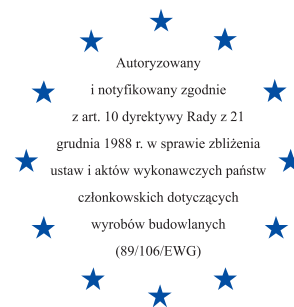




Instytut Techniki Budowlanej

Member of EOTA



European Technical Approval

ETA-13/0124

**DMX[®] type WBD, KG, WL, KRD, KMP, KMR,
KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB**

Three-dimensional nailing plates

*Trójwymiarowe łączniki mechaniczne
do konstrukcji drewnianych*



Europejska Organizacja ds. Aprobatach Technicznych
European Organisation for Technical Approvals

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w Zakładzie Aprobát Technicznych
przez dr inż. Agnieszkę FLESZAR

Projekt okładki: Ewa Kossakowska

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Członek EOTA

European Technical Approval

ETA-13/0124

English translation – the original version is in Polish language

Nazwa handlowa

Trade name

DMX[®] typów WBD, KG, WL, KRD, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

DMX[®] type WBD, KG, WL, KRD, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Właściciel aprobaty

Holder of approval

DOMAX Sp. z o.o.

**Al. Parku Krajobrazowego 109
PL 84-207 Koleczkowo, Łężyce**

Rodzaj i przeznaczenie wyrobu

*Generic type and use
of construction products*

**Trójwymiarowe łączniki mechaniczne
do konstrukcji drewnianych**

Three-dimensional nailing plates

Termin ważności

Valid

od

from

28.03.2013

do

to

28.03.2018

Zakład produkcyjny

Manufacturing plant

DOMAX Sp. z o.o.

**Al. Parku Krajobrazowego 109
PL 84-207 Koleczkowo, Łężyce**

Niniejsza Europejska Aprobata Techniczna zawiera

*This European Technical
Approval contains*

49 stron, w tym 36 Załączników

49 pages including 36 Annexes



Europejska Organizacja ds. Aprobatach Technicznych

European Organisation for Technical Approvals

I LEGAL BASES AND GENERAL CONDITIONS

1. This European Technical Approval is issued by Instytut Techniki Budowlanej in accordance with:
 - Council Directive 89/106/EEC of 21 December 1988 on the approximation of laws, regulations and administrative provisions of Member States relating to construction products¹, modified by the Council Directive 93/68/EEC² and Regulation (EC) no. 1882/2003 of the European Parliament and of the Council³;
 - ustawa z dnia 16 kwietnia 2004 r. o wyrobach budowlanych (law on construction products of 16 April 2004)⁴;
 - rozporządzenie Ministra Infrastruktury z dnia 14 października 2004 r. w sprawie europejskich aprobat technicznych oraz polskich jednostek organizacyjnych upoważnionych do ich wydawania (ordinance of Ministry of Infrastructure of 14 October 2004 on the European Technical Approvals and Polish bodies entitled to issue them)⁵;
 - Common Procedural Rules for Requesting, Preparing and the Granting of European Technical Approvals set out in the Annex to Commission Decision 94/23/EC⁶;
 - Guideline for European Technical Approval of “*Three-dimensional nailing plates*” ETAG 015, edition September 2002.
2. Instytut Techniki Budowlanej is authorized to check whether the provisions of this European Technical Approval are met. Checking may take place in the manufacturing plant. Nevertheless, the responsibility for the conformity of the products to the European Technical Approval and for their fitness for the intended use remains with the holder of the European Technical Approval.
3. This European Technical Approval is not to be transferred to manufacturers or agents of manufacturers other than those indicated on page 1; or manufacturing plants other than those laid down in the context of this European Technical Approval.
4. This European Technical Approval may be withdrawn by Instytut Techniki Budowlanej, in particular pursuant to information by the Commission according to Article 5 (1) of Council Directive 89/106/EEC.
5. Reproduction of this European Technical Approval including transmission by electronic means shall be in full. However, partial reproduction can be made with the written consent of Instytut Techniki Budowlanej. In this case, partial reproduction has to be designated as such. Texts and drawings of advertising brochures shall not contradict or misuse the European Technical Approval.
6. The European Technical Approval is issued by the approval body in its official language. This version corresponds to the version circulated within EOTA. Translations into other languages have to be designated as such.

¹ Official Journal of the European Communities no. L 40, 11.2.1989, p. 12

² Official Journal of the European Communities no. L 220, 30.8.1993, p. 1

³ Official Journal of the European Union no. L 284, 31.10.2003, p. 1

⁴ Official Journal of the Polish Republic no. 92/2004, pos. 881

⁵ Official Journal of the Polish Republic no. 237/2004, pos. 2375

⁶ Official Journal of the European Communities no. L 17, 20.1.1994, p. 34

II SPECIFIC CONDITIONS OF THE EUROPEAN TECHNICAL APPROVAL

1 Definition of product and intended use

1.1 Definition of product

The three-dimensional nailing plates DMX[®] are one-piece, non-welded elements, made of galvanized steel sheet grade DX51D+Z275 according to EN 10346 (WBD, KG, WL, KR, KMP, KMR, KMRP, KP, ŁZ, KSO, KWO). The KS, KW, KB plates are made of electrogalvanized steel DC01 according to EN 10131 or S235 according to EN 10025-2. The range of the DMX[®] type WBD, KG, WL, KR, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB three-dimensional nailing plates are shown in Annexes 1 to 22.

1.2 Intended use

The DMX[®] three-dimensional nailing plates are intended to be used 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 Essential Requirement 1 of Council Directive 89/106/EEC shall be fulfilled.

Ring shank nails according to EN 14592 with the diameter of 4 mm and characteristic tensile capacity $F_{ax,Rk}$ not less than 1,80 kN shall be used for connections made with the DMX[®] three-dimensional nailing plates.

In respect of the requirements concerning corrosion resistance, DMX[®] three-dimensional nailing plates are for use in timber structures subjected to the internal conditions defined by service classes 1 and 2 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 Approval 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 or approval body, 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.

2 Characteristics of product and methods of verification

2.1 Characteristics of product

The three-dimensional nailing plates DMX[®] type WBD, KG, WL, KR, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB correspond to the drawings and descriptions given in Annexes 1 to 22. The characteristic material values, dimensions and tolerances of the three-dimensional nailing plates not indicated in these Annexes shall correspond to the respective values laid down in the technical

documentation⁷ of this European Technical Approval. The dimension tolerances shall meet the requirements of EN 22768-1.

The DMX[®] WBD, KG, WL, KR, KMP, KMR, KMRP, KP, ŁZ, KSO, KWO three-dimensional nailing plates are made of the cold-formed steel sheet grade DX51D according to EN 10346 with the zinc coating mass of 275 g/m². The thickness is 1,0 mm (WL), 1,5 mm (KG, KMP, KSO, KWO), 2,0 mm (WBD, KR, KMR, KMRP) and 2,5 mm (KP, ŁZ). The KS, KW, KB plates are made of electrogalvanized steel DC01 according to EN 10131 or S235 according to EN 10025-2 with minimum 12 µm of zinc layer. The thickness is 1,5 to 2,0 mm (KS), 1,5 to 5,0 mm (KW) and 3,0 to 5,0 mm (KB).

2.2 Methods of verification

2.2.1 General

The assessment of the fitness of the DMX[®] three-dimensional nailing plates for the intended use has been made in compliance with the Guideline for European Technical Approval of “*Three-dimensional nailing plates*”, ETAG 015.

2.2.2 Essential Requirement 1 – Mechanical resistance and stability

2.2.2.1 Strength

The characteristic load-carrying capacities of joints loaded according to static diagrams No 1 and 2 and shown in Annex 23, determined by tests carried out according to ETAG 015, clause 5.1.3, are given in Annexes 23 to 36. 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).

2.2.2.2 Stiffness

No performance determined.

2.2.2.3 Ductility in cyclic testing

No performance determined.

2.2.3 Essential Requirement 2 – Safety in case of fire

2.2.3.1 Reaction to fire

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

2.2.3.2 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 determined option used to this Essential Requirement.

⁷ The technical documentation of this European Technical Approval is deposited at Instytut Techniki Budowlanej and, as far as relevant for the tasks of the notified body involved in the attestation of conformity procedure, may be handed over only to the notified body involved.

2.2.4 Essential Requirement 3 – Hygiene, health and the environment

According to the manufacturer's declaration the DMX[®] three-dimensional nailing plates do not contain harmful or dangerous substances as defined in the EU database.

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

2.2.5 Essential Requirement 4 – Safety in use

Not relevant

2.2.6 Essential Requirement 5 – Protection against noise

Not relevant

2.2.7 Essential Requirement 6 – Energy economy and heat retention

Not relevant

2.2.8 Aspects of durability serviceability and identification

2.2.8.1 Durability and serviceability

The DMX[®] three-dimensional nailing plates have been assessed as having satisfactory durability and serviceability when used in conditions defined by service classes 1 and 2 according to EN 1995-1-1 (Eurocode 5).

2.2.8.2 Identification

Each three-dimensional nailing plate is to be marked with the symbol and the product type according to the Annexes 1 to 22.

3 Evaluation and attestation of conformity and CE marking

3.1 System of attestation of conformity

According to the decision 98/279/EC of the European Commission amended by 2001/596/EC the system 2+ of attestation of conformity applies.

The system 2+ of attestation of conformity is defined as follows:

Declaration of conformity of the product by the manufacturer on the basis of:

a) Tasks of the manufacturer:

- (1) initial type-testing of the product,
- (2) factory production control,
- (3) testing of samples taken at the factory in accordance with a prescribed test plan,

b) Tasks of the notified body:

- (4) certification of factory production control on the basis of:
 - initial inspection of factory and of factory production control,

- continuous surveillance, assessment and approval of factory production control.

3.2 Responsibilities

3.2.1 Tasks of the manufacturer

3.2.1.1 Factory production control

The manufacturer shall exercise permanent internal control of production. All the elements, requirements and provisions adopted by the manufacturer shall be documented in a systematic manner in the form of written policies and procedures, including records of results performed. This production control system shall ensure that the products are in conformity with this European Technical Approval.

The manufacturer shall only use raw materials supplied with the relevant inspection documents as laid down in the control plan⁸. The incoming raw materials shall be subjected to controls and tests by the manufacturer before acceptance. Check of incoming materials shall include control of inspection documents presented by the manufacturers of those materials by verifying the steel grade and thickness (in case of steel sheet) and dimensions (in case of ring shank nails) and other material properties laid down in those documents (comparison with nominal values).

The manufactured three-dimensional nailing plates shall be subjected to the following tests:

- shape,
- dimensions,
- marking.

The results of factory production control are to be recorded and evaluated. The records shall include at least the following information:

- designation of the product and basic materials used in production,
- type of control or testing,
- date of manufacture and date of testing of the product and of the basic materials used in production,
- result of control and testing and, if appropriate, comparison with requirements,
- signature of person responsible for factory production control.

The records shall be presented to the notified body involved in continuous surveillance. On request they shall be presented to Instytut Techniki Budowlanej. Details of extent, nature and frequency of testing and controls to be performed within the factory production control shall correspond to the control plan which is part of the technical documentation of this European Technical Approval.

3.2.1.2 Initial type-testing

For initial type-testing the results of the tests performed as a part of the assessment for the ETA shall be used unless there are changes in the production line or plant. In such cases, the necessary initial type-testing has to be agreed between Instytut Techniki Budowlanej and the notified body involved.

⁸ The control plan has been deposited at Instytut Techniki Budowlanej and may be handed over only to the approved body involved in the conformity attestation procedure.

3.2.2 Tasks of the notified body

3.2.2.1 Initial inspection of factory and of factory production control

The notified body shall ascertain that, in accordance with the control plan, the factory, in particular the staff and equipment, and the factory production control are suitable to ensure a continuous and orderly manufacturing of the hangers with the specifications mentioned in clause 2.1 as well as in the Annexes to this European Technical Approval.

3.2.2.2 Continuous surveillance

Continuous surveillance and assessment of factory production control have to be performed according to the control plan.

The notified body shall visit the factory at least twice a year for surveillance. It has to be verified that the system of factory production control and the manufacturing process are maintained taking account of the prescribed control plan.

The results of continuous surveillance shall be made available on demand by the notified body to Instytut Techniki Budowlanej.

3.3 CE marking

The CE-marking shall be affixed on each packaging of the three-dimensional nailing plates. The symbol „CE” shall be accompanied by the following information:

- identification number of the notified body,
- name or identifying mark of the manufacturer and manufacturing plant,
- the last two digits of the year in which the CE-marking was affixed,
- the number of EC certificate of the Factory Production Control,
- the number of the European Technical Approval,
- the number of the Guideline for European Technical Approval (ETAG 015).

4 Assumptions under which the fitness of the product for the intended use was favourably assessed

4.1 Manufacturing

The DMX[®] three-dimensional nailing plates are manufactured in accordance with the provisions of the European Technical Approval using the manufacturing process as identified in the inspection of the plant by Instytut Techniki Budowlanej. Changes to the product or production process, which could result in this deposited data/information being incorrect, should be notified to Instytut Techniki Budowlanej before the changes are introduced. Instytut Techniki Budowlanej 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 alterations to the ETA shall be necessary.

4.2 Installation

4.2.1 General

The design of the building work in which the DMX[®] three-dimensional nailing plates are to be used shall be made in accordance with EN 1995-1-1:2004 (Eurocode 5) or with the appropriate national rules concerning timber structures design.

4.2.2 Design of joints

The joints with the DMX[®] three-dimensional nailing plates shall be designed taking into account the following conditions:

- the characteristic load-carrying capacities of joints are to be taken from the Annexes 23 to 36 for the defined nailing pattern,
- connected elements shall be made of solid coniferous timber classified to at least C24 strength class according to EN 338.

4.2.3 Installation of three-dimensional nailing plates

The fitness for use of the DMX[®] three-dimensional nailing plates can only be assumed if the following conditions of installation are met:

- installation is carried out by appropriately qualified personnel under the supervision of the person qualified for this work,
- the original three-dimensional nailing plates only are used, supplied by the manufacturer together with the appropriate ring shank nails defined in clause 2.2.2,
- three-dimensional nailing plates installation is in accordance with the manufacturer's installation guide,
- before placing the three-dimensional nailing plates, the characteristics of timber members (type, class and moisture content) in which the nailing plates are to be placed are checked to ensure that they are identical or better than the characteristics of timber members used in testing in which the characteristic load-carrying capacities were determined,
- timber member placed in three-dimensional nailing plate does not contain the wanes and the gap between the connected elements does not exceed 3 mm.

4.2.4 Responsibility of the manufacturer

It is in the responsibility of the manufacturer to ensure that the information on the specific conditions defined in clause 2 and in Annexes is given to those who are concerned. This information shall be presented in manufacturer's installation guide which may include the reproduction of the respective parts of the European Technical Approval. All installation data shall be shown clearly on the packaging and/or on an enclosed instruction sheet, preferably using illustrations.

The minimum data required are:

- specification of the three-dimensional nailing plate,
- requirements of the timber members connected,
- identification of the manufacturing batch.

5 Recommendations for the manufacturer

5.1 Recommendations on packaging, transport and storage

The three-dimensional nailing plates shall be supplied in original packages. The one package shall contain the three-dimensional nailing plates of the same type and size.

Packaging of the three-dimensional nailing plates has to be such that the products are protected against weathering and damage during transport and storage.

5.2 Use, maintenance and repair

The assessment of the fitness for use is based on the assumption that the maintenance is not required during the assumed intended working life.

Should repair prove necessary, it is normal for the three-dimensional nailing plate to be replaced.

On behalf of Instytut Techniki Budowlanej



Marek Kaproń
Deputy Director of ITB

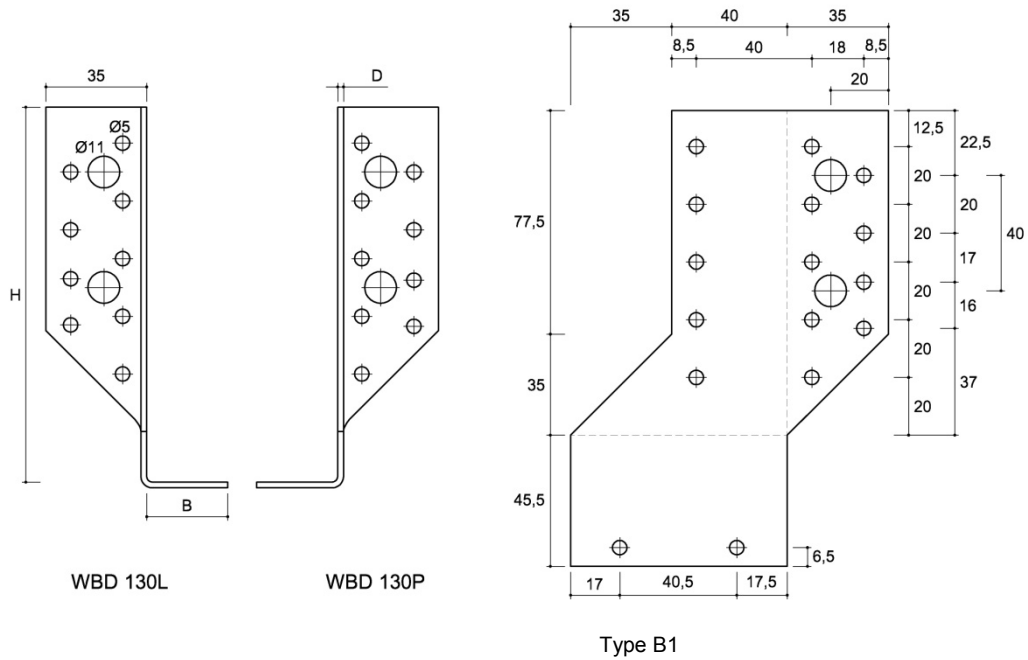


Table 1. WBD three-dimensional nailing plate symbols and dimensions

Symbol	Dimensions, mm			Type	Number of holes	
	H	B	D		Ø11	Ø5
WBD 105L WBD 105P	105	25	2	A1	1	13
WBD 130L WBD 130P	130	28	2	B1	2	16
WBD 140L WBD 140P	140	50	2	C1	2	19
WBD 170L WBD 170P	170	50	2	D1	3	22
WBD 200L WBD 200P	200	50	2	E1	3	25

DMX® type WBD, KG, WL, KRD, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Three-dimensional nailing plates DMX® WBD

Annex 1
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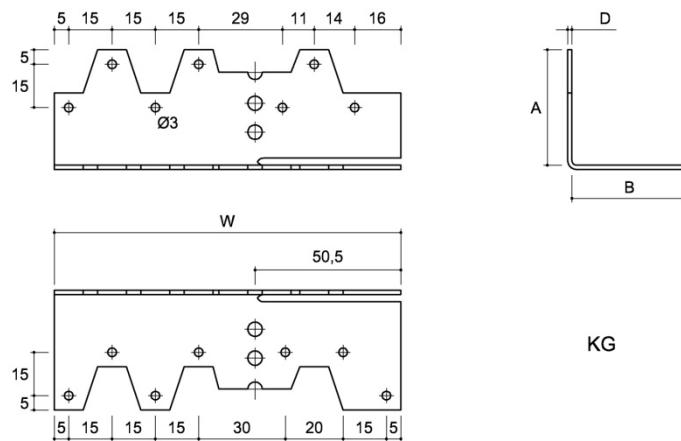


Table 2. KG three-dimensional nailing plate symbols and dimensions

Symbol	Dimensions, mm				Number of holes
	W	A	B	D	Ø3
KG	120	40	40	1,5	14

DMX[®] type WBD, KG, WL, KRd, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Three-dimensional nailing plates DMX[®] KG

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 ETA-13/0124

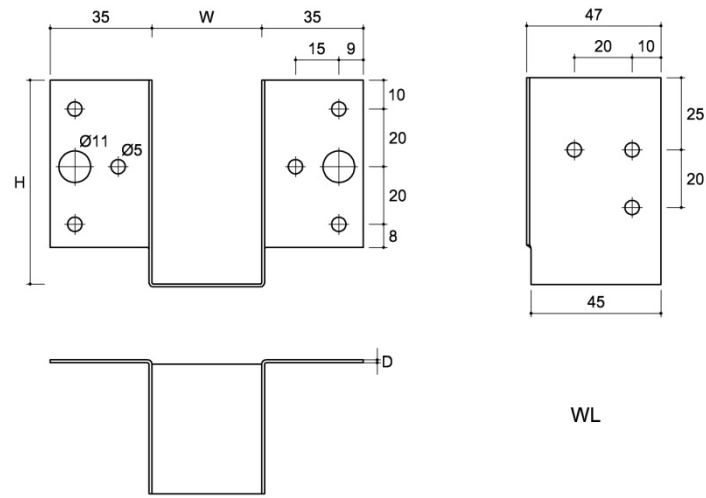


Table 3. WL three-dimensional nailing plate symbols and dimensions

Symbol	Dimensions, mm			Number of holes	
	W	H	D	Ø11	Ø5
WL 5	25	77	1	2	12
WL 6	38	71	1	2	12
WL 7	41	70	1	2	12
WL 8	51	65	1	2	12
WL 9	60	60	1	2	12

DMX[®] type WBD, KG, WL, KRD, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Three-dimensional nailing plates DMX[®] WL

Annex 3
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 ETA-13/0124

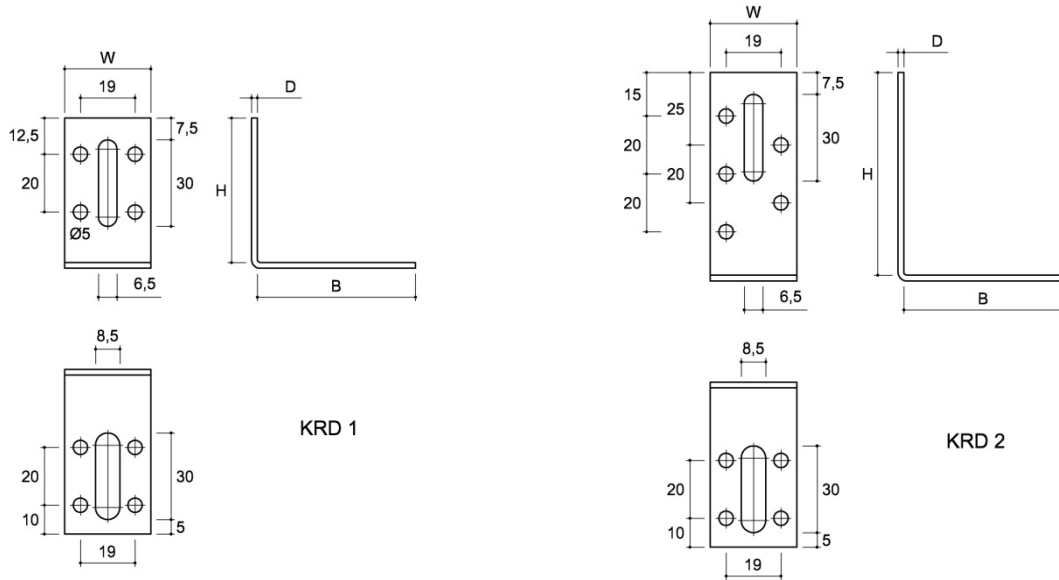


Table 4. KRD three-dimensional nailing plate symbols and dimensions

Symbol	Dimensions, mm				Number of holes
	W	H	B	D	Ø5
KRD 1	30	50	55	2	8
KRD 2	30	70	55	2	9

DMX[®] type WBD, KG, WL, KRD, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Three-dimensional nailing plates DMX[®] KRD

Annex 4
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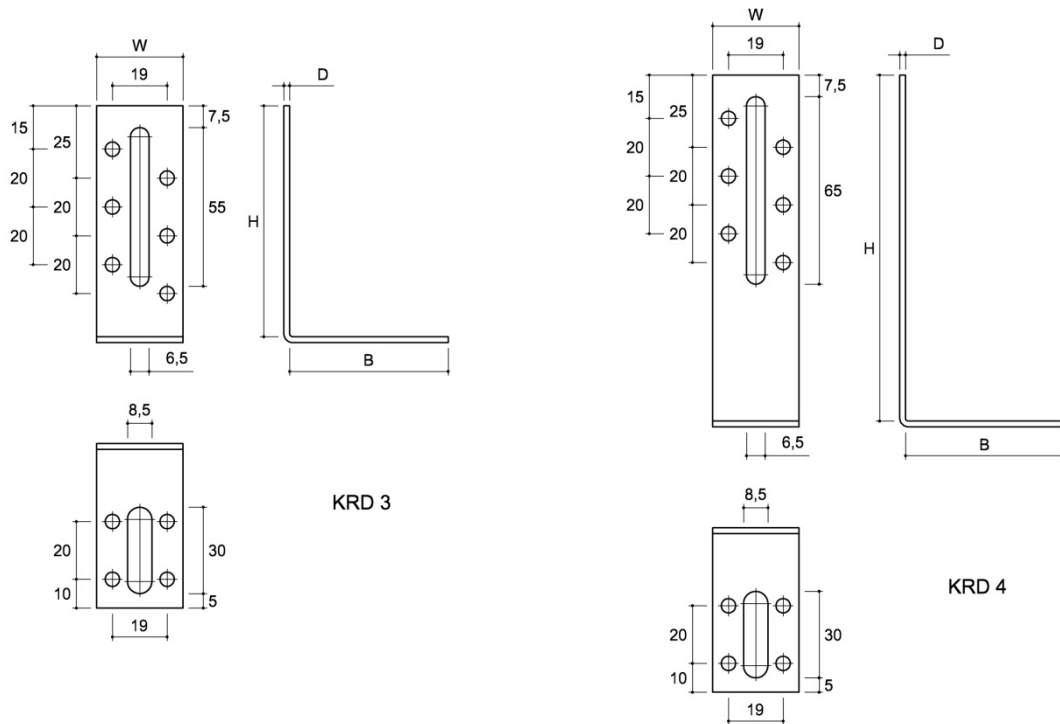


Table 5. KRD three-dimensional nailing plate symbols and dimensions

Symbol	Dimensions, mm				Number of holes
	W	H	B	D	Ø5
KRD 3	30	80	55	2	10
KRD 4	30	120	55	2	10

DMX[®] type WBD, KG, WL, KRD, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Three-dimensional nailing plates DMX[®] KRD

Annex 5
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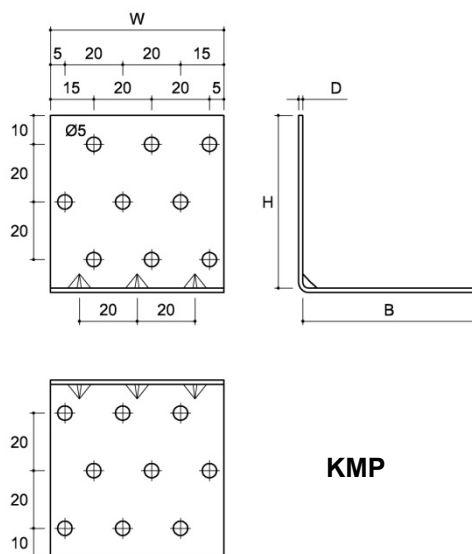


Table 6. KMP three-dimensional nailing plate symbols and dimensions

Symbol	Dimensions, mm				Number of holes
	W	H	B	D	Ø5
KMP 1	40	40	40	1,5	8
KMP 2	60	40	40	1,5	12
KMP 3	80	40	40	1,5	16
KMP 4	40	60	60	1,5	12
KMP 5	60	60	60	1,5	18
KMP 6	80	60	60	1,5	24
KMP 7	40	80	80	1,5	16
KMP 8	60	80	80	1,5	24
KMP 9	80	80	80	1,5	32

DMX[®] type WBD, KG, WL, KRd, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Three-dimensional nailing plates DMX[®] KMP

Annex 6
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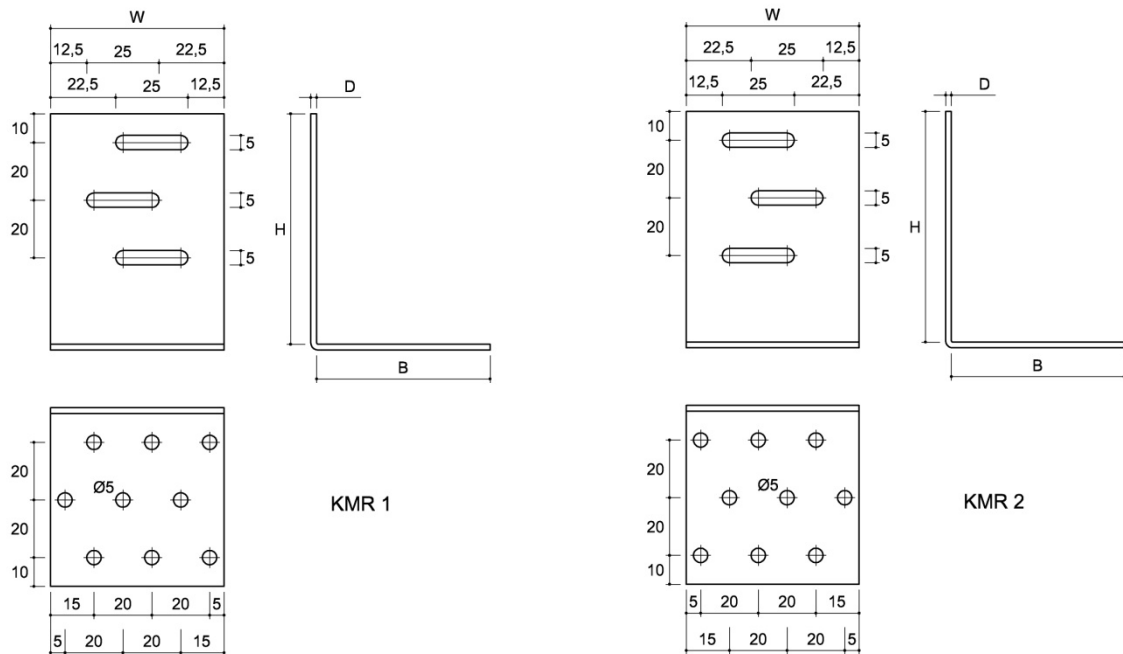


Table 7. KMR three-dimensional nailing plate symbols and dimensions

Symbol	Dimensions, mm				Number of holes
	W	H	B	D	Ø5
KMR 1	60	80	60	2	9
KMR 2	60	80	60	2	9

DMX[®] type WBD, KG, WL, KRd, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Three-dimensional nailing plates DMX[®] KMR

Annex 7
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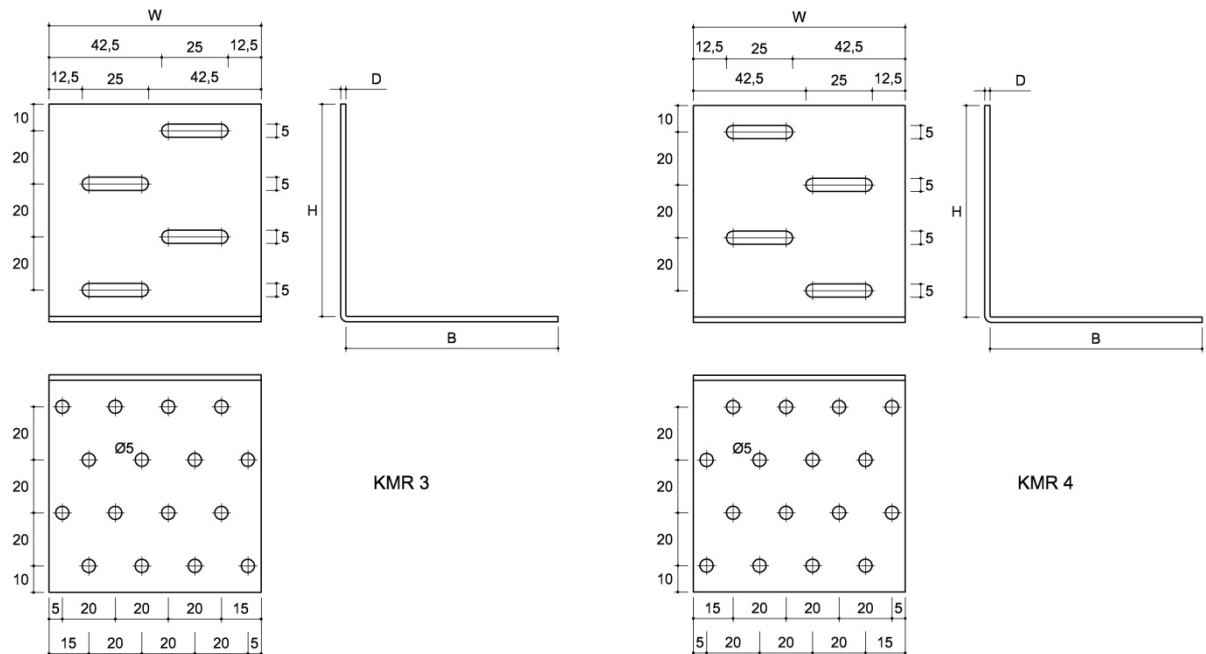


Table 8. KMR three-dimensional nailing plate symbols and dimensions

Symbol	Dimensions, mm				Number of holes
	W	H	B	D	Ø5
KMR 3	80	80	80	2	16
KMR 4	80	80	80	2	16

DMX[®] type WBD, KG, WL, KRd, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Three-dimensional nailing plates DMX[®] KMR

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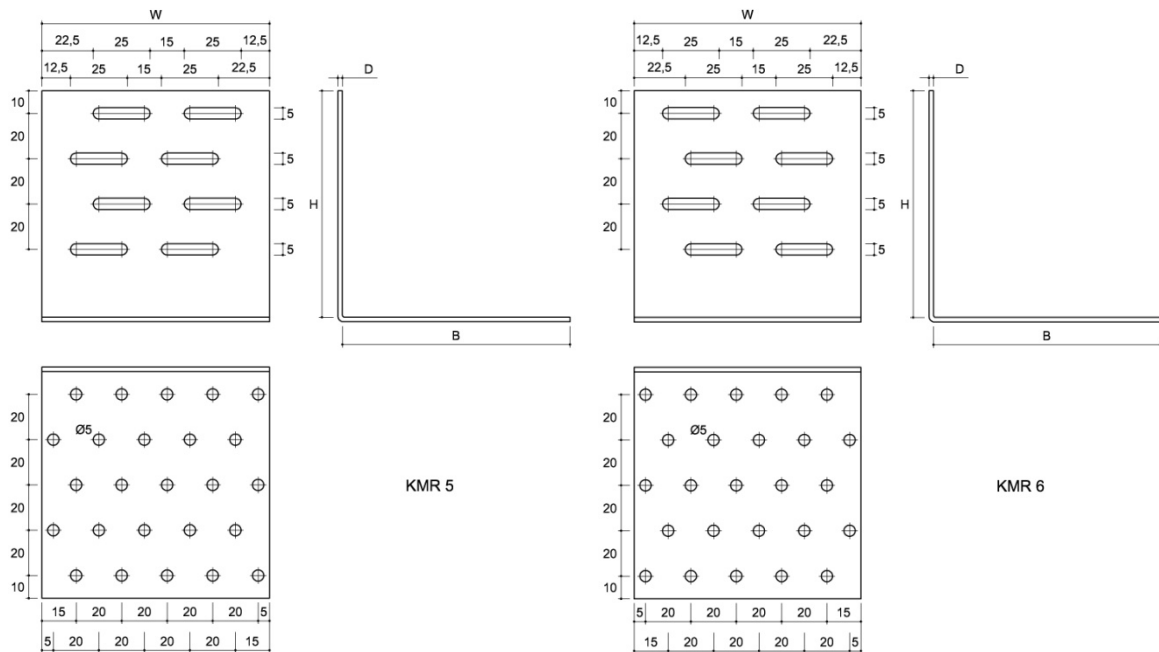


Table 9. KMR three-dimensional nailing plate symbols and dimensions

Symbol	Dimensions, mm				Number of holes
	W	H	B	D	Ø5
KMR 5	100	100	100	2	25
KMR 6	100	100	100	2	25

DMX[®] type WBD, KG, WL, KRd, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Three-dimensional nailing plates DMX[®] KMR

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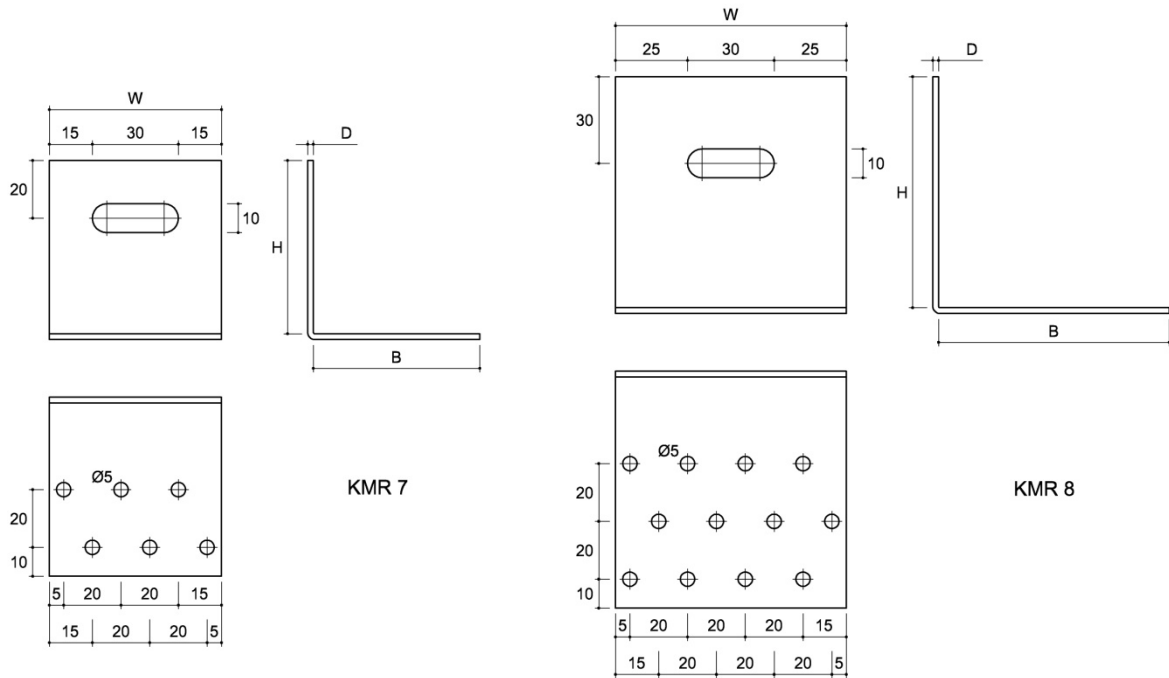


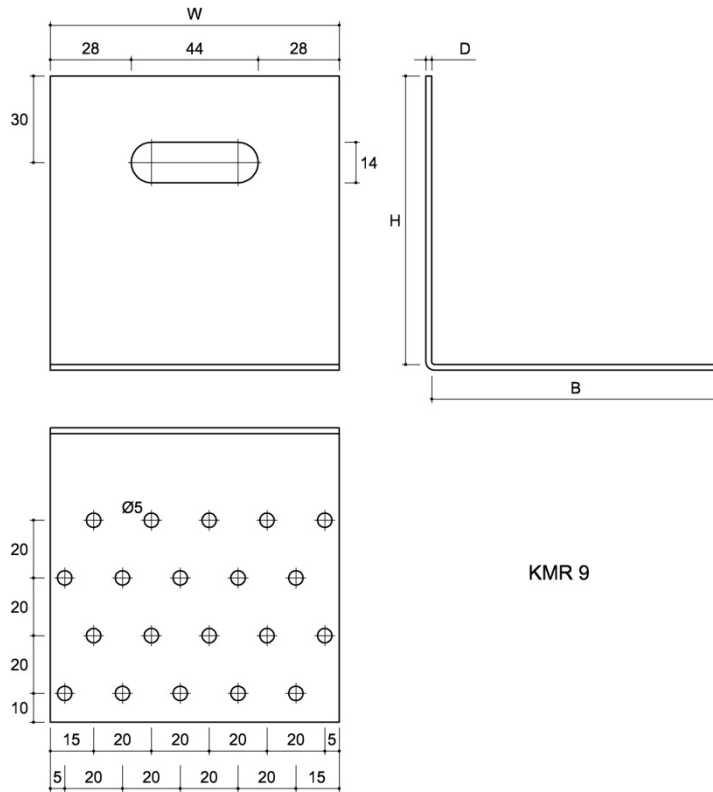
Table 10. KMR three-dimensional nailing plate symbols and dimensions

Symbol	Dimensions, mm				Number of holes
	W	H	B	D	Ø5
KMR 7	60	60	60	2	6
KMR 8	80	80	80	2	12

DMX[®] type WBD, KG, WL, KR, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Three-dimensional nailing plates DMX[®] KMR

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KMR 9

Table 11. KMR three-dimensional nailing plate symbols and dimensions

Symbol	Dimensions, mm				Number of holes
	W	H	B	D	Ø5
KMR 9	100	100	100	2	20

DMX[®] type WBD, KG, WL, KRd, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Three-dimensional nailing plates DMX[®] KMR

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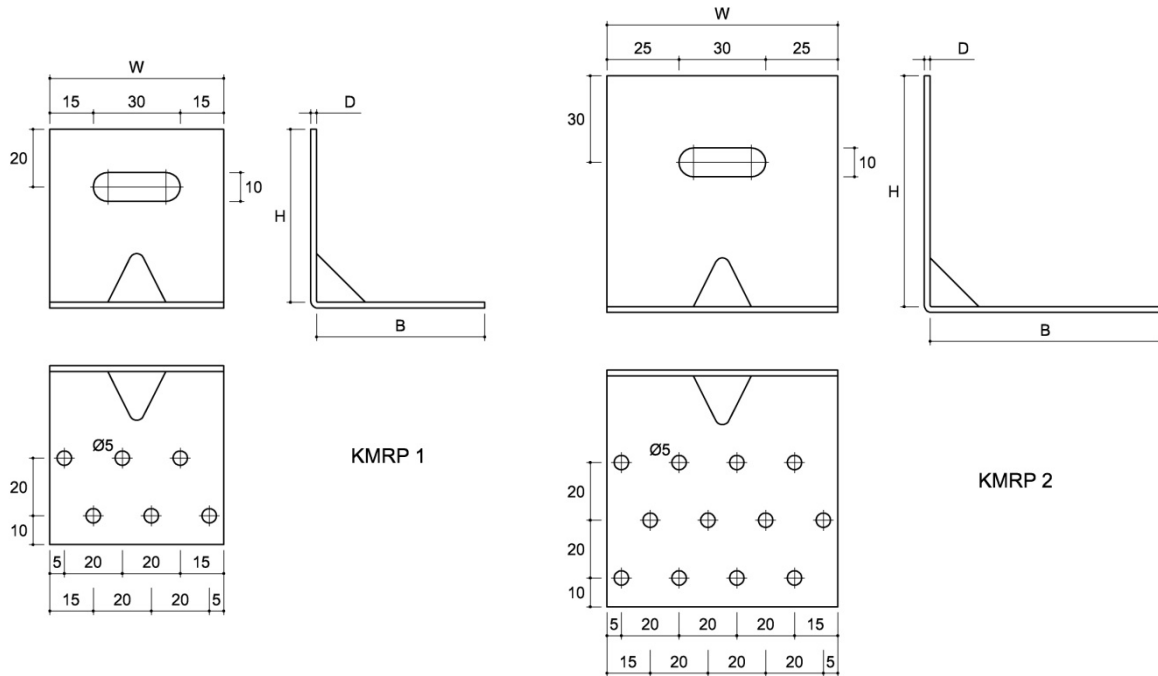


Table 12. KMRP three-dimensional nailing plate symbols and dimensions

Symbol	Dimensions, mm				Number of holes
	W	H	B	D	Ø5
KMRP 1	60	60	60	2	6
KMRP 2	80	80	80	2	12

DMX[®] type WBD, KG, WL, KR, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Three-dimensional nailing plates DMX[®] KMRP

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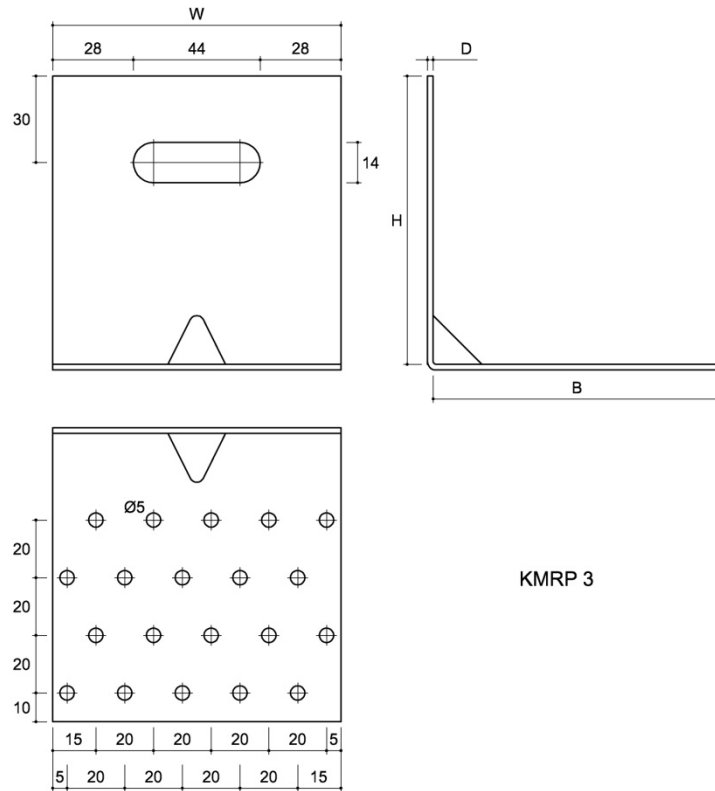


Table 13. KMRP three-dimensional nailing plate symbols and dimensions

Symbol	Dimensions, mm				Number of holes
	W	H	B	D	Ø5
KMRP 3	100	100	100	2	20

DMX® type WBD, KG, WL, KRd, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Three-dimensional nailing plates DMX® KMRP

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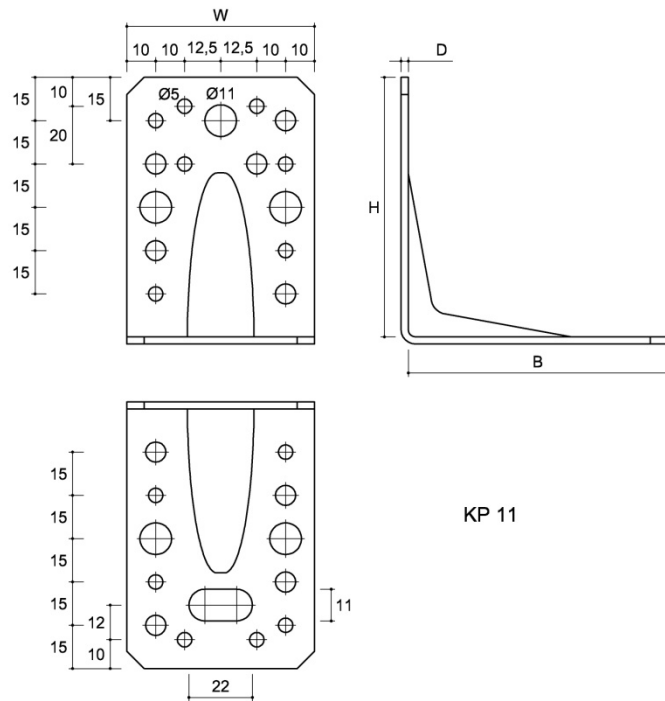


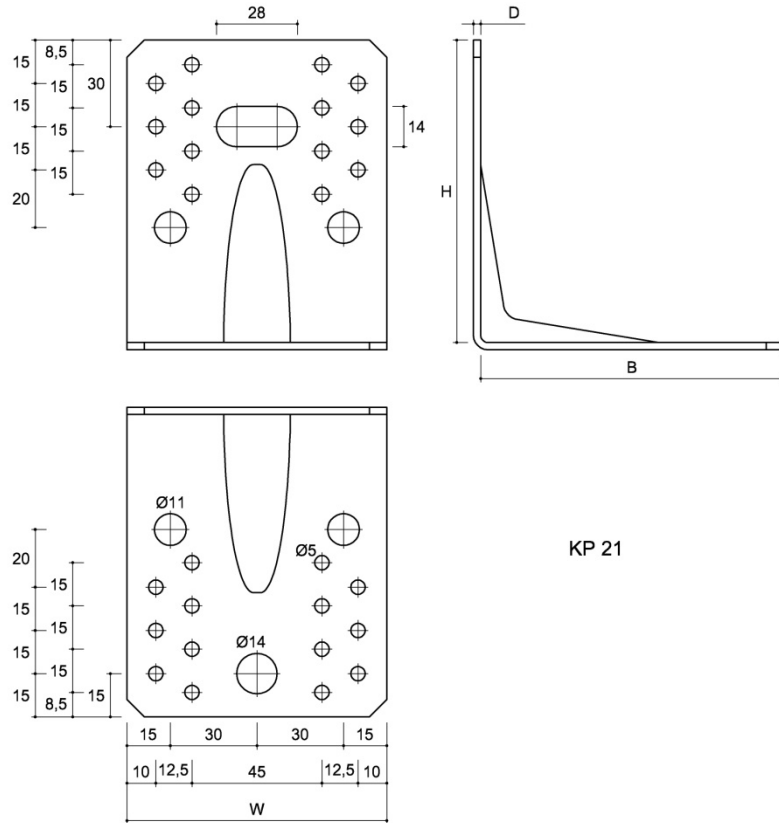
Table 14. KP three-dimensional nailing plate symbols and dimensions

Symbol	Dimensions, mm				Number of holes		
	W	H	B	D	Ø11	Ø7	Ø5
KP 11	65	90	90	2,5	5	9	13

DMX[®] type WBD, KG, WL, KRD, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Three-dimensional nailing plates DMX[®] KP

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KP 21

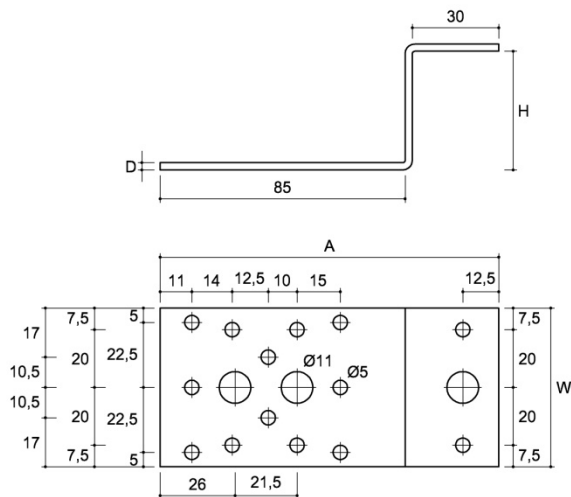
Table 15. KP three-dimensional nailing plate symbols and dimensions

Symbol	Dimensions, mm				Number of holes		
	W	H	B	D	Ø14	Ø11	Ø5
KP 21	90	105	105	2,5	1	4	28

DMX[®] type WBD, KG, WL, KRD, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Three-dimensional nailing plates DMX[®] KP

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LZ 1

Table 16. ŁZ three-dimensional nailing plate symbols and dimensions

Symbol	Dimensions, mm				Number of holes	
	W	H	A	D	Ø11	Ø5
ŁZ 1	55	41	117,5	2,5	3	14
ŁZ 2	55	51	117,5	2,5	3	14
ŁZ 2	55	61	117,5	2,5	3	14

DMX[®] type WBD, KG, WL, KRD, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Three-dimensional nailing plates DMX[®] ŁZ

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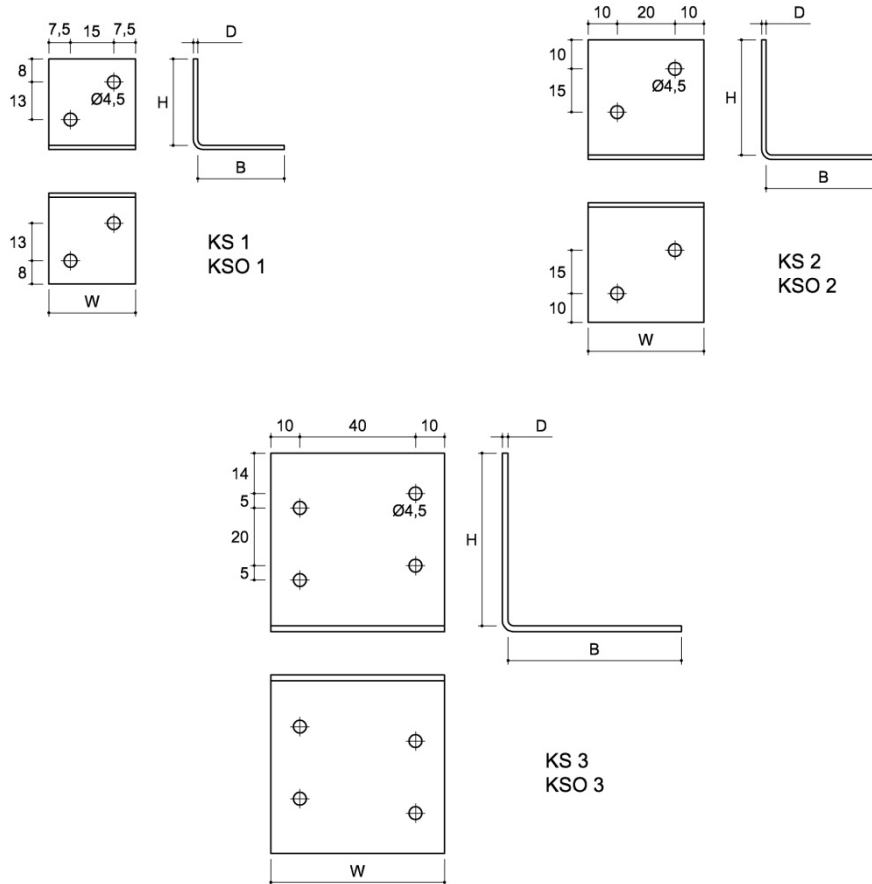


Table 17. KS and KSO three-dimensional nailing plate symbols and dimensions

Symbol	Dimensions, mm				Number of holes
	W	H	B	D	Ø4,5
KS 1 KSO 1	30	30	30	1,5	4
KS 2 KSO 2	40	40	40	1,5	4
KS 3 KSO 3	60	60	60	2	8

DMX[®] type WBD, KG, WL, KRd, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Three-dimensional nailing plates DMX[®] KS and KSO

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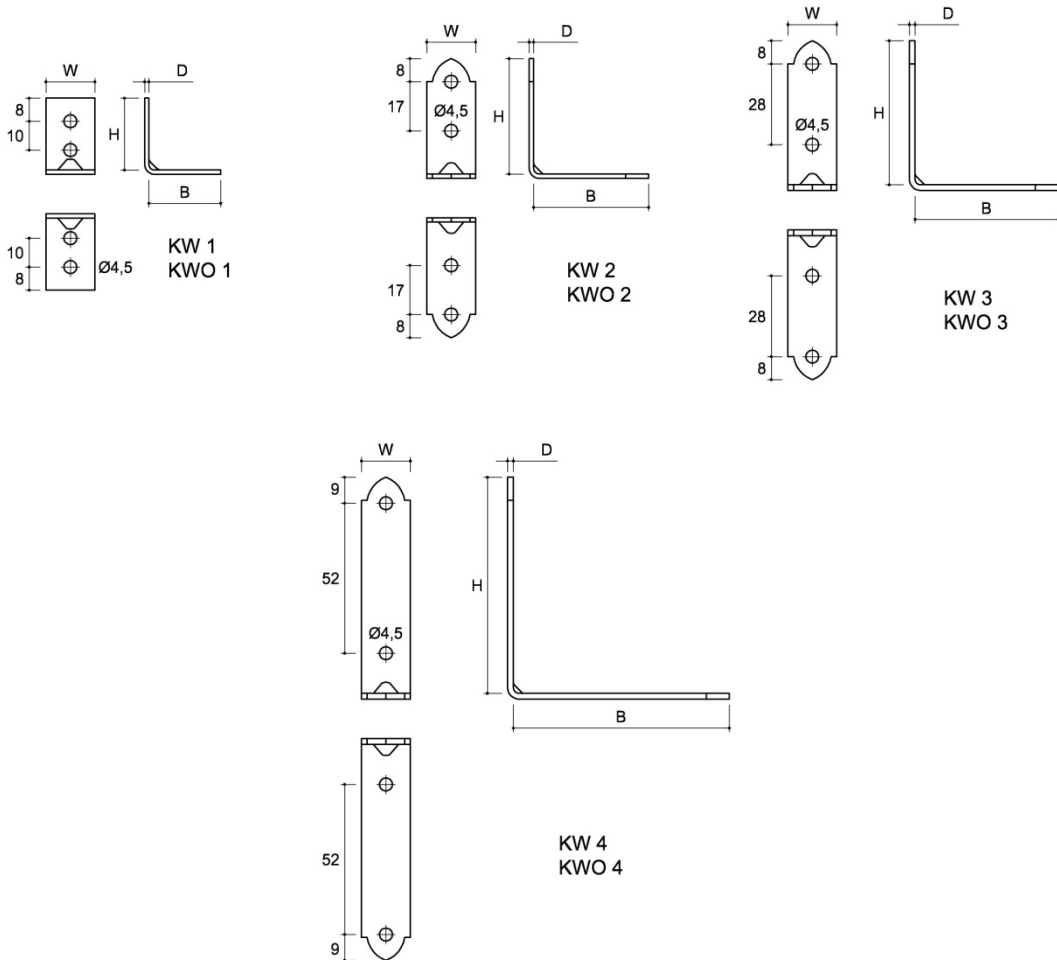


Table 18. KW and KWO three-dimensional nailing plate symbols and dimensions

Symbol	Dimensions, mm				Number of holes
	W	H	B	D	Ø4,5
KW 1 KWO 1	17	25	25	1,5	4
KW 2 KWO 2	17	40	40	1,5	4
KW 3 KWO 3	17	50	50	2	4
KW 4 KWO 4	17	75	75	2	4

DMX® type WBD, KG, WL, KRd, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Three-dimensional nailing plates DMX® KW and KWO

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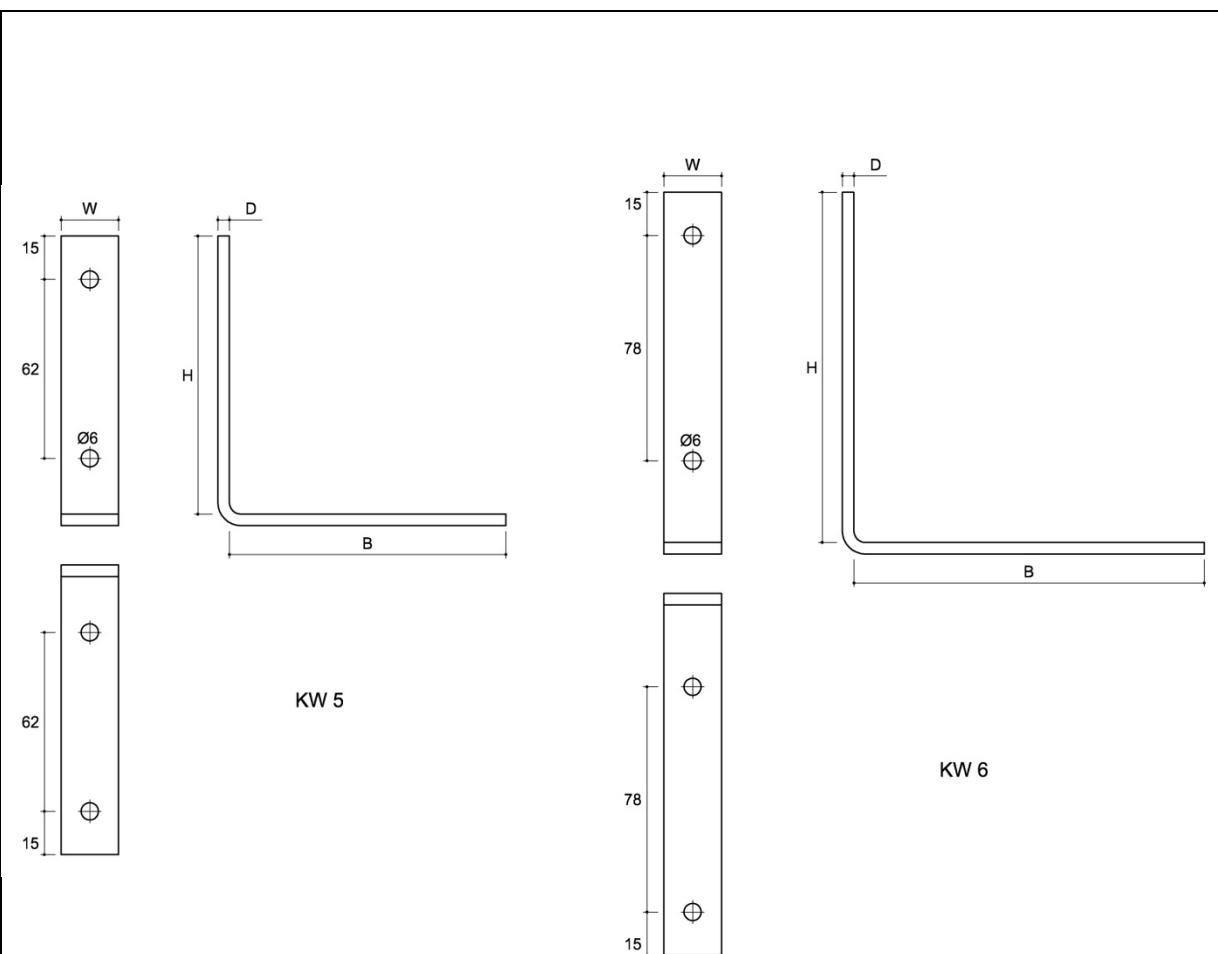


Table 19. KW three-dimensional nailing plate symbols and dimensions

Symbol	Dimensions, mm				Number of holes
	W	H	B	D	Ø6
KW 5	20	96	96	4	4
KW 6	20	121	121	4	4

DMX[®] type WBD, KG, WL, KRD, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB	Annex 19 of European Technical Approval ETA-13/0124
Three-dimensional nailing plates DMX [®] KW	

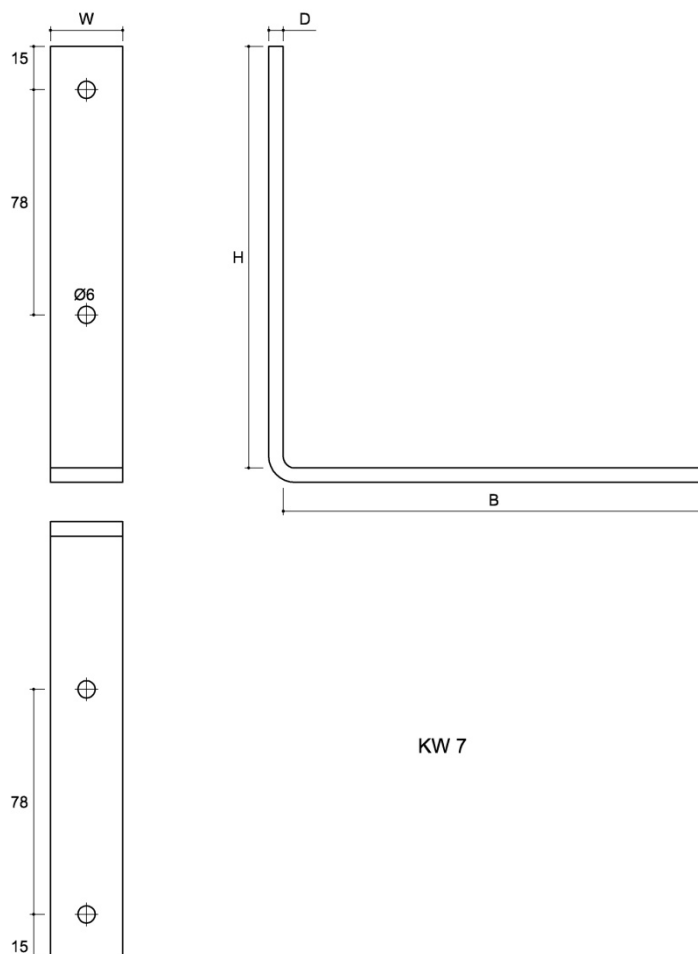


Table 20. KW three-dimensional nailing plate symbols and dimensions

Symbol	Dimensions, mm				Number of holes
	W	H	B	D	Ø6
KW 7	25	146	146	5	4

DMX[®] type WBD, KG, WL, KRD, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Three-dimensional nailing plates DMX[®] KW

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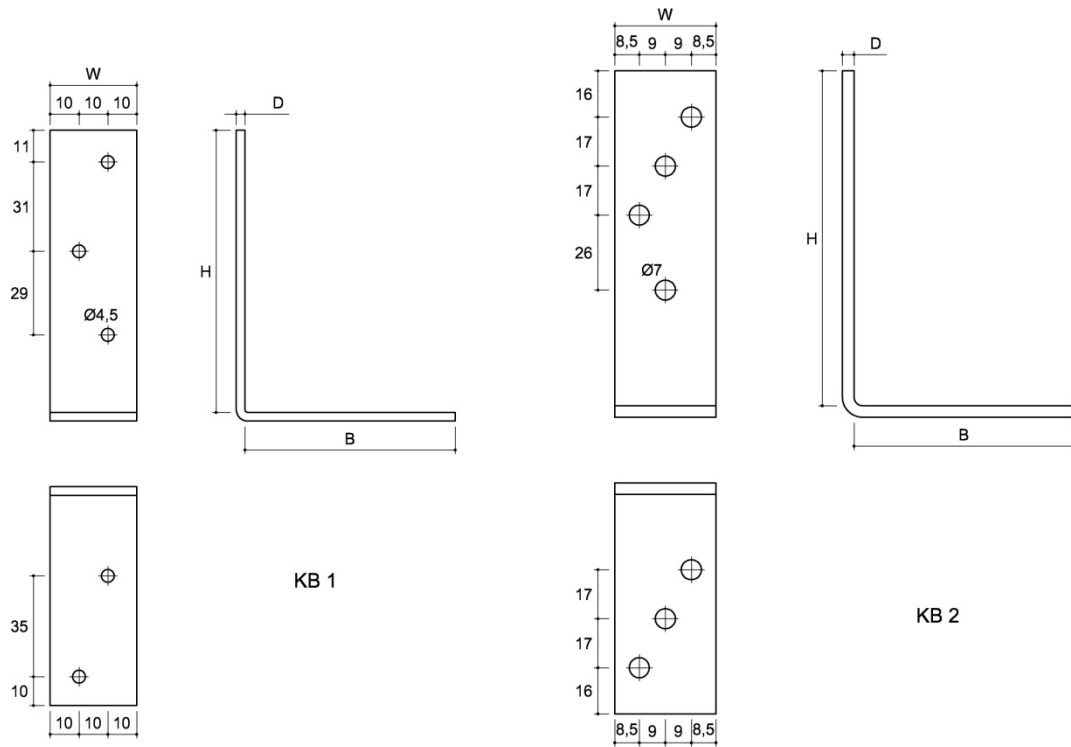


Table 21. KB three-dimensional nailing plate symbols and dimensions

Symbol	Dimensions, mm				Number of holes	
	W	H	B	D	Ø4,5	Ø7
KB 1	30	98	73	3	5	-
KB 2	35	116	76	4	-	7

DMX[®] type WBD, KG, WL, KRd, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Three-dimensional nailing plates DMX[®] KB

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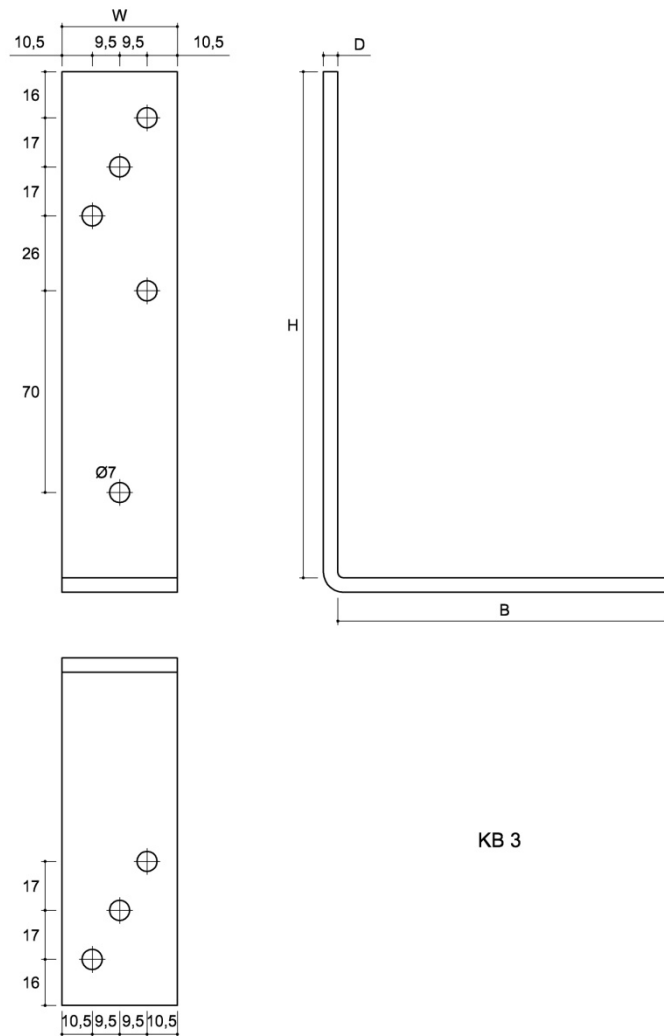


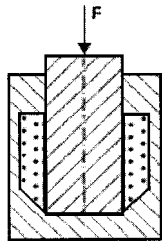
Table 22 . KB three-dimensional nailing plate symbols and dimensions

Symbol	Dimensions, mm				Number of holes
	W	H	B	D	Ø7
KB 3	40	176	116	5	8

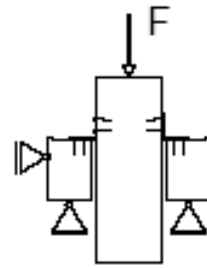
DMX[®] type WBD, KG, WL, KRD, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Three-dimensional nailing plates DMX[®] KB

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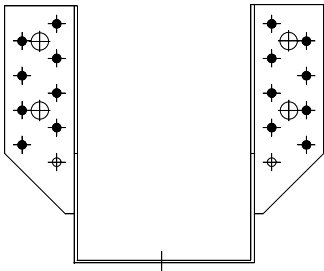


Static diagram No 1



Static diagram No 2

Table 23. Characteristic load-carrying capacity of joints made with DMX[®] type WBD three-dimensional nailing plates

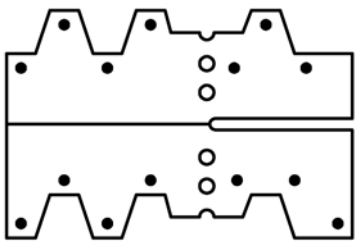
DMX [®] symbol	Nailing reference drawing*	Characteristic load-carrying capacity**, R _k , kN
WBD 105L WBD 105P WBD 130L WBD 130P WBD 140L WBD 140P WBD 170L WBD 170P WBD 200L WBD 200P		26,96
* Ring shank nails with the diameter $d \geq 4$ mm and the length ≥ 40 mm. Timber grade at least C24 according to EN 338 ** Loading according to static diagram No 1		

DMX[®] type WBD, KG, WL, KRD, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Characteristic load-carrying capacity of joints made with DMX[®] type WBD three-dimensional nailing plates

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Table 24. Characteristic load-carrying capacity of joints made with type DMX® KG three-dimensional nailing plates

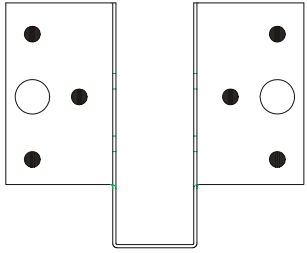
DMX® symbol	Nailing reference drawing*	Characteristic load-carrying capacity**, R _k , kN
KG		3,44
<p>* Ring shank nails with the diameter $d \geq 4$ mm and the length ≥ 40 mm. Timber grade at least C24 according to EN 338</p> <p>** Loading according to static diagram No 2</p>		

DMX® type WBD, KG, WL, KR, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Characteristic load-carrying capacity of joints made with DMX® type KG three-dimensional nailing plates

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Table 25. Characteristic load-carrying capacity of joints made with DMX[®] type WL three-dimensional nailing plates


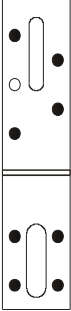

DMX [®] symbol	Nailing reference drawing*	Characteristic load-carrying capacity**, R _k , kN
WL5 WL6 WL7 WL8 WL9		14,29
* Ring shank nails with the diameter $d \geq 4$ mm and the length ≥ 40 mm. Timber grade at least C24 according to EN 338 ** Loading according to static diagram No 1		

DMX[®] type WBD, KG, WL, KRD, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Characteristic load-carrying capacity of joints made with DMX[®] type WL three-dimensional nailing plates

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Table 26. Characteristic load-carrying capacity of joints made with DMX[®] type KRD three-dimensional nailing plates

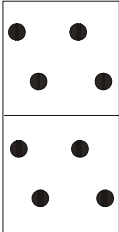
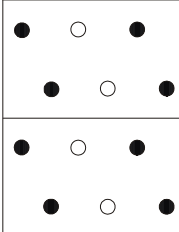
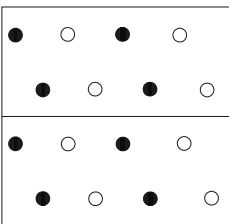
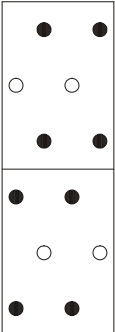
DMX [®] symbol	Nailing reference drawing*	Characteristic load-carrying capacity**, R _k , kN
KRD1		6,65
KRD2		6,68
KRD3 KRD4		6,75
<p>* Ring shank nails with the diameter $d \geq 4$ mm and the length ≥ 40 mm. Timber grade at least C24 according to EN 338</p> <p>** Loading according to static diagram No 2</p>		

DMX[®] type WBD, KG, WL, KRD, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Characteristic load-carrying capacity of joints made with DMX[®] type KRD three-dimensional nailing plates

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Table 27. Characteristic load-carrying capacity of joints made with DMX[®] type KMP three-dimensional nailing plates

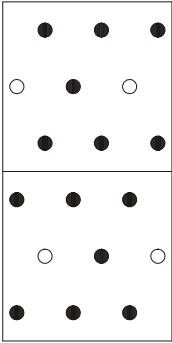
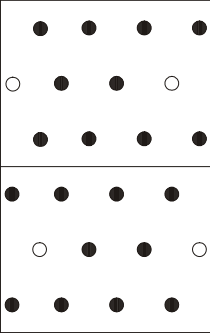
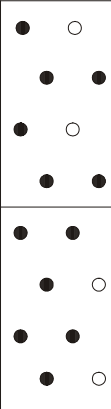
DMX [®] symbol	Nailing reference drawing*	Characteristic load-carrying capacity**, R _k , kN
KMP1		6,20
KMP2		5,91
KMP3		6,26
KMP4		3,41

DMX[®] type WBD, KG, WL, KR, KRD, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Characteristic load-carrying capacity of joints made with DMX[®] type KMP three-dimensional nailing plates

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cont. Table 27

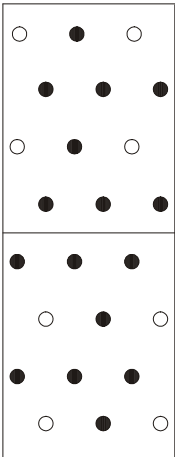
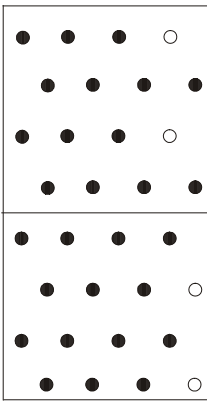
DMX [®] symbol	Nailing reference drawing*	Characteristic load-carrying capacity**, R _k , kN
KMP5		5,51
KMP6		6,80
KMP7		5,53

DMX[®] type WBD, KG, WL, KRd, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Characteristic load-carrying capacity of joints made with DMX[®] type KMP three-dimensional nailing plates

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cont. Table 27


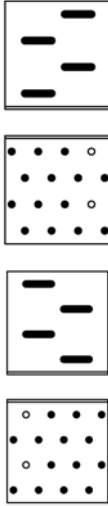
DMX [®] symbol	Nailing reference drawing*	Characteristic load-carrying capacity**, R _k , kN
KMP8		6,57
KMP9		10,71
<p>* Ring shank nails with the diameter $d \geq 4$ mm and the length ≥ 40 mm. Timber grade at least C24 according to EN 338</p> <p>** Loading according to static diagram No 2</p>		

DMX[®] type WBD, KG, WL, KRd, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Characteristic load-carrying capacity of joints made with DMX[®] type KMP three-dimensional nailing plates

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Table 28. Characteristic load-carrying capacity of joints made with DMX[®] type KMR three-dimensional nailing plates

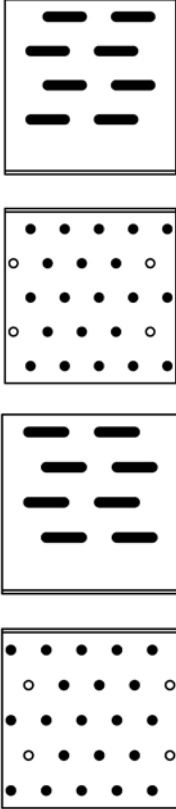

DMX [®] symbol	Nailing reference drawing*	Characteristic load-carrying capacity**, R _k , kN
KMR1 KMR2		5,52
KMR3 KMR4		8,65

DMX[®] type WBD, KG, WL, KRd, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Characteristic load-carrying capacity of joints made with DMX[®] type KMR three-dimensional nailing plates

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cont. Table 28

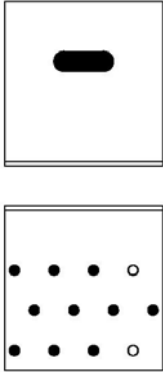
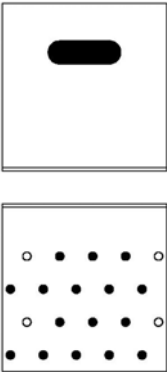
DMX [®] symbol	Nailing reference drawing*	Characteristic load-carrying capacity**, R _k , kN
KMR5 KMR6		10,92
KMR7		3,70

DMX[®] type WBD, KG, WL, KRd, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Characteristic load-carrying capacity of joints made with DMX[®] type KMR three-dimensional nailing plates

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cont. Table 28

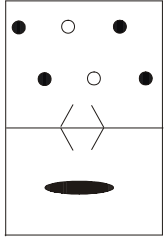
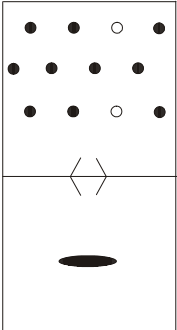
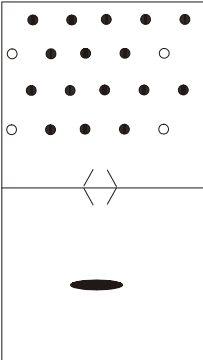
DMX [®] symbol	Nailing reference drawing*	Characteristic load-carrying capacity**, R _k , kN
KMR8		6,73
KMR9		6,63
<p>* Ring shank nails with the diameter $d \geq 4$ mm and the length ≥ 40 mm. Timber grade at least C24 according to EN 338</p> <p>** Loading according to static diagram No 2</p>		

DMX[®] type WBD, KG, WL, KRd, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Characteristic load-carrying capacity of joints made with DMX[®] type KMR three-dimensional nailing plates

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Table 29. Characteristic load-carrying capacity of joints made with DMX[®] type KMRP three-dimensional nailing plates

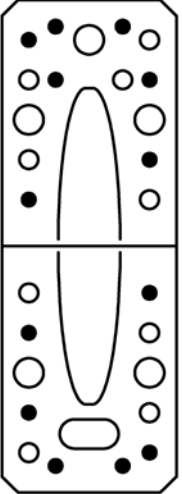
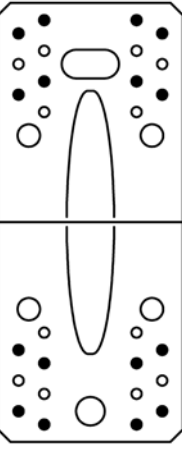
DMX [®] symbol	Nailing reference drawing*	Characteristic load-carrying capacity**, R _k , kN
KMRP1		3.74
KMRP2		6,90
KMRP3		7,40
<p>* Ring shank nails with the diameter $d \geq 4$ mm and the length ≥ 40 mm. Timber grade at least C24 according to EN 338 ** Loading according to static diagram No 2</p>		

DMX[®] type WBD, KG, WL, KRd, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Characteristic load-carrying capacity of joints made with DMX[®] type KMRP three-dimensional nailing plates

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Table 30. Characteristic load-carrying capacity of joints made with DMX[®] type KP three-dimensional nailing plates

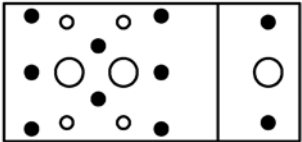
DMX [®] symbol	Nailing reference drawing*	Characteristic load-carrying capacity**, R _k , kN
KP11		3.62
KP21		3,64
<p>* Ring shank nails with the diameter $d \geq 4$ mm and the length ≥ 40 mm. Timber grade at least C24 according to EN 338</p> <p>** Loading according to static diagram No 2</p>		

DMX[®] type WBD, KG, WL, KRD, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Characteristic load-carrying capacity of joints made with DMX[®] type KP three-dimensional nailing plates

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Table 31. Characteristic load-carrying capacity of joints made with DMX[®] type ŁZ three-dimensional nailing plates

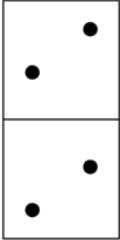
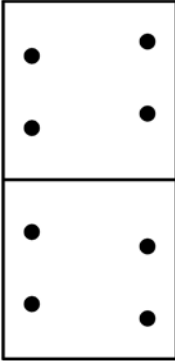
DMX [®] symbol	Nailing reference drawing*	Characteristic load-carrying capacity**, R _k , kN
ŁZ1 ŁZ2 ŁZ3		3,62
* Ring shank nails with the diameter $d \geq 4$ mm and the length ≥ 40 mm. Timber grade at least C24 according to EN 338 ** Loading according to static diagram No 2		

DMX[®] type WBD, KG, WL, KRD, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Characteristic load-carrying capacity of joints made with DMX[®] type ŁZ three-dimensional nailing plates

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Table 32. Characteristic load-carrying capacity of joints made with DMX[®] type KS three-dimensional nailing plates

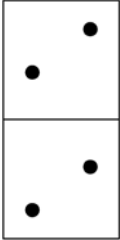
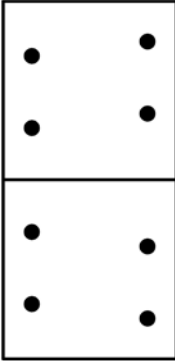
DMX [®] symbol	Nailing reference drawing*	Characteristic load-carrying capacity**, R _k , kN
KS1 KS2		3,44
KS3		6,65
<p>* Ring shank nails with the diameter $d \geq 4$ mm and the length ≥ 40 mm. Timber grade at least C24 according to EN 338</p> <p>** Loading according to static diagram No 2</p>		

DMX[®] type WBD, KG, WL, KRd, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Characteristic load-carrying capacity of joints made with DMX[®] type KS three-dimensional nailing plates

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Table 33. Characteristic load-carrying capacity of joints made with DMX[®] type KSO three-dimensional nailing plates


DMX [®] symbol	Nailing reference drawing*	Characteristic load-carrying capacity**, R _k , kN
KSO1 KSO2		3,49
KSO3		6,58
<p>* Ring shank nails with the diameter $d \geq 4$ mm and the length ≥ 40 mm. Timber grade at least C24 according to EN 338</p> <p>** Loading according to static diagram No 2</p>		

DMX[®] type WBD, KG, WL, KRd, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Characteristic load-carrying capacity of joints made with DMX[®] type KSO three-dimensional nailing plates

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Table 34. Characteristic load-carrying capacity of joints made with DMX[®] type KW three-dimensional nailing plates


DMX [®] symbol	Nailing reference drawing*	Characteristic load-carrying capacity**, R _k , kN
KW1 KW2 KW3 KW4 KW5 KW6 KW7		3,33
* Ring shank nails with the diameter $d \geq 4$ mm and the length ≥ 40 mm. Timber grade at least C24 according to EN 338 ** Loading according to static diagram No 2		

DMX[®] type WBD, KG, WL, KRd, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Characteristic load-carrying capacity of joints made with DMX[®] type KW three-dimensional nailing plates

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Table 35. Characteristic load-carrying capacity of joints made with DMX[®] type KWO three-dimensional nailing plates


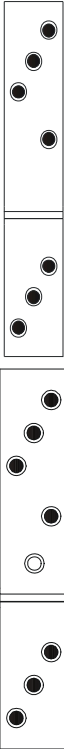
DMX [®] symbol	Nailing reference drawing*	Characteristic load-carrying capacity**, R _k , kN
KWO1 KWO2 KWO3 KWO4		2,51
* Ring shank nails with the diameter $d \geq 4$ mm and the length ≥ 40 mm. Timber grade at least C24 according to EN 338 ** Loading according to static diagram No 2		

DMX[®] type WBD, KG, WL, KRd, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Characteristic load-carrying capacity of joints made with DMX[®] type KWO three-dimensional nailing plates

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Table 36. Characteristic load-carrying capacity of joints made with DMX[®] type KB three-dimensional nailing plates

DMX [®] symbol	Nailing reference drawing*	Characteristic load-carrying capacity**, R _k , kN
KB1		7,46
KB2 KB3		8,62
<p>* Ring shank nails with the diameter $d \geq 4$ mm and the length ≥ 40 mm. Timber grade at least C24 according to EN 338</p> <p>** Loading according to static diagram No 2</p>		

DMX[®] type WBD, KG, WL, KRD, KMP, KMR, KMRP, KP, ŁZ, KS, KSO, KW, KWO, KB

Characteristic load-carrying capacity of joints made with DMX[®] type KB three-dimensional nailing plates

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