BS EN 10248-2:2024

BSI Standards Publication

Hot-rolled steel sheet piles

Part 2: Tolerances on dimensions and shape

bsi.

National foreword

This British Standard is the UK implementation of EN 10248-2:2024. It supersedes BS EN 10248-2:1996, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee ISE/103, Structural Steels Other Than Reinforcements.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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Published by BSI Standards Limited 2024

ISBN 978 0 539 25139 5

ICS 77.140.70

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 July 2024.

Amendments/corrigenda issued since publication

Date	Text affected

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 10248-2

July 2024

ICS 77.140.70

Supersedes EN 10248-2:1995

English Version

Hot-rolled steel sheet piles - Part 2: Tolerances on dimensions and shape

Palplanches en acier laminées à chaud - Partie 2: Tolérances sur dimensions et forme

Warmgewalzte Spundbohlen aus Stahl - Teil 2: Grenzabmaße und Formtoleranzen

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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents

European foreword

This document (EN 10248-2:2024) has been prepared by Technical Committee CEN/TC 459/SC 3 “Structural steels other than reinforcements”, the secretariat of which is held by DIN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by January 2025, and conflicting national standards shall be withdrawn at the latest by January 2025.

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This document supersedes EN 10248-2:1995.

EN 10248-2:2024 includes the following significant technical changes with respect to EN 10248-2:1995:

a) restructure of the standard;

b) update of the normative references and general requirements;

c) review of the sketches;

d) new wording for Clause 10;

e) new wording for Clause 11 about the mass tolerance;

f) insertion of a new Table 15 about the misalignment of the head of sheet piles.

EN 10248 consists of the following parts under the general title *Hot rolled steel sheet piles:*

— *Part 1: Technical delivery conditions*

— *Part 2: Tolerances on dimensions and shape*

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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1 Scope

This document specifies the tolerances on dimensions, squareness of ends, straightness and mass of hot rolled steel sheet piles and is designed to be read in conjunction with EN 10248-1.

The products specified are for general, structural and civil engineering works. The types of steel sheet piles covered by this document are: Z-shaped, U-shaped, straight web, H-shaped with their interlocking bars.

This document also specifies options that can be agreed between the purchaser and the manufacturer at the time of the order and enquiry.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 10021:2006, *General technical delivery conditions for steel products*

EN 10079:2007, *Definition of steel products*

EN 10248-1, *Hot-rolled steel sheet piles - Part 1: Technical delivery conditions*

EN 12063, *Execution of special geotechnical work - Sheet pile walls, combined pile walls, high modulus walls*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 10021:2006, EN 10079:2007 apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp/ui

— IEC Electropedia: available at https://www.electropedia.org/

4 General requirements

The tolerances on dimensions and shape of this document shall apply, as far as possible, in addition to the technical delivery conditions of EN 10248-1.

The determination of sheet pile dimensions and tolerances shall comply with the following preparation before any measurement is carried out. This requirement shall apply in the workshop or on-site without any distinction.

The sheet piles to be measured shall be extracted from the storing stack and laid down on the ground separately. The reference ground shall be flat and free of any local relief over the length of the sheet piles. Transverse supports, e.g. blocks, may be used for supporting the sheet piles on the ground, but the distance between supports shall not exceed five meters. The sheet piles shall be laid down parallel to the ground as indicated in Clauses 5 to 10. Double U-shaped and double Z-shaped sheet piles without crimping or welding of the common interlock, as well as single Z-shaped piles shall be supported by blocks or any suitable supporting device.

The tolerances on the straightness and thicknesses stated in this document are cumulative. Each sheet pile shall slide through its own weight when being threaded over the free length of one adjacent and identical sheet pile that has been installed in compliance with the installation tolerances of EN 12063.

5 Height of profiles

5.1 U-shaped sheet piles

The tolerances on the height of U-shaped sheet piles are given in Table 1.

Table 1 — Height of U-shaped sheet piles

Dimensions in millimetres

Designation	Figure	Nominal dimension	Tolerance
Height h		$h \leq 200$	±4
		$h > 200$	±5

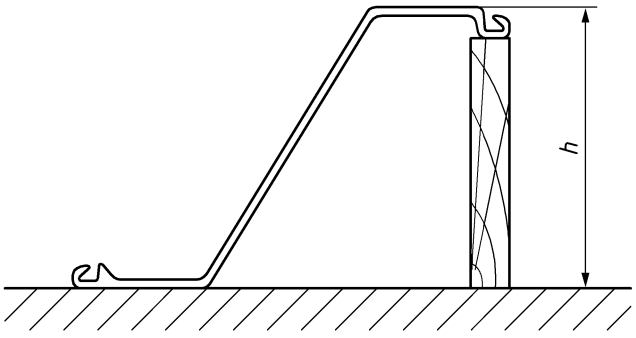
Tolerances on the height of sections made of a pair of crimped or welded piles may be agreed at the time of the enquiry and order: see ***Option 1***, Clause 13.

5.2 Z-shaped sheet piles

The tolerances on the height of Z-shaped sheet piles are given in Table 2.

Table 2 — Height of Z-shaped sheet piles

Dimensions in millimetres

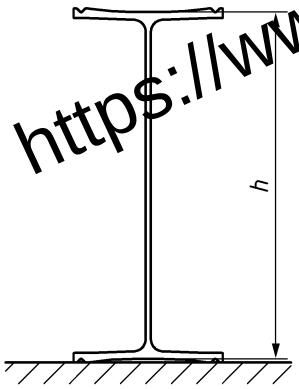
Designation	Figure	Nominal dimension	Tolerance
Height h		$h \leq 200$	±5
		$200 < h < 300$	±6
		$h \geq 300$	±7

5.3 H-shaped sheet piles

The tolerances on the height of H-shaped sheet piles are given in Table 3.

Table 3 — Height of H-shaped sheet piles

Dimensions in millimetres

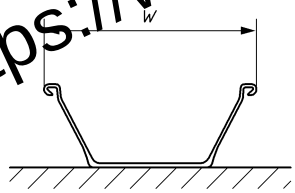
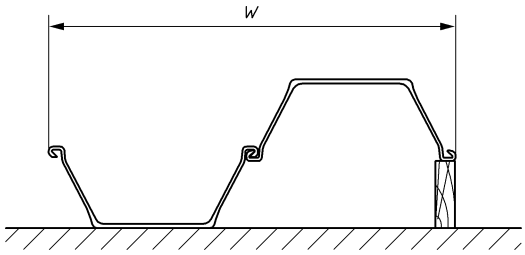
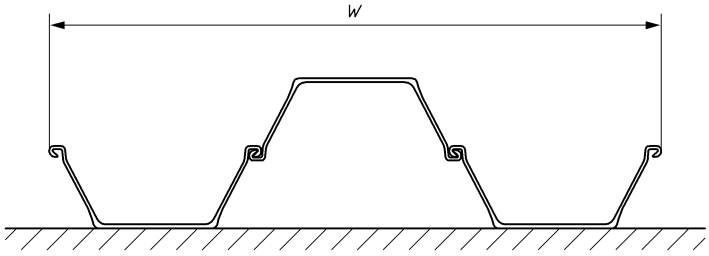
Designation	Figure	Nominal dimension	Tolerance
Height h		$h \leq 500$	±5
		$h > 500$	±7

6 Width of profiles

6.1 U-shaped sheet piles

The tolerance on the width of U-shaped sheet piles is given in Table 4.

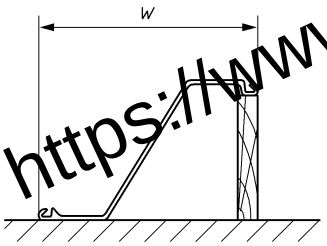
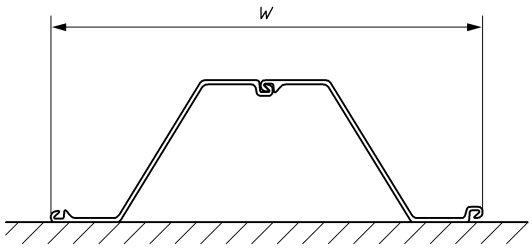
Table 4 — Width of U-shaped sheet piles

Designation	Figure	Nominal dimension	Tolerance
Width *w* Single pile		all	±2 % *w*
Width *w* Double pile		all	±3 % *w*
Width *w* Triple pile		all	±3 % *w*

6.2 Z-shaped sheet piles

The tolerance on the width of Z-shaped sheet piles is given in Table 5.

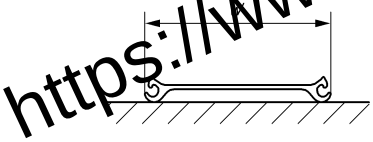
Table 5 — Width of Z-shaped sheet piles

Designation	Figure	Nominal dimension	Tolerance
Width *w* Single pile		all	±2 % *w*
Width *w* Double pile	 NOTE For common interlocks that are neither crimped nor welded, an additional support might be required beneath the common interlocks to prevent an interlock swing.	all	±3 % *w*

6.3 Straight web sheet piles

The tolerance on the width of straight web sheet piles is given in Table 6.

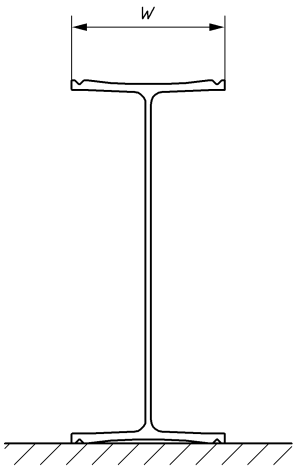
Table 6 — Width of straight web sheet piles

Designation	Figure	Nominal dimension	Tolerance
Width *w*		all	±2 % *w*

6.4 H-shaped sheet piles

The tolerance on the width of H-shaped sheet piles is given in Table 7.

Table 7 — Width of H-shaped sheet piles

Designation	Figure	Nominal dimension	Tolerance
Width *w*		all	±2 % *w*

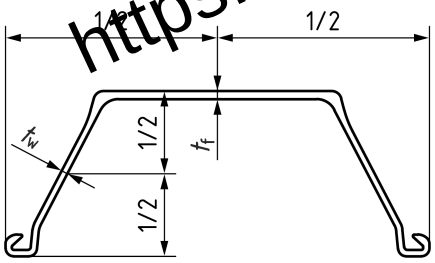
7 Wall thicknesses of profiles

7.1 U-shaped sheet piles

The tolerances on wall thicknesses of U-shaped sheet piles are given in Table 8.

Table 8 — Wall thicknesses of U-shaped sheet piles

Dimensions in millimetres

Designation	Figure	Nominal dimension	Tolerance[a]
Thicknesses t_f and t_w		$t_f \leq 8{,}5$	−0,5
		$t_f > 8{,}5$	−6 % t_f
		$t_w \leq 8{,}5$	−0,5
		$t_w > 8{,}5$	−6 % t_w

[a] The positive tolerance shall be at the discretion of the manufacturer.

At the time of the enquiry and order, a limitation on the positive tolerance can be agreed (see ***Option 2***, Clause 13). In this case, the following values should be chosen:

— +0,5 mm for $(t_f, t_w) \leq 8{,}5$ mm;

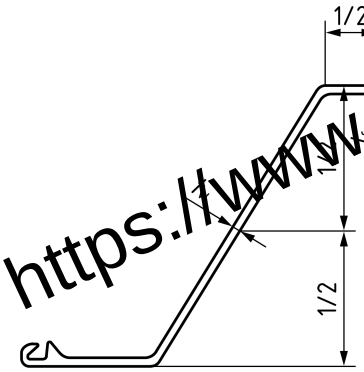
— +6 % (t_f, t_w) for $(t_f, t_w) > 8{,}5$ mm.

7.2 Z-shaped sheet piles

The tolerances on wall thicknesses of Z-shaped sheet piles are given in Table 9.

Table 9 — Wall thicknesses of Z-shaped sheet piles

Dimensions in millimetres

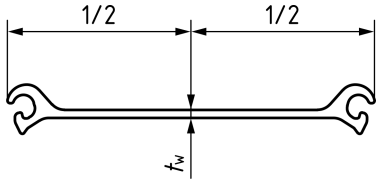
Designation	Figure	Nominal dimension	Tolerance[a]
Thicknesses t_f and t_w		$t_f \leq 8,5$	−0,5
		$t_f > 8,5$	−6 % t_f
		$t_w \leq 8,5$	−0,5
		$t_w > 8,5$	−6 % t_w
[a] The positive tolerance shall be at the discretion of the manufacturer. At the time of the enquiry and order, a limitation on the positive tolerance can be agreed (see ***Option 2***, Clause 13). In this case, the following values should be chosen: — +0,5 mm for $(t_f, t_w) \leq 8,5$ mm; — +6 % (t_f, t_w) for $(t_f, t_w) > 8,5$ mm.			

7.3 Straight web sheet piles

The tolerances on wall thickness of straight web sheet piles are given in Table 10.

Table 10 — Wall thickness of straight web sheet piles

Dimensions in millimetres

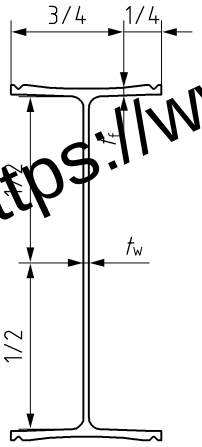
Designation	Figure	Nominal dimension	Tolerance[a]
Thickness t_w		$t_w \leq 8,5$	−0,5
		$t_w > 8,5$	−6 % t_w
[a] The positive tolerance shall be at the discretion of the manufacturer. At the time of the enquiry and order, a limitation on the positive tolerance can be agreed (see ***Option 2***, Clause 13). In this case, the following values should be chosen: — +0,5 mm for $t_w \leq 8,5$ mm; — +6 % t_w for $t_w > 8,5$ mm.			

7.4 H-shaped sheet piles

The tolerances on wall thicknesses of H-shaped sheet piles are given in Table 11.

Table 11 — Wall thicknesses of H-shaped sheet piles

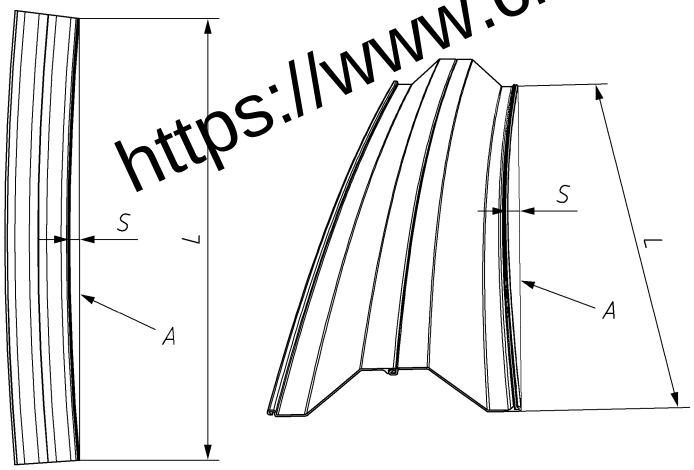
Dimensions in millimetres

Designation	Figure	Nominal dimension	Tolerance
Thicknesses t_f and t_w		t_f, $t_w \leq 12,5$	+2,0 −1,0
		t_f, $t_w > 12,5$	+2,5 −1,5

8 Straightness of profiles (deviation from straight line)

The tolerance on straightness (sweep *S*) of all profiles is given in Table 12.

Table 12 — Straightness of all profiles of all lengths

Designation	Figure	Nominal dimension	Tolerance
Straightness (sweep) *S*		all lengths *L*	0,2 % *L*
Key A for example a string line			

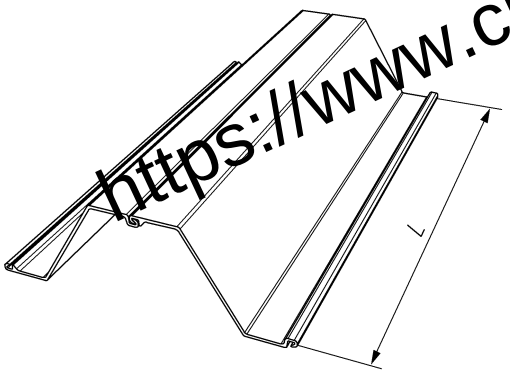
A reduced tolerance may be agreed at the time of the enquiry and order: see ***Option 3***, Clause 13.

9 Length of profiles

The tolerance on the length of all profiles is given in Table 13.

Table 13 — Length of all profiles

Dimensions in millimetres

Designation	Figure	Nominal dimension	Tolerance
Length *L*		all	±200

A reduced tolerance may be agreed at the time of the enquiry and order: see ***Option 4***, Clause 13.

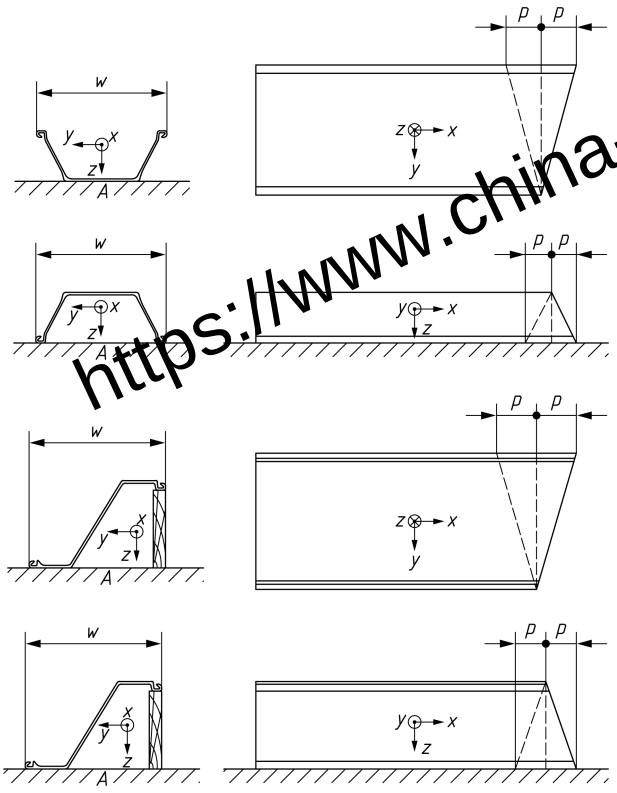
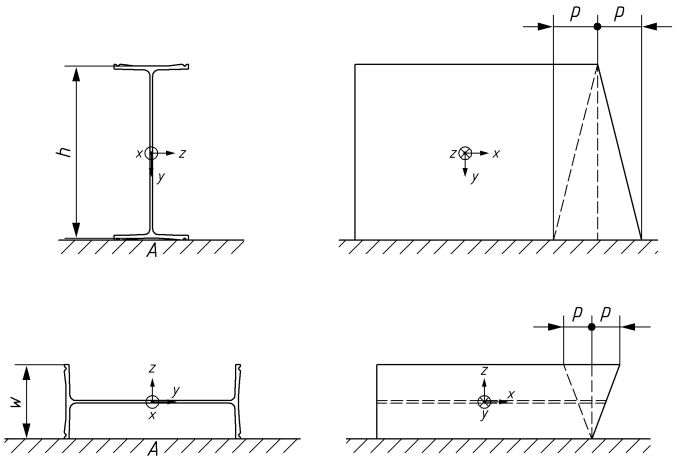
10 Squareness of ends of profiles

The tolerance on squareness of ends of all profiles is given in Table 14.

For Z-shaped, U-shaped and straight web sheet piles, the total deviation between the highest and the lowest point of the cutting plane shall not exceed 2 % of the width *w* with the measurement being taken in the direction of the longitudinal axis of a single pile.

For the H-shaped sheet piles this tolerance shall not exceed 4 % of the height *h*.

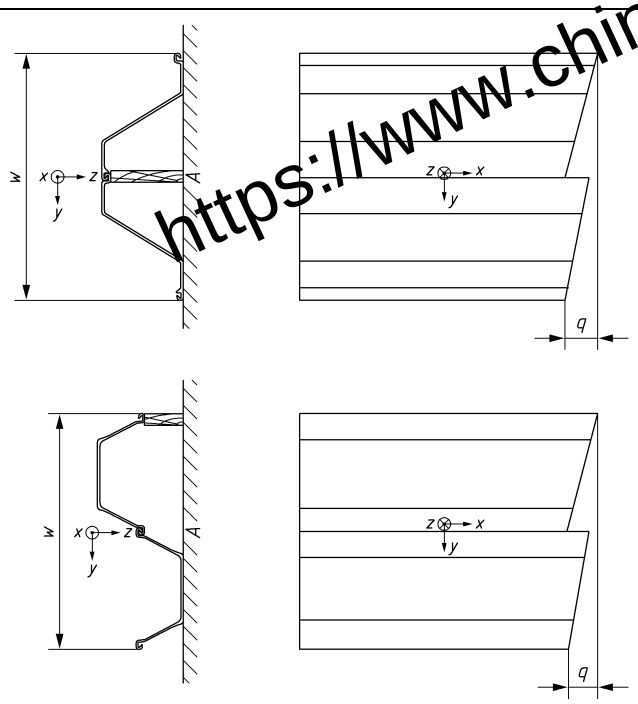
Table 14 — Squareness of ends of profiles

Designation	Figure	Nominal dimension	Tolerance
Squareness *p* Z-shaped, U-shaped and straight web sheet piles		all widths *w*	single pile 2 % *w* double pile 1 % *w*
Squareness *p* H-shaped		all heights *h* all widths *w*	4 % *h* 2 % *w*
Key A ground			

When Z-shaped, U-shaped or H-shaped sheet piles are delivered in double or triple piles with the common interlocks welded and/or crimped, the head of the sheet pile element shall not present a misalignment (q) exceeding 20 mm – see Table 15.

Table 15 — Misalignment of the head of double and triple piles

Dimensions in millimetres

Designation	Figure	Nominal dimension	Tolerance
Misalignment of the head of double and triple piles q Z-shaped, U-shaped or H-shaped		all widths w	20
Key A ground			

11 Mass of profiles

The actual mass of a piece shall not deviate more than ± 5 % from the calculated mass (product of nominal pile length by mass per linear meter of pile according to section tables of the producers).

A reduced tolerance may be agreed at the time of the enquiry and order: see ***Option 5***, Clause 13.

12 Interlocks of profiles

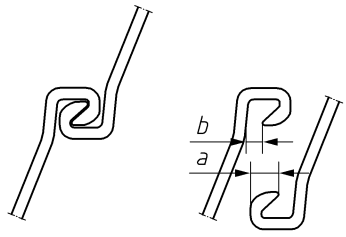
One part of the interlock comprises a recessed groove with a narrow opening of width b. The other part of the interlock comprises a bulb of width a (measured parallel to the line of the b dimension) which fits into the groove but with sufficient interference (a-b) to prevent the two elements disengaging.

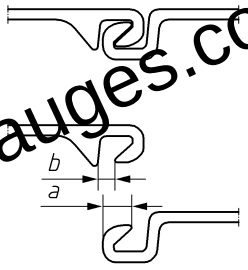
The interference (a-b) of different types of interlocks is shown in Table 16:

a) Type 1 to Type 4: for sheet piles subjected primarily to bending stresses, the interference shall be (a-b) ≥ 4 mm;

b) Type 5: for sheet piles subjected primarily to tensile stresses, the interference shall be (a-b) ≥ 6 mm.

Table 16 — Measurement for interlock types of sheet piles

<table>
<tr><td> 

Type 1</td><td> 

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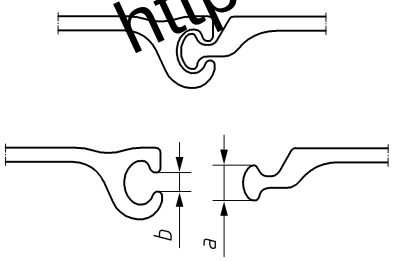
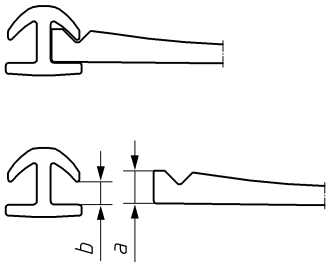
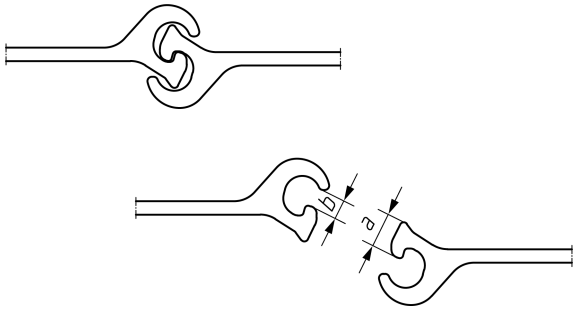
<tr><td> 

Type 3</td><td> 

Type 4</td></tr>
<tr><td> 

Type 5</td><td></td></tr>
</table>

13 Options

Following options can be agreed at the time of the enquiry and order:

1	Tolerances on the height of sections made of a pair of crimped or welded U-shaped sheet piles (see 5.1).
2	A plus tolerance of the thickness of U-shaped sheet piles, Z-shaped sheet piles or straight web sheet piles (see 7.1, 7.2 and 7.3).
3	A reduced tolerance for the straightness (sweep) *S* of profiles (see Clause 8).
4	A reduced tolerance for the length *L* of profiles (see Clause 9).
5	A reduced tolerance for the mass of profiles (see Clause 11).

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