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Designated according to Article 29 of Regulation (EU) No 305/2011

Member of EOTA
www.eota.eu

European Technical Assessment ETA 12/0139 of 1/6/2017

I General Part

Technical Assessment Body issuing the ETA	VTT Expert Services LTD
Trade name of the construction product	MiTek liukukiinnikkeet MiTek sliding connectors
Product family to which the construction product belongs	Naulauslevy rakenteelliseen käyttöön Three-dimensional nailing plates
Manufacturer	MiTek Finland Oy Sepänkatu 7-9 FI-11710 Riihimäki Finland
Manufacturing plant	MiTek Finland Oy Sepänkatu 7-9 FI-11710 Riihimäki Finland
This European Technical Assessment contains	26 pages including 2 Annexes that 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	Guideline for European technical approval of "Three-dimensional nailing plates", ETAG 015, Edition November 2012, used as European Assessment Document (EAD)
This ETA replaces	ETA 12/0138, issued on May 8, 2012

II Specific Part

1 Technical description of the product

This European Technical Assessment covers following sliding connector types: Sliding Beam Bracket, Sliding Bracket, Sliding Partition Bracket, Sliding Slot Plate and Sliding Follower Plate.

MiTek Sliding Beam Bracket, Sliding Bracket, Sliding Partition Bracket and Sliding Slot Plate are non-welded three-dimensional nailing plates manufactured from hot-dip zinc coated steel sheet of grade S250 GD-Z 275 MA according to EN 10346 or cold formable galvanized steel DX51D-Z275 (EN 10346). The yield strength (symboli) of the steel is at least 250 N/mm² and the tensile strength (symboli) at least 330 N/mm². Amount of zinc coating is at least 275 g/m².

MiTek Follower Plate is a non-welded three dimensional nailing plate manufactured from hot-rolled steel grade S355JR. Follower Plate has electrodeposited zinc coating Fe/Zn 12c (EN ISO 2081). The material thicknesses are 2,5 $\pm$ 0,24 mm and 5,0 $\pm$ 0,30 mm.

Construction and dimensions of MiTek sliding connectors are described in Annex 1.

2 Specification of the intended uses in accordance with the applicable EAD

2.1 Intended uses

Intended use of MiTek sliding connectors are timber constructions, where the sliding part is attached to a non-settling construction member and the angular part is attached to a log wall. Timber materials may be strength graded timber according to EN 14081-1, glulam according to EN 14080, softwood- or laminated logs, laminated veneer lumber (LVL) according to EN 14374, plywood according to EN 13986 or cross laminated timber (CLT) with edge glued lamellas.

The intended service classes according to EN 1995-1-1 are classes 1 and 2. MiTek sliding connectors shall not be used in service class 3. In service class 2, the nails or screws shall have an electroplated zinc coating according to EN ISO 2081 at least of type and thickness Fe/Zn 12c, or they shall be hot dip zinc coated according to EN ISO 1461, thickness at least 39 μm.

MiTek sliding connectors shall be fixed through all holes by anchor nails or screws according to EN 14592. The diameter of the anchor nails shall be d = 4,0 mm and the profiled length at least 24 mm. The diameter of the smooth part of the anchor screws shall be d = 4,5…5,0 mm and the inner diameter of the threaded part $d_s \geq 3{,}0$ mm. The length of the threaded part of the screw shall be at least 6d. Timber parts shall not be pre-bored for the nails or screws that shall be perpendicular to the grain of the timber.

Figure 2. Anchor nail and anchor screw

Sliding Beam Bracket (MiTek SBB) is a two-part connector used as a wind uplift restraint as shown in Figure 3.

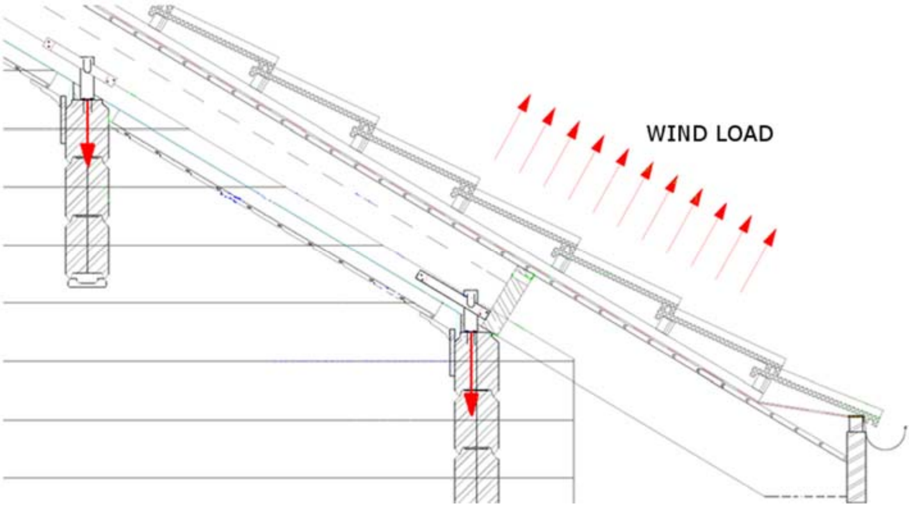

Figure 3. Typical use of Sliding Beam Bracket and load directions

Sliding Bracket (MiTek SB) is a one-part universal sliding connector used typically for fixing non-settling construction members to a log wall as shown in Figure 4.

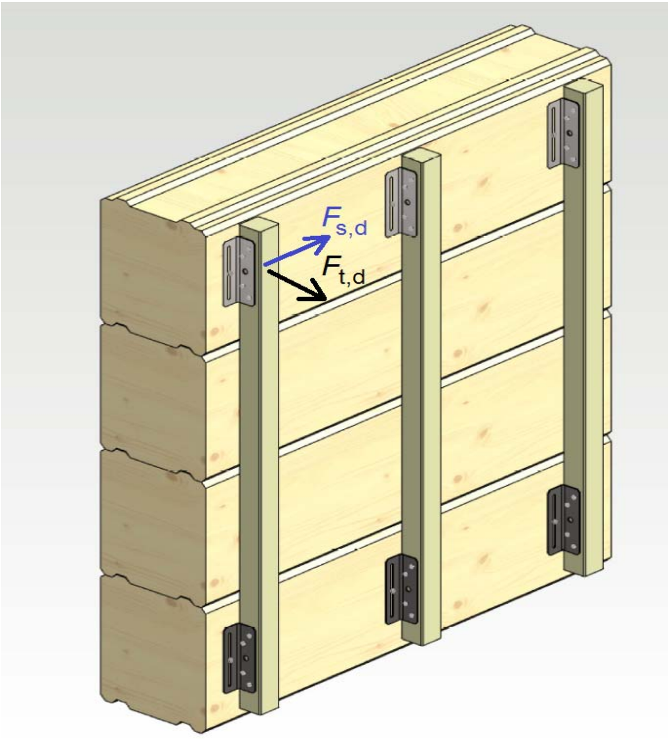

Figure 4. Sliding Bracket (MiTek SB)

Sliding Partition Bracket (MiTek SPB) is a one-part universal sliding connector that is typically used for fixing a partition under an overhead loadbearing beam or other structure to allow settling space as shown in Figure 5.

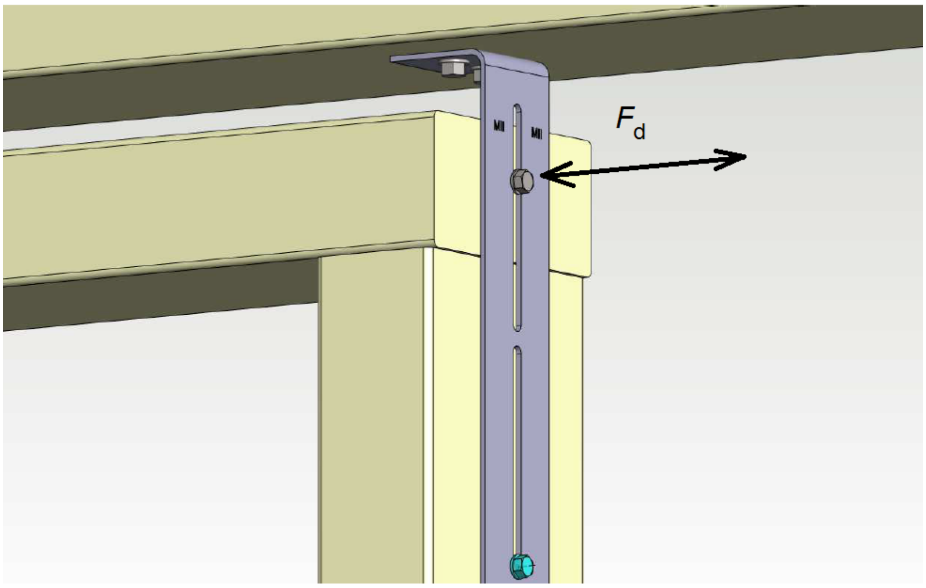

Figure 5. Typical use of Sliding Partition Bracket and loading directions

Sliding Slot Plate (MiTek SSP) is a one-part guiding connector used in conjunction with screw connections where settling may occur. The connection shall restrain lateral force as shown in Figure 6.

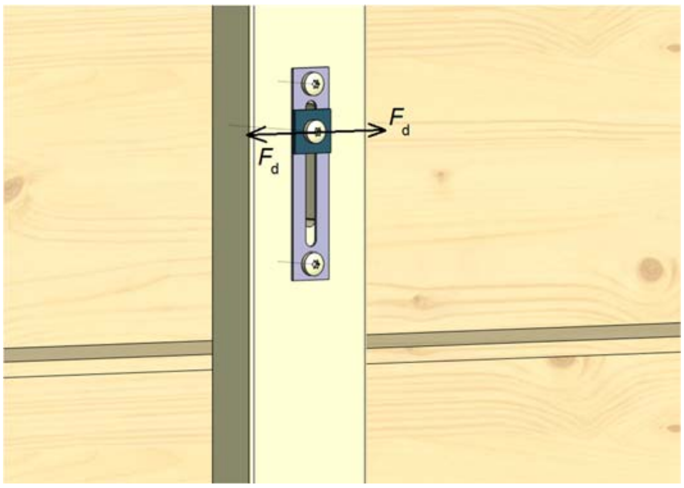

Figure 6. Typical use of Sliding Slot Plate and loading direction.

Sliding Follower Plate (MiTek SFP) is a one-part connector used in conjunction with bolted or screw bar connection that support surrounding log walls from moving. The connection shall restrain lateral force as shown in Figure 7.

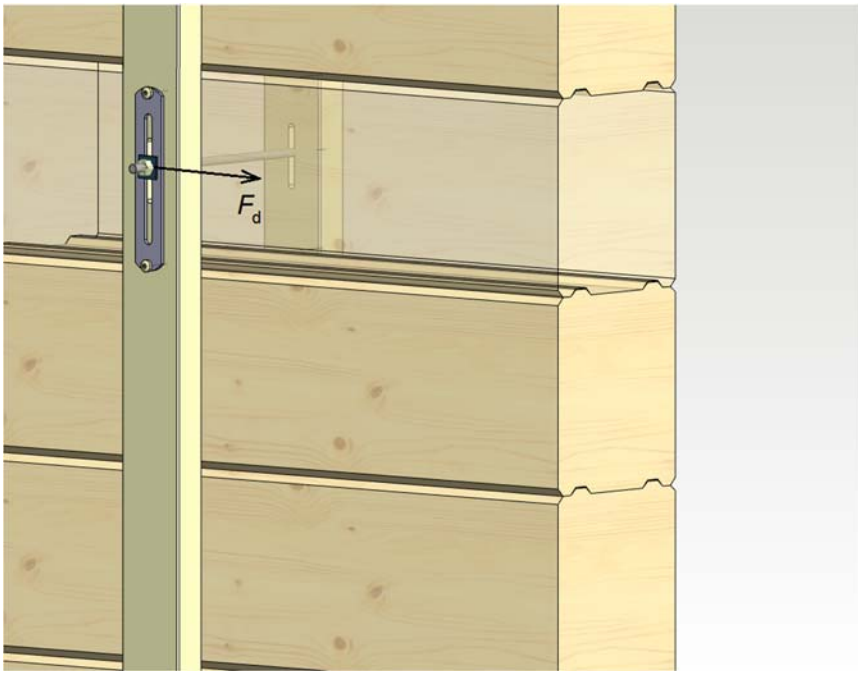

Figure 7. Typical use of Sliding Follower Plate and loading direction.

2.2 Working life

The provisions made in this European Technical Assessment are based on an assumed intended working life of MiTek sliding connectors of 50 years[1].

2.3 Identification

MiTek sliding connectors are identified having "Mii" stamped on each connector.

[1] This means that it is expected that when this working life has elapsed, the real working life may be, in normal use conditions, considerably longer without major degradation affecting the essential requirements of the works. The indications given as to the working life of a building kit cannot be interpreted as a guarantee given by the producer or the technical assessment body. They should only be regarded as a means for the specifiers to choose the appropriate criteria for building kits 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

Table 1. Basic requirements for construction works and essential characteristics

Basic requirement and essential characteristics	Performance
BWR 1. Mechanical resistance and stability	
Joint strength	Clause 3.1
Joint stiffness	No performance assessed
Joint ductility	No performance assessed
Resistance to corrosion and deterioration	Clause 3.1
Dimensional stability	No performance assessed
BWR 2. Safety in case of fire	
Reaction to fire	Clause 3.2
Resistance to fire	No performance assessed
BWR 3. Hygiene, health and the environment	
Content, emission and/or release of dangerous substances	Clause 3.3
BWR 7. Sustainable use of natural resources	
Sustainable use of natural resources	No performance assessed

3.1 Mechanical resistance and stability, BWR 1

3.1.1 Joint strength

Characteristic resistance values of MiTek sliding connectors are given in Annex 2

3.1.2 Resistance to corrosion and deterioration

MiTek sliding connectors have been assessed as having satisfactory durability and serviceability when used in timber structures when the timber species (including timbers preserved with organic solvent, boron diffusion and related preservatives) described in Eurocode 5 (EN 1995-1-1: 2004) are used and the structures are subject to the dry, internal conditions defined by service classes 1 and 2.

3.2 Safety in case of fire, BWR 2

3.2.1 Reaction to fire

MiTek sliding connectors are made of materials classified to have reaction to fire class A1 according to EN 13501-1.

3.3 Hygiene, health and environment, BWR 3

3.3.1 Content, emission and/or release of dangerous substances

The product does not contain harmful or dangerous substances listed in EOTA TR 34 dated May 2014.

In addition to the specific clauses relating to dangerous substances contained in this European Technical Approval, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the EU Construction Products Directive, these requirements need also to be complied with, when and where they apply.

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

According to the Decision 97/638/EC of the European Commission[2], the system of assessment and verification of constancy of performance (see Annex V to the regulation (EU) No 305/2011) is System 2+.

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 at VTT Expert Services Ltd.

Documentation

Test reports presented by the manufacturer and other material used as basis for the assessment are presented in Annex 3.

Issued in Espoo on June 1, 2017
by VTT Expert Services Ltd

Pertti Jokinen
Product Manager

Ari Kevarinmäki
Leading Expert

[2] Official Journal of the European Communities L 268 of 1/10/1997

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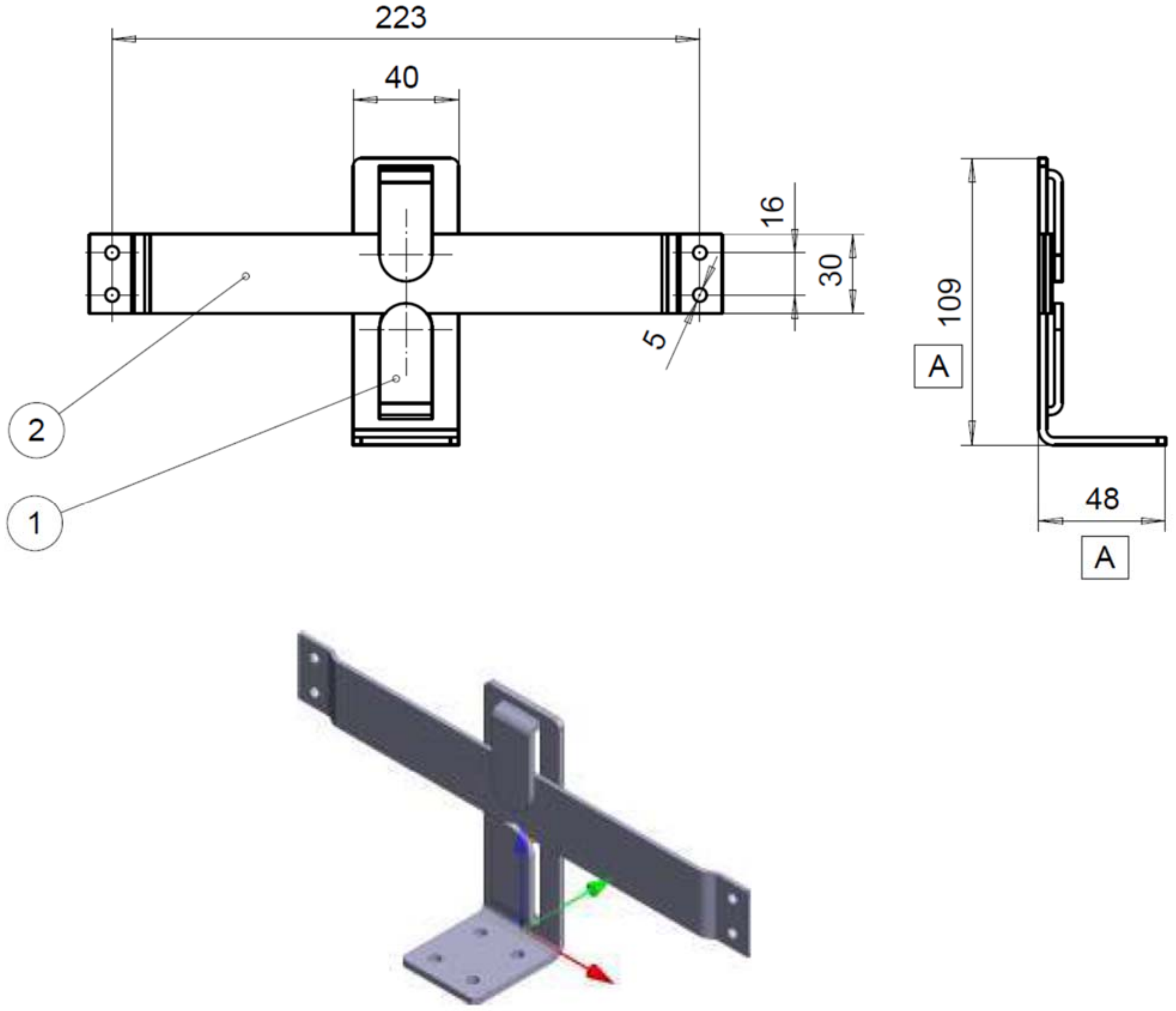

Part	Drawing number Item reference	Part or assembly group name	Standard or catalog	Shape, Dimension, Designation	Amount	Material	Qty
2	I-1001087	Slide plate / Liukulevy					1
1	I-1001095	Angle / Kulma					1

General tolerances	Scale 1:2.5	Product Mitek, Liukukiinnikkeet	Slide connector / Hirsikerauta 2K 48x109x3x40 Annex 1 to ETA-12/0138
Mass 0.256 kg		Ref	
		Project C01	
Design 2009-09-22 VKa		MiTek Finland Oy Sepänkatu 7-9 11710 Riihimäki, Finland tel. +358-19-77410	Prev / New
Check 2009-09-22 VKa			400428
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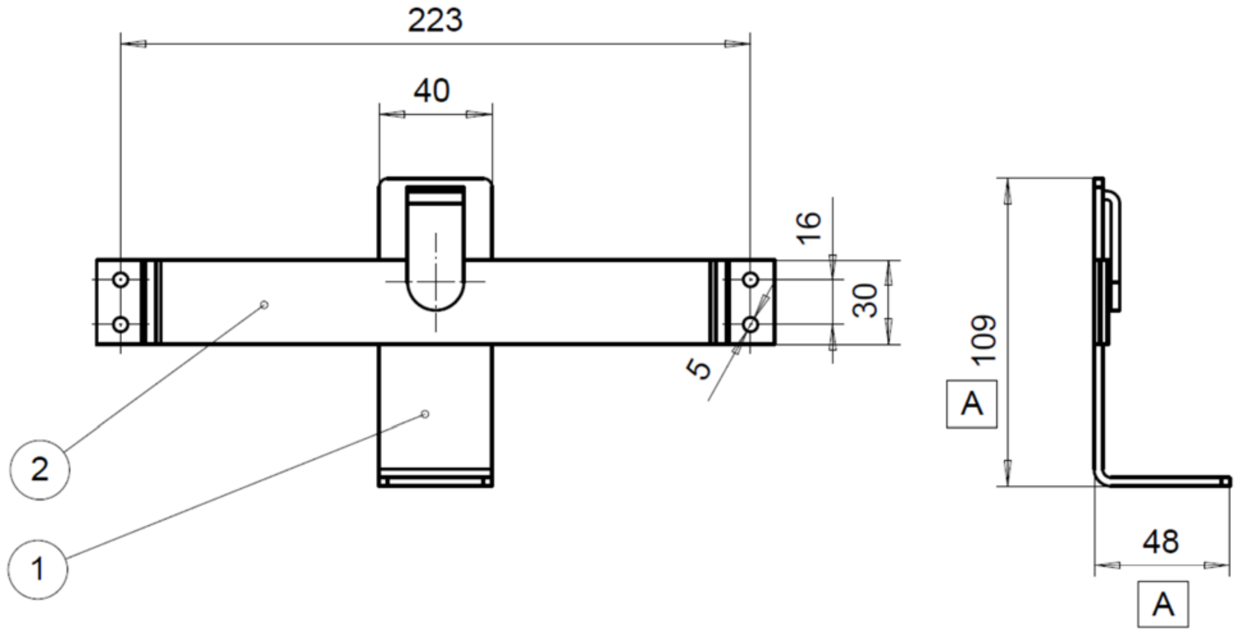

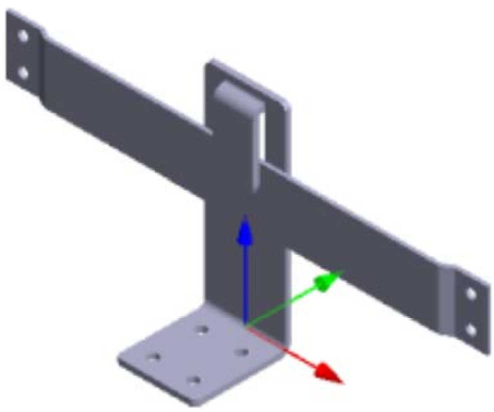

Part	Drawing number Item reference	Part or assembly group name	Standard or catalog	Shape, Dimension, Designation	Amount	Material	Qty
2	I-1001087	Slide plate / Liukulevy					1
1	I-1001086	Angle / Kulma					1

General tolerances

Mass 0.255 kg

Design 2009-08-20 VKa

Check 2009-08-20 VKa

Acc

Scale 1:2.5

Product Mitek, Liukukiinnikkeet

Ref

Project C01

MiTek Finland Oy
Sepänkatu 7-9
11710 Riihimäki, Finland
tel. +358-19-77410

Slide connector / Hirsikerauta

1K 46x107x3x40

Annex 1 to ETA-12/0138

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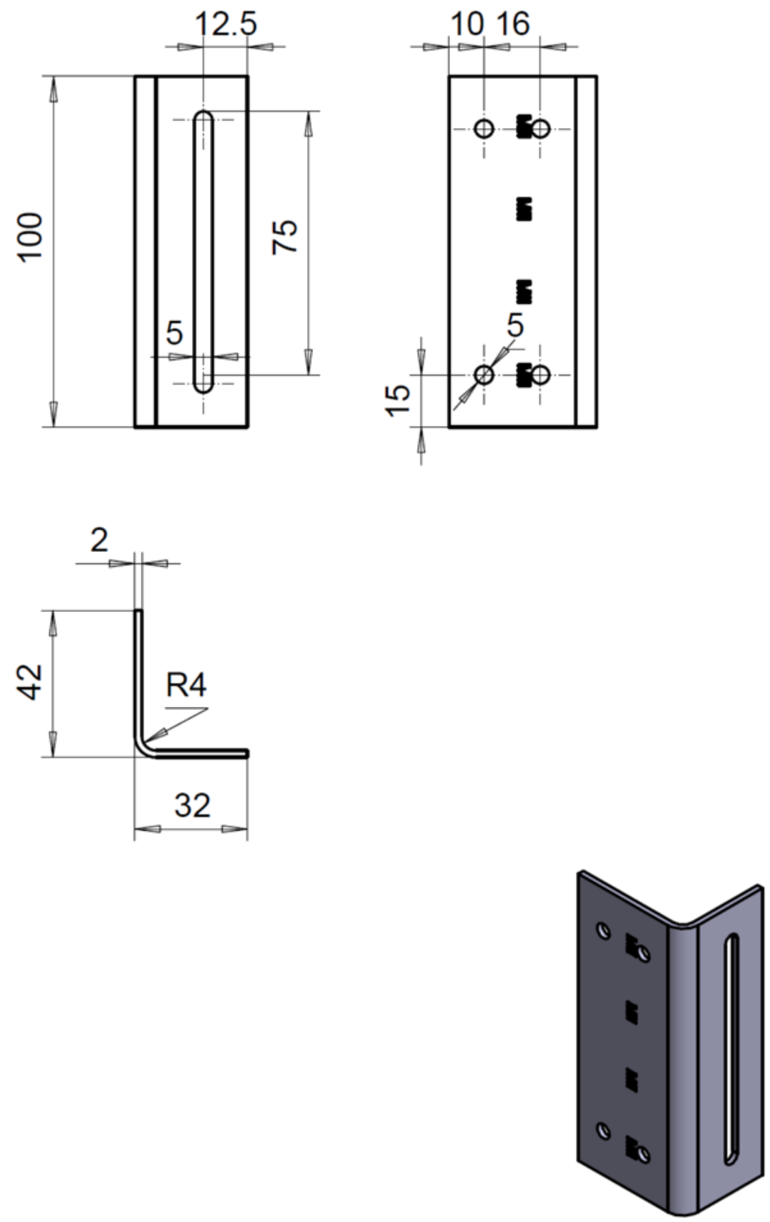

1		TERÄSLEVY		Le2-135x74	1	S250GD-Z275MA	1
Part	Drawing number Item reference	Part or assembly group name	Standard or catalog	Shape, Dimension, Designation	Amount	Material	Qty

General tolerances	Scale 1:2	Product MiTek Sliding Connectors	Sliding Bracket 100
		Ref ETAG-015	40x40x100
Mass 0.1 kg		Project C01	Annex 1 to ETA-12/0138
Design 2016-11-04 MER		MiTek Finland Oy Sepänkatu 7-9 11710 Riihimäki, Finland tel. +358-19-77410	Prev / New
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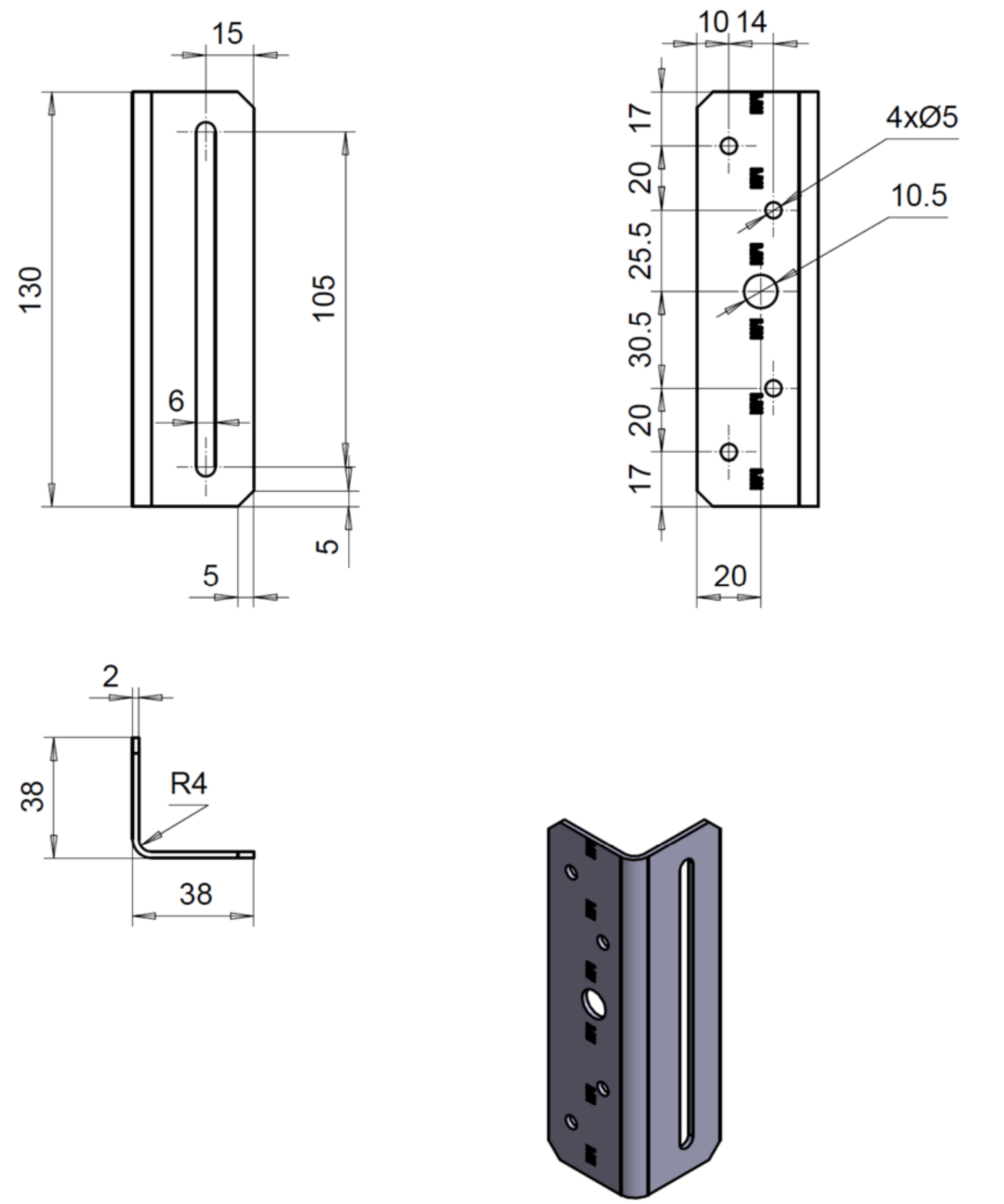

1		TERÄSLEVY		Le2-135x74	1	S250GD-Z275MA	1
Part	Drawing number Item reference	Part or assembly group name	Standard or catalog	Shape, Dimension, Designation	Amount	Material	Qty

General tolerances	Scale 1:2	Product MiTek Sliding Connectors	Sliding Bracket 130
		Ref ETAG-015	40x40x130
Mass 0.1 kg		Project C01	Annex 1 to ETA-12/0138
Design 2016-11-24 MER		MiTek Finland Oy Sepänkatu 7-9 11710 Riihimäki, Finland tel. +358-19-77410	Prev / New
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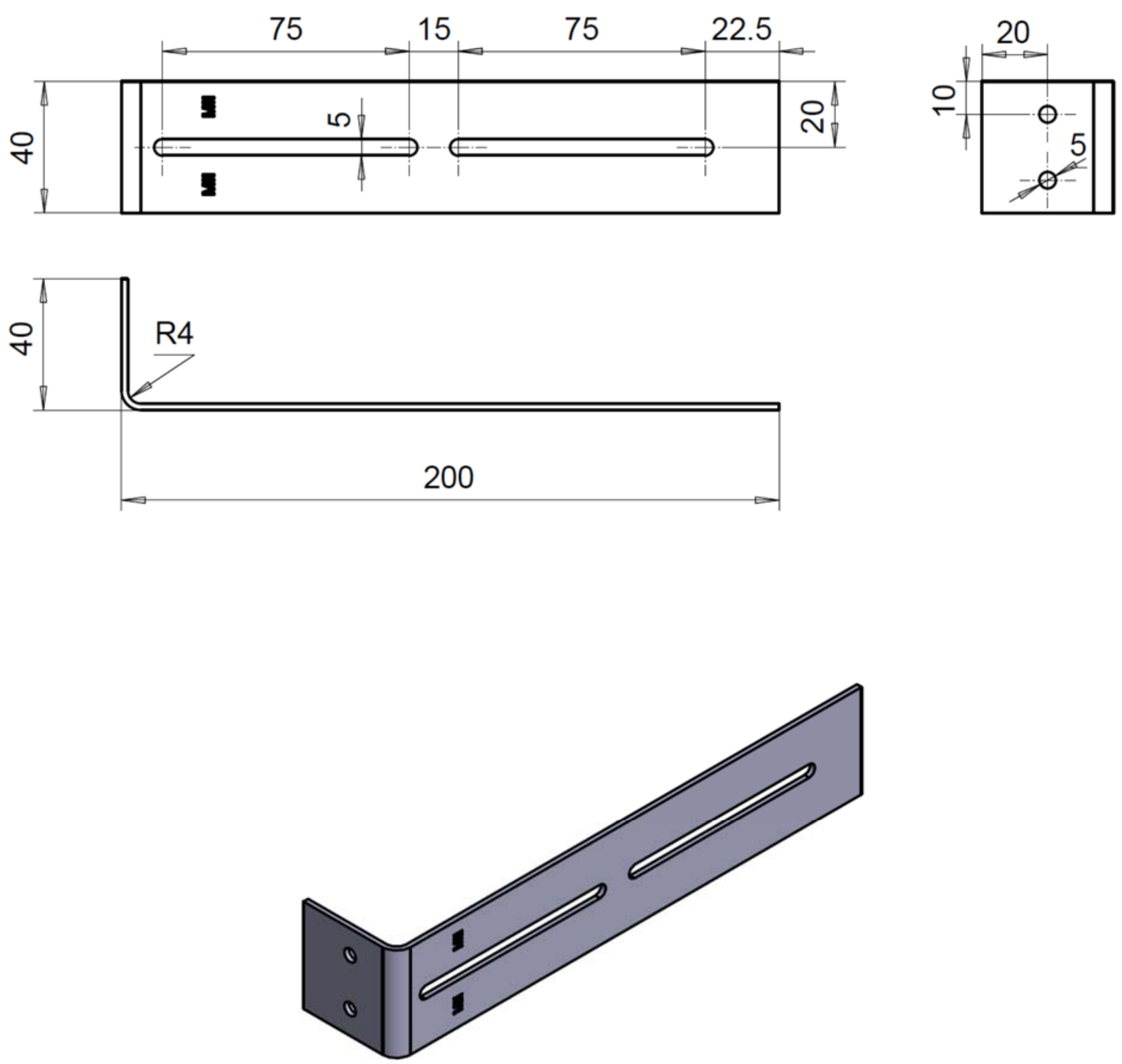

1		TERÄSLEVY		Le2-135x74	1	S250GD-Z275MA	1
Part	Drawing number Item reference	Part or assembly group name	Standard or catalog	Shape, Dimension, Designation	Amount	Material	Qty

General tolerances	Scale 1:2	Product MiTek Sliding Connectors	Sliding partition bracket 40x200
Mass 0.1 kg		Ref ETAG-015	40x200x2
		Project C01	Annex 1 to ETA-12/0138
Design 2016-11-16 MER		MiTek Finland Oy Sepänkatu 7-9 11710 Riihimäki, Finland tel. +358-19-77410	Prev / New
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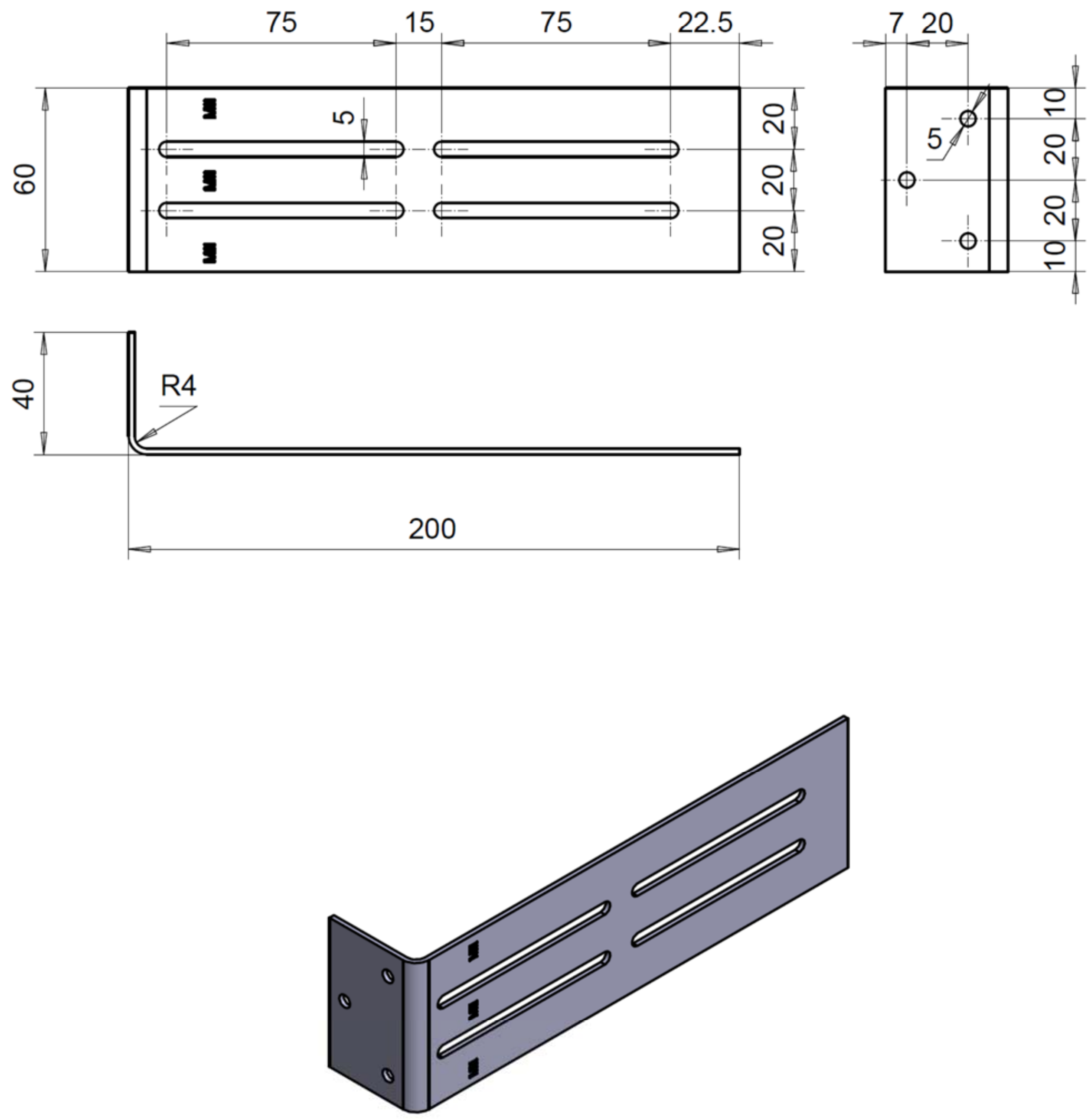

1		TERÄSLEVY		Le2-135x74	1	S250GD-Z275MA	1
Part	Drawing number Item reference	Part or assembly group name	Standard or catalog	Shape, Dimension, Designation	Amount	Material	Qty

General tolerances	Scale 1:2	Product MiTek Sliding Connectors	Partition bracket 60x200
Mass 0.1 kg		Ref ETAG-015	60x200x2
		Project C01	Annex 1 to ETA-12/0138
Design 2016-11-16 MER		MiTek Finland Oy Sepänkatu 7-9 11710 Riihimäki, Finland tel. +358-19-77410	Prev / New
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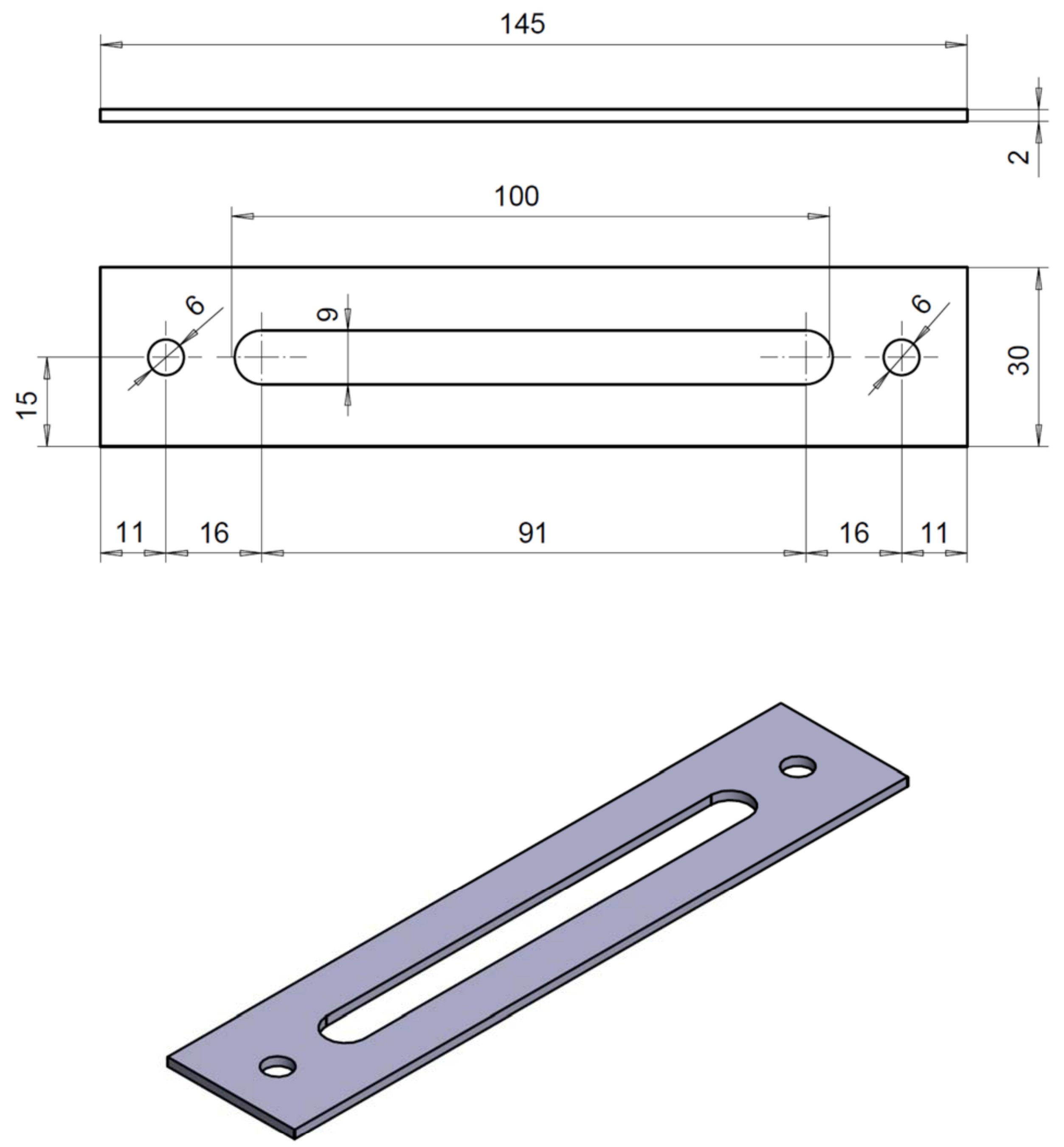

Part	Drawing number Item reference	Part or assembly group name	Standard or catalog	Shape, Dimension, Designation	Amount	Material	Qty
1		Steel strip		Le2-30x145	1	S250GD-Z275MA	1

General tolerances	Scale 1:2 (1:1)	Product MiTek Sliding connectors	Sliding slot plate 145
Mass 0.1 kg		Ref ETAG 015	145x30x2
		Project C01	Annex 1 to ETA-12/0138
Design 2016-11-24 MER		MiTek Finland Oy Sepänkatu 7-9 11710 Riihimäki, Finland tel. +358-19-77410	Prev / New
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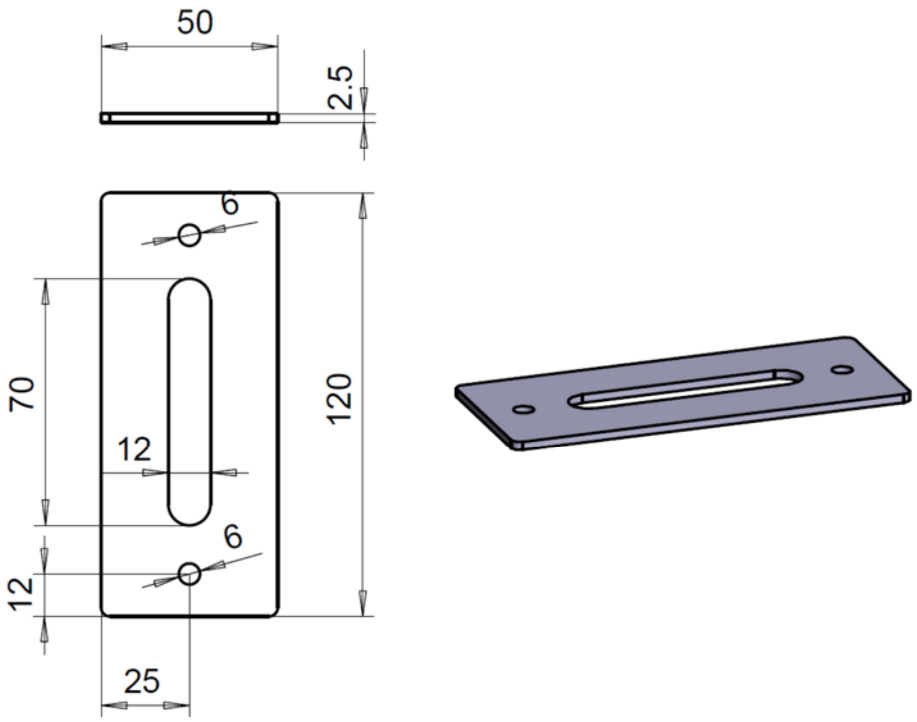

0		Steel plate				S355J0 / J2	1
Part	Drawing number Item reference	Part or assembly group name	Standard or catalog	Shape, Dimension, Designation	Amount	Material	Qty

General tolerances	Scale 1:2	Product MiTek Sliding Connectors
Mass 0.1 kg		Ref ETAG 015
		Project C01
Design 2016-11-23 MER		MiTek Finland Oy Sepänkatu 7-9 11710 Riihimäki, Finland tel. +358-19-77410
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Sliding Follower Plate 120

120x50x2,5

Annex 1 to ETA-12/0138

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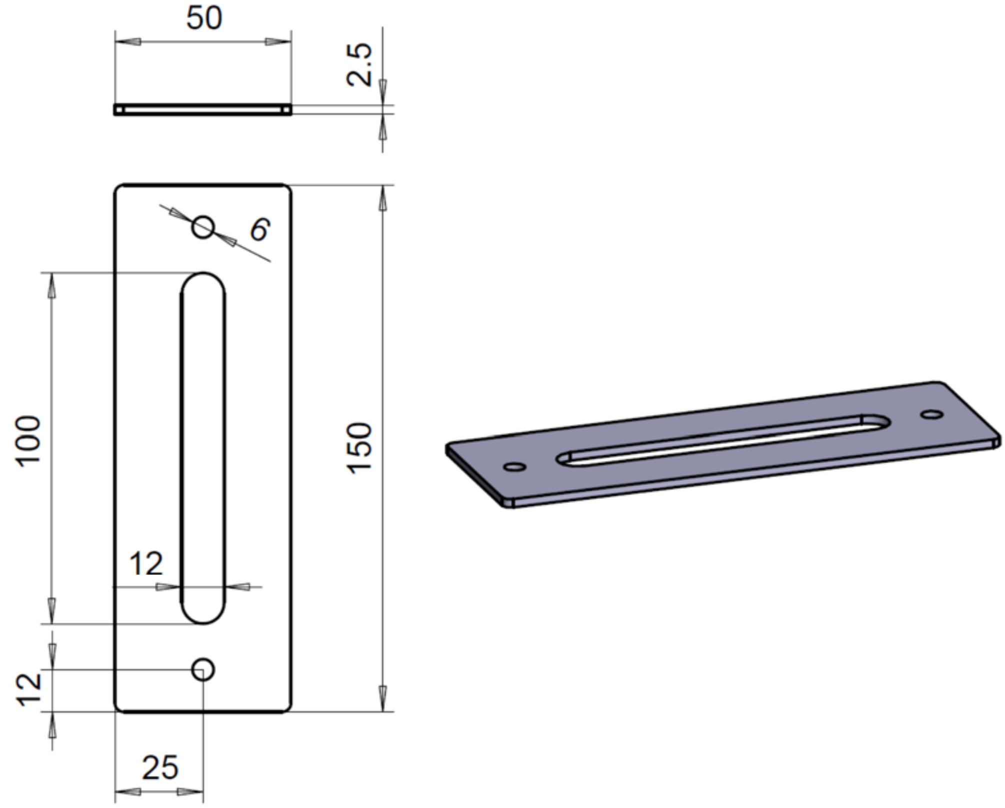

0		Steel plate				S355J0/J2	1
Part	Drawing number Item reference	Part or assembly group name	Standard or catalog	Shape, Dimension, Designation	Amount	Material	Qty

General tolerances	Scale 1:2	Product MiTek Sliding Connectors	Sliding follower plate 150
		Ref ETAG 015	150x50x2,5
Mass 0.1 kg		Project C01	Annex 1 to ETA-12/0138
Design 2016-11-23 MER		MiTek Finland Oy Sepänkatu 7-9 11710 Riihimäki, Finland tel. +358-19-77410	Prev / New
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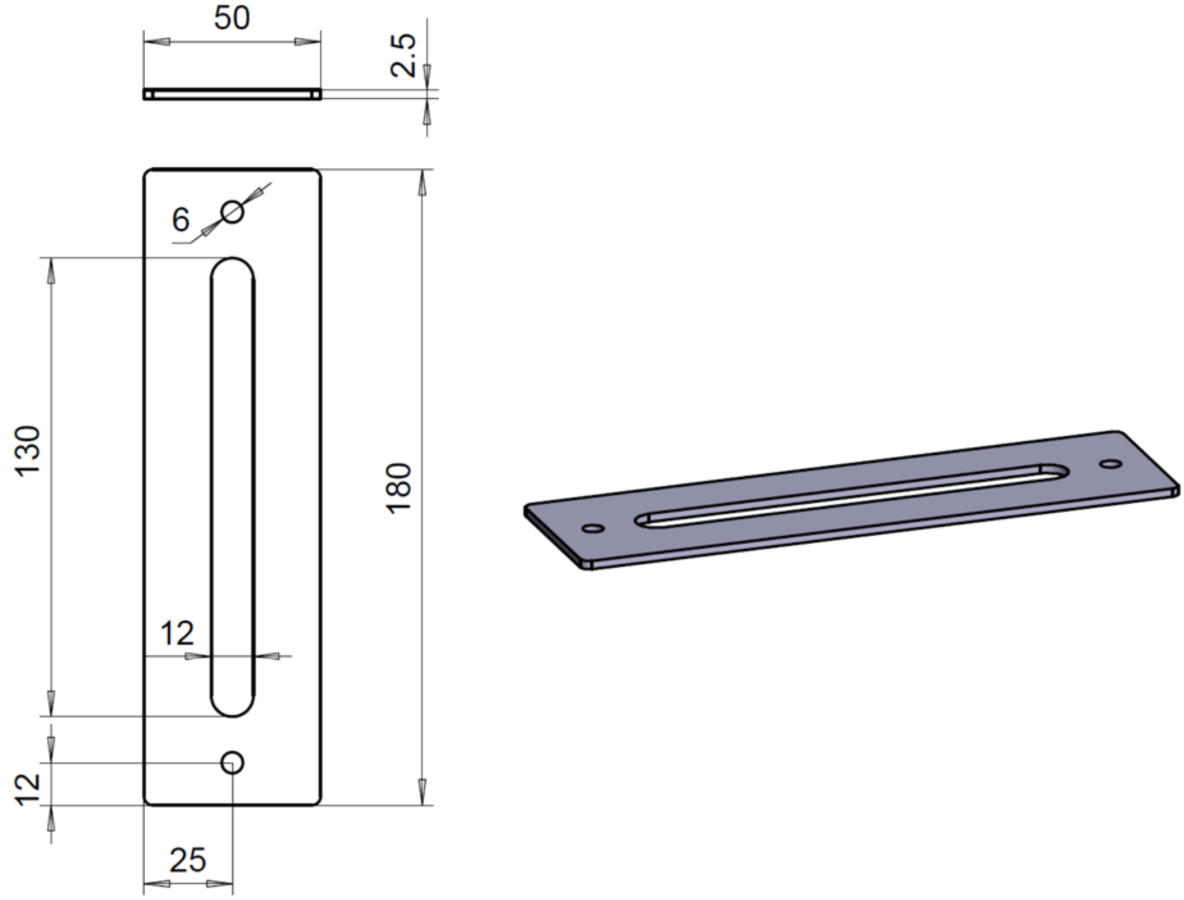

Part	Drawing number Item reference	Part or assembly group name	Standard or catalog	Shape, Dimension, Designation	Amount	Material	Qty
0		Steel Plate				S355J0/J2	1

General tolerances	Scale 1:2	Product MiTek Sliding Connectors	Sliding Follower Plate 180
Mass 0.1 kg		Ref ETAG-015	180x50x2,5
		Project C01	Annex 1 to ETA-12/0138
Design 2016-11-23 MER		MiTek Finland Oy Sepänkatu 7-9 11710 Riihimäki, Finland tel. +358-19-77410	Prev / New
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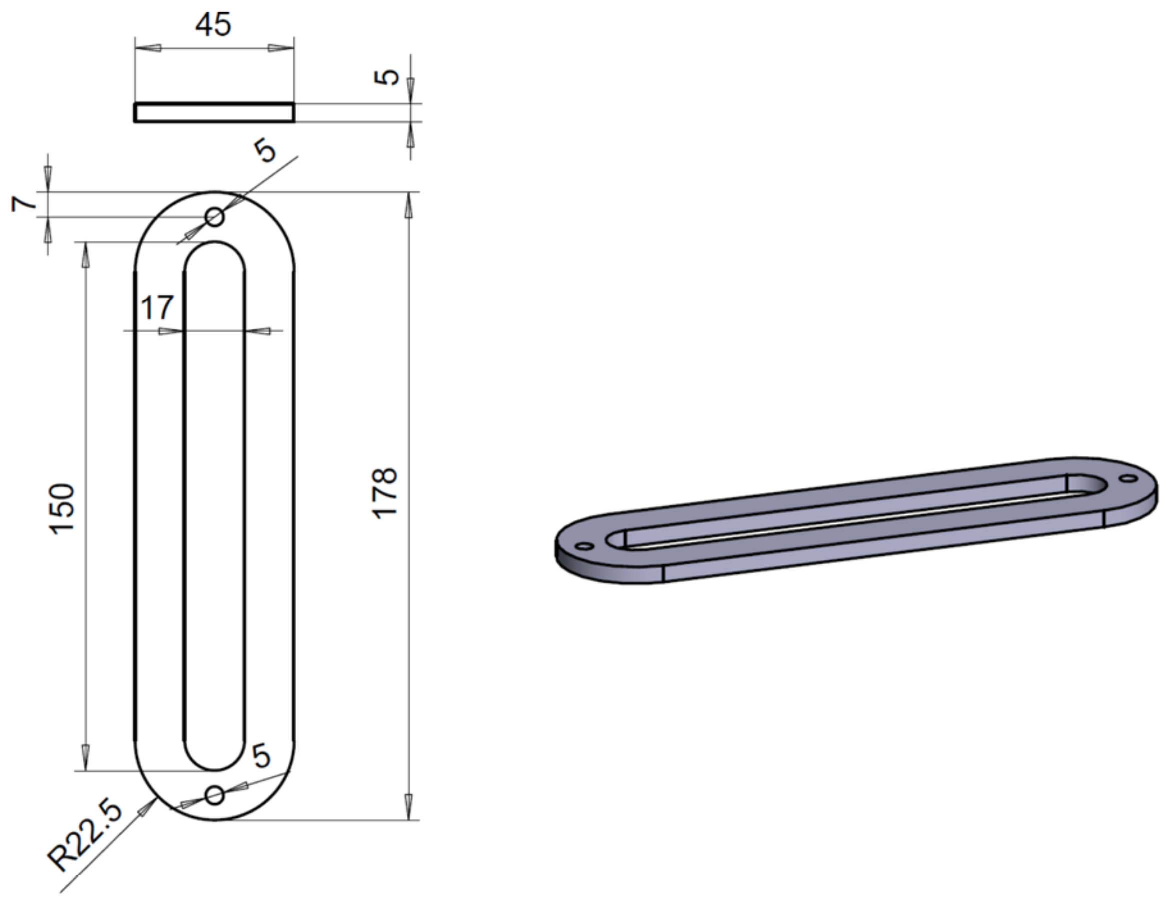

0		Steel plate				S355J0 / J2	1
Part	Drawing number Item reference	Part or assembly group name	Standard or catalog	Shape, Dimension, Designation	Amount	Material	Qty

General tolerances	Scale 1:2	Product MiTek Sliding Connectors	Sliding Follower Plate 180R
		Ref ETAG 015	180x45x5
Mass 0.2 kg		Project C01	Annex 1 to ETA-12/0138
Design 2016-11-24 MER		MiTek Finland Oy Sepänkatu 7-9 11710 Riihimäki, Finland tel. +358-19-77410	Prev / New
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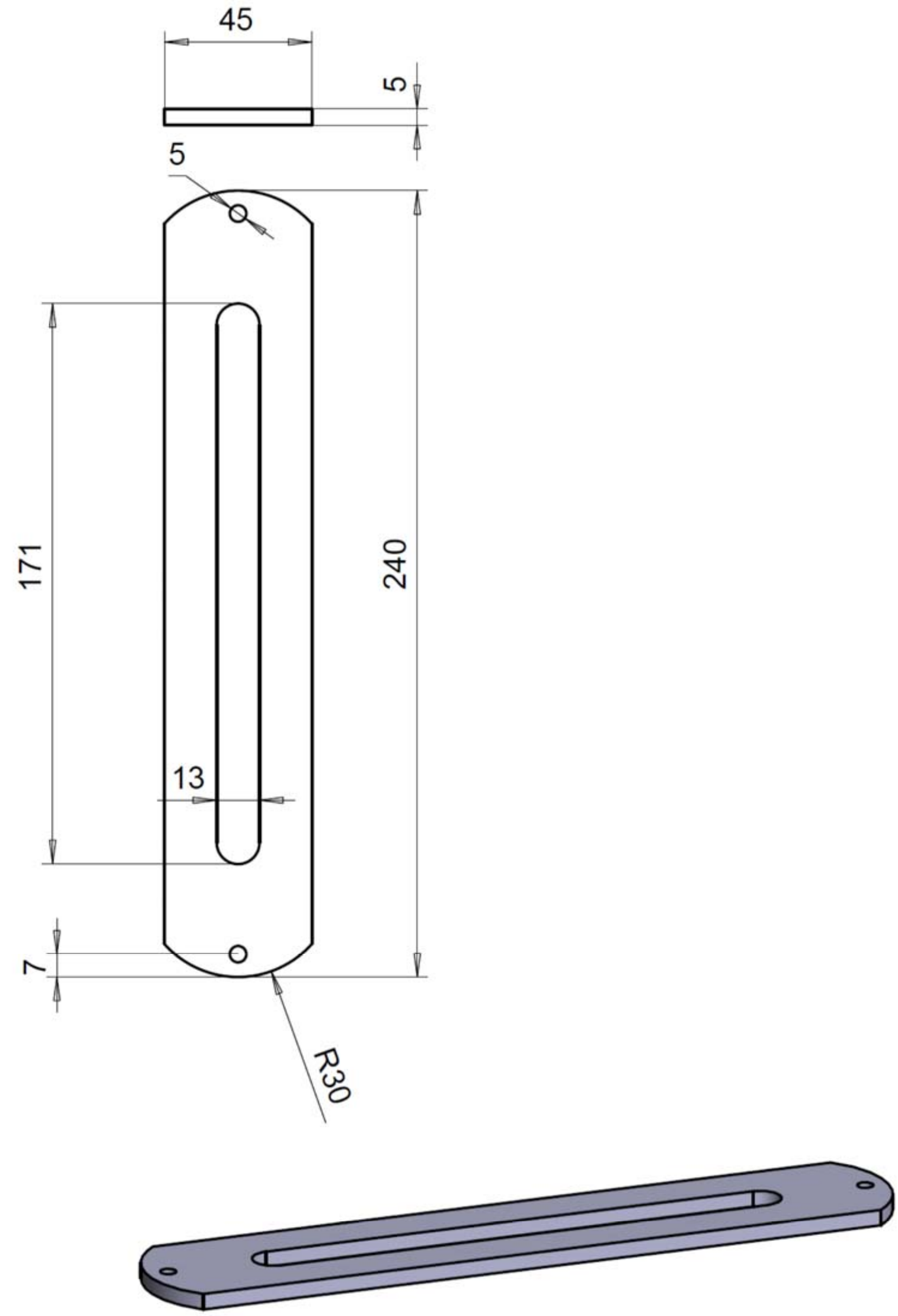

0		Steel plate				S355J0 / J2	1
Part	Drawing number Item reference	Part or assembly group name	Standard or catalog	Shape, Dimension, Designation	Amount	Material	Qty

General tolerances	Scale: 1:2	Product: MiTek Sliding Connectors
Mass: 0.3 kg		Ref: ETAG 015
		Project: C01
Design: 2016-11-23 MER		
Check		
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Sliding Follower Plate 240R
240x45x5
Annex 1 to ETA-12/0138

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400426-2	

ANNEX 2: CHARACTERISTIC LOAD-CARRYING CAPACITIES

Fasteners

Characteristic load-carrying capacity in steel-to-timber connections are calculated in accordance with EN 1995-1-1.

Lateral load carrying capacity of fasteners

For steel plates of thickness less than or equal to 0,5d in single shear:

$$F_{v,Rk} = \min \begin{cases} 0{,}4\, f_{h,k} t_1 d & \text{(a)} \\ 1{,}15\sqrt{2M_{y,Rk}\, f_{h,k} d} + \dfrac{F_{ax,Rk}}{4} & \text{(b)} \end{cases} \qquad (1)$$

For thick metal plates ($t \geq d$)

$$F_{v,Rk} = \min \begin{cases} f_{h,k} t_1 d & \text{(a)} \\ f_{h,k} t_1 d \left[\sqrt{2 + \dfrac{4M_{y,Rk}}{f_{h,k} d\, t_1^2}} - 1 \right] + \dfrac{F_{ax,Rk}}{4} & \text{(b)} \\ 2{,}3\sqrt{M_{y,Rk}\, f_{h,k} d} + \dfrac{F_{ax,Rk}}{4} & \text{(c)} \end{cases} \qquad (2)$$

In formulae (1) and (2) d is thickness of the fastener, t is thickness of steel plate, t_1 is the fastener penetration length $L - t$, where L is the length of the fastener, $M_{y,k}$ is the fastener yield moment in accordance with EN 14952 and EN 409, $F_{ax,Rk}$ is the withdrawal capacity in accordance with formula (4) however maximum of $F_{ax,k}/4$ is 1/3 from the load-carrying capacity $F_{v,Rk}$ and the characteristic embedment strength

$$f_{h,k} = 0{,}082 \rho_k d^{-0,3} \qquad \text{N/mm}^2 \qquad (3)$$

where ρ_k is the characteristic density of timber.

The lateral load-carrying capacity for anchor nail connectors used in conjunction with MiTek Sliding Connectors 5 mm holes can be calculated using equation (2) provided that the connector head has a conical base where length of the conical part is at least 4 mm and the diameter of the conical part is at least 5,2 mm at the head of nail.

The lateral load-carrying capacity for anchor screws used in conjunction with MiTek Sliding Connectors 5 mm holes can be calculated using equations (1) - (3) in accordance with EN 1995-1-1 where the connector diameter d is the effective diameter $d_{ef} = 1{,}1 d_i$, where d_i is the inner threaded diameter of the screw. The withdrawal strength $F_{ax,Rk}$ in equations (1) and (2) is calculated using equation (5) and the maximum value of $F_{ax,Rk}/4$ is restricted to 50% from the load-carrying capacity $F_{v,Rk}$.

Withdrawal capacity of fasteners

In accordance with EN 1995-1-1 the characteristic withdrawal capacity of a nail

$$F_{ax,Rk} = f_{ax,k}\, d\, t_{pen} \leq f_{tens,k} \qquad (4)$$

where $f_{ax,k}$ is the declared withdrawal strength parameter in accordance with EN 14592 and EN 1382 in direction perpendicular to grain, $f_{tens,k}$ is similarly the declared tensile capacity in conjunction with steel plate (tensile failure or pull through failure) and t_{pen} is the penetration length of the fastener's profiled part (> 6*d*). If the penetration length $t_{pen} \leq 8d$ = 32 mm, the strength calculated with equation (4) shall be reduced with factor (t_{pen}/8mm - 3).

The withdrawal capacity of a screw in accordance with EN 1995-1-1:2004+A1:2008+A2:2014 in direction perpendicular to grain

$$F_{ax,Rk} = n^{-0,1} f_{ax,k} d\, l_{ef} \left(\frac{\rho_k}{\rho_a} \right)^{0,8} \leq n^{-0,1} f_{tens,k} \tag{5}$$

where *n* is the quantity of screws under tension in the joint, *d* is the nominal diameter of the screw (the outer diameter of the threaded part), l_{ef} is the length of the threaded part, $f_{ax,k}$ is the screw withdrawal strength parameter in direction perpendicular to grain in accordance with EN 14592 using timber density ρ_a, ρ_k is the characteristic density of the timber member used in the joint and $f_{tens,k}$ is the characteristic tensile capacity of the fastener in accordance with EN 14592.

MiTek Sliding Beam Bracket (MiTek SBB)

The design tensile capacity of the SBB connector joint

$$R_{t,d} = \min \begin{cases} \dfrac{F_{b,Rk}}{\gamma_{M,1}} \\ \dfrac{k_{\mathrm{mod}}}{\gamma_M} \cdot R_{t,k} \end{cases} \tag{6}$$

where $\gamma_{M,1}$ is the partial safety factor in accordance with the relevant national annex of standard EN 1993-1-3, $F_{b,k}$ characteristic capacity of the sliding part, k_{mod} is the modification factor for load duration and moisture content according to EN 1995-1-1, γ_M is the partial safety factor of connector in accordance with the relevant national annex of standard EN 1995-1-1 and $R_{t,k}$ is the characteristic capacity of the angular bracket part.

Characteristic capacities are

$F_{b,Rk}$ = 1180 N

and

$$R_{t,k} = \min \begin{cases} 1{,}294\, F_{ax,Rk} \;+\; 568\,\mathrm{N} \\ 2818\,\mathrm{N} \\ 4F_{ax,Rk} \\ 2{,}25\, F_{v,Rk} \end{cases} \tag{7}$$

where $F_{ax,Rk}$ is the characteristic axial withdrawal capacity per fastener in the angular part to timber connection, see equations (4) and (5). $F_{v,Rk}$ correspondingly is the lateral load-carrying capacity of the fastener in the sliding timber part, see equations (1) and (2).

MiTek Sliding Bracket (MiTek SB)

In design of Sliding Brackets following condition shall be fulfilled

$$\left(\frac{F_{\mathrm{s,d}}}{R_{\mathrm{s,d}}}\right)^2 + \left(\frac{F_{\mathrm{t,d}}}{R_{\mathrm{t,d}}}\right)^2 \leq 1 \tag{8}$$

where $F_{\mathrm{s,d}}$ and $F_{\mathrm{t,d}}$ are the design loadings in directions shown in Figure 4.

The design capacities are as follows

$$R_{\mathrm{s,d}} = \min\begin{cases} \dfrac{k_{\mathrm{mod}}}{\gamma_{\mathrm{M}}} \cdot R_{\mathrm{z,s,k}} \\ \dfrac{k_{\mathrm{mod}}}{\gamma_{\mathrm{M}}} \cdot R_{\mathrm{v,s,k}} \\ \dfrac{R_{\mathrm{b,s,k}}}{\gamma_{\mathrm{M,1}}} \end{cases} \tag{9a}$$

$$R_{\mathrm{t,d}} = \min\begin{cases} \dfrac{k_{\mathrm{mod}}}{\gamma_{\mathrm{M}}} \cdot R_{\mathrm{z,t,k}} \\ \dfrac{k_{\mathrm{mod}}}{\gamma_{\mathrm{M}}} \cdot R_{\mathrm{v,t,k}} \\ \dfrac{R_{\mathrm{f,t,k}}}{\gamma_{\mathrm{M,1}}} \end{cases} \tag{9b}$$

where $\gamma_{\mathrm{M,1}}$ is the partial safety factor in accordance with the relevant national annex of standard EN 1993-1-3, k_{mod} is the modification factor for load duration and moisture content according to EN 1995-1-1 and γ_{M} is the partial safety factor of connector in accordance with the relevant national annex of standard EN 1995-1-1.

The design shear capacities for Sliding Brackets

$$R_{\mathrm{v,s,d}} = F_{\mathrm{v,1,Rk}} \tag{10a}$$

$$R_{\mathrm{v,t,d}} = 2F_{\mathrm{v,2,Rk}} \tag{10b}$$

where $F_{\mathrm{v,1,Rk}}$ is the lateral load-carrying capacity per fastener in the sliding part and $F_{\mathrm{v,2,Rk}}$ is similarly the load-carrying capacity per fastener in nailing plate side, see equations (1) and (2).

The characteristic capacities for MiTek SB 40x40x100 are:

$$R_{\mathrm{z,s,k}} = \min\begin{cases} 1{,}072F_{\mathrm{ax,2,Rk}} + 640\,\mathrm{N} \\ 4F_{\mathrm{ax,2,Rk}} \end{cases} \tag{11}$$

$$R_{\mathrm{b,s,k}} = 695\ \mathrm{N} \tag{12}$$

$$R_{\mathrm{z,t,k}} = \min\begin{cases} 0{,}311F_{\mathrm{ax,1,Rk}} + 772\,\mathrm{N} \\ F_{\mathrm{ax,1,Rk}} \end{cases} \tag{13}$$

$$R_{f,t,k} = 1340 \text{ N} \tag{14}$$

where $F_{ax,1,Rk}$ is the withdrawal capacity of the sliding fastener and $F_{ax,2,Rk}$ is the withdrawal capacity of nailing plate side fastener, see equations (4) and (5).

The characteristic capacities for MiTek SB 40x40x130 are respectively:

$$R_{z,s,k} = \min\begin{cases} 1{,}103F_{ax,2,Rk} + 928\text{N} \\ 4F_{ax,2,Rk} \end{cases} \tag{15}$$

$$R_{b,s,k} = 680 \text{ N} \tag{16}$$

$$R_{z,t,k} = \min\begin{cases} 0{,}311F_{ax,1,Rk} + 772\,\text{N} \\ F_{ax,1,Rk} \end{cases} \tag{17}$$

$$R_{f,t,k} = 1120 \text{ N}$$

MiTek Sliding Partition Bracket (MiTek SPB)

In design of Sliding Partition Brackets following condition shall be fulfilled

$$F_d \le R_{t,d} \tag{18}$$

where F_d is the design load in the direction shown in Figure 5.

The design tensile capacity is

$$R_{t,d} = \min\begin{cases} \dfrac{k_{mod}}{\gamma_M} \cdot R_{z,t,k} \\ \dfrac{k_{mod}}{\gamma_M} \cdot R_{v,t,k} \\ \dfrac{R_{f,t,k}}{\gamma_{M,1}} \end{cases} \tag{19}$$

where $\gamma_{M,1}$ is the partial safety factor in accordance with the relevant national annex of standard EN 1993-1-3, k_{mod} is the modification factor for load duration and moisture content according to EN 1995-1-1 and γ_M is the partial safety factor in accordance with the relevant national annex of standard EN 1995-1-1

The characteristic shear capacities for Sliding Partition Brackets $R_{v,s,d}$ are as follows

for MiTek SPB 40x200:

$$R_{v,t,k} = 2F_{v,Rk} \tag{20a}$$

for MiTek SPB 40x200:

$$R_{v,t,k} = 3F_{v,Rk} \tag{20b}$$

where $F_{v,Rk}$ is the lateral load-carrying capacity per fastener on nailing plate side, see equations (1) and (2).

The yield capacities $R_{f,t,k}$ for Sliding Partition brackets are as follows

for MiTek SPB 40x200:

$$R_{f,t,k} = 180 \text{ N} \tag{21a}$$

for MiTek SPB 40x200

$$R_{f,t,k} = 263 \text{ N} \tag{21b}$$

The tensile capacities $R_{z,t,k}$ for Sliding Partition brackets are as follows

for MiTek SPB 40x200:

$$R_{z,t,k} = \min\begin{cases} 0{,}464 F_{ax,Rk} + 51\,\text{N} \\ 2F_{ax,Rk} \end{cases} \tag{22}$$

for MiTek SPB 60x200

$$R_{z,t,k} = \min\begin{cases} 0{,}929 F_{ax,Rk} + 77\,\text{N} \\ 4F_{ax,Rk} \end{cases} \tag{23}$$

where $F_{ax,Rk}$ is the sliding fastener withdrawal capacity, see equations (4) and (5).

MiTek Sliding Slot Plate (MiTek SSP)

In design of Sliding Slot Plates following condition shall be fulfilled

$$F_d \le \min\begin{cases} \dfrac{k_{mod}}{\gamma_M} \cdot 1{,}15 F_{v,Rk} \\ \dfrac{596\text{ N}}{\gamma_{M,1}} \end{cases} \tag{24}$$

where F_d is the design load in direction shown in Figure 6, k_{mod} is the modification factor for load duration and moisture content according to EN 1995-1-1, γ_M is the partial safety factor of connector in accordance with the relevant national annex of standard EN 1995-1-1 and $\gamma_{M,1}$ is the partial safety factor in accordance with the relevant national annex of standard EN 1993-1-3.

MiTek Sliding Follower Plate (MiTek SFP)

In design of Sliding Follower Plates following condition shall be fulfilled

$$F_{\mathrm{d}} \leq \min \begin{cases} \dfrac{k_{\mathrm{mod}}}{\gamma_{\mathrm{M}}} R_{\mathrm{v,k}} \\ \dfrac{R_{\mathrm{b,k}}}{\gamma_{\mathrm{M,1}}} \end{cases} \tag{25}$$

where F_d is the design load in direction shown in Figure 7, k_{mod} is the modification factor for load duration and moisture content according to EN 1995-1-1, γ_M is the partial safety factor of connector in accordance with the relevant national annex of standard EN 1995-1-1 and $\gamma_{M,1}$ is the partial safety factor in accordance with the relevant national annex of standard EN 1993-1-3.

The characteristic load-carrying capacity of the Sliding Follower Plate connection:

$$R_{\mathrm{v,k}} = \begin{cases} 1{,}23 F_{\mathrm{v,Rk}} & \text{Sliding Follower Plate 120x50x2,5} \\ 1{,}17 F_{\mathrm{v,Rk}} & \text{Sliding Follower Plate 150x50x2,5} \\ 1{,}13 F_{\mathrm{v,Rk}} & \text{Sliding Follower Plate 180x50x2,5} \\ 1{,}10 F_{\mathrm{v,Rk}} & \text{Sliding Follower Plate 180x45x5} \\ 1{,}17 F_{\mathrm{v,Rk}} & \text{Sliding Follower Plate 240x45x5} \end{cases} \tag{26}$$

where $F_{v,Rk}$ is the lateral load-carrying capacity per fastener, see equations (1) and (2).

The characteristic bending capacity of the Sliding Follower plate:

$$R_{\mathrm{b,k}} = \begin{cases} 4750\ \mathrm{N} & \text{Sliding Follower Plate 120x50x2,5} \\ 3110\ \mathrm{N} & \text{Sliding Follower Plate 150x50x2,5} \\ 2240\ \mathrm{N} & \text{Sliding Follower Plate 180x50x2,5} \\ 2690\ \mathrm{N} & \text{Sliding Follower Plate 180x45x5} \\ 3010\ \mathrm{N} & \text{Sliding Follower Plate 240x45x5} \end{cases} \tag{27}$$

Structural requirements

Connections with Sliding Connectors shall fulfil the minimum spacing and edge distance requirement specified in EN 1995-1-1. The minimum distances a_1 and a_2 in table 8.2 of EN 1995-1-1 may be multiplied by a factor of 0,7 (nailed steel-to-timber connections).

If sliding connectors are used on both sides of a timber member the fasteners on opposite sides may overlap if the timber thickness > L + 14 mm, where L is the length of the fastener.

Sliding Connectors are fixed from all holes. The fasteners on the sliding part and the fasteners on the holes of the flanges of angular connectors shall be identical.

Sliding Connectors are not suitable for service class 3 applications. The Sliding Connectors shall not be used without adequate protection for connections where resistance to fire is required.