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2017

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1

Nails specification — Part 1: Steel nails

2



Reference number

DRS 364.: 2017

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Foreword

Rwanda Standards are prepared by Technical Committees and approved by Rwanda Standards Board (RSB) Board of Directors in accordance with the procedures of RSB, in compliance with Annex 3 of the WTO/TBT agreement on the preparation, adoption and application of standards.

The main task of technical committees is to prepare national standards. Final Draft Rwanda Standards adopted by Technical committees are ratified by members of RSB Board of Directors for publication and gazettment as Rwanda Standards.

In other circumstances, particularly when there is an urgent need for such documents, Rwanda Standards Board may decide to publish technical specifications to respond to either market or regulatory needs. A technical specification represents an agreement of majority of the members of a Technical Committee and the document is subjected to review for improvement.

DRS 364:2017 was prepared by Technical Committee RSB/TC 23, *Mechanical Engineering and Metallurgy*.

In the preparation of this Technical Specification, reference was made to the following standard:

BS 1202-1:2002, *Specification for nails — Part 1: Steel nails*
US 194-1:2016, *Nails— Part 1: Steel nails— Specification*

The assistance derived from the above source is hereby acknowledged with thanks.

Committee membership

The following organizations were represented on the Technical Committee on Mechanical Engineering and Metallurgy RSB/TC 023) in the preparation of this standard.

Association des Consommateurs au Rwanda (ADECOR)

Rwanda Standards Board (RSB) – Secretariat

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Nails specification — Part 1: Steel nails

1 Scope

This Draft Rwanda Standard specifies requirements for preferred forms and dimensions, tolerances on dimensions finish and surface coating, for the types of steel nails and of loose steel wire nails for general applications.

This standard is applicable to the following types of nails:

- a) convex head roofing nails (chisel or diamond points)
- b) pipe nails (chisel point)
- c) hardboard panel pins (round shank)
- d) hardboard panel pins (square shank)
- e) lath nails
- f) plasterboard nails (jagged shank)
- g) tile pegs
- h) tram nails with flat or raised head with chisel point
- i) square twisted shank flat head nails
- j) dowels
- k) tenter hooks
- l) annular ringed shank flat head nails
- m) helical threaded shank flat head nails
- n) duplex head nails
- o) cut clasp nails
- p) cut floor brads

2 Normative references

The following referenced documents are indispensable for the application 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.

RS ISO 1461, *Hot dip galvanized coatings on fabricated iron and steel articles — Specification and test*
ISO 22034-2, *Steel wire and wire products — Part 2: Tolerances on wire dimensions.*

3 Requirements

3.1 Materials and manufacture

3.1.1 Wire nails shall be made of mild steel and cut nails shall be made from black rolled steel.

3.1.2 Nails manufactured in accordance with this standard shall not be subjected to heat treatment after fabrication except for that incurred during surface coating.

3.2 Workmanship

Nails shall be straight and true in shape. The head and tip should conform to the different nail geometries referred in table 1-28

3.3 Finish

3.3.1 Oxidation

The surface of all nails shall be free from excessive oxidation.

3.3.2 Wire nails.

The finish of wire nails shall be one of the following:

- a) bright;
- b) galvanized;
- c) cement-coated (resin-coated);
- d) an alternative finish such as sherardized, cadmium plated or lead coated, as agreed between purchaser and supplier.

3.3.3 Cut nails

The finish of cut nails shall be one of the following:

- a) in the "as rolled" condition, except for those sides which are made bright by the cutting process;
- b) galvanized

3.3.4 Galvanizing

The coating of galvanized wire nails and galvanized cut nails shall comply with the requirements of RS ISO 1461 except that the minimum coat weight shall be 300 g/m² at a maximum Acceptable Quality Level (AQL) of 10 %.

3.4 Surface coating

The surface of the wire nails shall comply with one of the following:

- 115 a) uncoated; the surface of the nails shall be free from rust;
- 116 b) zinc coated or zinc alloy coated, with a minimum zinc purity of 98.5 % in the outer surface of the coating,
117 by one of the following alternatives:
- 118 1) hot dipped to provide a minimum coating of 300 g/m² at an Acceptable Quality Level (AQL) of 10 %;
- 119 2) barrel coated to provide a minimum coating of 300 g/m² at an AQL of 10 % of nails with nominal
120 characteristic dimensions greater than 2.6 mm;
- 121 3) electroplated zinc coatings;
- 122 4) other zinc or zinc alloy coating methods such as sheradizing or mechanical zinc plating as agreed
123 between purchaser and supplier;
- 124 c) lacquered, cement coated or phosphate coated

125 **4 Dimensions and tolerances**

126 **4.1 General**

127 The dimensions of nails shall be in accordance with Table 1 to 28 subject to the tolerances given in 4.1 to 4.4

128 **4.2 Head diameter (d_h)**

129 Tolerance for head diameter shall be $\pm 5\%$ except for extra large head clout or felt nails, which have a
130 minimum diameter of 11 mm.

131 **4.3 Shank diameter (dimension D)**

132 The following tolerances shall apply to shank diameter for:

- 133 a) Round wire nails:
- 134 1) when diameter is less than 2.65 mm, ± 0.03 mm,
- 135 2) when diameter is 2.65 mm and more, ± 0.05 mm.
- 136 b) Cut nails
- 137 1) when not more than 50 mm in length, ± 0.10 mm;
- 138 2) when over 50 mm and not more than 100 mm in length, ± 0.15 mm;
- 139 3) when over 100 mm in length, ± 0.20 mm.

4.4 Length

The following tolerances shall apply

a) Wire nails

1) when diameter is less than 2.65 mm, ± 0.5 mm,

2) when diameter is 2.65 mm and more, ± 0.8 mm.

b) Cut nails

1) when not more than 50 mm in length, ± 1.0 mm;

2) when over 50 mm and not more than 100 mm in length, ± 1.5 mm;

3) when over 100 mm in length, ± 2.0 mm.

4.5 Nominal characteristic dimension, d

The tolerance on the nominal characteristic dimension applies to the nail shank before coating. The nominal characteristic dimension tolerances on nails shall be T1 of ISO 22034-2

5 Weights

The approximate number of bright nails and cut nails per kilogram is given, for general guidance only, in Table 1 to table 16.

6 Packaging and labelling

Nails are usually supplied in package by net weight or by an approximate number of nails. The label or text on the package shall give the following:

a) reference to this standard;

b) type;

c) length and nominal characteristic dimension;

d) surface coating;

e) weight or approximate number of nails; and

f) name and address of manufacturer

7 Designation for ordering

7.1 When designating steel nails in an enquiry or an order, the following information shall be given:

- 166 a) quantity required by weight;
 167 b) type of nail;
 168 c) finish required;
 169 d) length in millimetres;
 170 e) diameter or dimension D in millimetres;
 171 f) Rwanda Standard reference number;
 172 g) Surface coating.

Table 1 — Dimensions and approximate count of convex roofing nails (chisel or diamond points)

Length L mm	Shank diameter D mm	Approx. no. of nails per kg	Nearest former s.w.g.
75	5.60	68	5
65	6.00	66	4
65	5.60	79	5

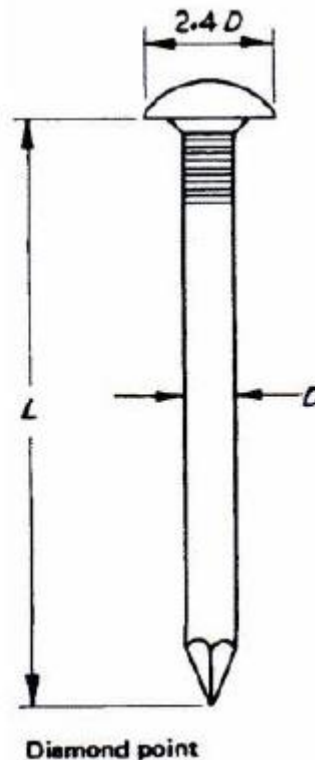
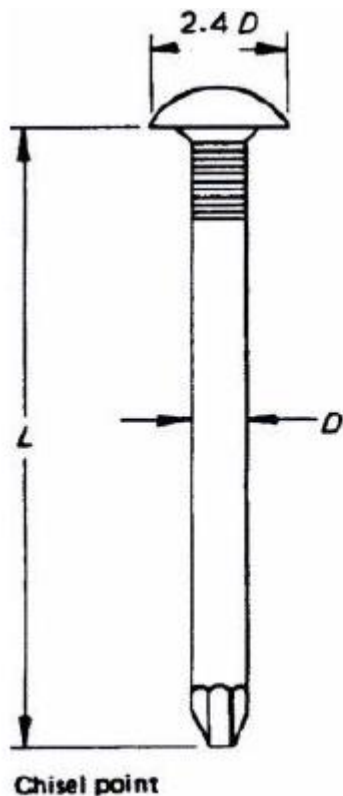


Table 2 — Dimensions and approximate count of convex roofing nails (chisel points)

Length L mm	Shank diameter D mm	Approx. no. of nails per kg	Nearest former s.w.g.
100	8.00	24	5/16
90	8.00	26	5/16
75	8.00	31	5/16
65	8.00	35	5/16
50	8.00	44	5/16

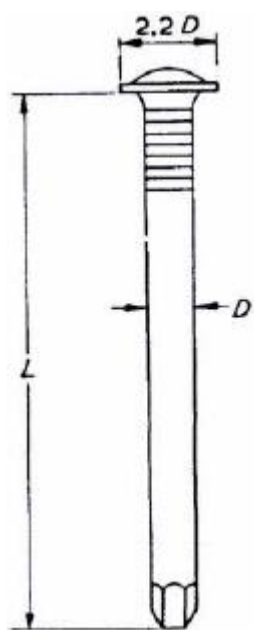


Table 3 — Dimensions and approximate count of hardboard panel pins (round shank)

Length L mm	Shank diameter D mm	Approx. no. of nails per kg	Nearest former s.w.g.
25	1.60	2 340	16
25	1.40	3 090	17
20	1.60	3 140	16
20	1.40	3 970	17

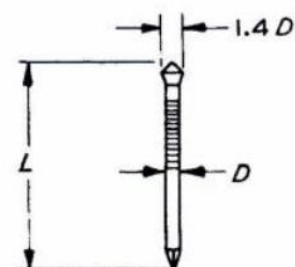


Table 4 — Dimensions and approximate count of hardboard panel pins (square shank)

Length L mm	Shank diameter D mm	Approx. no. of nails per kg	Nearest former s.w.g.
20	1.40	3 470	17

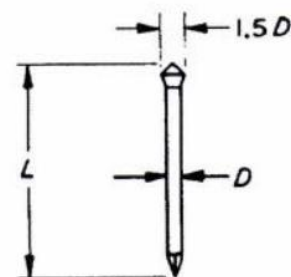


Table 5 — Dimensions and approximate count of lath nails

Length L mm	Shank diameter D mm	Approx. no. of nails per kg	Nearest former s.w.g.
40	2.00	970	14
30	2.00	1 170	14
25	2.00	1 430	14
25	1.80	1 740	15
25	1.60	2 140	16
20	1.80	1 750	15
20	1.60	2 370	16

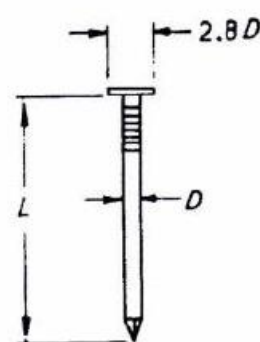


Table 6 — Dimensions and approximate count of plasterboard nails (Jagged shank)

Length L mm	Shank diameter D mm	Approx. no. of nails per kg	Nearest former s.w.g.
40	2.65	570	12
30	2.65	700	12

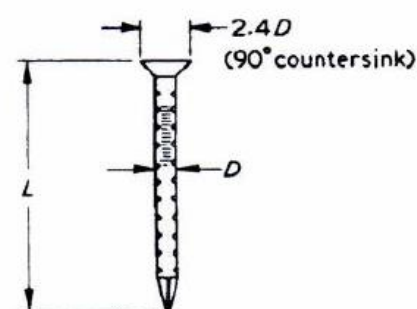


Table 7 — Dimensions and approximate count of tile pegs

Length L mm	Shank diameter D mm	Approx. no. of nails per kg	Nearest former s.w.g.
40	6.00	88	4
30	6.00	106	4

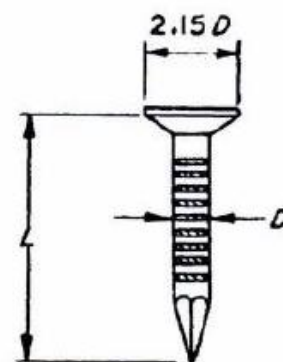
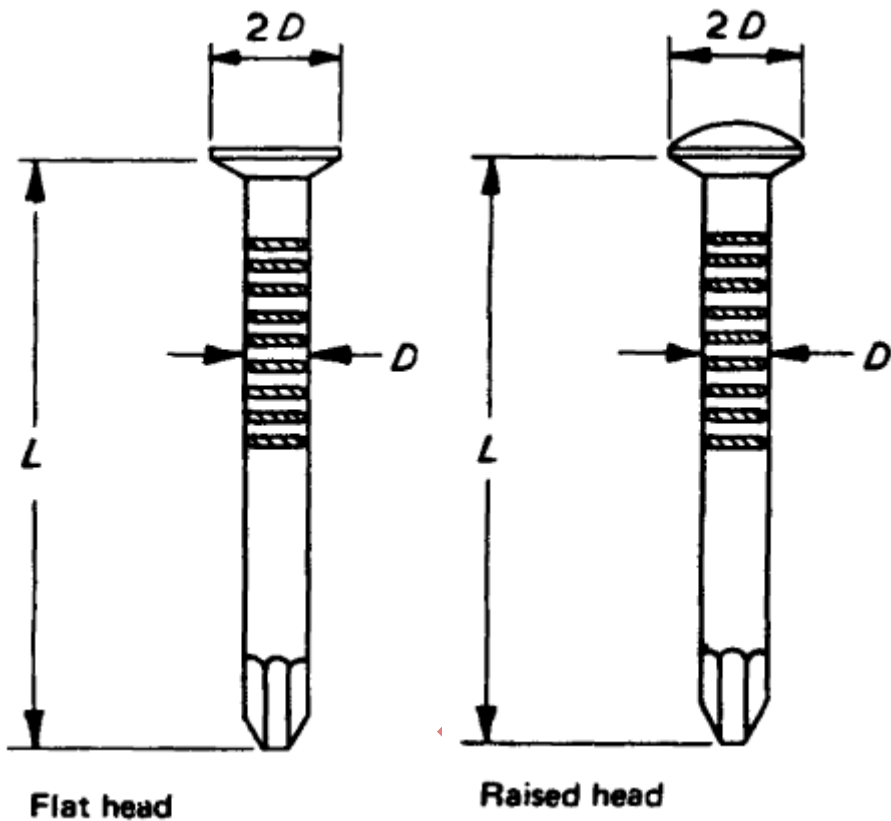


Table 8 — Dimensions and approximate count of tram nails with flats or raised head and chisel point

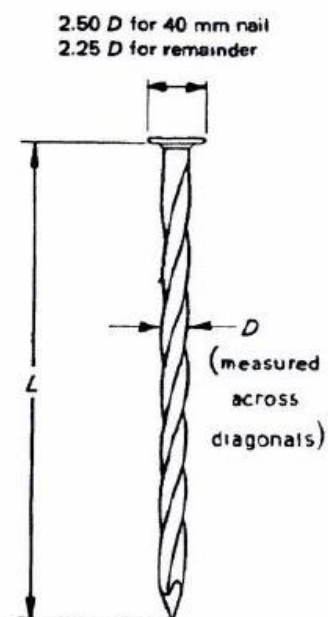
Length L mm	Shank diameter D mm	Approx. no. of nails per kg	Nearest former s.w.g.
65	8.00	37	5/16



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Table 9 — Dimensions and approximate count of squared twisted shank flat head nails

Length L mm	Shank diameter D mm	Approx. no. of nails per kg	Nearest former s.w.g.
65	3.35	235	10
50	3.00	415	11
50	2.65	515	12
40	2.36	860	13



NOTE Because of the square twisted shank, the shape of the head will differ from that of a round wire nail.

Table 10 — Dimensions and approximate count of dowels

Length L mm	Shank diameter D mm	Approx. no. of nails per kg	Nearest former s.w.g.
50	2.65	455	12
45	2.65	520	12
40	2.65	610	12

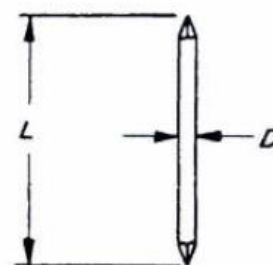
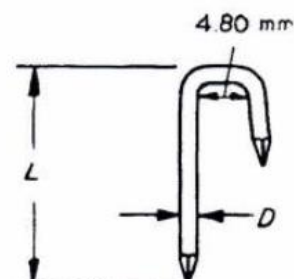


Table 11 — Dimensions and approximate count of tenterhooks

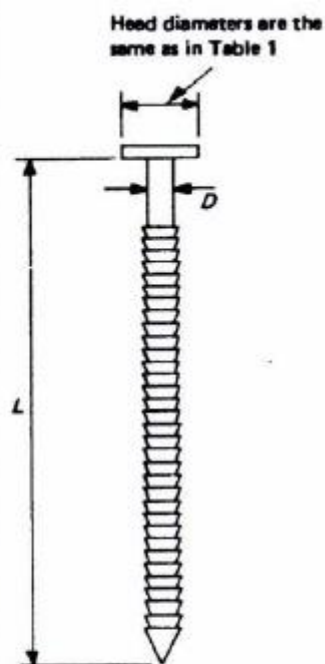
Length L mm	Shank diameter D mm	Approx. no. of nails per kg	Nearest former s.w.g.
25	2.36	690	13
20	2.36	740	13



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Table 12 — Dimensions and approximate count of annular ringed shank flat head nails

Length <i>L</i> mm	Shank diameter <i>D</i> mm	Approx. no. of nails per kg	Nearest former s.w.g.
200	8.00	13	5/16
180	6.70	22	3
150	6.00	29	4
125	5.60	35	5
115	5.00	57	6
100	5.00	66	6
90	4.00	106	8
90	3.75	123	9
90	3.35	152	10
75	4.00	121	8
75	3.75	154	9
75	3.35	194	10
65	3.75	175	9
65	3.35	230	10
65	3.00	275	11
60	3.35	255	10
60	3.00	310	11
60	2.65	385	12
50	3.35	290	10
50	3.00	340	11
50	2.65	440	12
45	2.65	510	12
45	2.36	640	13
40	2.65	575	12
40	2.36	750	13
30	2.36	840	13
30	2.00	1 170	14
25	2.00	1 430	14
20	2.00	1 900	14

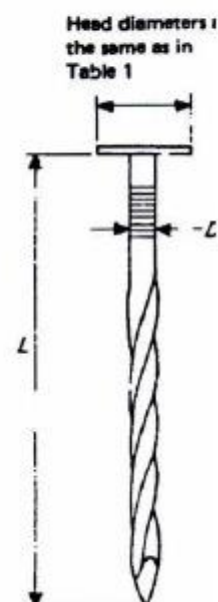


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202 **Table 13 — Dimensions and approximate count of helical threaded shank flat head nails**

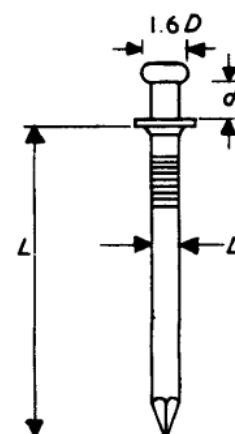
Length L mm	Shank diameter D mm	Approx. no. of nails per kg	Nearest former s.w.g.
200	8.00	13	5/16
180	6.70	22	3
150	6.00	29	4
125	5.60	35	5
115	5.00	57	6
100	5.00	66	6
90	4.00	106	8
90	3.75	123	9
90	3.35	152	10
75	4.00	121	8
75	3.75	154	9
75	3.35	194	10
65	3.75	175	9
65	3.35	230	10
65	3.00	275	11
60	3.35	255	10
60	3.00	310	11
60	2.65	385	12
50	3.35	290	10
50	3.00	340	11
50	2.65	440	12
45	2.65	510	12
40	2.65	575	12



203

204 **Table 14 — Dimensions and approximate count of duplex head nails**

Length L mm	Shank diameter D mm	Lower head diameter	Approx. no. of nails per kg	d mm	Nearest former s.w.g.
100	5.60	11.00	46	9.50	
90	5.00	9.50	62	9.50	5
75	4.00	8.50	100	9.50	6
70	3.75	8.00	130	8.00	8
60	3.35	7.00	200	6.50	9
45	3.00	6.50	345	6.50	10
					11

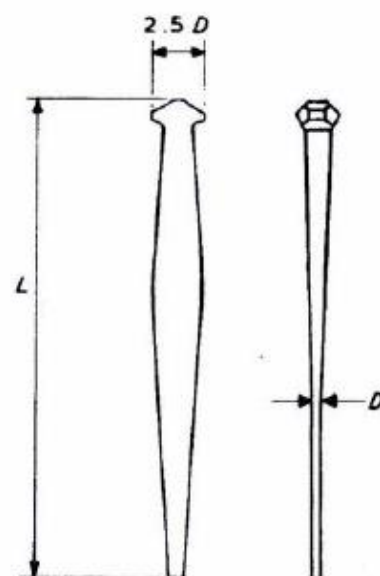


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Table 15 — Dimensions and approximate count of cut clasp nails

Length L mm	Shank dimension D mm	Approx. no. of nails per kg	Nearest former s.w.g.
200	6.00	11	4
175	5.60	13	5
150	5.60	19	5
125	5.00	30	6
100	4.00	48	8
90	3.75	66	9
75	3.35	103	10
65	3.00	171	11
60	2.65	202	12
50	2.65	286	12
40	2.00	616	14
30	1.80	858	15
25	1.60	1 384	16

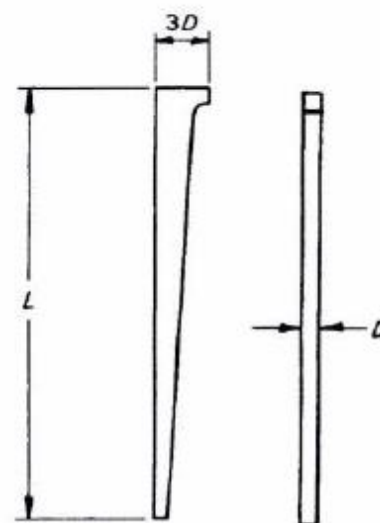


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Table 16 — Dimensions and approximate count of cut clasp nails

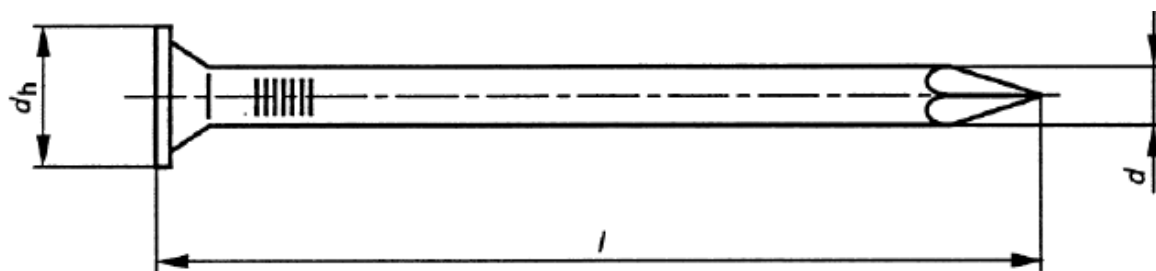
Length L mm	Shank dimension D mm	Approx. no. of nails per kg	Nearest former s.w.g.
75	3.35	100	10
65	3.35	154	10
60	3.00	198	11
50	2.65	264	12
45	2.36	330	13
40	2.36	396	13

**Side views**

209



210 **Table 17 — Dimensions for circular, flat, flat countersunk and cup head, plain shank nails**

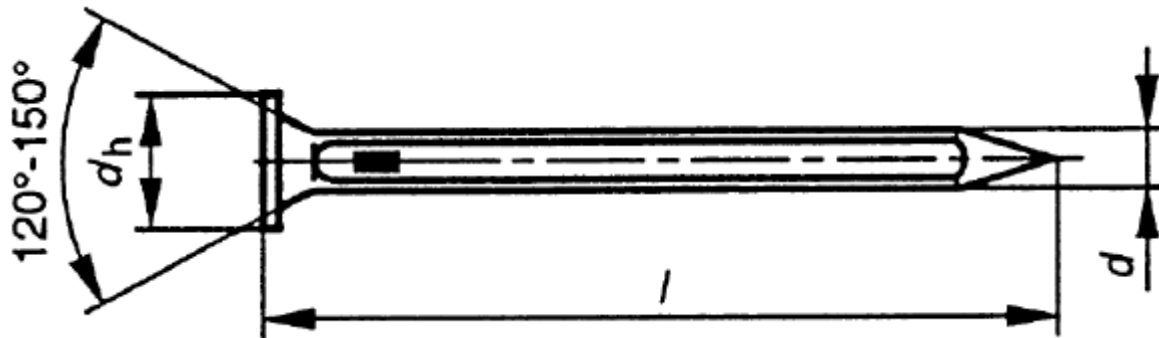


211
212 Dimensions in mm

Nominal characteristic dimension D	1,0	1,2	1,4	1,6	1,8	2,0	2,2	2,4	2,7	3,0	3,4	3,8	4,2	4,6	5,0	5,5	6,0	7,0	8,0
Nail Length L	10	15	20 25	25 30	30 40	30 40 45	30 40 50	30 40 50	40 50 60	50 60 70 80	60 70 80 90	70 80 90 100	90 100 110	90 100 120	100 120 140	140	150 160 180	200	280
Head diameter d_h	2,8	3,3	3,9	4,0	4,5	5,0	5,5	5,9	6,1	6,8	7,7	7,6	8,4	9,2	10	11	12	14	16

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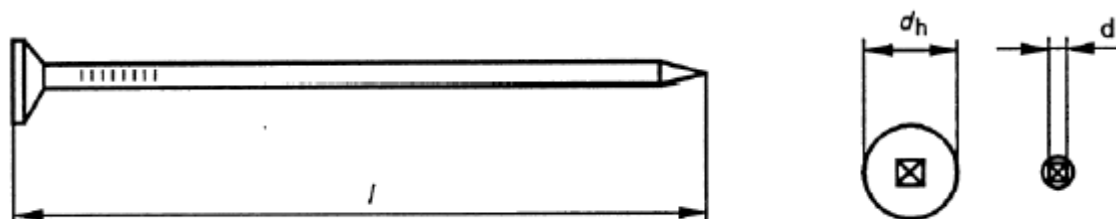
Table 18 — Dimensions for circular, flat and flat countersunk head, grooved shank nails



Dimension in mm

Nominal characteristic dimension D	1,4	1,6	1,8	2,0	2,2	2,4	2,7	3,0	3,4	3,8	4,2	4,6	5,0	5,5	6,0	7,0	8,0
Nail Length L	20 25 30	30 35 40	30 35 40	40 50	50 60	50 60	60 70 80	60 70 80 90	60 70 80 90 100	70 80 90 100 110 120	90 100 110 120 130	90 100 120 140	100 120 140 150	140 170	150 160 180 200	200 220 250	280 300
Head diameter d_h	3,2	3,6	4,0	4,5	5,0	5,5	5,9	6,8	7,7	7,7	8,4	9,2	10	11	12	14	16

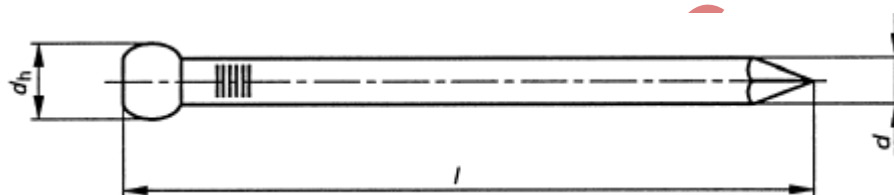
Table 19 — Dimensions for circular, flat and flat countersunk head, square shank nails



Dimension in mm

Nominal characteristic dimension d	1,0	1,2	1,4	1,6	1,7	1,8	2,0	2,2	2,5	2,8	3,1	3,4	3,8	4,2	4,6	4,8	5,5	6,0	7,0
Nail length l	15	20	25 35	25 35	30 35 40	35 40	40 50	45 50 55	55 60 65	65 75 90	80	90 95 100	100 125	125	130	150	160 175 200	180 190	210 260
Head diameter d_h	2,5	3,0	3,5	4,0	4,3	4,5	5,0	5,5	6,3	7,0	7,6	8,5	9,5	10,5	11,5	12,0	13,8	15,0	17,5

Table 20 — Dimensions for lost round head, plain shank nails

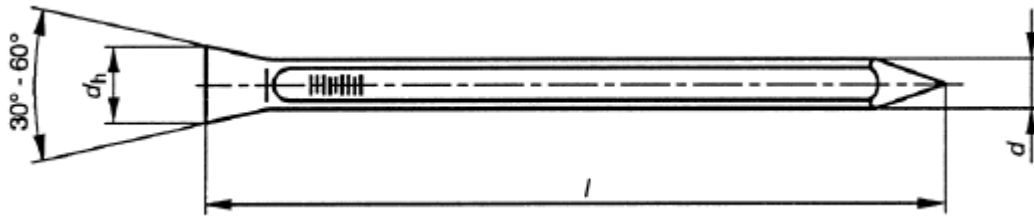


Dimension in mm

Nominal characteristic dimension d	1,0	1,2	1,4	1,6	1,8	2,0	2,2	2,4	2,7	3,0	3,4	3,8	4,2	4,6	5,0
Nail length l	10	15	20 25	25 30	30 40	30 40 45	30 40 50	30 40 50	40 50 60	50 60 70 80	60 70	70	80 90 100	90 100 110	100 120 140
Head diameter d_h	1,4	1,7	2,0	2,2	2,5	2,8	3,1	3,4	3,8	4,2	4,8	5,3	5,9	6,4	7,0

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Table 21 — Dimensions for lost round head, grooved shank nails



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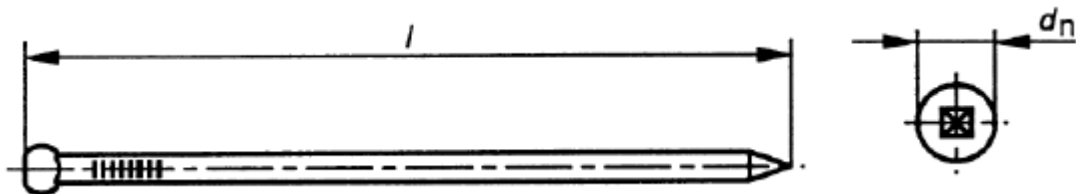
Dimension in mm

Nominal characteristic dimension d	1,4	1,6	1,8	2,0	2,2	2,4	2,7	3,0	3,4	3,8	4,2	4,6	5,0
Nail length l	20 25 30	30 35 40	30 35 40	40 50	50 60	50 60	60 70 80	60 70 80 90	60 70 80 90 100	70 80 90 100 110 120	90 100 110 120 130	90 100 120 140	100 120 140 150
Head diameter d_h	2,0	2,2	2,5	2,8	3,1	3,4	3,8	4,2	4,8	5,3	5,9	6,4	7,0

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Table 22 — Dimensions for lost round head, plain shank nails



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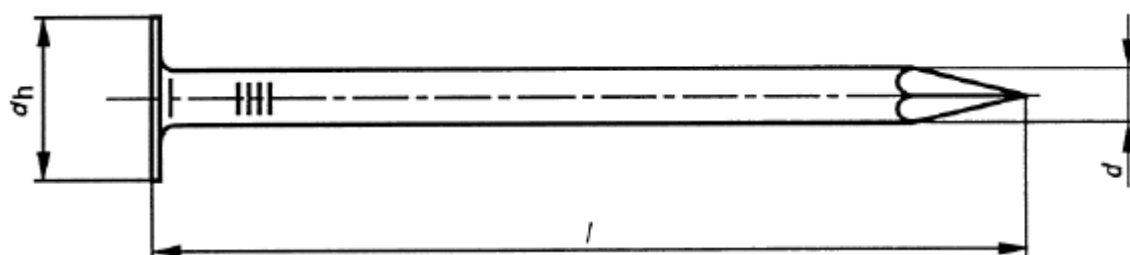
236 Dimension in mm

Nominal dimension d	1,0	1,2	1,4	1,6	1,7	1,8	2,0	2,2	2,5	2,8	3,1	3,4	3,8	4,2
Nail length l	15	20	25 35	25 35	30 35 40	35 40	40 50	45 50 55	55 60 65	65 75 90	80	90 95 100	100 125	125
Head diameter d_h	2,5	3,0	3,5	4,0	4,3	4,5	5,0	5,5	6,3	7,0	7,8	8,5	9,5	10,5

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Table 23 — Dimensions for clout head, plain shank nails



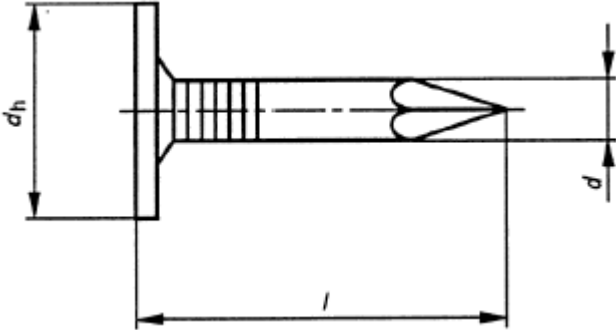
239

240 Dimension in mm

Nominal characteristic dimension d	2,2	2,4	2,7	3,0	3,4	3,8	4,6
Nail length l	20 25 30 40	25 30 35 40 45 50	20 25 30 40 50 65	30 40 50	40 45 50	50 65 75	100
Head diameter d_h	7,3	7,9	8,9	9,9	11,2	11,8	13,1

241

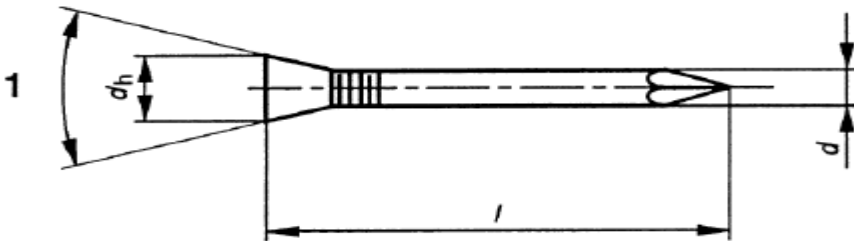
Table 24 — Dimensions for extra-large clout head nails



Dimension in mm

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Table 25 — Dimensions for countersunk panel pin head, plain shank nails

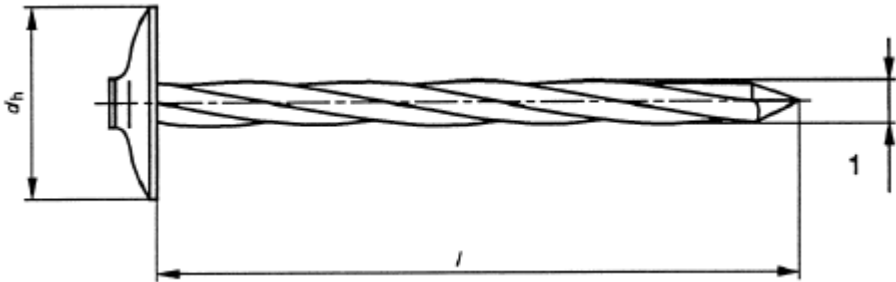


1. 32° included angle.

Dimension in mm

Nominal characteristic dimension d	1,0	1,4	1,6	1,8
Nail length l	15	20 25 30	20 30 40	20 25 30 40
Head diameter d_h	1,4	2,0	2,2	2,5

Table 26 — Dimensions for springhead, square twisted shank nails

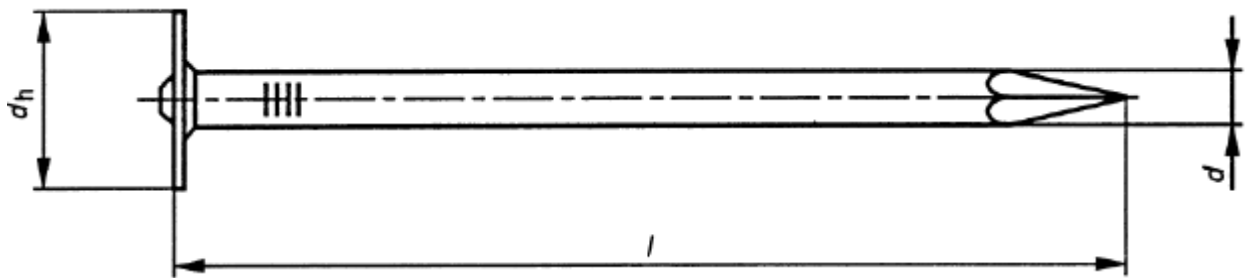


1) d measured over the diagonals

Dimension in mm

Nominal characteristic dimension d	3,4	3,8
Nail length l	50	50
	60	60
	70	70
	75	75
	80	80
	90	90
	100	100
Head diameter d_h	≥ 18	≥ 18
NOTE. The nail length is measured under the head.		

Table 27 — Dimensions for washer head plain shank nails

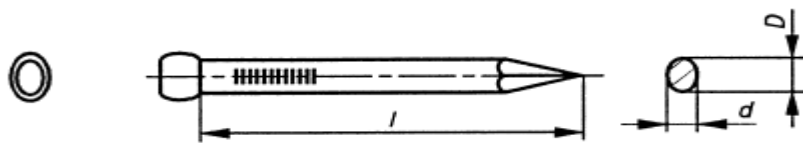


Dimension in mm

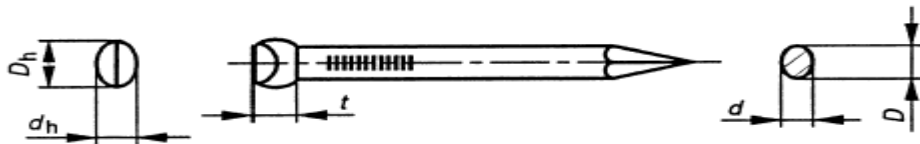
Nominal characteristic dimension d	3,0	3,4
Nail length l	40	
	50	
	60	
		70
		80
		90
		100
Head diameter d_h	≥ 18	≥ 18
NOTE. The heads are usually manufactured by using plain washers but other shapes are permitted.		

Table 28 — Dimensions for lost oval head and brad oval head oval plain shank nails

Lost oval head



Brad oval head



Dimension in mm

Nominal characteristic dimensions	d	1,2	1,6	2,0	2,4	2,7	3,4	3,8	4,2	4,6	5,0
	D	2,0	2,7	3,4	3,8	4,2	5,0	5,5	6,0	6,5	7,0
Nail length l	20 25		30 40	45 50	60	65	75	90	100	125	150
Head diameter d_h 1,5d		1,9	2,6	3,2	3,8	4,3	5,4	6,1	6,7	7,4	8,0
D_h 1,4D		2,8	3,8	4,8	5,3	5,8	7,0	7,7	8,4	9,1	9,8

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