Leistungserklärung / *Declaration of Performance*
2009100351_013CPR2022-11-041_2024

- **Eindeutiger Kenncode des Produkttyps** / ***Unique identification code of the product type***
  HV3600, HV3610, HV3620, HV3630, HV3640, HV3641

- **Verwendungszweck(e)** / ***Usage(s)***
  Sparrenfettenanker für Verbindungen von Holz auf Holz, Holz auf Stahl oder Holz auf Beton
  Anchors for timber to timber, timber to steel or timber to concrete connections

- **Hersteller** / ***Manufacturer***
  Conmetall Meister GmbH
  Hafenstraße 26
  29223 Celle Germany

- **System(e) zur Bewertung und Überprüfung der Leistungsbeständigkeit** /
  System(s) for evaluating and verifying constancy of performance
  System 2+

- **Europäisch Technische Bewertung** / ***European Technical Assessment***
  Europäisches Bewertungsdokument / *European evaluation document:*
  EAD 130186-00-0603 01.07.2018
  Europäisch technische Bewertung / *European technical evaluation:*
  ETA 17/0244 23.09.2022
  Technische Bewertungsstelle / *Technical Assessment Body:*
  Eurofins Expert Services Oy
  Notifizierte Stelle / *Notified body:*
  1336

- **Wesentliche Merkmale und erklärte Leistung(en) /**
  Essential features and stated performance(s)

Wesentliches Merkmal *Essential features*	Leistung *Performance*	Harmonisierte technische Spezifikation *Harmonized technical specification*
Charakteristische Tragfähigkeit *Joint strength*	Siehe Annex 2	ETA-17/0244; 3.1
Steifigkeit der Verbindung *Joint stiffness*	NPD	ETA-17/0244; 3.1
Duktilität der Verbindung *Joint ductility*	NPD	ETA-17/0244; 3.1
Widerstandsfähigkeit gegen seismische Einflüsse *Resistance to seismic actions*	NPD	ETA-17/0244; 3.1
Widerstandsfähigkeit gegen Korrosion und Beschädigung *Resistance to corrosion and deterioration*	Nutzungsklasse 1 & 2 gem. Eurocode 5 *Service classes 1 & 2*	ETA-17/0244; 3.1 EAD 130186-00-0603
Brandverhalten *Reaction to fire*	Stahl klassifiziert als Euroklasse A1 *Steel classified as Euroclass A1*	ETA-17/0244; 3.2 EN 13501-1
Brandresistenz *Resistance to fire*	NPD	ETA-17/0244; 3.2

Tab.1 Wesentliche Merkmale / *essential features*

Kenncode *Identification code*	Sparrenfettenanker-Dimensionen *Anchor dimensions*	Kenncode aus ETA *Identificatin code from ETA*
HV3600	32x32x170x2mm r	72101
HV3610	32x32x170x2mm l	72102
HV3620	32x32x210x2mm r	72103
HV3630	32x32x210x2mm l	72104
HV3640	32x32x250x2mm r	72105
HV3641	32x32x250x2mm l	72106

Tab.2 Produkt Details / *Product details*

Die Leistung des vorstehenden Produkts entspricht der erklärten Leistung / den erklärten Leistungen. Für die Erstellung der Leistungserklärung im Einklang mit der Verordnung (EU) Nr. 305/2011 ist allein der obengenannte Hersteller verantwortlich.
Unterzeichnet für den Hersteller und im Namen des Herstellers von:
The performance of the above product is the declared performance. The above manufacturer is solely responsible for drawing up the declaration of performance in accordance with Regulation (EU) No 305/2011.
Signed for the manufacturer and on behalf of the manufacturer of:

Conmetall Meister GmbH
Celle, 27.04.2024

i. A. Yannik Nothnagel
Leitung Einkauf Eisenwaren
Head of purchasing ironmongery

i. A. Marcel Dartscht
Standortverantwortlicher Qualitätsmanagement Celle
Site Manager Quality Management Celle

ANNEX 2. CHARACTERISTIC LOAD-CARRYING CAPACITIES

Characteristic resistances for Arras Purlin Anchors - calculation method

Lateral load-carrying capacity of fastener

The characteristic load-carrying capacity for nails and screws in Arras Purlin Anchor connections per fastener should be taken as the minimum value found from the following expressions:

- for a thick fastener $d \geq 4$ mm:

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

- for a thin fastener $d \leq 2$ mm:

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

- for a fastener 2 mm < d < 4 mm, linear interpolation between equations (1) and (2) is used.

In equations (1) and (2) the penetration length of fastener in timber $t_1 = L - t$, when L is the length of fastener and t is the thickness of steel plate, d is the nominal diameter of nail or the effective diameter of screw = 1,1d_i, when d_i is the inner diameter of threaded part of screw, $M_{y,k}$ is the characteristic yield moment of the fastener determined according to standards EN 14952 and EN 409, $F_{ax,k}$ is the characteristic withdrawal capacity of the fastener with a limitation of term $F_{ax,k}/4$ at maximum to 1/3 with nails and to 1/2 with screws from the load-carrying capacity $F_{v,Rk}$ and the characteristic embedding strength

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

where ρ_k is the characteristic density of timber.

The capacity according to equation (2) may be used for anchor nails of diameter 4,0 mm provided, that it has a cone head with minimum conical part length of 4 mm and the minimum cone diameter of 5,2 mm at the head of nail.

Load-carrying capacity of Purlin Anchor connection

The Purlin Anchors are used as a purlin to beam or a purlin to column connection subjected to a tension load F_d parallel to the length direction of the connector (see Figure A.2.1). The Purlin Anchors are not assumed to have any load-carrying capacity for lateral forces perpendicular to the length direction of the connector. Two same sizes of connectors with the same number of fasteners are always used symmetrically at both sides of the beam for that a pure tension force would act on the plane of the flange of the connector without any eccentricity.

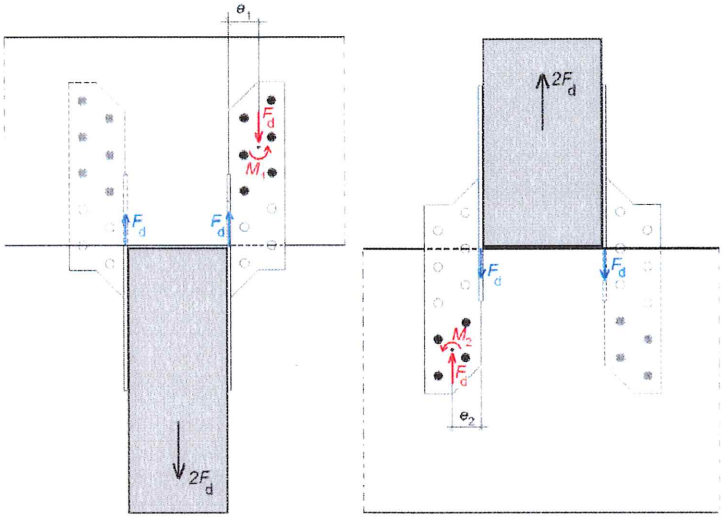

Figure A.2.1 Use of Purlin Anchors as tension connectors and the forces and moments acting in the Purlin Anchor.

The characteristic load-carrying capacity per purlin anchor should be taken as follows:

- for failure in steel:

$$F_{Rk,S} = 3{,}66 \text{ kN} \tag{4}$$

- for failure in nailed or screwed timber-to-steel connection:

$$F_{Rk,H} = \min \begin{cases} \dfrac{F_{v,Rk,1}}{\dfrac{1}{n_1} + \dfrac{e_1}{\sum_{i=1}^{n_1} r_{i,1}}} \\ \dfrac{F_{v,Rk,2}}{\dfrac{1}{n_2} + \dfrac{e_2}{\sum_{i=1}^{n_2} r_{i,2}}} \end{cases} \tag{5}$$

where:

$F_{v,Rk,j}$ is the characteristic lateral load-carrying resistance of the fastener in the timber member of flange j = 1 or 2 calculated according to expressions (1) and (2);

e_j is the eccentricity of the fastener group from the line of bent edge in the flange j = 1 or 2 (see Figure A.2.1);

$r_{i,j}$ is the distance of fastener i from the centroid of the fastener group in flange j;

n_j is the number of fasteners in flange j = 1 or 2.

Values of e_j and $\Sigma r_{i,j}$ for the certain number of fasteners n_1 and n_2 are presented in Table A.2.1, when the fasteners are inserted to the all holes from the ends of the connector (see Figure A.2.1).

Table A.2.1 Purlin Anchors – article numbers and nominal dimensions. Presented eccentricities e_j and moments arms $\Sigma r_{i,j}$ are valid for the given number of fasteners n_j.

Art. No.	size (mm)	e_1 (mm)	e_2 (mm)	n_1	n_2	$\Sigma r_{i,1}$ (mm)	$\Sigma r_{i,2}$ (mm)
72101 Right	170x32x2,0	16,1	16,1	6	4	103,8	51,6
72102 Left	170x32x2,0	16,1	16,1	6	4	103,8	51,6
72103 Right	210x32x2,0	16,1	16,1	8	6	175,4	103,8
72104 Left	210x32x2,0	16,1	16,1	8	6	175,4	103,8
72105 Right	250x32x2,0	16,1	16,1	10	8	266,6	175,4
72106 Left	250x32x2,0	16,1	16,1	10	8	266,6	175,4
72107 Right	290x32x2,0	16,1	16,1	12	10	377,6	266,6
72108 Left	290x32x2,0	16,1	16,1	12	10	377,6	266,6
72109 Right	330x32x2,0	16,1	16,1	14	12	508,5	377,6
72110 Left	330x32x2,0	16,1	16,1	14	12	508,5	377,6
72111 Right	370x32x2,0	16,1	16,1	16	14	659,2	508,5
72112 Left	370x32x2,0	16,1	16,1	16	14	659,2	508,5

Design condition

The following design condition shall be satisfied:

$$F_d \leq \min \begin{cases} \frac{k_{mod} \cdot F_{Rk,H}}{\gamma_M} \\ \frac{F_{Rk,S}}{\gamma_{M0}} \end{cases} \quad (6)$$

where

F_d is the design tension force per connector according to Figure A.2.1;

k_{mod} is the modification factor according to Eurocode 5 taking into account the effect of the duration of the load and moisture content for the timber member;

γ_M is the partial safety factor for the resistance of connections according to the actual National annex of EN 1995-1-1;

$F_{Rk,H}$ is the characteristic load-carrying capacity of the connector according to the expression (5);

γ_{M0} is the partial safety factor for the resistance of steel cross-section according to the actual National annex of EN 1993-1-1;

$F_{Rk,S}$ is the characteristic load-carrying capacity of connector according to the expression (4).

Structural requirements

The following provisions apply:

- The nailing pattern may be determined by case by case. However, at least two fasteners shall be used in both flanges of the connector.
- All minimum spacings and edge/end distances in accordance with Eurocode 5 shall be complied with.
- The splitting resistance of the timber members shall be verified according to Eurocode 5.

- The cross section of the connected timber members shall have a plane surface without wane against the purling anchor.
- There are no specific requirements relating to preparation of the timber members.
- In service class 2, the nails and screws shall have an electroplated zinc coating according to EN ISO 2081 at least of type and thickness Fe/Zn 12 c, or they shall be hot dip zinc coated according to EN ISO 1461, thickness at least 39 µm.
- The purlin anchors shall not be used without adequate protection for connections where resistance to fire is required.