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Member of



## European Technical Assessment

**ETA 24/0873**  
**of 05/08/2025**

General part

**Technical Assessment Body issuing the European Technical Assessment**  
Technický a zkušební ústav stavební Praha, s.p.

|                                                                                                                     |                                                                                                                                                                                                                                                        |
|---------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Trade name of the construction product</b>                                                                       | Three-dimensional nailing plates<br>KLR, KP, KPK, KPL, KR, KRD, KB, KK, KKB,<br>KL, KM, KPS, KRB, KSB, KWB, KWC, LU,<br>LB, NT, PPS, PPSR, PR, PS, PS 84L, PSK,<br>PSL, PSP, PSPO, PSR, PSRP, PSRT,<br>PSRU, PST, SD, SDPSK, SDS, WB, WBC,<br>WBU, WBZ |
| <b>Product family to which the construction product belongs</b>                                                     | Product area: 13<br>Three-dimensional Nailing Plates                                                                                                                                                                                                   |
| <b>Manufacturer</b>                                                                                                 | DOMAX Sp. z o.o.<br>Aleja Parku Krajobrazowego 109<br>84-207 Koleczkowo<br>Łężyce<br>Republic of Poland                                                                                                                                                |
| <b>Manufacturing plant</b>                                                                                          | DOMAX Sp. z o.o.<br>Aleja Parku Krajobrazowego 109<br>84-207 Koleczkowo<br>Łężyce<br>Republic of Poland                                                                                                                                                |
| <b>This European Technical Assessment contains</b>                                                                  | 141 pages including 6 Annexes, which form an integral part of this European Technical Assessment                                                                                                                                                       |
| <b>This European Technical Assessment is issued in accordance with Regulation (EU) No 305/2011, on the basis of</b> | EAD 130186-00-0603 Three-dimensional nailing plates                                                                                                                                                                                                    |

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## 1 Technical description of the product

The three-dimensional nailing plates DMX® are one-piece, non-welded (KB, KK, KL, KM, KP, KR, KRB, KSB, KWB, KWC, WBZ.), non-welded or welded (KKB, PS, SDP 90 A, SDP 90 B, SDP 100 A, SDP 100 B, SDP 120 A, SDP 120 B, SDSP 70 A, SDSP 70 B, KM, KL, WB, WBZ, PSK, SDPSK), welded (PSL, PSP, PSPO, PST, PS 84L) elements or multi-piece, welded and/or bolted (PSR, PSRT, PSRU, PSRP, PPS, PR, PPSR) elements, made of the cold-formed steel sheet grade DX51D according to EN 10346 with the zinc coating mass of 275 g/m<sup>2</sup>, electrogalvanized steel DC01 according to EN 10131 with corrosion protection Fe/Zn 12 + powder coating 60 µm or structural steel S235 according to EN 10025-2 with corrosion protection Fe/Zn 12 or hot-dip galvanization (HDG). Elements SD and SDS have extra powder coating 60 µm (see list below). The three-dimensional nailing plates correspond to the drawings and dimensions given in Annex 1.

**Table 1** Technical description of the product

| Type of Domax connector | Made of      | Kind of corrosion protection | Type of connector | Intended use                                                                        |
|-------------------------|--------------|------------------------------|-------------------|-------------------------------------------------------------------------------------|
| KLR                     | DX51D        | Z275                         | Angle             | Used to connect two pieces of timber, side-grain to side-grain                      |
| KP                      | DX51D        | Z275                         |                   |                                                                                     |
| KP 2                    | DX51D        | Z275                         |                   |                                                                                     |
| KP 9                    | DX51D        | Z275                         |                   |                                                                                     |
| KPK                     | DX51D        | Z275                         |                   |                                                                                     |
| KPL                     | DX51D        | Z275                         |                   |                                                                                     |
| KR                      | KR 1 – DC01  | Fe/Zn 12                     |                   |                                                                                     |
|                         | KR 2 – DX51D | Z275                         |                   |                                                                                     |
|                         | KR 3 – DX51D | Z275                         |                   |                                                                                     |
| KR 4                    | S 235        | Z275                         |                   |                                                                                     |
| KR 5                    | DX51D        | Z275                         |                   |                                                                                     |
| KR 6                    | DC01         | Fe/Zn 12                     |                   |                                                                                     |
| KR 7                    | DC01         | Fe/Zn 12                     |                   |                                                                                     |
| KRD                     | DX51D        | Z275                         |                   |                                                                                     |
| LU                      | DX51D        | Z275                         |                   |                                                                                     |
| WBC                     | DX51D        | Z275                         | Beam hanger       | Used to connect two piece of timber, end-grain to side-grain                        |
| WBU                     | DX51D        | Z275                         |                   |                                                                                     |
| ŁB                      | S235         | Fe/Zn 12                     | Angle             | Used to connect piece of timber with concrete ground, side-grain to concrete ground |

| Type of Domax connector | Made of          | Kind of corrosion protection    | Type of connector | Intended use                                                               |
|-------------------------|------------------|---------------------------------|-------------------|----------------------------------------------------------------------------|
| NT                      | DX51D            | Z275                            | Tape tension      | Used to connect two piece of timber by perforated metal tape               |
| KKB                     | S235             | Fe/Zn 12                        | Beam hanger       | Used to connect two piece of timber, end-grain to side-grain               |
| PS                      | S235 / B500      | Fe/Zn 12                        | Post base         | Used to connect timber beam with concrete ground, end-grain to steel plate |
| KPS                     | DX51D            | Z275                            | Angle             | Used to connect two piece of timber, side-grain to side-grain              |
| SD                      | SDLZ 1 – DX51D   | Z275 + Powder Coating 60 µm     | Angle             | Used to connect two piece of timber, side-grain to side-grain              |
|                         | SDKLR 1 – DX51D  | Z275 + Powder Coating 60 µm     |                   |                                                                            |
|                         | SDKL 1 – DX51D   | Z275 + Powder Coating 60 µm     |                   |                                                                            |
|                         | SDP 90 A – S235  | Fe/Zn 12 + Powder Coating 60 µm | Post base         | Used to connect timber beam with concrete ground, end-grain to steel plate |
|                         | SDP 90 B – S235  | Fe/Zn 12 + Powder Coating 60 µm |                   |                                                                            |
|                         | SDP 100 A – S235 | Fe/Zn 12 + Powder Coating 60 µm |                   |                                                                            |
|                         | SDP 100 B – S235 | Fe/Zn 12 + Powder Coating 60 µm |                   |                                                                            |
|                         | SDP 120 A – S235 | Fe/Zn 12 + Powder Coating 60 µm |                   |                                                                            |
|                         | SDP 120 B – S235 | Fe/Zn 12 + Powder Coating 60 µm |                   |                                                                            |
|                         | SDD 85 A – DX51D | Z275 + Powder Coating 60 µm     | Decor             | Use to decorate another connector                                          |
|                         | SDD 85 B – DX51D | Z275 + Powder Coating 60 µm     |                   |                                                                            |
| SDS                     | SDSP 70 A – S235 | Fe/Zn 12 + Powder Coating 60 µm | Post base         | Used to connect timber beam with concrete ground, end-grain to steel plate |
|                         | SDSP 70 B – S235 | Fe/Zn 12 + Powder Coating 60 µm |                   |                                                                            |

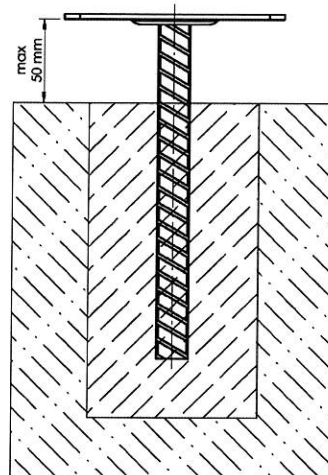
| Type of Domax connector | Made of           | Kind of corrosion protection    | Type of connector | Intended use                                                               |
|-------------------------|-------------------|---------------------------------|-------------------|----------------------------------------------------------------------------|
|                         | SDSKW 2 – DX51D   | Z275 + Powder Coating 60 µm     | Angle             | Used to connect two piece of timber, side-grain to side-grain              |
|                         | SDSKW 8 – DX51D   | Z275 + Powder Coating 60 µm     |                   |                                                                            |
|                         | SDSKP 1 – DX51D   | Z275 + Powder Coating 60 µm     |                   |                                                                            |
|                         | SDSKP 5 – DX51D   | Z275 + Powder Coating 60 µm     |                   |                                                                            |
|                         | SDSKM 7 – DX51D   | Z275 + Powder Coating 60 µm     |                   |                                                                            |
|                         | SDSWBZ 10 – DX51D | Z275 + Powder Coating 60 µm     | Beam hanger       | Used to connect two piece of timber, end-grain to side-grain               |
|                         | SDSWBZ 11 – DX51D | Z275 + Powder Coating 60 µm     |                   |                                                                            |
|                         | SDSWBZ 14 – DX51D | Z275 + Powder Coating 60 µm     |                   |                                                                            |
|                         | SDSWBZ 21 – DX51D | Z275 + Powder Coating 60 µm     |                   |                                                                            |
|                         | SDSWBZ 26 – DX51D | Z275 + Powder Coating 60 µm     |                   |                                                                            |
|                         | SDSWBZ 30 – DX51D | Z275 + Powder Coating 60 µm     |                   |                                                                            |
| KB 4                    | S 235             | Fe/Zn 12                        | Angle             | Used to connect two piece of timber, side-grain to side-grain              |
| KK 0                    | DC01              | Fe/Zn 12 + Powder Coating 60 µm |                   |                                                                            |
| KK 11                   | DX51D             | Z275                            |                   |                                                                            |
| KK 12                   | DX51D             | Z275                            |                   |                                                                            |
| KL 6                    | DX51D             | Z275                            |                   |                                                                            |
| KM 17                   | DX51D             | Z275                            |                   |                                                                            |
| KM 18                   | DX51D             | Z275                            |                   |                                                                            |
| KRB 7                   | DC01              | Fe/Zn 12 + Powder Coating 60 µm |                   |                                                                            |
| KSB 1                   | DC01              | Fe/Zn 12 + Powder Coating 60 µm |                   |                                                                            |
| KWB1                    | DC01              | Fe/Zn 12 + Powder Coating 60 µm |                   |                                                                            |
| KWC 1                   | DC01              | Fe/Zn 12 + Powder Coating 60 µm |                   |                                                                            |
| WBZ 14                  | DX51D             | Z275                            | Beam hanger       | Used to connect two piece of timber, end-grain to side-grain               |
| PSL 50, 70, 90, 100     | S 235             | HDG                             | Post base         | Used to connect timber beam with concrete ground, end-grain to steel plate |
| PSP 70, 90, 100, 120    | S 235             | HDG                             |                   |                                                                            |



| Type of Domax connector   | Made of | Kind of corrosion protection | Type of connector | Intended use                                                  |
|---------------------------|---------|------------------------------|-------------------|---------------------------------------------------------------|
| PSPO 80, 100              | S 235   | HDG                          |                   |                                                               |
| PSR 80, 110               | S 235   | Fe/Zn 12                     |                   |                                                               |
| PSRT                      | S 235   | HDG                          |                   |                                                               |
| PSRU                      | S 235   | HDG                          |                   |                                                               |
| PST 70, 90, 100, 120, 140 | S 235   | HDG                          |                   |                                                               |
| PS 84 L                   | S 235   | HDG                          |                   |                                                               |
| KM 16                     | DX51D   | Z275                         | Angle             | Used to connect two piece of timber, side-grain to side-grain |
| KM 16 (3 mm)              | DX51D   | Z275                         |                   |                                                               |
| KM 8 (2.5 mm)             | DX51D   | Z275                         |                   |                                                               |
| KM 19 (3 mm)              | DX51D   | Z275                         |                   |                                                               |
| KM 3 (2.5 mm)             | DX51D   | Z275                         |                   |                                                               |
| KL 0                      | DX51D   | Z275                         |                   |                                                               |
| KL 5 (3 mm)               | DX51D   | Z275                         | Beam-hanger       | Used to connect two piece of timber, end-grain to side-grain  |
| WB 39                     | DX51D   | Z275                         |                   |                                                               |
| WB 40                     | DX51D   | Z275                         |                   |                                                               |
| WB 41                     | DX51D   | Z275                         |                   |                                                               |
| WB 42                     | DX51D   | Z275                         |                   |                                                               |
| WB 43                     | DX51D   | Z275                         |                   |                                                               |
| WB 44                     | DX51D   | Z275                         |                   |                                                               |
| WB 45                     | DX51D   | Z275                         |                   |                                                               |
| WB 46                     | DX51D   | Z275                         |                   |                                                               |
| WB 47                     | DX51D   | Z275                         |                   |                                                               |
| WB 48                     | DX51D   | Z275                         |                   |                                                               |
| WB 49                     | DX51D   | Z275                         |                   |                                                               |
| WB 50                     | DX51D   | Z275                         |                   |                                                               |
| WB 51                     | DX51D   | Z275                         |                   |                                                               |
| WB 52                     | DX51D   | Z275                         |                   |                                                               |
| WB 53                     | DX51D   | Z275                         |                   |                                                               |
| WB 54                     | DX51D   | Z275                         |                   |                                                               |
| WB 55                     | DX51D   | Z275                         |                   |                                                               |
| WB 56                     | DX51D   | Z275                         |                   |                                                               |
| WB 57                     | DX51D   | Z275                         |                   |                                                               |
| WB 58                     | DX51D   | Z275                         |                   |                                                               |
| WB 59                     | DX51D   | Z275                         |                   |                                                               |
| WB 60                     | DX51D   | Z275                         |                   |                                                               |
| WB 61                     | DX51D   | Z275                         |                   |                                                               |
| WB 62                     | DX51D   | Z275                         | Beam-             | Used to connect two piece of                                  |

| Type of Domax connector | Made of | Kind of corrosion protection | Type of connector | Intended use                                                               |
|-------------------------|---------|------------------------------|-------------------|----------------------------------------------------------------------------|
| WB 63                   | DX51D   | Z275                         | hanger            | timber, end-grain to side-grain                                            |
| WBZ 38                  | DX51D   | Z275                         |                   |                                                                            |
| WBZ 49                  | DX51D   | Z275                         |                   |                                                                            |
| WBZ 52                  | DX51D   | Z275                         |                   |                                                                            |
| WBZ 54                  | DX51D   | Z275                         |                   |                                                                            |
| PSR 80 M24              | S235JR  | Fe/Zn 12                     | Post base         | Used to connect timber beam with concrete ground, end-grain to steel plate |
| PSR 100 M24             | S235JR  | Fe/Zn 12                     |                   |                                                                            |
| PSR 130 M24             | S235JR  | Fe/Zn 12                     |                   |                                                                            |
| PSR 80 M20              | S235JR  | Fe/Zn 12                     |                   |                                                                            |
| PSR 100 M20             | S235JR  | Fe/Zn 12                     |                   |                                                                            |
| PSR 130 M20             | S235JR  | Fe/Zn 12                     |                   |                                                                            |
| PSRP 80 M20             | S235JR  | Fe/Zn 12                     |                   |                                                                            |
| PSRP 100 M20            | S235JR  | Fe/Zn 12                     |                   |                                                                            |
| PSRP 130 M20            | S235JR  | Fe/Zn 12                     |                   |                                                                            |
| PPSR 80                 | S235JR  | Fe/Zn 12                     |                   |                                                                            |
| PPSR 100                | S235JR  | Fe/Zn 12                     |                   |                                                                            |
| PPSR 130                | S235JR  | Fe/Zn 12                     |                   |                                                                            |
| PPS 80                  | S235JR  | Fe/Zn 12                     |                   |                                                                            |
| PPS 100                 | S235JR  | Fe/Zn 12                     |                   |                                                                            |
| PPS 130                 | S235JR  | Fe/Zn 12                     |                   |                                                                            |
| PR 100 100-150          | S235JR  | Fe/Zn 12                     |                   |                                                                            |
| PR 100 130-150          | S235JR  | Fe/Zn 12                     |                   |                                                                            |
| PR 130 130-150          | S235JR  | Fe/Zn 12                     |                   |                                                                            |
| PSK 70                  | DX51D   | Z275                         |                   |                                                                            |
| SDPSK 70                | DX51D   | Z275/Powder coating 60 um    |                   |                                                                            |

For post bases with concrete bars (PPS 80, PPS 100, PPS 130, PS 84L, PS, PSL) have to be fulfilled the maximal free length 50 mm. Threaded rods are made from rebars B500SP.



For welded three-dimensional nailing plates, the information about weld is mentioned in table below.

**Table 2** Welded three-dimensional nailing plates

| Name                   | Weld size [mm] | Symbol                                                                              | Weld length [mm] | Qty. |
|------------------------|----------------|-------------------------------------------------------------------------------------|------------------|------|
| PS (60,70)             | a 3.5          |  | 56.0             | 1    |
| PS (80,90,100,120,140) | a 3.5          |                                                                                     | 63.55            | 1    |
| PS84L                  | a 3.5          |                                                                                     | 63.55            | 1    |
| PSL (50,70,90,100)     | a 3.5          |                                                                                     | 56.0             | 1    |
| PSRT                   | a 3.5          |                                                                                     | 63.55            | 2    |
| PSRU                   | a 3.5          |                                                                                     | 63.55            | 1    |
| PPS 80                 | a 2.8          |                                                                                     | 64.3             | 1    |
| PPS 100                | a 2.8          |                                                                                     | 64.3             | 1    |
| PPS 130                | a 2.8          |                                                                                     | 64.3             | 1    |
| PR 100/130-150         | a 2.8          |                                                                                     | 57.23            | 1    |
| PR 100/100-150         | a 2.8          |                                                                                     | 57.23            | 1    |
| PR 130/130-150         | a 2.8          |                                                                                     | 57.23            | 1    |
| PSR 80 M20             | a 2.8          |                                                                                     | 57.23            | 1    |
| PSR 100 M20            | a 2.8          |                                                                                     | 57.23            | 1    |
| PSR 130 M20            | a 2.8          |                                                                                     | 57.23            | 1    |
| PSR 80 M24             | a 2.8          |                                                                                     | 69.1             | 1    |
| PSR 100 M24            | a 2.8          |                                                                                     | 69.1             | 1    |
| PSR 130 M24            | a 2.8          |                                                                                     | 69.1             | 1    |
| PSRP 80 M20            | a 2.8          |                                                                                     | 57.23            | 1    |
| PSRP 100 M20           | a 2.8          |                                                                                     | 57.23            | 1    |
| PSRP 130 M20           | a 2.8          |                                                                                     | 57.23            | 1    |

Yield strength for used steel DX51D is 265 MPa (thickness 1.5 mm).  
 Yield strength for used steel DX51D is 297 MPa (thickness 2 mm).  
 Yield strength for used steel DX51D is 287 MPa (thickness 2.5 mm).  
 Yield strength for used steel DX51D is 278 MPa (thickness 3 mm).  
 Yield strength for used steel DX51D is 314 MPa (thickness 4 mm).  
 Yield strength for used steel DC01 is 175 MPa (thickness 1 mm).  
 Yield strength for used steel DC01 is 218 MPa (thickness 2 mm).  
 Yield strength for used steel DC01 is 209 MPa (thickness 3 mm).  
 Yield strength for used steel S235 is 348 MPa (thickness 2 mm).  
 Yield strength for used steel S235 is 348 MPa (thickness 3 mm).  
 Yield strength for used steel S235 is 279 MPa (thickness 4 mm).  
 Yield strength for used steel S235 is 266 MPa (thickness 5 mm).  
 Yield strength for used steel S235 is 250 MPa (thickness 6 mm).  
 Yield strength for used steel S235 is 304 MPa (thickness 8 mm).  
 Tensile strength for used rebars B500SP is 671 MPa (diameter 18.0 mm)

### 1.1 Identification

The identification parameters and reference to product specifications for identifying the materials and components which constitute the three-dimensional nailing plates are given in Annex 1.

## 2 Specification of the intended use(s) in accordance with the applicable European Assessment Document (hereinafter EAD)

The three-dimensional nailing plates are intended to be used as connections in loadbearing timber structures (to connect vertical timber columns to concrete, wood or steel ground). For connecting the mutually perpendicular, load-bearing, solid timber elements, in side-grain to side-grain configurations, in joints for which requirements for mechanical resistance and stability in the sense of the Basic Works Requirement 1 of Regulation (EU) No 305/2011 shall be fulfilled.

Ring shank nails according to EN 14592+A1 with the diameter  $\geq 4$  mm and characteristic tensile capacity  $F_{ax,Rk}$  not less than 1.80 kN shall be used for connections made with the three-dimensional nailing plates.

For connections made with the three-dimensional nailing plates shall be used the elements described in Annex 1.

In respect of the requirements concerning corrosion resistance, three-dimensional nailing plates are for use in timber structures subjected to the internal conditions defined by service classes 1, 2 and 3 (connectors with additional powder coating) according to EN 1995-1-1 (Eurocode 5), in corrosion aggressiveness categories C1 and C2 according to EN ISO 12944-2, without action of acid gases or vapours.

The provisions made in this European Technical Assessment are based on an assumed working life of the product of 50 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.

The assessment of the fitness of the three-dimensional nailing plates for the intended use has been made in compliance with the European Assessment Document (EAD) 130186-00-0603 Three-dimensional nailing plates.



## 2.1 Installation of three-dimensional nailing plates

The installation instructions including special installation techniques and provisions for the qualification of the personnel are given in the manufacturer's technical documentation.

## 3 Performance of the product and references to the methods used for its assessment

The assessment of the fitness for use of the above-mentioned three-dimensional nailing plates according to the Basic Work Requirements (BWR) were carried out in compliance with EAD 130186-00-0603.

The European Technical Assessment is issued for the three-dimensional nailing plates on the basis of agreed data and information, deposited at Technický a zkušební ústav stavební Praha, s.p., which identifies three-dimensional nailing plates that has been assessed and judged. Changes to the plates or production process which could result in this deposited data and information being incorrect should be notified to Technický a zkušební ústav stavební Praha, s.p. before the changes are introduced. Technický a zkušební ústav stavební Praha, s.p. will decide whether or not such changes affect the ETA and consequently the validity of the CE marking on the basis of the ETA and if so whether further assessment or alternations to the ETA shall be necessary.

**Table 3** Essential characteristics of the product

| Essential characteristic                       |                                           | Performance                                                                                                                                                                                                                      |
|------------------------------------------------|-------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 3.1 BWR 1: Mechanical resistance and stability |                                           |                                                                                                                                                                                                                                  |
| 3.1.1                                          | Joint strength                            | See Annex 3                                                                                                                                                                                                                      |
| 3.1.2                                          | Joint stiffness                           | NPA                                                                                                                                                                                                                              |
| 3.1.3                                          | Joint ductility                           | NPA                                                                                                                                                                                                                              |
| 3.1.4                                          | Resistance to seismic actions             | NPA                                                                                                                                                                                                                              |
| 3.1.5                                          | Resistance to corrosion and deterioration | NPA                                                                                                                                                                                                                              |
| 3.2 BWR 2: Safety in case of fire              |                                           |                                                                                                                                                                                                                                  |
| 3.2.1                                          | Reaction to fire                          | The steel elements are classified as class A1 of reaction to fire (non-combustible products) in accordance with EN 13501-1+A1 and to European Commission Decision 96/603/EC amended by European Commission Decision 2000/605/EC. |
| 3.2.2                                          | Resistance to fire                        | NPA                                                                                                                                                                                                                              |

### 3.1 Mechanical resistance and stability (BWR 1)

#### 3.1.1 Joint strength

The characteristic load-carrying capacities of joints loaded according to static diagrams (shown in Annex 2), determined by tests carried out according to EAD 130186-00-0603, clause 2.2.1 and calculations carried out in accordance with EN 1995-1-1 are given in Annex 3. The characteristic load-carrying capacities of joints for other load directions shall be calculated on the basis of EN 1995-1-1 (Eurocode 5) or according to national regulations. The design values shall be determined according to EN 1995-1-1 (Eurocode 5).

Following the requirements of EAD, the applicant provided to the TAB test results, configuration of the connections and static schemes (direction of force actions).

#### 3.1.2 Joint stiffness

No performance assessed.

### **3.1.3 Joint ductility**

No performance assessed.

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

### **3.2.1 Reaction to fire**

The steel elements are classified as class A1 of reaction to fire (non-combustible products) in accordance with EN 13501-1+A1 and to European Commission Decision 96/603/EC amended by European Commission Decision 2000/605/EC.

### **3.2.2 Resistance to fire**

Performance in relation to fire resistance would be determined for the complete structural element with any associated finishes, therefore there is no performance assessed option used to this Basic Work Requirement.

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

According to the Decision 1997/638/EC<sup>1</sup>, of the European Commission the system(s) of assessment and verification of constancy of performance (see Annex V to Regulation (EU) No 305/2011 and Commission delegated Regulation (EU) No 568/2014) given in the following table applies:

| Product(s)                                                                  | Intended use(s)                | Level(s) or class(es) | Attestation of conformity system(s) |
|-----------------------------------------------------------------------------|--------------------------------|-----------------------|-------------------------------------|
| Shear plates, toothed-plate connectors, punched nail plates, nailing plates | For structural timber products |                       | 2+                                  |

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<sup>1</sup> Official Journal of the European Communities L 268/37 of 1.10.1997

**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 Technický a zkušební ústav stavební Praha, s.p.

Issued in Prague on 05/08/2025



By  
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Head of the TAB



**Annexes:**

- |         |                                                           |
|---------|-----------------------------------------------------------|
| Annex 1 | Product details and definitions                           |
| Annex 2 | Loading and calculations according to static diagrams     |
| Annex 3 | The characteristic load-carrying capacities of connectors |
| Annex 4 | Nailing patterns                                          |
| Annex 5 | Specification of connection elements                      |
| Annex 6 | Reference documents                                       |

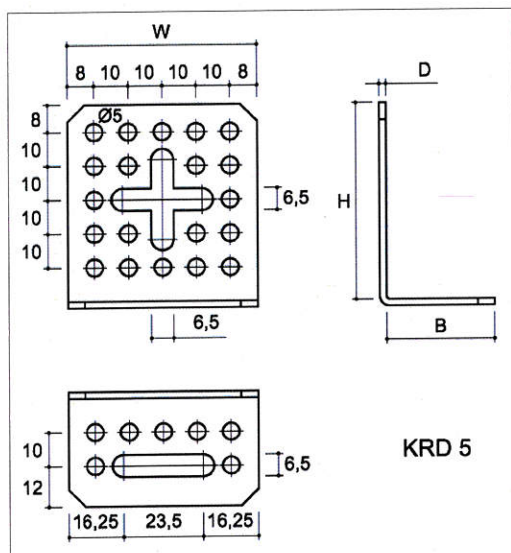


Figure 1 Type KRD 5

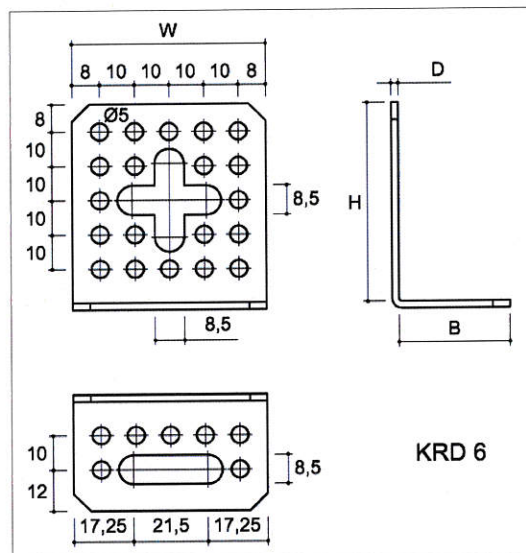
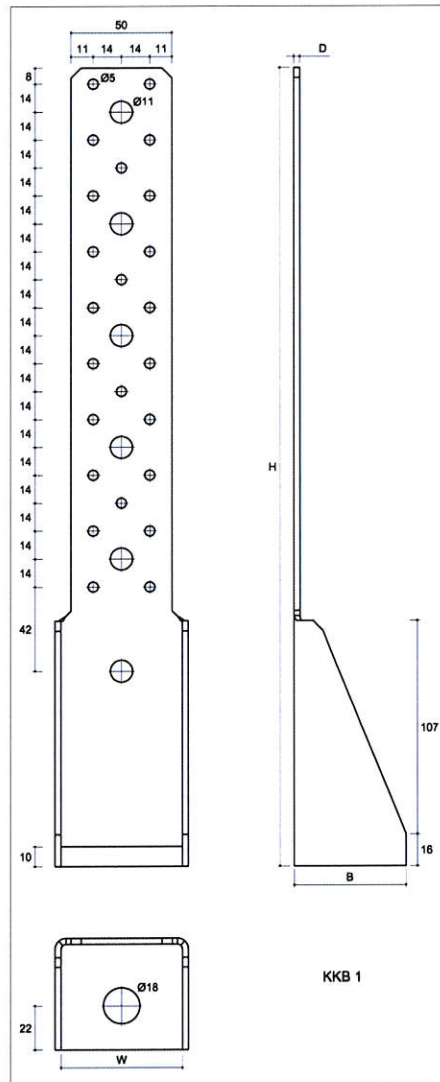


Figure 2 Type KRD 6

Table 4 KRD three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions, mm |    |    |   | Number of holes |
|--------|----------------|----|----|---|-----------------|
|        | W              | H  | B  | D | ø 5             |
| KRD 5  | 56             | 58 | 32 | 2 | 27              |
| KRD 6  | 56             | 58 | 32 | 2 | 27              |

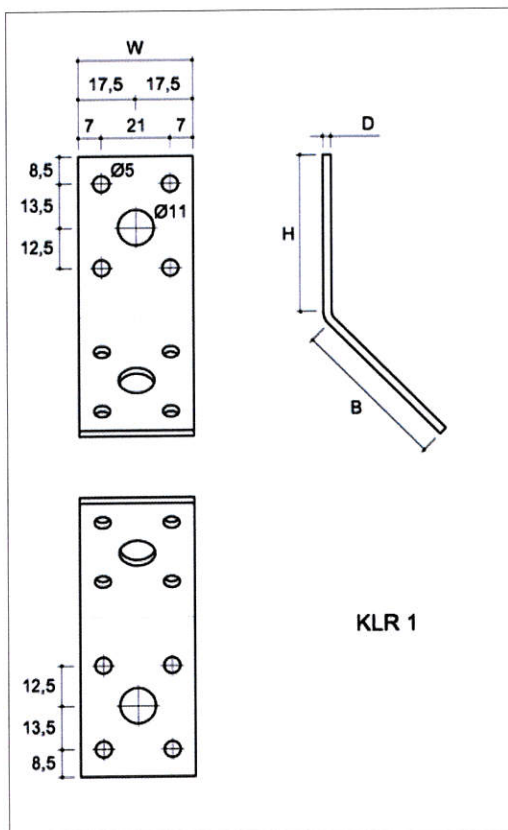




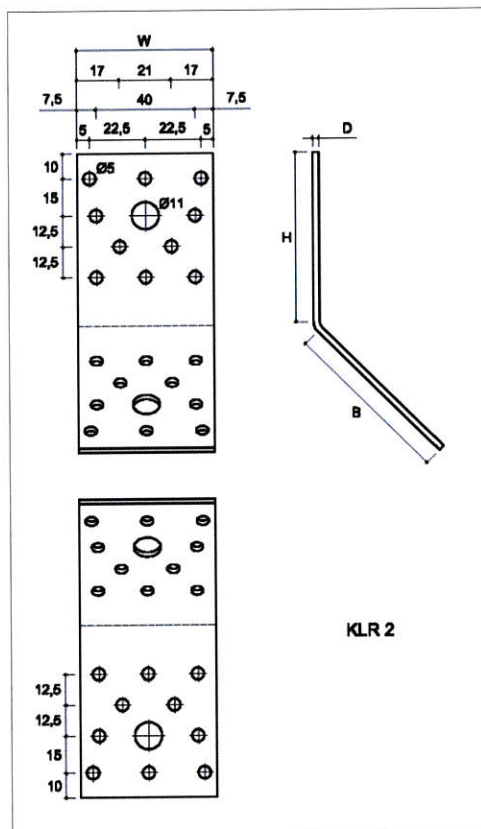
**Figure 3** Type KKB 1

**Table 5** KKB three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions, mm |     |    |   | Quantity of openings |      |      |
|--------|----------------|-----|----|---|----------------------|------|------|
|        | W              | H   | B  | D | ø 5                  | ø 11 | ø 18 |
| KKB 1  | 60             | 400 | 56 | 3 | 24                   | 6    | 1    |



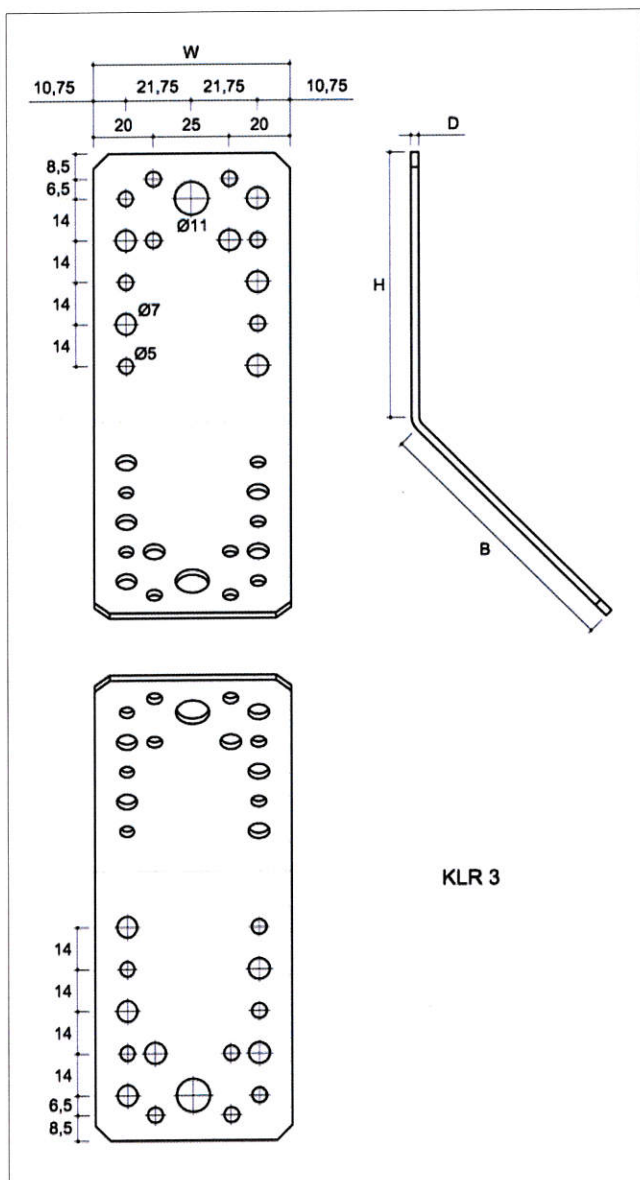
**Figure 4** Type KLR 1



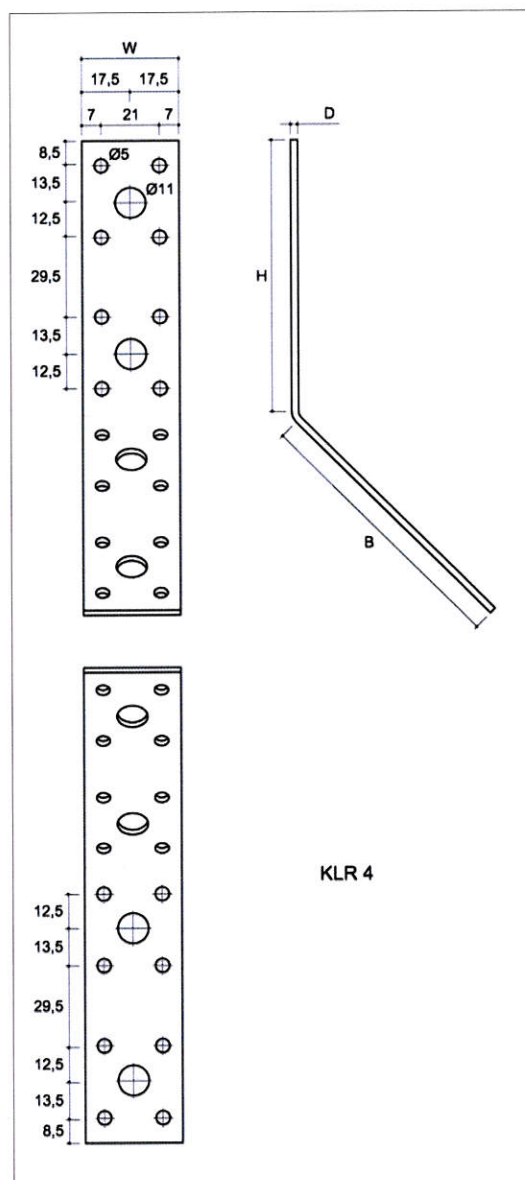
**Figure 5** Type KLR 2

**Table 6** KLR three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions, mm |    |    |     | Quantity of openings |      |
|--------|----------------|----|----|-----|----------------------|------|
|        | W              | H  | B  | D   | Ø 5                  | Ø 11 |
| KLR 1  | 35             | 50 | 50 | 2.5 | 8                    | 2    |
| KLR 2  | 55             | 70 | 70 | 2.5 | 20                   | 2    |



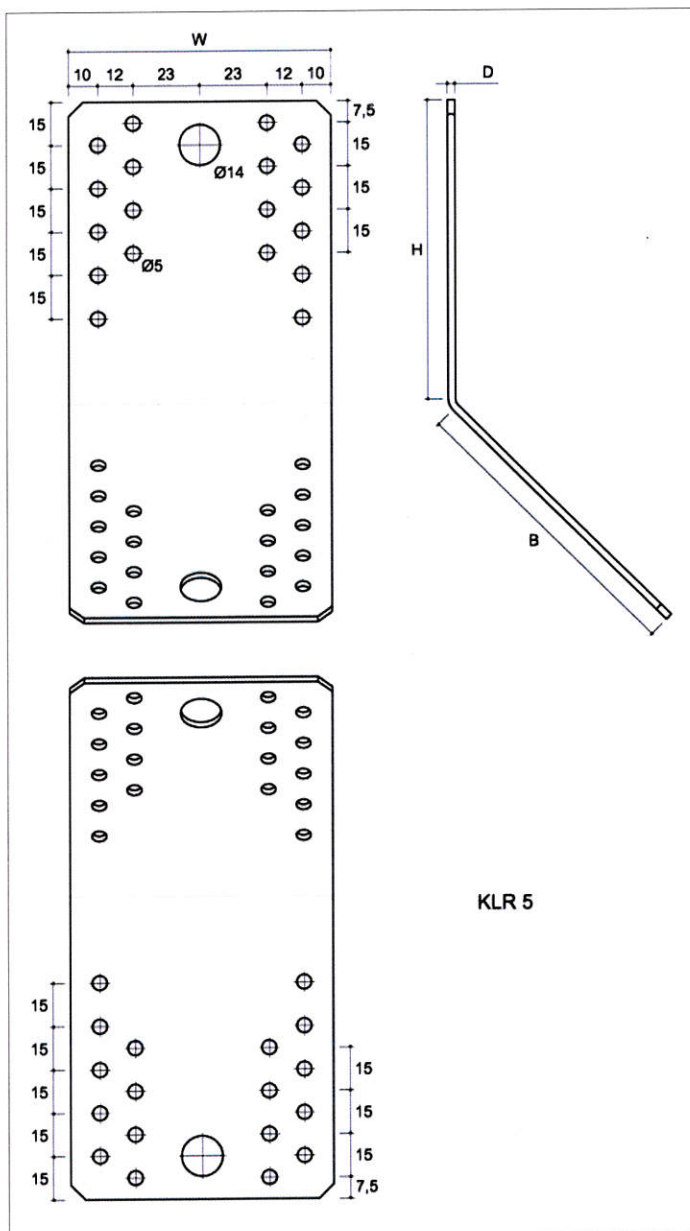
**Figure 6 Type KLR 3**



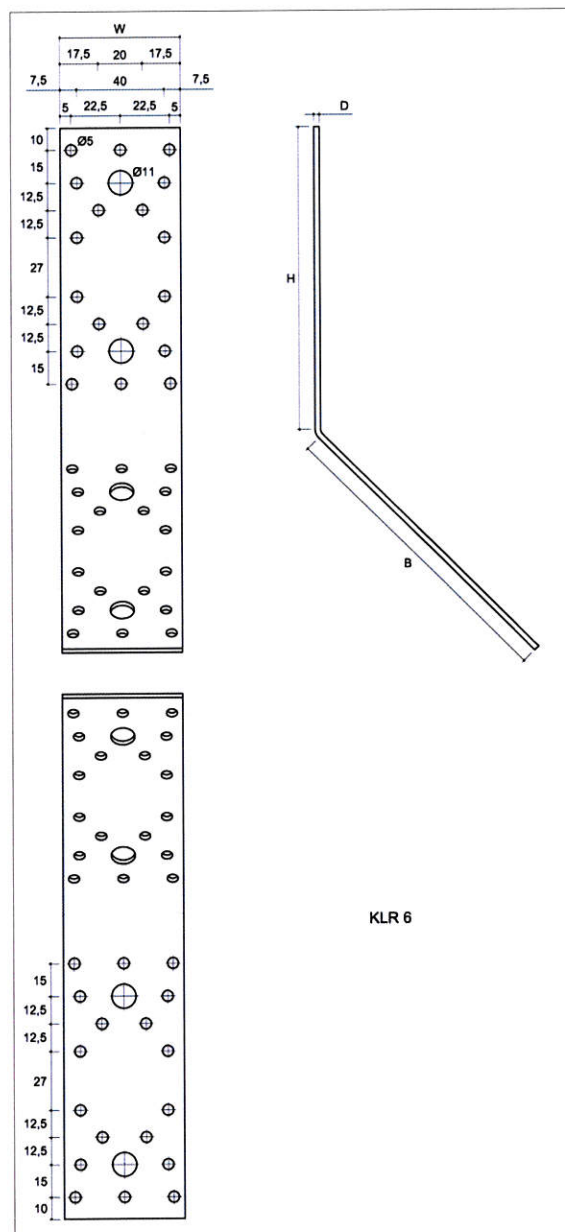
**Figure 7 Type KLR 4**

**Table 7 KLR three-dimensional nailing plate symbols and dimensions**

| Symbol | Dimensions, mm |     |     |     | Quantity of openings |     |      |
|--------|----------------|-----|-----|-----|----------------------|-----|------|
|        | W              | H   | B   | D   | Ø 5                  | Ø 7 | Ø 11 |
| KLR 3  | 65             | 90  | 90  | 2.5 | 16                   | 12  | 2    |
| KLR 4  | 35             | 100 | 100 | 2.5 | 16                   | -   | 4    |



**Figure 8** Type KLR 5



**Figure 9** Type KLR 6

**Table 8** KLR three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions, mm |     |     |     | Quantity of openings |      |      |
|--------|----------------|-----|-----|-----|----------------------|------|------|
|        | W              | H   | B   | D   | ø 5                  | ø 11 | ø 14 |
| KLR 5  | 90             | 105 | 105 | 2.5 | 36                   | -    | 2    |
| KLR 6  | 55             | 140 | 140 | 2.5 | 36                   | 4    | -    |

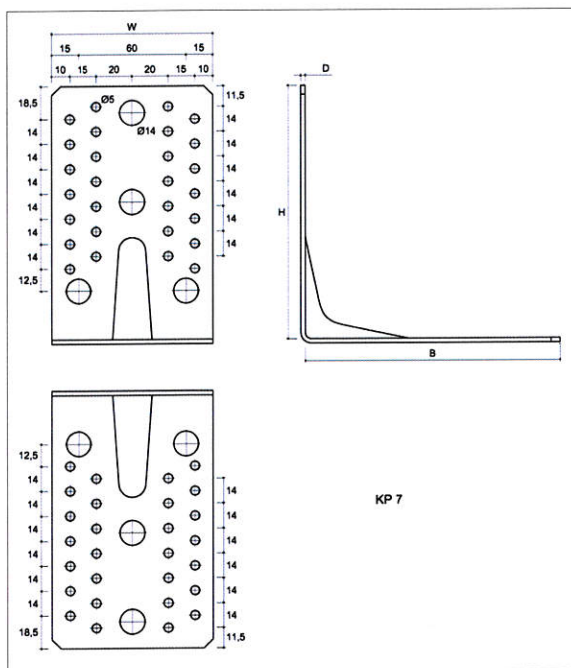


Figure 10 Type KP 7

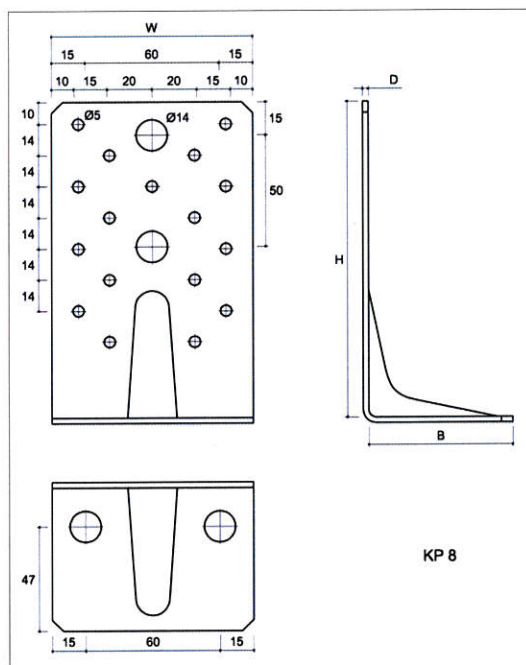


Figure 11 Type KP 8

Table 9 KP three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions, mm |     |     |     | Quantity of openings |      |
|--------|----------------|-----|-----|-----|----------------------|------|
|        | W              | H   | B   | D   | Ø 5                  | Ø 14 |
| KP 7   | 90             | 143 | 143 | 2.5 | 56                   | 8    |
| KP 8   | 90             | 143 | 65  | 2.5 | 17                   | 4    |

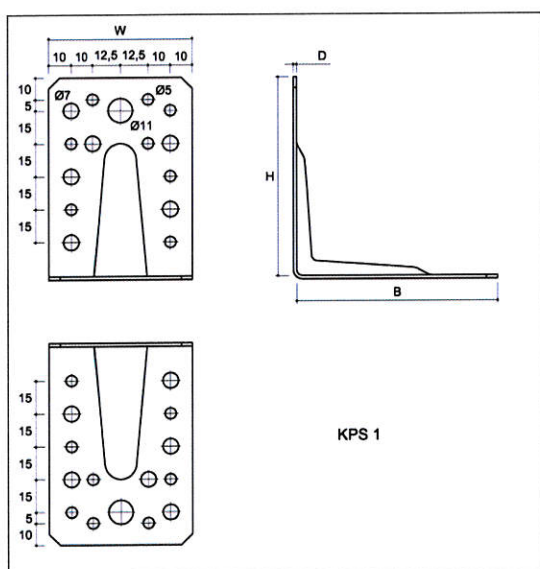


Figure 12 Type KPS 1

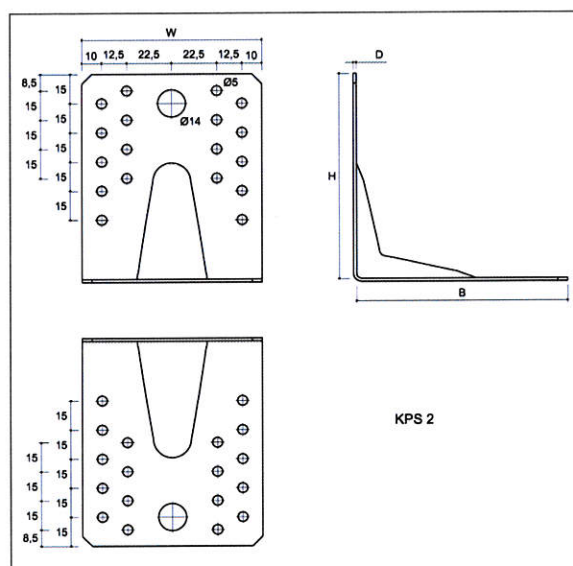


Figure 13 Type KPS 2



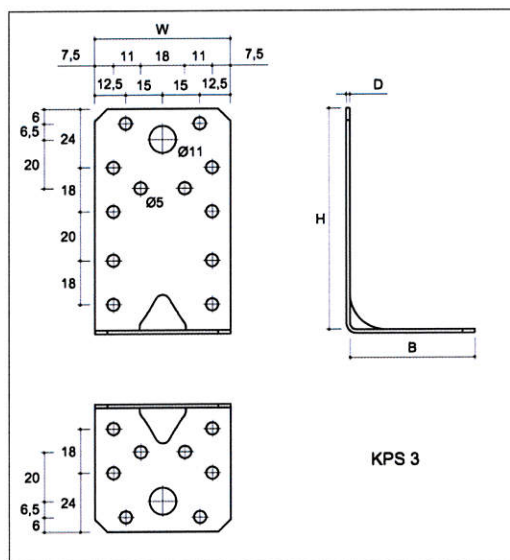


Figure 14 Type KPS 3

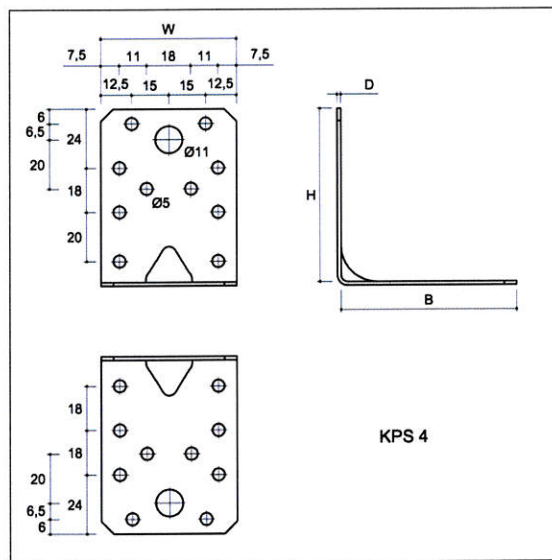


Figure 15 Type KPS 4

Table 10 KPS three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions, mm |     |     |     | Quantity of openings |     |      |      |
|--------|----------------|-----|-----|-----|----------------------|-----|------|------|
|        | W              | H   | B   | D   | Ø 5                  | Ø 7 | Ø 11 | Ø 14 |
| KPS 1  | 65             | 90  | 90  | 1,5 | 16                   | 12  | 2    | -    |
| KPS 2  | 90             | 105 | 105 | 1,5 | 36                   | -   | -    | 2    |
| KPS 3  | 55             | 90  | 50  | 1,5 | 20                   | -   | 2    | -    |
| KPS 4  | 55             | 70  | 70  | 1,5 | 20                   | -   | 2    | -    |

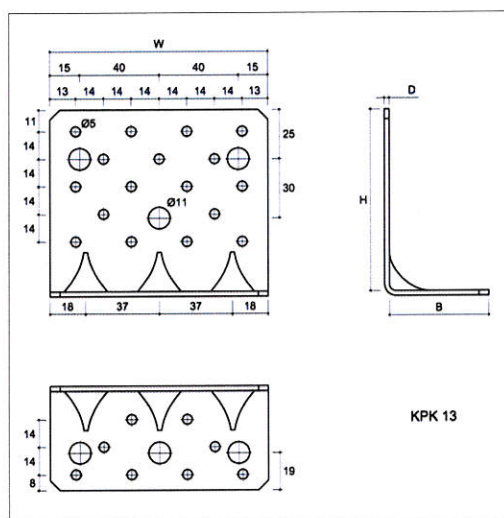


Figure 16 Type KPK 13



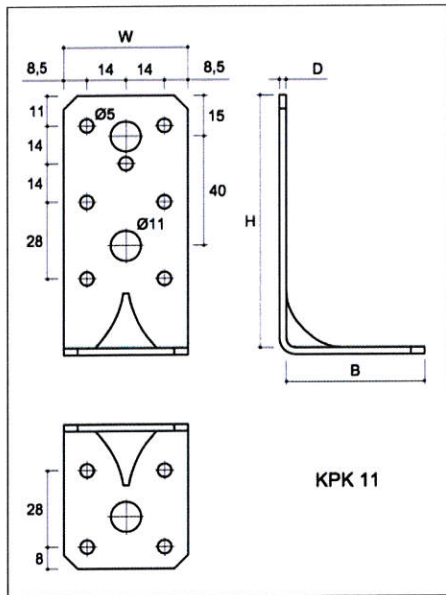


Figure 17 Type KPK 11

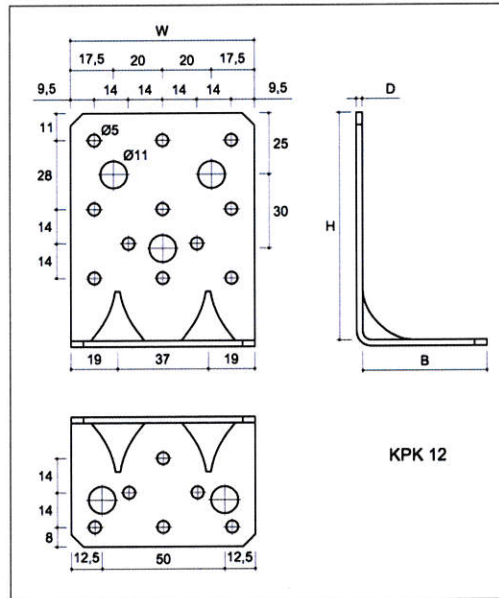


Figure 18 Type KPK 12

Table 11 KPK three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions, mm |    |    |     | Quantity of openings |      |
|--------|----------------|----|----|-----|----------------------|------|
|        | W              | H  | B  | D   | Ø 5                  | Ø 11 |
| KPK 11 | 45             | 93 | 50 | 2.5 | 11                   | 3    |
| KPK 12 | 75             | 93 | 50 | 2.5 | 17                   | 5    |
| KPK 13 | 110            | 93 | 50 | 2.5 | 25                   | 6    |

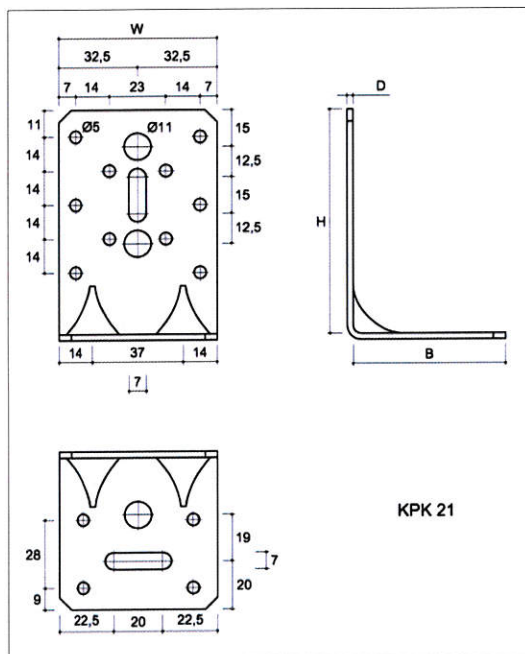


Figure 19 Type KPK 21

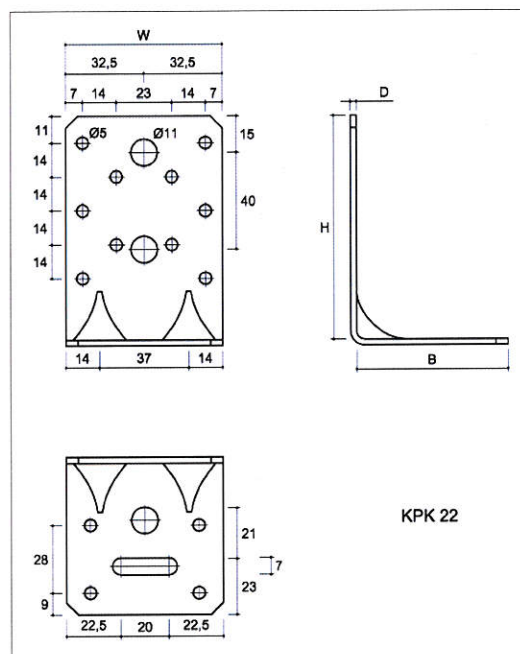
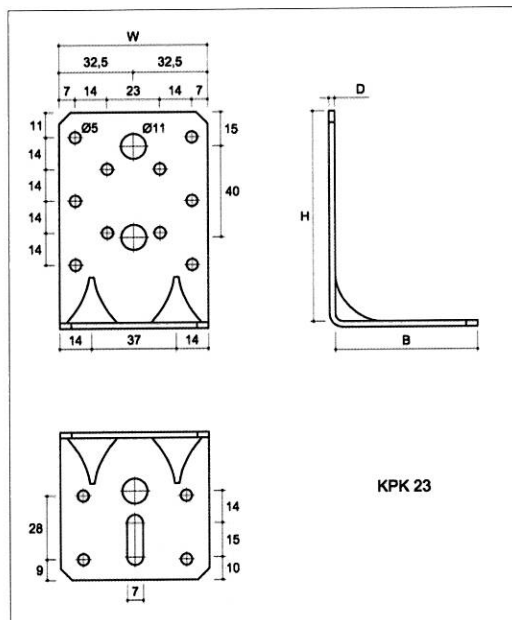


Figure 20 Type KPK 22



**Figure 21** Type KPK 23

**Table 12** KPK three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions, mm |    |    |     | Quantity of openings |      |
|--------|----------------|----|----|-----|----------------------|------|
|        | W              | H  | B  | D   | ø 5                  | ø 11 |
| KPK 21 | 65             | 93 | 63 | 2.5 | 14                   | 3    |
| KPK 22 | 65             | 93 | 63 | 2.5 | 14                   | 3    |
| KPK 23 | 65             | 93 | 63 | 2.5 | 14                   | 3    |

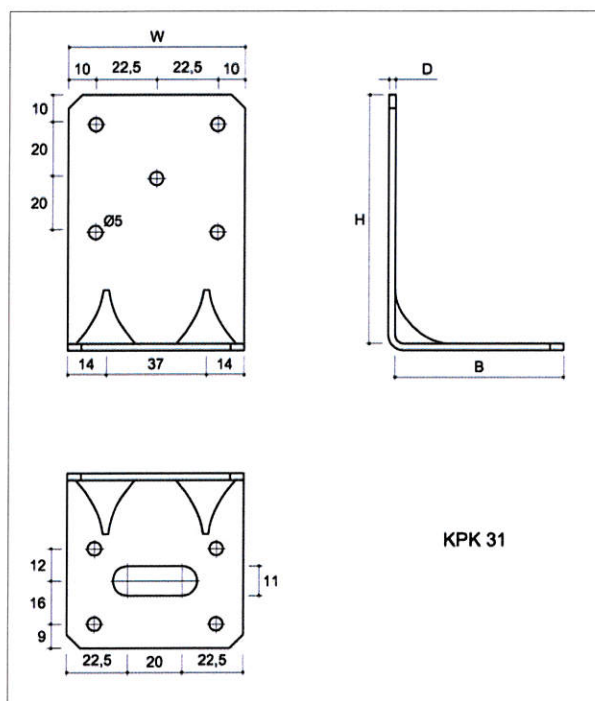


Figure 22 Type KPK 31

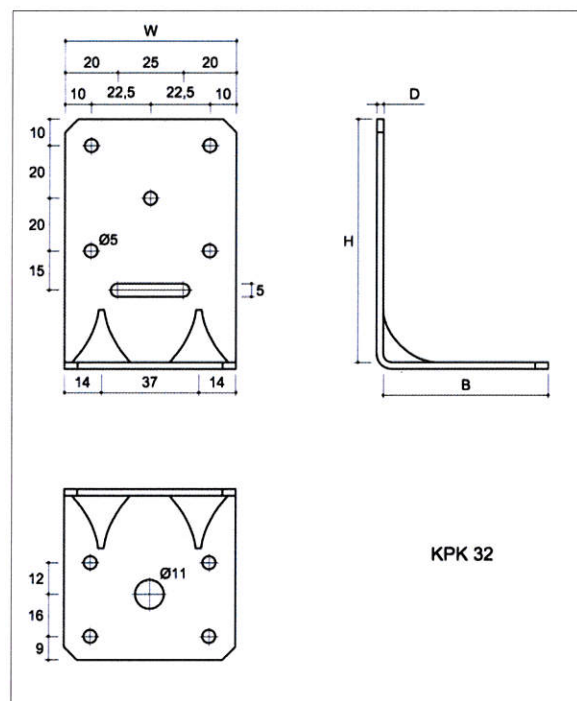


Figure 23 Type KPK 32

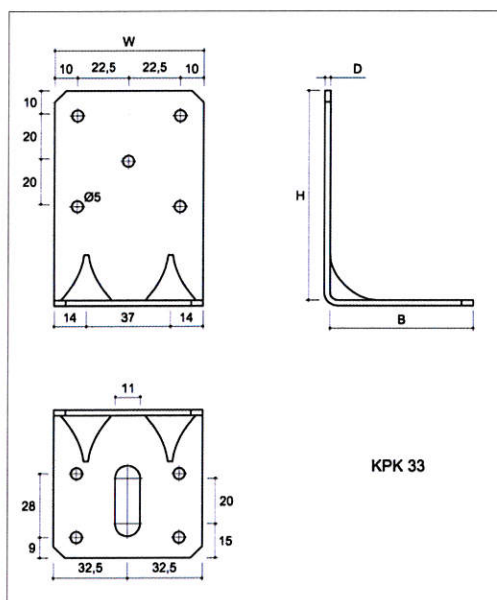


Figure 24 Type KPK 33

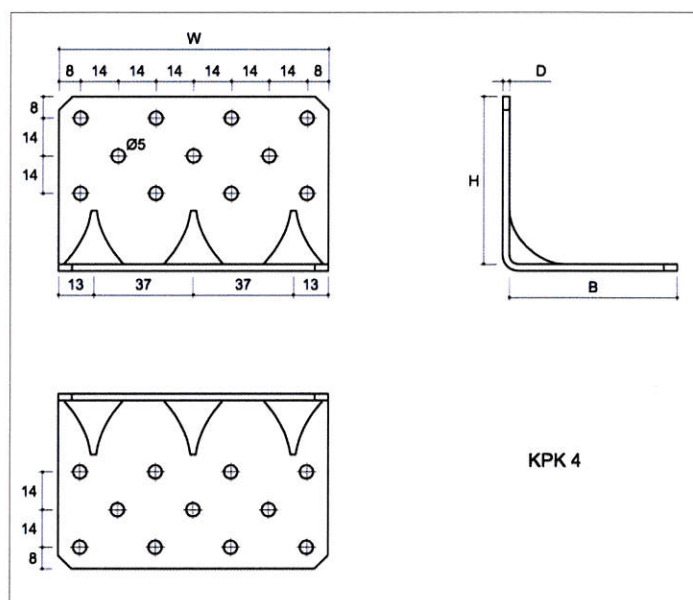


Figure 25 Type KPK 4

Table 13 KPK three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions, mm |    |    |     | Quantity of openings |      |
|--------|----------------|----|----|-----|----------------------|------|
|        | W              | H  | B  | D   | Ø 5                  | Ø 11 |
| KPK 31 | 65             | 93 | 63 | 2.5 | 9                    | -    |
| KPK 32 | 65             | 93 | 63 | 2.5 | 9                    | 1    |
| KPK 33 | 65             | 93 | 63 | 2.5 | 9                    | -    |
| KPK 4  | 100            | 63 | 63 | 2.5 | 22                   | -    |

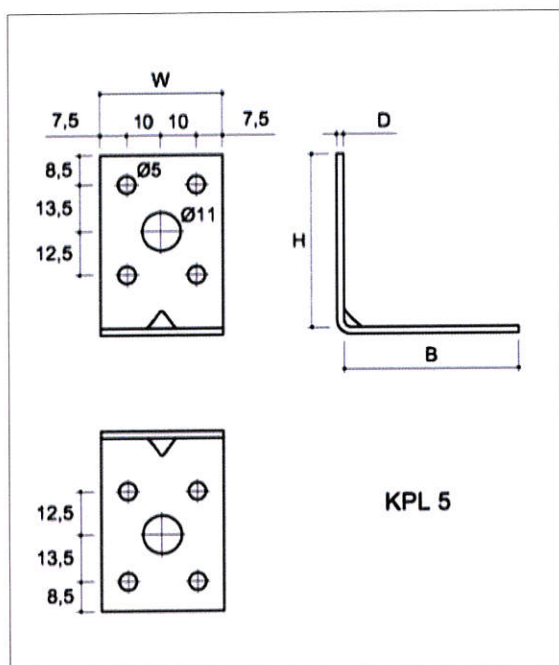


Figure 26 Type KPL 5

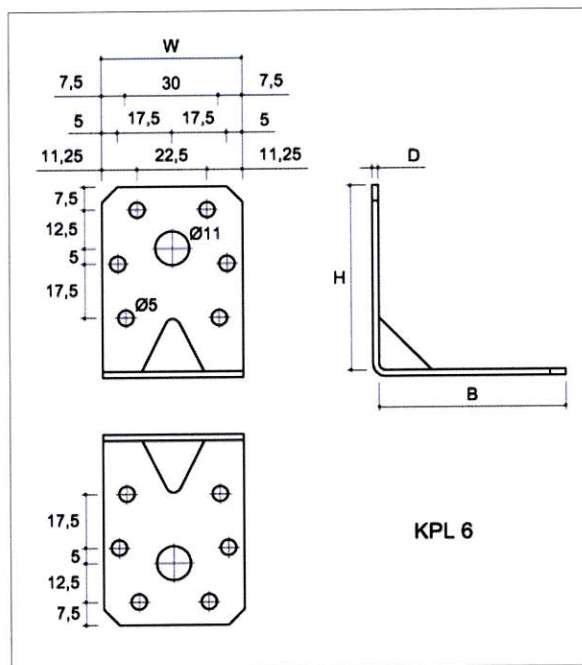


Figure 27 Type KPL 6

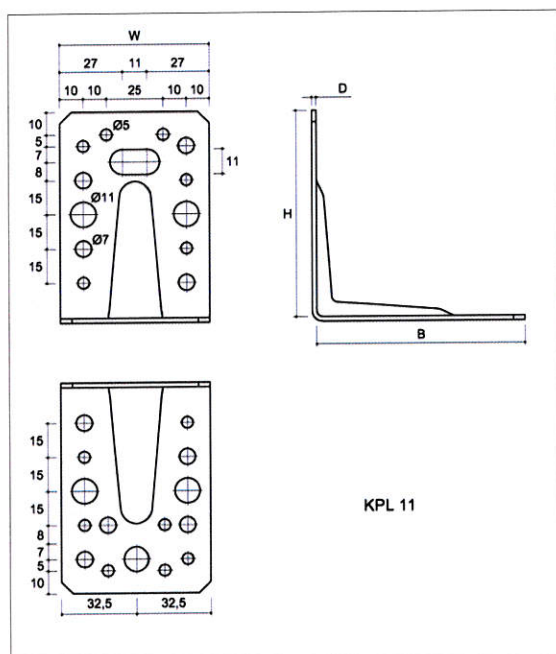


Figure 28 Type KPL 11

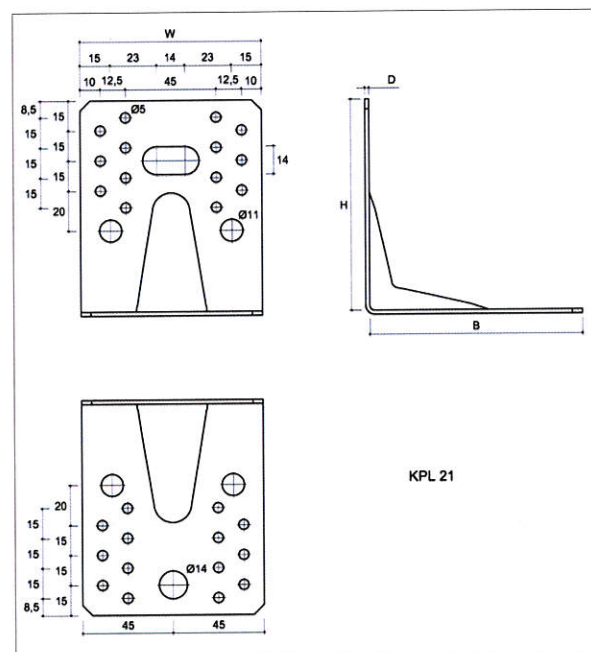


Figure 29 Type KPL 21

Table 14 KPL three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions, mm |     |     |   | Quantity of openings |     |      |      |
|--------|----------------|-----|-----|---|----------------------|-----|------|------|
|        | W              | H   | B   | D | Ø 5                  | Ø 7 | Ø 11 | Ø 14 |
| KPL 5  | 35             | 50  | 50  | 2 | 8                    | -   | 2    | -    |
| KPL 6  | 45             | 60  | 60  | 2 | 12                   | -   | 2    | -    |
| KPL 11 | 65             | 90  | 90  | 2 | 13                   | 9   | 5    | -    |
| KPL 21 | 90             | 105 | 105 | 2 | 28                   | -   | 4    | 1    |



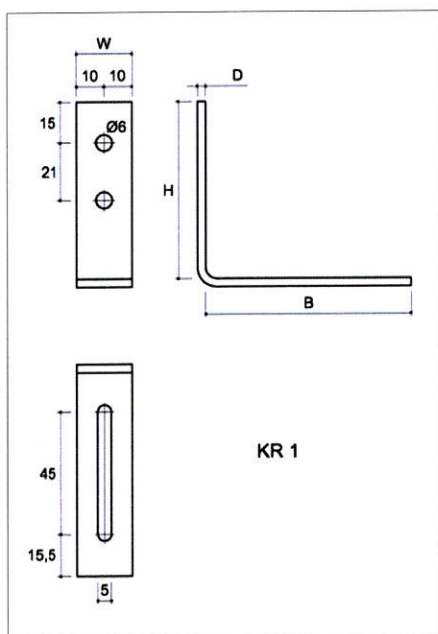


Figure 30 Type KR 1

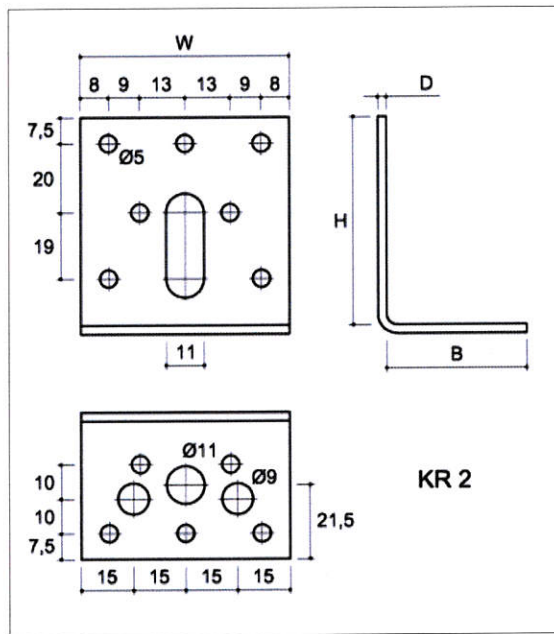


Figure 31 Type KR 2

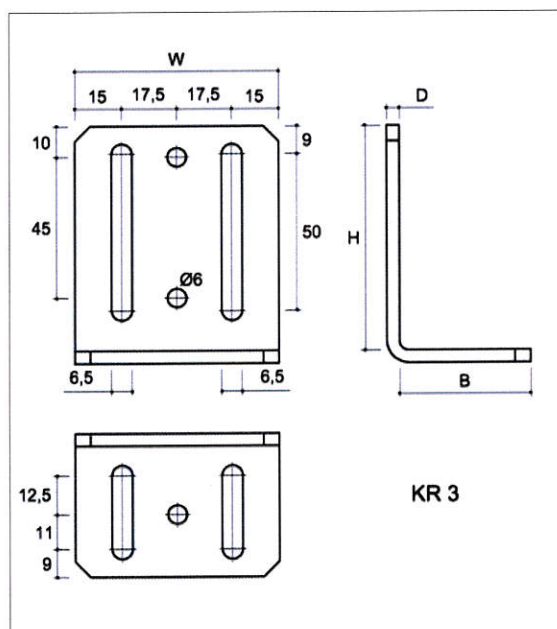


Figure 32 Type KR 3

Table 15 KR three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions, mm |    |    |     | Quantity of openings |     |     |      |
|--------|----------------|----|----|-----|----------------------|-----|-----|------|
|        | W              | H  | B  | D   | Ø 5                  | Ø 6 | Ø 9 | Ø 11 |
| KR 1   | 20             | 65 | 75 | 3   | -                    | 2   | -   | -    |
| KR 2   | 60             | 60 | 40 | 2.5 | 12                   | -   | 2   | 1    |
| KR 3   | 65             | 72 | 42 | 4   | -                    | 3   | -   | -    |



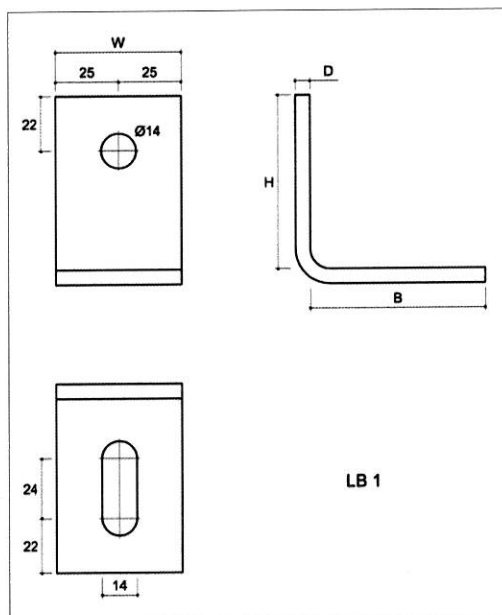


Figure 33 Type LB 1

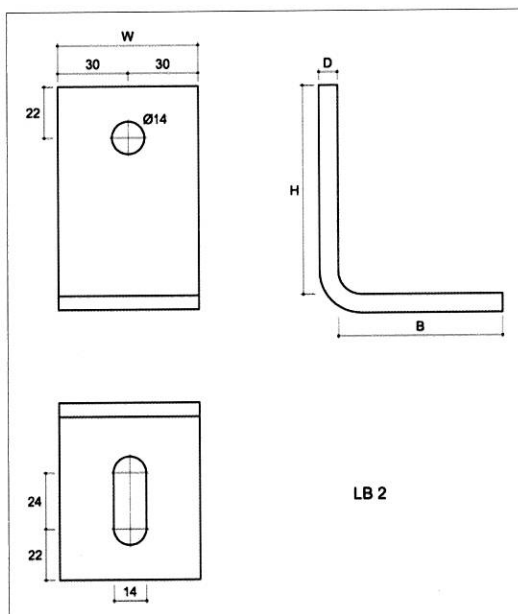


Figure 34 Type LB 2

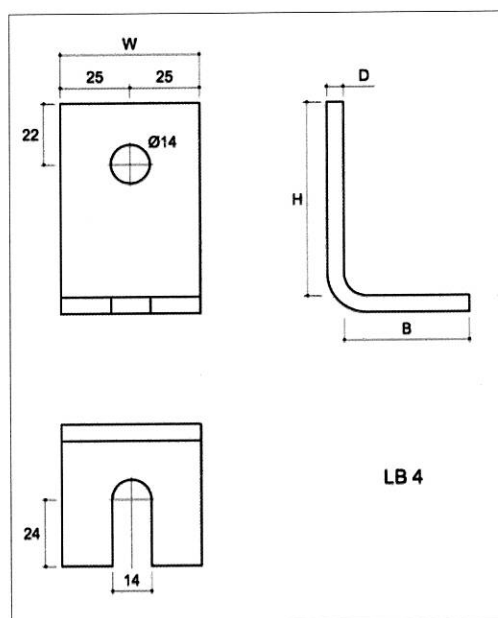
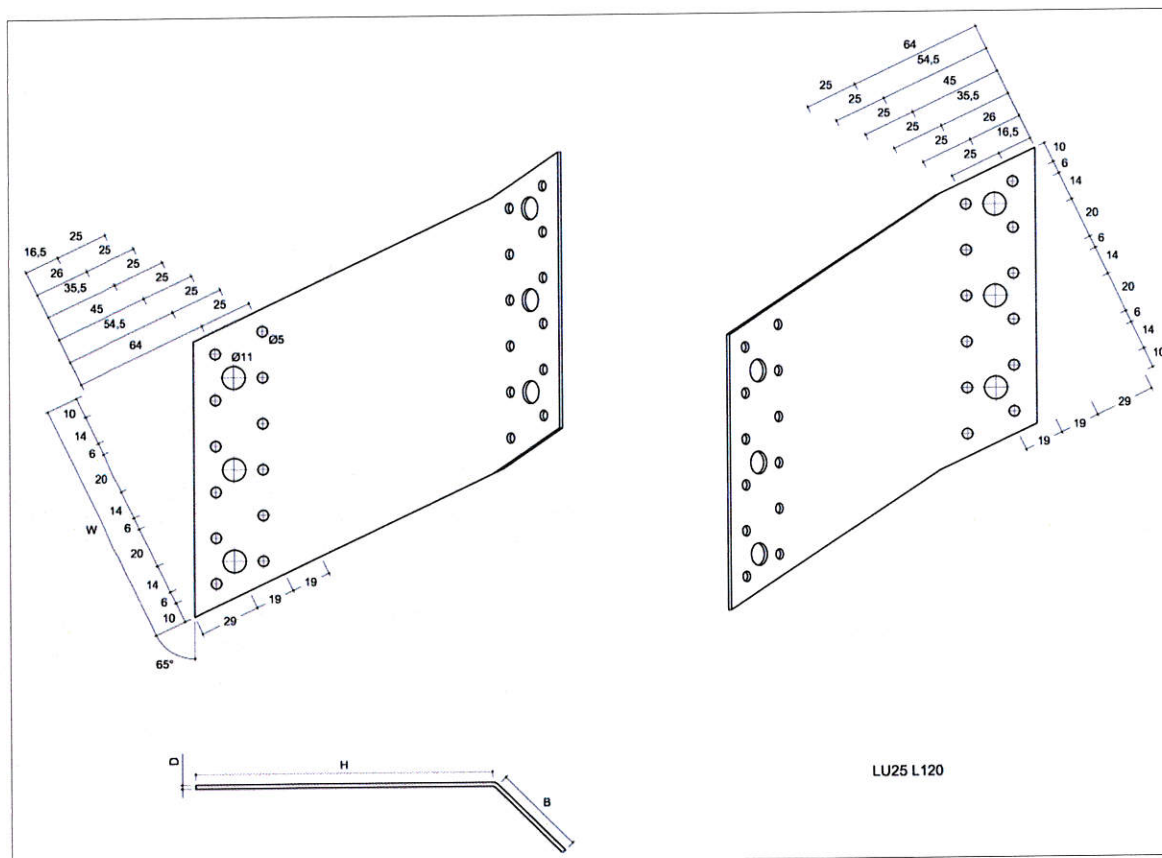


Figure 35 Type LB 4

Table 16 LB three-dimensional nailing plate symbols and dimensions

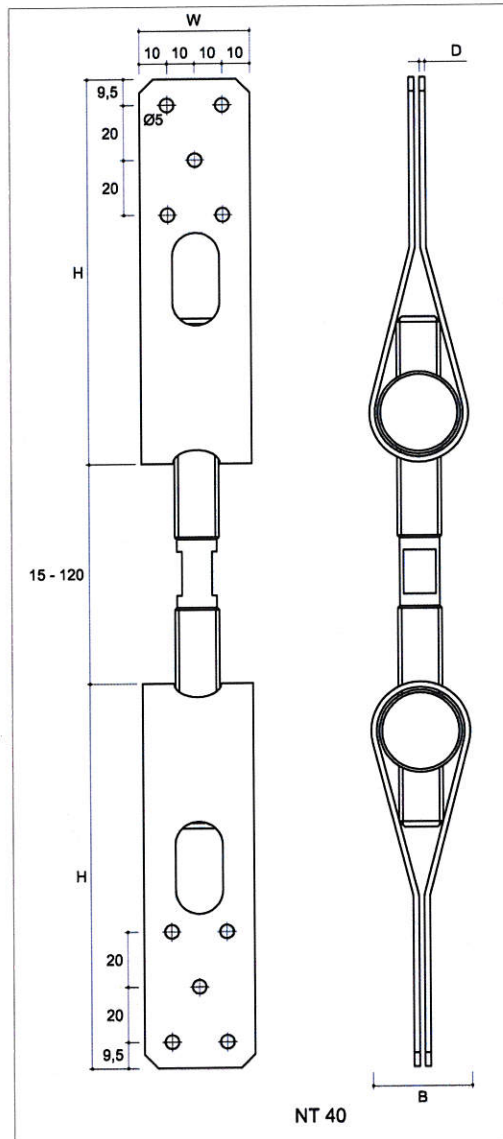
| Symbol | Dimensions, mm |    |    |   | Quantity of openings |
|--------|----------------|----|----|---|----------------------|
|        | W              | H  | B  | D | Ø 14                 |
| LB 1   | 50             | 70 | 70 | 6 | 1                    |
| LB 2   | 60             | 90 | 70 | 8 | 1                    |
| LB 4   | 50             | 70 | 45 | 6 | 1                    |



**Figure 36** Type LU25 L120

**Table 17** LU25 three-dimensional nailing plate symbols and dimensions

| Symbol    | Dimensions, mm |     |    |   | Quantity of openings |      |
|-----------|----------------|-----|----|---|----------------------|------|
|           | W              | H   | B  | D | ø 5                  | ø 11 |
| LU25 L80  | 80             | 142 | 45 | 2 | 16                   | 4    |
| LU25 R80  | 80             | 142 | 45 | 2 | 16                   | 4    |
| LU25 L120 | 120            | 142 | 45 | 2 | 24                   | 6    |
| LU25 R120 | 120            | 142 | 45 | 2 | 24                   | 6    |



**Figure 37** Type NT 40

**Table 18** NT three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions, mm |     |    |     | Quantity of openings |
|--------|----------------|-----|----|-----|----------------------|
|        | W              | H   | B  | D   | ø 5                  |
| NT 25  | 30             | 137 | 25 | 1.5 | 12                   |
| NT 40  | 40             | 140 | 36 | 2   | 10                   |
| NT 60  | 60             | 140 | 36 | 2   | 14                   |

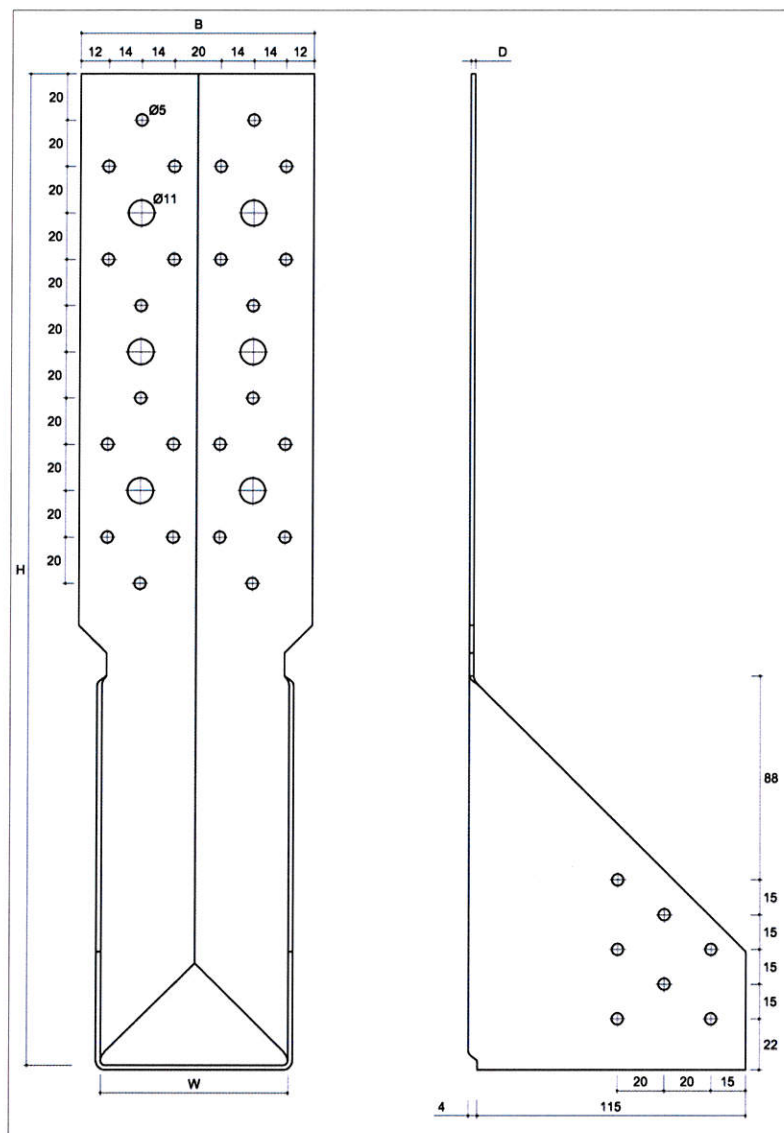
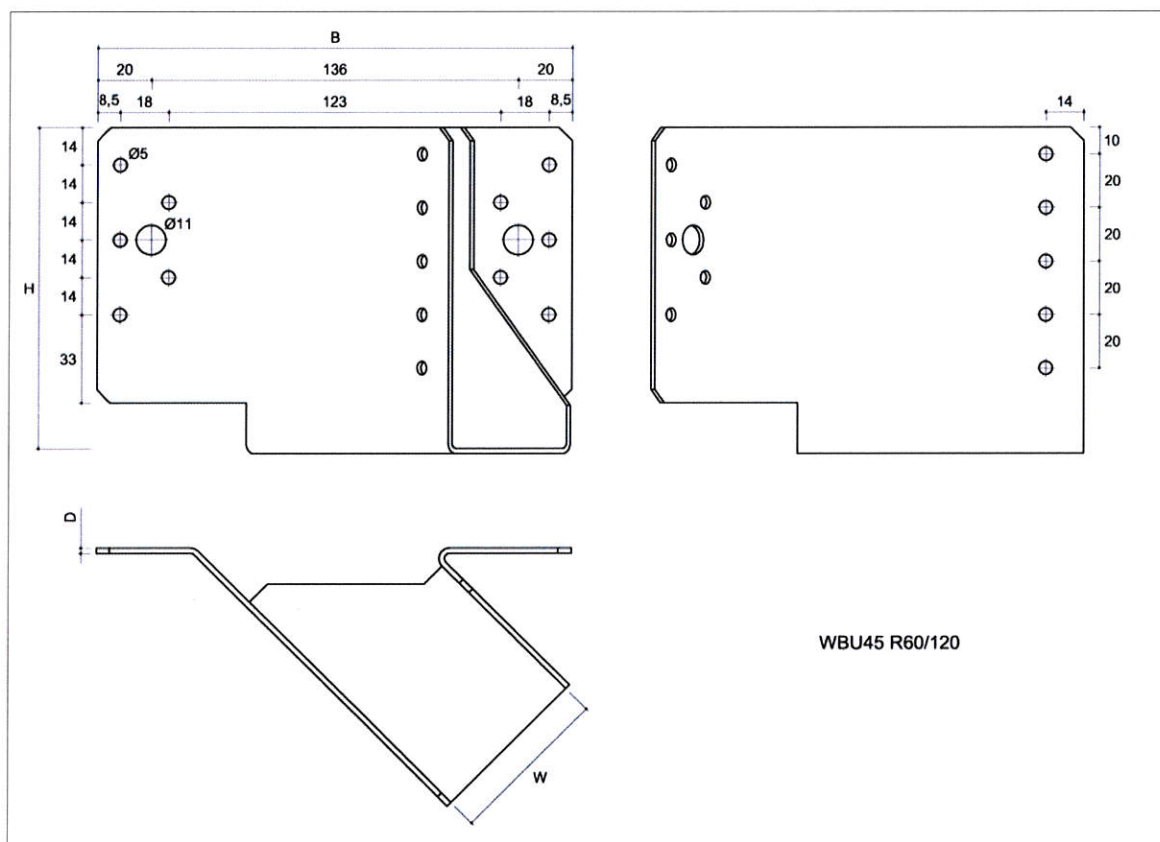


Figure 38 Type WBC 80

Table 19 WBC three-dimensional nailing plate symbols and dimensions

| Symbol  | Dimensions, mm |     |     |   | Quantity of openings |      |
|---------|----------------|-----|-----|---|----------------------|------|
|         | W              | H   | B   | D | Ø 5                  | Ø 11 |
| WBC 80  | 80             | 428 | 100 | 2 | 38                   | 6    |
| WBC 92  | 92             | 443 | 114 | 2 | 42                   | 8    |
| WBC 100 | 100            | 443 | 120 | 2 | 42                   | 8    |
| WBC 120 | 120            | 505 | 148 | 2 | 48                   | 10   |
| WBC 137 | 137            | 515 | 160 | 2 | 52                   | 12   |

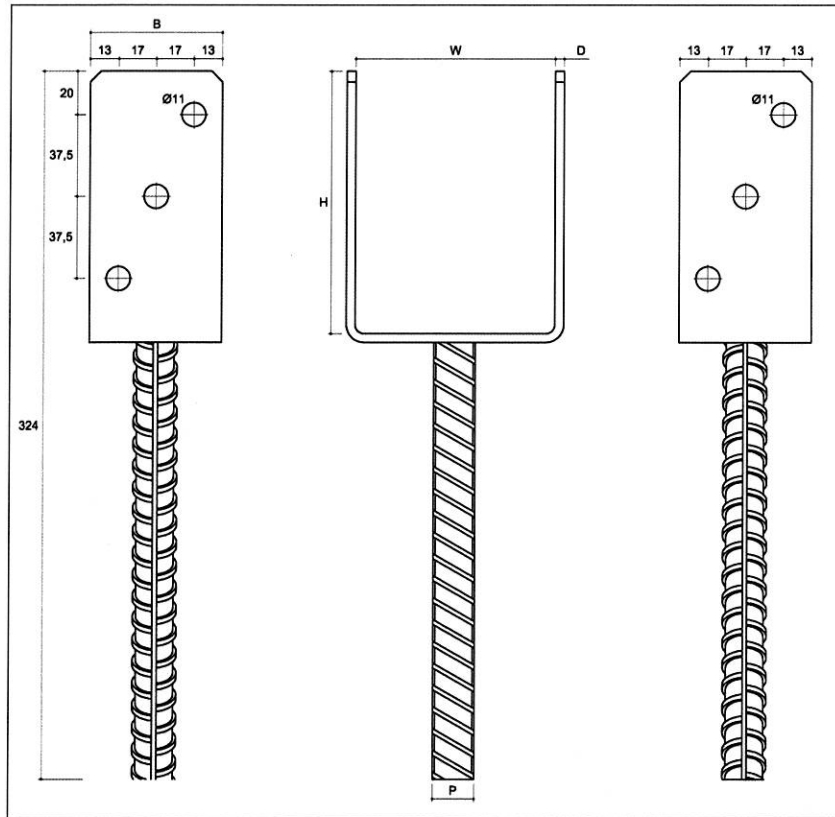


**Figure 39** Type WBU 45 R60/120

**Table 20** WBU 45 three-dimensional nailing plate symbols and dimensions

| Symbol                         | Dimensions, mm |     |     |   | Quantity of openings |                  |
|--------------------------------|----------------|-----|-----|---|----------------------|------------------|
|                                | W              | H   | B   | D | $\varnothing 5$      | $\varnothing 11$ |
| WBU45 R45/105<br>WBU45 L45/105 | 45             | 105 | 155 | 2 | 12                   | 2                |
| WBU45 R50/105<br>WBU45 L50/105 | 50             | 105 | 162 | 2 | 12                   | 2                |
| WBU45 R60/120<br>WBU45 L60/120 | 60             | 120 | 176 | 2 | 15                   | 2                |





**Figure 40** Type PS 90

**Table 21** PS three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions, mm |     |    |   |      | Quantity of openings |
|--------|----------------|-----|----|---|------|----------------------|
|        | W              | H   | B  | D | P    | Ø 11                 |
| PS 60  | 61             | 120 | 60 | 4 | Ø 16 | 6                    |
| PS 70  | 71             | 120 | 60 | 4 | Ø 16 | 6                    |
| PS 80  | 81             | 120 | 60 | 4 | Ø 18 | 6                    |
| PS 90  | 91             | 120 | 60 | 4 | Ø 18 | 6                    |
| PS 100 | 101            | 120 | 60 | 4 | Ø 18 | 6                    |
| PS 120 | 121            | 120 | 60 | 4 | Ø 18 | 6                    |
| PS 140 | 141            | 120 | 60 | 4 | Ø 18 | 6                    |

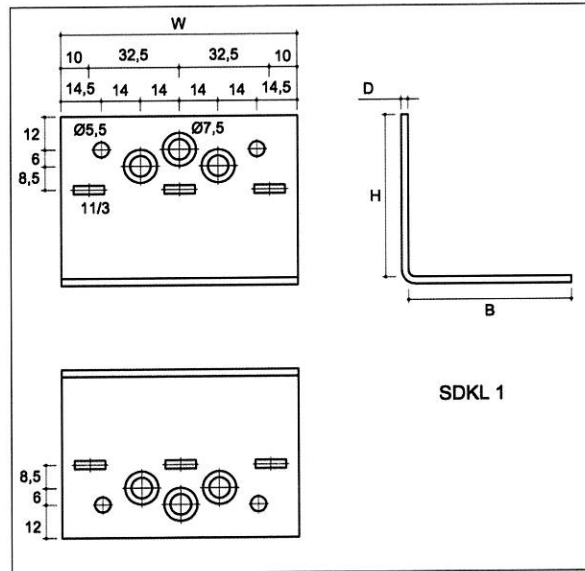


Figure 41 Type SDKL 1

Table 22 SDKL three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions, mm |    |    |     | Quantity of openings |       |      |
|--------|----------------|----|----|-----|----------------------|-------|------|
|        | W              | H  | B  | D   | Ø 5.5                | Ø 7.5 | 11/3 |
| SDKL 1 | 85             | 58 | 58 | 2,5 | 4                    | 6     | 6    |

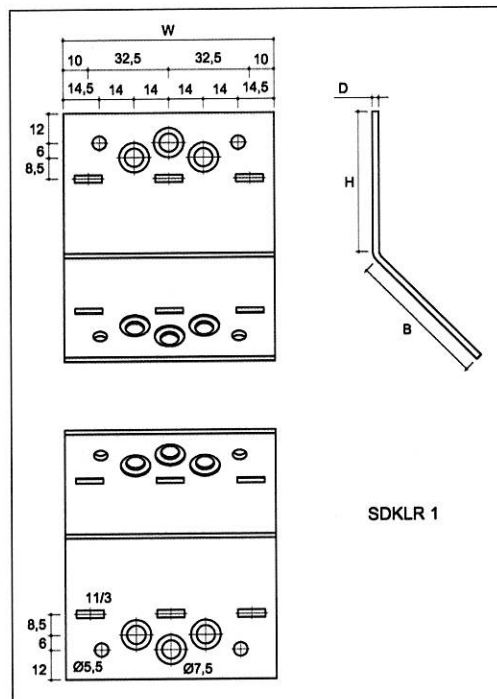


Figure 42 Type SDKLR 1

Table 23 SDKLR three-dimensional nailing plate symbols and dimensions

| Symbol  | Dimensions, mm |    |    |     | Quantity of openings |       |      |
|---------|----------------|----|----|-----|----------------------|-------|------|
|         | W              | H  | B  | D   | Ø 5.5                | Ø 7.5 | 11/3 |
| SDKLR 1 | 85             | 57 | 57 | 2,5 | 4                    | 6     | 6    |

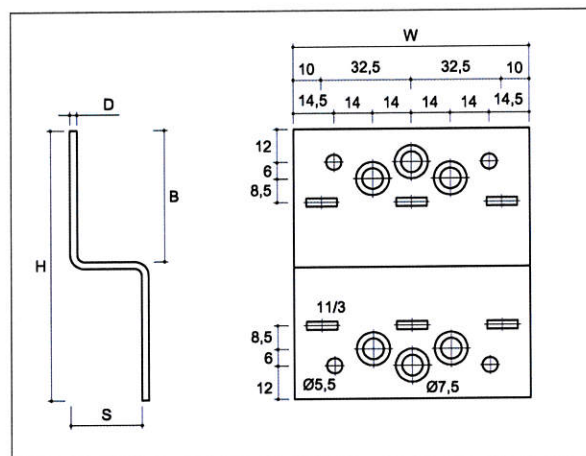


Figure 43 Type SDLZ 1

Table 24 SDLZ 1 three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions, mm |      |    |    |     | Quantity of openings |       |      |
|--------|----------------|------|----|----|-----|----------------------|-------|------|
|        | W              | H    | B  | S  | D   | Ø 5.5                | Ø 7.5 | 11/3 |
| SDLZ 1 | 85             | 96,5 | 47 | 24 | 2,5 | 4                    | 6     | 6    |

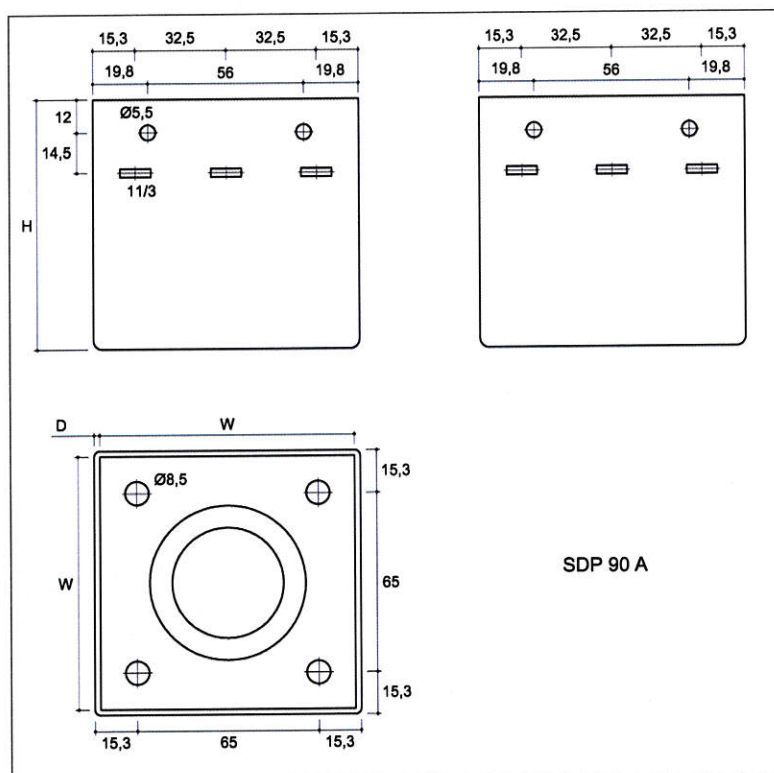


Figure 44 Type SDP 90 A

Table 25 SDP 90 A three-dimensional nailing plate symbols and dimensions

| Symbol    | Dimensions, mm |    |   | Quantity of openings |       |      |
|-----------|----------------|----|---|----------------------|-------|------|
|           | W              | H  | D | Ø 5.5                | Ø 8.5 | 11/3 |
| SDP 90 A  | 91             | 90 | 2 | 8                    | 4     | 12   |
| SDP 100 A | 101            | 90 | 2 | 8                    | 4     | 12   |
| SDP 120 A | 121            | 90 | 2 | 8                    | 4     | 12   |

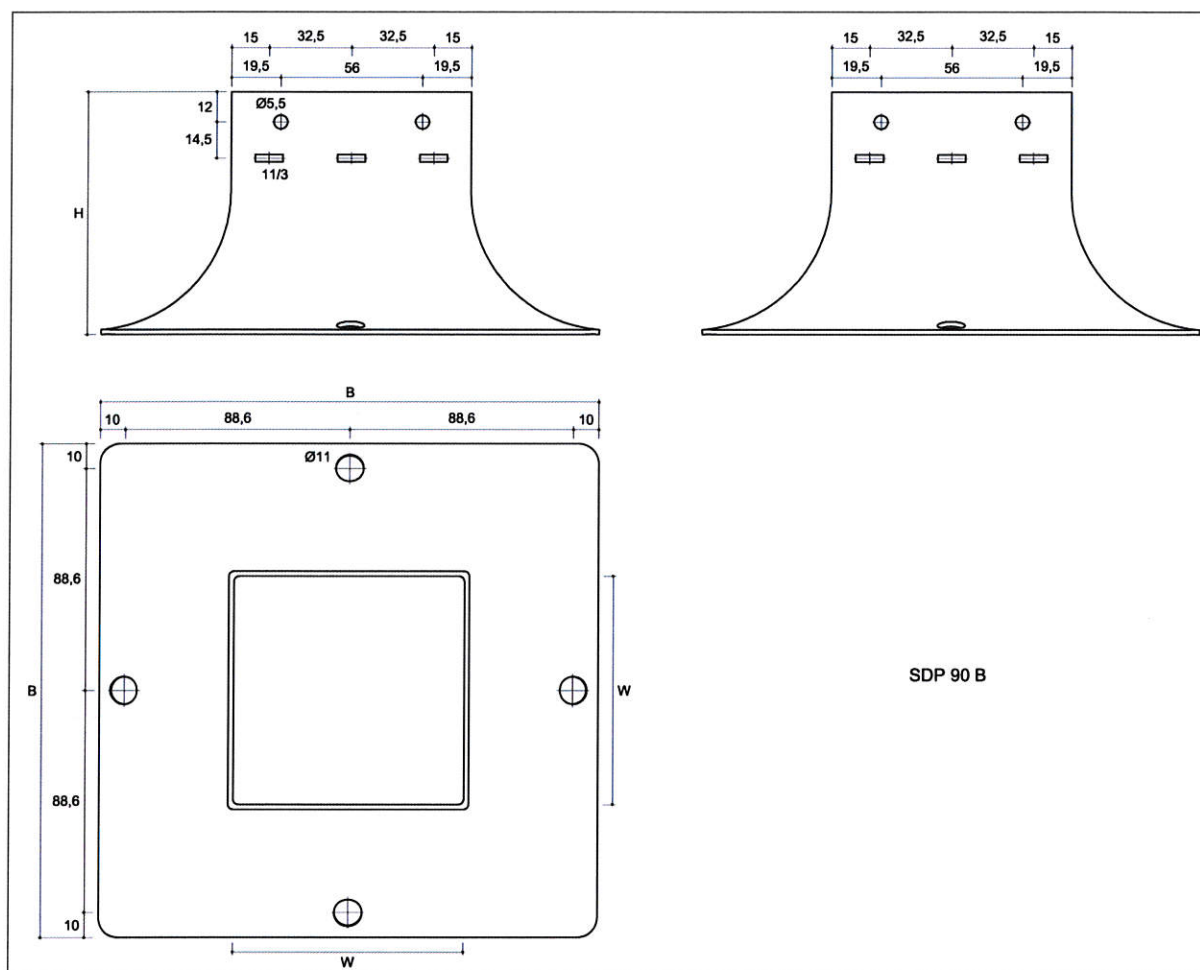


Figure 45 Type SDP 90 B

Table 26 SDP 90 B three-dimensional nailing plate symbols and dimensions

| Symbol    | Dimensions, mm |    |   |     | Quantity of openings |      |      |
|-----------|----------------|----|---|-----|----------------------|------|------|
|           | W              | H  | D | B   | Ø 5.5                | Ø 11 | 11/3 |
| SDP 90 B  | 91             | 97 | 2 | 197 | 8                    | 4    | 12   |
| SDP 100 B | 101            | 97 | 2 | 207 | 8                    | 4    | 12   |
| SDP 120 B | 121            | 97 | 2 | 227 | 8                    | 4    | 12   |

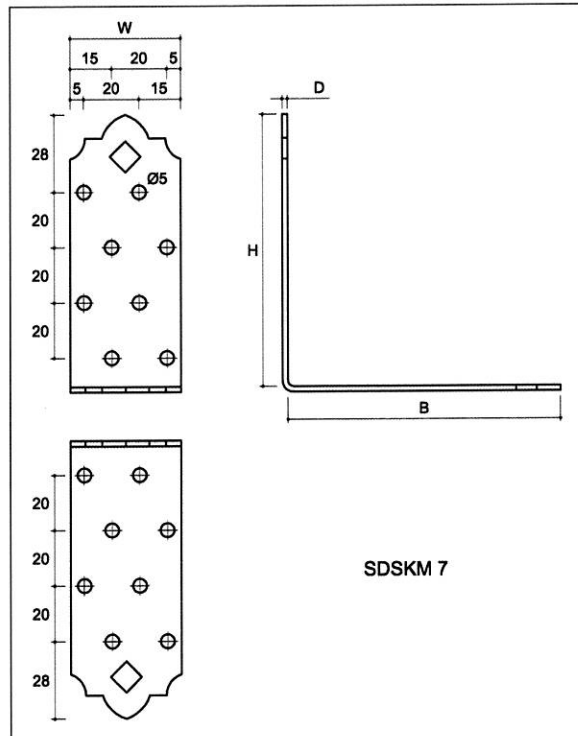


Figure 46 Type SDSKM 7

Table 27 SDSKM three-dimensional nailing plate symbols and dimensions

| Symbol  | Dimensions, mm |    |    |   | Quantity of openings |
|---------|----------------|----|----|---|----------------------|
|         | W              | H  | B  | D | ø 5                  |
| SDSKM 7 | 40             | 98 | 98 | 2 | 16                   |



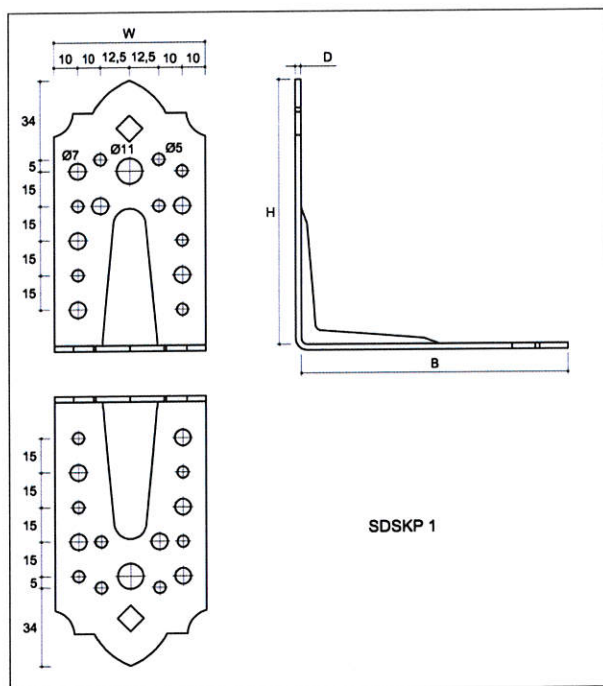


Figure 47 Type SDSKP 1

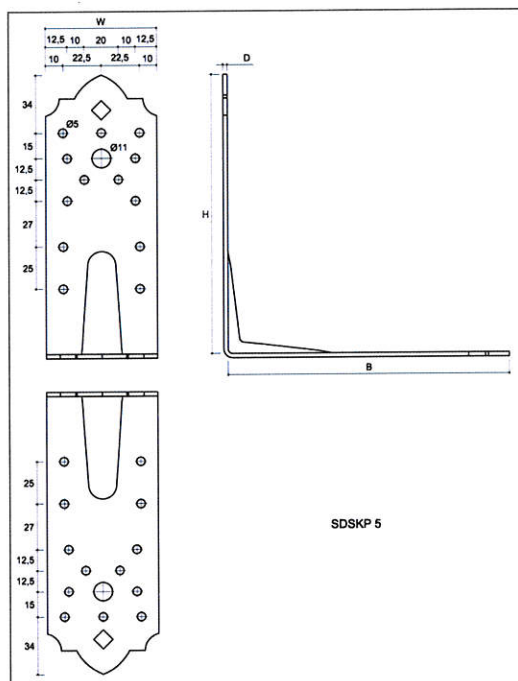


Figure 48 Type SDSKP 5

Table 28 SDSKP three-dimensional nailing plate symbols and dimensions

| Symbol  | Dimensions, mm |     |     |     | Quantity of openings |     |      |
|---------|----------------|-----|-----|-----|----------------------|-----|------|
|         | W              | H   | B   | D   | Ø 5                  | Ø 7 | Ø 11 |
| SDSKP 1 | 65             | 115 | 115 | 2,5 | 16                   | 12  | 2    |
| SDSKP 5 | 65             | 165 | 165 | 2,5 | 26                   | -   | 2    |

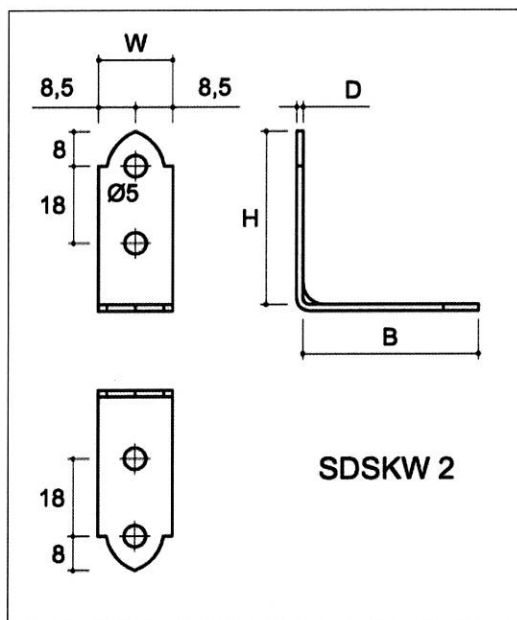


Figure 49 Type SDSKW 2

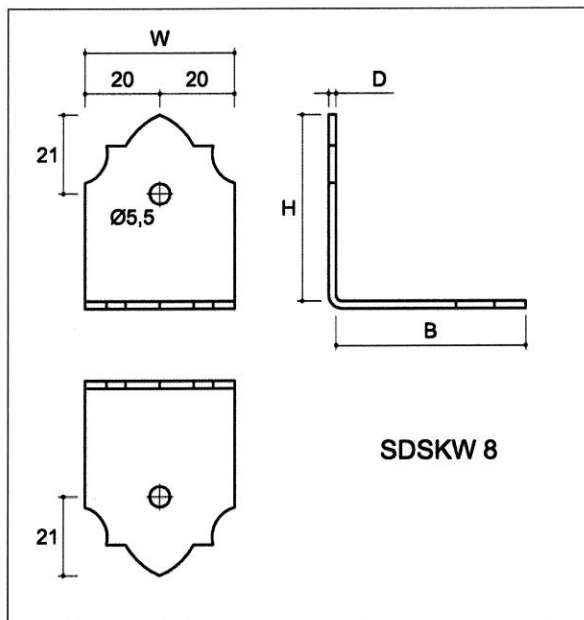
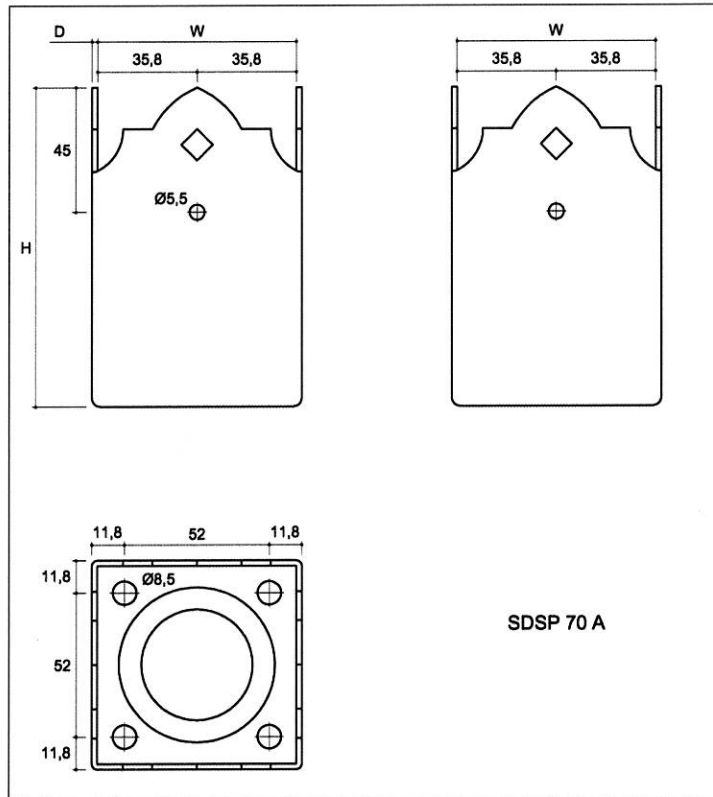


Figure 50 Type SDSKW 8

Table 29 SDSKW three-dimensional nailing plate symbols and dimensions

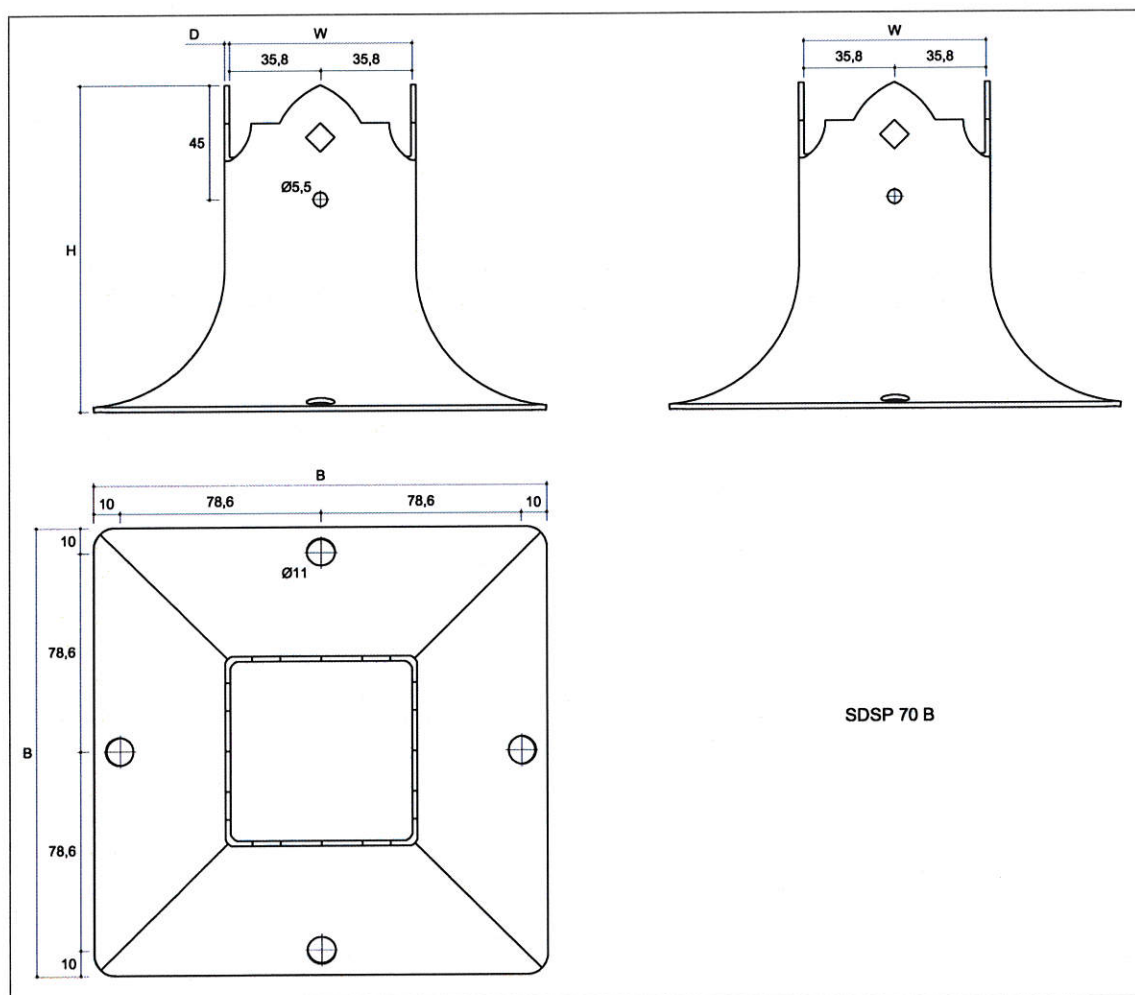
| Symbol  | Dimensions, mm |    |    |     | Quantity of openings |       |
|---------|----------------|----|----|-----|----------------------|-------|
|         | W              | H  | B  | D   | ø 5                  | ø 5.5 |
| SDSKW 2 | 17             | 40 | 40 | 1,5 | 4                    | -     |
| SDSKW 8 | 40             | 50 | 50 | 2   | -                    | 2     |



**Figure 51** Type SDSP 70 A

**Table 30** SDSP three-dimensional nailing plate symbols and dimensions

| Symbol    | Dimensions, mm |     |   | Quantity of openings |       |
|-----------|----------------|-----|---|----------------------|-------|
|           | W              | H   | D | ø 5.5                | ø 8.5 |
| SDSP 70 A | 71             | 115 | 2 | 4                    | 4     |



**Figure 52** Type SDSP 70B

**Table 31** SDSP three-dimensional nailing plate symbols and dimensions

| Symbol    | Dimensions, mm |     |   |     | Quantity of openings |      |
|-----------|----------------|-----|---|-----|----------------------|------|
|           | W              | H   | D | B   | Ø 5.5                | Ø 11 |
| SDSP 70 B | 71             | 129 | 2 | 177 | 4                    | 4    |

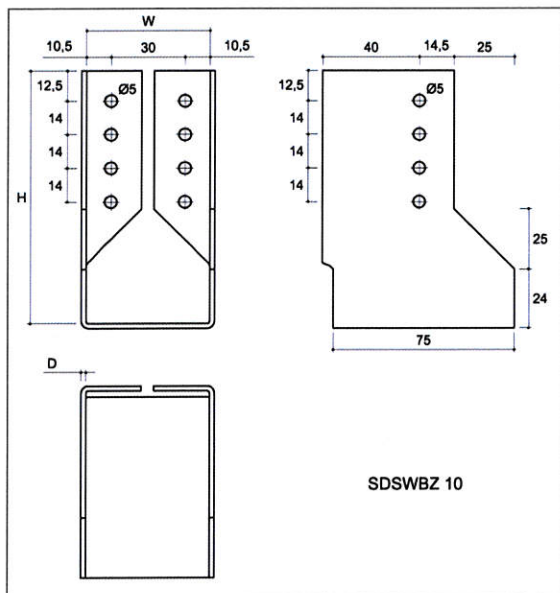


Figure 53 Type SDSWBZ 10

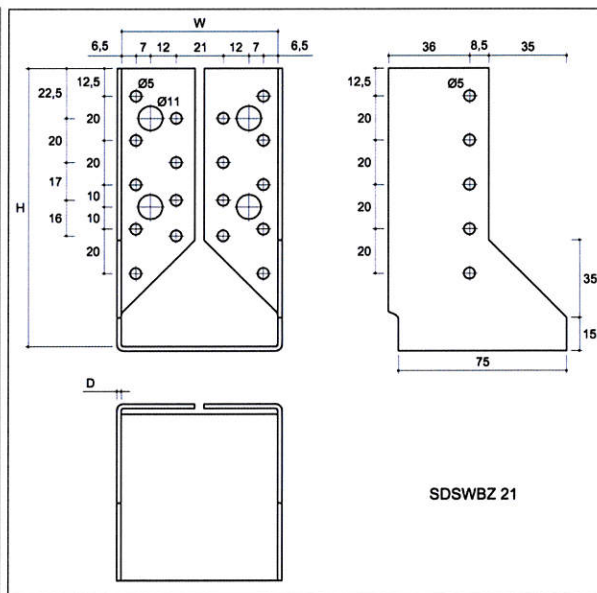


Figure 54 Type SDSWBZ 21

Table 32 SDSWBZ three-dimensional nailing plate symbols and dimensions

| Symbol    | Dimensions, mm |     |   | Quantity of openings |      |
|-----------|----------------|-----|---|----------------------|------|
|           | W              | H   | D | Ø 5                  | Ø 11 |
| SDSWBZ 10 | 51             | 105 | 2 | 16                   | -    |
| SDSWBZ 11 | 51             | 135 | 2 | 24                   | -    |
| SDSWBZ 14 | 60             | 100 | 2 | 16                   | -    |
| SDSWBZ 21 | 70             | 125 | 2 | 28                   | 4    |
| SDSWBZ 26 | 80             | 120 | 2 | 28                   | 4    |
| SDSWBZ 30 | 100            | 140 | 2 | 34                   | 4    |



## MASKING ELEMENTS

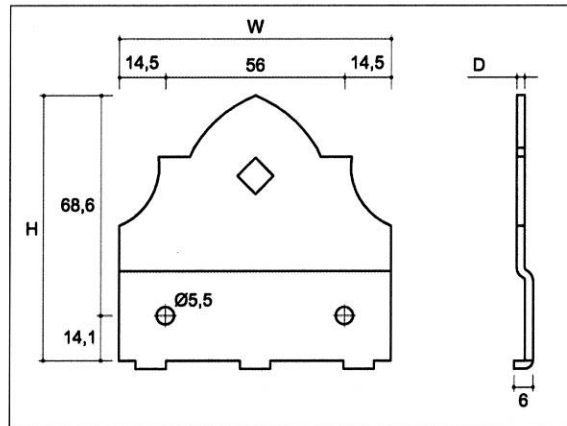


Figure 55 Type SDD 85 A

Table 33 SDD masking elements symbols and dimensions

| Symbol   | Dimensions, mm |    |     | Quantity of openings |
|----------|----------------|----|-----|----------------------|
|          | W              | H  | D   | Ø 5.5                |
| SDD 85 A | 85             | 83 | 2,5 | 2                    |
| SDD 85 B | 85             | 83 | 2,5 | 2                    |

## CONNECTION ELEMENTS

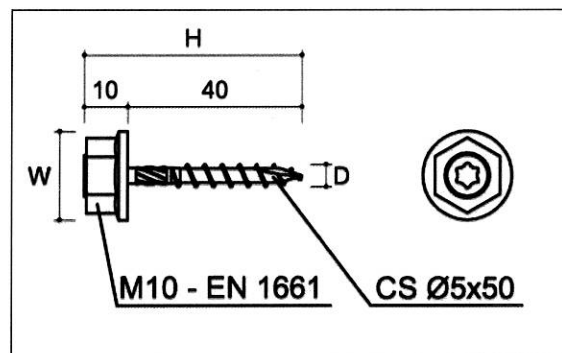
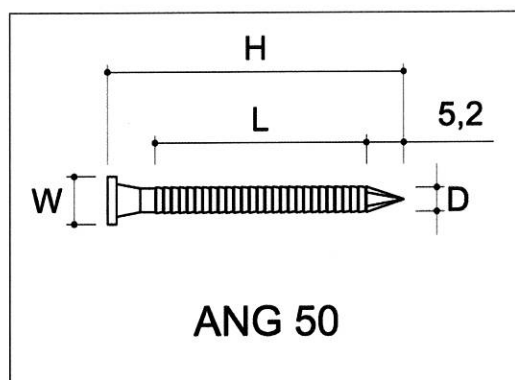


Figure 56 Type SDCS 50

Table 34 SDCS dowel type connector symbols and dimensions

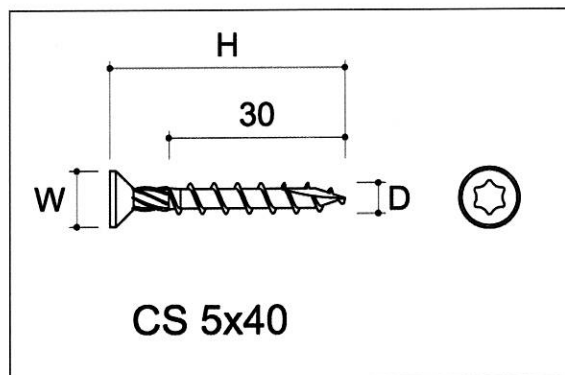
| Symbol  | Dimensions, mm |    |     |
|---------|----------------|----|-----|
|         | W              | H  | D   |
| SDCS 50 | 20.5           | 50 | 5.2 |



**Figure 57** Type ANG 50

**Table 35** Anchor dowel type connector symbols and dimensions

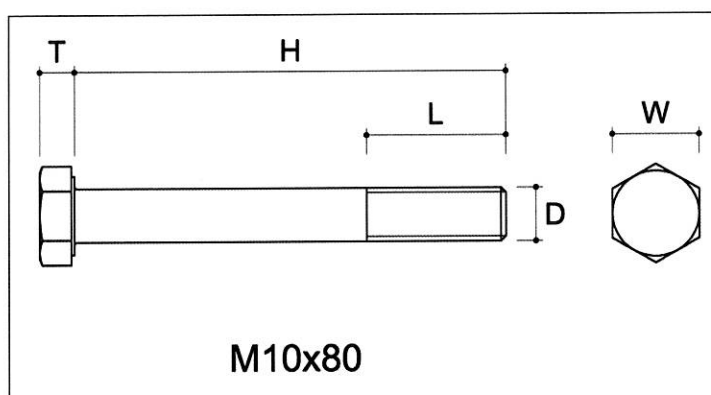
| Symbol | Dimensions, mm |    |      |   |
|--------|----------------|----|------|---|
|        | D              | H  | L    | W |
| ANG 40 | 4              | 40 | 26.8 | 8 |
| ANG 50 | 4              | 50 | 36.8 | 8 |



**Figure 58** Type CS 5x40

**Table 36** CS dowel type connector symbols and dimensions

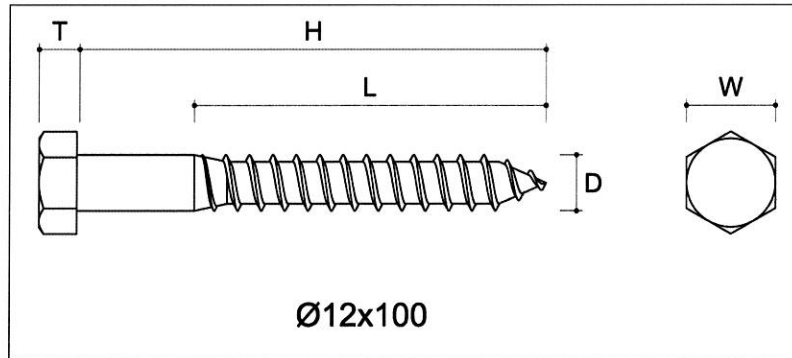
| Symbol  | Dimensions, mm |    |     |
|---------|----------------|----|-----|
|         | D              | H  | W   |
| CS 5x40 | 5              | 40 | 9.5 |
| CS 5x50 | 5              | 50 | 9.5 |



**Figure 59** Type M10x80

**Table 37** M bolt type connector symbols and dimensions

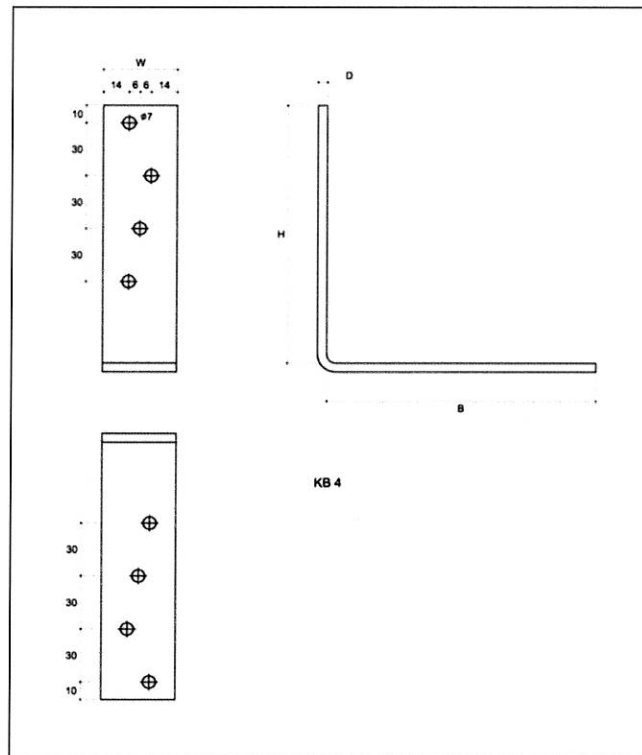
| Symbol | Dimensions, mm |    |    |    |     | Standard |
|--------|----------------|----|----|----|-----|----------|
|        | D              | H  | L  | W  | T   |          |
| M10x80 | M10            | 80 | 26 | 16 | 6.4 | ISO 4014 |



**Figure 60** Type Ø12x100

**Table 38** Ø12x100 type connector symbols and dimensions

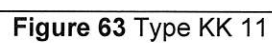
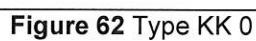
| Symbol  | Dimensions, mm |     |    |    |   | Standard |
|---------|----------------|-----|----|----|---|----------|
|         | D              | H   | L  | W  | T |          |
| Ø12x100 | 12             | 100 | 75 | 19 | 8 | DIN 571  |



**Figure 61** Type KB 4

**Table 39** KB three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions, mm |     |     |   | Quantity of openings |
|--------|----------------|-----|-----|---|----------------------|
|        | W              | H   | B   | D | ø7                   |
| KB 4   | 40             | 146 | 146 | 5 | 8                    |

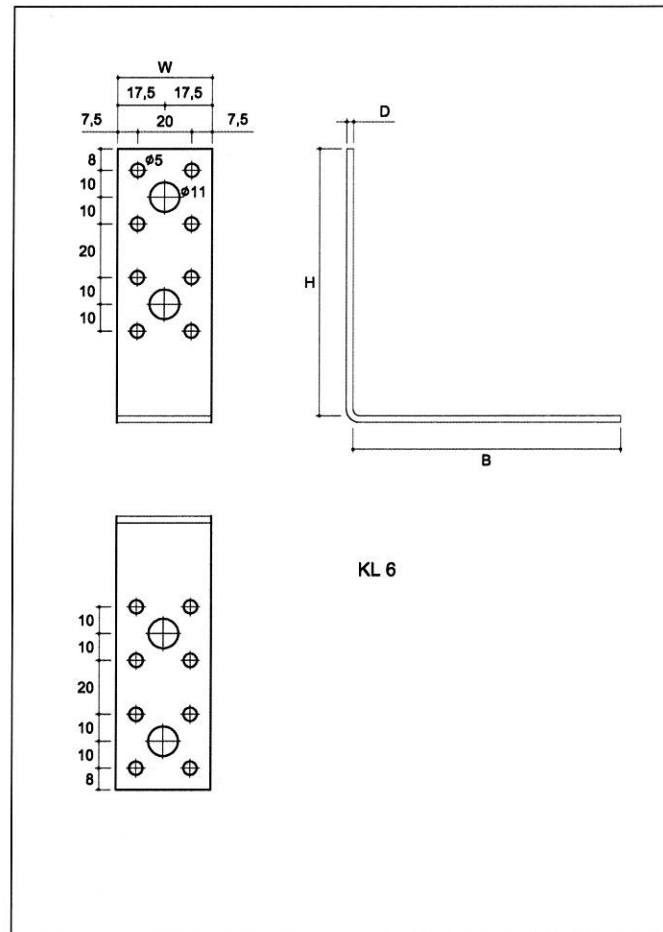


**Table 40** KK three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions, mm |     |    |   | Quantity of openings |     |
|--------|----------------|-----|----|---|----------------------|-----|
|        | W              | H   | B  | D | ø5                   | ø13 |
| KK 0   | 30             | 78  | 38 | 2 | 5                    | -   |
| KK 11  | 40             | 206 | 39 | 4 | 19                   | 1   |







**Figure 65** Type KL 6

**Table 42** KL three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions, mm |      |      |     | Quantity of openings |     |
|--------|----------------|------|------|-----|----------------------|-----|
|        | W              | H    | B    | D   | ø5                   | ø11 |
| KL 6   | 35             | 99.5 | 99.5 | 2.5 | 16                   | 4   |

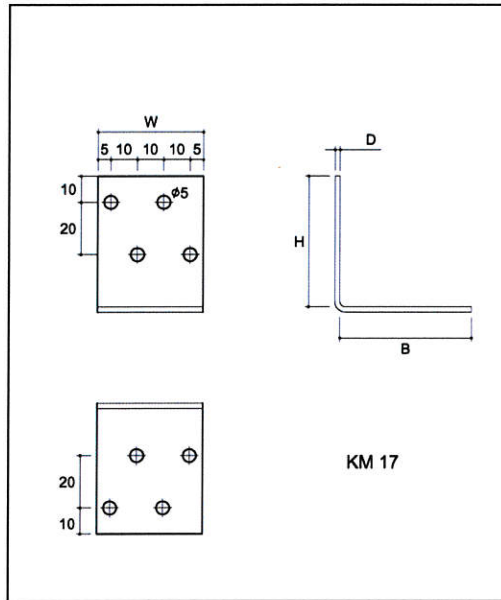


Figure 66 Type KM 17

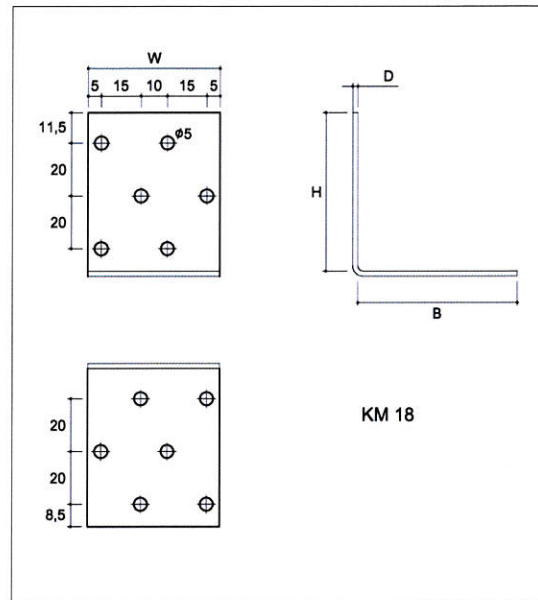


Figure 67 Type KM 18

Table 43 KM three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions, mm |    |    |   | Quantity of openings |  |
|--------|----------------|----|----|---|----------------------|--|
|        | W              | H  | B  | D | ø5                   |  |
| KM 17  | 40             | 50 | 50 | 2 | 8                    |  |
| KM 18  | 50             | 60 | 60 | 2 | 12                   |  |

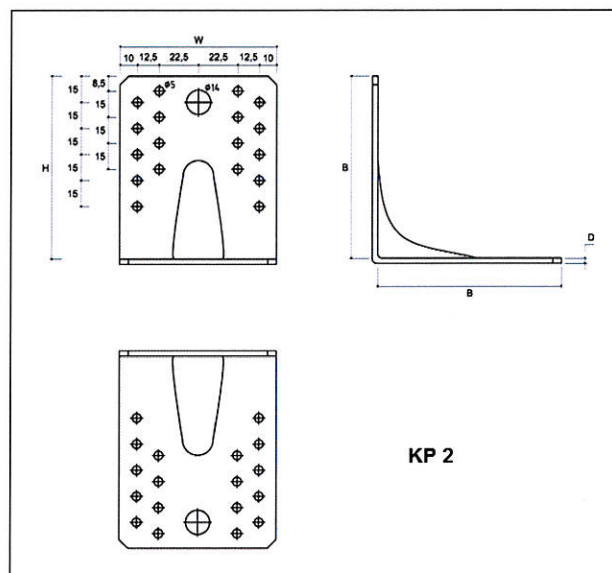


Figure 68 Type KP 2

Table 44 KP three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions, mm |       |       |   | Quantity of openings |     |
|--------|----------------|-------|-------|---|----------------------|-----|
|        | W              | H     | B     | D | ø5                   | ø14 |
| KP 2   | 90             | 105.5 | 105.5 | 3 | 36                   | 2   |

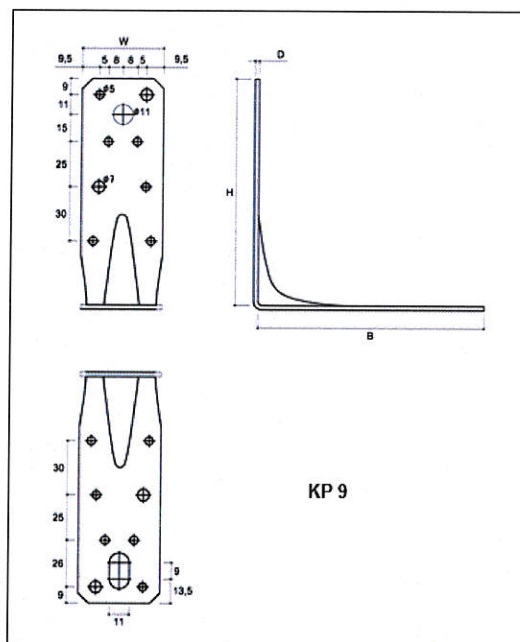


Figure 69 Type KP 9

Table 45 KP three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions, mm |     |     |     | Quantity of openings |    |     |
|--------|----------------|-----|-----|-----|----------------------|----|-----|
|        | W              | H   | B   | D   | ø5                   | ø7 | ø11 |
| KP 9   | 45             | 126 | 126 | 2.5 | 12                   | 4  | 1   |

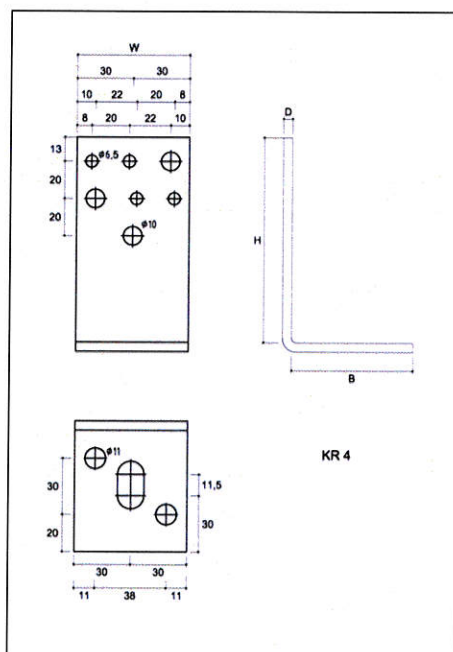
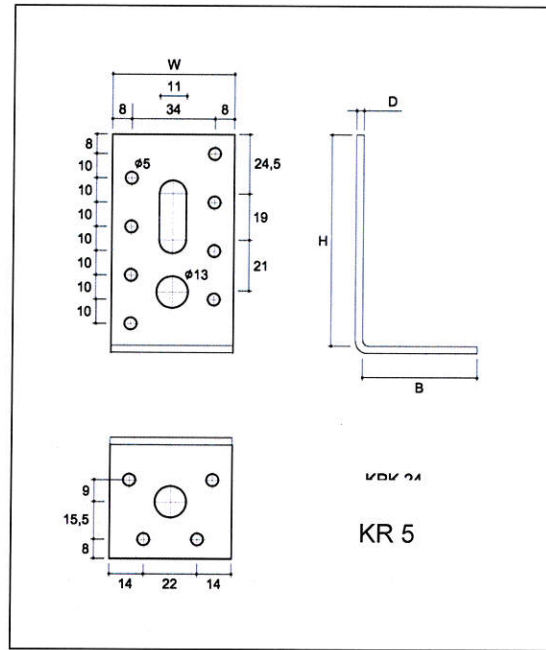


Figure 70 Type KR 4

Table 46 KR three-dimensional nailing plate symbols and dimensions

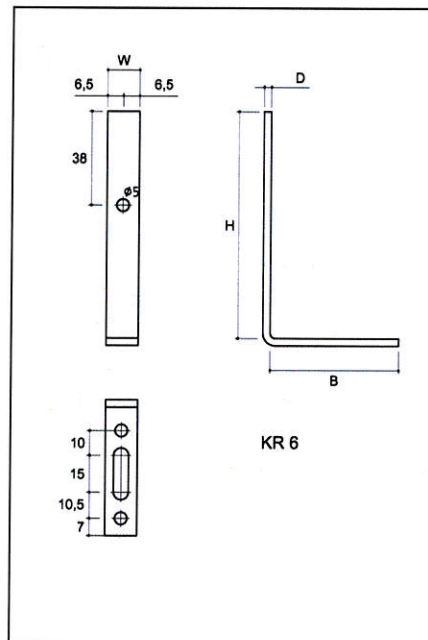
| Symbol | Dimensions, mm |     |    |   | Quantity of openings |     |     |
|--------|----------------|-----|----|---|----------------------|-----|-----|
|        | W              | H   | B  | D | ø6.5                 | ø10 | ø11 |
| KR 4   | 60             | 110 | 65 | 5 | 4                    | 3   | 2   |



**Figure 71** Type KR 5

**Table 47** KR three-dimensional nailing plate symbols and dimensions

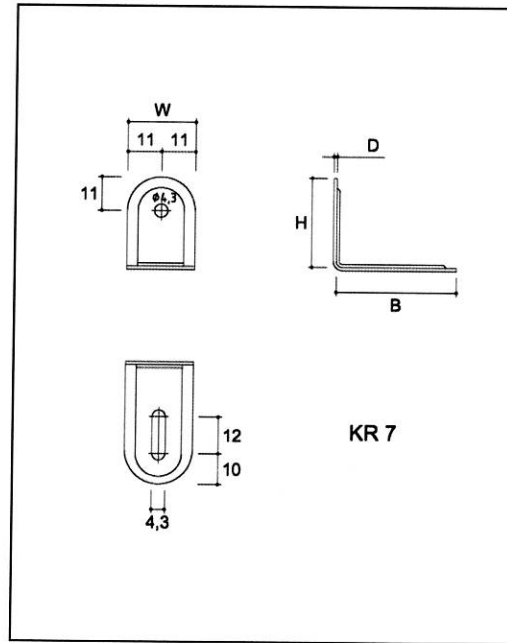
| Symbol | Dimensions, mm |    |    |   | Quantity of openings |     |
|--------|----------------|----|----|---|----------------------|-----|
|        | W              | H  | B  | D | ø5                   | ø13 |
| KR 5   | 50             | 87 | 47 | 3 | 12                   | 2   |



**Figure 72** Type KR 6

**Table 48** KR three-dimensional nailing plate symbols and dimensions

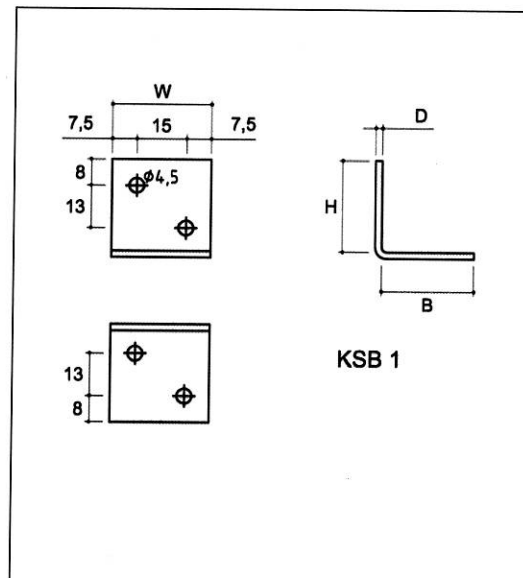
| Symbol | Dimensions, mm |    |    |   | Quantity of openings |  |
|--------|----------------|----|----|---|----------------------|--|
|        | W              | H  | B  | D | ø5                   |  |
| KR 6   | 13             | 92 | 52 | 3 | 3                    |  |



**Figure 73** Type KR 7, KRB 7

**Table 49** KR, KRB three-dimensional nailing plate symbols and dimensions

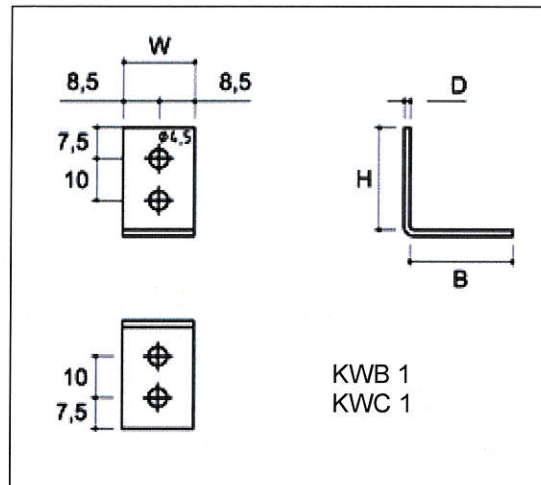
| Symbol | Dimensions, mm |    |    |   | Quantity of openings |
|--------|----------------|----|----|---|----------------------|
|        | W              | H  | B  | D | ø4.3                 |
| KR 7   | 22             | 29 | 39 | 1 | 1                    |
| KRB 7  | 22             | 29 | 39 | 1 | 1                    |



**Figure 74** Type KSB 1

**Table 50** KSB three-dimensional nailing plate symbols and dimensions

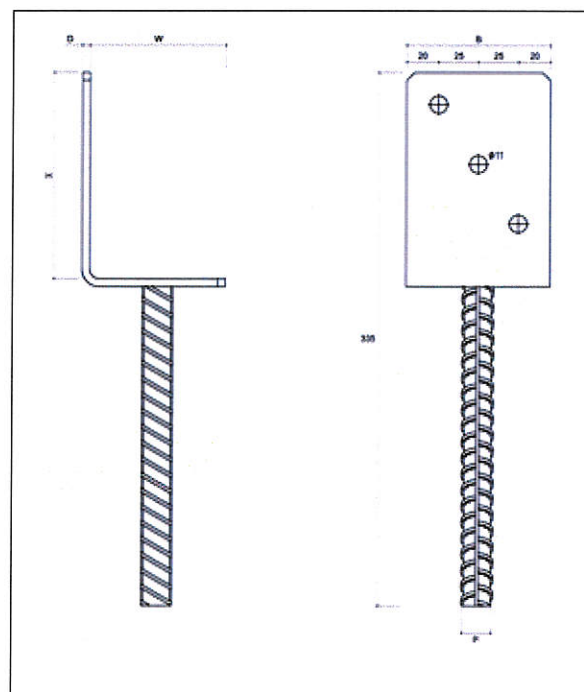
| Symbol | Dimensions, mm |    |    |   | Quantity of openings |
|--------|----------------|----|----|---|----------------------|
|        | W              | H  | B  | D | ø4,5                 |
| KSB 1  | 30             | 28 | 28 | 2 | 4                    |



**Figure 75** Type KWB 1, KWC 1

**Table 51** KWB, KWC three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions, mm |      |      |   | Quantity of openings |
|--------|----------------|------|------|---|----------------------|
|        | W              | H    | B    | D | ø4.5                 |
| KWB 1  | 17             | 24.5 | 24.5 | 2 | 4                    |
| KWC 1  | 17             | 24.5 | 24.5 | 2 | 4                    |

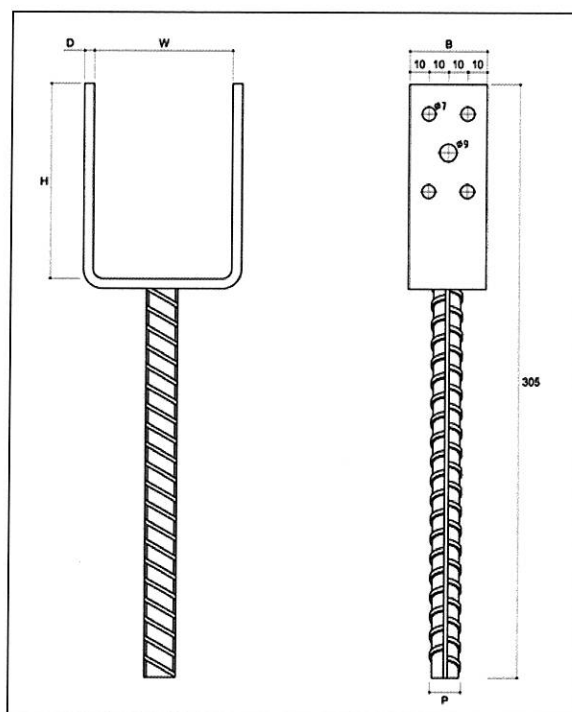


**Figure 76** Type PS 84L

**Table 52** PS 84 three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions, mm |     |    |   |     | Quantity of openings |
|--------|----------------|-----|----|---|-----|----------------------|
|        | W              | H   | B  | D | P   | ø11                  |
| PS 84L | 90             | 130 | 90 | 5 | ø18 | 3                    |

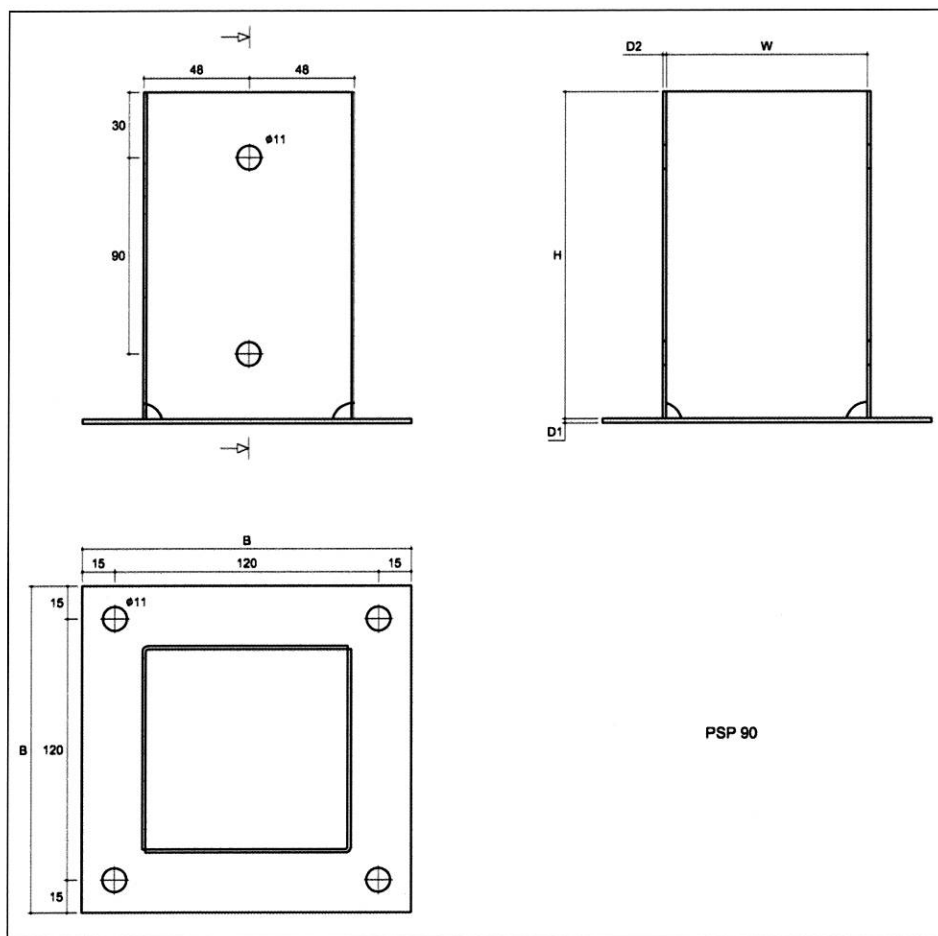




**Figure 77** Type PSL 70

**Table 53** PSL three-dimensional nailing plate symbols and dimensions

| Symbol  | Dimensions, mm |     |    |   |     | Quantity of openings |    |
|---------|----------------|-----|----|---|-----|----------------------|----|
|         | W              | H   | B  | D | P   | ø7                   | ø9 |
| PSL 50  | 51             | 100 | 40 | 5 | ø16 | 8                    | 2  |
| PSL 70  | 71             | 100 | 40 | 5 | ø16 | 8                    | 2  |
| PSL 90  | 91             | 100 | 40 | 5 | ø16 | 8                    | 2  |
| PSL 100 | 101            | 100 | 40 | 5 | ø16 | 8                    | 2  |



**Figure 78** Type PSP 90

**Table 54** PSP three-dimensional nailing plate symbols and dimensions

| Symbol  | Dimensions, mm |     |     |    |     | Quantity of openings |
|---------|----------------|-----|-----|----|-----|----------------------|
|         | W              | H   | B   | D1 | D2  | ø11                  |
| PSP 70  | 72             | 150 | 150 | 2  | 1.5 | 8                    |
| PSP 90  | 92             | 150 | 150 | 2  | 1.5 | 8                    |
| PSP 100 | 102            | 150 | 150 | 2  | 2   | 8                    |
| PSP 120 | 122            | 150 | 180 | 2  | 2   | 8                    |

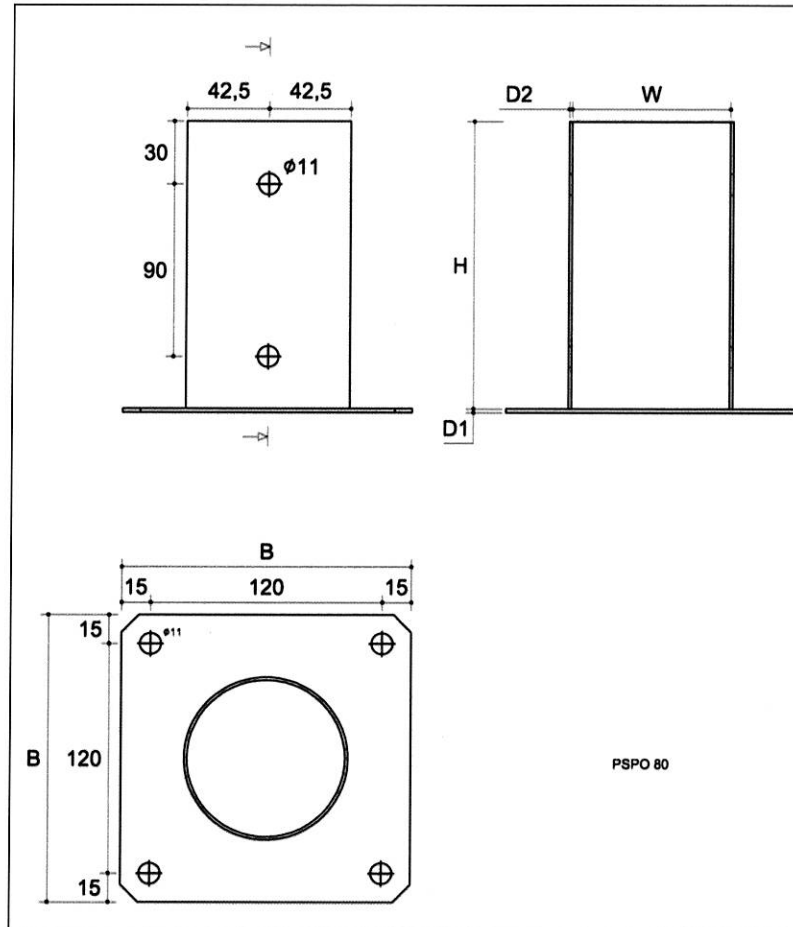
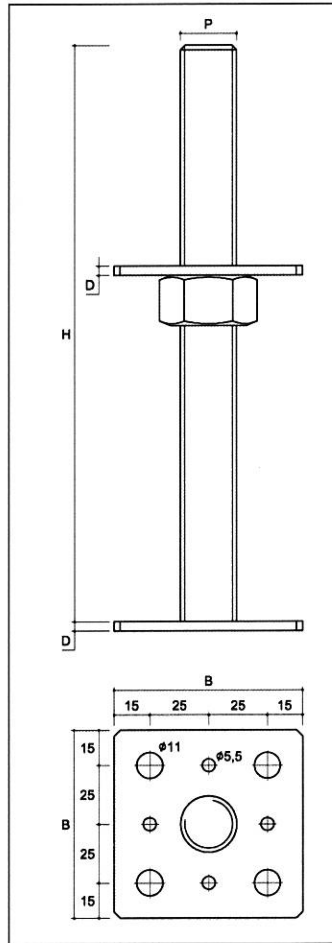


Figure 79 Type PSPO 80

Table 55 PSPO three-dimensional nailing plate symbols and dimensions

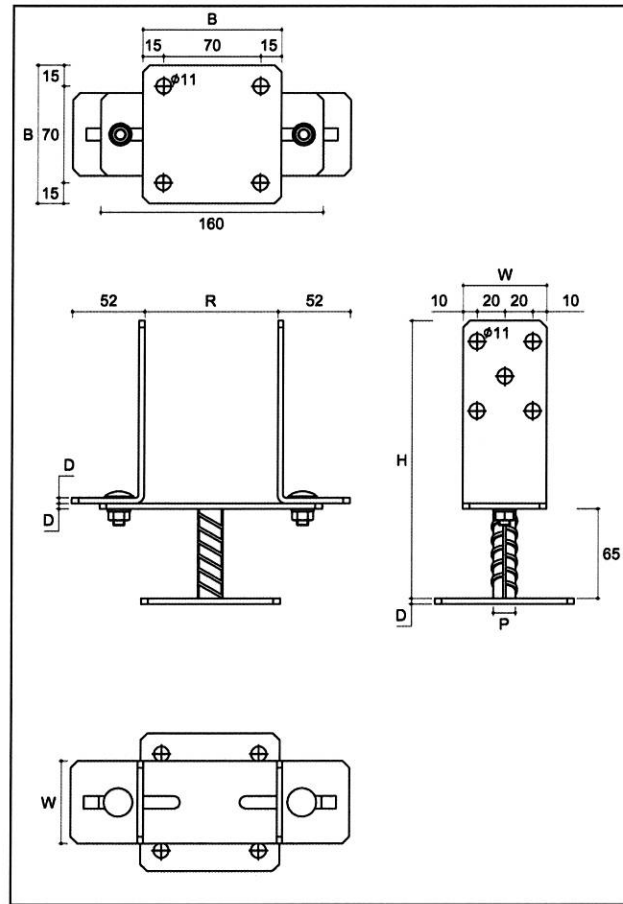
| Symbol   | Dimensions, mm    |     |     |    |     | Quantity of openings |
|----------|-------------------|-----|-----|----|-----|----------------------|
|          | W                 | H   | B   | D1 | D2  | $\varnothing 11$     |
| PSPO 80  | $\varnothing 82$  | 150 | 150 | 2  | 1.5 | 8                    |
| PSPO 100 | $\varnothing 102$ | 150 | 150 | 2  | 1.5 | 8                    |



**Figure 80** Type PSR 80

**Table 56** PSR three-dimensional nailing plate symbols and dimensions

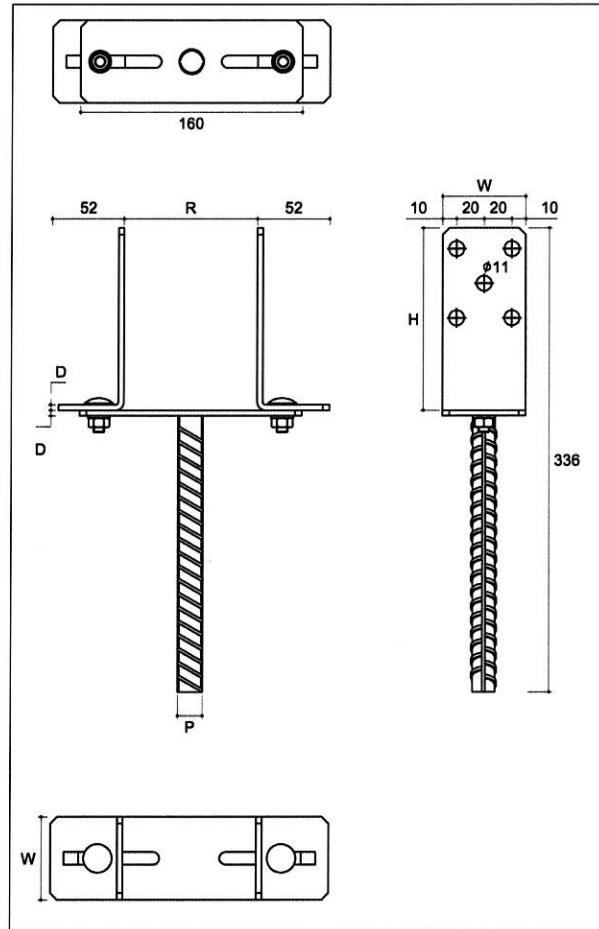
| Symbol  | Dimensions, mm |     |   |     | Quantity of openings |     |
|---------|----------------|-----|---|-----|----------------------|-----|
|         | H              | B   | D | P   | Ø5.5                 | Ø11 |
| PSR 80  | 246            | 80  | 4 | M24 | 8                    | 8   |
| PSR 110 | 246            | 110 | 4 | M24 | 8                    | 8   |



**Figure 81** Type PSRT

**Table 57** PSRT three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions of the timber beam | Dimensions, mm |     |     |   |    |     | Quantity of openings |
|--------|-------------------------------|----------------|-----|-----|---|----|-----|----------------------|
|        | [mm]                          | W              | H   | B   | D | R  | P   | ø11                  |
| PSRT   | 60x120                        | 60             | 200 | 100 | 4 | 60 | ø18 | 14                   |
|        | 70x120                        | 60             | 200 | 100 | 4 | 70 | ø18 | 14                   |
|        | 80x120                        | 60             | 200 | 100 | 4 | 80 | ø18 | 14                   |
|        | 90x120                        | 60             | 200 | 100 | 4 | 90 | ø18 | 14                   |

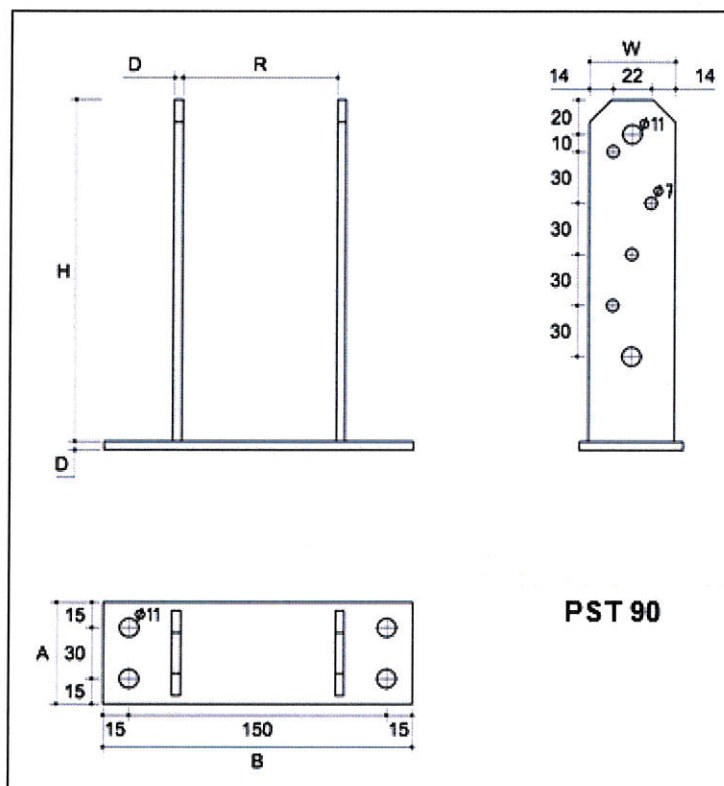


**Figure 82** Type PSRU

**Table 58** PSRU three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions of the timber beam | Dimensions, mm |     |     |    |   | Quantity of openings |
|--------|-------------------------------|----------------|-----|-----|----|---|----------------------|
|        | [mm]                          | W              | H   | P   | R  | D | ø11                  |
| PSRU   | 60x120                        | 60             | 132 | ø18 | 60 | 4 | 10                   |
|        | 70x120                        | 60             | 132 | ø18 | 70 | 4 | 10                   |
|        | 80x120                        | 60             | 132 | ø18 | 80 | 4 | 10                   |
|        | 90x120                        | 60             | 132 | ø18 | 90 | 4 | 10                   |

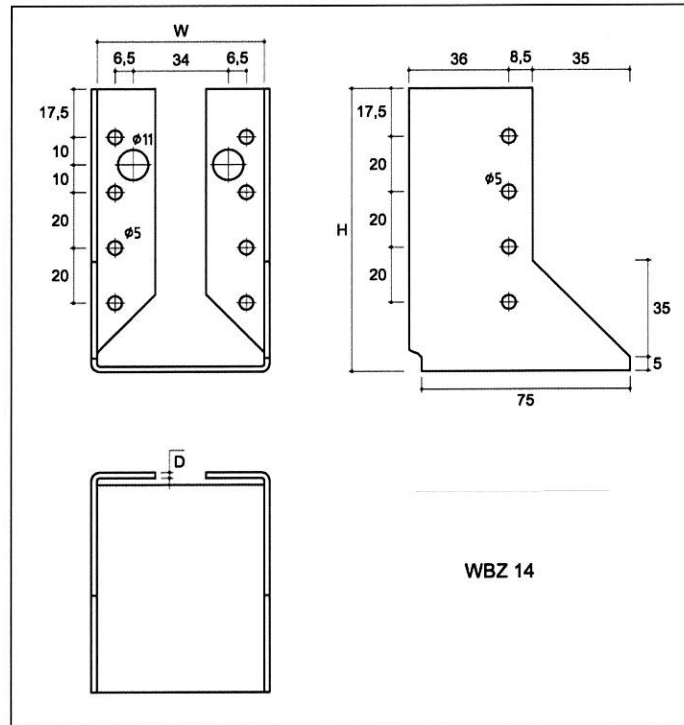




**Figure 83** Type PST 90

**Table 59** PST three-dimensional nailing plate symbols and dimensions

| Symbol  | Dimensions, mm |     |     |    |     |   | Quantity of openings |           |
|---------|----------------|-----|-----|----|-----|---|----------------------|-----------|
|         | W              | H   | R   | A  | B   | D | $\phi 7$             | $\phi 11$ |
| PST 70  | 50             | 200 | 70  | 60 | 160 | 5 | 8                    | 8         |
| PST 90  | 50             | 200 | 90  | 60 | 180 | 5 | 8                    | 8         |
| PST 100 | 50             | 200 | 100 | 60 | 190 | 5 | 8                    | 8         |
| PST 120 | 50             | 200 | 120 | 60 | 210 | 5 | 8                    | 8         |
| PST 140 | 50             | 200 | 140 | 60 | 230 | 5 | 8                    | 8         |

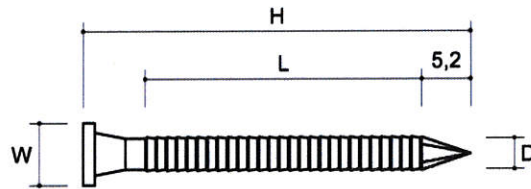


**Figure 84** Type WBZ 14

**Table 60** WBZ 14 three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions, mm |     |   | Quantity of openings |           |
|--------|----------------|-----|---|----------------------|-----------|
|        | W              | H   | D | $\phi 5$             | $\phi 11$ |
| WBZ 14 | 60             | 102 | 2 | 16                   | 2         |

## CONNECTION ELEMENTS

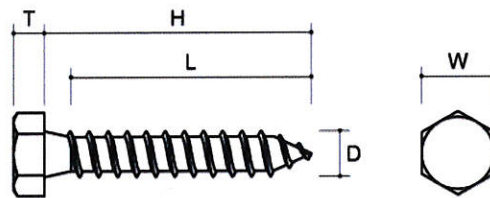


**ANG 50**

**Figure 85** Type ANG 50

**Table 61** ANCHOR dowel type connector symbols and dimensions

| Symbol | Dimensions, mm |    |      |   | DoP No.                                |
|--------|----------------|----|------|---|----------------------------------------|
|        | D              | H  | L    | W |                                        |
| ANG 50 | 4              | 50 | 36.8 | 8 | DWU 30-20232 AN (issued on 02.01.2018) |

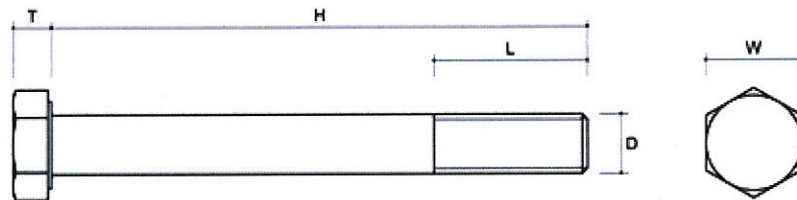


**Ø6x35**

**Figure 86** Type 6x35

**Table 62** ø6x35 type connector symbols and dimensions

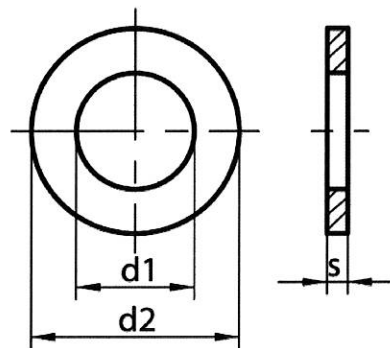
| Symbol | Dimensions, mm |    |    |     |   | Standard |
|--------|----------------|----|----|-----|---|----------|
|        | D              | H  | L  | W   | T |          |
| ø6x35  | 6              | 35 | 31 | 9.7 | 4 | DIN 571  |



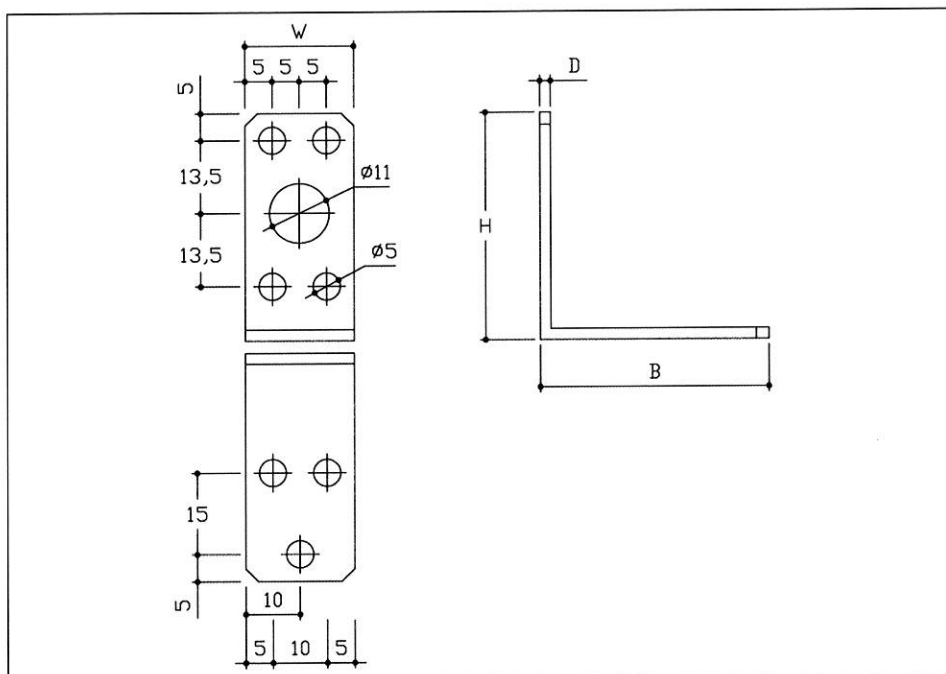
**Figure 87** Bolt type M

**Table 63** M bolt type connector symbols and dimensions

| Symbol  | Dimensions, mm |     |    |    |     | Standard |
|---------|----------------|-----|----|----|-----|----------|
|         | D              | H   | L  | W  | T   |          |
| M12x110 | 12             | 110 | 30 | 18 | 7.5 | ISO 4014 |
| M10x160 | 10             | 160 | 32 | 16 | 6.5 | ISO 4014 |
| M10x140 | 10             | 140 | 32 | 16 | 6.5 | ISO 4014 |
| M10x130 | 10             | 130 | 32 | 16 | 6.5 | ISO 4014 |
| M10x120 | 10             | 120 | 26 | 16 | 6.5 | ISO 4014 |
| M10x110 | 10             | 110 | 26 | 16 | 6.5 | ISO 4014 |
| M10x90  | 10             | 90  | 26 | 16 | 6.5 | ISO 4014 |
| M10x70  | 10             | 70  | 26 | 16 | 6.5 | ISO 4014 |
| M10x60  | 10             | 60  | 26 | 16 | 6,5 | ISO 4014 |
| M8x120  | 8              | 120 | 22 | 13 | 5.2 | ISO 4014 |
| M8x110  | 8              | 110 | 22 | 13 | 5.2 | ISO 4014 |
| M8x100  | 8              | 100 | 22 | 13 | 5.2 | ISO 4014 |
| M8x90   | 8              | 90  | 22 | 13 | 5.2 | ISO 4014 |
| M8x70   | 8              | 70  | 22 | 13 | 5.2 | ISO 4014 |

**Figure 88** Washet type M10**Table 64** Washer type M10 symbols and dimensions

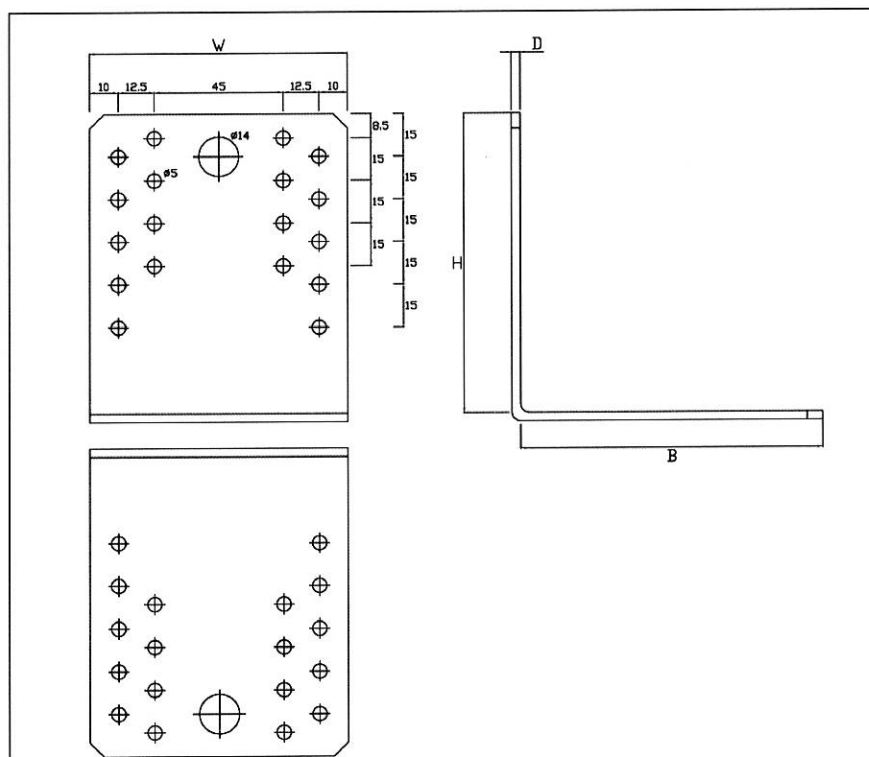
| Symbol | Dimensions [mm] |    |   | DoP No.                                             |
|--------|-----------------|----|---|-----------------------------------------------------|
|        | d1              | d2 | s |                                                     |
| M10    | 10.5            | 20 | 2 | NKJ/CPR/2015-09-01 rev.02<br>(issued on 15.01.2016) |



**Figure 89** Type KL 0

**Table 65** KL 0 three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions [mm] |    |    |   | Quantity of openings |     |
|--------|-----------------|----|----|---|----------------------|-----|
|        | W               | H  | B  | D | Ø5                   | Ø11 |
| KL 0   | 20              | 40 | 40 | 2 | 7                    | 1   |

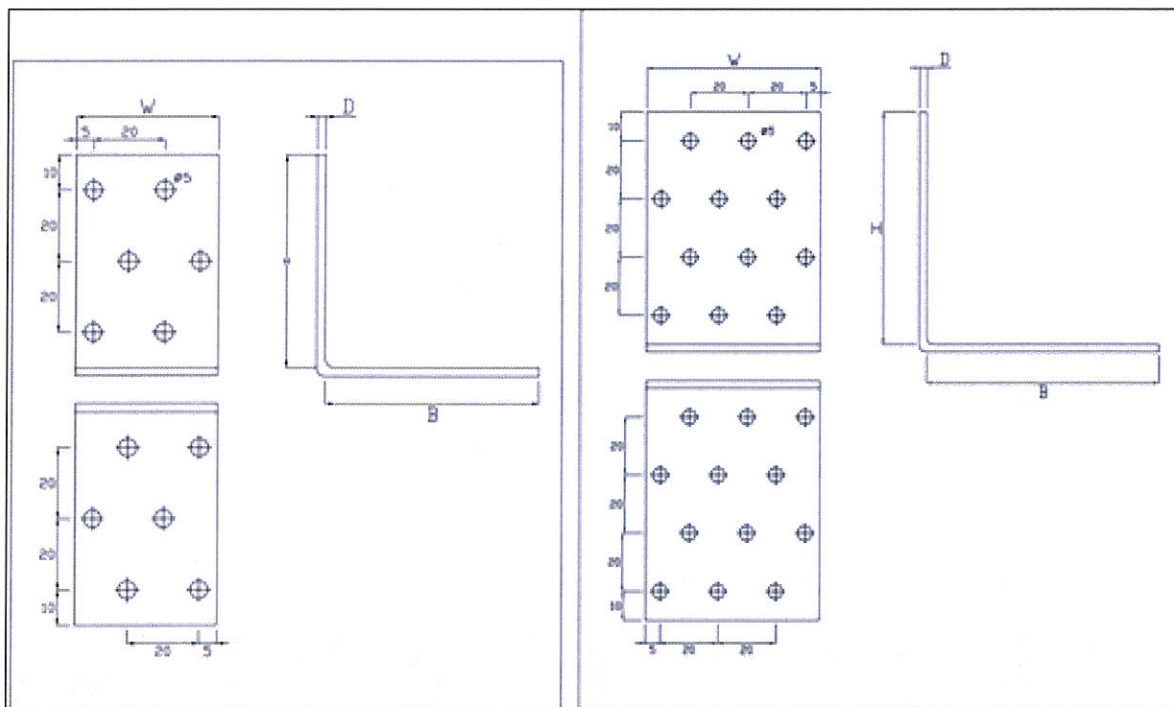


**Figure 90** Type KL 5

**Table 66** KL 5 three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions [mm] |     |     |   | Quantity of openings |     |
|--------|-----------------|-----|-----|---|----------------------|-----|
|        | W               | H   | B   | D | Ø5                   | Ø14 |
| KL 5   | 90              | 105 | 105 | 3 | 36                   | 2   |



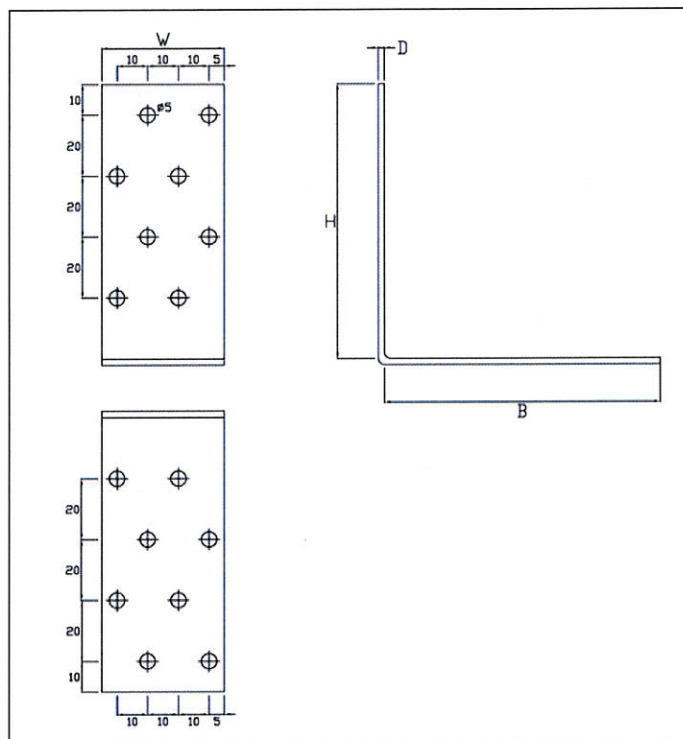


**Figure 91** Type KM 3

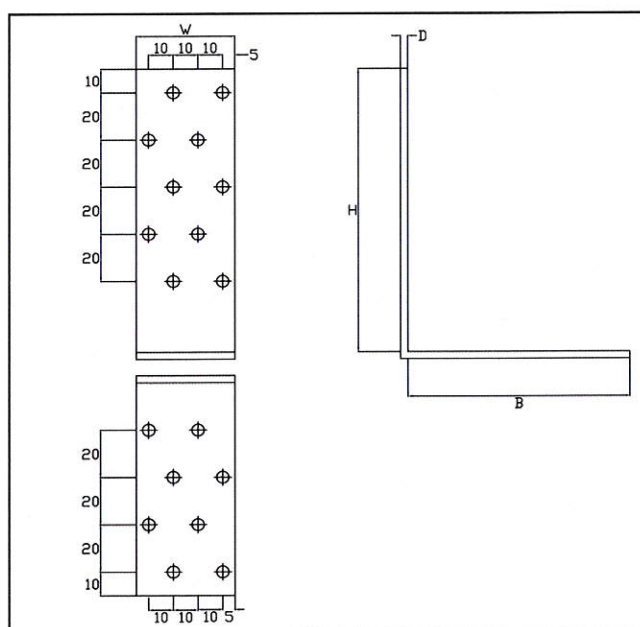
**Figure 92** Type KM 8

**Table 67** KM three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions [mm] |    |    |     | Quantity of openings |
|--------|-----------------|----|----|-----|----------------------|
|        | W               | H  | B  | D   | Ø5                   |
| KM 3   | 40              | 60 | 60 | 2,5 | 12                   |
| KM 8   | 60              | 80 | 80 | 2,5 | 24                   |



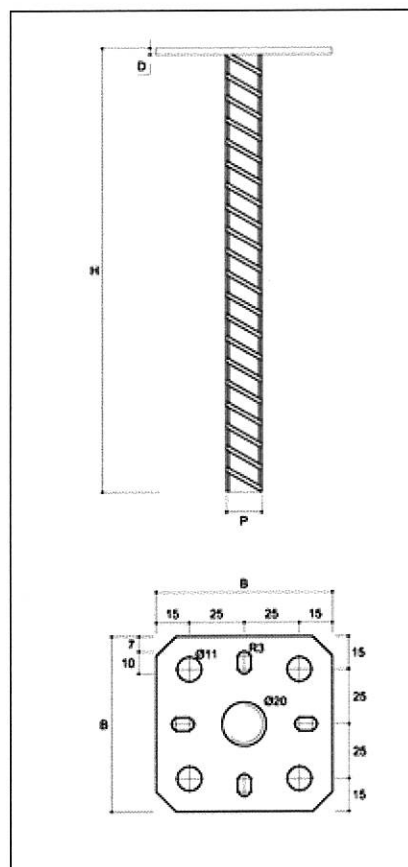
**Figure 93** Type KM 16 and KM 16 (3 mm)



**Figure 94** Type KM 19

**Table 68** KM three-dimensional nailing plate symbols and dimensions

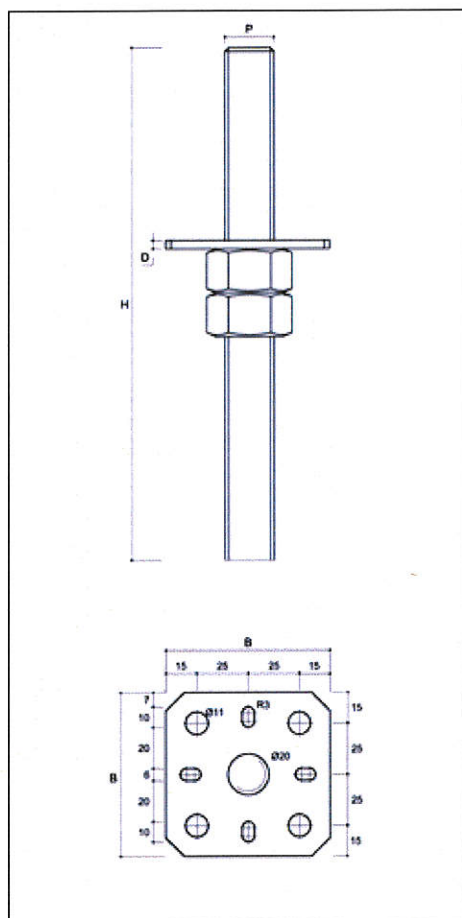
| Symbol | Dimensions [mm] |     |    |   | Quantity of openings |
|--------|-----------------|-----|----|---|----------------------|
|        | W               | H   | B  | D | Ø5                   |
| KM 16  | 40              | 90  | 90 | 2 | 16                   |
| KM 16  | 40              | 90  | 90 | 3 | 16                   |
| KM 19  | 40              | 120 | 90 | 3 | 18                   |



**Figure 95** Type PPS 80

**Table 69** PPS three-dimensional nailing plate symbols and dimensions

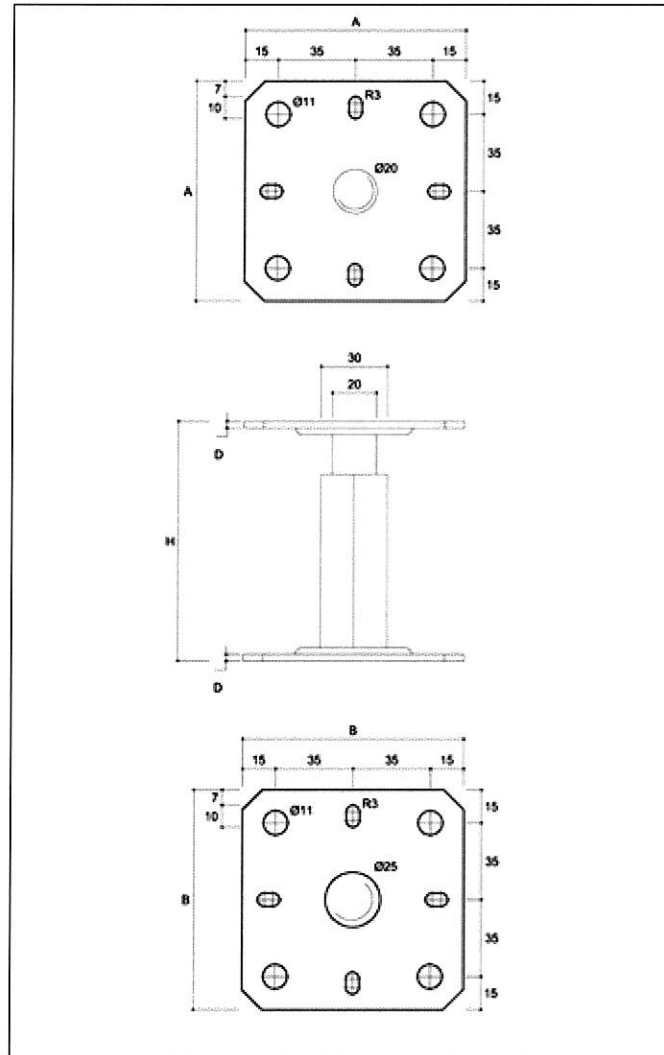
| Symbol  | Dimensions [mm] |     |   |     | Quantity of openings |     |
|---------|-----------------|-----|---|-----|----------------------|-----|
|         | H               | B   | D | P   | Ø11                  | Ø20 |
| PPS 80  | 202             | 80  | 3 | Ø18 | 4                    | 1   |
| PPS 100 | 205             | 100 | 3 | Ø18 | 4                    | 1   |
| PPS 130 | 205             | 130 | 3 | Ø18 | 4                    | 1   |



**Figure 96** Type PPSR 80

**Table 70** PPSR three-dimensional nailing plate symbols and dimensions

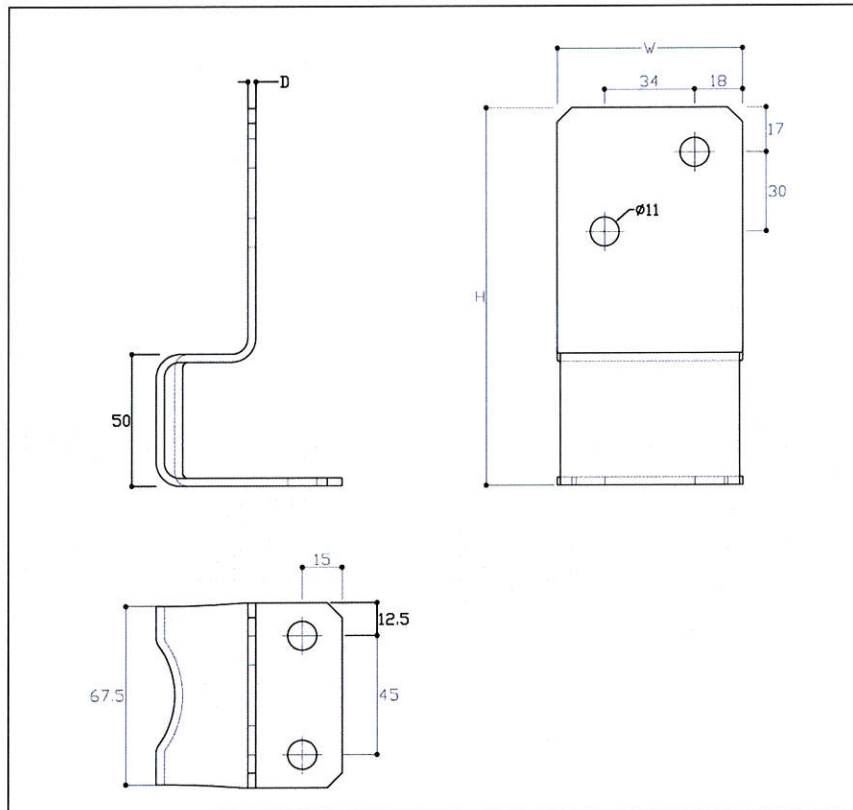
| Symbol   | Dimensions [mm] |     |   |     | Quantity of openings |     |
|----------|-----------------|-----|---|-----|----------------------|-----|
|          | H               | B   | D | P   | Ø11                  | Ø20 |
| PPSR 80  | 330             | 80  | 3 | M20 | 8                    | 2   |
| PPSR 100 | 330             | 100 | 3 | M20 | 8                    | 2   |
| PPSR 130 | 330             | 130 | 3 | M20 | 8                    | 2   |



**Figure 97** Type PR 100 100-150

**Table 71** PR three-dimensional nailing plate symbols and dimensions

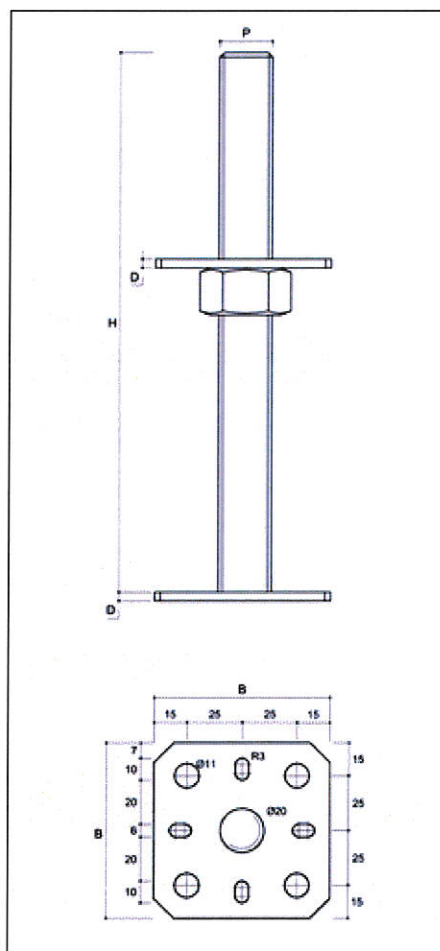
| Symbol         | Dimensions [mm] |     |     |   | Quantity of openings |     |     |
|----------------|-----------------|-----|-----|---|----------------------|-----|-----|
|                | H               | A   | B   | D | Ø11                  | Ø20 | Ø25 |
| PR 100 100-150 | 100-150         | 100 | 100 | 3 | 8                    | 1   | 1   |
| PR 100 130-150 | 100-150         | 100 | 130 | 3 | 8                    | 1   | 1   |
| PR 130 130-150 | 100-150         | 130 | 130 | 3 | 8                    | 1   | 1   |



**Figure 98** Type PSK 70

**Table 72** PSK three-dimensional nailing plate symbols and dimensions

| Symbol   | Dimensions [mm] |    |   | Quantity of openings |
|----------|-----------------|----|---|----------------------|
|          | H               | B  | D | Ø11                  |
| PSK 70   | 143             | 70 | 3 | 4                    |
| SDPSK 70 | 165             | 70 | 3 | 4                    |



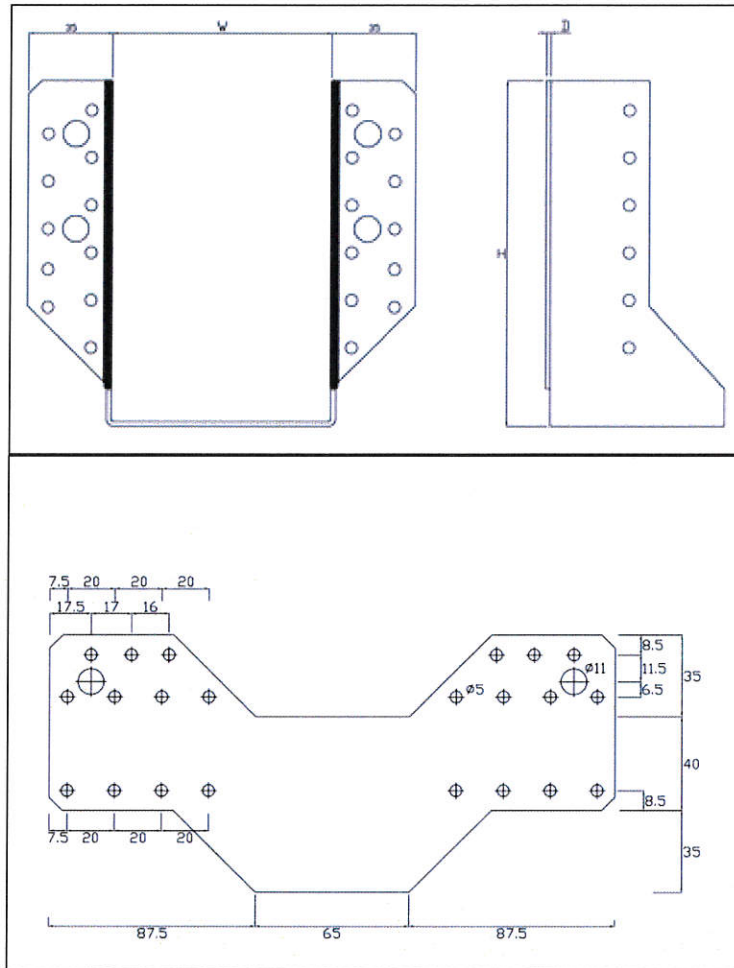
**Figure 99** Type PSR 80 M20

**Table 73** PSR three-dimensional nailing plate symbols and dimensions

| Symbol      | Dimensions [mm] |     |   |     | Quantity of openings |     |     |
|-------------|-----------------|-----|---|-----|----------------------|-----|-----|
|             | H               | B   | D | P   | Ø11                  | Ø20 | Ø24 |
| PSR 80 M20  | 240             | 80  | 3 | M20 | 8                    | 2   | -   |
| PSR 100 M20 | 252             | 100 | 3 | M20 | 8                    | 2   | -   |
| PSR 130 M20 | 252             | 130 | 3 | M20 | 8                    | 2   | -   |
| PSR 80 M24  | 250             | 80  | 4 | M24 | 8                    | -   | 2   |
| PSR 100 M24 | 250             | 100 | 4 | M24 | 8                    | -   | 2   |
| PSR 130 M24 | 250             | 130 | 4 | M24 | 8                    | -   | 2   |







**Figure 101** Type WB, type A

**Table 75** WB three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions [mm] |     |   | Quantity of openings |     | Type |
|--------|-----------------|-----|---|----------------------|-----|------|
|        | W               | H   | D | Ø5                   | Ø11 |      |
| WB 40  | 25              | 109 | 2 | 22                   | 2   | A    |
| WB 43  | 32              | 106 | 2 | 22                   | 2   | A    |
| WB 44  | 32              | 116 | 2 | 22                   | 2   | A    |
| WB 47  | 38              | 103 | 2 | 22                   | 2   | A    |
| WB 48  | 41              | 101 | 2 | 22                   | 2   | A    |
| WB 49  | 45              | 99  | 2 | 22                   | 2   | A    |
| WB 52  | 48              | 98  | 2 | 22                   | 2   | A    |
| WB 53  | 48              | 108 | 2 | 22                   | 2   | A    |
| WB 57  | 51              | 96  | 2 | 22                   | 2   | A    |

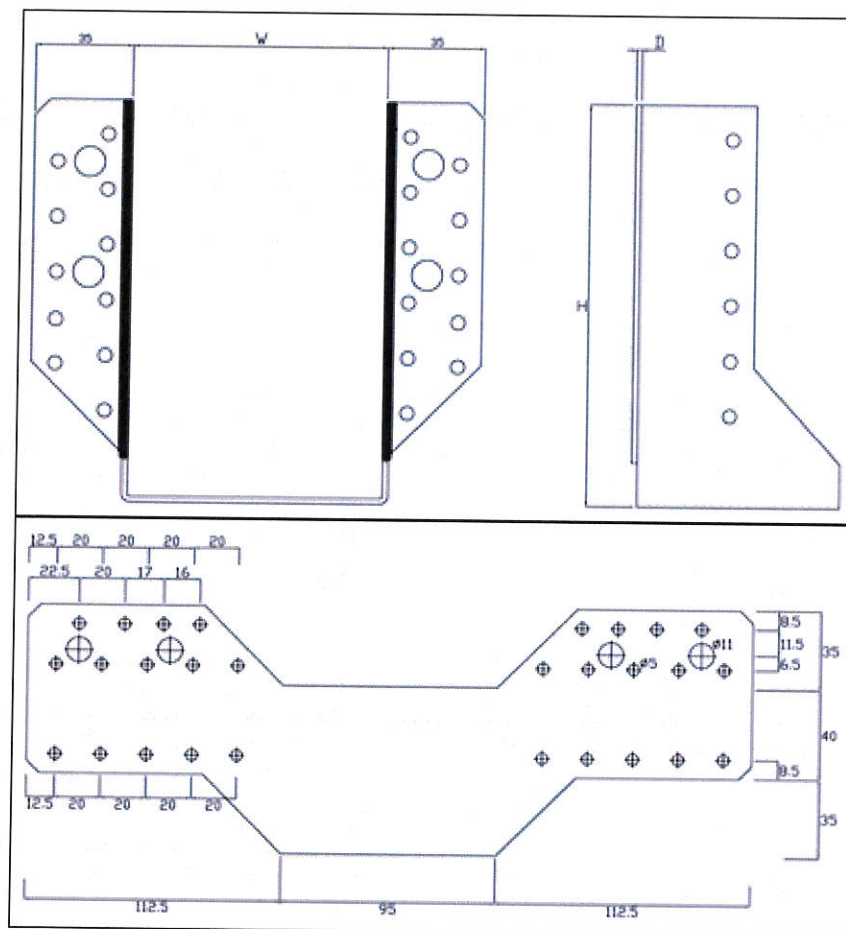
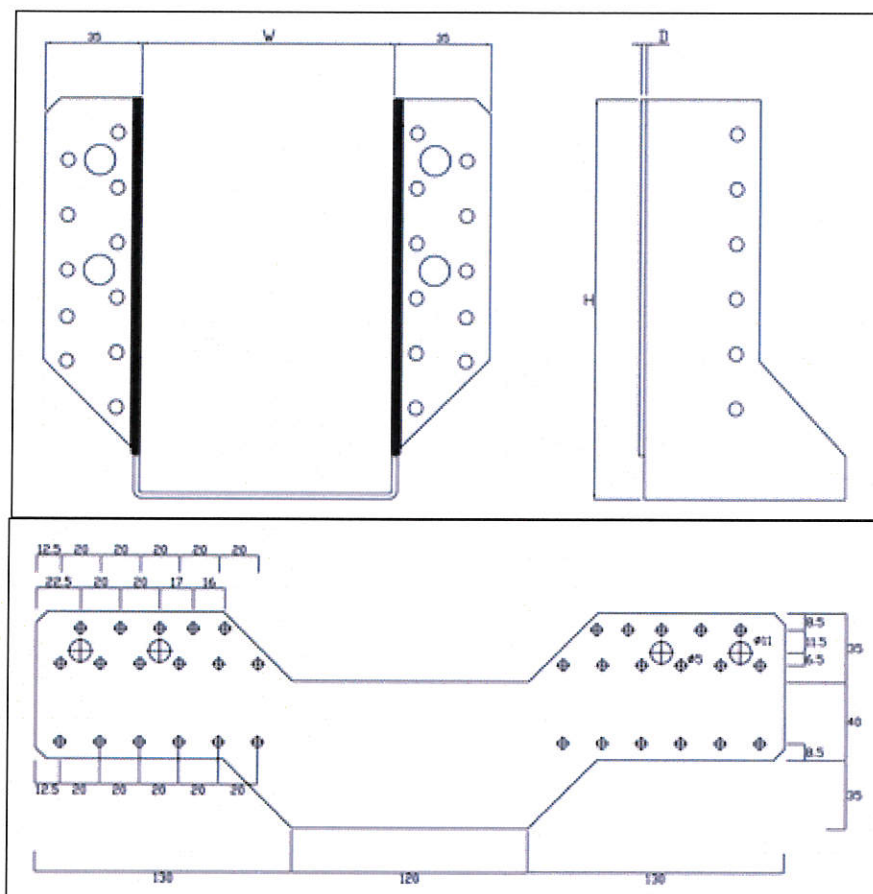


Figure 102 Type WB, type B

Table 76 WB three-dimensional nailing plate symbols and dimensions

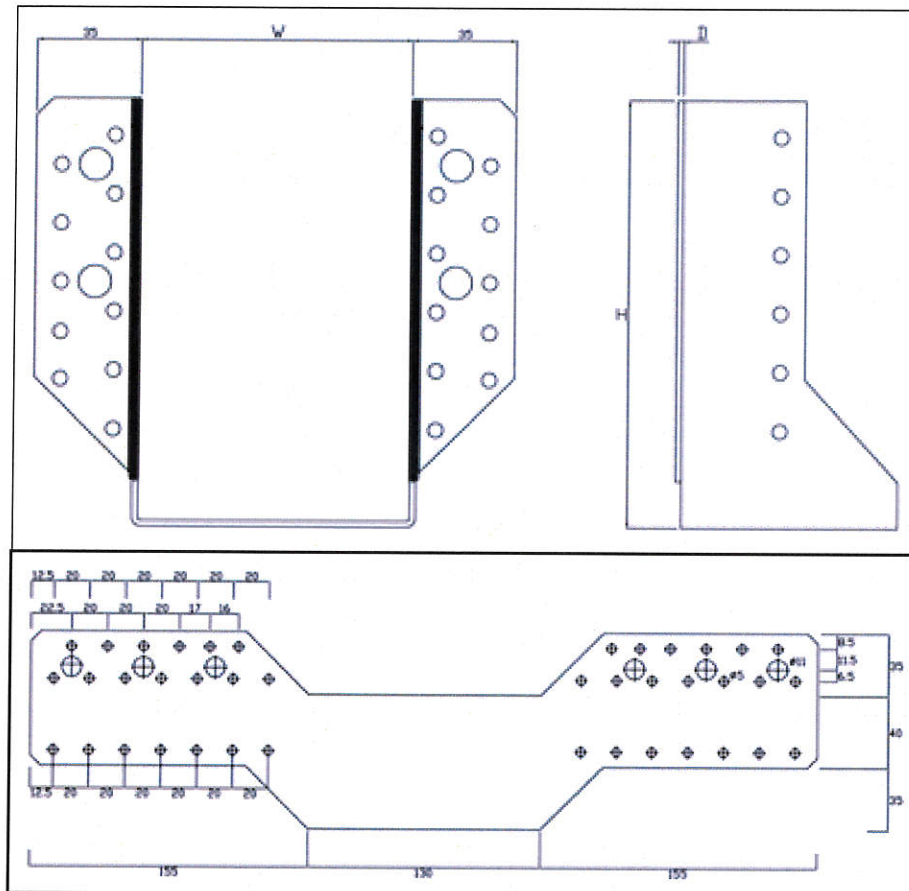
| Symbol | Dimensions [mm] |     |   | Quantity of openings |     | Type |
|--------|-----------------|-----|---|----------------------|-----|------|
|        | W               | H   | D | Ø5                   | Ø11 |      |
| WB 41  | 28              | 148 | 2 | 28                   | 4   | B    |
| WB 45  | 32              | 146 | 2 | 28                   | 4   | B    |
| WB 54  | 48              | 138 | 2 | 28                   | 4   | B    |
| WB 59  | 73              | 125 | 2 | 28                   | 4   | B    |



**Figure 103** Type WB, type C

**Table 77** PSR three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions [mm] |     |   | Quantity of openings |     | Type |
|--------|-----------------|-----|---|----------------------|-----|------|
|        | W               | H   | D | Ø5                   | Ø11 |      |
| WB 39  | 92              | 146 | 2 | 34                   | 4   | C    |
| WB 42  | 28              | 178 | 2 | 34                   | 4   | C    |
| WB 46  | 32              | 176 | 2 | 34                   | 4   | C    |
| WB 50  | 45              | 169 | 2 | 34                   | 4   | C    |
| WB 55  | 48              | 168 | 2 | 34                   | 4   | C    |
| WB 60  | 73              | 155 | 2 | 34                   | 4   | C    |
| WB 63  | 98              | 143 | 2 | 34                   | 4   | C    |



**Figure 104** Type WB, type D

**Table 78** WB three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions [mm] |     |   | Quantity of openings |     | Type |
|--------|-----------------|-----|---|----------------------|-----|------|
|        | W               | H   | D | Ø5                   | Ø11 |      |
| WB 51  | 45              | 199 | 2 | 40                   | 6   | D    |
| WB 61  | 73              | 185 | 2 | 40                   | 6   | D    |





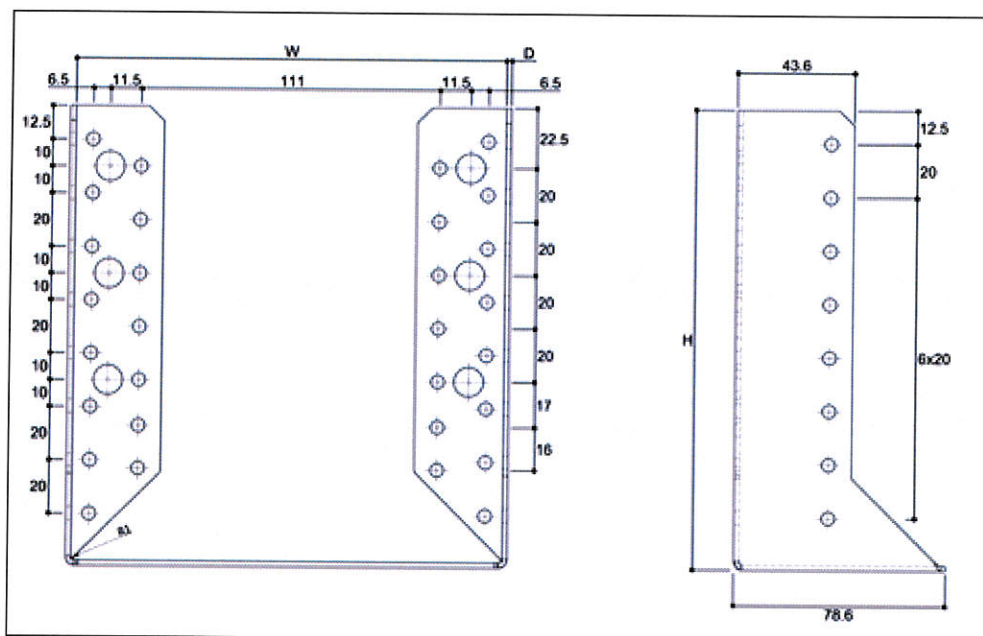


Figure 106 Type WBZ 38

Table 80 WBZ three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions [mm] |     |   | Quantity of openings |                  |
|--------|-----------------|-----|---|----------------------|------------------|
|        | W               | H   | D | $\varnothing 5$      | $\varnothing 11$ |
| WBZ 38 | 160,5           | 172 | 2 | 46                   | 6                |

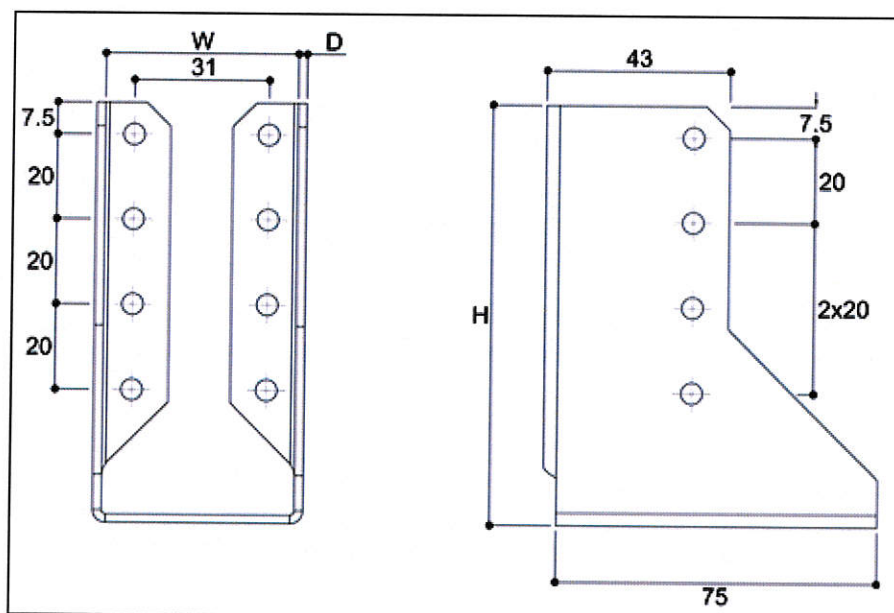
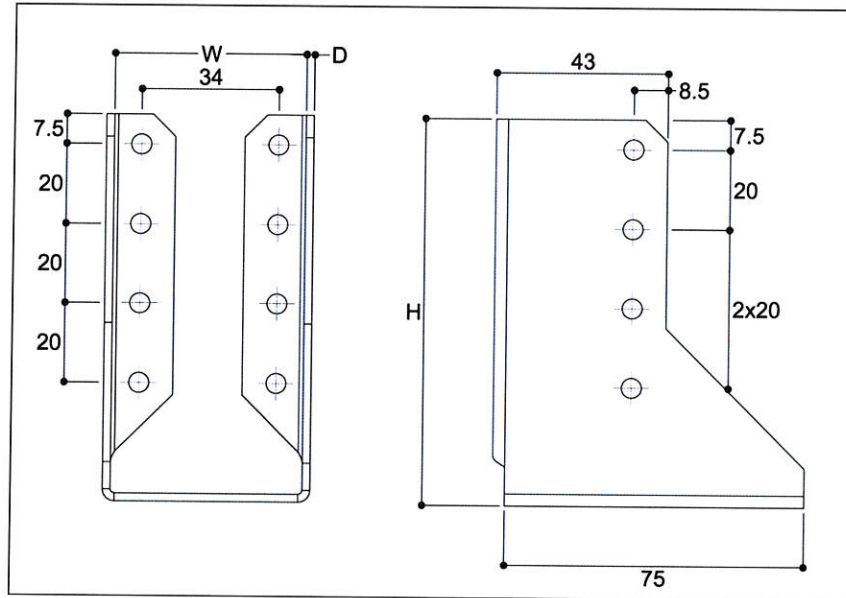


Figure 107 Type WBZ 49

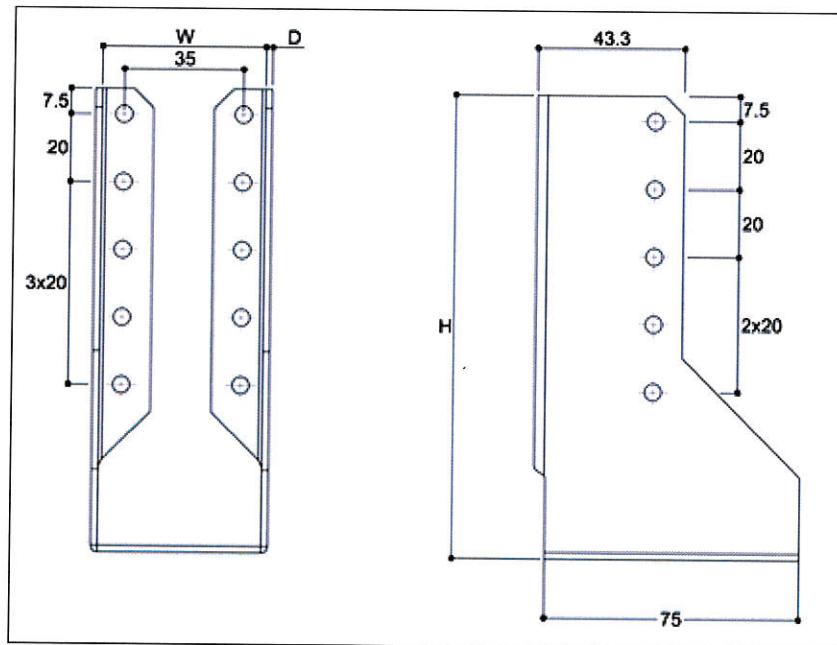




**Figure 108** Type WBZ 52

**Table 81** WBZ three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions [mm] |    |   | Quantity of openings |
|--------|-----------------|----|---|----------------------|
|        | W               | H  | D |                      |
| WBZ 49 | 45              | 99 | 2 | 16                   |
| WBZ 52 | 48              | 98 | 2 | 16                   |

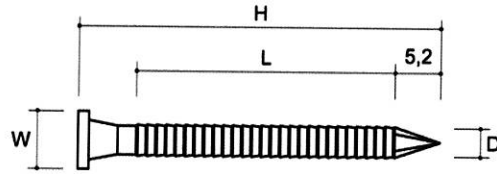


**Figure 109** Type WBZ 54

**Table 82** WBZ three-dimensional nailing plate symbols and dimensions

| Symbol | Dimensions [mm] |     |   | Quantity of openings |
|--------|-----------------|-----|---|----------------------|
|        | W               | H   | D |                      |
| WBZ 54 | 48              | 138 | 2 | 20                   |

## CONNECTION ELEMENTS



ANG 50

Figure 110 Type ANG 50

Table 83 ANCHOR dowel type connector symbols and dimensions

| Symbol | Dimensions, mm |    |      |   | DoP No.                                |
|--------|----------------|----|------|---|----------------------------------------|
|        | D              | H  | L    | W |                                        |
| ANG 50 | 4              | 50 | 36.8 | 8 | DWU 30-20232 AN (issued on 02.01.2018) |

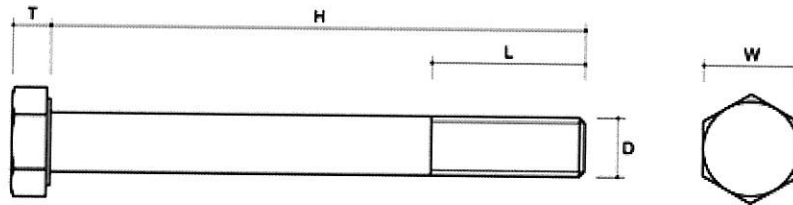


Figure 111 Bolt type M

Table 84 M bolt type connector symbols and dimensions

| Symbol       | Dimensions, mm |    |    |    |     | DoP No.                                    |
|--------------|----------------|----|----|----|-----|--------------------------------------------|
|              | D              | H  | L  | W  | T   |                                            |
| M10x60 – 5.8 | 10             | 60 | 26 | 16 | 6,5 | NKJ/CPR/20170201<br>(issued on 01.02.2017) |

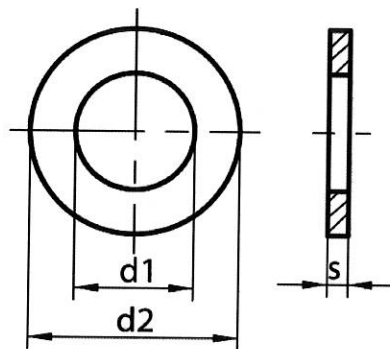


Figure 112 Washet type M10

Table 85 Washer type M10 symbols and dimensions

| Symbol | Dimensions [mm] |    |   | DoP No.                                          |
|--------|-----------------|----|---|--------------------------------------------------|
|        | d1              | d2 | s |                                                  |
| M10    | 10.5            | 20 | 2 | NKJ/CPR/2015-09-01 rev.02 (issued on 15.01.2016) |

|                                      |                        |
|--------------------------------------|------------------------|
| THREE-DIMENSIONAL NAILING PLATES     | ANNEX 2<br>ETA 24/0873 |
| LOADING ACCORDING TO STATIC DIAGRAMS |                        |

**LOADING ACCORDING TO STATIC DIAGRAMS**  
(for selected elements)

| No. | Scheme | Connector types                                                          |
|-----|--------|--------------------------------------------------------------------------|
| 1   |        | KPK 11, 12, 13, 21, 22, 23<br>KPL 5, 6, 11, 21<br>KR 1, 2, 3<br>KRD 5, 6 |

**Figure 113 Scheme 1**

| No. | Scheme | Connector types            |
|-----|--------|----------------------------|
| 2   |        | KPK 31<br>KPK 32<br>KPK 33 |

**Figure 114 Scheme 2**

| No. | Scheme | Connector types |
|-----|--------|-----------------|
| 3   |        | KP 7<br>KP 8    |

**Figure 115 Scheme 3**

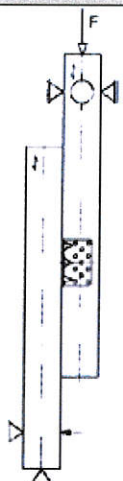
| No. | Scheme                                                                            | Connector types |
|-----|-----------------------------------------------------------------------------------|-----------------|
| 4   |  | KPK 4           |

Figure 116 Scheme 4

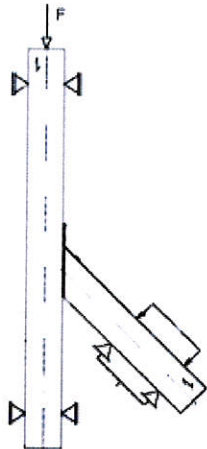
| No. | Scheme                                                                             | Connector types                                    |
|-----|------------------------------------------------------------------------------------|----------------------------------------------------|
| 5   |  | KLR 1<br>KLR 2<br>KLR 3<br>KLR 4<br>KLR 5<br>KLR 6 |

Figure 117 Scheme 5

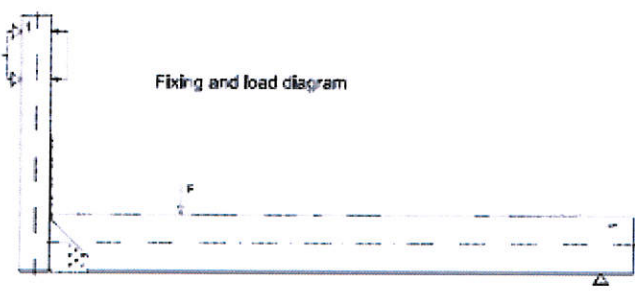
| No. | Scheme                                                                                                             | Connector types                                   |
|-----|--------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| 6   |  <p>Fixing and load diagram</p> | WBC 80<br>WBC 92<br>WBC 100<br>WBC 120<br>WBC 137 |

Figure 118 Scheme 6

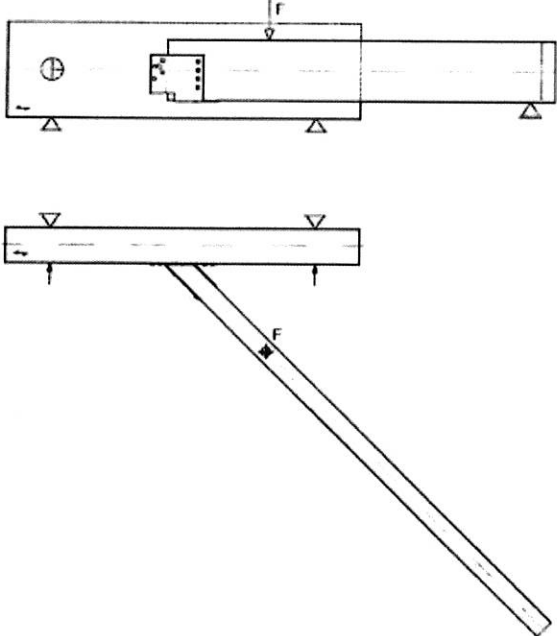
| No. | Scheme                                                                            | Connector types                                                    |
|-----|-----------------------------------------------------------------------------------|--------------------------------------------------------------------|
| 7   |  | WBU 45<br>R45-105; L45-105<br>R50-105; L50-105<br>R60-120; L60-120 |

Figure 119 Scheme 7

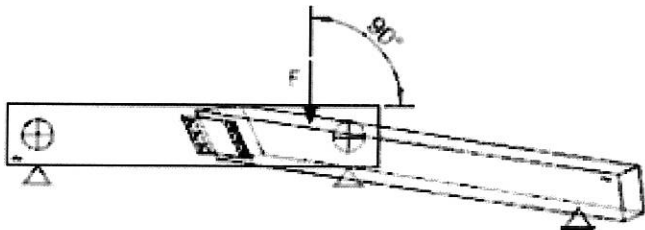
| No. | Scheme                                                                               | Connector types                 |
|-----|--------------------------------------------------------------------------------------|---------------------------------|
| 8   |  | LU 25<br>R80; L80<br>R120; L120 |

Figure 120 Scheme 8

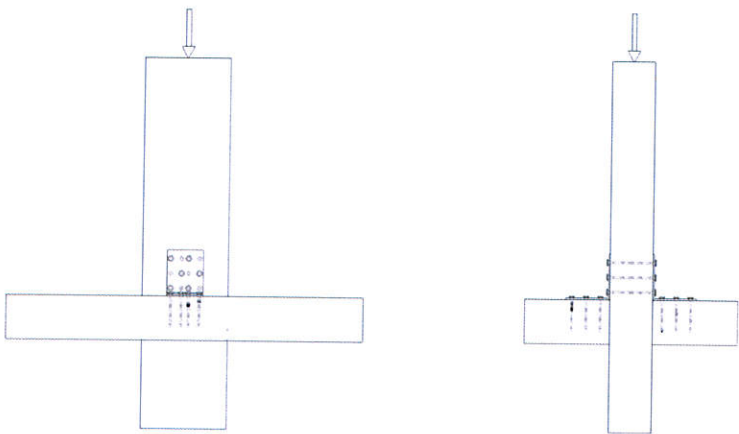
| No. | Scheme                                                                             | Connector types                                                                                                    |
|-----|------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| 9   |  | KB 4<br>KK 0<br>KL 6<br>KM 17<br>KM 18<br>KP 2<br>KP 9<br>KR 5<br>KR 6<br>KR 7<br>KRB 7<br>KSB 1<br>KWB 1<br>KWC 1 |

Figure 121 Scheme 9

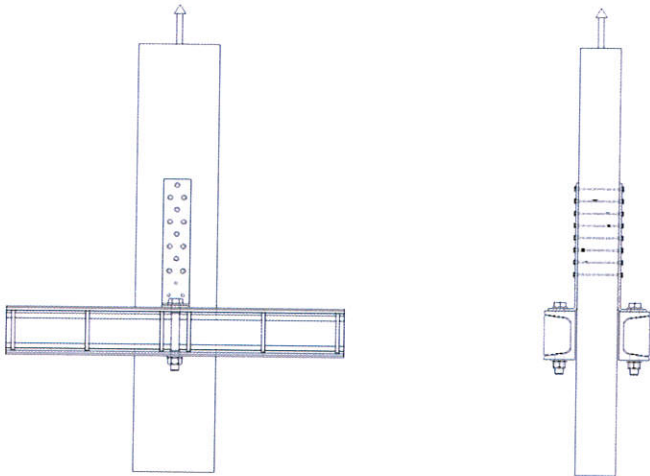
| No. | Scheme                                                                             | Connector types        |
|-----|------------------------------------------------------------------------------------|------------------------|
| 10  |  | KK 11<br>KK 12<br>KR 4 |

Figure 122 Scheme 10



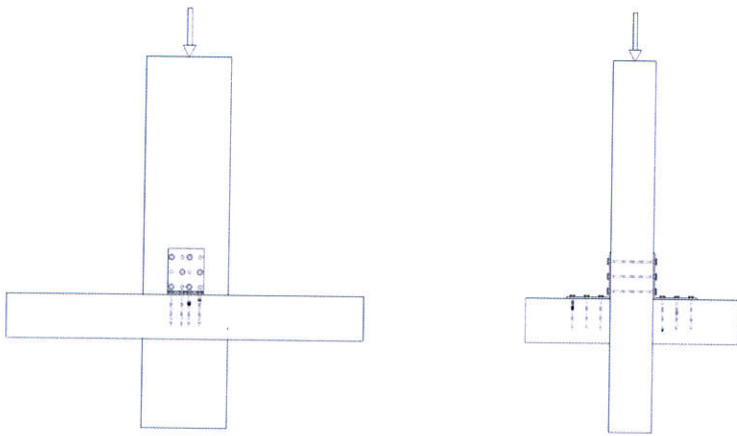
| No. | Scheme                                                                             | Connector types                                                                         |
|-----|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 11  |  | KM 16<br>KM 16 (3 mm)<br>KM 8 (2.5 mm)<br>KM 19<br>KM 3 (2.5 mm)<br>KL 0<br>KL 5 (3 mm) |

Figure 123 Scheme 11

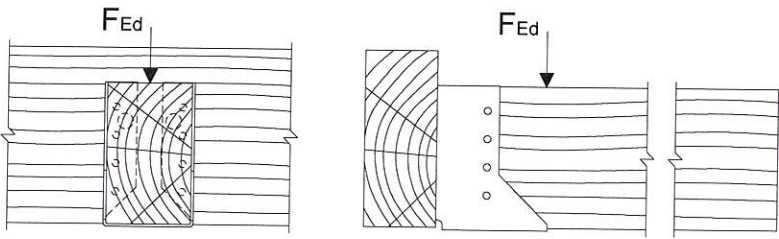
| No. | Scheme                                                                              | Connector types                      |
|-----|-------------------------------------------------------------------------------------|--------------------------------------|
| 12  |  | WBZ 38<br>WBZ 49<br>WBZ 52<br>WBZ 54 |

Figure 124 Scheme 12

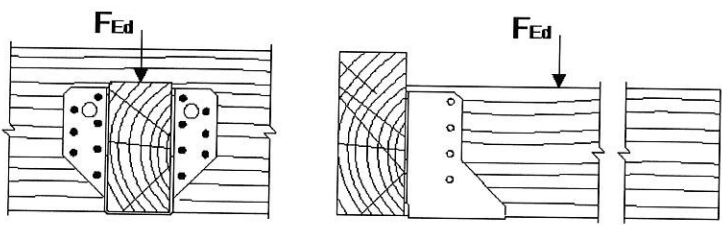
| No. | Scheme                                                                             | Connector types                                                                                                                                                                                                               |
|-----|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 13  |  | WB 39<br>WB 40<br>WB 41<br>WB 42<br>WB 43<br>WB 44<br>WB 45<br>WB 46<br>WB 47<br>WB 48<br>WB 49<br>WB 50<br>WB 51<br>WB 52<br>WB 53<br>WB 54<br>WB 55<br>WB 56<br>WB 57<br>WB 58<br>WB 59<br>WB 60<br>WB 61<br>WB 62<br>WB 63 |

Figure 125 Scheme 13

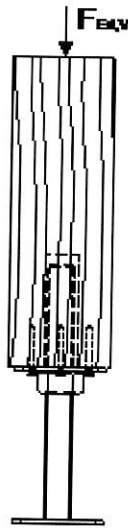
| No. | Scheme                                                                              | Connector types                                                                          |
|-----|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------|
| 14  |  | PSR 80 M24<br>PSR 100 M24<br>PSR 130 M24<br><br>PSR 80 M20<br>PSR 100 M20<br>PSR 130 M20 |

Figure 126 Scheme 14

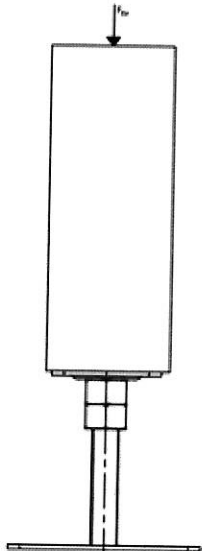
| No. | Scheme                                                                            | Connector types                             |
|-----|-----------------------------------------------------------------------------------|---------------------------------------------|
| 15  |  | PSRP 80 M20<br>PSRP 100 M20<br>PSRP 130 M20 |

Figure 127 Scheme 15

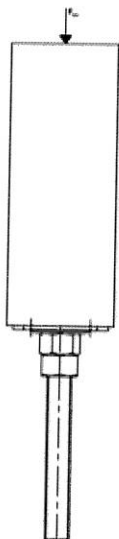
| No. | Scheme                                                                             | Connector types                 |
|-----|------------------------------------------------------------------------------------|---------------------------------|
| 16  |  | PPSR 80<br>PPSR 100<br>PPSR 130 |

Figure 128 Scheme 16

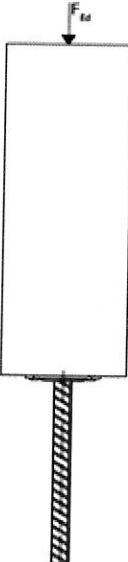
| No. | Scheme                                                                            | Connector types              |
|-----|-----------------------------------------------------------------------------------|------------------------------|
| 17  |  | PPS 80<br>PPS 100<br>PPS 130 |

Figure 129 Scheme 17

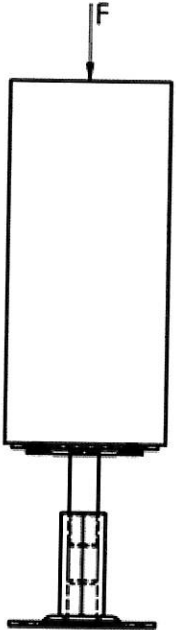
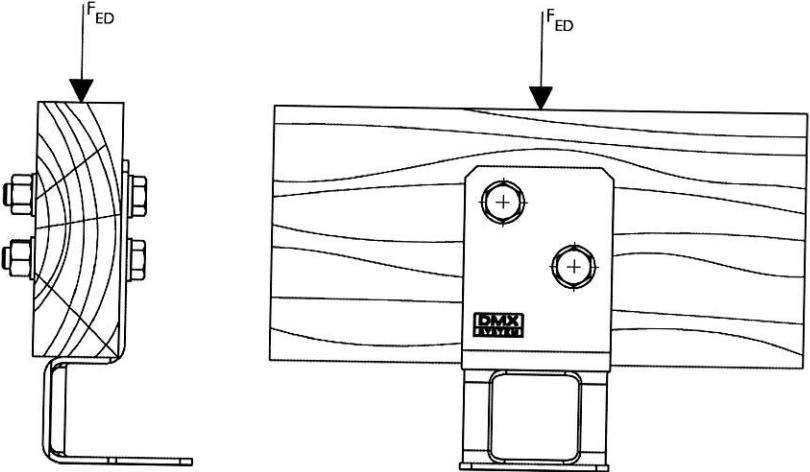
| No. | Scheme                                                                             | Connector types                                    |
|-----|------------------------------------------------------------------------------------|----------------------------------------------------|
| 18  |  | PR 100 100-150<br>PR 100 130-150<br>PR 130 130-150 |

Figure 130 Scheme 18

| No. | Scheme                                                                             | Connector types    |
|-----|------------------------------------------------------------------------------------|--------------------|
| 19  |  | PSK 70<br>SDPSK 70 |

**Figure 131** Scheme 19

**CALCULATIONS ACCORDING TO STATIC DIAGRAMS**  
(for selected elements)

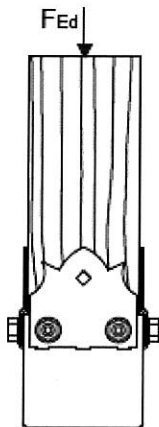
| No. | Scheme                                                                            | Connector types                    |
|-----|-----------------------------------------------------------------------------------|------------------------------------|
| 1   |  | SDP 90 A<br>SDP 100 A<br>SDP 120 A |

Figure 132 Scheme 1

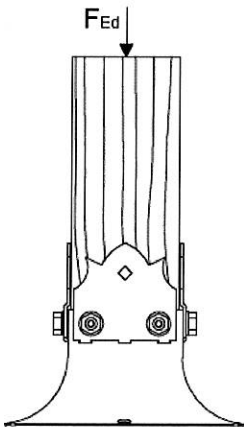
| No. | Scheme                                                                              | Connector types                    |
|-----|-------------------------------------------------------------------------------------|------------------------------------|
| 2   |  | SDP 90 B<br>SDP 100 B<br>SDP 120 B |

Figure 133 Scheme 2



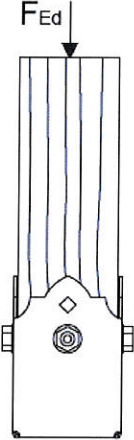
| No. | Scheme                                                                            | Connector types |
|-----|-----------------------------------------------------------------------------------|-----------------|
| 3   |  | SDSP 70 A       |

Figure 134 Scheme 3

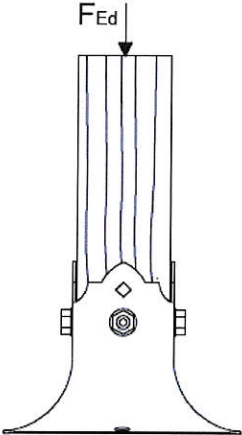
| No. | Scheme                                                                             | Connector types |
|-----|------------------------------------------------------------------------------------|-----------------|
| 4   |  | SDSP 70 B       |

Figure 135 Scheme 4

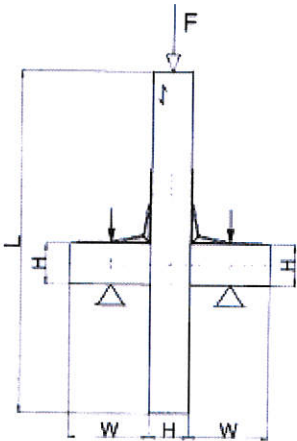
| No. | Scheme                                                                              | Connector types                  |
|-----|-------------------------------------------------------------------------------------|----------------------------------|
| 5   |  | KPS 1<br>KPS 2<br>KPS 3<br>KPS 4 |

Figure 136 Scheme 5

| No. | Scheme | Connector types                                                |
|-----|--------|----------------------------------------------------------------|
| 6   |        | PS 60<br>PS 70<br>PS 80<br>PS 90<br>PS 100<br>PS 120<br>PS 140 |

Figure 137 Scheme 6

| No. | Scheme | Connector types    |
|-----|--------|--------------------|
| 7   |        | SDKL 1<br>pull out |

Figure 138 Scheme 7

| No. | Scheme | Connector types    |
|-----|--------|--------------------|
| 8   |        | SDKL 1<br>pressure |

Figure 139 Scheme 8

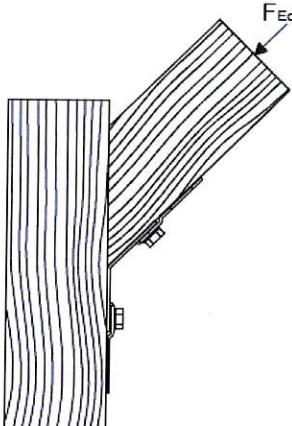
| No. | Scheme                                                                            | Connector types |
|-----|-----------------------------------------------------------------------------------|-----------------|
| 9   |  | SDKLR 1         |

Figure 140 Scheme 9

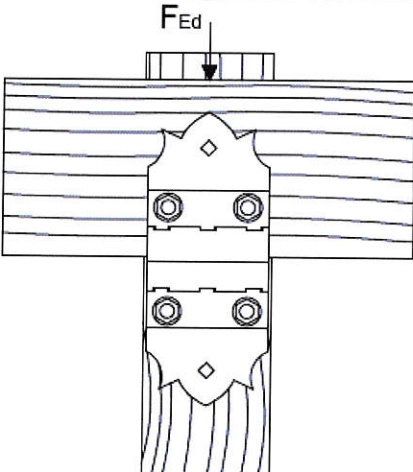
| No. | Scheme                                                                             | Connector types |
|-----|------------------------------------------------------------------------------------|-----------------|
| 10  |  | SDLZ 1          |

Figure 141 Scheme 10

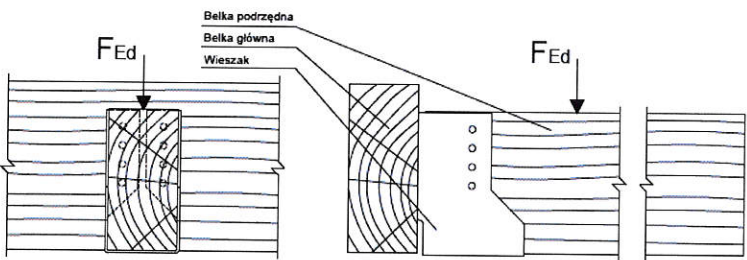
| No. | Scheme                                                                               | Connector types                                                            |
|-----|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------|
| 11  |  | SDSWBZ 10<br>SDSWBZ 11<br>SDSWBZ 14<br>SDSWBZ 21<br>SDSWBZ 26<br>SDSWBZ 30 |

Figure 142 Scheme 11

| No. | Scheme | Connector type |
|-----|--------|----------------|
| 12  |        | WBZ 14         |

Figure 143 Scheme 12

| No. | Scheme | Connector type                        |
|-----|--------|---------------------------------------|
| 13  |        | PSL 50<br>PSL 70<br>PSL 90<br>PSL 100 |

Figure 144 Scheme 13

| No. | Scheme | Connector type                                                                                                     |
|-----|--------|--------------------------------------------------------------------------------------------------------------------|
| 14  |        | PSP 70<br>PSP 90<br>PSP 100<br>PSP 120<br>PSPO 80<br>PSPO 100<br>PST 70<br>PST 90<br>PST 100<br>PST 120<br>PST 140 |

Figure 145 Scheme 14

| No. | Scheme                                                                            | Connector type    |
|-----|-----------------------------------------------------------------------------------|-------------------|
| 15  |  | PSR 80<br>PSR 110 |

Figure 146 Scheme 15

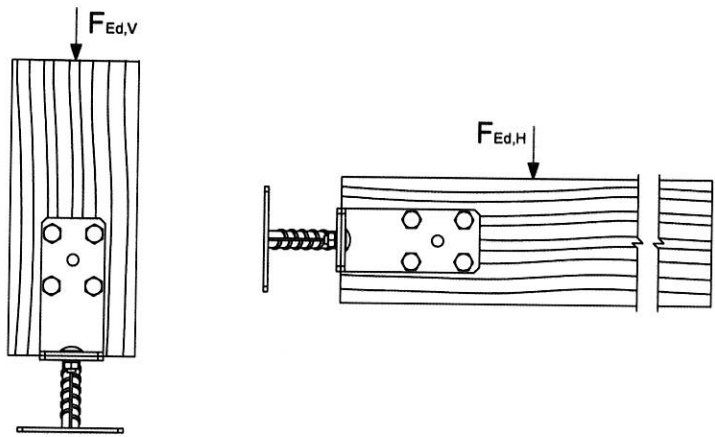
| No. | Scheme                                                                              | Connector type |
|-----|-------------------------------------------------------------------------------------|----------------|
| 16  |  | PSRT           |

Figure 147 Scheme 16

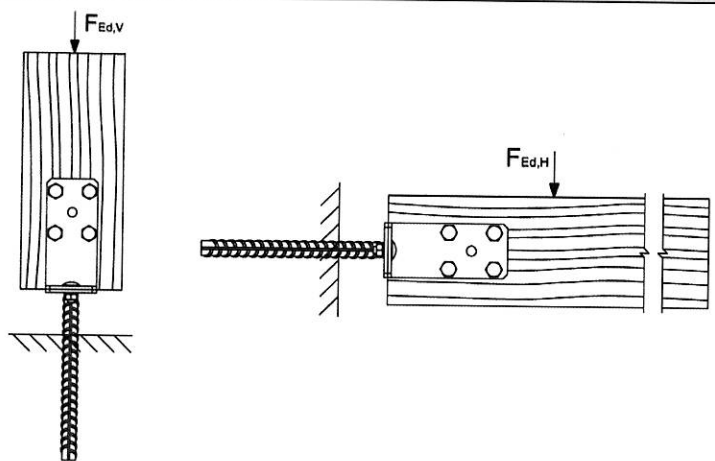
| No. | Scheme                                                                               | Connector type |
|-----|--------------------------------------------------------------------------------------|----------------|
| 17  |  | PSRU           |

Figure 148 Scheme 17

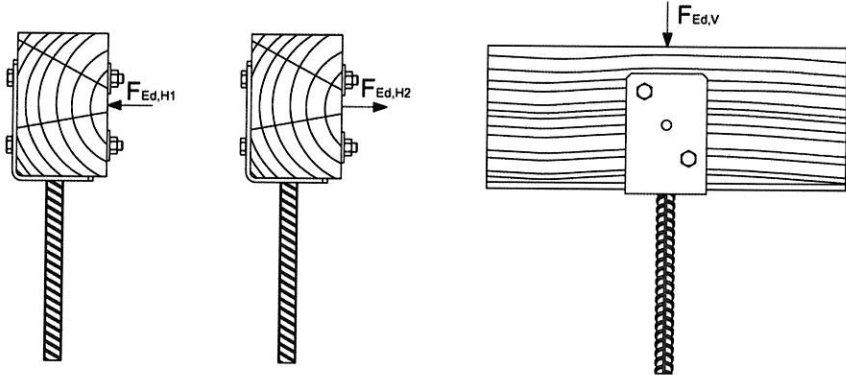
| No. | Scheme                                                                             | Connector type |
|-----|------------------------------------------------------------------------------------|----------------|
| 18  |  | PS 84L         |

Figure 149 Scheme 18

|                                                           |  |                        |
|-----------------------------------------------------------|--|------------------------|
| THREE-DIMENSIONAL NAILING PLATES                          |  | ANNEX 3<br>ETA 24/0873 |
| THE CHARACTERISTIC LOAD-CARRYING CAPACITIES OF CONNECTORS |  |                        |

Table 86 The characteristic load-carrying capacities of connectors

| Type group | Type    | Timber<br>Moisture<br>[%] | Density<br>$\rho_{\text{mean, 12\%}}$<br>[kg·m <sup>-3</sup> ] | $P_{\text{max, mean}}$<br>[kN] | $P_{\text{max, k}}$<br>[kN] | Note No. |
|------------|---------|---------------------------|----------------------------------------------------------------|--------------------------------|-----------------------------|----------|
| KP         | KP 7    | 16.9                      | 428.2                                                          | 18.34                          | 12.5                        | 1        |
|            | KP 8    | 23.0                      | 411.7                                                          | 20.62                          | 12.9                        | 1        |
| KPL        | KPL 5   | 15.2                      | 421.2                                                          | 8.09                           | 6.8                         | 2        |
|            | KPL 6   | 12.9                      | 422.8                                                          | 9.49                           | 6.2                         | 2        |
|            | KPL 11  | 14.9                      | 452.1                                                          | 18.43                          | 13.0                        | 2        |
|            | KPL 21  | 15.6                      | 472.7                                                          | 21.23                          | 17.1                        | 2        |
|            | KPK 4   | 14.3                      | 416.8                                                          | 15.85                          | 12.7                        | 2        |
| KPK        | KPK 11  | 17.7                      | 460.8                                                          | 13.00                          | 10.4                        | 2        |
|            | KPK 12  | 14.3                      | 460.9                                                          | 17.32                          | 13.5                        | 2        |
|            | KPK 13  | 13.4                      | 398.2                                                          | 22.13                          | 16.7                        | 2        |
|            | KPK 21  | 12.3                      | 468.5                                                          | 13.53                          | 10.8                        | 2        |
|            | KPK 22  | 11.3                      | 407.5                                                          | 13.14                          | 10.6                        | 2        |
|            | KPK 23  | 11.3                      | 460.9                                                          | 12.79                          | 9.0                         | 2        |
|            | KPK 31  | 13.6                      | 436.6                                                          | 12.44                          | 9.3                         | 3        |
|            | KPK 32  | 12.2                      | 424.8                                                          | 12.62                          | 10.5                        | 3        |
|            | KPK 33  | 15.4                      | 415.4                                                          | 13.66                          | 10.5                        | 3        |
|            | KLR 1   | 13.8                      | 422.2                                                          | 5.71                           | 4.2                         | 2        |
|            | KLR 2   | 15.5                      | 429.7                                                          | 10.95                          | 7.9                         | 2        |
|            | KLR 3   | 15.5                      | 407.1                                                          | 10.59                          | 8.3                         | 2        |
| KLR        | KLR 4   | 15.7                      | 468.1                                                          | 6.35                           | 5.1                         | 2        |
|            | KLR 5   | 15.3                      | 410.8                                                          | 15.41                          | 13.6                        | 2        |
|            | KLR 6   | 16.0                      | 497.6                                                          | 9.98                           | 7.2                         | 2        |
|            | KR 1    | 13.4                      | 438.8                                                          | 6.74                           | 5.1                         | 2        |
|            | KR 2    | 14.6                      | 396.2                                                          | 12.29                          | 6.7                         | 2        |
|            | KR 3    | 14.7                      | 408.7                                                          | 7.53                           | 6.3                         | 2        |
| WBC        | WBC 80  | 14.7                      | 423.2                                                          | 42.06                          | 34.9                        | 2        |
|            | WBC 92  | 16.8                      | 424.0                                                          | 42.79                          | 36.1                        | 2        |
|            | WBC 100 | 14.9                      | 423.6                                                          | 42.71                          | 26.8                        | 2        |
|            | WBC 120 | 16.7                      | 414.3                                                          | 47.22                          | 29.2                        | 2        |



| Type group | Type           | Timber Moisture [%] | Density $\rho_{\text{mean}, 12\%}$ [kg·m <sup>-3</sup> ] | $P_{\text{max, mean}}$ [kN] | $P_{\text{max, k}}$ [kN] | Note No. |
|------------|----------------|---------------------|----------------------------------------------------------|-----------------------------|--------------------------|----------|
| WBU        | WBC 137        | 14.9                | 428.4                                                    | 52.44                       | 42.1                     | 2        |
|            | WBU 45 R45-105 | 15.6                | 385.4                                                    | 16.96                       | 11.0                     | 2        |
|            | WBU 45 R50-105 | 14.5                | 387.0                                                    | 16.43                       | 12.4                     | 2        |
|            | WBU 45 R60-120 | 14.9                | 423.8                                                    | 21.47                       | 16.5                     | 2        |
| KRD        | KRD 5          | 16.1                | 453.8                                                    | 9.65                        | 6.1                      | 2        |
|            | KRD 6          | 16.1                | 430.8                                                    | 8.74                        | 6.1                      | 2        |
| LU         | LU 25 R80      | 14.7                | 436.5                                                    | 9.07                        | 6.1                      | 2        |
|            | LU 25 R120     | 14.6                | 414.5                                                    | 14.76                       | 12.3                     | 2        |

Notes:

- 1 Given forces are per one connector (one angle bracket), the test connections consisted of two connectors, forces for the complete connections are twice as high
- 2 One connector
- 3 The forces are given for the complete connection consisting of two connectors, hence force per one connector (one angle bracket) is half of the given value

**Table 87** The characteristic load-carrying capacities of joints (loading)

| Type group | Type  | Timber Moisture [%] | Density $\rho_{\text{mean}, 12\%}$ [kg·m <sup>-3</sup> ] | $P_{\text{max, mean}}$ [kN] | $P_{\text{max, k}}$ [kN] | Note No. |
|------------|-------|---------------------|----------------------------------------------------------|-----------------------------|--------------------------|----------|
| LB         | LB 1  | 12.0                | 400.1                                                    | 13.41                       | 9.9                      | 1        |
|            | LB 2  | 12.0                | 400.1                                                    | 15.27                       | 10.4                     | 1        |
|            | LB 4  | 12.0                | 400.1                                                    | 12.73                       | 9.4                      | 1        |
| NT         | NT 25 | -                   | -                                                        | 25.26                       | 15.7                     | 2        |
|            | NT 40 | -                   | -                                                        | 37.14                       | 32.8                     | 2        |
|            | NT 60 | -                   | -                                                        | 67.62                       | 59.8                     | 2        |
| KKB        | KKB 1 | 12.0                | 400.0                                                    | 81.14                       | 57.6                     | 3        |

Notes:

- 1 Given forces are for one connector, the test connections consisted of two connectors, hence the force for the complete connection is twice the given
- 2 One connector loaded in tension
- 3 Given forces are for the complete connection, the test connections consisted of two connectors, hence force for one connector is half of the given

**Table 88** The characteristic load-carrying capacities of connectors (load)

| Connector | Type of Load | Timber Moisture [%] | Density $\rho_{mean}^{12\%}$ [kg·m <sup>-3</sup> ] | $P_{max,mean}$ (350 kg·m <sup>-3</sup> ) [kN] | $P_{max,k}$ (350 kg·m <sup>-3</sup> ) [kN] | Connectors per connection | Method of determination | Document No.     | Note |
|-----------|--------------|---------------------|----------------------------------------------------|-----------------------------------------------|--------------------------------------------|---------------------------|-------------------------|------------------|------|
| KB 4      | pressure     | 12.7                | 420                                                | 21.9                                          | 19.3                                       | 2                         | testing                 | KB4-01-0001/15   | 2)   |
| KK 0      | pressure     | 12                  | 411                                                | 9.7                                           | 7.7                                        | 2                         | testing                 | KK0-01-0001/15   | 2)   |
| KK 11     | pull out     | 11.7                | 429                                                | 32.8                                          | 26.5                                       | 2                         | testing                 | KK11-01-0001/15  | 2)   |
| KK 12     | pull out     | 11.4                | 439                                                | 20.7                                          | 18.3                                       | 2                         | testing                 | KK12-01-0001/15  | 2)   |
| KL 6      | pressure     | 11.9                | 435                                                | 16.2                                          | 13.6                                       | 2                         | testing                 | KL6-01-0001/15   | 2)   |
| KM 17     | pressure     | 11.4                | 456                                                | 11.2                                          | 9.3                                        | 2                         | testing                 | KM17-01-0001/15  | 2)   |
| KM 18     | pressure     | 14.3                | 437                                                | 13.5                                          | 11.2                                       | 2                         | testing                 | KM18-01-0001/15  | 2)   |
| KP 2      | pressure     | 11                  | C24                                                | 24.3                                          | 21.9                                       | 2                         | testing                 | LCE-O-ML-01      | 2)   |
| KP 9      | pressure     | 12.2                | 440                                                | 21.6                                          | 18.2                                       | 2                         | testing                 | KP130-01-0001/15 | 2)   |
| KR 4      | pull out     | 11.4                | 461                                                | 17.4                                          | 14.9                                       | 2                         | testing                 | KR4-01-0001/15   | 2)   |
| KR 5      | pressure     | 11.5                | 450                                                | 17.4                                          | 14.7                                       | 2                         | testing                 | KR5-01-0001/15   | 2)   |
| KR 6      | pressure     | 11.7                | 429                                                | 7.7                                           | 6.7                                        | 2                         | testing                 | KR6-01-0001/15   | 2)   |
| KR 7      | pressure     | 11.3                | 414                                                | 3.5                                           | 3                                          | 2                         | testing                 | KR7-01-0001/15   | 2)   |
| KRB 7     | pressure     | 11.3                | 414                                                | 3.5                                           | 3                                          | 2                         | testing                 | KR7-01-0001/15   | 2)   |
| KSB 1     | pressure     | -                   | C24                                                | 3.7                                           | 3.4                                        | 2                         | testing                 | LCE-O-ML-01      | 2)   |
| KWB 1     | pressure     | 13.8                | 439                                                | 5.7                                           | 5                                          | 2                         | testing                 | KWC1-01-0001/15  | 2)   |

| Connector | Type of Load | Timber Moisture [%] | Density $\rho_{mean, 12\%}$ [kg*m <sup>-3</sup> ] | $P_{max, mean}$ (350 kg*m <sup>-3</sup> ) [kN] | $P_{max, k}$ (350 kg*m <sup>-3</sup> ) [kN] | Connectors per connection | Method of determination | Document No.    | Note |
|-----------|--------------|---------------------|---------------------------------------------------|------------------------------------------------|---------------------------------------------|---------------------------|-------------------------|-----------------|------|
| KWC 1     | pressure     | 13.8                | 439                                               | 5.7                                            | 5                                           | 2                         | testing                 | KWC1-01-0001/15 | 2)   |
| WBZ 14    | pressure     | -                   | C24                                               | -                                              | 9.3                                         | 1                         | calculation             | LCE-O-WBZ-01    | 1)   |

Notes:

- 1) The forces are given for the complete connection consisting of one connector
- 2) The forces are given for the complete connection consisting of two connectors, hence force per one connector (one angle bracket) is half of the given value.  
 $P_{max, k}$  characteristic load-bearing capacity of connector

**Table 89** The characteristic load-carrying capacities of joints (calculations)

| Type of connector | Load     | Bearing Capacity [kN] |       | Method of determination | Document No. |
|-------------------|----------|-----------------------|-------|-------------------------|--------------|
|                   |          | Timber                | Steel |                         |              |
| SDLZ 1            | shear    | 3.6                   | -     | calculation             | KAO-O-SOD-13 |
| SDKLR 1           | oblique  | 3.3                   | -     | calculation             | KAO-O-SOD-12 |
| SDKL 1            | pull out | -                     | 1.1   | calculation             | KAO-O-SOD-10 |
|                   | pressure | 3.3                   | -     | calculation             | KAO-O-SOD-11 |
| SDSP 70 A         | pressure | 34.8                  | -     | calculation             | KAO-O-SOD-23 |
| SDSP 70 B         | pressure | 108.6                 | -     | calculation             | KAO-O-SOD-24 |
| SDP 90 A          | pressure | 39.6                  | -     | calculation             | KAO-O-SOD-15 |
| SDP 90 B          | pressure | 180.6                 | -     | calculation             | KAO-O-SOD-17 |
| SDP 100 A         | pressure | 39.6                  | -     | calculation             | KAO-O-SOD-15 |
| SDP 100 B         | pressure | 220.5                 | -     | calculation             | KAO-O-SOD-17 |
| SDP 120 A         | pressure | 39.6                  | -     | calculation             | KAO-O-SOD-15 |
| SDP 120 B         | pressure | 312.9                 | -     | calculation             | KAO-O-SOD-17 |
| SDSKW 2           | pressure | 3.3                   |       | testing                 | KAO-O-SOD-21 |
| SDSKW 8           | pressure | 3.5                   |       | testing                 | KAO-O-SOD-22 |
| SDSKP 1           | pressure | 17.8                  |       | testing                 | KAO-O-SOD-21 |
| SDSKP 5           | pressure | 10.9                  |       | testing                 | KAO-O-SOD-21 |
| SDSKM 7           | pressure | 5.8                   |       | testing                 | KAO-O-SOD-21 |
| SDSWBZ 10         | pressure | 9.6                   | -     | calculation             | KAO-O-SOD-18 |
| SDSWBZ 11         | pressure | 12.3                  | -     | calculation             | KAO-O-SOD-19 |
| SDSWBZ 14         | pressure | 9.3                   | -     | calculation             | KAO-O-SOD-20 |
| SDSWBZ 21         | pressure |                       |       | testing                 | KAO-O-SOD-21 |
| SDSWBZ 26         | pressure | 17.2                  |       | testing                 | KAO-O-SOD-21 |
| SDSWBZ 30         | pressure | 22.4                  |       | testing                 | KAO-O-SOD-21 |

**Table 90** The characteristic load-carrying capacities of joints (calculations)

| Type of connector | Characteristic load-carrying capacities of joints (calculations) |  | Document No. |
|-------------------|------------------------------------------------------------------|--|--------------|
|                   | Characteristic bearing capacity [kN]                             |  |              |
|                   | Timber                                                           |  |              |
| PS 60             | 4.1                                                              |  | BPS-0001/13  |
| PS 70             | 4.3                                                              |  | BPS-0002/13  |
| PS 80             | 6.9                                                              |  | BPS-0003/13  |
| PS 90             | 6.2                                                              |  | BPS-0004/13  |
| PS 100            | 6.7                                                              |  | BPS-0005/13  |
| PS 120            | 8.2                                                              |  | BPS-0006/13  |
| PS 140            | 7.5                                                              |  | BPS-0007/13  |
| KPS 1             | 16.3                                                             |  | KE1-0009/14  |
| KPS 2             | 18.7                                                             |  | KE1-0010/14  |
| KPS 3             | 12.6                                                             |  | KE1-0011/14  |
| KPS 4             | 11.6                                                             |  | KE1-0012/14  |

**Table 91** Overview of bearing capacities of connector type PS

| Type of connector | Bearing capacity N <sub>Rd,V</sub> [kN] (calculation) |                           | Bearing capacity N <sub>Rd,H1</sub> [kN] (calculation) |                           | Bearing capacity N <sub>Rd,H2</sub> [kN] (testing) |
|-------------------|-------------------------------------------------------|---------------------------|--------------------------------------------------------|---------------------------|----------------------------------------------------|
|                   | Bearing capacity of timber                            | Bearing capacity of steel | Bearing capacity of timber                             | Bearing capacity of steel |                                                    |
| PS 60             | 61.7                                                  | 51.7                      | 12.2                                                   | 6.9                       | 4.7                                                |
| PS 70             | 86.6                                                  | 51.7                      | 12.2                                                   | 6.9                       | 4.4                                                |
| PS 80             | 99.2                                                  | 57.3                      | 12.2                                                   | 9.6                       | 7.7                                                |
| PS 90             | 111.8                                                 | 57.3                      | 12.2                                                   | 9.6                       | 6.8                                                |
| PS 100            | 124.4                                                 | 57.3                      | 12.2                                                   | 9.6                       | 7                                                  |
| PS 120            | 149.6                                                 | 57.3                      | 12.2                                                   | 9.6                       | 9.1                                                |
| PS 140            | 174.8                                                 | 57.3                      | 12.2                                                   | 9.6                       | 7.8                                                |

N<sub>Rd,V</sub> - Vertical load force, N<sub>Rd,H1</sub> - Horizontal load force, N<sub>Rd,H2</sub> - Vertical load force parallel to the side of base  
Document No.: KAO-L-PS-01

For combinations of loads ( $F_{Ed,V}$ ,  $F_{Ed,H1}$ ,  $F_{Ed,H2}$ ) a linear summation of the utilization ratios may be used. This method may be applied by using a following criteria:

$$\frac{F_{Ed,V}}{N_{Rd,V}} + \frac{F_{Ed,H1}}{N_{Rd,H1}} + \frac{F_{Ed,H2}}{N_{Rd,H2}} \leq 1$$

**Table 92** The characteristic load-carrying capacities of connectors (calculations)

| Connector | Beam dimensions [mm] | Pressure $F_{Ed,V}$      |                         | Shear $F_{Ed,H1}$         |                          | Shear $F_{Ed,H2}$         |                          | Document No.  |
|-----------|----------------------|--------------------------|-------------------------|---------------------------|--------------------------|---------------------------|--------------------------|---------------|
|           |                      | Timber $N_{Rk,V,w}$ [kN] | Steel $N_{Rd,V,s}$ [kN] | Timber $N_{Rk,H1,w}$ [kN] | Steel $N_{Rd,H1,s}$ [kN] | Timber $N_{Rk,H2,w}$ [kN] | Steel $N_{Rd,H2,s}$ [kN] |               |
| PSL 50    | 50x65                | 40.8                     | 51.7                    | 2.9                       | 2.4                      | 5.6                       | 1.3                      | KAO-L-PSL-01  |
| PSL 70    | 70x70                | 60.5                     | 51.7                    | 2.9                       | 2.4                      | 8.2                       | 1.3                      |               |
| PSL 90    | 90x90                | 77.3                     | 51.7                    | 2.9                       | 2.4                      | 11.2                      | 1.3                      |               |
| PSL 100   | 100x100              | 85.7                     | 51.7                    | 2.9                       | 2.4                      | 11.2                      | 1.3                      |               |
| PSP 70    | 70x70                | 13.4                     | 21.6                    | 11.4                      | 11.2                     | 11.4                      | 11.2                     | KAO-L-PSP-01  |
| PSP 90    | 90x90                | 13.4                     | 21.6                    | 14.6                      | 15.3                     | 14.6                      | 15.3                     |               |
| PSP 100   | 100x100              | 14.1                     | 28.8                    | 16.3                      | 23.2                     | 16.3                      | 23.2                     |               |
| PSP 120   | 120x120              | 14.1                     | 28.8                    | 19.5                      | 28.6                     | 19.5                      | 28.6                     |               |
| PSPO 80   | ø80                  | 13.4                     | 21.6                    | 9.8                       | 25.2                     | 9.8                       | 25.2                     | KAO-L-PSPO-01 |
| PSPO 100  | ø100                 | 13.4                     | 21.6                    | 15.2                      | 30.8                     | 15.2                      | 30.8                     |               |
| PSR 80    | 90x90                | 115.3                    | 49.3                    | -                         | -                        | -                         | -                        | KAO-L-PSR-01  |
| PSR 110   | 120x120              | 235                      | 49.3                    | -                         | -                        | -                         | -                        |               |
| PSRT      | 60x120               | 75.6                     | 57.3                    | 13                        | 0.5                      | -                         | -                        | KAO-L-PSRT-01 |
|           | 70x120               | 88.2                     | 57.3                    | 15.2                      | 0.5                      | -                         | -                        |               |
|           | 80x120               | 100.8                    | 57.3                    | 17.4                      | 0.5                      | -                         | -                        |               |
|           | 90x120               | 113.4                    | 57.3                    | 19.5                      | 0.5                      | -                         | -                        |               |
| PSRU      | 60x120               | 75.6                     | 57.3                    | 13                        | 0.5                      | -                         | -                        | KAO-L-PSRU-01 |
|           | 70x120               | 88.2                     | 57.3                    | 15.2                      | 0.5                      | -                         | -                        |               |
|           | 80x120               | 100.8                    | 57.3                    | 17.4                      | 0.5                      | -                         | -                        |               |
|           | 90x120               | 113.4                    | 57.3                    | 19.5                      | 0.5                      | -                         | -                        |               |
| PST 70    | 70x80                | 31.9                     | 117.5                   | 2.5                       | 3.7                      | 8.8                       | 7.1                      | KAO-L-PST-01  |
| PST 90    | 90x90                | 31.9                     | 117.5                   | 2.5                       | 3.7                      | 12                        | 7.1                      |               |
| PST 100   | 100x100              | 31.9                     | 117.5                   | 2.5                       | 3.7                      | 13                        | 7.1                      |               |
| PST 120   | 120x120              | 31.9                     | 117.5                   | 2.5                       | 3.7                      | 13                        | 7.1                      |               |



| Connector | Beam dimensions [mm] | Pressure $F_{Ed,V}$         |                            | Shear $F_{Ed,H1}$            |                             | Shear $F_{Ed,H2}$            |                             | Document No.  |
|-----------|----------------------|-----------------------------|----------------------------|------------------------------|-----------------------------|------------------------------|-----------------------------|---------------|
|           |                      | Timber<br>$N_{Rk,V,w}$ [kN] | Steel<br>$N_{Rd,V,s}$ [kN] | Timber<br>$N_{Rk,H1,w}$ [kN] | Steel<br>$N_{Rd,H1,s}$ [kN] | Timber<br>$N_{Rk,H2,w}$ [kN] | Steel<br>$N_{Rd,H2,s}$ [kN] |               |
| PST 140   | 140x140              | 31.9                        | 117.5                      | 2.5                          | 3.7                         | 13                           | 7.1                         | KAO-L-PS84-01 |
| PS 84 L   | 160x100              | 29.3                        | 57.3                       | 5.3                          | 2.2                         | 12.2                         | 1.8                         |               |

Table 93 The characteristic load-carrying capacities of connectors

| Connector     | Type of Load | Timber Moisture | Density             |         | $P_{max,mean}$<br>(350 kg*m³) | $P_{max,k}$<br>(350 kg*m³) |             | Connectors per connection | Method of determination | Note |
|---------------|--------------|-----------------|---------------------|---------|-------------------------------|----------------------------|-------------|---------------------------|-------------------------|------|
|               |              |                 | $\rho_{mean, 12\%}$ |         |                               |                            |             |                           |                         |      |
|               |              |                 | [%]                 | [kg*m³] | [kN]                          | [kN]                       |             |                           |                         |      |
| KM 16         | pressure     | 11.7            | 441                 | 11.1    | 8.5                           | 2                          | testing     | 2)                        |                         |      |
| KM 16 (3 mm)  | pressure     | -               | C24                 | 11.1    | 8.5                           | 2                          | calculation | 2)                        |                         |      |
| KM 8 (2.5 mm) | pressure     | -               | C24                 | 7.33    | 6.68                          | 2                          | testing     | 2)                        |                         |      |
| KM 19         | pressure     | 11.9            | 429                 | 20.5    | 15.4                          | 2                          | testing     | 2)                        |                         |      |
| KM 3 (2.5 mm) | pressure     | -               | C24                 | 4.05    | 3.83                          | 2                          | testing     | 2)                        |                         |      |
| KL 0          | pressure     | 12.7            | 438                 | 8.6     | 7.4                           | 2                          | testing     | 2)                        |                         |      |
| KL 5 (3 mm)   | pressure     | -               | C24                 | 24.3    | 21.9                          | 2                          | testing     | 2)                        |                         |      |
| WB 39         | pressure     | -               | C24                 | -       | 13.2                          | 1                          | calculation | 1)                        |                         |      |
| WB 40         | pressure     | -               | C24                 | -       | 6.6                           | 1                          | calculation | 1)                        |                         |      |
| WB 41         | pressure     | -               | C24                 | -       | 7.4                           | 1                          | calculation | 1)                        |                         |      |
| WB 42         | pressure     | -               | C24                 | -       | 7.4                           | 1                          | calculation | 1)                        |                         |      |
| WB 43         | pressure     | -               | C24                 | -       | 8.4                           | 1                          | calculation | 1)                        |                         |      |
| WB 44         | pressure     | -               | C24                 | -       | 8.4                           | 1                          | calculation | 1)                        |                         |      |
| WB 45         | pressure     | -               | C24                 | -       | 8.4                           | 1                          | calculation | 1)                        |                         |      |
| WB 46         | pressure     | -               | C24                 | -       | 8.4                           | 1                          | calculation | 1)                        |                         |      |
| WB 47         | pressure     | -               | C24                 | -       | 9.7                           | 1                          | calculation | 1)                        |                         |      |
| WB 48         | pressure     | -               | C24                 | -       | 9.6                           | 1                          | calculation | 1)                        |                         |      |
| WB 49         | pressure     | -               | C24                 | -       | 9.4                           | 1                          | calculation | 1)                        |                         |      |



| Connector   | Type of Load | Timber Moisture | Density                 |         | $P_{\text{max,mean}}$<br>(350 kg*m³) |      | $P_{\text{max,k}}$<br>(350 kg*m³) |      | Connectors per connection | Method of determination | Note |
|-------------|--------------|-----------------|-------------------------|---------|--------------------------------------|------|-----------------------------------|------|---------------------------|-------------------------|------|
|             |              |                 | $P_{\text{mean, 12\%}}$ | [kg*m³] | $P_{\text{max,mean}}$                | [kN] | $P_{\text{max,k}}$                | [kN] |                           |                         |      |
|             |              |                 |                         |         |                                      |      |                                   |      |                           |                         |      |
| WB 50       | pressure     | -               | C24                     | -       | -                                    | -    | 11.8                              | 1    | calculation               | 1)                      |      |
| WB 51       | pressure     | -               | C24                     | -       | -                                    | -    | 11.8                              | 1    | calculation               | 1)                      |      |
| WB 52       | pressure     | -               | C24                     | -       | -                                    | -    | 9.3                               | 1    | calculation               | 1)                      |      |
| WB 53       | pressure     | -               | C24                     | -       | -                                    | -    | 9.3                               | 1    | calculation               | 1)                      |      |
| WB 54       | pressure     | -               | C24                     | -       | -                                    | -    | 12.4                              | 1    | calculation               | 1)                      |      |
| WB 55       | pressure     | -               | C24                     | -       | -                                    | -    | 12.6                              | 1    | calculation               | 1)                      |      |
| WB 56       | pressure     | -               | C24                     | -       | -                                    | -    | 12.6                              | 1    | calculation               | 1)                      |      |
| WB 57       | pressure     | -               | C24                     | -       | -                                    | -    | 9.1                               | 1    | calculation               | 1)                      |      |
| WB 58       | pressure     | -               | C24                     | -       | -                                    | -    | 17.3                              | 1    | calculation               | 1)                      |      |
| WB 59       | pressure     | -               | C24                     | -       | -                                    | -    | 11.2                              | 1    | calculation               | 1)                      |      |
| WB 60       | pressure     | -               | C24                     | -       | -                                    | -    | 14.2                              | 1    | calculation               | 1)                      |      |
| WB 61       | pressure     | -               | C24                     | -       | -                                    | -    | 18.4                              | 1    | calculation               | 1)                      |      |
| WB 62       | pressure     | -               | C24                     | -       | -                                    | -    | 22.9                              | 1    | calculation               | 1)                      |      |
| WB 63       | pressure     | -               | C24                     | -       | -                                    | -    | 12.9                              | 1    | calculation               | 1)                      |      |
| WBZ 38      | pressure     | -               | C24                     | -       | -                                    | -    | 16.2                              | 1    | calculation               | 1)                      |      |
| WBZ 49      | pressure     | -               | C24                     | -       | -                                    | -    | 4.8                               | 1    | calculation               | 1)                      |      |
| WBZ 52      | pressure     | -               | C24                     | -       | -                                    | -    | 4.8                               | 1    | calculation               | 1)                      |      |
| WBZ 54      | pressure     | -               | C24                     | -       | -                                    | -    | 5.8                               | 1    | calculation               | 1)                      |      |
| PSR 80 M24  | pressure     | -               | C24                     | -       | -                                    | -    | 49.3                              | 1    | calculation               | 1)                      |      |
| PSR 100 M24 | pressure     | -               | C24                     | -       | -                                    | -    | 49.3                              | 1    | calculation               | 1)                      |      |
| PSR 130 M24 | pressure     | -               | C24                     | -       | -                                    | -    | 49.3                              | 1    | calculation               | 1)                      |      |
| PSR 80 M20  | pressure     | -               | C24                     | -       | -                                    | -    | 40.8                              | 1    | calculation               | 1)                      |      |
| PSR 100 M20 | pressure     | -               | C24                     | -       | -                                    | -    | 40.8                              | 1    | calculation               | 1)                      |      |
| PSR 130 M20 | pressure     | -               | C24                     | -       | -                                    | -    | 40.8                              | 1    | calculation               | 1)                      |      |
| PSRP 80 M20 | pressure     | -               | C24                     | -       | -                                    | -    | 40.8                              | 1    | calculation               | 1)                      |      |

| Connector      | Type of Load | Timber Moisture<br>[%] | Density                                         |      | $P_{\max, \text{mean}}$<br>(350 kg*m <sup>3</sup> ) |      | $P_{\max, k}$<br>(350 kg*m <sup>3</sup> ) |      | Connectors per connection | Method of determination | Note |
|----------------|--------------|------------------------|-------------------------------------------------|------|-----------------------------------------------------|------|-------------------------------------------|------|---------------------------|-------------------------|------|
|                |              |                        | $P_{\text{mean}, 12\%}$<br>[kg*m <sup>3</sup> ] | [kN] | $P_{\max, \text{mean}}$<br>(350 kg*m <sup>3</sup> ) | [kN] | $P_{\max, k}$<br>(350 kg*m <sup>3</sup> ) | [kN] |                           |                         |      |
| PSRP 100 M20   | pressure     | -                      | C24                                             | -    | -                                                   | -    | 40.8                                      | -    | 1                         | calculation             | 1)   |
| PSRP 130 M20   | pressure     | -                      | C24                                             | -    | -                                                   | -    | 40.8                                      | -    | 1                         | calculation             | 1)   |
| PPSR 80        | pressure     | -                      | C24                                             | -    | -                                                   | -    | 52.6                                      | -    | 1                         | calculation             | 1)   |
| PPSR 100       | pressure     | -                      | C24                                             | -    | -                                                   | -    | 52.6                                      | -    | 1                         | calculation             | 1)   |
| PPSR 130       | pressure     | -                      | C24                                             | -    | -                                                   | -    | 52.6                                      | -    | 1                         | calculation             | 1)   |
| PPS 80         | pressure     | -                      | C24                                             | -    | -                                                   | -    | 57.3                                      | -    | 1                         | calculation             | 1)   |
| PPS 100        | pressure     | -                      | C24                                             | -    | -                                                   | -    | 57.3                                      | -    | 1                         | calculation             | 1)   |
| PPS 130        | pressure     | -                      | C24                                             | -    | -                                                   | -    | 57.3                                      | -    | 1                         | calculation             | 1)   |
| PR 100 100-150 | pressure     | -                      | C24                                             | -    | -                                                   | -    | 40.8                                      | -    | 1                         | calculation             | 1)   |
| PR 100 130-150 | pressure     | -                      | C24                                             | -    | -                                                   | -    | 40.8                                      | -    | 1                         | calculation             | 1)   |
| PR 130 130-150 | pressure     | -                      | C24                                             | -    | -                                                   | -    | 40.8                                      | -    | 1                         | calculation             | 1)   |
| PSK 70         | pressure     | -                      | C25                                             | -    | -                                                   | -    | 4.9                                       | -    | 1                         | calculation             | 1)   |
| SDPSK 70       | pressure     | -                      | C26                                             | -    | -                                                   | -    | 4.9                                       | -    | 1                         | calculation             | 1)   |

It is always necessary to put nails in the black marked holes. This is the only one proper pattern. Too many or too long nails can weaken the wood, when are quite close to the edge (rule is stated below).

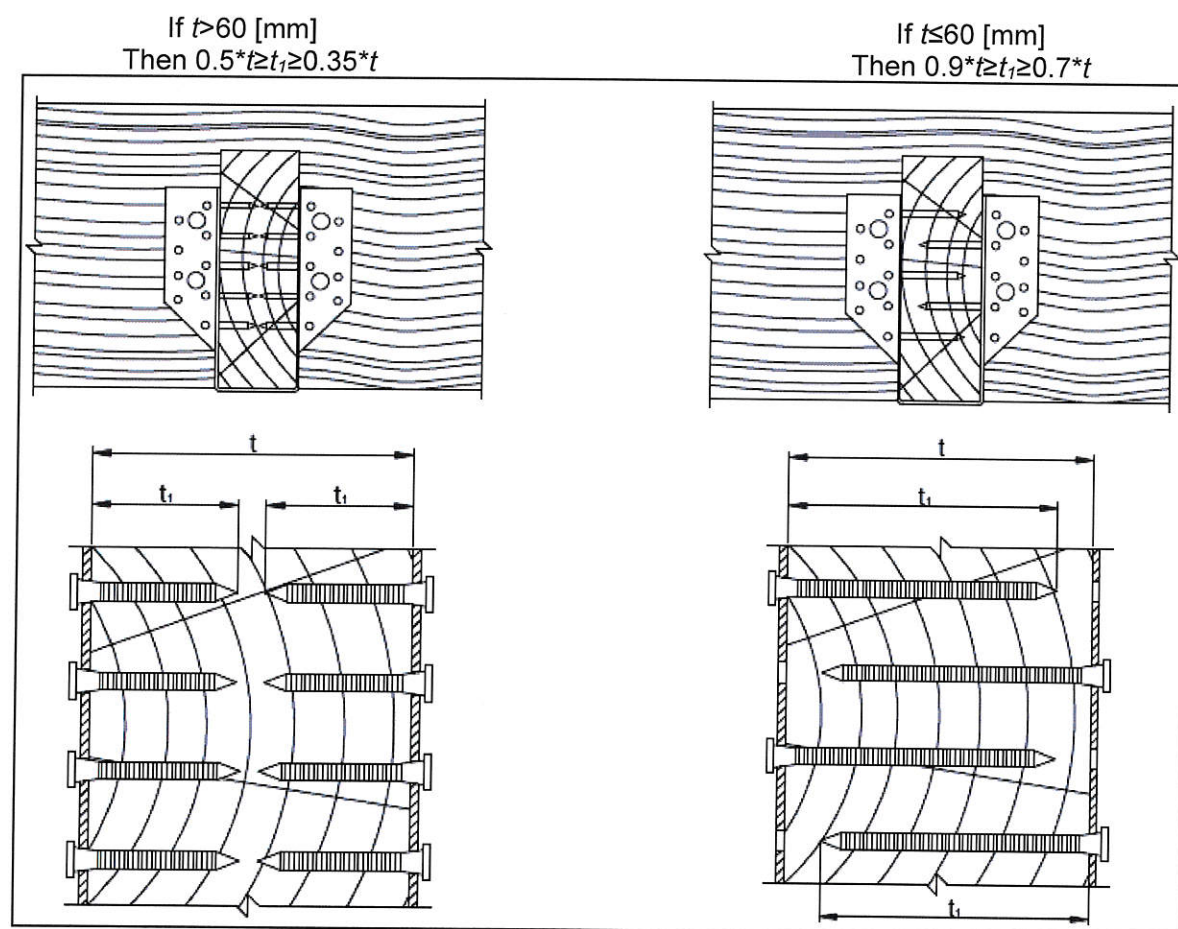
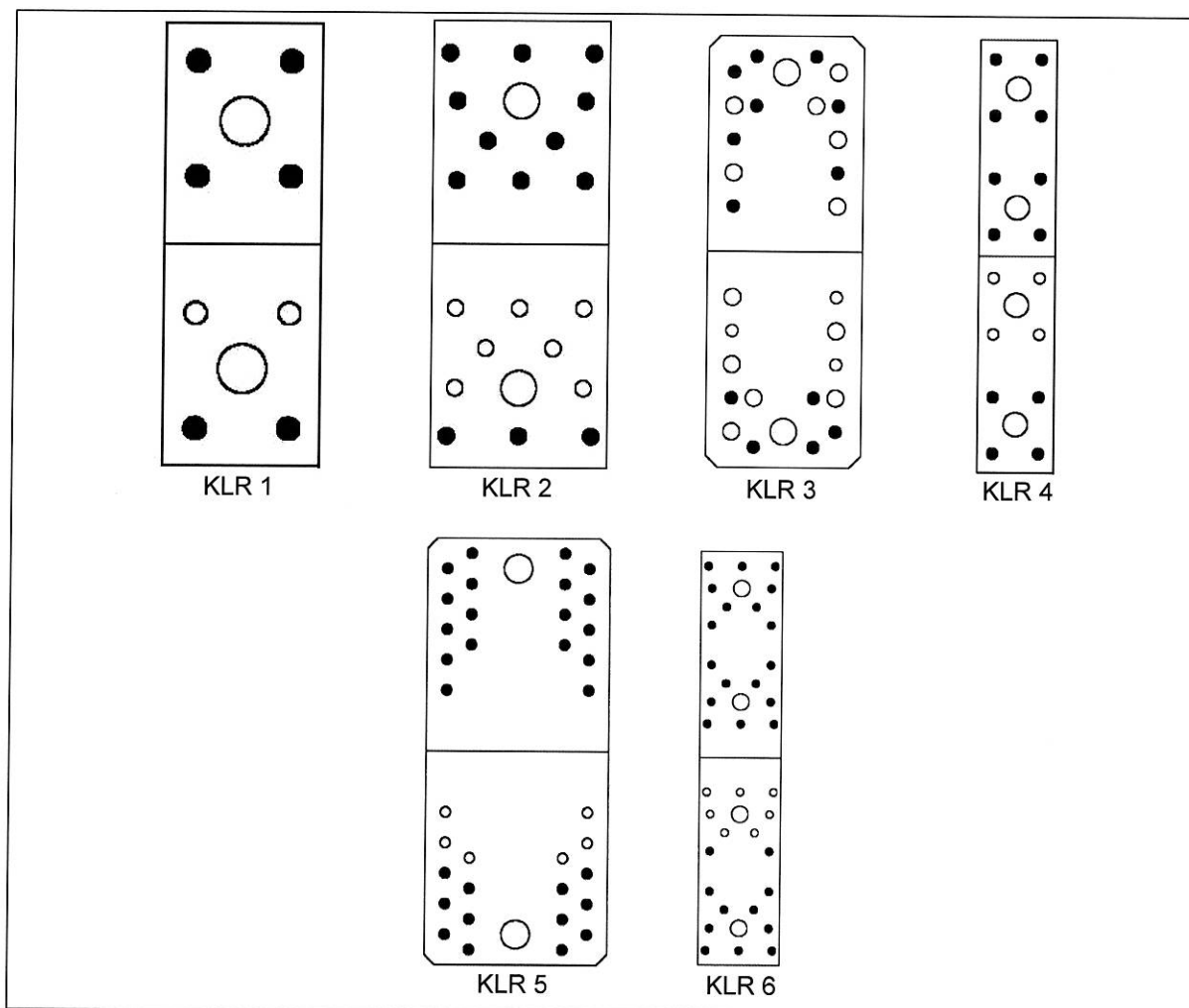
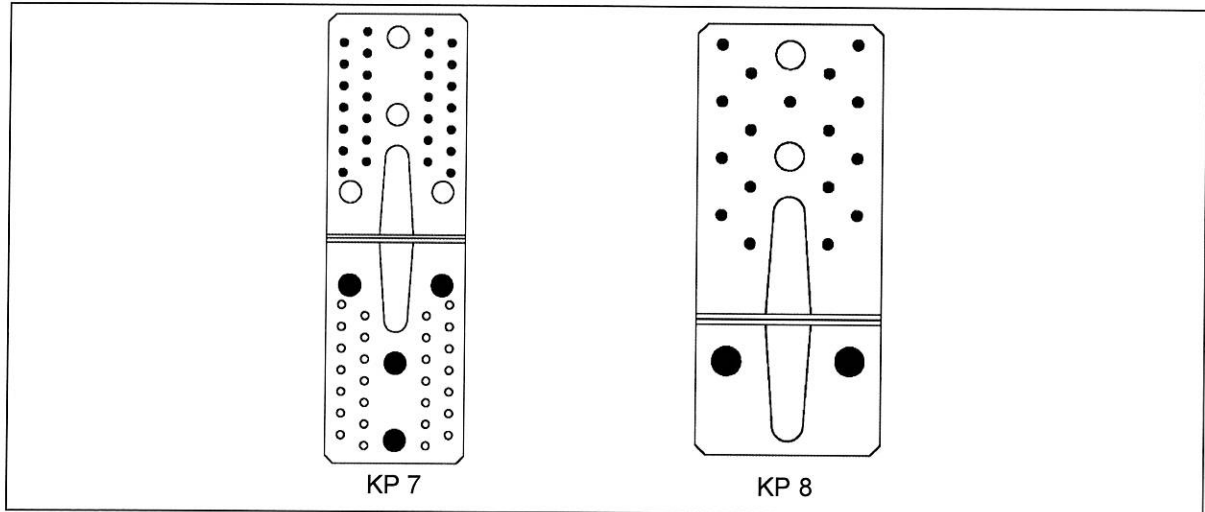


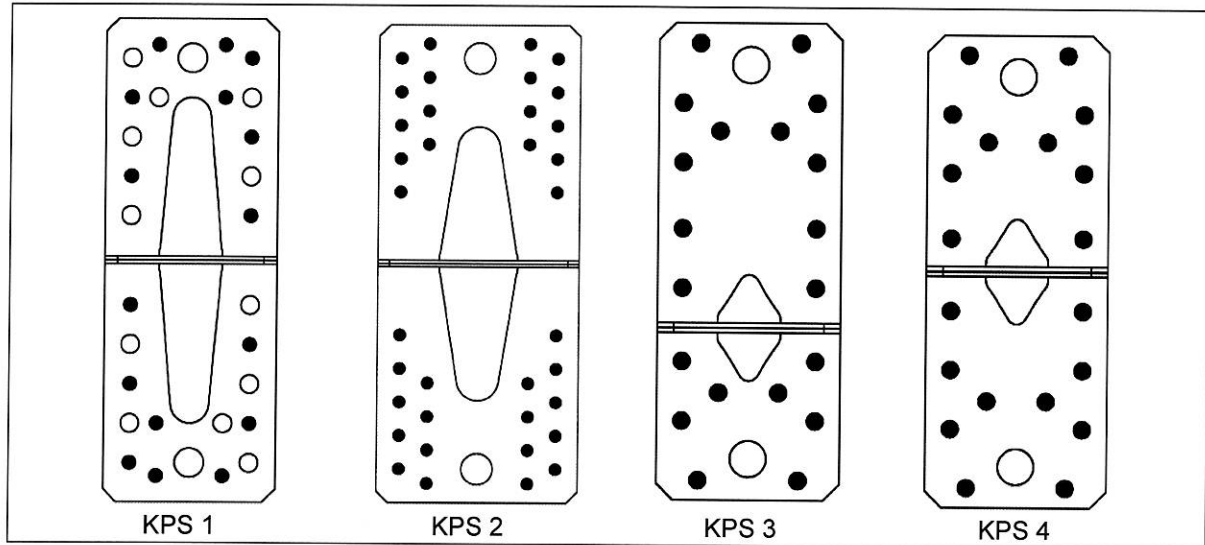
Figure 150 Rule for placement nails



**Figure 151** Type KLR



**Figure 152** Type KP



**Figure 153** Type KPS

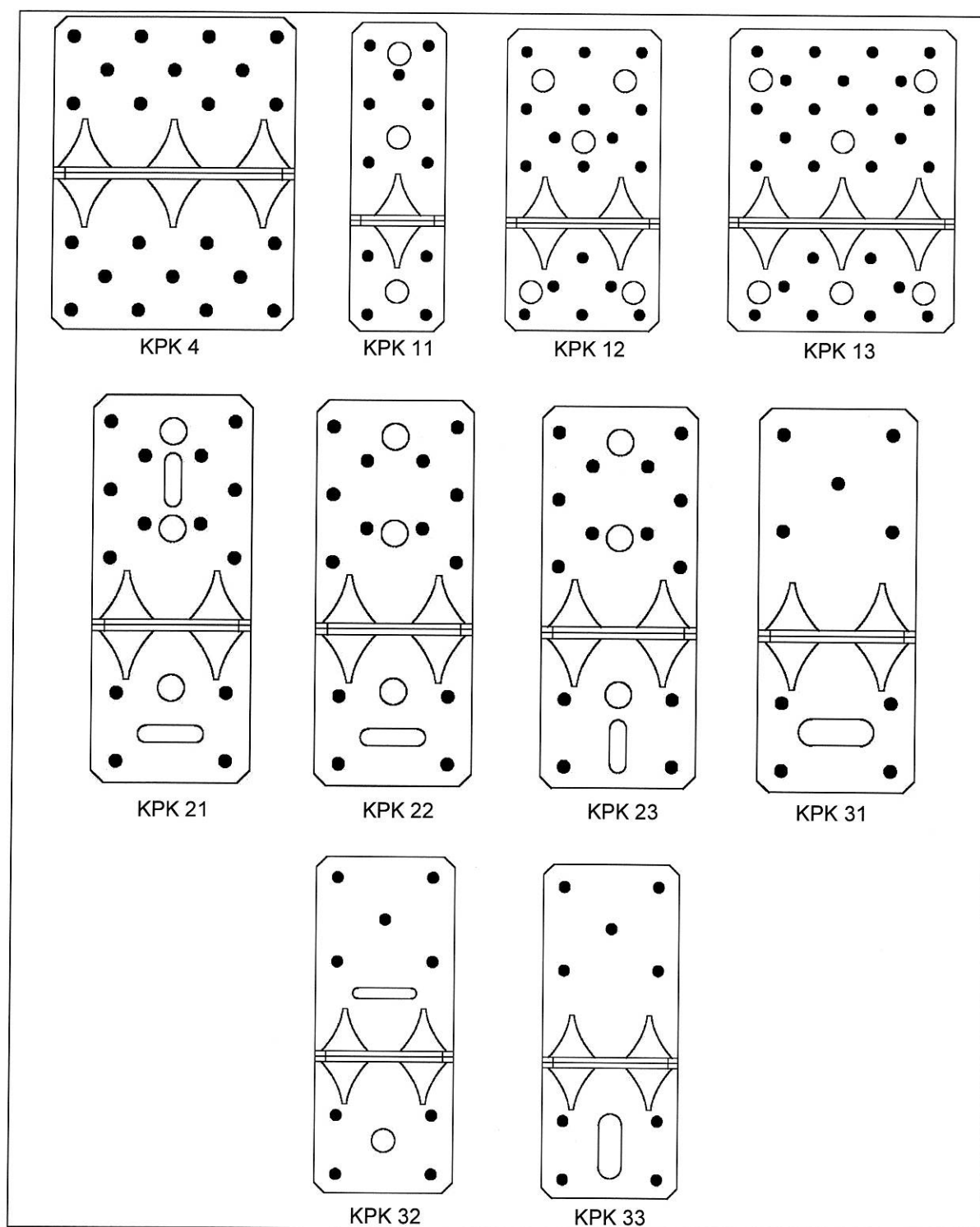


Figure 154 Type KPK



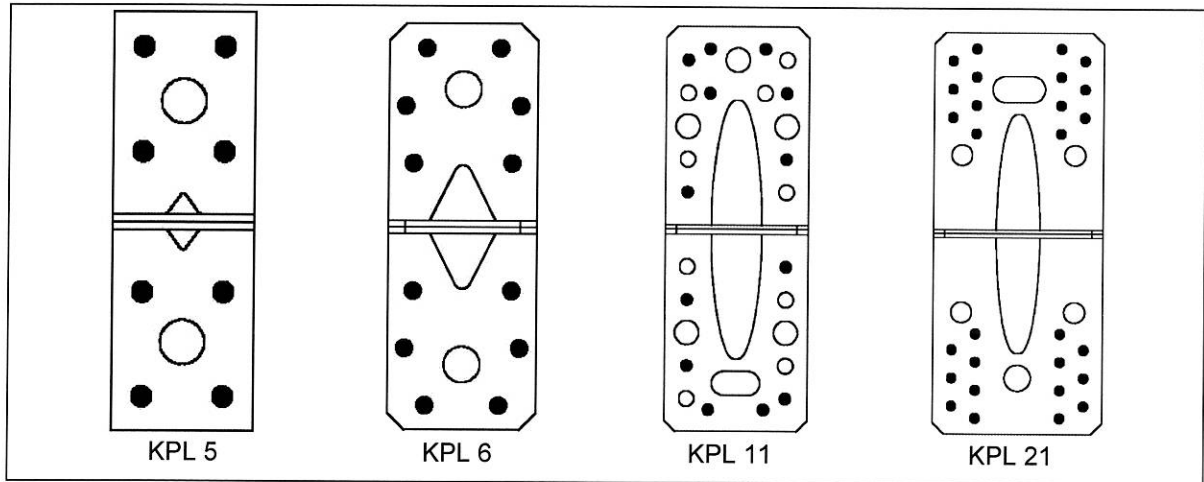


Figure 155 Type KPL

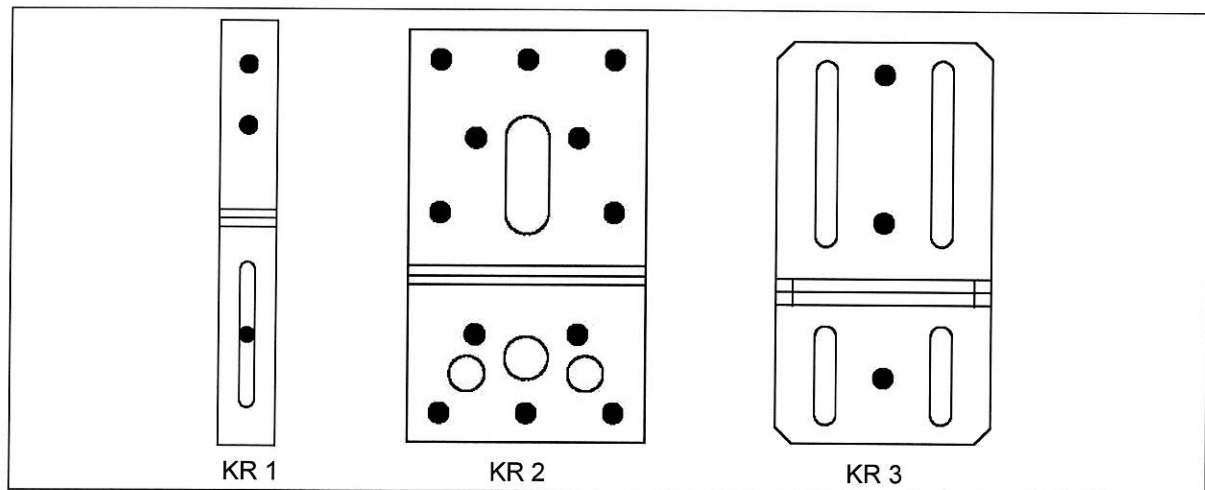


Figure 156 Type KR

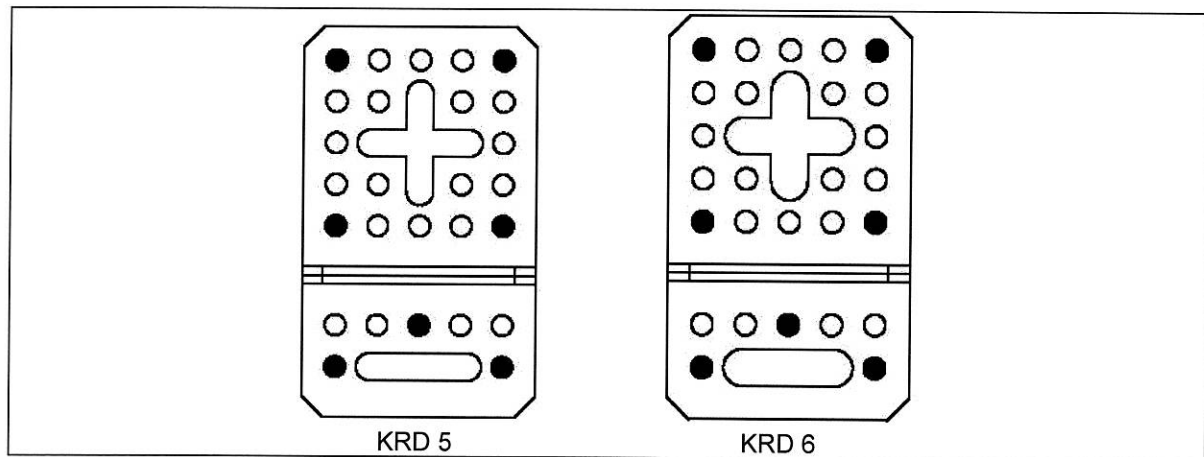
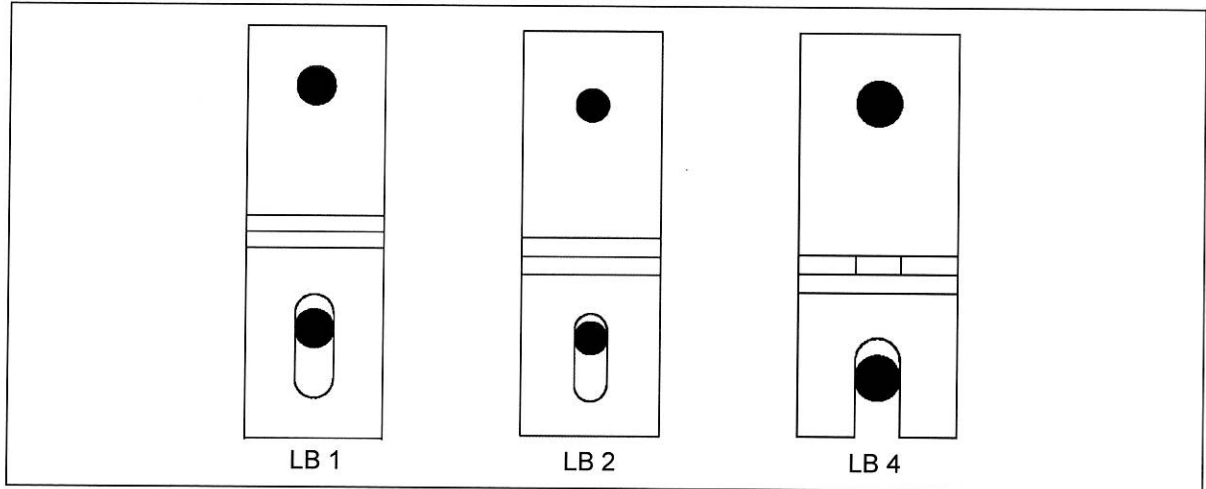
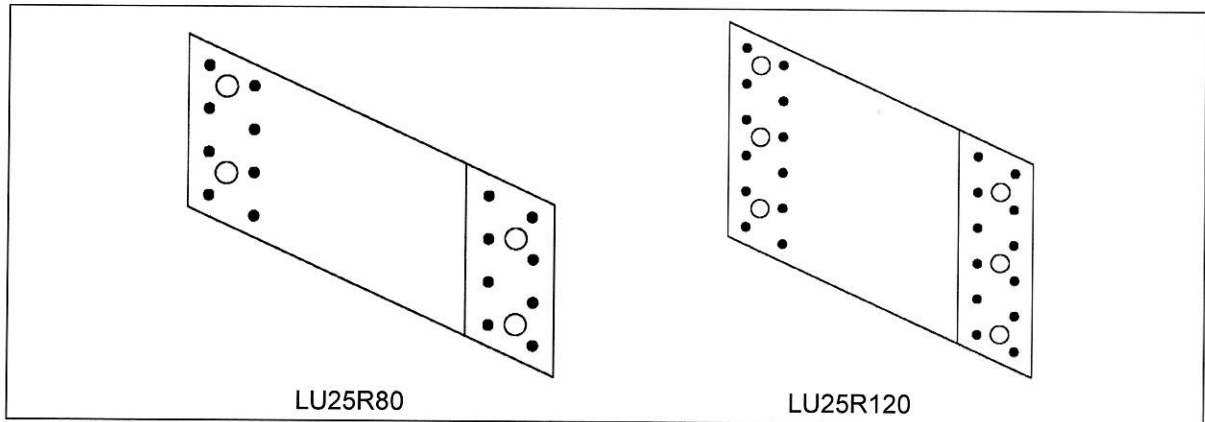


Figure 157 Type KRD

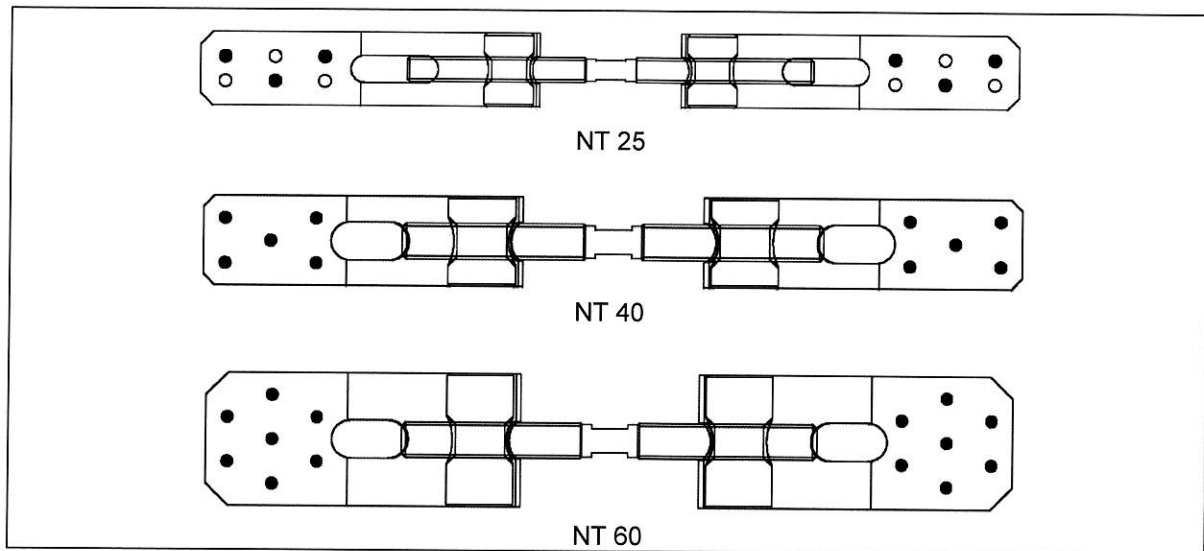




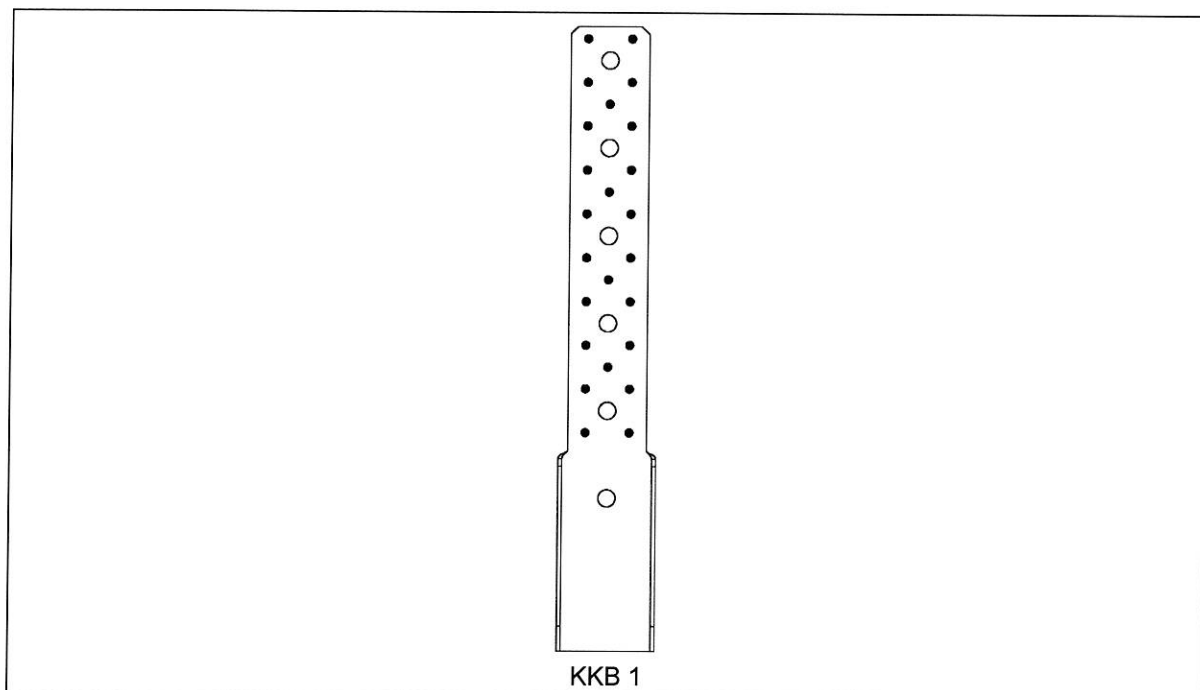
**Figure 158** Type LB



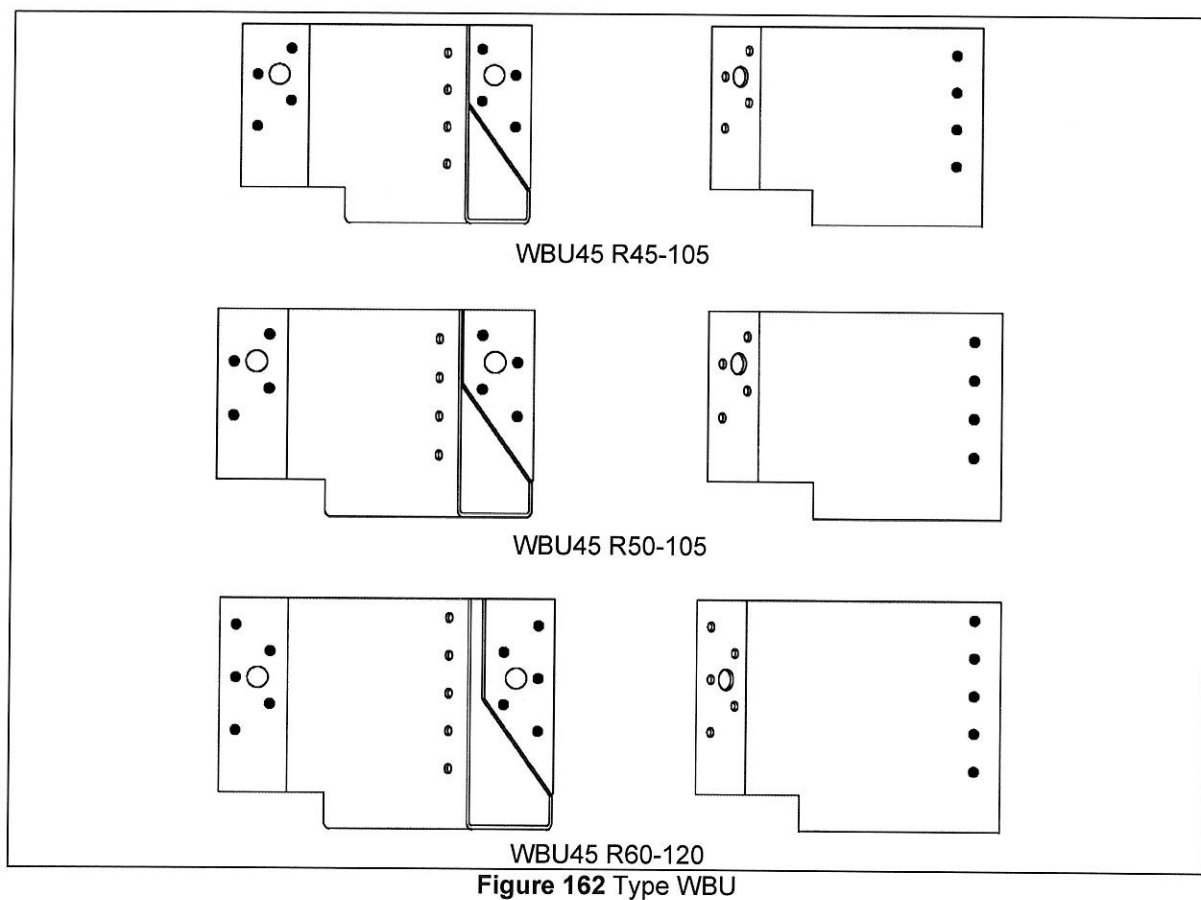
**Figure 159** Type LU



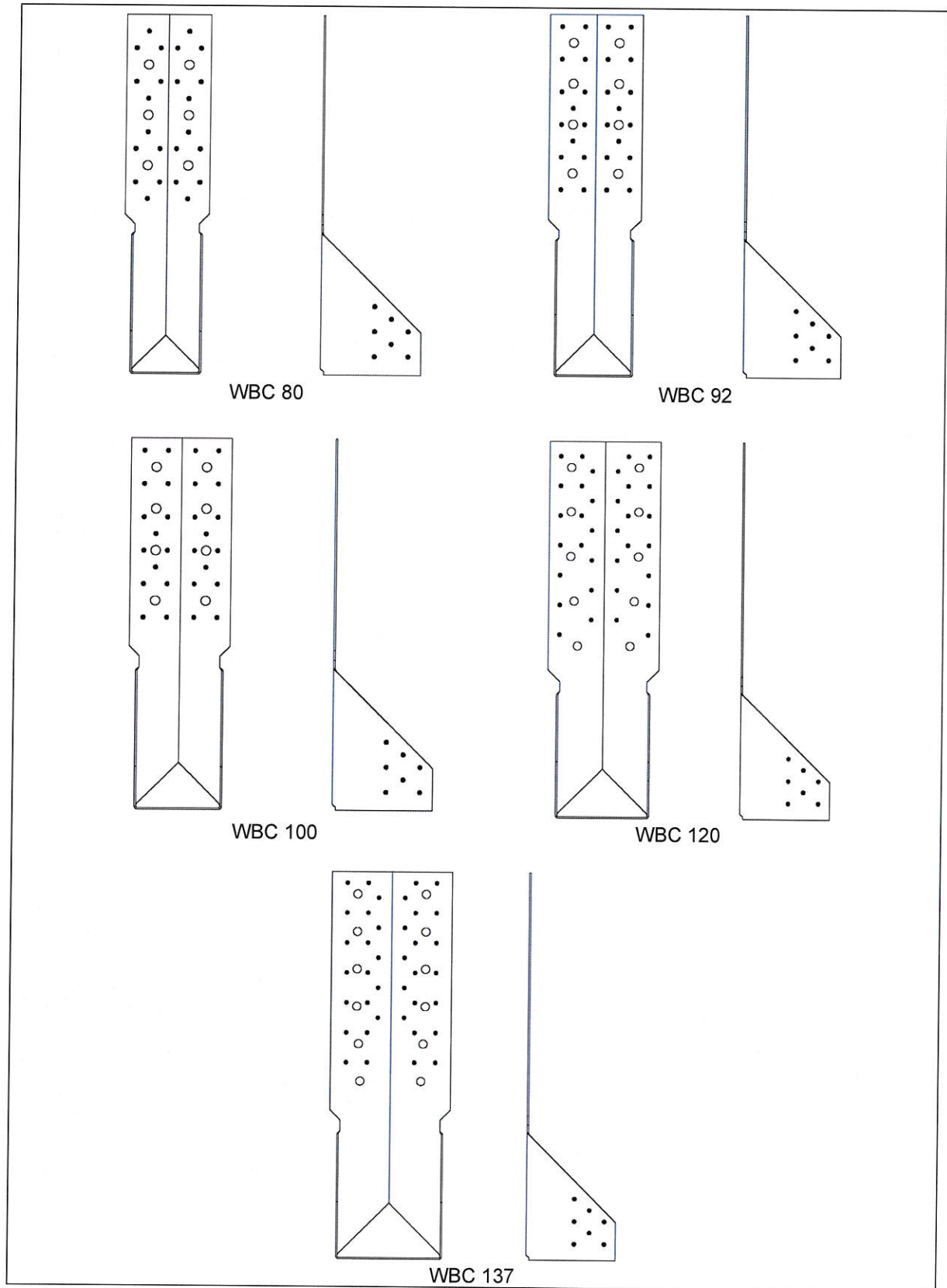
**Figure 160** Type NT



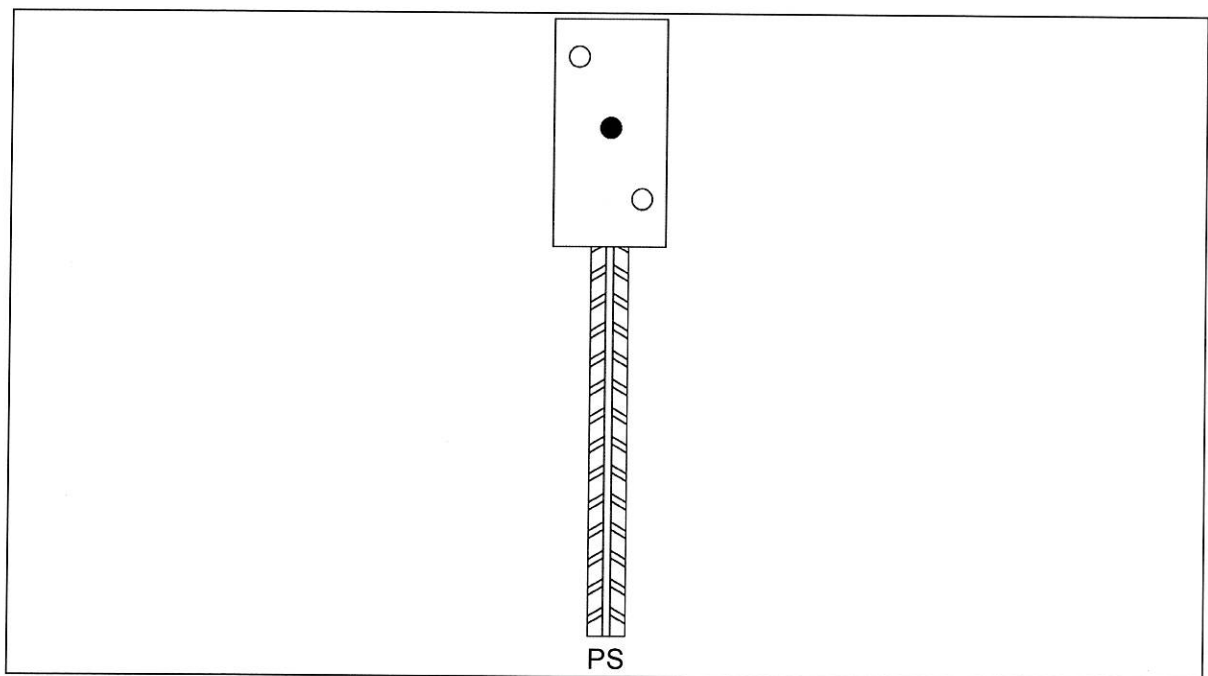
**Figure 161** Type KKB



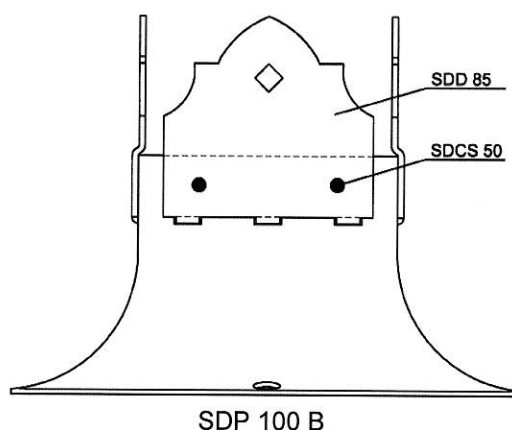
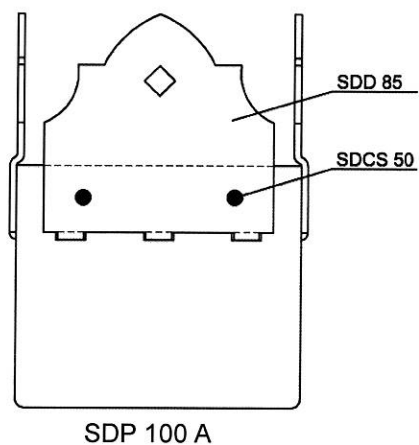
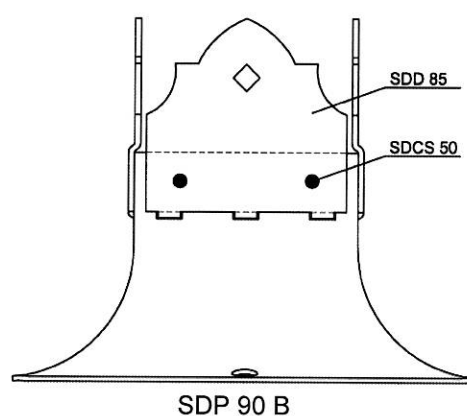
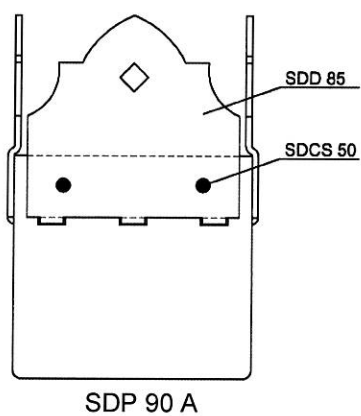
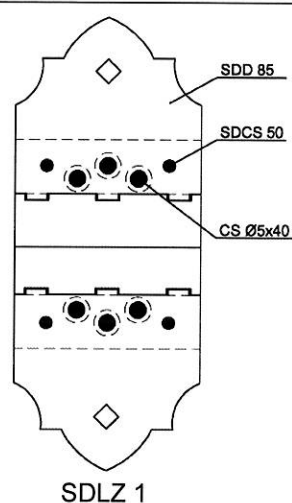
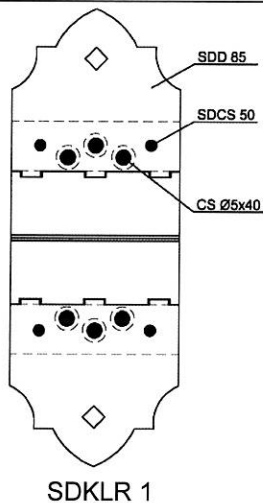
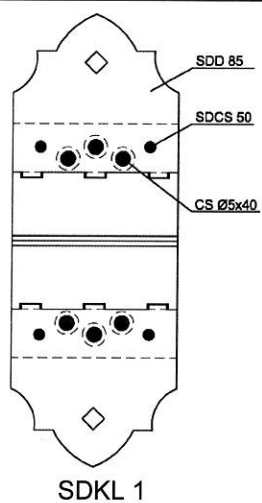
**Figure 162** Type WBU



**Figure 163 Type WBC**



**Figure 164** Type PS



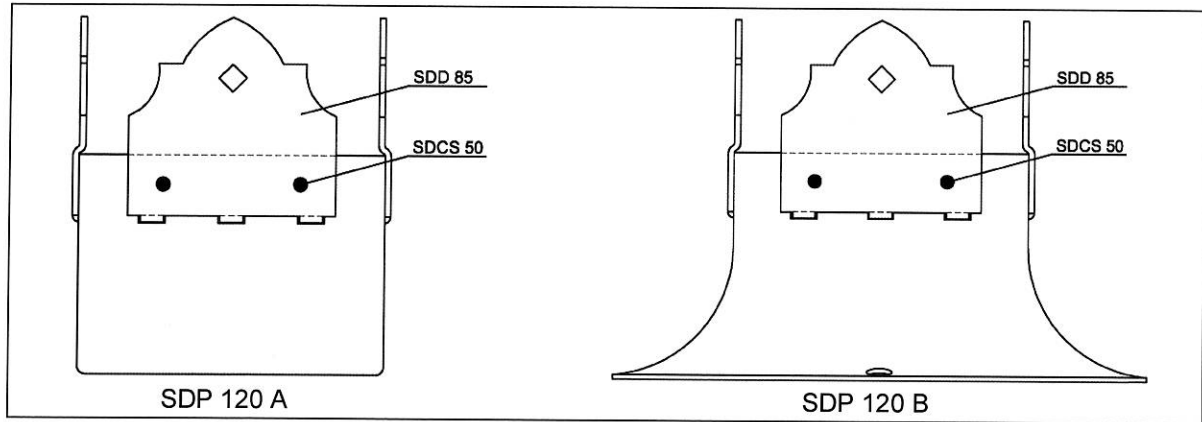
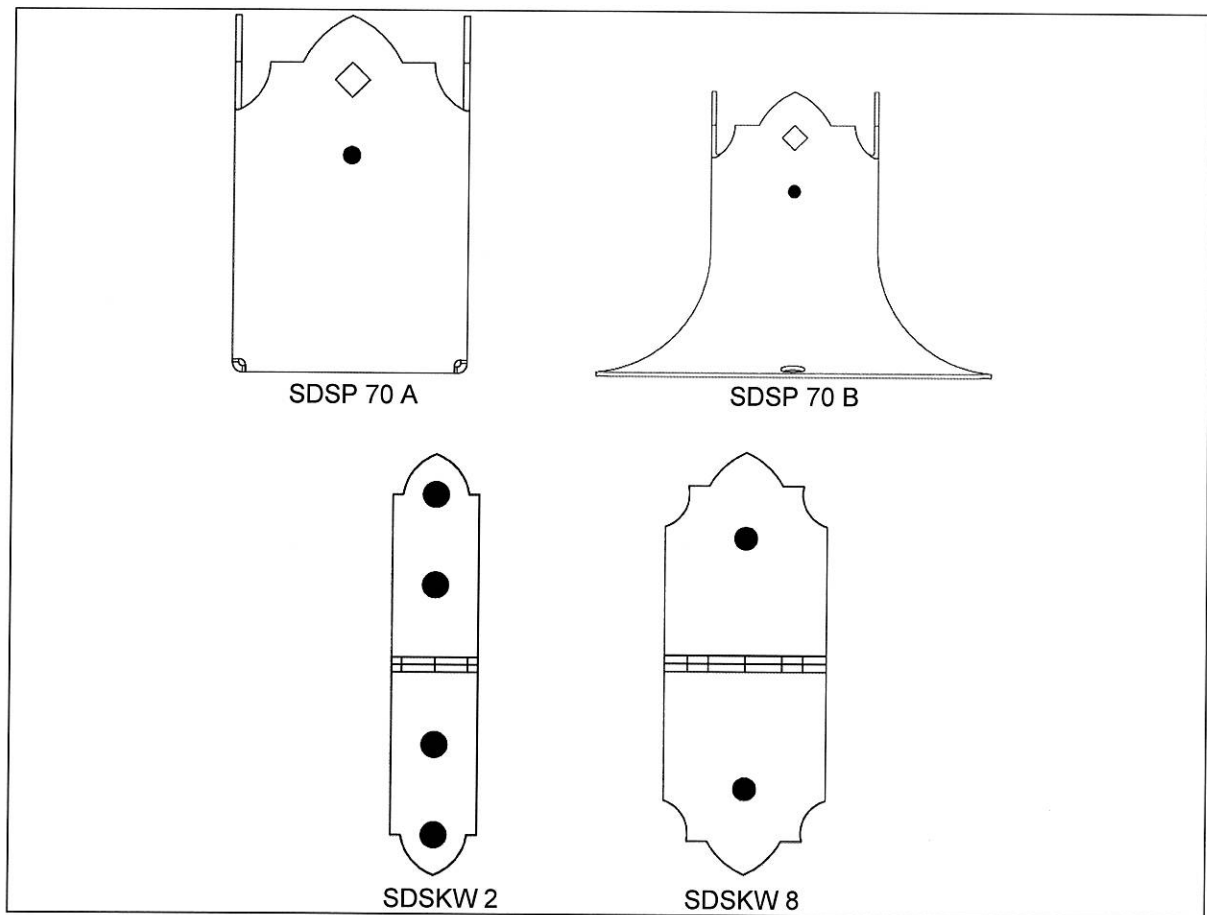
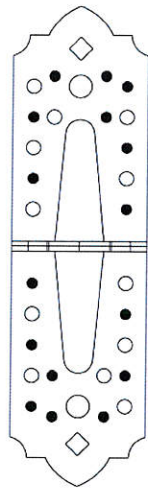
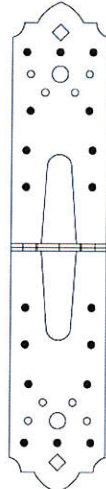


Figure 165 Type SD

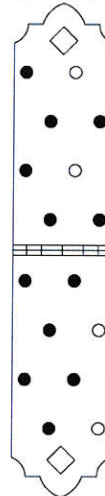




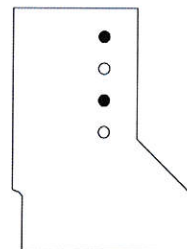
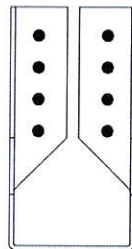
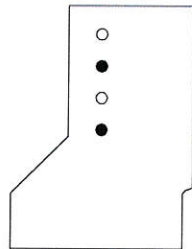
SDSKP 1



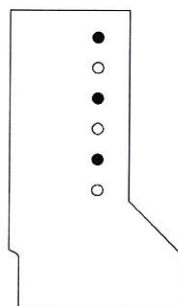
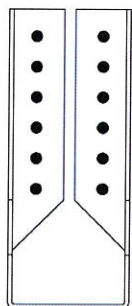
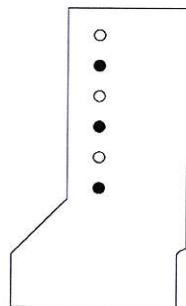
SDSKP 5



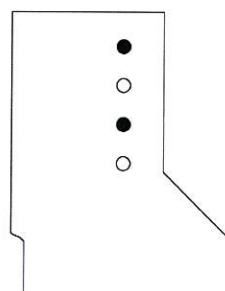
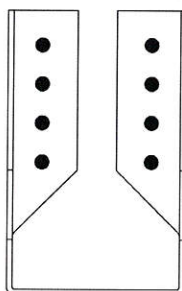
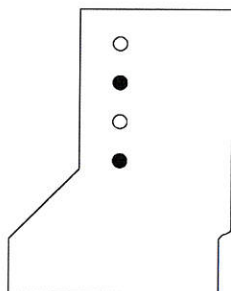
SDSKM 7



SDSWBZ 10

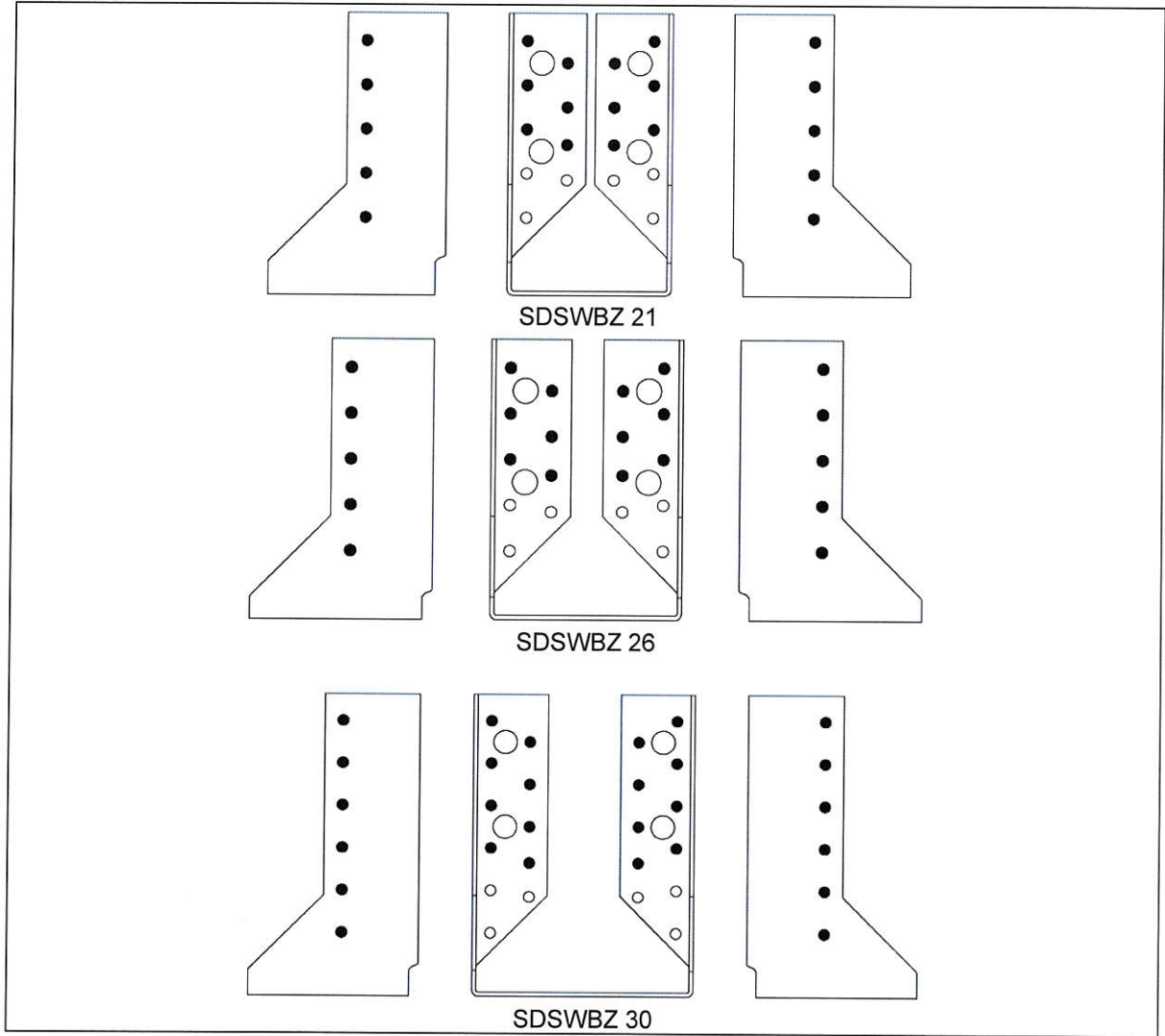


SDSWBZ 11

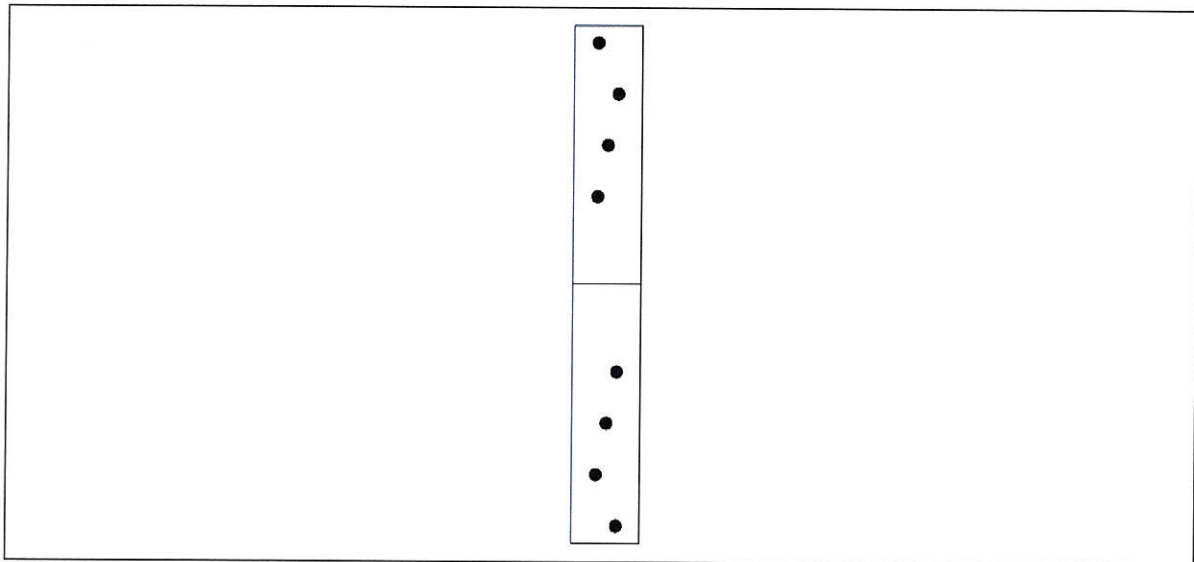


SDSWBZ 14

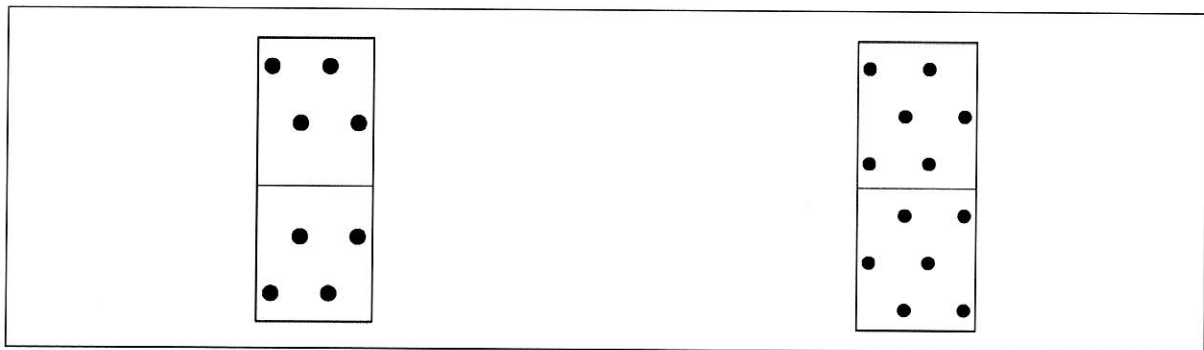
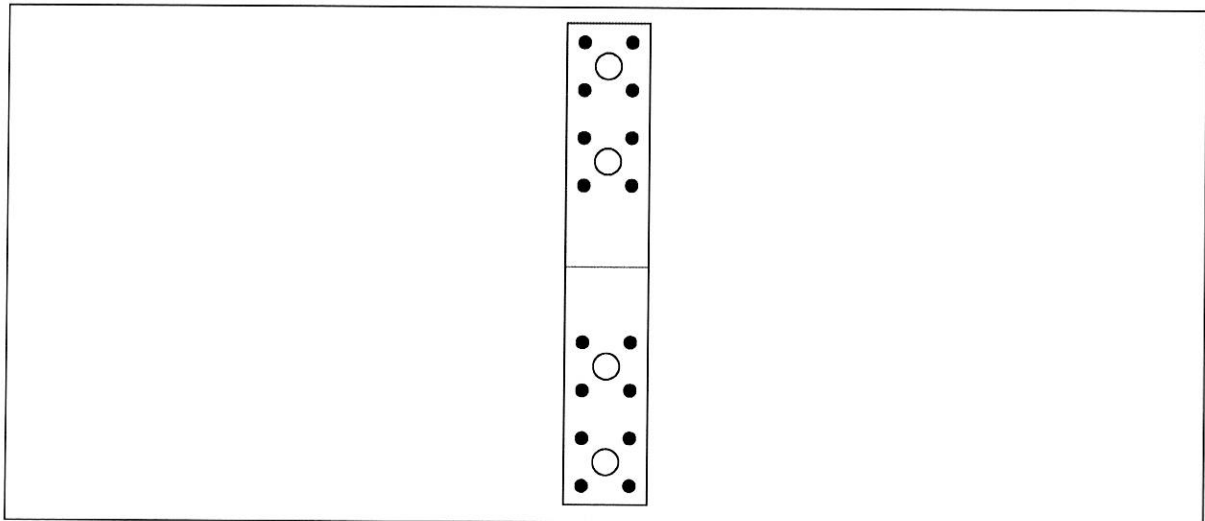
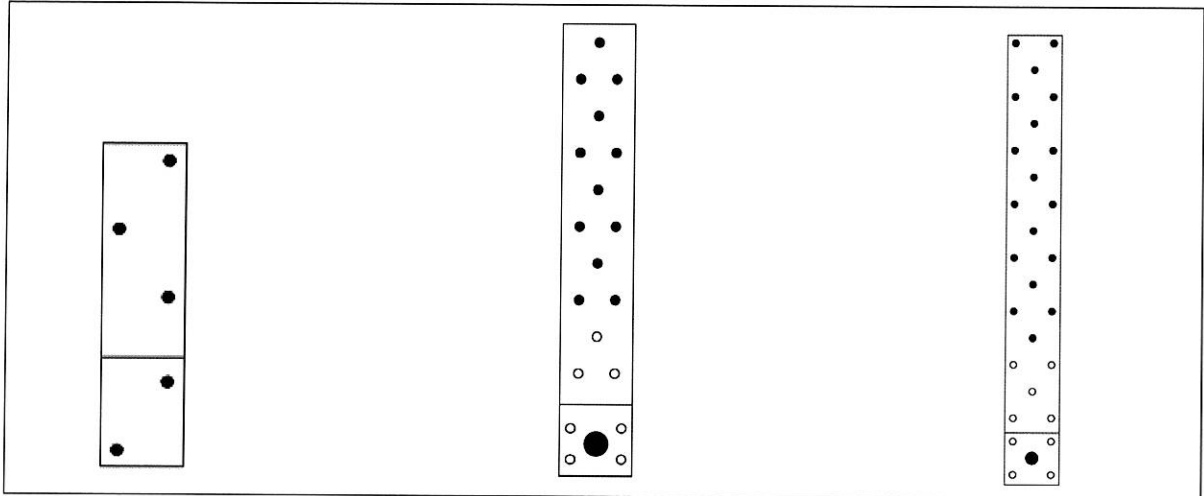




**Figure 166 Type SDS**



**Figure 167 Type KB 4**



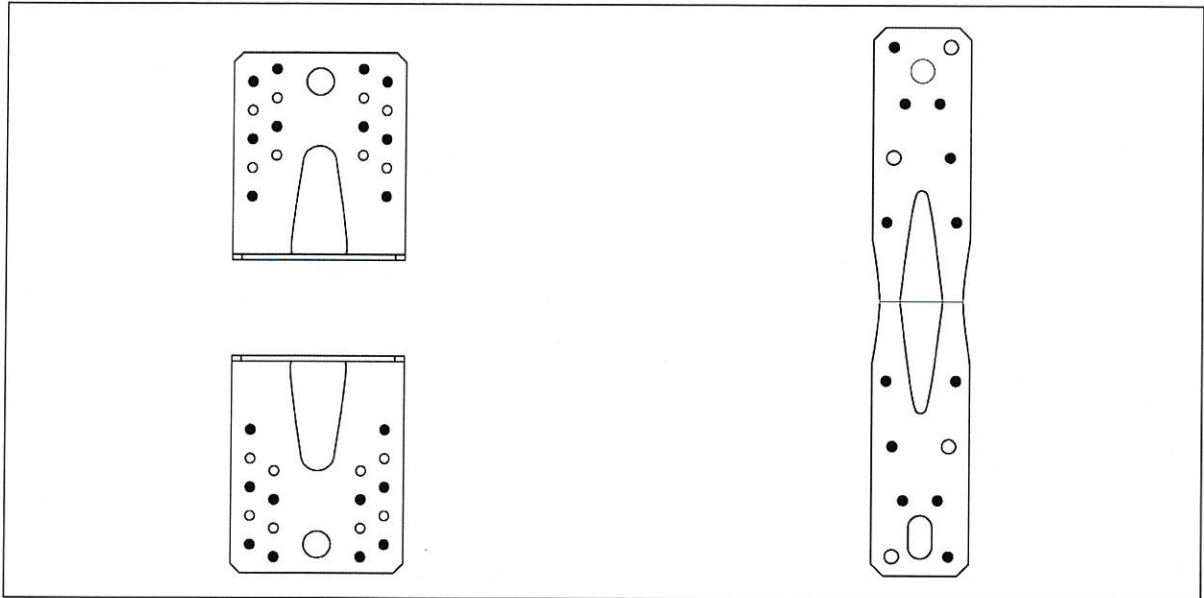


Figure 174 Type KP 2

Figure 175 Type KP 9

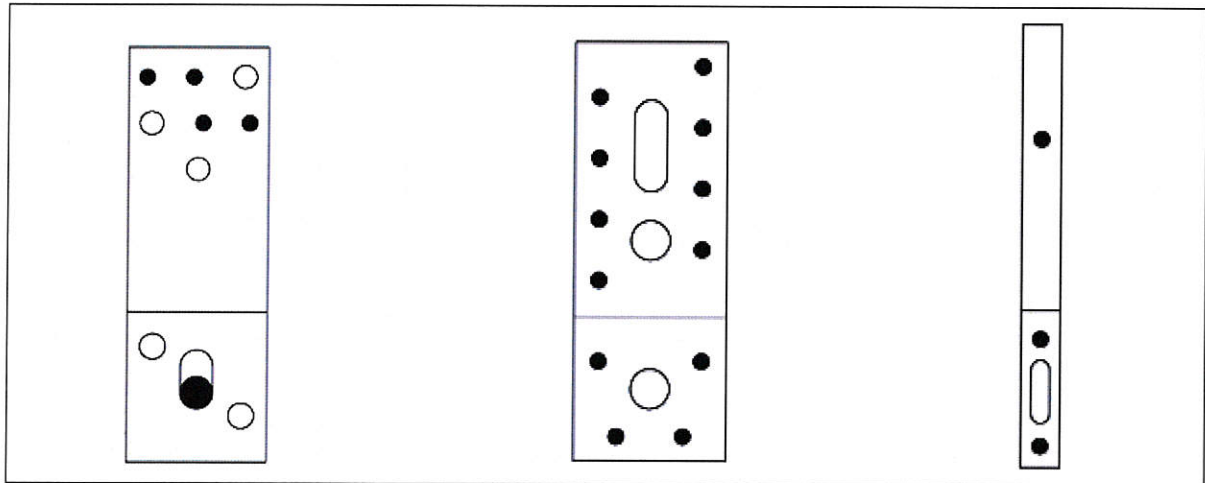


Figure 176 Type KR 4

Figure 177 Type KR 5

Figure 178 Type KR 6

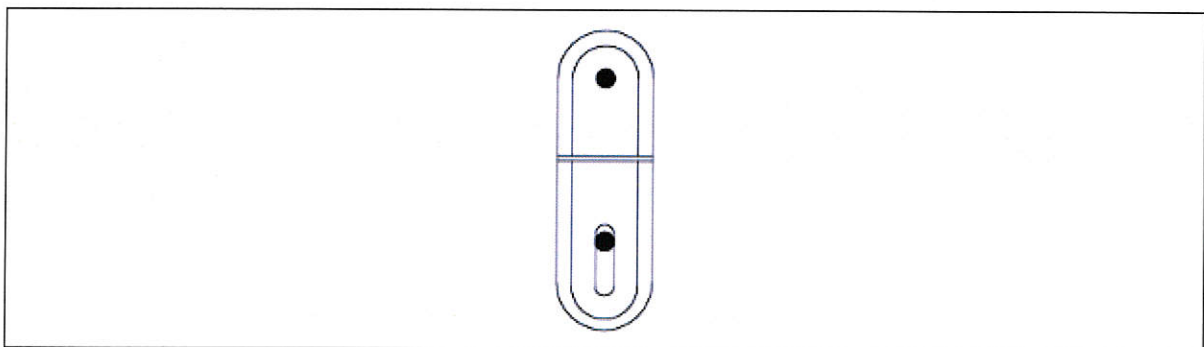
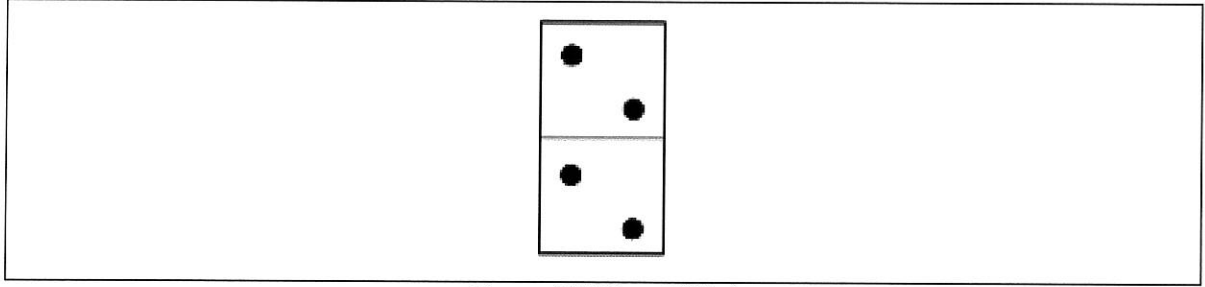
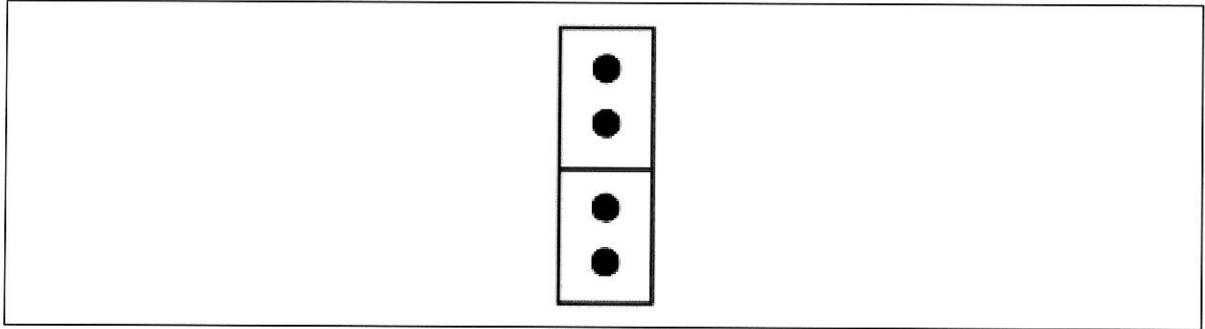


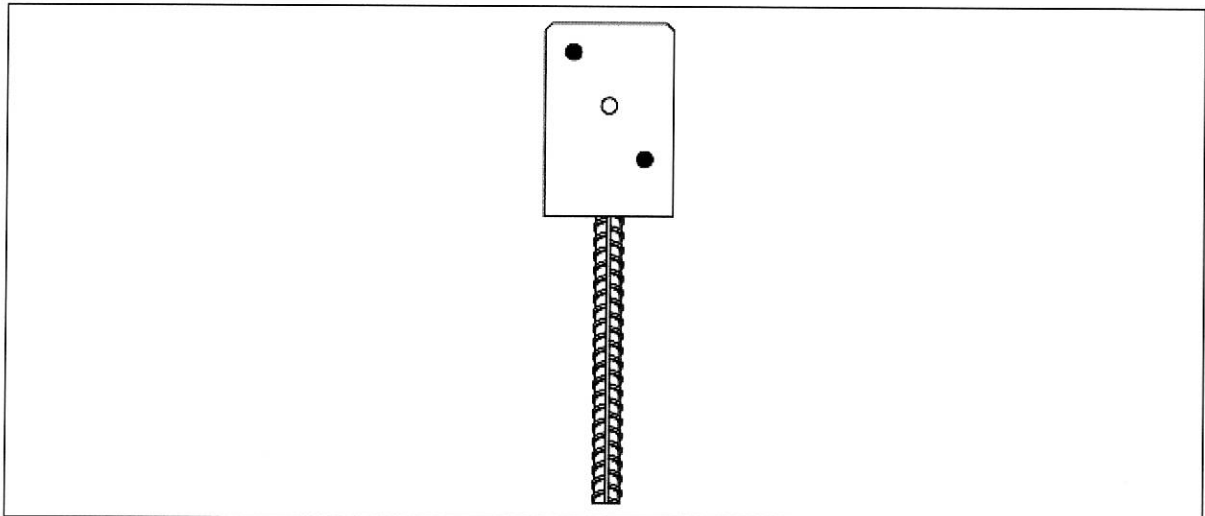
Figure 179 Type KR 7, KRB 7



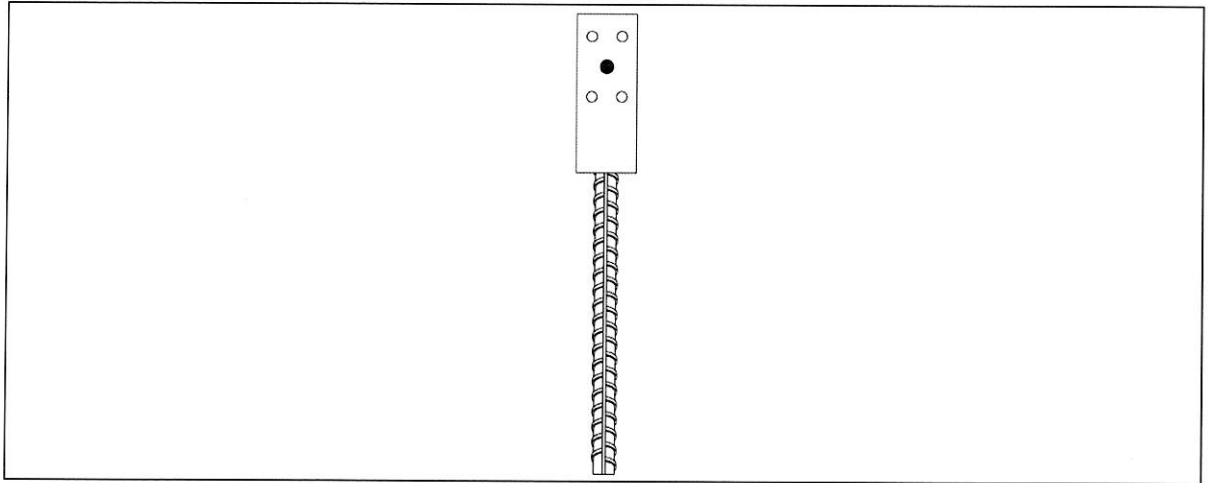
**Figure 180** Type KSB 1



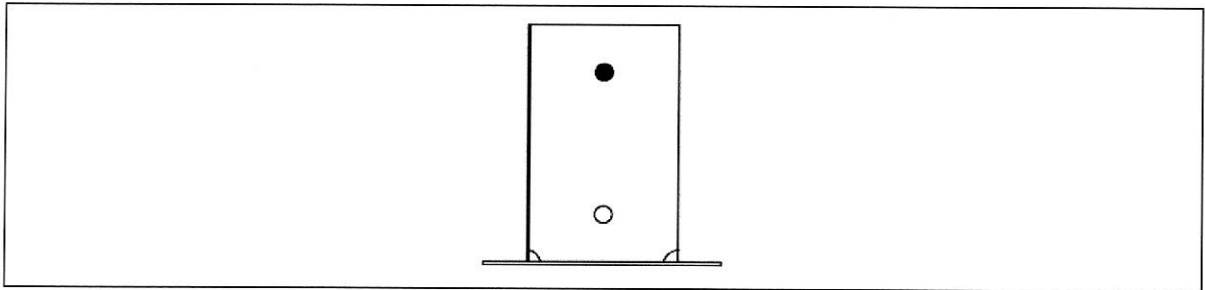
**Figure 181** Type KWB 1, KWC 1



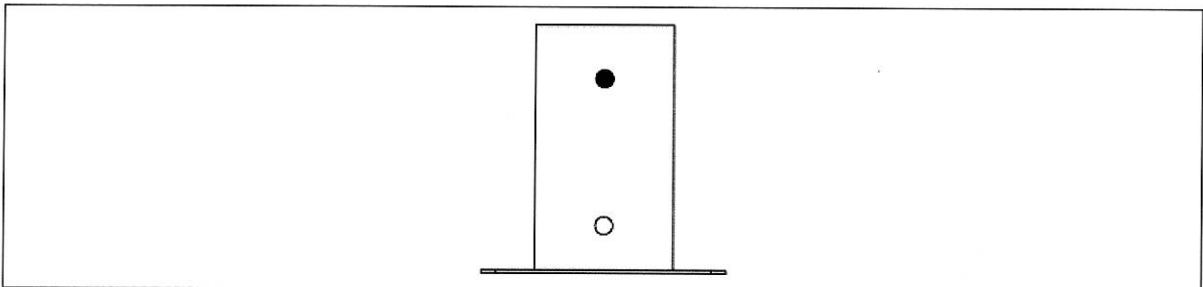
**Figure 182** Type PS 84 L



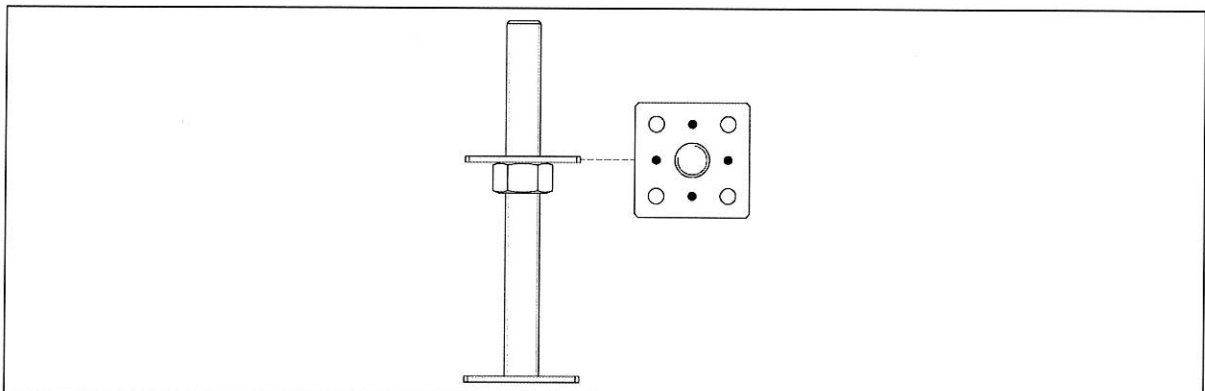
**Figure 183 Type PSL**



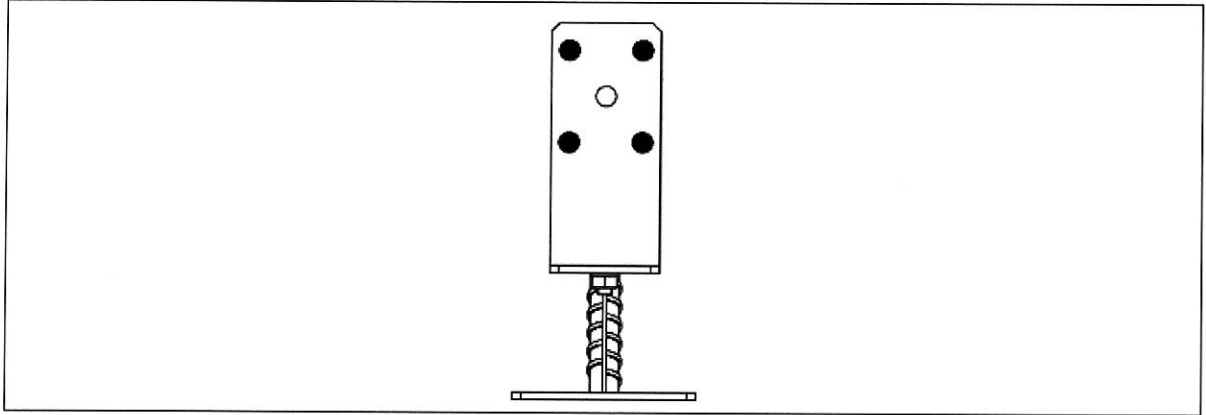
**Figure 184 Type PSP**



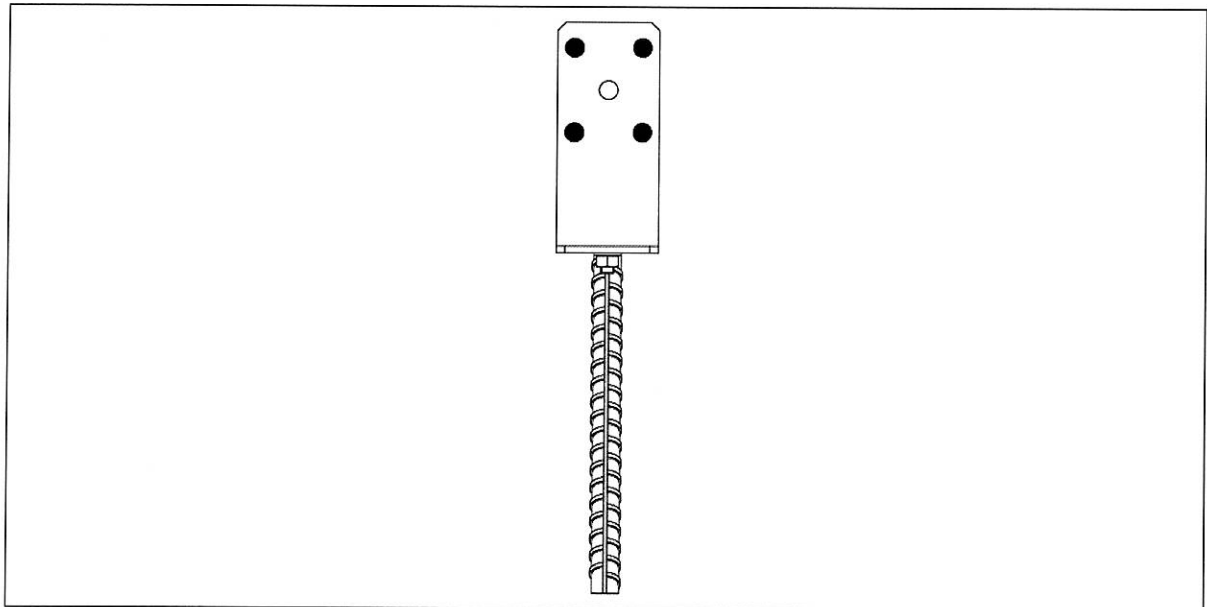
**Figure 185 Type PSPO**



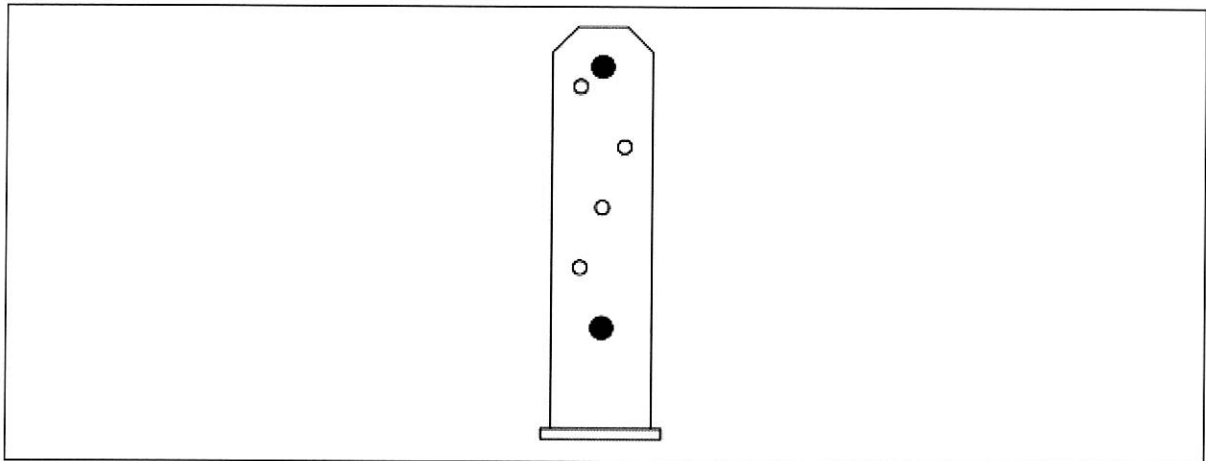
**Figure 186 Type PSR**



**Figure 187 Type PSRT**



**Figure 188 Type PSRU**



**Figure 189 Type PST**

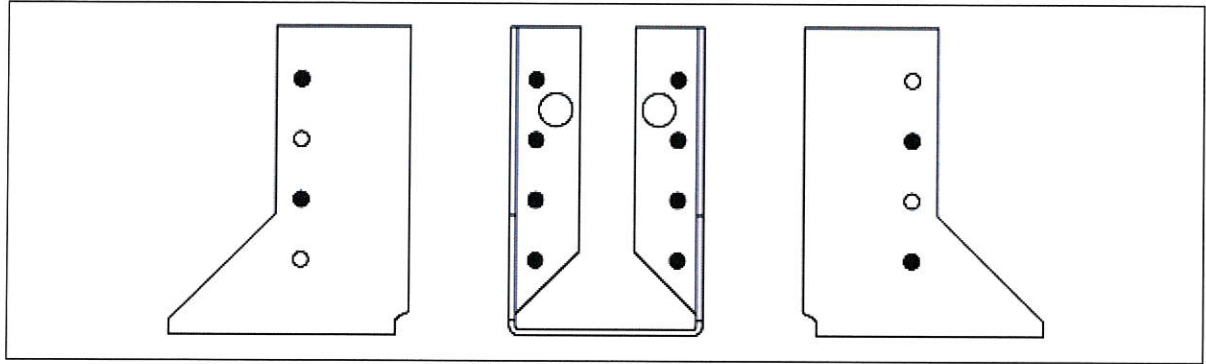


Figure 190 Type WBZ

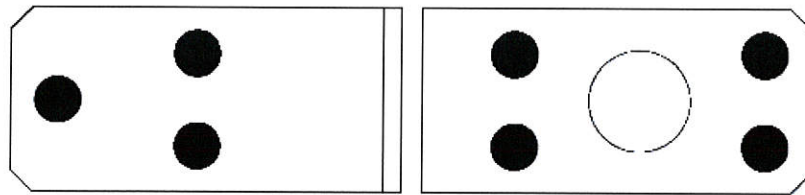


Figure 191 Type KL 0

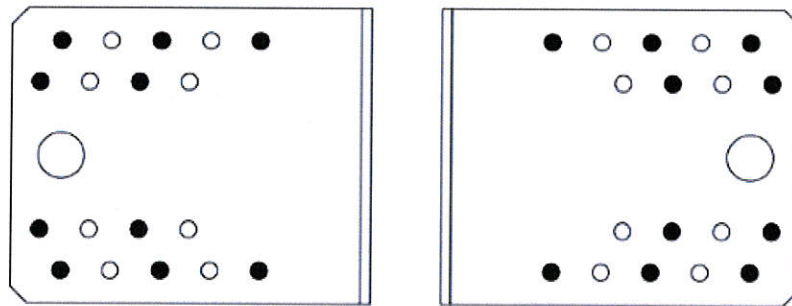


Figure 192 Type KL 5

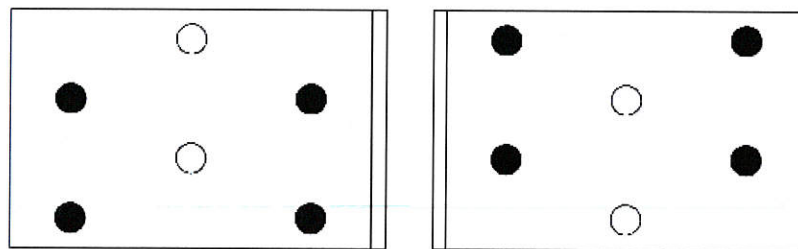


Figure 193 Type KM 3

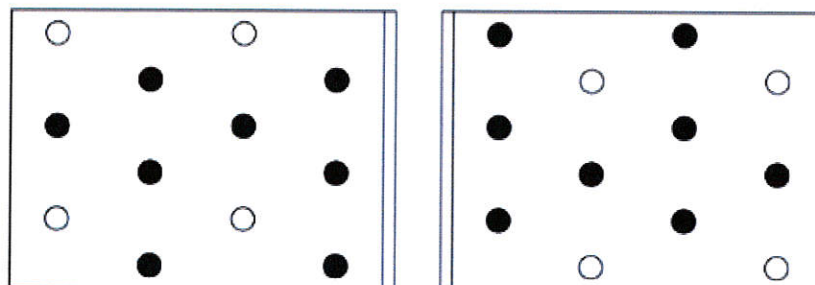


Figure 194 Type KM 8



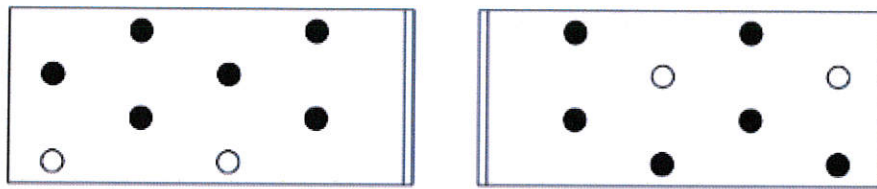


Figure 195 Type KM 16

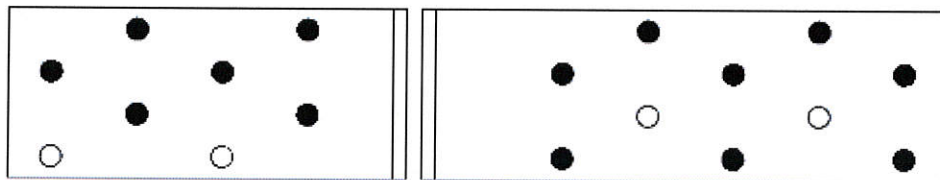


Figure 196 Type KM 19

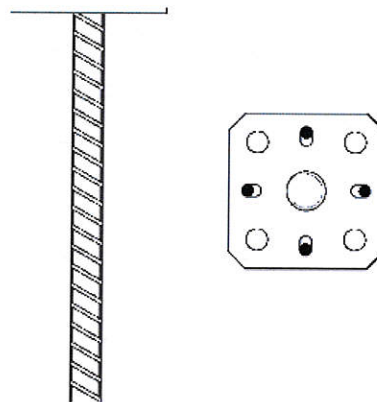


Figure 197 Type PPS

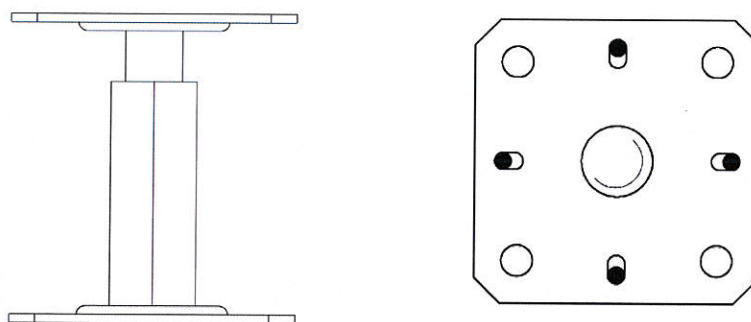
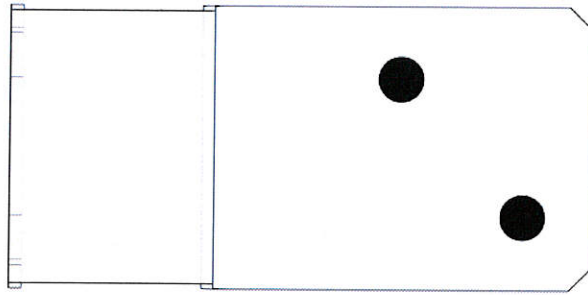
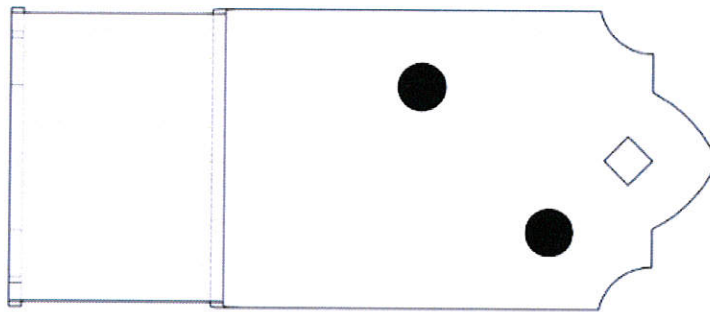


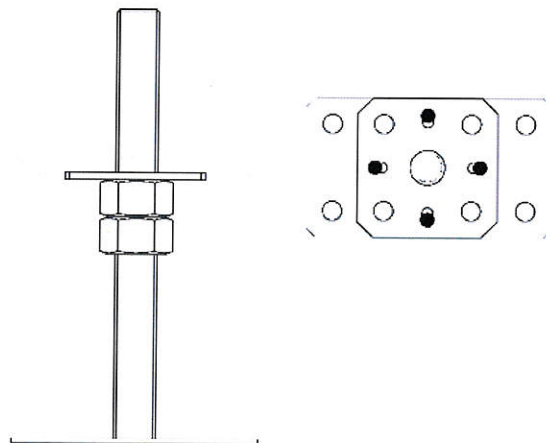
Figure 198 Type PR



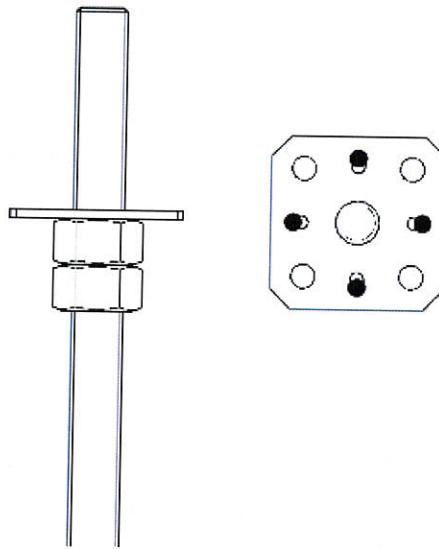
**Figure 199** Type PSK



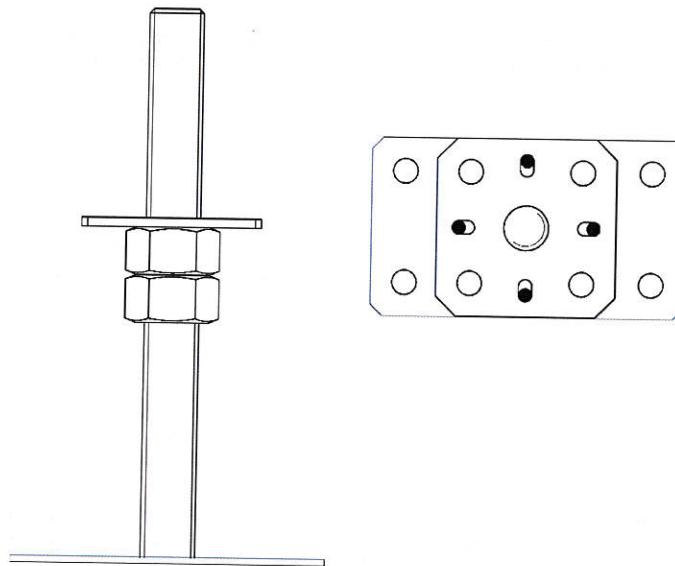
**Figure 200** Type SDPSK



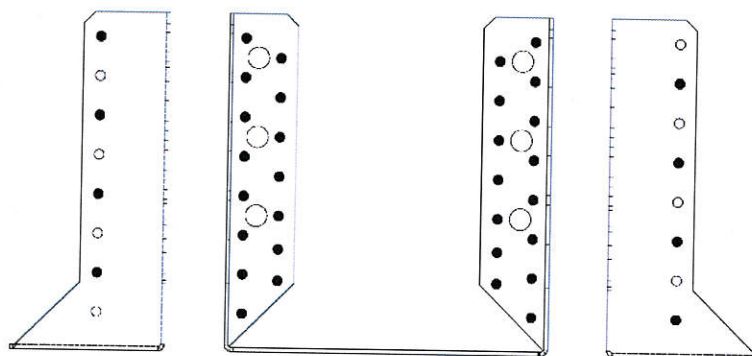
**Figure 201** Type PSR



**Figure 202 Type PPSR**



**Figure 203 Type PSRP**



**Figure 204 Type WBZ 38**

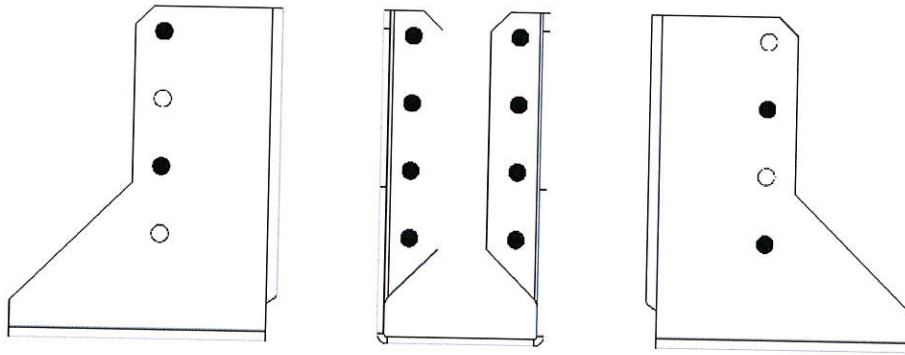


Figure 205 Type WBZ 49

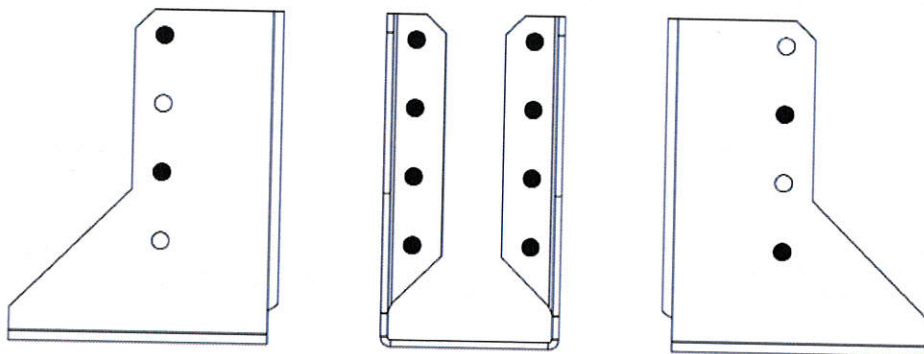


Figure 206 WBZ 52

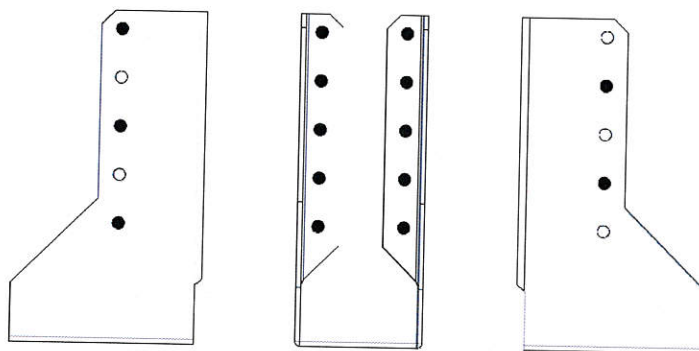


Figure 207 WBZ 54

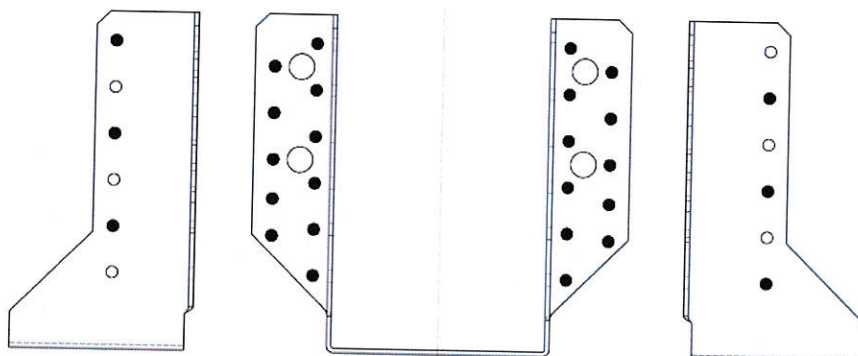


Figure 208 WB 39

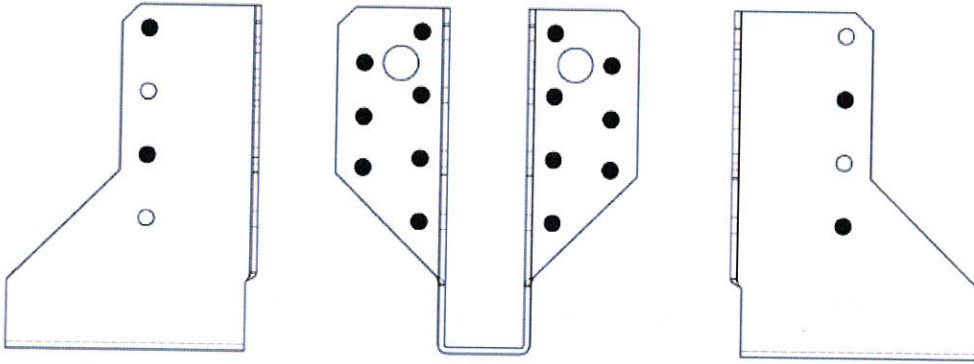


Figure 209 WB 40

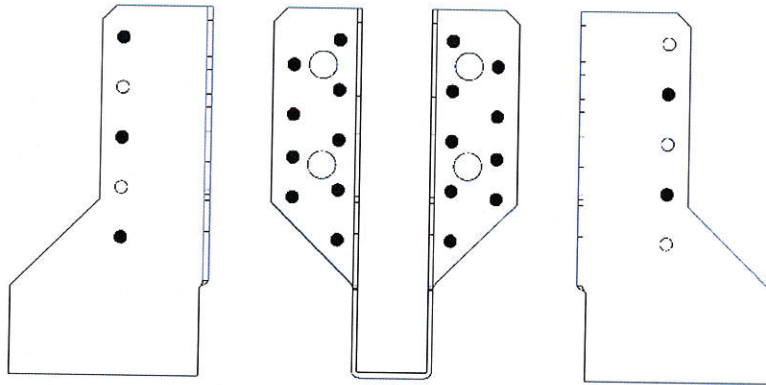


Figure 210 WB 41

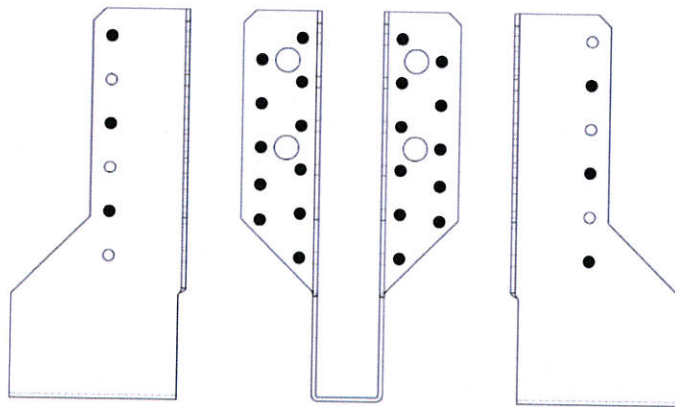


Figure 211 WB 42

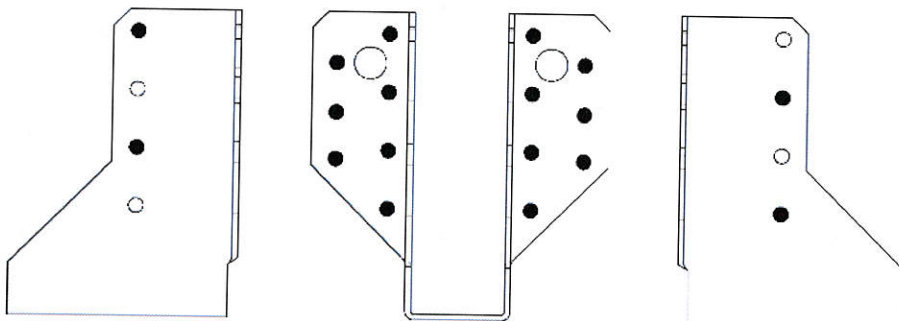


Figure 212 WB 43

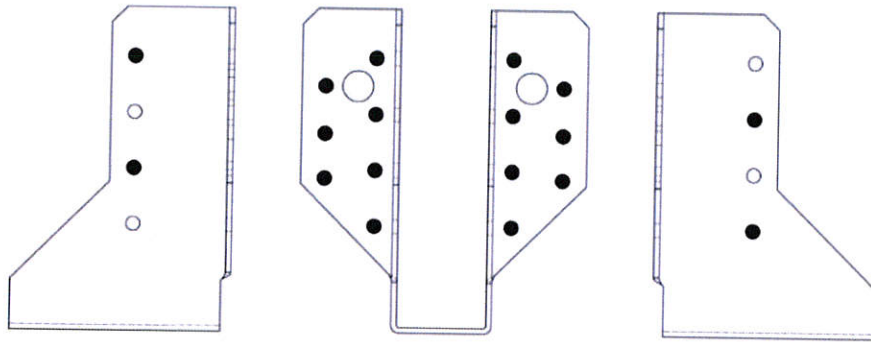


Figure 213 WB 44

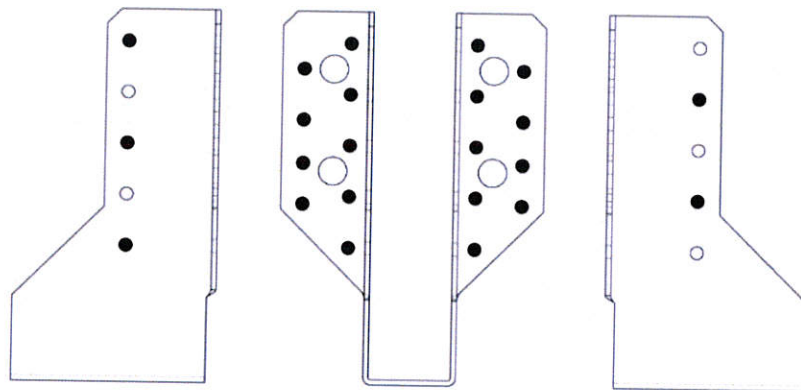


Figure 214 WB 45

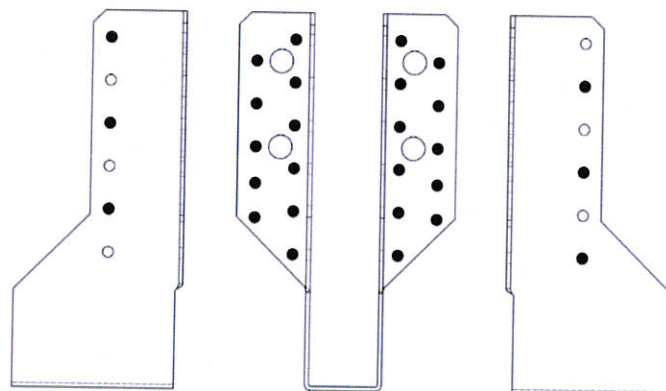


Figure 215 WB 46

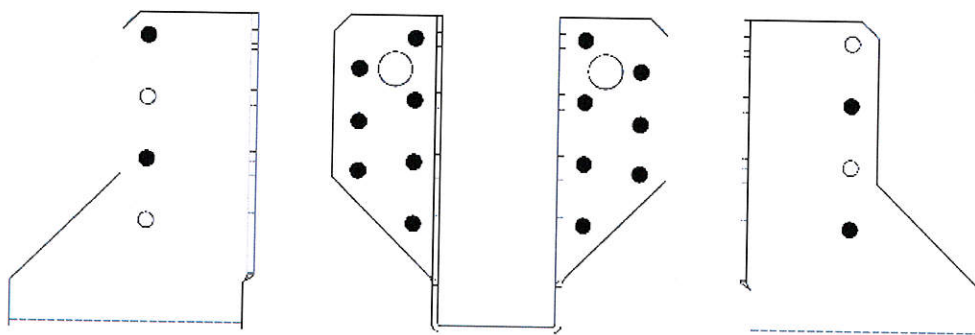


Figure 216 WB 47

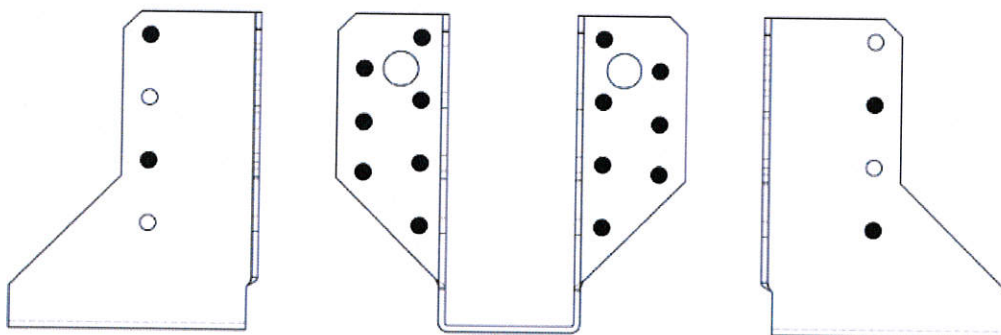


Figure 217 WB 48

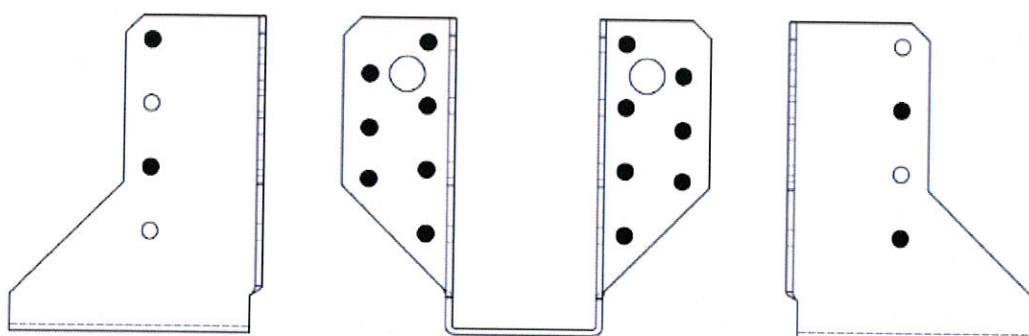


Figure 218 WB 49

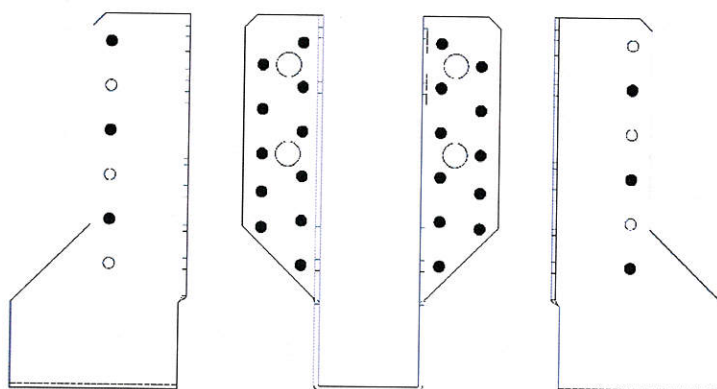


Figure 219 WB 50

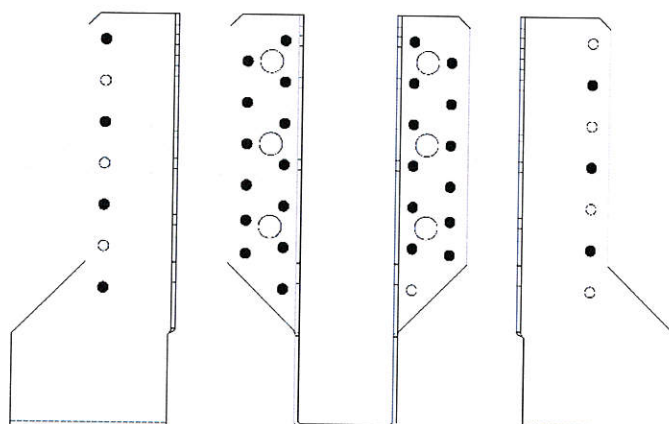


Figure 220 WB 51



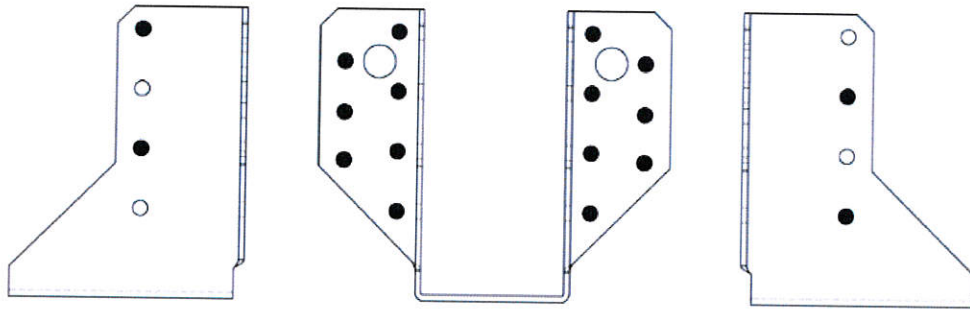


Figure 221 WB 52

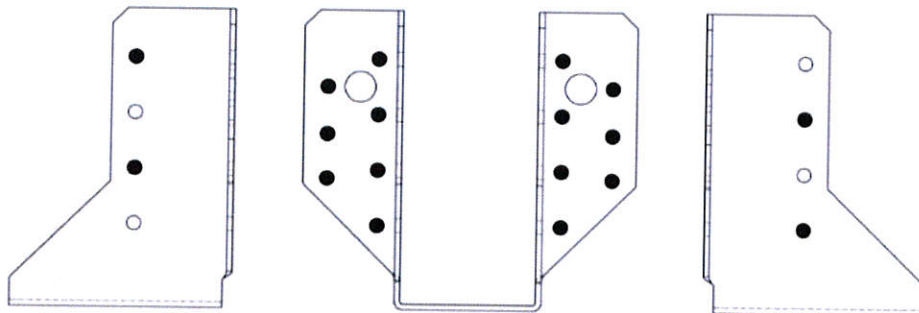


Figure 222 WB 53

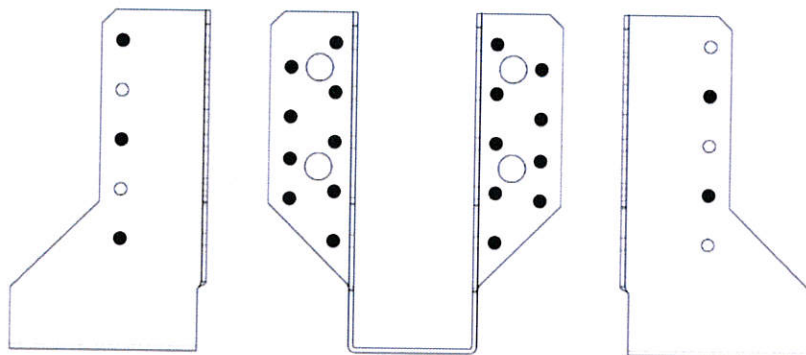


Figure 223 WB 54

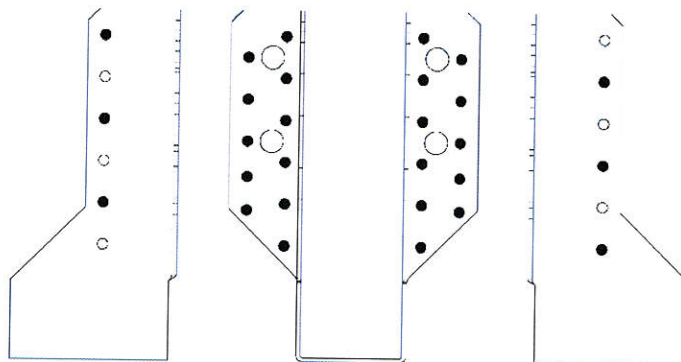


Figure 224 WB 55

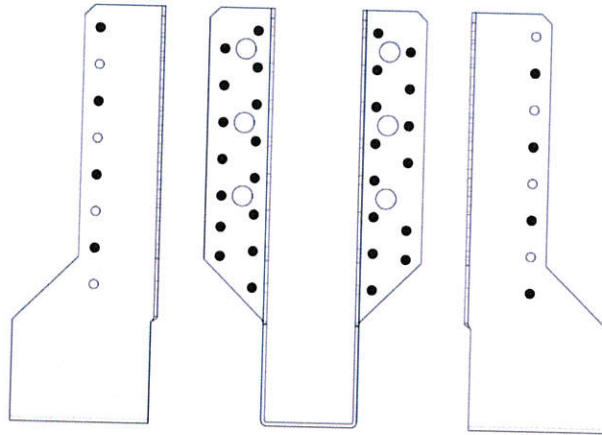


Figure 225 WB 56

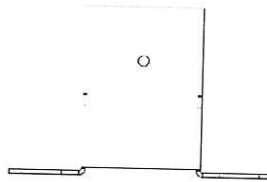
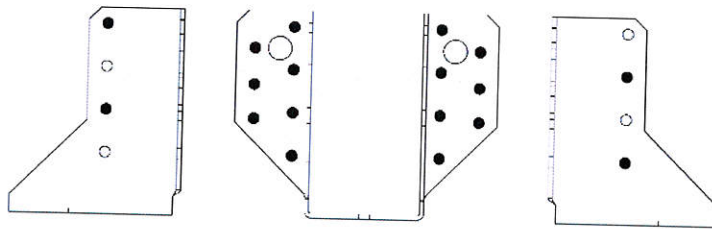


Figure 226 WB 57

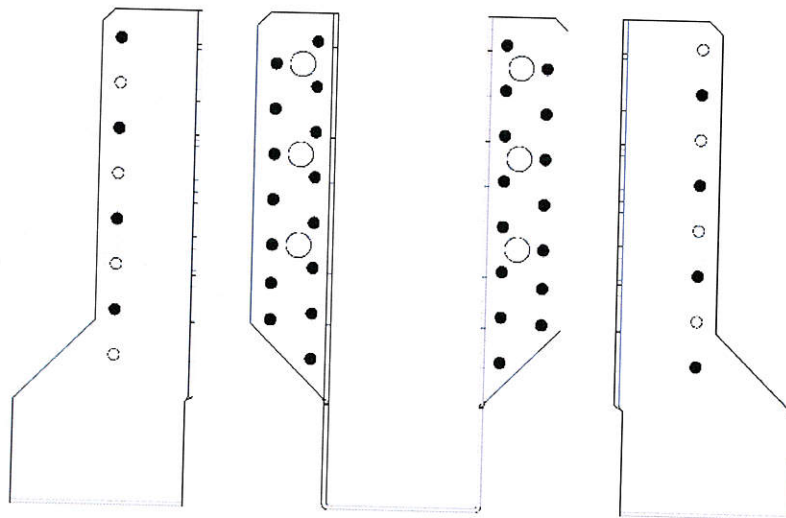


Figure 227 WB 58

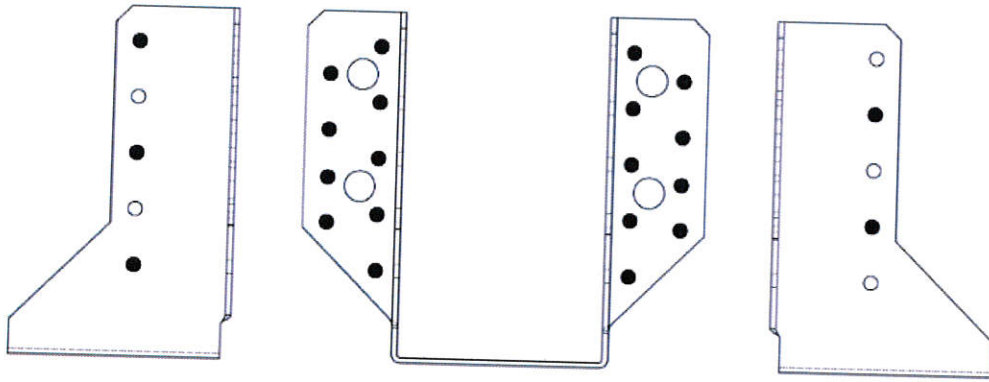


Figure 228 WB 59

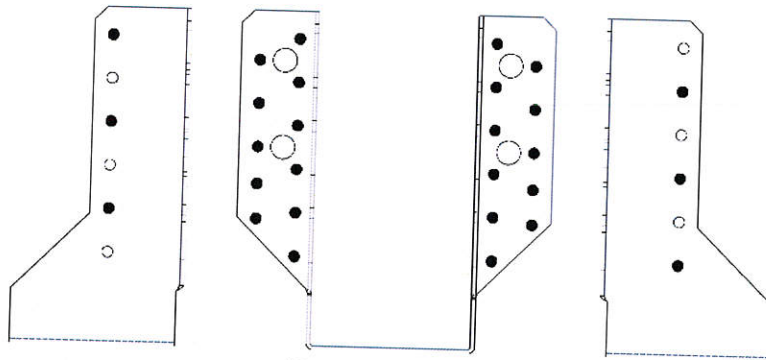


Figure 229 WB 60

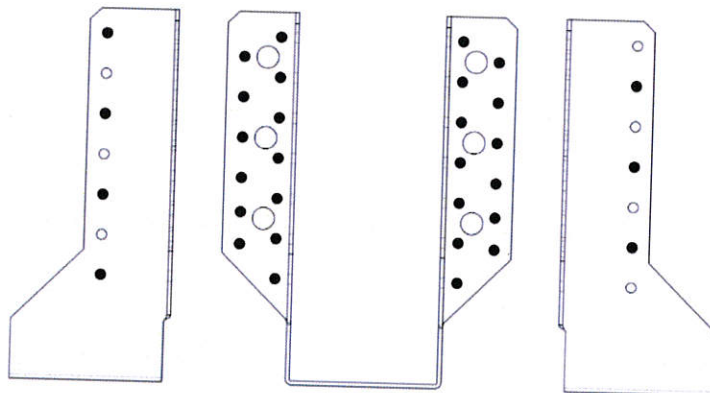


Figure 230 WB 61

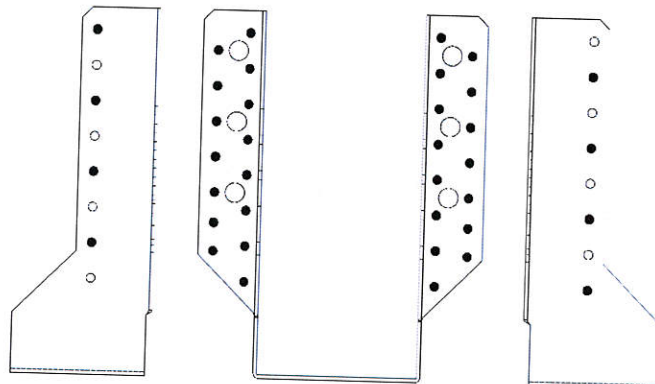
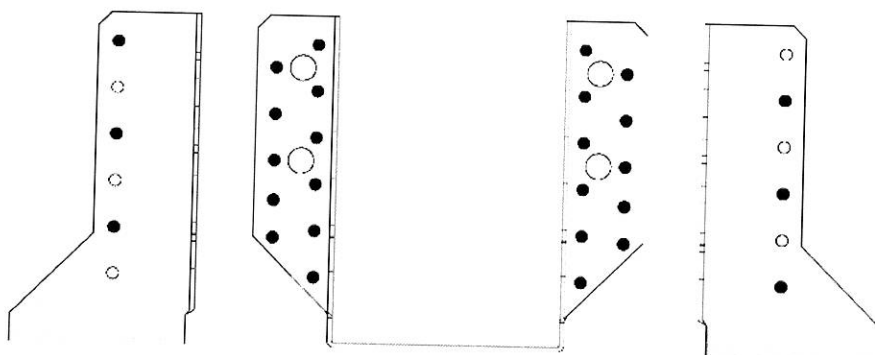


Figure 231 WB 62



**Figure 232 WB 63**

|                                             |                                      |
|---------------------------------------------|--------------------------------------|
| <b>THREE-DIMENSIONAL NAILING PLATES</b>     | <b>ANNEX 5</b><br><b>ETA 24/0873</b> |
| <b>SPECIFICATION OF CONNECTION ELEMENTS</b> |                                      |

**Table 94** Specification of connection elements

| Connector | Dowel type connectors                                    | Connectors per Detail | Connectors per Connection |
|-----------|----------------------------------------------------------|-----------------------|---------------------------|
|           |                                                          | [pc.]                 | [pc.]                     |
| KLR 1     | ANCHOR $\varnothing$ 4x50                                | 6                     | 6                         |
| KLR 2     | ANCHOR $\varnothing$ 4x50                                | 13                    | 13                        |
| KLR 3     | ANCHOR $\varnothing$ 4x50                                | 13                    | 13                        |
| KLR 4     | ANCHOR $\varnothing$ 4x50                                | 12                    | 12                        |
| KLR 5     | ANCHOR $\varnothing$ 4x50                                | 30                    | 30                        |
| KLR 6     | ANCHOR $\varnothing$ 4x50                                | 29                    | 29                        |
| KP 7      | ANCHOR $\varnothing$ 4x50 / DIN 571 $\varnothing$ 12x100 | 28 / 4                | 56 / 8                    |
| KP 8      | ANCHOR $\varnothing$ 4x50 / DIN 571 $\varnothing$ 12x100 | 17 / 2                | 34 / 4                    |
| KPK 4     | ANCHOR $\varnothing$ 4x50                                | 22                    | 22                        |
| KPK 11    | ANCHOR $\varnothing$ 4x50                                | 11                    | 11                        |
| KPK 12    | ANCHOR $\varnothing$ 4x50                                | 17                    | 17                        |
| KPK 13    | ANCHOR $\varnothing$ 4x50                                | 25                    | 25                        |
| KPK 21    | ANCHOR $\varnothing$ 4x50                                | 14                    | 14                        |
| KPK 22    | ANCHOR $\varnothing$ 4x50                                | 14                    | 14                        |
| KPK 23    | ANCHOR $\varnothing$ 4x50                                | 14                    | 14                        |
| KPK 31    | ANCHOR $\varnothing$ 4x50                                | 9                     | 18                        |
| KPK 32    | ANCHOR $\varnothing$ 4x50                                | 9                     | 18                        |
| KPK 33    | ANCHOR $\varnothing$ 4x50                                | 9                     | 18                        |
| KPL 5     | ANCHOR $\varnothing$ 4x50                                | 8                     | 8                         |
| KPL 6     | ANCHOR $\varnothing$ 4x50                                | 12                    | 12                        |
| KPL 11    | ANCHOR $\varnothing$ 4x50                                | 13                    | 13                        |
| KPL 21    | ANCHOR $\varnothing$ 4x50                                | 28                    | 28                        |
| KR 1      | ANCHOR $\varnothing$ 4x50                                | 3                     | 3                         |
| KR 2      | ANCHOR $\varnothing$ 4x50                                | 12                    | 12                        |
| KP 3      | ANCHOR $\varnothing$ 4x50                                | 3                     | 3                         |
| KRD 5     | ANCHOR $\varnothing$ 4x50                                | 7                     | 7                         |
| KRD 6     | ANCHOR $\varnothing$ 4x50                                | 7                     | 7                         |
| SDLZ 1    | SDCS 50 / CS $\varnothing$ 5x40                          | 4 / 6                 | 4 / 6                     |
| SDKLR 1   | SDCS 50 / CS $\varnothing$ 5x40                          | 4 / 6                 | 4 / 6                     |
| SDKL 1    | SDCS 50 / CS $\varnothing$ 5x40                          | 4 / 6                 | 4 / 6                     |
| SDSP 70 A | SDCS 50                                                  | 4                     | 4                         |
| SDSP 70 B | SDCS 50                                                  | 4                     | 4                         |
| SDP 90 A  | SDCS 50                                                  | 8                     | 8                         |
| SDP 90 B  | SDCS 50                                                  | 8                     | 8                         |
| SDP 100 A | SDCS 50                                                  | 8                     | 8                         |
| SDP 100 B | SDCS 50                                                  | 8                     | 8                         |
| SDP 120 A | SDCS 50                                                  | 8                     | 8                         |
| SDP 120 B | SDCS 50                                                  | 8                     | 8                         |

| Connector               | Dowel type connectors                                 | Connectors per Detail | Connectors per Connection |
|-------------------------|-------------------------------------------------------|-----------------------|---------------------------|
|                         |                                                       | [pc.]                 | [pc.]                     |
| SDSKW 2                 | ANCHOR $\varnothing$ 4x50                             | 4                     | 8                         |
| SDSKW 8                 | SDCS 50                                               | 2                     | 4                         |
| SDSKP 1                 | ANCHOR $\varnothing$ 4x50                             | 16                    | 32                        |
| SDSKP 5                 | ANCHOR $\varnothing$ 4x50                             | 18                    | 36                        |
| SDSKM 7                 | ANCHOR $\varnothing$ 4x50                             | 12                    | 24                        |
| SDSWBZ 10               | ANCHOR $\varnothing$ 4x50 / ANCHOR $\varnothing$ 4x40 | 8 / 4                 | 8 / 4                     |
| SDSWBZ 11               | ANCHOR $\varnothing$ 4x50 / ANCHOR $\varnothing$ 4x40 | 12 / 6                | 12 / 6                    |
| SDSWBZ 14               | ANCHOR $\varnothing$ 4x50 / ANCHOR $\varnothing$ 4x40 | 8 / 4                 | 8 / 4                     |
| SDSWBZ 21               | ANCHOR $\varnothing$ 4x50 / ANCHOR $\varnothing$ 4x40 | 12 / 10               | 12 / 10                   |
| SDSWBZ 26               | ANCHOR $\varnothing$ 4x50 / ANCHOR $\varnothing$ 4x40 | 12 / 10               | 12 / 10                   |
| SDSWBZ 30               | ANCHOR $\varnothing$ 4x50 / ANCHOR $\varnothing$ 4x40 | 16 / 12               | 16 / 12                   |
| PS 60                   | ISO 4014 M10x80-5.8                                   | 1                     | 1                         |
| PS 70                   | ISO 4014 M10x90-5.8                                   | 1                     | 1                         |
| PS 80                   | ISO 4014 M10x100-5.8                                  | 1                     | 1                         |
| PS 90                   | ISO 4014 M10x110-5.8                                  | 1                     | 1                         |
| PS 100                  | ISO 4014 M10x120-5.8                                  | 1                     | 1                         |
| PS 120                  | ISO 4014 M10x140-5.8                                  | 1                     | 1                         |
| PS 140                  | ISO 4014 M10x160-5.8                                  | 1                     | 1                         |
| LU25 R80 (L80)          | ANCHOR $\varnothing$ 4x50                             | 16                    | 16                        |
| LU25 R120 (L120)        | ANCHOR $\varnothing$ 4x50                             | 24                    | 24                        |
| WBC 80                  | ANCHOR $\varnothing$ 4x50 / ANCHOR $\varnothing$ 4x40 | 24 / 14               | 24 / 14                   |
| WBC 92                  | ANCHOR $\varnothing$ 4x50 / ANCHOR $\varnothing$ 4x40 | 28 / 14               | 28 / 14                   |
| WBC 100                 | ANCHOR $\varnothing$ 4x50 / ANCHOR $\varnothing$ 4x40 | 28 / 14               | 28 / 14                   |
| WBC 120                 | ANCHOR $\varnothing$ 4x50 / ANCHOR $\varnothing$ 4x40 | 34 / 14               | 34 / 14                   |
| WBC 137                 | ANCHOR $\varnothing$ 4x50 / ANCHOR $\varnothing$ 4x40 | 38 / 14               | 38 / 14                   |
| WBU45 R45-105 (L45-105) | ANCHOR $\varnothing$ 4x50 / ANCHOR $\varnothing$ 4x40 | 8 / 4                 | 8 / 4                     |
| WBU45 R50-105 (L50-105) | ANCHOR $\varnothing$ 4x50 / ANCHOR $\varnothing$ 4x40 | 8 / 4                 | 8 / 4                     |
| WBU45 R60-120 (L60-120) | ANCHOR $\varnothing$ 4x50 / ANCHOR $\varnothing$ 4x40 | 10 / 5                | 10 / 5                    |
| KKB 1                   | ANCHOR $\varnothing$ 4x50 / ISO 4014 M16x160-5.8      | 24 / 1                | 48 / 2                    |
| LB 1                    | ISO 4014 M12x120-5.8 / ISO 4014 M12x90-5.8            | 1 / 1                 | 1 / 2                     |
| LB 2                    | ISO 4014 M12x120-5.8 / ISO 4014 M12x90-5.8            | 1 / 1                 | 1 / 2                     |
| LB 4                    | ISO 4014 M12x120-5.8 / ISO 4014 M12x90-5.8            | 1 / 1                 | 1 / 2                     |
| NT 25                   | ISO 4017 M5x16-8.8                                    | 6                     | 6                         |
| NT 40                   | ISO 4017 M5x16-8.8                                    | 10                    | 10                        |
| NT 60                   | ISO 4017 M5x16-8.8                                    | 14                    | 14                        |
| KPS 1                   | ANCHOR $\varnothing$ 4x50                             | 16                    | 32                        |
| KPS 2                   | ANCHOR $\varnothing$ 4x50                             | 36                    | 72                        |

| Connector | Dowel type connectors                                 | Connectors per Detail | Connectors per Connection |
|-----------|-------------------------------------------------------|-----------------------|---------------------------|
|           |                                                       | [pc.]                 | [pc.]                     |
| KPS 3     | ANCHOR $\varnothing$ 4x50                             | 20                    | 40                        |
| KPS 4     | ANCHOR $\varnothing$ 4x50                             | 20                    | 40                        |
| KB 4      | DIN 571 $\varnothing$ 6x35                            | 8                     | 16                        |
| KK 0      | ANCHOR $\varnothing$ 4x50                             | 5                     | 10                        |
| KK 11     | ANCHOR $\varnothing$ 4x50 / ISO 4014 M12x110-5.8      | 12 / 1                | 24 / 2                    |
| KK 12     | ANCHOR $\varnothing$ 4x50 / ISO 4014 M8x100-5.8       | 18 / 1                | 36 / 2                    |
| KL 6      | ANCHOR $\varnothing$ 4x50                             | 16                    | 32                        |
| KM 17     | ANCHOR $\varnothing$ 4x50                             | 8                     | 16                        |
| KM 18     | ANCHOR $\varnothing$ 4x50                             | 12                    | 24                        |
| KP 2      | ANCHOR $\varnothing$ 4x50                             | 20                    | 40                        |
| KP 9      | ANCHOR $\varnothing$ 4x50                             | 12                    | 24                        |
| KR 4      | DIN 571 $\varnothing$ 6x35 / ISO 4014 M12x110-5.8     | 4 / 1                 | 8 / 2                     |
| KR 5      | ANCHOR $\varnothing$ 4x50                             | 12                    | 24                        |
| KR 6      | ANCHOR $\varnothing$ 4x50                             | 3                     | 6                         |
| KR 7      | ANCHOR $\varnothing$ 4x50                             | 2                     | 4                         |
| KRB 7     | ANCHOR $\varnothing$ 4x50                             | 2                     | 4                         |
| KSB 1     | ANCHOR $\varnothing$ 4x50                             | 4                     | 8                         |
| KWB 1     | ANCHOR $\varnothing$ 4x50                             | 4                     | 8                         |
| KWC 1     | ANCHOR $\varnothing$ 4x50                             | 4                     | 8                         |
| WBZ 14    | ANCHOR $\varnothing$ 4x50 / ANCHOR $\varnothing$ 4x50 | 8 / 4                 | 8 / 4                     |
| PSL 50    | ISO 4014 M8x70-5.8                                    | 1                     | 1                         |
| PSL 70    | ISO 4014 M8x90-5.8                                    | 1                     | 1                         |
| PSL 90    | ISO 4014 M8x110-5.8                                   | 1                     | 1                         |
| PSL 100   | ISO 4014 M8x120-5.8                                   | 1                     | 1                         |
| PSP 70    | ISO 4014 M10x90-5.8                                   | 1                     | 1                         |
| PSP 90    | ISO 4014 M10x110-5.8                                  | 1                     | 1                         |
| PSP 100   | ISO 4014 M10x120-5.8                                  | 1                     | 1                         |
| PSP 120   | ISO 4014 M10x130-5.8                                  | 1                     | 1                         |
| PSPO 80   | ISO 4014 M10x100-5.8                                  | 1                     | 1                         |
| PSPO 100  | ISO 4014 M10x120-5.8                                  | 1                     | 1                         |
| PSR 80    | ANCHOR $\varnothing$ 4x50                             | 4                     | 4                         |
| PSR 110   | ANCHOR $\varnothing$ 4x50                             | 4                     | 4                         |
| PSRT      | ISO 4014 M10-5.8                                      | 4                     | 4                         |
| PSRU      | ISO 4014 M10-5.8                                      | 4                     | 4                         |
| PST 70    | ISO 4014 M10x90-5.8                                   | 2                     | 2                         |
| PST 90    | ISO 4014 M10x110-5.8                                  | 2                     | 2                         |
| PST 100   | ISO 4014 M10x120-5.8                                  | 2                     | 2                         |
| PST 120   | ISO 4014 M10x140-5.8                                  | 2                     | 2                         |
| PST 140   | ISO 4014 M10x160-5.8                                  | 2                     | 2                         |
| PS 84 L   | ISO 4014 M10x120-5.8 (washer ISO                      | 2                     | 2                         |



| Connector     | Dowel type connectors     | Connectors per Detail | Connectors per Connection |
|---------------|---------------------------|-----------------------|---------------------------|
|               |                           | [pc.]                 | [pc.]                     |
|               | 7094)                     |                       |                           |
| KM 16         | ANCHOR Ø4x50              | 16                    | 32                        |
| KM 16 (3mm)   | ANCHOR Ø4x50              | 16                    | 32                        |
| KM 8 (2.5 mm) | ANCHOR Ø4x50              | 16                    | 32                        |
| KM 19 (3mm)   | ANCHOR Ø4x50              | 14                    | 28                        |
| KM 3 (2.5 mm) | ANCHOR Ø4x50              | 8                     | 16                        |
| KL 0          | ANCHOR Ø4x50              | 7                     | 14                        |
| KL 5 (3mm)    | ANCHOR Ø4x50              | 20                    | 40                        |
| WB 39         | ANCHOR Ø4x50/ANCHOR Ø4x50 | 22/8                  | 22/8                      |
| WB 40         | ANCHOR Ø4x50/ANCHOR Ø4x50 | 14/4                  | 14/4                      |
| WB 41         | ANCHOR Ø4x50/ANCHOR Ø4x50 | 18/6                  | 18/6                      |
| WB 42         | ANCHOR Ø4x50/ANCHOR Ø4x50 | 22/6                  | 22/6                      |
| WB 43         | ANCHOR Ø4x50/ANCHOR Ø4x50 | 14/4                  | 14/4                      |
| WB 44         | ANCHOR Ø4x50/ANCHOR Ø4x50 | 14/4                  | 14/4                      |
| WB 45         | ANCHOR Ø4x50/ANCHOR Ø4x50 | 18/6                  | 18/6                      |
| WB 46         | ANCHOR Ø4x50/ANCHOR Ø4x50 | 22/6                  | 22/6                      |
| WB 47         | ANCHOR Ø4x50/ANCHOR Ø4x50 | 14/4                  | 14/4                      |
| WB 48         | ANCHOR Ø4x50/ANCHOR Ø4x50 | 14/4                  | 14/4                      |
| WB 49         | ANCHOR Ø4x50/ANCHOR Ø4x50 | 14/4                  | 14/4                      |
| WB 50         | ANCHOR Ø4x50/ANCHOR Ø4x50 | 22/6                  | 22/6                      |
| WB 51         | ANCHOR Ø4x50/ANCHOR Ø4x50 | 26/8                  | 26/8                      |
| WB 52         | ANCHOR Ø4x50/ANCHOR Ø4x50 | 14/4                  | 14/4                      |
| WB 53         | ANCHOR Ø4x50/ANCHOR Ø4x50 | 14/4                  | 14/4                      |
| WB 54         | ANCHOR Ø4x50/ANCHOR Ø4x50 | 18/6                  | 18/6                      |
| WB 55         | ANCHOR Ø4x50/ANCHOR Ø4x50 | 22/6                  | 22/6                      |
| WB 56         | ANCHOR Ø4x50/ANCHOR Ø4x50 | 30/8                  | 30/8                      |
| WB 57         | ANCHOR Ø4x50/ANCHOR Ø4x50 | 12/4                  | 12/4                      |
| WB 58         | ANCHOR Ø4x50/ANCHOR Ø4x50 | 30/8                  | 30/8                      |
| WB 59         | ANCHOR Ø4x50/ANCHOR Ø4x50 | 18/6                  | 18/6                      |
| WB 60         | ANCHOR Ø4x50/ANCHOR Ø4x50 | 22/6                  | 22/6                      |
| WB 61         | ANCHOR Ø4x50/ANCHOR Ø4x50 | 26/8                  | 26/8                      |
| WB 62         | ANCHOR Ø4x50/ANCHOR Ø4x50 | 30/8                  | 30/8                      |
| WB 63         | ANCHOR Ø4x50/ANCHOR Ø4x50 | 22/6                  | 22/6                      |
| WBZ 38        | ANCHOR Ø4x50/ANCHOR Ø4x50 | 16/8                  | 16/8                      |
| WBZ 49        | ANCHOR Ø4x50/ANCHOR Ø4x50 | 8/4                   | 8/4                       |
| WBZ 52        | ANCHOR Ø4x50/ANCHOR Ø4x50 | 8/4                   | 8/4                       |
| WBZ 54        | ANCHOR Ø4x50/ANCHOR Ø4x50 | 10/6                  | 10/6                      |
| PSR 80 M24    | ANCHOR Ø4x50              | 4                     | 4                         |
| PSR 100 M24   | ANCHOR Ø4x50              | 4                     | 4                         |
| PSR 130 M24   | ANCHOR Ø4x50              | 4                     | 4                         |
| PSR 80 M20    | ANCHOR Ø4x50              | 4                     | 4                         |
| PSR 100 M20   | ANCHOR Ø4x50              | 4                     | 4                         |

| Connector      | Dowel type connectors           | Connectors per Detail | Connectors per Connection |
|----------------|---------------------------------|-----------------------|---------------------------|
|                |                                 | [pc.]                 | [pc.]                     |
| PSR 130 M20    | ANCHOR Ø4x50                    | 4                     | 4                         |
| PSRP 80 M20    | ANCHOR Ø4x50                    | 4                     | 4                         |
| PSRP 100 M20   | ANCHOR Ø4x50                    | 4                     | 4                         |
| PSRP 130 M20   | ANCHOR Ø4x50                    | 4                     | 4                         |
| PPSR 80        | ANCHOR Ø4x50                    | 4                     | 4                         |
| PPSR 100       | ANCHOR Ø4x50                    | 4                     | 4                         |
| PPSR 130       | ANCHOR Ø4x50                    | 4                     | 4                         |
| PPS 80         | ANCHOR Ø4x50                    | 4                     | 4                         |
| PPS 100        | ANCHOR Ø4x50                    | 4                     | 4                         |
| PPS 130        | ANCHOR Ø4x50                    | 4                     | 4                         |
| PR 100 100-150 | ANCHOR Ø4x50                    | 4                     | 4                         |
| PR 100 130-150 | ANCHOR Ø4x50                    | 4                     | 4                         |
| PR 130 130-150 | ANCHOR Ø4x50                    | 4                     | 4                         |
| PSK 70         | Bolt M 10x60 - 5.8 + washer M10 | 2                     | 2                         |
| SDPSK 70       | Bolt M 10x60 - 5.8 + washer M10 | 2                     | 2                         |

|                                         |                               |
|-----------------------------------------|-------------------------------|
| <b>THREE-DIMENSIONAL NAILING PLATES</b> | <b>ANNEX 6</b><br>ETA 24/0873 |
| <b>REFERENCE DOCUMENTS</b>              |                               |

- [1] European Assessment Document 130186-00-0603, edition July 2018,  
Three-dimensional nailing plates
- [2] EN 10346 Continuously hot-dip coated steel flat products - Technical delivery  
conditions
- [3] EN 10131 Cold rolled uncoated and zinc or zinc-nickel electrolytically coated low  
carbon and high yield strength steel flat products for cold forming - Tolerances on  
dimensions and shape
- [4] EN 10025-2 Hot rolled products of structural steels - Part 2: Technical delivery  
conditions for non-alloy structural steels
- [5] EN 14592+A1 Timber structures - Dowel-type fasteners – Requirements
- [6] EN 1995-1-1 Eurocode 5: Design of timber structures - Part 1-1: General - Common  
rules and rules for buildings
- [7] EN ISO 12944-2 Paints and varnishes - Corrosion protection of steel structures by  
protective paint systems - Part 2: Classification of environments
- [8] EN ISO 8970 Timber structures - Testing of joints made with mechanical fasteners -  
Requirements for wood density
- [9] EN 26891 Timber structures – Joints made with mechanical fasteners – General  
principles for the determination of strength and deformation characteristics
- [10] EN 384+A2 Structural timber – Determination of characteristic values of mechanical  
properties and density
- [11] EN 13183-2 Moisture content of a piece of sawn timber - Part 2: Estimation by  
electrical resistance method
- [12] EN 1309-1 Round and sawn timber - Method of measurement of dimensions - Part 1:  
Sawn timber
- [13] EN 14358 Timber structures – Calculation and verification of characteristic values
- [14] EN 13501-1 Fire classification of construction products and building elements -  
Part 1: Classification using test data from reaction to fire tests