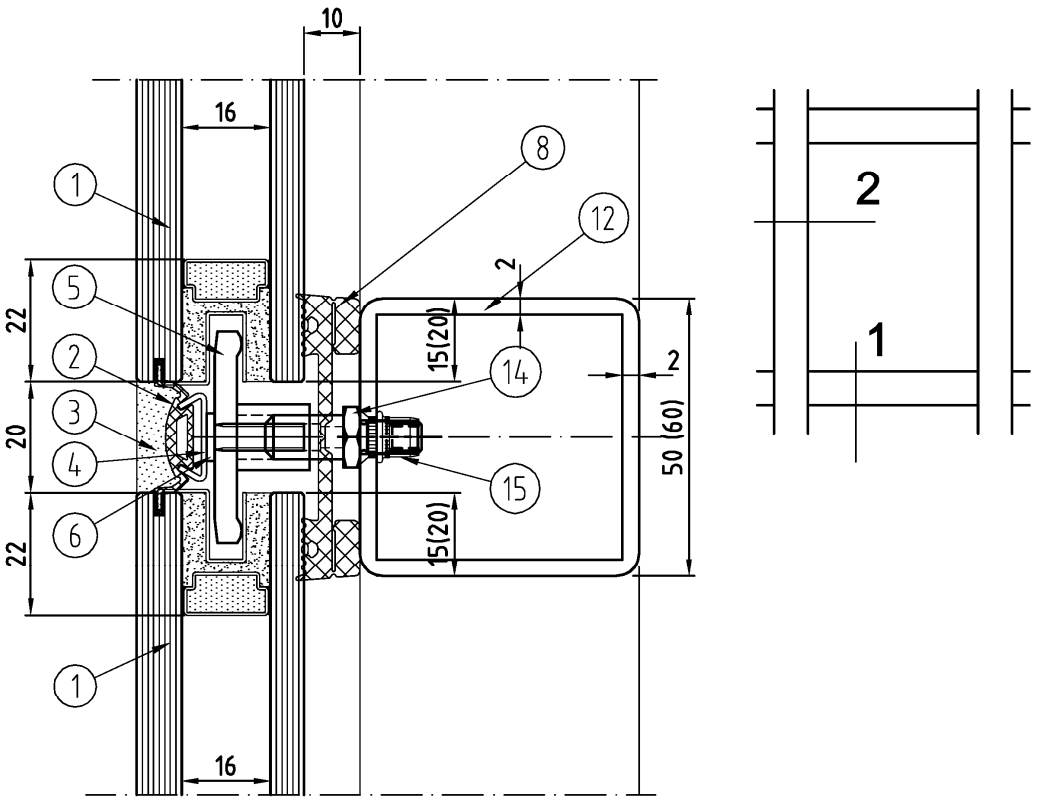
Screw bolt

Annex C 10

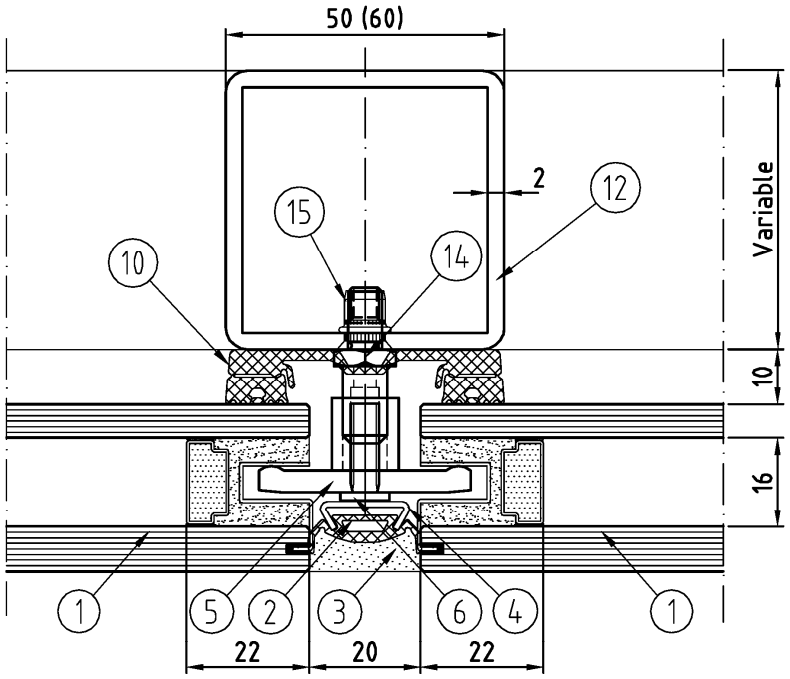
electronic copy of the eta by dibt: eta-13/0015

Deutsches Institut für Bautechnik DIBt

1




2

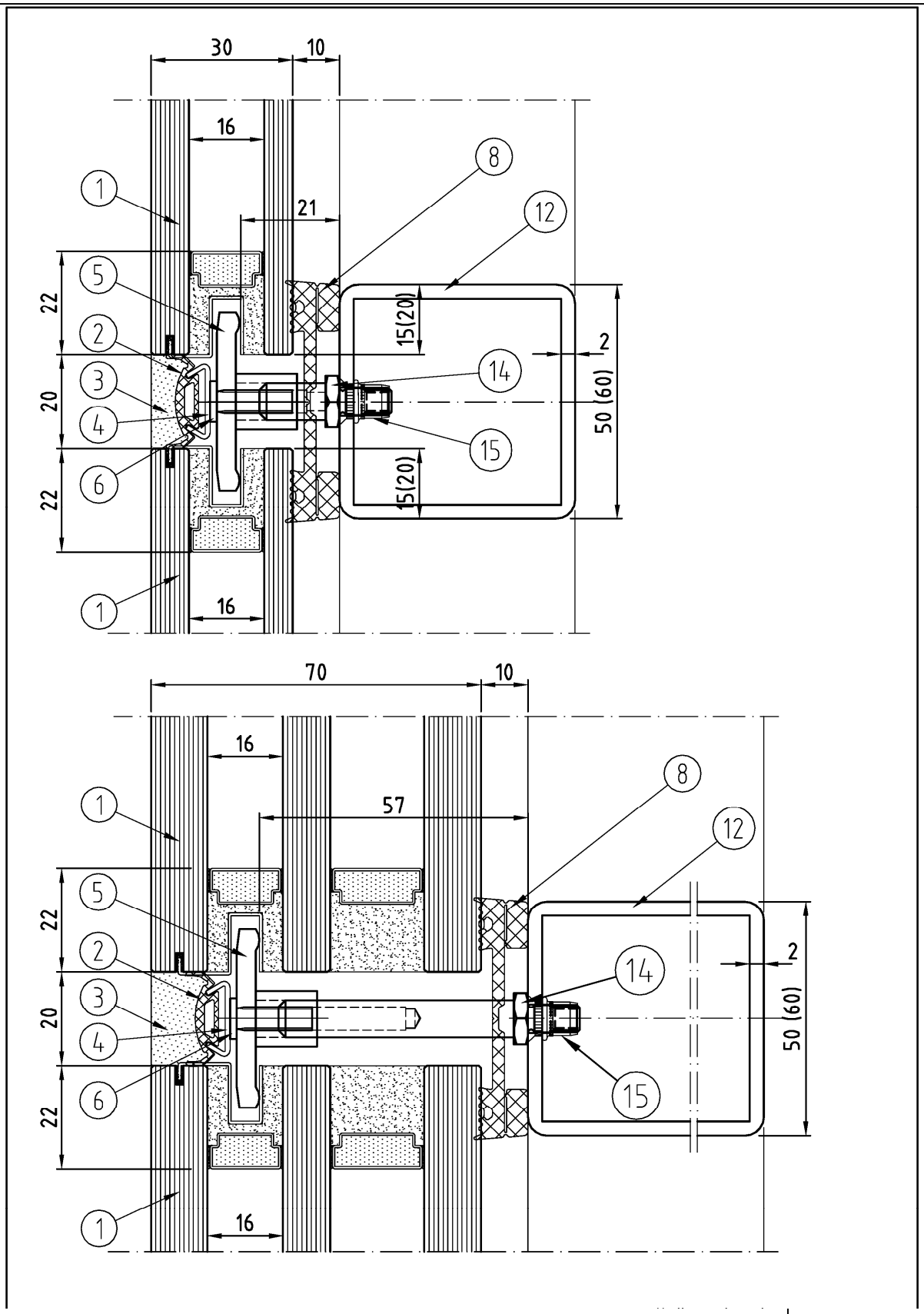



VISS SG

Screwed and riveted bolt

Annex C 11

electronic copy of the eta by dibt: eta-13/0015




VISS SG

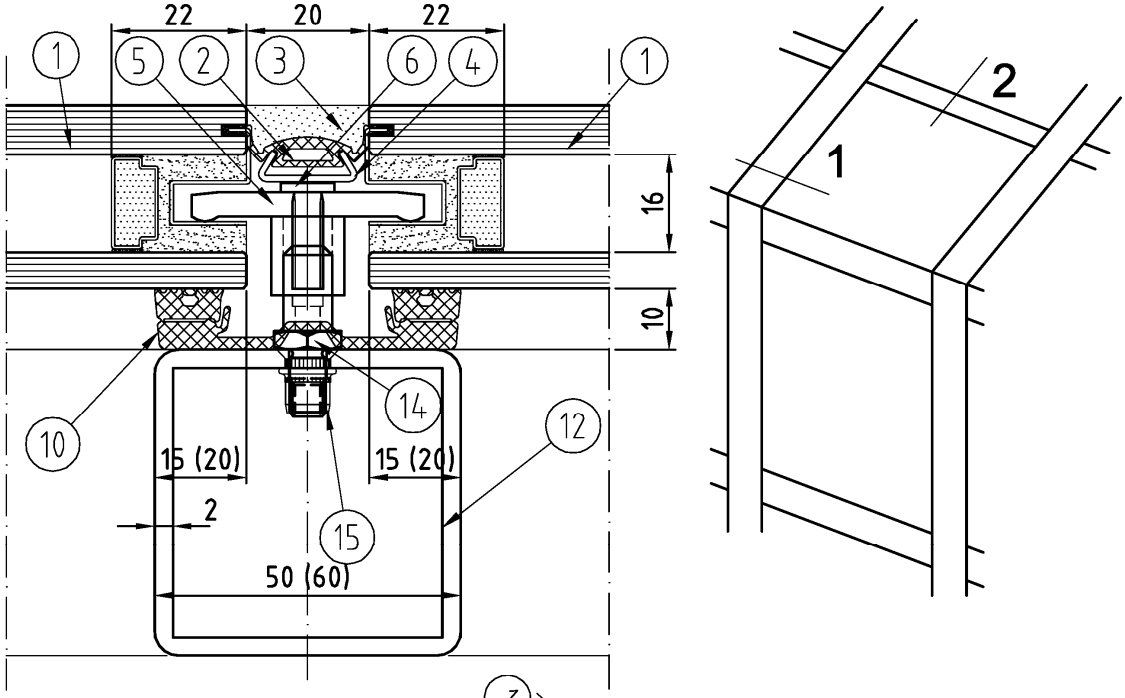
Screwed and riveted bolt
Glass thickness 30 (21) mm – 70 (57) mm

Annex C 12

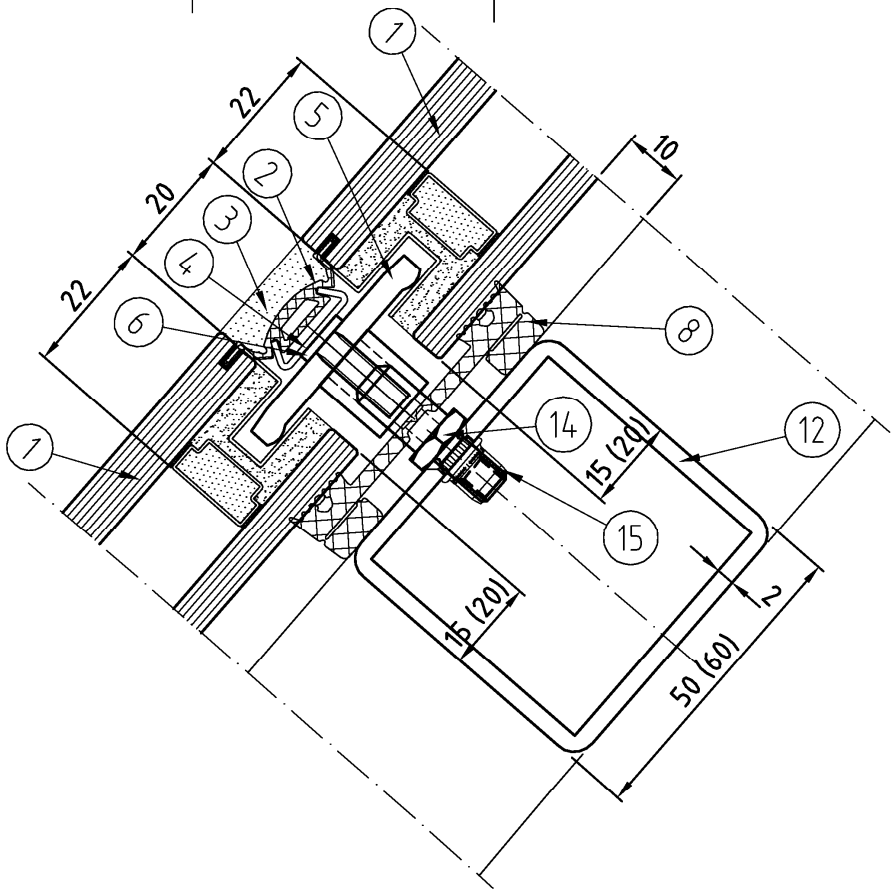
electronic copy of the eta by dibt: eta-13/0015

Deutsches Institut für Bautechnik DIBt

1




2



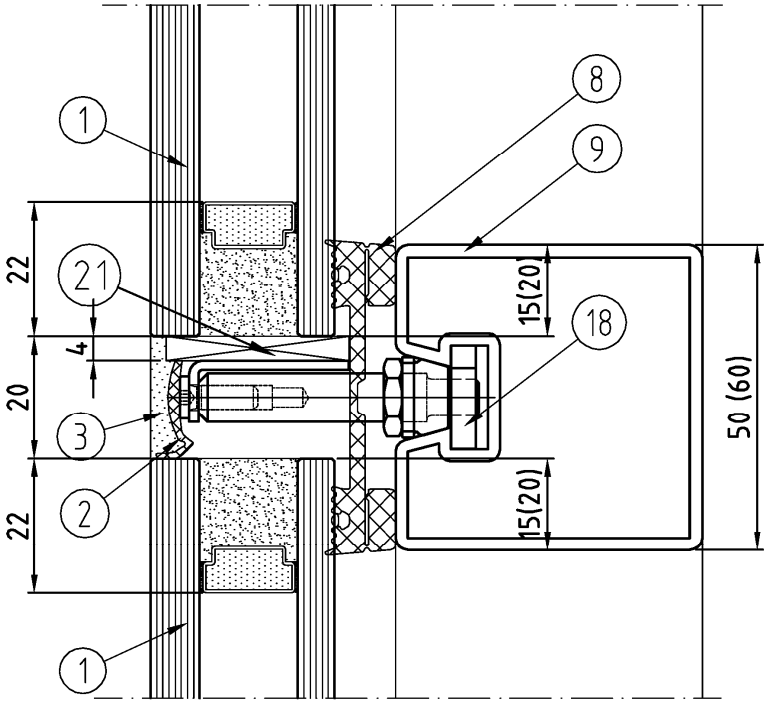

VISS SG

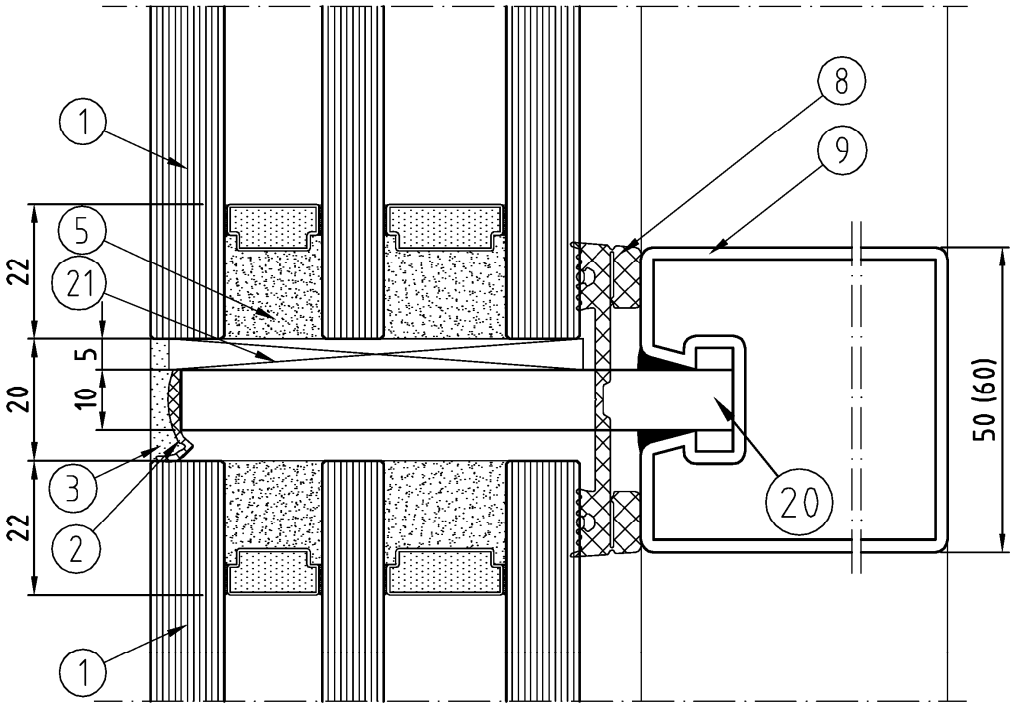
Screwed and riveted bolt

Annex C 13

electronic copy of the eta by dibt: eta-13/0015

Deutsches Institut für Bautechnik DIBt



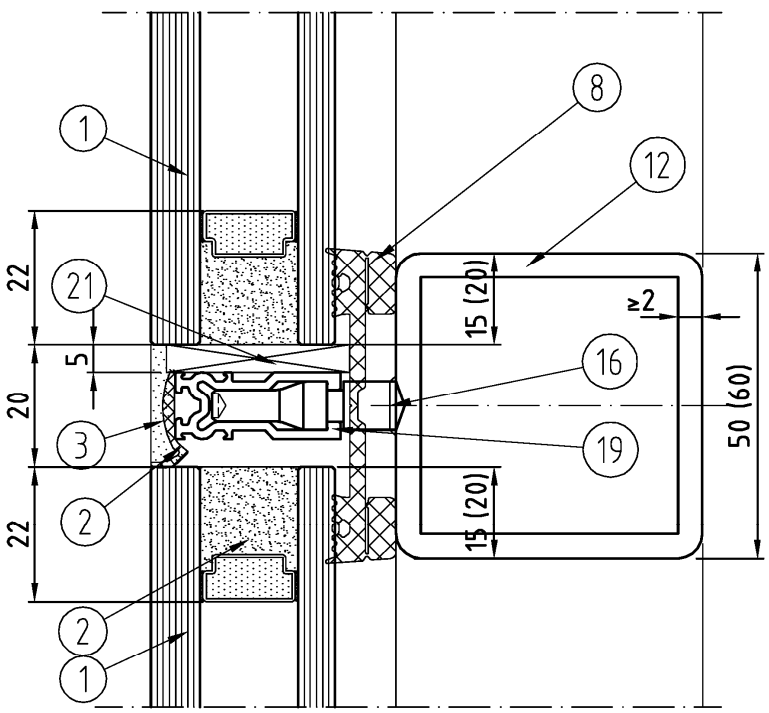

VISS SG

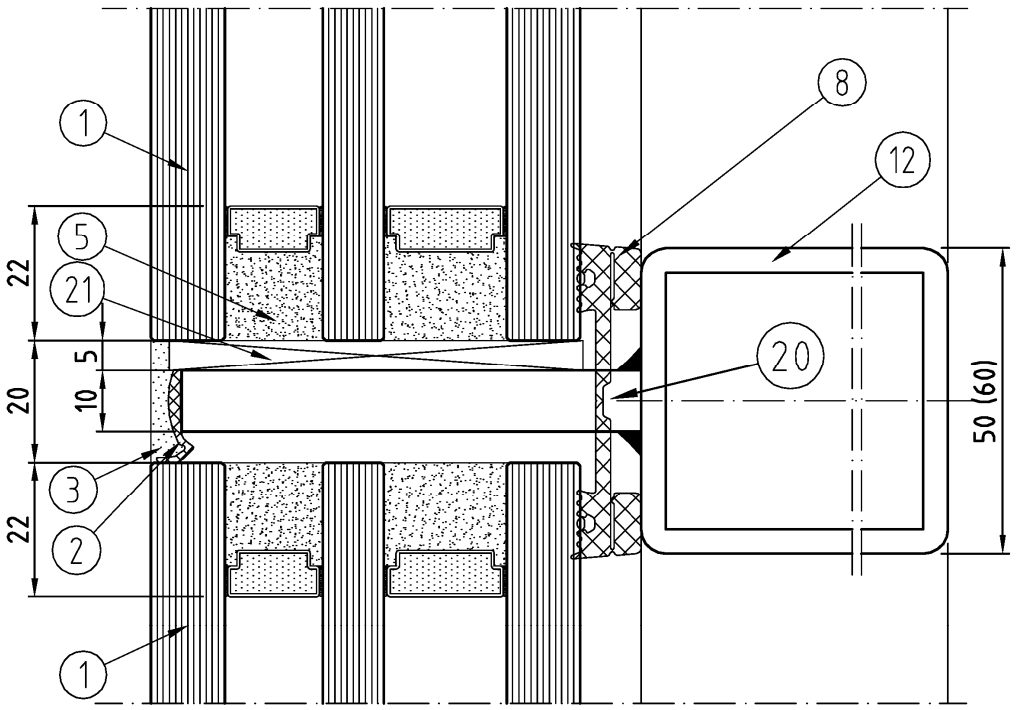
Glazing support

Annex C 14

electronic copy of the eta by dibt: eta-13/0015

Deutsches Institut für Bautechnik DIBt



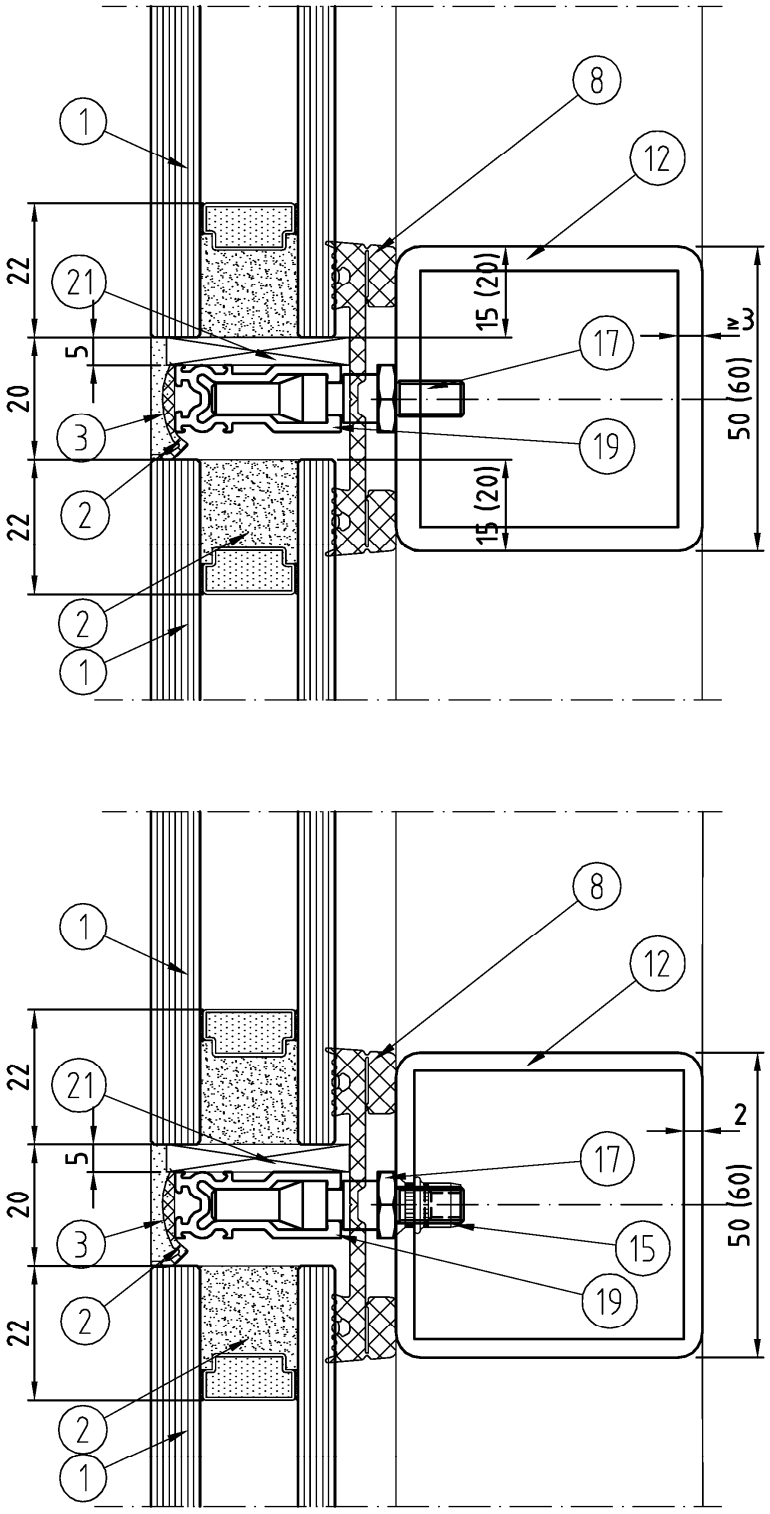




VISS SG

Glazing support

Annex C 15

electronic copy of the eta by dibt: eta-13/0015



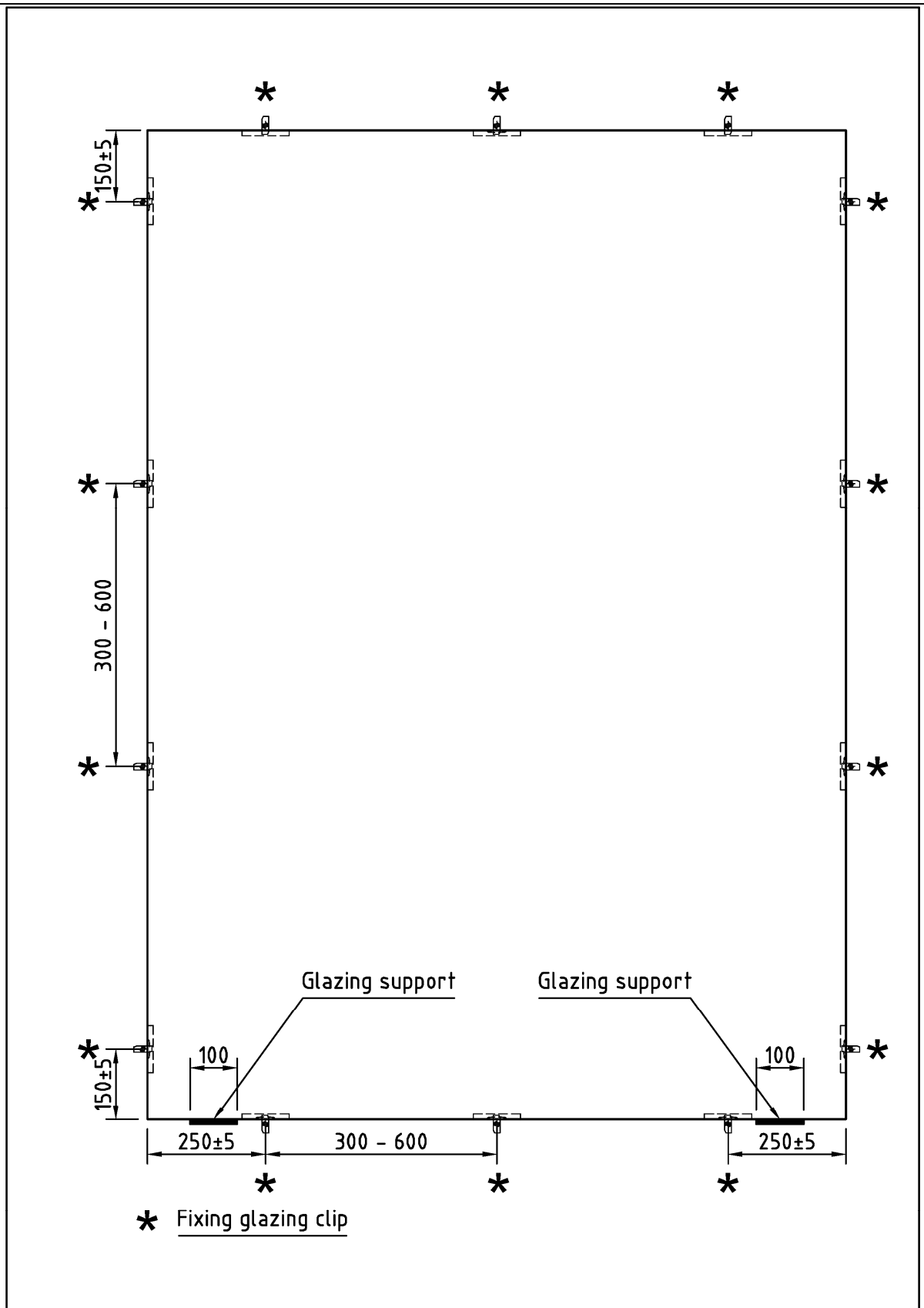

VISS SG

Glazing support

Annex C 16

electronic copy of the eta by dibt: eta-13/0015

Deutsches Institut für Bautechnik DIBt



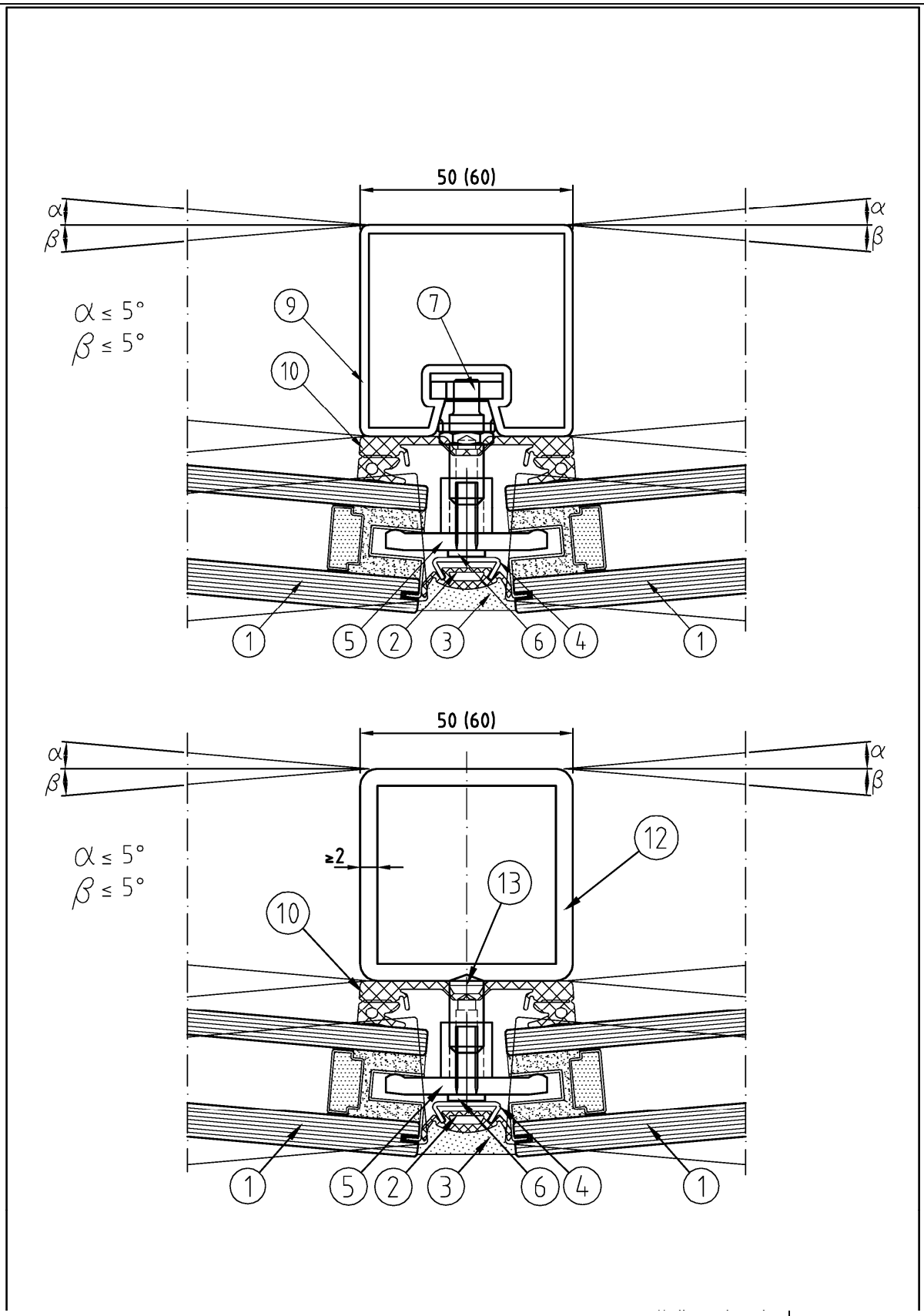

VISS SG

Positions of the retaining devices (fixing glazing clip) and glazing support

Annex C 17

electronic copy of the eta by dibt: eta-13/0015

Deutsches Institut für Bautechnik DIBt



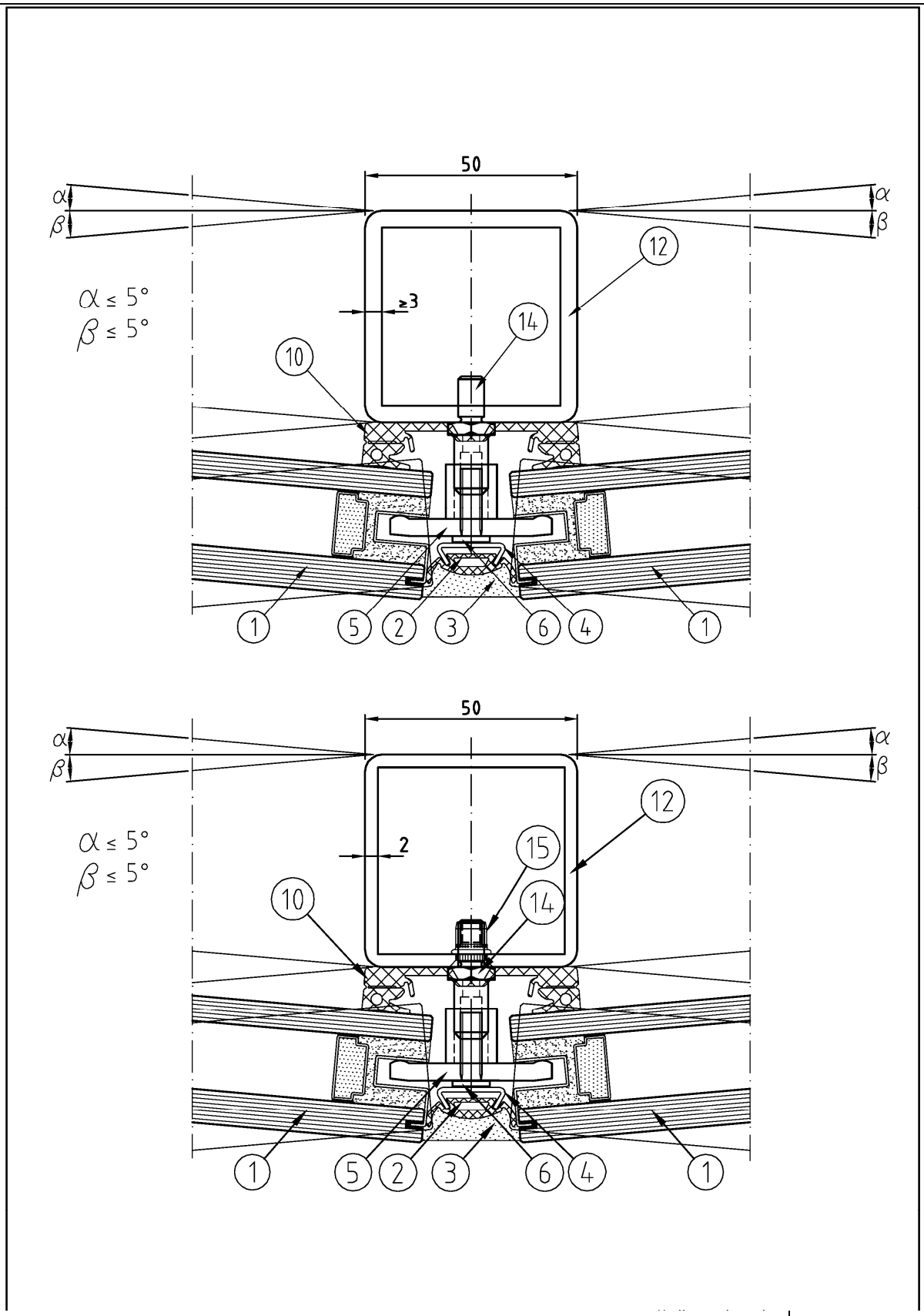

VISS SG

Segmental glazing

Annex C 18

electronic copy of the eta by dibt: eta-13/0015

Deutsches Institut für Bautechnik DIBt



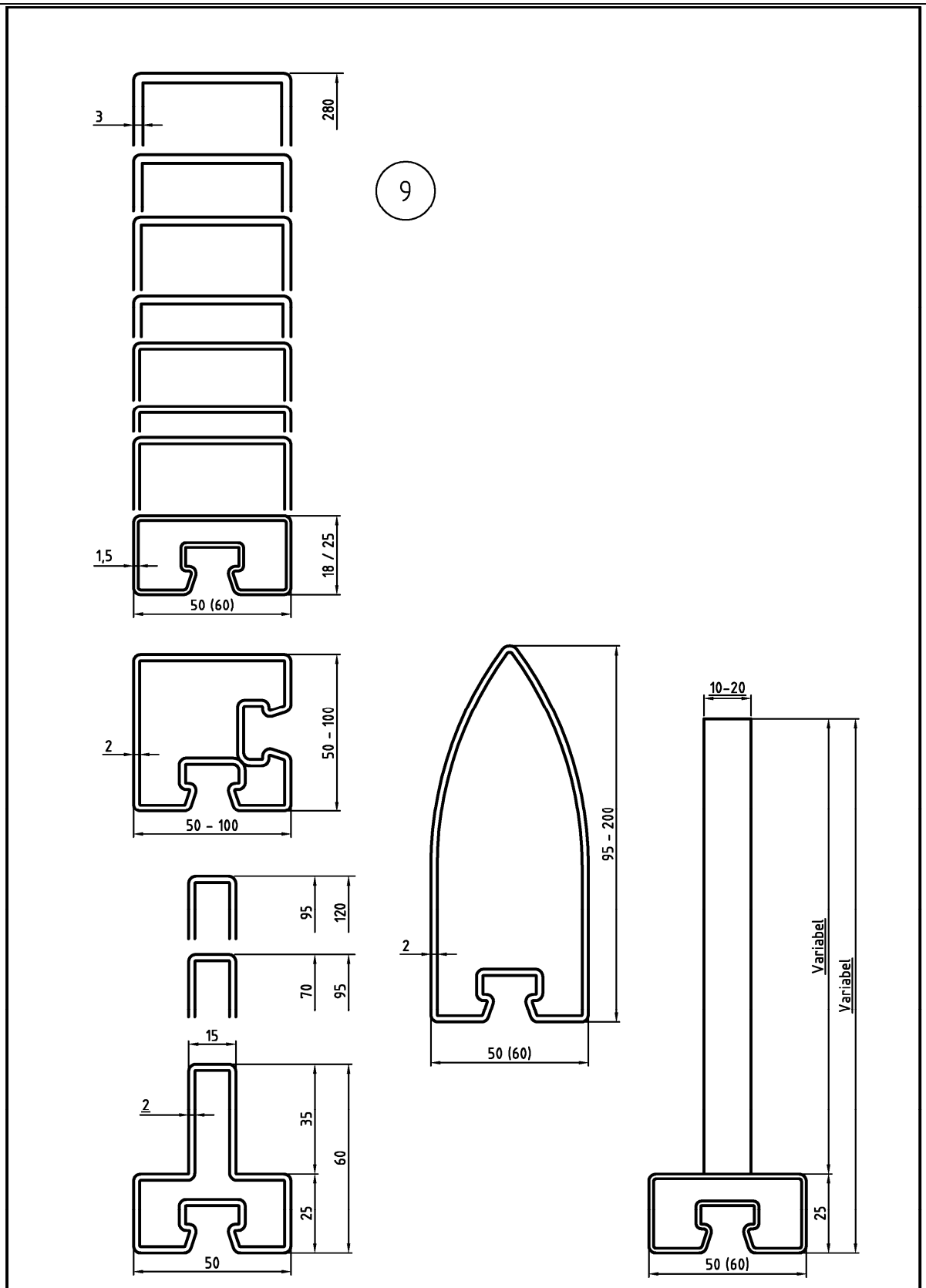

VISS SG

Segmental glazing

Annex C 19

electronic copy of the eta by dibt: eta-13/0015

Deutsches Institut für Bautechnik DIBt



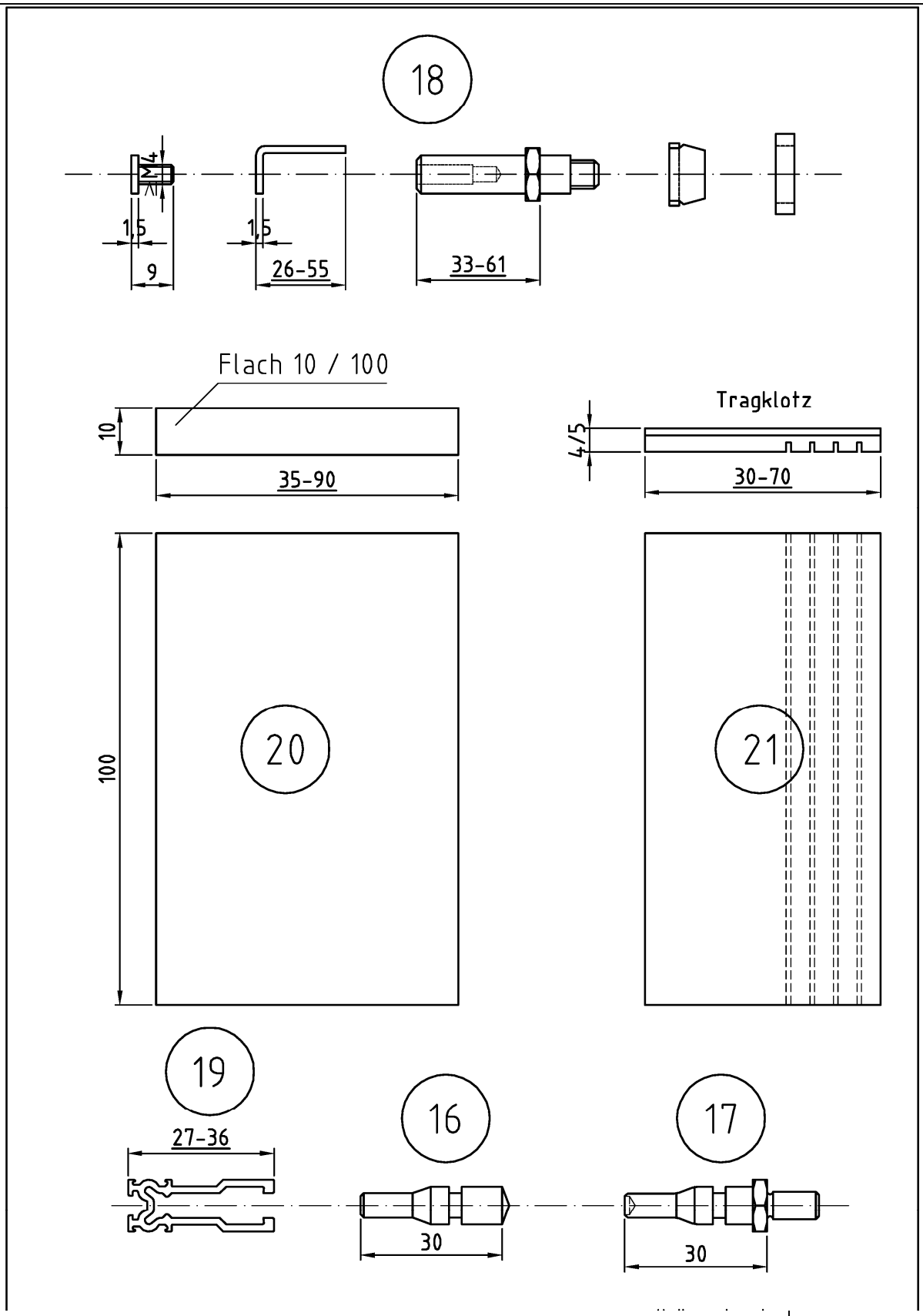

VISS SG

Frame profiles

Annex C 20

electronic copy of the eta by dibt: eta-13/0015

Deutsches Institut für Bautechnik DIBt



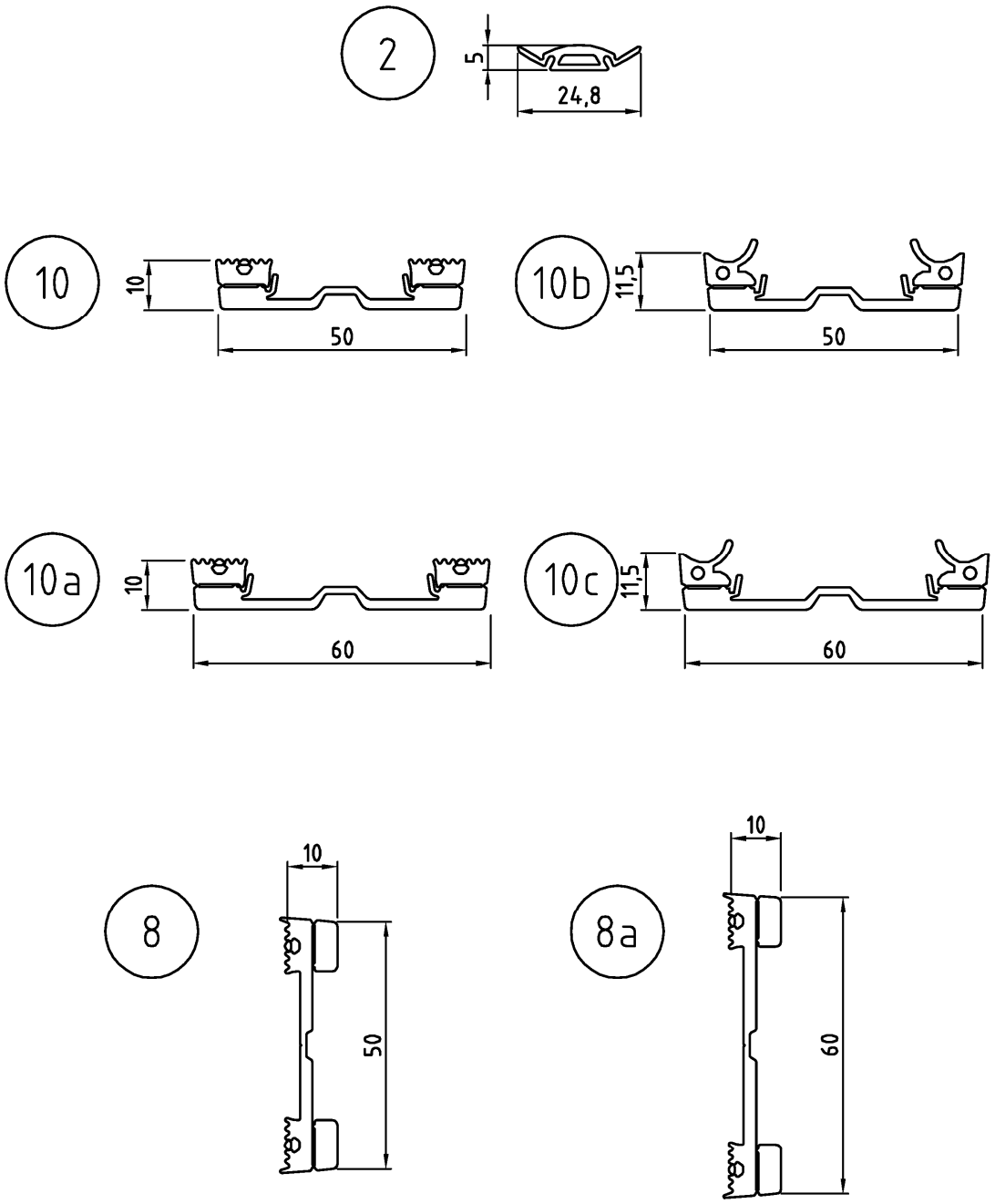

VISS SG

Glazing support
Components

Annex C 21

electronic copy of the eta by dibt: eta-13/0015

Deutsches Institut für Bautechnik DIBt



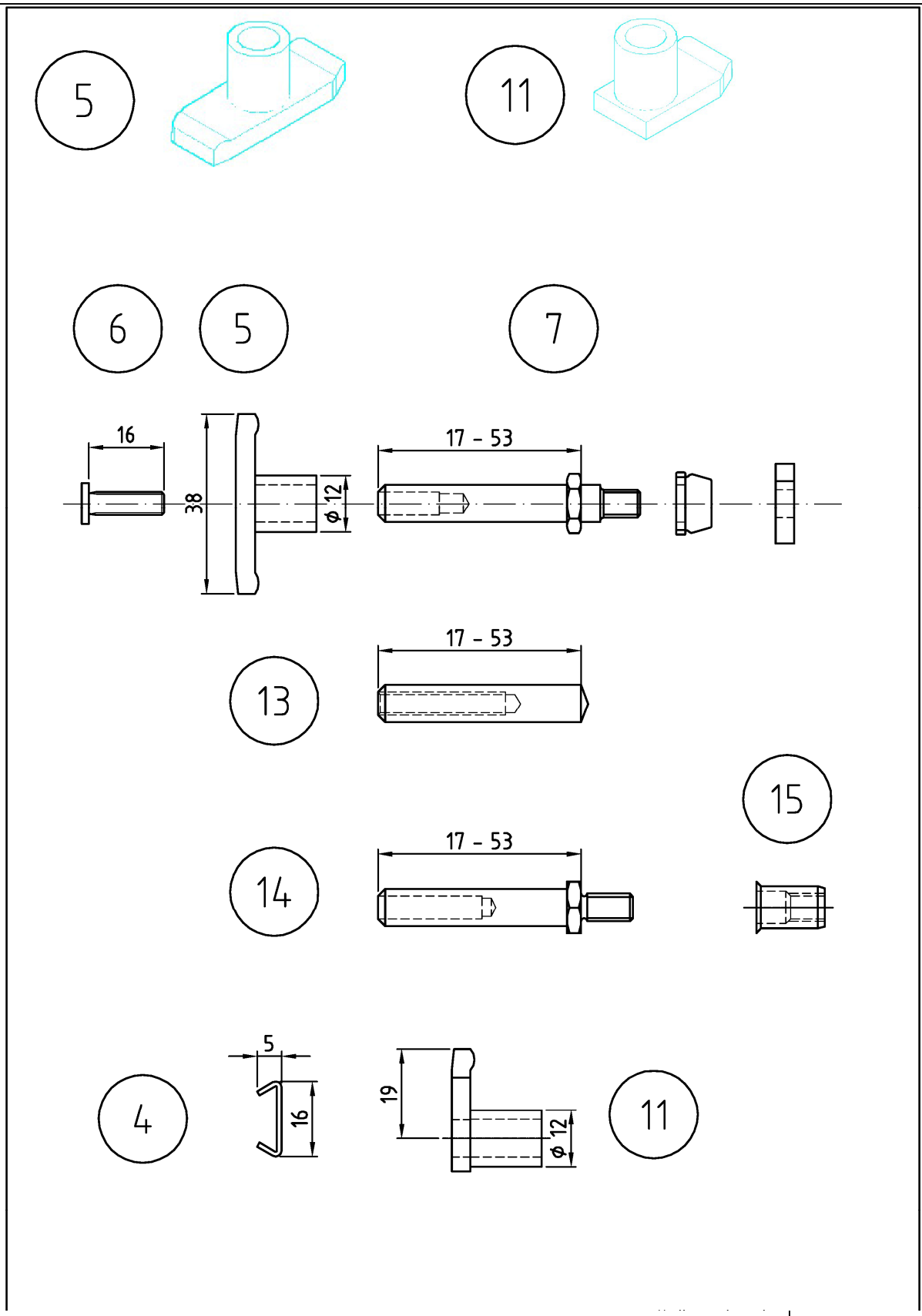

VISS SG

Gaskets

Annex C 22

electronic copy of the eta by dibt: eta-13/0015

Deutsches Institut für Bautechnik DIBt




VISS SG

Retaining devices (toggles)

Annex C 23

electronic copy of the eta by dibt: eta-13/0015

Deutsches Institut für Bautechnik DIBt

| Pos. | Description |
|---|---|
| 1. | Glass – Product Vario (Eckelt Glas) – ETA-10/0362 |
| 2. | Gasket silicon (Item No. 455.989) |
| 3. | 1-component silicon (DC-791, …) |
| 4. | Glazing rebate profile – stainless steel (Item No. 400.856) |
| 5. | Fixing glazing clip T – stainless steel (Item No. 452.165) |
| 6. | Screw M5x16 (Item No. 452.433) |
| 7. | Fastening anchor – stainless steel (e.g. Item No. 452.423 …) |
| 8. | Inner gasket horizontal 50 mm – EPDM (Item No. 455.570) |
| 8a. | Inner gasket horizontal 60 mm– EPDM (Item No. 455.571) |
| 9. | VISS – steel profile (e.g. Item No. 76.696 …) |
| 10. | Inner gasket, vertical 50 mm – EPDM (Item No. 455.537) |
| 10a. | Inner gasket, vertical 60 mm – EPDM (Item No. 455.538) |
| 10b. | Inner gasket, vertical 50 mm, for segmental glazing – EPDM (Item No. 455.545) |
| 10c. | Inner gasket, vertical 60 mm, for segmental glazing – EPDM (Item No. 455.546) |
| 11. | Fixing glazing clip L– stainless steel (Item No. 452.166) |
| 12. | Support profile (VISS Basic) |
| 13. | Welding stud – stainless steel (e.g. Item No. 452.417…) |
| 14. | Screw bolt – stainless steel (e.g. Item No. 452.420…) |
| 15. | Blind rivet M6– stainless steel, steel galvanised (Item No. 555.298; Item No. 555.299) |
| 16. | Welding supporting bolt – stainless steel (e.g. Item No. 452.509) |
| 17. | Screw bolt – stainless steel (e.g. Item No. 452.515) |
| 18. | Glazing support – stainless steel (e.g. Item No. 452.560) |
| 19. | Rebate section – aluminium (e.g. Item No. 407.813) |
| 20. | Flat steel – steel |
| 21. | Glazing bridge – made of polypropylene, with elastic layer made of TPU (Item No. 453.050; Item No. 453.051; Item No. 453.052; Item No. 453.053) |

electronic copy of the eta by dibt: eta-13/0015

| | |
|---|---|
| VISS SG | Annex C 24 |
| Item list | |